DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
Sukhpur Village

Junagadh District

PREPARED BY

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
Kishan Kotadiya	Civil	171090106004
Chintan Vaghasiya	Civil	171090106008

Balaji Engineering College

NODAL OFFICERS NAME

Asst. Prof. Mr. Mayur Nandha

YEAR:2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad– 382424 Gujarat

DETAIL PROJECT REPORT

ON

Vishwakarma Yojana: Phase VIII

AN APPROACH TOWARDS RURBANISATION

Sukhpur Village

Junagadh District

Prepared By

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
Kishan Kotadiya	Civil	171090106004
Chiiintan Vaghasiya	Civil	171090106008

Balaji Engineering Collge

Asst. Prof. Mayur Nandha

Year: 2020-21

Gujarat Technological University,
Chandkheda,Ahmedabad– 382424 Gujarat

CERTIFICATE

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

Detail Project Report for,

VILLAGE:- SUKHPUR

DISTRICT:- JUNAGADH

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
KOTADIYA KISHAN	CIVIL	171090106004
VAGHASIYA CHINATAN	CIVIL	171090106008

Date of Report Submission:	
Principal Name and Signature:	**Suresh Vaghasiya**
VY-Nodal Officer Name and Signature:	**Mayur Nandha**
Internal(Evaluator) Guide Name and Signature:	**Mayur Nandha**
College Name:	**BALAJI ENGINEERING COLLEGE**
College Stamp:	

ABSTRACT

Vishwakarma Yojana project and how you do your vision project: Vishwakarma yojana provides the benefits of real work experience to engineering students and students can apply their technical knowledge in the development of infrastructure in rural development. Under this scheme, the villages are surveyed and this project was identified & selected for implementation. Rurbanisation is the concept of providing villagers the basic amenities required along with keeping the village soul alive. This project gives new ideas for Development of rural villages. As a measure to strengthen the Panchayat Raj Institutions in terms of functions, powers and finance. Gram Sabha, NGOs, Self-Help Groups and PRIs have been accorded adequate role to make participatory democracy meaningful and effective. By this Vishwakarma yojana project government wants technical solution of the problems of villages from the engineering point of view.

About your village description: Sukhpur village is located in Junagadh district in Gujarat, India. It is situated 08 km away from Junagadh. SUKHPUR has population of 1383 as per census of India2011. Their lives mostly Patel community in this village.

About existing village condition: Sukhpur village is located very near to the Junagadh city. And now it has been included in JUDA. The facilities which are available here are very properly maintained and most of the facilities which an ideal village should have is already available here. But some of the Basic facilities are missing. The Economy and Culture is already higher than the other villages. It also leads in cleanliness and safety.

About your proposed designs your view for village development: In the present report presented, the details and information about the village is shown. According to the data obtained, it can be observed that with some proper further development, Sukhpur village can become a Smart village. So we have tried to design the buildings which were not available to be a smart village. It can be also developed educationally as it already has a scenario of Education. There are six design provide at Sukhpur village.

About future scope of the village development: We are given attractive of Bio-Gas Plant , Aanganwadi and CCTV using smart technology for Sukhpur village. We are tried to give batter design to use maximum natural resources and provide all the basic needs.

Key Words: Development, Urban, Digital, Reduce Migrations

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 **Commissioner ate of Technical Education, Gujarat State** for appreciating and acknowledging our work.

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

We are also thankful to our **Prof**. (**Dr.) SURESH VAGHASIYA Principal**, faculties of our colleges for their encouragement and support to complete this project work.

An act of gratitude is expressed to our internal guide / Evaluator / Nodal Officer, **Asst. Prof. Mr. MAYUR S. NANDHA from college BALAJI ENGINEERING COLLEGE** for their invaluable guidance, constant inspiration and active involvement in our project work.

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

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

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

CONTENT

LIST OF FIGURE

LIST OF TABLES

Chapter 1: Ideal village Visit from Your District Of Gujarat State

Introduction:

Ideal village concept adopted by national, state and local governments of India, as an focused on holistic rural development, derived from Mahatma Gandhi's vision of Adarsh Gram (Ideal village). The 'gaon' with the green field, clean air and clear blue sky always gives a nostalgic chram to any individuals. But, it is very unfortunate that villages which have so many things to offer are still very backward. Poverty, lack of education and lack of even the basic needs are washing away the charm. of the village. But beating the odd there are some Indian village which have set a different level of milestone altogether. Vadal was a village princely state under a aheer Kamaliya chieftain. Vadal state prince name is shree Raningbapu Surabapu Kamaliya It had a population of 320 in 1901, yielding a state revenue of 3000 Rupees he was single pricely state.

1.1 Background & Study area location:

Background

Vishwakarma yojana is provide the benefits of real work experience to engineering student and simultaneously apply their technical knowledge in the development of infrastructure in rural development. Under this scheme, the villages are surveyed and this project was identified and selected for implementation.

Rurbnisaton is to bring peace of mind to the villagers by providing them basic amenities required and still keeping the village soul. This project gives one new idea for Development of rural villages. Also gives procedure how they fulfill needs of the villages. As a measure to strengthen the panchayat Raj Institutions in terms of functions, powers and finance. Gram Sabha, NGOs, Self-Help Groups and PRIs have been accorded adequate role to make participatory democracy meaningful and effective. By this Vishwakarma yojana project government want technical solution of the problem of villages at the engineering point of view.

Study area location:

According to census 2011 information the location code of Vadal village is 514463. Vadal village is located in junagadh district in Gujarat, India. It is located 12Km away from junagadh, which is both district & sub- district headquarter of Vadal village. Vadal village is gram panchayat.

VILLAGE	VADAL
TALUKA	JUNAGADH
DISTRICT	JUNAGADH
STATA	GUJARAT
LAGUAGE	GUJARATI, HINDI, ENGLISH
TIME ZONE	IST(UTC+5.30)
PINCODE	362310

TABLE NO 1. STUDY AREA AND LOCATION

1.2 Concept: Ideal Village, Normal Village

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

House:

The houses of an ideal village are very neat clean. The owners of these houses look to the house sanitation and house-drainage. The houses have sufficient windows to let in air and light.

Agriculture:

People of an ideal village are good farmers. They grow food crops and seasonal crops etc. now they improved method of farming for production of crops.

Educational facilities:

There are primary schools and high school in an ideal village. Primary education is free and compulsory.

Medical facilities:

In an ideal village, there are clinical facilities for villagers and animals. Hence, there are lots of dispensaries.

Other facilities:

We can find post-office, library, playground, garden, skill development center etc there.

People:

People of an ideal village are very neat and clean. They have a sense of discipline and collaboration. They have a spirit of service and let go.

Conclusion:

An ideal village makes all possible provision for development of her people. It is our main duty that we should develop every of India to much higher level. The idea of an ideal village will certainly help us in discharge our duty.

1.2.1 Objectives:

The objectives of an ideal village are as follows,

- To make the village 'HUB' that could attract resources for the development of other village to prevent distress migration from rural to urban areas.
- Contribution tom ward social empowerment
- Create and sustain a culture of cooperative living for inclusive and rapid development.

1.2.2 Example / Live case studies of ideal village of India / Gujarat:

Based on census 2011 information the location code is 514463. Vadal village is located in junagadh tehsil of junagadh district in Gujarat, India. It is situated 12Km away from junagadh.

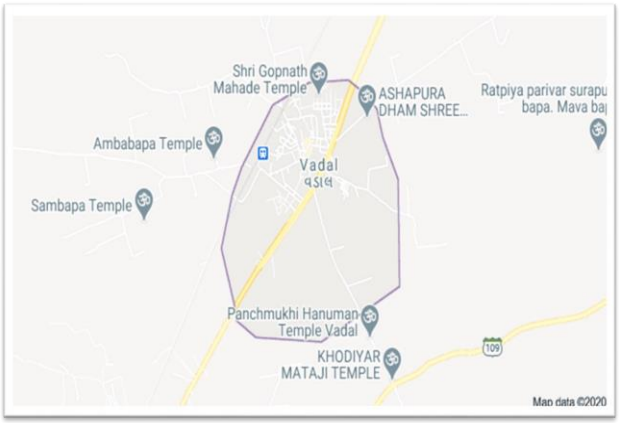


Figure: 1. Map of Village

Gram Panchayat	Vadal
Block / tehsil	Junagadh
District	Junagadh
State	Gujarat
Pin code	362310
Area	2104.32 hectare
Population	7165
Household	1557
Nearest town	Junagadh

Table No.2 Vadal

1.2.3 The idea of model / smart village:

The concept of smartness is popular in respect and honor of human development regardless of rural or urban area, literate or illiterate in all country and ideal is not omission to it.

The ideas of smart village will also attention to multiple challenges such as unplanned urbanization, under development of village and smart villages.

What is smart village?

In smart village access sustainable energy acts as a catalyst for development – enabling the provision of good education and health care, access to clean water, sanitation and nutrition, the growth of productive enterprise to boost income and enhanced security.

1.2.4 Ancient History civil concept about Indian village / foreign countries perspective and its development

It is well acknowledged that we were familiar to science just time is changed and the same thing is in front of us in new from. A book “Vimanashastam” show the procedures to make an airplane.

Some other facts are:

1. The iron pillar of Delhi is famous Indian place it has 99% resistance to corrosion and almost 1600-1700 years old. A study concluded that a corrosion-resistance agent iron hydrogen phosphate was applied on it which shows advanced chemical knowledge of our ancestors.

2. Harappa and Mohenjo-Daro are best example of this architecture and mature urban civilization. In Harappa civilization the underground drainage system was from small to big sewer than to channel and then channel to river. It has also a remarkable town planning system.

3. Ancient fort and huge bath bawadiya etc. are very attractive. One of the most beautiful example of patterns in architecture it is chandbauri well in Rajasthan which is 100 feet below the earth level.

4. Mughals have done change in architecture, the use of marbles shows that we had good Knowledge of geology too.

5. Jagganath temple: the shadow of the main dome is not visible whatever be the time it shows architecture feat. Also the Sudarshan chakra on the top seems always facing you. Irrespective of wherever you stand. When you enter the temple by Singhdwara after first step you cannot here any sound of ocean but when you exit it can be clearly heard.

6. The Narayan pal vishun mandir of Chitrkut, Bastar was completely built only in a day. Its structure and arts are also built in a shorter period of time of a day.

7. The Konark sun temple is one of the UNESCO heritage site. The main attraction of the temple is its twelve pairs of wheel located at the base of the temple. These wheels are nit ordinary wheels but tell time as well the spokes of the wheels create a sundial. One can calculate the precise time of the day by just looking at the shadow cast by these spokes.

1.3 Detail study (Socio-economic, physical, and demographic and infrastructure details) of ideal village / smart Village with photograph

Socio Economic:

Name of three major occupation groups in village	Farming	70%
	Production of food items	18%
	Jobs in Junagdh	12%

Table No 3. Socio Economic profile

Physical and Demographic:

Vadal village is located in Junagadh Tehsil of Junagadh district in Gujarat, India. Vadal is located 12 Km Away from junagadh, which is both district & sub-district headquarter of Vadal village. The geographical are of village is 2104.32 hectares. Vadal has a total population of 7,165 peoples. There are about 1,557 houses in Vadal village. Junagadh is nearest town to Vadal which is approximately 12Km away.

Sr. no	Census	Population	Male	Female
1	2001			
2	2011	7165	3726	3439

Table No 4. Population of Vadal

Infrastructures Details:

Fig No. 2 Post Office

Fig No 3. Railway station

Fig No. 4 PHC

Fig No. 5 Samaj

Fig No 6. Gram panchayat

Fig No. 7 Gate

Fig No. 8 Hospital

Fig No. 9 Anganwadi

Fig No 10. BOI

Fig No. 11 SBI

Fig No. 12 School

Fig No. 13 Agricultural Bank

1.4 SWOT analysis of ideal village:

- ❖ Strength
- Road network, panchayat building, water supply, education are facilities like this are very good.
- ❖ Weakness
- This is a little weakness of the village. In village public laibrery and recreational facility are weak.
- ❖ Opportunities
- This village still needs a lot of things.
- The village has the opportunity to make something like Wi-Fi and E-Class.
- ❖ Threats
- Something in this village is bad too.
- The open sewer in this village is a very big bad thing.

1.5 Future Prospects of village:

For future prospect, the Vadal village can use more advanced technologies for agricultural prospect and other requirements also. They can make the village Wi-Fi zone and can improve the computer labs in the schools. They can provide biogas plant in the village.

1.6 Benefits of visit of ideal village:

We visited Vadal village, Junagadh. By visit of this village Vadal, we got an idea about an ideal village. We had seen much kind of new technologies which can be used in village that are being used in the urban area. By this visit of this village, it has improved our communication skills and we know how to interact with the people.

1.7 Civil Aspect required in ideal village / Smart village:

No required

Chapter 2. Village literature review

2.1 Introduction: Urban and Rural

Urban:

An urban area is human settlement with high population and infrastructure facilities of built environment. Urban area are created through urbanization and are categorized as cities, towns, or sub urban settlements are proper, planned settlements built up according to a process called urbanization. According to census 2011, there are 7,935 towns, 7,041 statutory town and 3,894 census towns.

Rural:

A Rural area is a land that has population and infrastructure facility of built environment. Urban area are created through urbanization and are categorized as cities, towns, or sub urban settlement are proper , planned settlement built up according to a process called urbanization. According to census 2011, there are 7,935 towns, 4,041 statutory town and 3,894 census towns.

2.2 Importance of the rural development

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

Rural areas are large and isolated areas of and open country with low population density.

United states census (2000 census) defines rural areas as comprising open country and settlement with fewer than 2500 resident areas designated as rural can have population densities as high as 999 per square mile as 1 person per square mile.

United states development of agriculture (2002 from bill) define rural ares other than a city or town that has a population of greater than 50,000 swath of land that has few homes or other building and not very many people.

National geographic society define A rural area is an open swath of land that has few homes or other building and not very many people.

2.3 Ancient village / Different definition of Rural Urban Villages

A Village is a clustered human settlement or community, larger than a hamlet but smaller than a town, with a population ranging from a few hundred to a few thousand.

Urban:

For the census of India 2011, the definition of urban area is as follows:

- All places with a municipality, corporation, cantonment board or notified town area committee, etc.
- All other places Which satisfied the following criteria; A minimum population of 5,000;

At least 75 per cent of the male main working population engaged in non-agricultural pursuits.

2.4 Scenario: Rural/Urban Village of India population growth

Population Growth:

Total: 1,210,194,422(100%)

Rural: 833,087,662(68.84%)

Urban: 377,105,760(31.16%)

	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 No 5. Population of Rural and Urban area as per census 2001 and 2011

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

	2001	2011	Difference
Gujarat	5.06	6.04	0.98
Rural	3.16	3.47	0.31
Urban	1.90	2.57	0.67

Table No 6. Gujarat Population (in Crores)

2.6 Rural Development Issues – Concerns – Measures

Rural development issues - Concerns

The Financial, manpower and managerial resources devoted to the implementation of rural development programs are utterly inadequate.

A) People are directly or indirectly dependent on agriculture and a large number of landowners have small and medium-sized landholdings.

B) The upper caste people still hold large land while people of the lower castes own either marginal land or work as landless laborers.

C) Lack of physical facilities in rural areas

D) Less awareness and less income opportunity. Various Measures for rural Development

Rural development is the national necessity and it has following measures: To develop living standard of rural mass.

To develop rural youths, children etc.

To develop infrastructure facility in rural area.

To develop rural institutions like panchayat, cooperatives, post, banking and credit etc…. To develop agriculture, animal husbandry and other agricultural related areas.

To provide minimum facility to rural mass in terms of drinking water, education, transport, electricity and communication.

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

Facilities	Planning Commission/UDPFI Norms	Required as per Norms
Education		
Anganwadi	Each Village	0
Primary School	Each Village	0
Secondary School	Per 7,500 Population	0
Higher secondary School	Per 15,000 Population	0
Collage	Per 125,000Population	0
Tech. Training Institute	Per 100,000Population	0
Agriculture research centre	Per 100,000 Population	0
Medical facility		
Gov./ Panchayat Dispensary or Sub PHC or Health Centre	Each Village	0
PHC & CHC	Per 20,000 Population	0
Child welfare and maternity Home	Per 10,000 Population	0
Hospital	Per 100,000 Population	0
Transportation		
Pucca village Approach Road	Each Village	0
Bus/Auto stand Provision	All Villages connected by Pt (ST Bus or Auto)	0
Drinking Water		
Water facilities		
Over Head Tank	1/3 of Total Demand	1.6 Lac cap
U/G Sump	2/3 of Total demand	3.2 Lac cap
Public Latrines	Each Village	60
Cremation Ground	Per 20,000 Population	0
Post Office	Per 10,000 Population	0
Gram Panchayat Building	Each individual/group Panchayat	0
APMC	Per 100,000 Population	0
Fire Station	Per 100,000 Population	0
Police station	Per 15,000 Population	0
Community Hall	Per 10,000 Population	0

Table No 7. Infrastructure Details

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

2.9 Other Project / Schemes of Gujarat / Indian Government

Following are the schemes or project by govt. sector:

1. Mahatma Gandhi National Rural employment Guarantee Act (MHNREGA)
2. Pradhan Mantri Gram Sadak yojana (PMGCY)

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

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

(ii) Pradhan Mantri gram Sadak Yojna (PMGSY):

Pradhan Mantri gram Sadak Yojana (PMGSY) was lunched on 25th December 2000 as a Fully funded Centrally Sponsored Scheme to provide all weather road connectivity in rural areas of the country. The program 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 desert areas.

According to latest figure made available by the State Governments under a survey to identify Core Network as part of the PMGSY program, about 1.67lakh Unconnected Habitations are eligible for coverage under the program. This involves construction of about 3.71 lakh km. of road for New connectivity and 3.68 lakh km. under up gradation.

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 person and above (500 person 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 construction of 1, 46,185Kms of rural roads. In addition to new connectivity, Bharat Nirman envisages up Gradation/renwal of 1,94,130Kms of existing rural roads. This compresses 605 up gradation from Government of India and 40% renewal by the state Governments.

Chapter 3: Smart Village Concept as per your Idea and its Visit

3.1 Introduction: Concept, Definition and practices

Concept:

In a Smart Villages, access to sustainable energy services acts as a catalyst for Development-Enabling provision of good education and healthcare, access to clean water, the growth of production enterprises to boost Incomes, and enhanced security, gender equality and democratic engagement.

Definition:

The meaning of smart village is all the necessaries facilities is developed in the village and no need to moves in city for any kind of requirement.

Practices:

As civil engineering work change, a new kind of civil engineer will be required. Civil engineers will continue to make in many different roles, including project planner and advocate, regulator, analyst and designer, and builder, as well as working in any of several technical areas. From applying new technologies and adapting new management strategies to becoming Internet-savvy and streamlining the construction process. Civil engineers must master a different set of skills than in the past.

Civil Engineering Practice in the Twenty-first Century details the essentials skills and Strategies civil engineers need to be successful in the twenty-fist century. Topic include: critical thinking, finance and economic, communications, management, design skill law and ethics civil engineering heritage and future consequences of civil engineering work and careers of civil engineers and engineering design and the infrastructure life-cycle.

3.2 Vision-Goals, Standards and Performance Measurement Indicators:

In order to enhance and improve the quality of “public service”, a sound and clear quality management concept is needed. From the 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 if its services-whish should to low 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 is 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 testing of the indicators in smart city projects or cases in the CITY keys partner cities.

3.3 Technological options

1. Smart Energy:

Both residential and commercial building in smart cities is more efficient, using less energy, and the energy used is analyzed and data collected. Smart girds are part of a development of a smart city, and smart streetlight are an easy entry point for many cities, since LED lights save money and pay for themselves within a few years.

2. Smart Transportation:

A smart city support multi-model transportation, smart traffic lights and parking. By making parking smarter people spend less time looking for parking spots and circling city blocks. Smart traffic lights have a camera that monitors traffic flow so that it's reflected in the traffic signals.

3. Smart Infrastructure:

Having a smart infrastructure means that a city can move forward with other technologies and use the data collected to make meaningful change in future city plans.

4. Smart mobility:

Mobility refers to both technology and the data which travels across the technology. The ability to seamlessly move in out of many different municipal and private systems is essential if we are to realize the promise of smart cities. Building the smart city will never be a project that is "finished". Technology needs to be interoperable and perform to expectations regardless of who made it or when it was made.

5. Smart healthcare:

Intelligent Healthcare, technology, use of e-health and m-health system, intelligent and connected medical devices.

3.4 Road map and Safe Guards

The smart City mission has two components; area-based development for smaller areas within the city and pan-city development where one idea is implemented all throughout. According to officials from the Ministry of Urban Development (MUD), among other things, area-based plane allow for the purches of buses and other means to augment public transportation.

Pan city development has no provision for such capital investment on transport but requires the application of information of technology-based solution for better traffic management.

Pan city development plans for metros such as New Delhi and Mumbai have proposed smart parking to manage the increasing volume of care while Agra has mooted the one Agra, one card for cashless transaction across public transport systems, museum and other tourist attractions.

3.5 Issue & Challenges

The and city services are becoming increasingly complex and can be expensive. Although the return on investment may be attractive, complexities often make it challenging for cities to kick-start their smart City projects. Successful implementation of smart city solutions needs effective horizontal and vertical establishment that help cities manage electricity, water, waste, traffic flows, municipal operations coordination between various institutions between central government (MUD) state government as well as local government agencies on various issues related to financing, sharing of best practices and sharing of service delivery processes.

Other challenges for India include merging technology with law enforcement. There is no point in installing high tech traffic signals if its implementation cannot be enforced. India will also have to find ways of encouraging private investment for infrastructure required for a smart city.

3.6 Smart Infrastructure – Intelligent Traffic Management

What is smart infrastructure?

Smart information and Communication technology (smart ICT) has the potential to transform the way we plan and manage infrastructure. New developments in computer hardware, new applications and software are changing the face of the infrastructure scooter, and society more generally driving greater efficiency, increasing productivity, and greatly simplifying construction processes and life-of-asset maintenance. While Australia has generally been proactive in adapting these new technologies foe the planning, design and ongoing maintenance of infrastructure, the fast pace of new development means that there is much more that needs to be done.

3.7 Cyber Security or any other concept as per the

Cyber security is concerned with the security of data, and the applications and infrastructure used to store, process and transmit the data. It is understood as the process of protecting data and info by preventing, detecting and responding to cyber security events, such that events, which include intentional attacks and accidents, are changes that may have an impact on organizational operations.

3.8 Retrofitting- Redevelopment – Greenfield Development District Cooling

Air condition from Hammond services. In the Southeast, air conditioners are almost crucial pieces of equipment for home comfort. However, it can be default to find the right air

condiment for your home, one that will provide enough cool air in the summer to cool your home without driving your energy costs through the roof.

Energy Efficient and Affordable Air conditioners:

When it comes down to selecting a new air conditioner for your home, there are a few things you should consider. First of all is efficiency. By choosing an energy efficient model, you can be sure your money is being well spent and isn't being thrown away with inefficiencies. Get the most being for your buck with an air conditioner that won't cost a fortune to run. If you're having treble choosing an air conditioner for your home, contact us today – we can help you weigh your options!

3.9 Strategic Options for Fast Development

The strategic components of area-based development in the Smart Cities Mission are city Improvement (retrofitting), city renewal (redevelopment) and city extension (Greenfield Development) and Pan-city initiative in which Smart Solutions are applied covering larger Parts of the city.

Retrofitting will introduce planning in an existing built-up area to achieve smart city Objectives, to make the existing area more efficient and livable. In retrofitting, an area Consisting of more than 500 acres will be identified by the city in consultation with citizens.

Depending on the existing level 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 new smart City.

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

Swatchh Bharat Abhiyaan was launched by Prime Minister of India on 2nd October 2015, which caught attention of everybody not only in India, but also in the world? The government has taken various steps to create awareness among the masses for keeping the area surrounding them neat and clean city. Government is also paying good role for cleaning of rivers, railway stations, tourist destinations and other public places.

3.11 Initiatives in village development by local self-government

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

3.12 Smart Initiatives by District Municipal Corporation

The council is the governing body of the municipal corporation and the custodian of its powers, both legislative and administrative. The Municipal Government Act provides that councils can only exercise the powers of the municipal corporation in the proper form, either by bylaw or resolution.

A councilor's job is to work with other council members to set the overall direction of the municipality through their role as a policy maker. The policies that council sets are the guidelines for administration to follow as it does the job of running a municipality. A councilor will spend a lot of time while on council creating new policies and programs or reviewing the current ones to make sure they are working as they should.

The Councilor under the Municipal Government Act, councilors have the following duties:

- To consider the welfare and interests of the municipality as a whole and, to bring to council's attention anything that would promote the welfare or interests of the municipality
- To participate generally in developing and evaluating the policies and programs of the municipality
- To participate in council meetings and council committee meetings and meetings of other bodies to which they are appointed by the council
- To obtain information about the operation or administration of the municipality from the chief administrative officer
- To keep in confidence matters discussed in private at a council meeting until discussed at a meeting held in public
- To perform any other duty or function imposed on councilors by this or any other enactment or by the council.

3.13 Any Projects Contributed Working by Government/ NGO / Other Digital Concepts

The village is almost fulfilled with all types of facilities and it does not need any more Facility. Other than this, A Composed Pit is being constructed by government in the village.

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

Similar to Vishwakarma Yojana, Students of engineering colleges can be given chance to visit foreign countries' smart villages and survey and study it properly as they study the smart villages of Gujarat. Than with the help of other government or private engineers, one can Implement other countries smart village projects in Indian villages.

Chapter 4. About Sukhpur Village

4.1 Introduction About Sukhpur Village details

Sukhpur is a village located in Junagadh taluka of Junagadh district. Sarpanch of the village is S.B. Sovasiya. It is located 8 Km away from Junagadh. Total area of village is 453 hectares. Total population of village is 1383 among them 719 are male and 664 are female as per census 2011. Total households in Sukhapur village are 279 as per census. Main occupation of the Sukhpur village is Farm.

4.1.1 Justification/ need of the study

In India there are 640 districts, (200 backward) 6,50,000 villages (1,25,000 backward.)The Government takes responsibility for uplifting rural and poorer regions. There is lot of public spending to improve the infrastructure, water and sanitation in these areas. But not much improvement achieved in most of the villages. Vishwakarma Yojana helps in better and fast development of rural areas. By providing urban facilities in rural areas, decrease this rate of migration & also increase standard of living of people of rural areas. 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.

4.1.2 Study Area

Fig no 14 Map of Village

From techno economic survey of Sukhapur village we observe some physical and social facilities are batter like underground drainage, cement concrete road, primary school, secondary school, and anganwadi.

4.1.3 Objectives of the study

- To study the existing facilities and parameters of village.
- To identify the issues and problems of the village.

- To analyze existing social and physical utilities as well as infrastructure.
- To Design and planning for village basic facilities and needs.
- To collect socio-economic data through techno-economic survey. To propose the inclusive planning suited for ideal village.

4.1.4 Scope of the Study

- To reduce urban city pressure and lower the migration rate Due to providing urban facilities development of village will be possible.
- To improve health and livelihood of people.
- To improve education facility.

4.1.5 Methodology Frame Work for development of your village

- Ideal village survey at Vadal village near Junagadh. Data collection.
- Gap analysis for facilities available as per ideal village norms & requirement. Techno-economic survey of Ideal village.
- SWOT analysis of Ideal village.
- Techno-economic survey of allotted village.
- Meeting with Villagers, Sarpanch, Talati, TDO & DDO.
- Consulting with all related to village and analyse problem faced by Sukhpur village Gap analysis of Sukhpur village.
- SWOT analysis of Sukhpur village.
- Finding best, economical & sustainable solution for problems as per UDPFI Guideline Best Proposal and Design for solving problem.
- Detail progress report and detail design done in final project report.

4.1.6 Available Methodology for development of related to Civil

- Make special efforts to increase production of pulses and vegetable oil seeds
- Implement agricultural land ceiling, distribute surplus land and complete compilation of land records by removing all administrative and legal obstacles
- Increase irrigation potential, develop and disseminate technologies and inputs for dry land agriculture
- Supply drinking water to all problem villages
- Strengthen and expand coverage of integrated rural development and national rural employment programmes.
- Allot house sites to rural families who are without them and expand programmes for construction assistance to them Rehabilitate Bonded labour.
- Pursue vigorously programmes of afforestation, social, farm forestry, the development of bio-gas, and other alternative energy sources.

4.2 SUKHAPUR Study Area Profile

4.2.1 Study Area Location

Sukhpur - Village Overview	
Gram Panchayat :	Sukhpur
Block / Tehsil :	Junagadh
District :	Junagadh
State :	Gujarat
Pincode :	362310
Area :	452.49 hectares
Population :	1,383
Households :	279
Nearest Town :	Junagadh (8 km)

Table No 8 Study area details

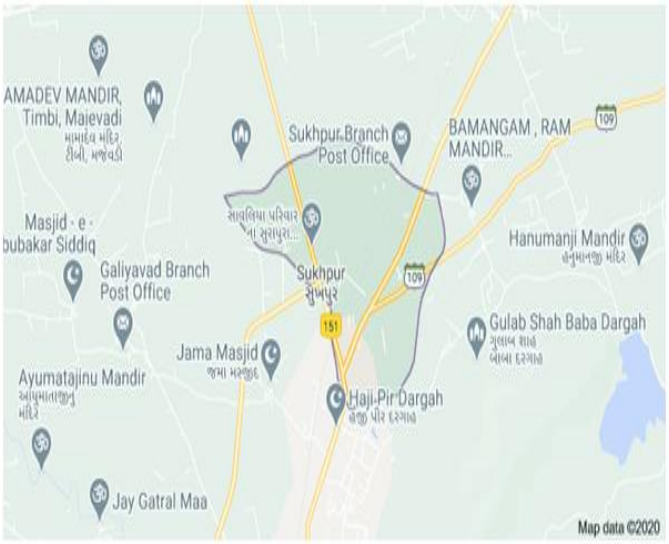


Fig No 15. Sukhpur

4.2.2 Base location map, Land map, Gram Tal Map

Figure No 16 Bas location map

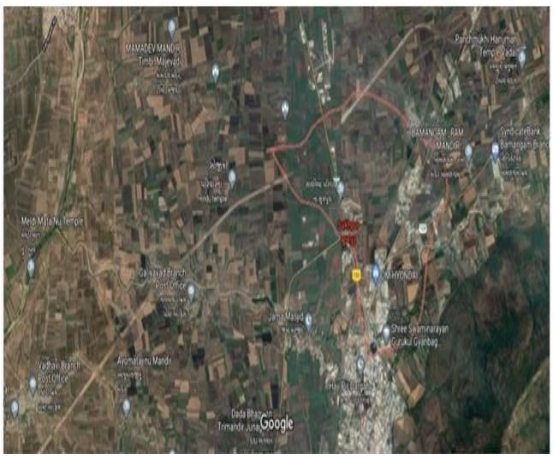


Figure no 17 land map

4.2.3 Physical & Demographical Growth

Sukhpur village is located in Junagadh taluka of Junagadh district in Gujarat, India. Sukhpur is located 08Km away from Junagadh. The geographical area of village is 452 hectare. SUKHPUR has a total population of 1386. There are about 250 houses in Sukhpur.

4.2.4 Economic generation profile / Banks

The people of Sukhpur village are economically medium.

4.2.5 Actual Problem Faced by villagers and smart solution

Not Properly grants utilized in village by gram panchayat.

4.2.6 Social scenario- Preservation, Festival, Cuisine

Sukhpur village total population is 1383 among them 719 are males and 664 are females as per census 2011. The population of children with age 0-6 is 141 which is 15% of total village population. There are about 279 houses in Sukhpur village and average family size is 4 members. Literacy rate of village was 79% as per census 2011. The geographical are of village is 453 hector.

4.2.7 Migrations Reasons / Trends

- Nowadays people are migrated due to low facility of people. They are unable to provide modern lifestyle.
- Nowadays Unemployment is big problem for migrate. The main problem of migration is poor education facility.

4.3 Data Collection Sukhpur Village Photograph / Graphs / Charts / Table

4.3.1 Describe Methods for data collection

We are conducted techno economic survey for data collection of Sukhapur village. We are met with sarpanch, Talati mantra and dweller of village and understand village actual situation, condition and existing structure of village. Available facilities are listed as below:

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

4.3.2 Primary details of survey

Sukhpur village is located in Junagadh district of Gujarat state. It is a small village with population of 1383 people. Sarpanch of the village Sukhpur is N.B. Parmar. Total area of the village is 453 hectares.

The nearest town to the Sukhpur is Junagadh which is 08 km away from village.

The village has bus station, Gram Panchayat, Primary and Secondary School, Water tank, cement concrete road, Anganwadi, Post office, etc.

4.3.3 Average size of house – geo – Tagging of House

The population of Sukhpur village is 1383 among them 719 males and 664 females. Total number of households is 279.

4.3.4 No of Human being in One House

Average size of family in houses is 4 persons.

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

Sukhpur village is used concrete, reinforcement and bricks are used for construction and wooden also available for furniture works.

4.3.6 Geographical Detail

The total geographical area of village is 453 hector.

4.3.7 Demographical Detail – Cast Wise Populations Details / Which ID Proof using by villagers

Particulars	Male	Female	Total
Total No. of Houses	-	-	279
Population	719	664	1383
Child (0-6)	71	70	141
Schedule Caste	104	90	194
Schedule tribe	5	0	5
Literacy	87.72%	67.51%	76.49%
Total Workers	464	189	653
Main worker	-	-	499
Marginal Worker	34	120	154

Table No 9. Demographical Detail

4.3.8 Occupational Detail – Occupation wise Details / Majority business

Private business	**60%**
Animal Husbandry	**20%**
Agriculture	**20%**

Table no 10. Occupation Detail

4.3.9Agricultural Details / organic Farming / Fishery

In Sukhpur village only 10 hector agricultural land is available for farming because in this village the main occupation of people is milk production. Generally people are use piped water is used for irrigation purpose. Sukhpur village people mostly depends on milk production and transportation like truck, bus, auto rixa, jeep etc..

4.3.10 Physical infrastructure Facilities – Manufacturing HUB / ware Houses

There are 0 industries and 0 ware house in this village.

4.3.11 Tourism development available in the village for attracting the tourist

There isn't any attractive place for Tourists.

4.4 Infrastructure Details (With Exiting Village Photograph)

4.4.1 Drinking Water / Water Management Facilities

- The village also has an overhead tank for drinking water.
- Its capacity is 40,000 liters.
- It provides clean drinking water to the whole village.

Figure No 18. Over head tank

4.4.2 Drainage Network

- Drainage is not open in Sukhpur so there is no dirt.
- Underground drain cleaning is also done regularly in this village.
- Underground drainage is very well compared to open drainage.

Fig No 19. Drainage Network

4.4.3 Transportation & Road Network

- The transport facility of Sukhpur village is well.
- But the road network of Sukhpur village is not proper. So the road network needs to maintain.

Figure No 20. Road

4.4.4 Housing condition

- Gruh udhyog and agriculture are very developed in Sukhpur so this village condition of house is very good. Sukhpur has 75% pukka and 25% kuchha houses.

Fig no 21. Condition of House

4.4.5 Social Infrastructures Facilities, Health, education, community Hall, Library

Fig No. 22 School

Fig No. 23 Temple

Fig No. 24 Aanganwadi

Fig No. 25 Choro

Fig No. 26 High School

Fig No. 27 Bus Stand

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

No Any required for repair and manitence except,Sukhpur village Bus stand.

4.4.7 Technology Mobile / WIFI / Internet Usage Details

80% of village population is using Internet services through their Mobile. Besides, Panchayat Building is fully connected with Wi-Fi. Many private Wi-Fi centers are also available at teastalls, Hostels, etc.

4.4.8 Sport Activity as Gram Panchayat

There is no sport activity as Gram Panchayat.

4.4.9 Socio-Culture Facilities, Public Garden / Park / Playground / pound / Other Recreation Facilities

There are some private centers which provides social facilities and villagers celebrate cultural events by themselves as there is no community hall in the village.

4.4.10 Other Facilities (e. g like foot path development-smart toilets- Coin Operated entry, self-cleansing, waterless, public building)

No any Other Facilities

4.4.11 Any Other details

No other detail

4.5 Electrical Concept

Not Applicable

4.6 Existing Institution like – Village Administration _Detail profile

There are not any types of institute.

4.6.1 Bachat Mandli

In this village no any type of bachat mandali.

4.6.2. Dudh Mandali

In Sukhpur village one dudh mandli are there so all people are easily supply milk from one place to another.

4.6.3. Mahila forum

In this village one mahila mandal are there. Which has 10 members are required.

4.6.4 Plantation for the Air Population

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

4.6.5 Rain Water Harvesting –Waste Water Recycling

In this village people are not collect rain water for future purpose.

4.6.6 Agricultural Development

No in this village don’t have a any agriculture development. Because people are engaged with milk production and other occupation so people are can’t focus in agriculture development.

4.6.7 Any Other

It has a gram Panchayat for many working purpose.

Chapter 5: Technical Option With Case Studies (FOR ANY ONE TOPIC, Take NEW Concept Design, Prototype model with actual costing)

5.1 Concept

5.1.1 Advance Sustainable construction techniques / Practices and Quantity Surveying

Figure No. 28 Sustainable Construction Techniques

The construction industry is repeatedly criticized for being inefficient and slow to innovate. The basic methods of construction techniques and technologies have changed little since Roman times. But the application of innovation in the construction industry is not straight forward.

The term “advance construction technology” covers a wide range of modern techniques and practices that encompass the latest development in material technology, design procedure, quantity surveying, facilities management, service, and structural analysis and management studies.

5.1.1.1 IOT Integrated Automated Building Systems

The Internet of Things (IOT) gives facility managers access to data that they did not previously have access to. These small connected sensors can integrate with automated building systems to improve the sustainability of operations. For example, IOT sensors can dynamically adjust the required ventilation and lighting levels inside the building based on temperature, weather and CO2 readings. The facility manager doesn't need to manually stay on top of these adjustments or input data from multiple pieces of equipment.

5.1.1.2. Synthetic Roof Underlayment

The underlayment on roofs is typically asphalt-based, which breaks down relatively quickly. Replacing this layer is necessary to keep moisture out of the building's interior. Synthetic roof underlayment offers an alternative that weighs less and holds up to the wear and tear of an exterior environment. This material uses polymer that comes from recycled scrap materials. It also eliminates VOCs from the underlayment.

5.1.1.3. Green Roofs

Another innovation for the top of commercial properties comes from green roofs. Grass, plants, flowers, bushes and other greenery grows on the roofing material. Stormwater is absorbed into the soil and managed more easily than with a bare roof. Heating and cooling costs are reduced, and the air quality is improved.

5.1.1.4. Grid Hybrid System

Renewable energy sources provide a sustainable way for organizations to power their commercial properties, but many grid systems lack storage to power facilities during times of low solar availability. A hybrid system stores excess energy and allows the renewable source to function at night, during overcast days and in other conditions that aren't ideal.

5.1.1.5. Passive Solar

Another way to leverage a sustainable solar energy source is to construct the building based on the passive solar concept. The facility's location and design maximize solar energy for heating during winter, while reducing its impact during warmer months.

5.1.1.6. Greywater Plumbing Systems

Greywater systems reduce the facility's need for fresh water, as everything except for toilet streams can be processed for reuse. The most common uses for this water include irrigation and supplying toilets with water.

5.1.1.7. Electrochromic Glass

Electrochromic glass can shift from clear to opaque based on external stimuli such as an electrical current or UV rays. It eliminates the need for shades and other window treatments, while adapting to current conditions passively. Additional benefits include blocking the vast majority of UV rays.

5.1.1.8. Solar Thermal Cladding

Solar thermal cladding is a passive solar building method designed specifically to hold heat during the winter. The sun's energy is stored within this material and passed through to the building for heat retention purposes.

5.1.1.9. Structural 3D Printing

Creating and moving building materials to the job site can have heavy environmental costs. As structure 3D printing begins moving forward, it becomes easier to cut down on shipping costs or reduce the weight of components.

5.1.1.10. Self-healing Concrete

This material is in its early stages, but once it's commercially viable it opens up many sustainable possibilities. Everything from roads to walkways can benefit from concrete that heals itself. Road crews would no longer need to shut down busy streets and highway lanes to address potholes and cracks.

5.1.2 Soil Liquefaction

Soil liquefaction and related ground failures are commonly associated with large earthquakes. In common usage, liquefaction refers to the loss of strength in saturated, cohesionless soils due to the build-up of pore water pressures during dynamic loading. A more precise definition of soil liquefaction is given by Sladen et al. (1985): "Liquefaction is a phenomenon wherein a mass of soil loses a large percentage of its shear resistance, when subjected to monotonic, cyclic, or shock loading, and flows in a manner resembling a liquid until the shear stresses acting on the mass are as low as the reduced shear resistance."

In a more general manner, soil liquefaction has been defined as the transformation "from a solid state to a liquefied state as a consequence of increased pore pressure and reduced effective stress" ("Definition of terms..." 1978). Some ground failures attributed to soil liquefaction are more correctly ascribed to "cyclic mobility" which results in limited soil deformations without liquid-like flow. The proper, concise definition for soil liquefaction has been the subject of a continuing debate within the geotechnical profession. While investigators have argued that liquefaction and cyclic mobility should be carefully distinguished (Castro and Poulos 1977), "liquefaction" is commonly used to describe all failure mechanisms resulting from the build-up of pore pressures during undrained cyclic shear of saturated soils.

Liquefaction results from the tendency of soils to decrease in volume when subjected to shearing stresses. When loose, saturated soils are sheared, the soil grains tend to rearrange into a more dense packing, with less space in the voids, as water in the pore spaces is forced out. If drainage of pore water is impeded, pore water pressures increase progressively with the shear load. This leads to the transfer of stress from the soil skeleton to the pore water precipitating a decrease in effective stress and shear resistance of the soil. If the shear resistance of the soil becomes less than the static, driving shear stress, the soil can undergo large deformations and is said to liquefy (Martin et al. 1975; Seed and Idriss 1982). By the narrowest definition, true liquefaction refers only to the flow of soil under a static shear stress that exceeds the undrained, residual shear resistance of a contractive soil (Castro 1987). Liquefaction of loose, cohesionless soils can be observed under both monotonic and cyclic shear loads.


Fig No 29. Soil liquefaction

When dense sands are monotonically sheared, the soil skeleton may first compress and then dilate as the sand particles move up and over one another. For dense, saturated sands sheared without pore water drainage, the tendency for dilation or volume increase results in a decrease in pore water pressure and an increase in the effective stress and shear strength. When a dense sand sample is subjected to cycles of small shear strains under undrained conditions, excess pore pressure may be generated in each load cycle leading to softening and the accumulation of deformations. However, at larger shear strains, dilation relieves the excess pore pressure resulting in an increased shear resistance. The behavior of loose and dense sands in undrained shear is discussed further.

Some investigators use the term "limited liquefaction" for conditions where large deformations after initial liquefaction are prevented by an increase in the undrained shear strength (Finn 1990). The propensity of dense, saturated sands to progressively soften in undrained cyclic shear, but achieve limiting strains under subsequent static loading, is more precisely described as cyclic mobility (Castro 1975: Castro and Poulos 1977). Cyclic mobility is distinguished from liquefaction by the fact that a liquefied soil exhibits no appreciable increase in shear resistance regardless of the magnitude of deformation (Seed 1979). Soils subject to cyclic mobility will first soften under cyclic loading but then stiffen when monotonically loaded without drainage as the tendency to dilate reduces the pore pressures. During cyclic mobility, the residual shear resistance remains greater than the driving static shear stress and deformations accumulate only during cyclic loading. However, in conventional usage, a soil failure actually resulting from cyclic mobility is often referred to as "liquefaction".

In addition, as pointed out by Selig and Chang (1981) and Robertson (1994), it is possible for a dilative soil to reach a temporary condition of zero effective stress and shear resistance. When the initial static shear stress is low, cyclic loads may produce a reversal in the shear stress direction. That is, the stress path passes through a state of zero shear stress. Under these conditions, a dilative soil may accumulate sufficient pore pressures to reach a condition of zero effective stress and large deformations may develop. However, deformations stabilize when

cyclic loading ends because the tendency to dilate with further shearing increases the effective stress and shear resistance. Robertson (1994) termed this behavior cyclic liquefaction. Unlike cyclic mobility, cyclic liquefaction involves at least some deformation occurring while static shear stresses exceed the shear resistance (when the condition of zero

effective stress is approached). However, deformations do not continue after cyclic loading ends as the tendency to dilate quickly results in strain hardening. Again, this type of failure in saturated, dense cohesion less deposits is usually identified as "liquefaction" but with limited deformations.

Considering these mechanisms of ground failure, Robertson (1994) and Significant effort can be spent in devising nomenclature to clearly define the failure response of Robertson et al. (1994) suggested a fairly complete classification system to define "soil liquefaction". The latest version of this system for describing liquefaction, given by Robertson and Fear (1996), can be summarized as:

Flow liquefaction, used for the undrained flow of a saturated, contractive soil when the static shear stress exceeds the residual strength of the soil. Failure may be triggered by cyclic or monotonic shear loading.

Cyclic softening, used to describe large deformations occurring during cyclic shear due to pore pressure build-up in soils that would tend to dilate in undrained, monotonic shear. Cyclic softening, in which deformations do not continue after cyclic loading ceases, can be further classified as:

Cyclic liquefaction, which occurs when cyclic shear stresses exceed the initial, static shear stress to produce a stress reversal. A condition of zero effective stress may be achieved during which large deformations may occur.

Cyclic mobility, in which cyclic loads do not yield a shear stress reversal and a condition of zero effective stress does not develop. Deformations accumulate in each cycle of shear stress.

This classification system for liquefaction recognizes that various mechanisms may be involved in a given ground failure. Yet, this definition preserves the contemporary usage of the term "liquefaction" to broadly describe the failure of saturated, cohesionless soils during earthquakes.

Saturated soils in earthquakes. However, no definition or classification system appears to be entirely satisfactory for all possible failure mechanisms. While recognizing the complex soil behavior involved, a broad definition of soil liquefaction will be adopted for this study. As defined by the National Research Council's Committee on Earthquake Engineering (1985), soil liquefaction will be taken to include "all phenomena giving rise to a loss of shearing resistance or the development of excessive strains as a result of transient or repeated disturbance of saturated cohesion less soils.

5.1.3 Sustainable Sanitation

The main objective of a sanitation system is to protect and promote human health by providing a clean environment and breaking the cycle of disease. To qualify as sustainable sanitation, a sanitation system has to be economically viable, socially acceptable, technically and institutionally appropriate, and protect the environment and natural resources. Most sanitation systems have been designed with these aspects in mind, but they fail far too often

because some of the criteria are not met. In fact, there is probably no system which is absolutely sustainable.

The concept of sustainability is more of a direction than a state to reach. Nevertheless, it is crucial that sanitation systems are evaluated carefully with regard to all dimensions of sustainability. Since appropriateness to the context is such a core criterion for sustainable sanitation, there is no one-size-fits-all sanitation solution. However, taking into consideration the entire range of sustainability dimensions, it is important to observe some basic principles when planning and implementing a sanitation system (see below).SuSanA believes that the following sustainability dimensions (or "criteria") should all be considered in the design or upgrade of a sanitation system.

Health and hygiene

Includes the risk of exposure to pathogens and hazardous substances that could affect public health at all points of the sanitation system, from the toilet via the collection and treatment system, to the point of reuse or disposal and downstream populations. This dimension also includes hygiene aspects as well as possible impacts on nutrition and health resulting from the application of a certain sanitation system.

Environment and natural resources

It includes issues such as the water, energy and other natural resources required for construction, operation and maintenance of the system, as well as the potential emissions to the environment resulting from use. Also includes aspects of safe recycling and reuse of excreta. Furthermore, it includes effects on consumption of non-renewable resources.

Technology and operation

Incorporates the functionality of the system, and the extent to which the entire system – including collection, transport, treatment and reuse and/or final disposal – can be constructed, operated and monitored by the local community or the technical teams of the local utilities.

Furthermore, the robustness of the system, its vulnerability to power cuts, water shortages, floods, etc. are also included in this criterion. Finally, the flexibility and adaptability of its

technical elements to the existing infrastructure, geology, and projected demographic and socio- economic developments should also be taken into account.

Financial and economic issues

This dimension includes the capacity of households and communities to finance the sanitation system, including the construction, operation, maintenance and necessary reinvestments in the system. In such calculations, direct benefits – for example income or savings from recycled products – and external costs and benefits have to be taken into account alongside such direct costs. The external costs might include environmental pollution and health hazards. Benefits may include increased agricultural productivity and subsistence economy, employment creation, improved health and reduced environmental risks.

Socio-cultural and institutional aspects

The criteria in this category evaluate if the sanitation system is socio-culturally acceptable and appropriate for the users. Further considerations include the following aspects: Convenience, perceptions, gender issues, religious or cultural issues, impacts on human dignity, compliance with the legal framework, and stability of institutional settings. Principles for planning and implementing sustainable sanitation systems The following principles for planning and implementing sanitation systems were developed by a group of experts and were endorsed by the Water Supply and Sanitation Collaborative Council as the “Bellagio Principles for Sustainable Sanitation” during its 5th Global Forum in November 2000: Human dignity, quality of life and environmental security at household level should be at the centre of any sanitation approach. In line with good governance principles, decision making should involve participation of all stakeholders, especially the consumers and providers of services. Waste should be considered a resource, and its management should be holistic and form part of integrated water resources, nutrient flow and waste management processes. The domain in which environmental sanitation problems are resolved should be kept to the minimum practicable size.

5.1.4 Transport Infrastructure / system

From the beginning of history, human sensitivity has revealed an urge for mobility leading to a measure of Society's progress. The history of this mobility or transport is the history of civilization. For any country to develop with right momentum modern and efficient Transport as a basic infrastructure is a must. It has been seen throughout the history of any nation that a proper, extensive and efficient Road Transport has played a major role. ‘Transporters' perform one of the most important activities, at every stage of advanced civilization. Where roads are considered as veins and arteries of a nation, passenger and goods transported are likened to blood in circulation. Passenger Road Transport Service (PRTS) is an essential connected to the economic development. Transport is the essential convenience with which people not just connect but progress. Throughout history, people's progress has been sustained on the convenience, speed and safety of the modes of transport. Road transport occupies a primary place in to-day's world as it provides a reach unparallel by any other contemporary mode of transport.

TRANSPORT

Transport (British English) or transportation (American English) is the movement of people and goods from one place to another. The term is derived from the Latin trans ("across") and portare ("to carry").

FUNCTIONS OF TRANSPORT

1. Transport contributes in Growth of industries whose product requires quick marketing. Perishable articles like fish and green vegetables are carried to various consumers quickly even in distant markets through transport.
2. Transport helps in increase in the demand for goods. Through transport newer customers in newer places can be easily contacted and products can be introduced to them. Today markets have become national or international only because of transport.
3. Transport creates place utility. Geographical and climatic factors force industries to be located in particular places far away from the markets and places where there may not be any demand for the products. Transport bridges the gap between production and consumption centers.
4. Transport creates time utility. Of late transport has started creating the time utility also. It has been made possible by virtue of the improvements in the speed of transport. It helps the product to be distributed in the minimum possible time.
5. Transport helps in stabilization of price. Transport exerts considerable influence upon the stabilization of the prices of several commodities by moving commodities from surplus to deficit areas. This equalizes the supply and demand factor sand makes the price of commodities stable as well as equal.
6. Transport ensures even flow of commodities into the hands of the consumers throughout the period of consumption.
7. Transport enables the consumers to enjoy the benefits of goods not produced locally. This increases the standard of living, an essential factor for further development of marketing and economy.
8. Transport identifies competition, which in turn, reduces pries. Prices are also reduced because of the facilities offered by transport for large-scale production. Advantages of large scale production are possible only due to transport.
9. Transport increases mobility of labor and capital. It makes people of one place migrate to other places in search of jobs. Even capital, machineries and equipments are imported from foreign countries through transport alone.

MEANS OF TRANSPORT

The means of transport are classified on the basis of the way, the vehicle, the motive power used and terminals.

TYPES OF TRANSFORTATION

- Road transportation
- Air transportation

- Water transportation

ROAD TRANSPORTATIONS

Types of road pavement

- Normally, pavement refers to the top layer of road surface. But in highway design, the pavement includes various layer like sub-base, base and surface course.

Objects of Pavement

- To transfer the wheel loads on the soil subgrade below, with stability and without deflection.
- To prevent the entry of rain water to the subgrade.
- To prevent smooth riding surface so that vehicles can travel with speed and comfort.

Based on the structural behavior, pavements are generally classified into two categories

(1) Flexible Pavement

(2) Rigid Pavement

Rigid Pavement

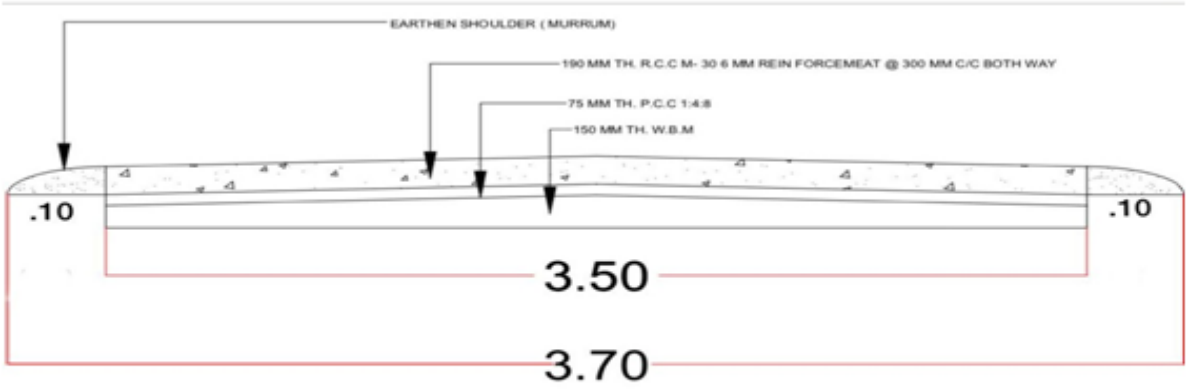
The pavement which posses good flexural strength and can transfer the wheel loads on the soil subgrade below without deformation of the pavement is called rigid pavement.

For example,

- RCC roads
- Cement Concrete roads
- Pre-stressed concrete roads

The rigid pavement does not get deformed to the shape of the lower layers as it can bridge the minor variations of lower layer.

In the rigid pavement temperature stresses are developed



TYPICAL ROAD SECTION

ABSTRACT SHEET

Item No.	DESCRIPTION	Qty	UNIT	RATE	Amount
1	**2**	**3**	**4**	**5**	**6**
1	Box Cutting the road surface to proper slope & camber for making a base for road work including removing the excavated stuff & depositing on the road side slop as directed up to 50Mt. lead	0.41	Cum	65.40	26.81
2	Supplying of H. B. Metal of following sizes. (for W.B.M.) (II) H. B. Metal 40 to 63mm.	0.12	Cum	955.11	109.84
3	Spreading the stone aggregate for rolling and W.B.M. including filling the interstices to required camber and gradient (excluding spreading of blind age) (II)40 to 63 size aggregates	0.12	Cum	157.00	18.06
4	Supplying of murrum binding materials. (I) 40mm.	0.03	Cum	336.57	10.10
5	Spreading blind age or road crust filling the gapes in metal and levelling to camber and gradient as directed (I) Murrum.	0.03	Cum	64.00	1.92
6	Rolling and consolidation water bound macadam (except laterite and Kankar) including watering not exceeding 15mm thickness (Main layer including binding materials) including filling in depression which occur during the process. (b) With power roller 8 ton and not exceeding 12 ton.	1.00	Sqm	12.40	12.40

7	Providing and laying Cement Concrete **1:4:8** (1 cement: 4-coarse sand:8 M/C graded stone aggregates of 40 mm nominal size) curing complete, excluding cost of formwork in Foundation & Plinth.	0.11	Cum	2176.00	239.36
8	Providing and laying controlled cement concrete M - 300 For RCC road Using trimix system, MS channel of CC thickness of both side including applying screed vibrator machine, Dewatering system device and finished with float machine etc. complete rate also inclusive of Providing and Spreading the Harder of approved brand and as per the method recommended by manufacturer and engineer in-charge.	0.19	Cum	4058.79	771.17
9	Providing and Mild Steel reinforcement for R.C.C. work including bending, binding and placing in position complete up to floor two level complete for all floors.	1.26	Kg.	39.60	49.90
		Total Amount Rs.			**1239.55**
		Say Amount Rs.			**1240.00**

- Slump test, type of pavement, soil test, type of land, aggregate test, element test all of these are very important for design of transportation.

ADVANTAGES OF R. C. C. ROAD

1. Excellent riding surface.
2. Pleasing appearance
3. It has good visibility at night due to colour contrast.
4. It has low cost of maintenance.
5. It is dustless and has no internal friction.
6. It is not unduly slippery.
7. It has more useful life.
8. It is practically unaffected by weather and temperature.
9. It requires flat camber as the surface is impermeable.

DISADVANTAGES OF R. C. C. ROAD

1. High initial cost
2. Repair is difficult and costly
3. Construction requires expert supervision
4. Not suitable for constructing in stages.

5. Transverse and longitudinal joints are planes of weaknesses.
6. A minimum period of 28 days for curing is required opening it to traffic.
7. It is difficult to make trenches for water mains, sewers and electric cables.
8. IRC: 15-1981 gives the specifications for R. C. C. pavement.

CAUSES OF FAILURE OF PAVEMENT

The main causes of failure of pavements are as follows:

1. Poor quality of construction materials
2. Defects in construction method
3. Poor quality control during construction
4. Inadequate surface or subsurface drainage.
5. Increase in the magnitude of wheel loads.
6. Increase in traffic volume.
7. Settlement of foundation of embankment of the fill material.
8. Environmental factors such as heavy rainfall, soil erosion, snow fall, frost action, high water table etc…

MAINTENANCE WORK

- Maintenance of R. C. C. Road

A well designed and properly constructed R. C. C. pavement, needs hardly any maintenance. However, the followings are the main items of maintenance of R. C. C. roads:

1. Cracks repair
2. Mud jacking
3. Patch repairs
4. Maintenance of joints
5. Loss of texture

1. Cracks repair

Cracks can be shrinkage cracks, structural cracks, contraction cracks, corner cracks, and warping cracks. Usually hair cracks are not dangerous since they do not admit water to the sub-grade. Medium and wide cracks are harmful since they can cause progressive destruction of the sub-grade support by allowing water to percolate.

The dirt, sand and other loose materials at the cracks are thoroughly cleaned using a sharp tool, stiff brush and pressure blower. Kerosene oil is applied on the cleaned cracks to facilitate proper bonding of the sealing material.

The cracks are then filled by suitable grade bituminous sealing compound, heated to liquid consistency. The sealer is placed up to 3 mm above the level of the slab along the cracks and a layer of sand is spread over it to protect the sealer temporarily.

2. Mud jacking

Once pavement starts pumping, the remedy for correcting it lies in providing the effective drainage. If the subsidence is localized then the same is repaired by patching the portions of slabs with bituminous mixes.

Advanced countries adopt the procedures of mud jacking. The process consists of drilling number of holes 4 cm to 5 cm diameter and 1.5 m to 3 m apart in the R. C. C. slab. Grouting in such slabs is done under pressure through these holes.

The grout normally used is either 1:3.5 cement-sand mix or bitumen. The cement sand slurry is injected through holes using the compressor. The slabs are thus raised from below by the pressure grout up to the desired level.

3. Patch repairs

A variety of defects such as scaling, spilling, depressions, irregularities and failures can occur locally in a slab. In such cases, it is necessary to patch up the defective portions immediately to arrest further deterioration. Bituminous premix materials though widely used for this purpose are not very satisfactory.

The best materials are concrete and epoxy / polyester resin mortars. Such patches are of regular geometrical shapes, without acute-angled corners. The sides are first trimmed and made vertical and fresh concrete is laid and tamped.

4. Maintenance of joints

Joints are the weakest parts in R.C.C. pavements. The efficiency of the pavement is determined by the proper functioning of the joints. Majority of the failure in the RCC pavements are observed at or near the joints.

The periodic maintenance of joints consists in examining whether the joints are properly sealed or not. The opened up joints are cleaned with brush and refilled with suitable joint sealer material before the start of the rains.

The joint filler material at the expansion joints may get damaged or deteriorated after several years of pavement life. The repair consists of removal of the sealer and deteriorated filler materials from the expansion joints cleaning up, replacement with new filler board and sealing the top of the joints with suitable sealer material. It will be convenient to insert the new filler board at the expansion joints during winter season when the joint opening is widest.

5. Loss of texture

If the surface becomes smooth and slippery, texture can be restored by cutting grooves by machines. Acid etching can also be adopted.

5.1.5 Vertical Farming

WHAT IS VERTICAL FARMING:

It is predicted that the world population will reach 9 billion by 2050, of which 70% will live in urban centers. This change, alongside a changing climate, will strain Earth‘s resources, specifically the ability to supply food. A valuable investigation would be to determine other ways to supply food to cities alongside current agricultural practices in a sustainable manner. One idea is the concept of vertical farming. Vertical farming can be defined as farming fruits, vegetables, grains, etc. in the middle of a city inside of a building where different floors have different purposes using hydroponics. The concept of supplying food in cities is not a new one as the history of urban agriculture goes back to many ancient civilizations, including the Mayans, the city of Tenochtitlan, etc. There are many developments taking place today that apply the concept of urban agriculture, and the concept of vertical farming is a large scale extension of urban agriculture. It is becoming increasingly understood that both our forms of settlement and methods of sustenance are functionally incompatible with a planet of limited natural resources.

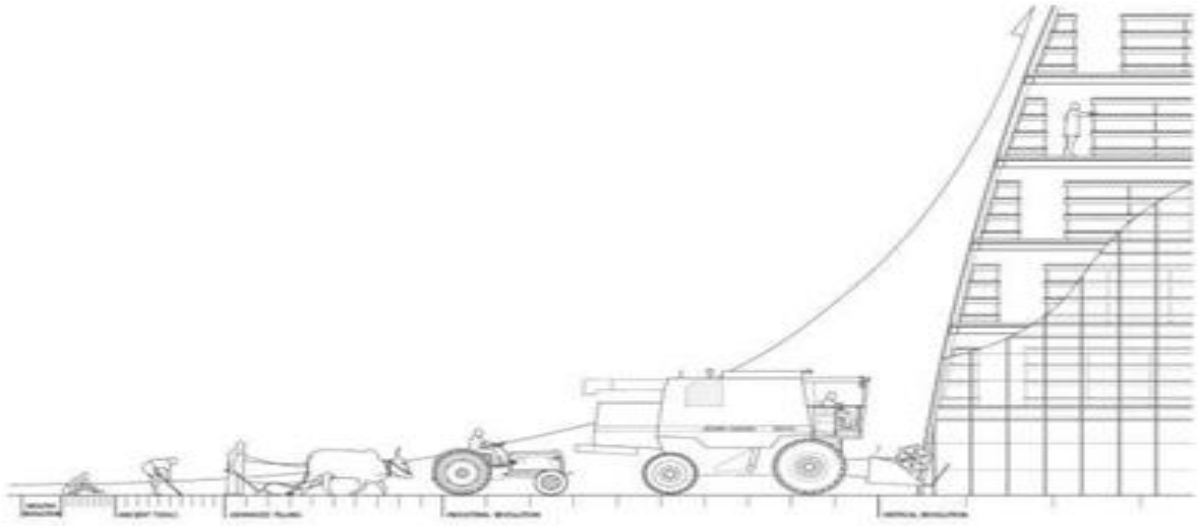


Figure No 30 Vertical Farming

Modern cities exhibit decisively linear resource metabolisms where food, fresh water, energy, and other resource demands are imported from great distances, consumed, and then swiftly dispensed as sewage or rubbish that the natural world cannot easily process. Likewise, the high- yield farming methods that support our immense population are characterized by their insatiable consumption of our limited reserves of freshwater, fossil-fuel energy, and soil. A glimpse of humanity‘s predictable future indicates that the way cities and agriculture consume the Earth‘s precious natural capital will only worsen with the passage of time. The projected addition of 2.25 billion people to the global population by 2050 and 4 another 2 billion by the end of the century forces us to consider what our world will be like with nearly twice as many consumers. Considering humanity‘s current population is already effectively degrading the ecological conditions we require to thrive, it appears the only way to avoid both a global ecological tragedy and widespread famine in the next century is to significantly transform the way cities and agriculture utilize natural resources. This dissertation presents an

argument for the implementation of an emerging building typology, the vertical farm, as potential solution to the conflict between ecological stability and humanity‘s persistent and economic growth. As the world‘s population grows, so does the land required to produce the needed food. The concept of a vertical farm was developed to remedy this crisis.

A vertical farm is farms stacked on top of one another, instead of branching out horizontally. Developed in 1999 by Professor Dickson Despommier, the farm uses conventional farming methods such as hydroponics and aeroponics to produce more yields faster.

METHODOLOGY

Literature reviews to examine the current agricultural practices were exhausting our natural resources, and whether it was sensible to explore other farming options.

Knowing the history and overview of urban agriculture. The history of urban agriculture was provided because it offered a sense of the history and development of the concept, its applications in the past and today, and the advantages and disadvantages associated.

To quantify the energy flows in the building. Also to study how much energy can be generated on site and how much energy will be used on site. The energy generation source was from photovoltaics, and the energy was used to pump the water, light the building (for indoor cultivation), and ventilate the building.

Conduct the carbon foot print analysis for horizontal conventional and vertical farming methods.

Conduct life cycle analysis of leafy veggies grown vertically. An exploration of social perceptions of relevant stakeholders, and this includes architects, engineers, and the general public. Conduct semi-structured interviews to explore the concept. Conduct the experiments and study to find out the crop growing condition at different levels of atmosphere.

Detailed case study on vertical framing and bio climatic sky scrapers to know the design process and approach. Comparative studies of crop cultivation and yielding in a conventional method and vertical farming. Finding out solutions for the correct implementation of techniques and materials for the same.

SCOPE

Reduction in vehicular transport is also foreseen; there will be less demand for delivery trucks, garbage trucks and other utilities. Overall wellness because city wastes will be channeled directly into the farm building's recycling system, hence, less bacteria can find its way in the environment and the atmosphere Abandoned or unused properties will be used productively. Water can be used more efficiently in a vertical farm. The greywater from office etc. can be used efficiently. The layers of atmosphere can be used effective ly in vertical build ups. Less CO2 emissions and pollution by decreasing reliance on coal- burning power plants and transportation, and implementing renewable- sources of energy. Crops will be protected from harsh weather conditions and disturbances like typhoons, hurricanes, floods, droughts, snow and the likes. Food production as well as food transport will not be

affected. Crops will be consumed immediately upon harvest since there is no need to transport them to far-off places. Spoilage will also be lessened.

LIMITATIONS

The initial phase will be cost intensive, and certain flaws integrated in the system that may appear during its initial run can still dampen efforts for its full maximization.

There will be fewer varieties of foods to choose from because not all plants and vegetables are suitable in a controlled and limited environment. The public will find it hard to reconcile with the idea of using black water for food production. Blackwater or the wastewater and sludge from soils, from the vertical farms need an additional costly filtration system in order to be recycled and conservative of the water resources. Displacement of agricultural societies, potential loss or displacement of traditional farming job.

5.1.6 Corrosion Mechanism, Prevention & repair Measures of RCC Structure

The durability of concrete structures is influenced by various factors, for example, ecological presentation, electrochemical responses, mechanical stacking, affect harm and others. Of all of these, consumption of the fortification is likely the primary driver for the disintegration of steel strengthen cement (RC) structures. Consumption administration is ending up progressively important because of the developing number of maturing foundation resources (e.g. spans, burrows and so on.) and the expanded prerequisite for imprompt upkeep with a specific end goal to keep these structures operational all through their outline life (and usually, past).

The primary RC repair, restoration and recovery approaches by and large utilized can be extensively arranged under an) ordinary, b) surface medications, c) electrochemical medicines and d) outline arrangements. The overall point of this examination was to recognize the key consumption administration strategies and embrace exact examinations concentrated on full- scale RC structures to explore their long haul execution.

To accomplish this, singular research bundles were recognized from the above expansive five approaches for repair, substitution and recovery. These were 1) Patch repairs and nascent anodes, 2) Impressed Current Cathodic Protection, 3) Galvanic Cathodic Protection, what's more, 4) Hydrophobic medications. The determination of the above research bundles depended on over a wide span of time use by the development industry to repair, renovate and restore RC structures.

Their commitments might be comprehensively arranged as I) Investigations on how particular medications and materials perform, ii) Investigations on the viability of existing techniques for estimations and creating options, iii) Changes to the current hypothesis of consumption commencement and capture furthermore iv) Changes to administration system methodologies. The key discoveries from each examination bundle can be condensed as takes after:

Macrocell movement seems, by all accounts, to be a result instead of a reason for beginning anode development in repaired solid structures, as has beforehand been exhibited;

ICCP has industrious defensive impacts even after the interference of the defensive current;

Discrete galvanic anodes introduced in the parent concrete encompassing the fix repair are an achievable contrasting option to galvanic anodes inserted inside the fix repairs of RC structures; Silanes may have a lingering hydrophobic impact even following 20 long stretches of administration.

5.1.7 Sewage Treatment Plant

Constructed at a cost of around Rs360 crore, the STP has three channels each of 113mld. The channels are fed by the Gwari pumping station in Gomtinagar drawing sewage from two subsidiary pumping stations each situated on two major canals – Kukrail canal and Ghiasuddin Haider canal.

The two pumping stations would pump their sewage to the Main Pumping Station (MPS) in Gwari culvert that will further pump the sewage to the STP in Bharwara. The STP will produce 400 cubic metres of methane gas per hour, which will generate 1,200-1,500 KW electricity that will be used to run the plant. Work on the Rs169-crore STP project had started in 2008.

Figure No 31. Sewage treatment plant

GENERAL OUTLINES OF SEWAGE TREATMENT

Sewage treatment, or domestic wastewater treatment, is the process of removing contaminants from wastewater, both runoff (effluents) and domestic. It includes physical, chemical and biological processes to remove physical, chemical and biological contaminants. Its objective is to produce a waste stream (or treated) and a solid waste or sludge suitable for discharge or reuse back into the environment.

Industrial sources of wastewater often require specialized treatment processes the sewage treatment involves three stages, called primary, secondary and tertiary treatment .First, the solids are separated from the wastewater stream. Then dissolved biological matter is progressively converted into a solid mass by using indigenous, waterborne microorganisms.

Finally, the biological solids are neutralized then disposed of or reused, and the treated water may be disinfected chemically or physically (for example by lagoons and micro-filtration).The final effluent can be discharged into a stream, river , bay, lagoon or wetland, or it can be used for the irrigation of a golf course, green way or park.

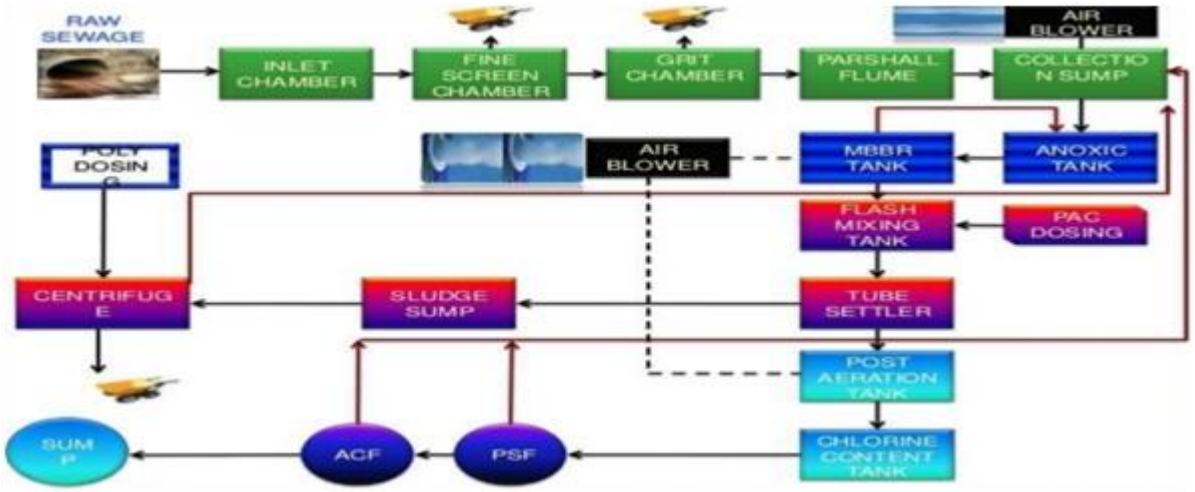


Figure No 32. Process overview

WASTEWATER TREATMENT TECHNOLOGIES

1. SUSPENDED GROWTH PROCESSES

In suspended growth processes the microorganisms responsible for treatment are maintained in liquid suspension by appropriate mixing methods. Many suspended growth processes used in municipal and industrial wastewater treatment are operated with a positive dissolved oxygen concentration (aerobic). The most common suspended growth process used for municipal wastewater treatment is the Activated Sludge Process.

2. ATTACHED GROWTH PROCESSES

In attached growth processes, the microorganisms responsible for the conversion of organic material or nutrients are attached on inert packing material. The major methods for wastewater treatment are listed below: •Activated sludge systems •Aerated lagoon •Aerobic granular reactor

- Aerobic treatment system •Anaerobic clarigester •Anaerobic digestion • API oil-water separator
- Anaerobic lagoon • Bead Filter

IMPORTANT FACTS OF SEWAGE TREATMENT PLANT

Around 85% of the land area of Lucknow City is situated on the Central Ganga alluvial plain, and stretches across both banks of the Gomti River Gross available water supply of about 490 MLD – of which around 240 MLD is derived from up to 500 tube wells and 250 MLD from river Gomti.

- Cis-Gomti side are comparatively lower than the areas on Trans- Gomti side.
- Gomti River flows from NW to SE through the heart of the city.
- 26 drains join the river, 14 drains from cis-Gomti and 12 drains from trans-Gomti side.
- Out of 14 cis-Gomti side drains, 12 drains are located in the upstream and 2 are located into downstream of Barrage.
- All of the 12 Trans-Gomti drains merge into river Gomti in the upstream of Barrage. The total project cost for the overall projects is estimated at Rs. 2054.63 crore with the bulk Of investments proposed in Phase 2 of the JNNURM. There is a provision of Rs. 625.97 Crores in Phase-I (2006-11) and Rs.
- 1428.67 Crores in Phase-II (2012-2031) of City Development Plan of Lucknow

SEWAGE DISTRICTS

- The overall sewerage scheme consists of 4 separate Sewerage Districts each with its own (planned) treatment plant:
- District I: Chowk, Hardoi Road, Cambell Road and Dubagga etc. area conveying sewage to existing Daulatganj STP
- District II: Amausi area and Sarojini Nagar area conveying sewage to proposed Khwajapur STP
- District III: Total Trans-Gomti side including Indira Nagar, Gomti Nagar and Sitapur road areas conveying sewage to Bharwara STP which is sanctioned under Gomti Action Plan Phase-II and in process of construction.
- District IV: Cis Gomti side conveying sewage to proposed Mastemau STP

Figure No. 33 Sewage Districts

FINE SCREEN CHAMBER

The function of the bar screen is to prevent entry of solid particles/ articles above a certain size; such as plastic cups, paper dishes, polythene bags, condoms and sanitary napkins into the STP. (If these items are allowed to enter the STP, they clog and damage the STP pumps, and cause stoppage of the plant.) The screening is achieved by placing a screen made out of vertical bars, placed across the sewage flow.

Figure No. 34 fine screen chamber

AERATION TANK

The Aeration tank (together with the settling tank/ clarifier that follows) is at the heart of the treatment system. The bulk of the treatment is provided here, employing microbes/bacteria for the process. The main function of the Aeration tank is to maintain a high population level of microbes. This mixture is called MLSS (Mixed Liquor Suspended Solids) The mixed liquor is passed on to the clarifier tank, where the microbes are made to settle at the bottom. The settled microbes are recycled back to the aeration tank. Thus they are retained for a long period within the system.

Figure No 35. Aeration Tank

Chapter 6: Swachh Bharat Abhiyan (Clean India)

6.1 Swatchhta need in allocated village – Existing situation with Photograph

According to Census 2011, India‘s urban population is 377 million or 31% of the total population. These numbers are expected to increase to 600 million by 2031. The Census 2011 also showed that in 4,041 statutory towns, close to eight million households do not have access to toilets and defecate in the open (7.90 million). Weak sanitation has significant health costs and untreated sewage from cities is the single biggest source of water resource pollution in India. This indicates both the scale of the challenge ahead of the Indian cities and the huge costs incurred from not addressing them.

Swachh Bharat Mission is a mass movement for cleanliness launched on 2nd October 2014 by the Prime Minister of India. The Swachhta Abhiyan has turned into a National Movement with citizens now becoming active participants in cleanliness activities across the nation. The dream of a Clean India‘ once seen by Mahatma Gandhi is being realized with millions of people across the country joining the cleanliness initiatives of the government departments, NGOs and local community centers to make India clean as a part of this Jan ndolan‘.Today, India has approximately 143 Million Smartphone Users who have access to Internet on 2G and 3G mobile platforms. Most of these Smartphone are equipped with at least 5 Mega Pixel Camera and using various Apps (e.g. WhatsApp etc.), people are sharing text, images and videos on the Internet. Therefore, we want to create a Smartphone App to strengthen Swachh Bharat Abhiyan‖ called Swachh Bharat App (Clean India App)‖. Any Indian can download this Clean India App‖ on their Smartphone.

6.2 Guidelines – Implementation in allocated village with Photograph

- Elimination of open defecation
- Eradication of Manual Scavenging
- Modern and Scientific Municipal Solid Waste Management
- To effect behavioral change regarding healthy sanitation practices
- Generate awareness about sanitation and its linkage with public health
- Capacity Augmentation for ULBs to create an enabling environment for private sector participation in Capex (capital expenditure) and Opex (operation and maintenance)

6.2.1 Mission Strategy

The estimated cost of implementation of SBM (Urban) based on unit and per capita costs for its various components is Rs. 62,009 Crore.

The Government of India share as per approved funding pattern amounts to Rs. 14,623 Crore. In addition, a minimum additional amount equivalent to 25% of GoI funding, amounting to Rs 4,874 Crore shall be contributed by the States as State/ ULB share.

Figure No 36. Sprinkler Medicine A

Figure No 37. Sprinkler Medicine B

The balance funds are proposed to be generated through various other sources of fund which are, but not limited to:

A. Private Sector Participation
B. Additional Resources from State Government/ ULB
C. Beneficiary Share
D. User Charges
E. Land Leveraging
F. Innovative revenue streams
G. Swachh Bharat Kosh
H. Corporate Social Responsibility
I. Market Borrowing
J. External Assistance

6.2.2 Mission Components

Household toilets, including conversion of insanitary latrines into pour-flush latrines

- Community toilets
- Public toilets and urinals
- Solid waste management
- IEC & Public Awareness
- Capacity building and Administrative & Office Expenses (A&OE)

6.3 Activities Done by Student for allocated village with Photograph

- While traveling doesn't throw any wrapper, paper or any dry waste on road. Keep it in your bag or pocket (as it is a dry waste you can keep them in your bag/pocket)
- Keep paper bags with yourself to store wet waste and throw them in dustbin only.
- Spitting on roads (as it can be the reason of viral disease).
- Avoid chewing Pan-Masala, Gutka and Tobacco.

- Avoid use of plastic bag.
- Follow government's rules and regulations.
- If someone is breaking the rule then make them aware of it.
- Stop your friends if they are making such mistakes.
- Spread awareness to keep our village clean.

Figure No 38. Street A

Figure No 39. Street B

Chapter 7. Village condition due to Covid-19

7.1 Taken steps in allocated village related to Existing Situation with Photograph

All the people of village were checked from house to house by the health worker. If the people who have symptoms of corona such as cough, cold, flue etc. should be treated immediately. All the streets of village, road, post-office, house, panchayat building etc. sanitize it every 15 to 20 days.

Figure No 40. Check up

Figure No 41. Medicine

7.2 Activities Done by Students for allocated village with Photograph

The students pledge to the villagers to wear masks, clean frequently and maintain social distance. Volume of student they have took initiator like they are want to make social distance of customer their frequently visit at shop. They made circle and advice shopkeeper and consumer thy have stood in this circle and regular maintain it.

Figure No 42. Sanitization

Figure No 43.Take pledge

7.3 Any other steps taken by the student / Villagers

People coming from other cities were coming to village to compulsory checkups and where given home. Should be treate All the streets, Roads, house etc. sanitize it every 15 to 20 days.

Figure No 44. Temp. Test A

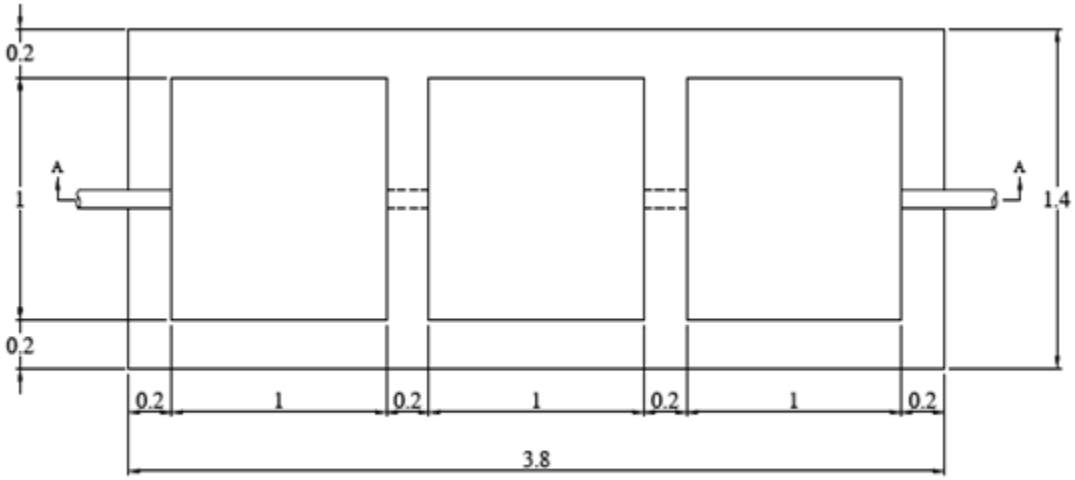
Figure No 45. Temp. Test B

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 Design Proposals

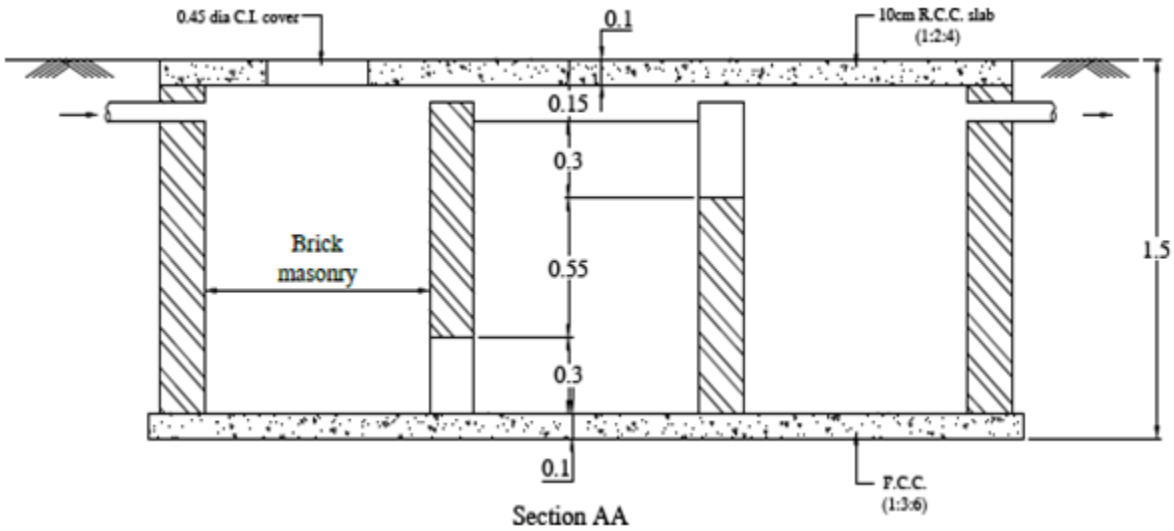
8.1.1 Sustainable Design (Civil)

SEPTIK TANK



Plan

All dimensions are in meters.



Section AA

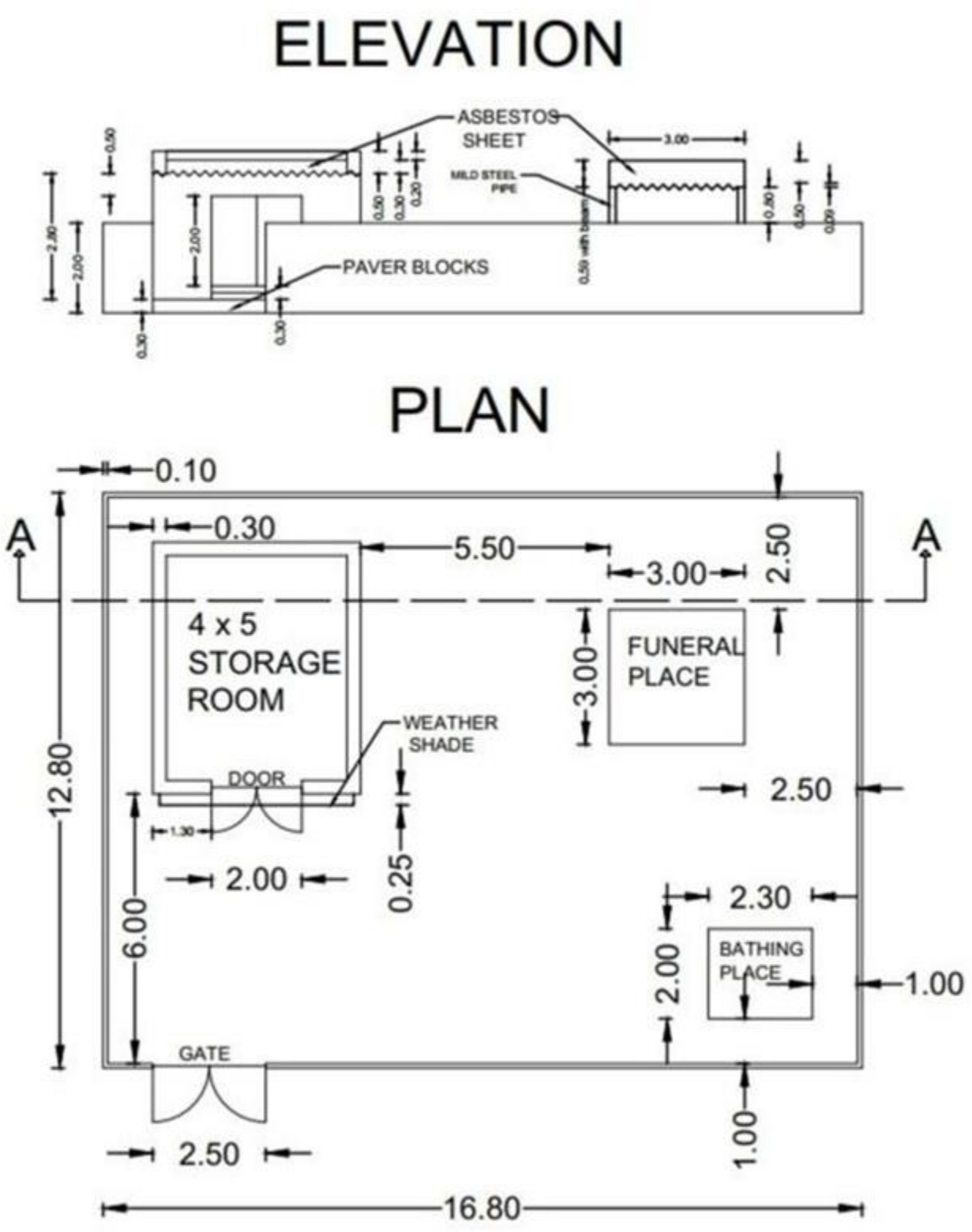
Measurement Sheet							
Sr. No.	**Item**	**Nos**	**L**	**B**	**H**	**Qty.**	**Total**
1	Excavation	1	3.9	1.5	1.5	8.76	8.78 m^3
2	P. C. C. (1:3:6) Flooring	1	3.9	1.5	0.1	0.59	0.59 m^3
3	First class brick masonary in C. M. (1:6)						
	Long walls	2	3.8	0.2	1.3	1.98	
	Short walls	2	1	0.2	1.3	0.52	2.96 m^3
	Middle walls	2	1	0.2	1.15	0.46	
4	RCC slab in proportion (1:2:4)	1	3.8	1.4	-	5.32	5.32 m^3
5	Weight of steel reinforcement in slab						
	Volume of concreteof 10 cm slab = 0.532						
	Volume of steel 1% of concrete volume = 0.00532						
	Weight of steel = Volume of steel * Density of steel = 41.762						
	1% steel is provided					41.76	41.76 kg

Abstract Sheet					
Sr. No.	**Particulars**	**Quantity**	**Cost**	**Per**	**Amount in INR**
1	Earthwork in foundatiion up to depth 1.5 m for 8.78 m^2				
	Labor				
	Male Coolie	2	350	Day	700
	Female Coolie	2	300	Day	600
	Sundries				50
				Total = 1350 Rs.	
2	P. C. C. (1:3:6) flooring 0.59 m^2				
	Materials				
	Cement	2 Bags	320	Bag	640
	Sand	0.22 m^3	800	m^3	176
	Aggregate	0.44 m^3	1000	m^3	440
				Material Cost = 1306 Rs.	
	Labor				
	Main mason	1	600	Day	600
	Male coolie	2	350	Day	700
	Female Coolie	2	300	Day	600
	Bhistie	1	350	Day	350
				Labor Cost = 2250 Rs.	

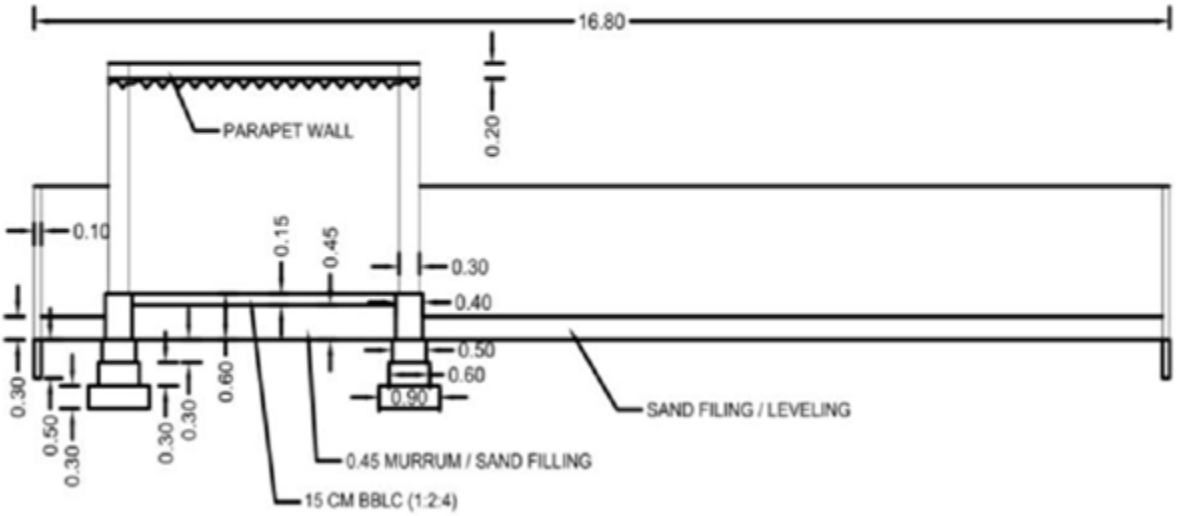
3	First class brickwork in CM 1:6 in superstructure = 33.849 m^3				
	Mateirals				
	Brick	1480			
	Add 5% wastage	75			
	Total brick	1555	5500	1000 Nos	8553
	Cement	4	320	Bag	1280
	Sand	0.83 m^3	800	m^3	670
	Sundries				50
				Material cost = 10553 Rs.	
	Labor				
	Main Mason	1	600	Day	600
	Mason	2	500	Day	1000
	Male Coolie	3	350	Day	1050
	Female coolie	3	300	Day	900
	Bhistie	1	350	Day	350
	Sundries				50
				Labor Cost = 3950 Rs.	
4	P. C. C. 1:2:4 for 0.53 m^3				
	Materials				
	Cement	3	320	Bags	960
	Sand	0.189	800	m^3	151
	Aggregate	0.379	1000	m^3	379
	Sundries				50
				Material Cost = 1540 Rs.	
	Labor				
	Main Mason	1	600	Day	600
	Male Coolie	2	350	Day	700
	Female coolie	2	300	Day	600
	Bhistie	1	350	Day	350
	Sundries				50
				Labor Cost = 2300 Rs.	
5	Steel reinforcement in slab				
	20% mild steel	8.35	kg	45.75	382
	80% HYSD steel	33.41	kg	50.45	1670
			Total		25300 Rs.
			Add 5% Contingencies		1265 Rs.
				Grand Total = 26565 Rs.	

8.1.2 Physical Design (Civil)

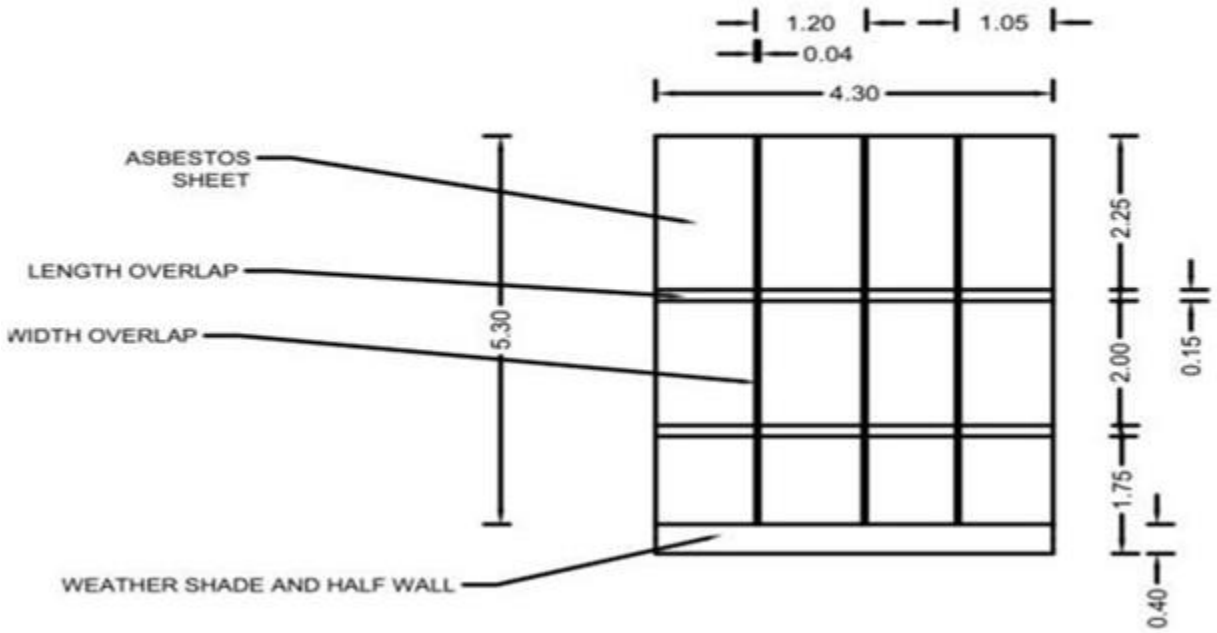
CEMETARY



SECTION A-A



STORAGE ROOM ROOF PLAN



Measurement Sheet of Cemetery						
SR. NO	DESCRIPTION	NO.	L	B	H	QUANTITY
	TOTAL CENTRE LINE = (5.3 X 2) + (4.3 X 2) = 19.2 M					
1.	Excavation for foundation up to 1.5 m depth					
	Storage room :-	1	19.2	0.9	0.9	15.55 m^3
	Partition wall :-					
	LW	2	16.8	0.2	0.5	3.36
	SW	2	12.6	0.2	0.5	2.52
					Total :-	21.43 m^3
2.	Providing and laying PCC (1:4:8) for foundation					
	Storage room:-	1	19.2	0.9	0.3	5.184 m^3
3.	First class brick masonry C:M (1:6) for foundation					
	Storage room :-					
	Step : 1 - 60 cm	1	19.2	0.6	0.3	3.46
	Step : 1 – 50 cm	1	19.2	0.5	0.3	2.88
					Total :	6.34 m^3
4.	Partition wall					
	Foundation to GL					
	LW	2	16.8		0.5	16.8
	SW	2	12.6		0.5	12.6
	GL to up to 2 m height					
	LW	2	16.8		2	67.2
	SW	2	12.6		2	50.4
	Deduction :-					
	Gate	1	2.5		2	5
					Total :	142 m^2
5.	first class brick masonry GL to PL					
	Storage room:-	1	19.2	0.4	0.6	4.61 m^3
6.	Backfilling in foundation					
	Storage room:- 15.55 – 6.34 = 9.21 m^3					9.21 m^3
	other back filling :-	1	16.8	12.8	0.3	64.512
	Deduction	1	4.6	5.6	0.3	7.728
					Total :-	65.994 m^3
7.	First class brick masonry for super structure					
	Storage room	1	19.2	0.3	3	17.28
	Deduction:-					
	Lintel	1	19.2	0.3	0.15	0.864
	Door	1	2	0.3	2	1.2
					Total :-	15.22 m^3

8.	RCC for lintel	1	19.2	0.3	0.15	0.864 m^3
9.	Providing reinforcement for RCC work including binding and bending and placing position					
	Quantity = 1% of volume of concrete = 0.864 * 78.54 = 67.86 kg = 68 kg					68 kg
10.	12 cm thick plaster					
	A] Internal wall plaster					
	1. Storage Room					
	LW	2	4	-	3	24
	SW	2	5	-	3	30
	2. Partition wall					
	LW	2	16.6	-	1.7	56.44
	SW	2	12.6	-	1.7	42.84
	B]External wall plaster					
	1. Storage room					
	LW	2	4.6	-	3.3	30.36
	SW	2	5.6	-	3.3	36.96
	2. Partition wall					
	LW	2	16.8	-	2	67.2
	SW	2	12.8	-	2	51.2
	Deduction					
	(a) Storage room door	1	2	-	2	4
	(b) Main Door	1	2.5	-	2	5
					Total	330 m2
11.	15 cm BBLC (1:2:4)					
	Funeral Place	1	2	1.5	0.15	0.45
	Storage Room	1	3.9	4.9	0.15	2.87
	Bathing place	1	1.9	2.29	0.15	0.65
					Total	3.97 m3
12.	Sand filling / Murom					
	Funeral place	1	2	1.5	0.45	1.35
	Storage room	1	3.9	4.9	0.45	8.6
	Bathing place	1	1.9	2.29	0.45	1.03
					Total	10.98 m3
13.	Providing paver blocks					
	Total area = 12.6 * 16.6 = 209.16 m2					
	Deduction area					
	Storage room = 4.6 * 5.6 = 25.76 m2					
	Funeral place = 2 * 1.5 = 3 m2					
	Bathing place = 2 * 2.3 = 4.6 m2					
	Total area = 175.8 m2 = 1892.3 sq. ft.					
	Size of one block = 0.215 sq. ft.					
	No. of blocks = 1892.3 / 0.215 = 8801.4					
					Total	8802 Nos.
14.	Providing asbestos					
	(I)	2	1.75	1.2	-	4.2
		2	2.25	1.2	-	5.4
		2	2	1.2	-	4.8

	(II)	8	1.75	1.05	-	14.7
		2	2.25	1.05	-	4.725
		2	2	1.05	-	4.2
					Total	38.025 m2
15.	Providing mild steel					
	(I) Column = 4 * 0.15 * 0.1 * 3 = 0.18 * 7850 = 1413 kg					1413 kg
	(II) Beam = 4 * 0.09 * 0.05 * 3 = 0.054 * 7850 = 423.9 kg					423.9 kg
	(III) Roof truss = 2 * 0.06 * 0.04 * 5.24 = 0.025 * 7850 = 196.25 kg					196.25 kg
	(IV) Ridge line = 1 * 0.06 * 0.04 * 3 = 0.0072 * 7850 = 56.52 kg					56.52 kg
	(V) Slope line = 4 * 0.05 * 0.03 * 1.58 = 0.00948 * 7850 = 74.42 kg					74.42 kg
	(VI) Vertical line = 2 * 0.05 * 0.025 * 3 = 0.0075 * 7850 = 58.88 kg					58.88 kg
	(VII) Circular mild steel D = 0.05 m, L = 18 m = 0.03534 m3 = 0.03534 * 7850 = 278 kg					278 kg
					Total	2500.97 kg

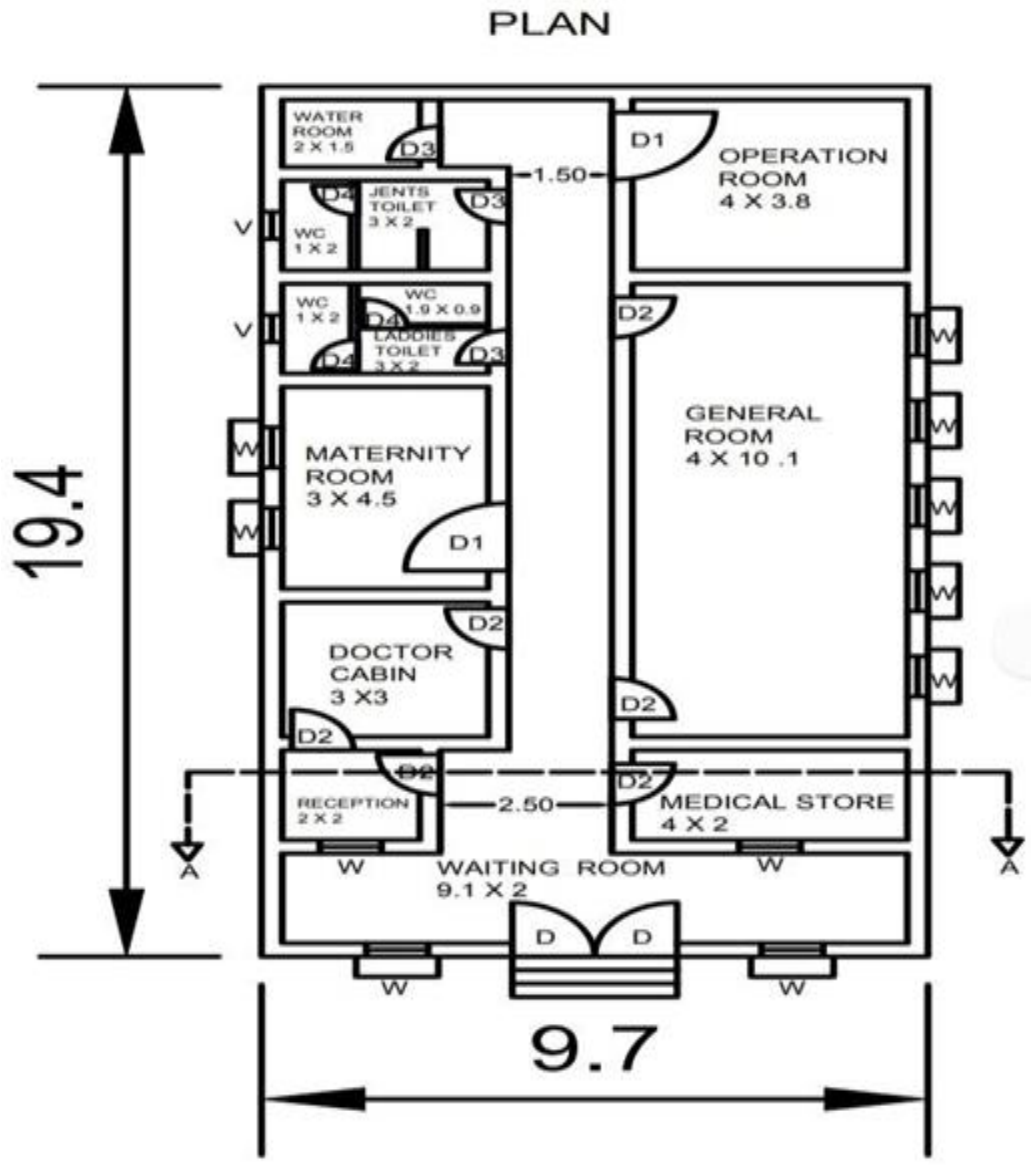
Abstract Sheet of Cemetery

Sr. No.	Description	Qty	Rate	Per	Amount
1	Excavation up to 1.5 m depth	21.43	153.5	M3	3290
2	Providing and laying PCC (1:4:8) for foundation	5.184	3200	M3	16590
3	1st class brick masonry CM (1:6) for foundation	6.34	3200	M3	20288
4	Partition wall	142	3500	M3	497000
5	1st class brick masonry GL to PL	4.61	3500	M3	16135
6	Back filling on Foundation	66	100	M3	6600
7	1st class brick masonry for superstructure	15.22	3500	M3	53270
8	RCC for lintel	0.864	8800	M3	7603
9	Providing reinforcement for RCC	68	50	kg	3400
10	12 cm thick plaster	330	150	M2	49500
11	15 cm BBLC (1:2:4)	3.97	1500	M3	5955
12	Sand filling / Murom	10.98	100	M3	1098
13	Providing paver blocks	8802	30	Nos.	264060
14	Providing asbestos	38.025	150	M2	5704
15	Providing mild steel	2500.97	50	kg	125050
				Total	1075543 Rs

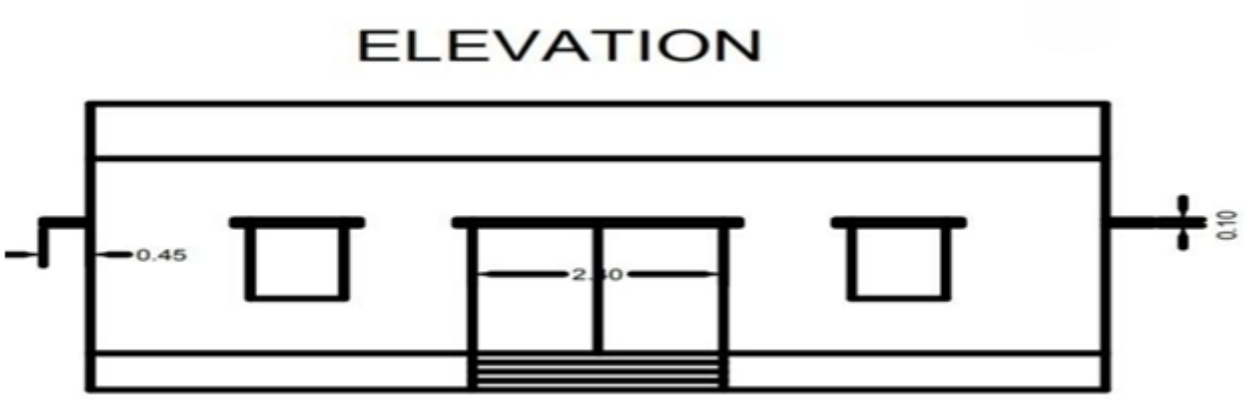
		3% contingency	32266 Rs
		2% work charge establishment	21511 Rs
		Total	1129320 Rs
		10% contractor's profit	112932 Rs
		Grand Total	1242252 Rs

8.1.3 Social Design (Civil)

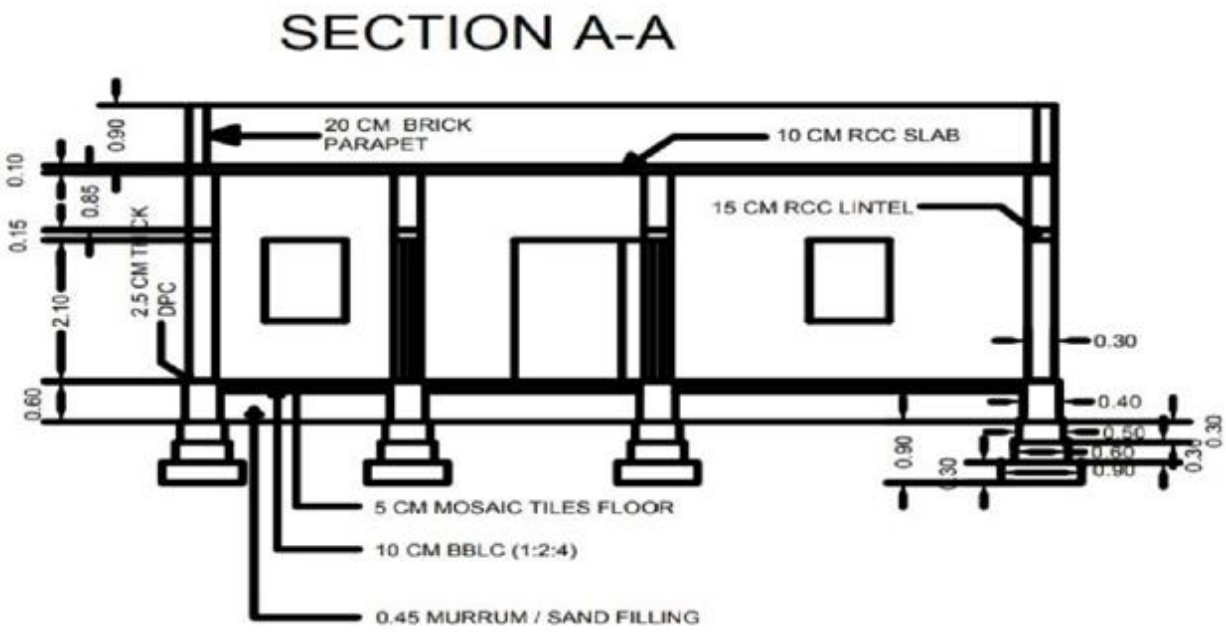
PUBLIC HEALTH CENTRE



Plan for PHC



Elevation of PHC



Section of PHC

Measurement Sheet of public health center						
Sr. No	Description	No	L	B	H	Quantity
	Total Centre =(19.1×4)+1.8+(9.4x4)+(5.1x3)+2.3+4.3=137.7 No. Of T-junction=34					

1.	Excavation for foundation up to 1.5 depth					
	Length=total centerline-(numberofteajunction×width÷2)					
	L=137.7-(34×0.9÷2) =122.4	1	122.4	0.9	0.9	99.144 m3
	For steps:-					
	L=1.2+0.15=1.5m	1	1.35	0.6	0.15	0.122 m3
					Total	99.266 m3
2.	Providing and laying PCC(1:4:8) for foundation	1	122.4	0.9	0.3	33.048 m3
	Steps	1	1.35	0.9	0.15	0.182 m3
					Total	33.23 m3
3.	First class brick masonry C:M(1:6) for Foundation					
	Step:-1(60cm)					
	L=103.55m	1	103.55	0.6	0.3	18.639 m3
	Step:-2(50cm)					
	L=104.85m	1	104.85	0.5	0.3	15.73 m3
					Total	34.369 m3
4.	First class brick masonry G.L to P.L					
	L=106.15m	1	106.15	0.4	0.575	24.415 m3
	Step1.	1	1.2	0.3	0.15	0.0547 m3
	Step2.	1	1.2	0.3	0.3	0.108 m3
	Step3.	1	1.2	0.3	0.45	0.162 m3
					Total	30.43 m3
5.	DPC(2.5cmthick)	1	106.15	0.4		42.46 m2
	Deduction:- D	2	1.2	0.4		0.96 m2
	D1	2	1.5	0.4		1.2 m2
	D2	6	0.9	0.4		2.16 m2
	D3	3	0.75	0.4		0.9 m2
					Total	47.68 m2
6.	First class brick masonry for superstructure					
	L=107.45m	1	107.45	0.3	3	110.75 m3
	Deduction					
	Lintel	1	107.45	0.3	0.15	4.835 m3
	Door : D	2	1.2	0.3	2.1	1.512 m3
	D1	2	1.5	0.3	2.1	1.89 m3
	D2	6	0.9	0.3	2.1	3.402 m3
	D3	3	0.75	0.3	2.1	1.42 m3
	Windows	11	0.9	0.3	1.2	3.564 m3
	Ventilation	2	0.6	0.3	0.6	0.216 m3
					Total	93.911 m3
7.	Providing and laying RCC (1:2:4) for slab, lintel, chhajja					
	Lintel L = 132.6 m	1	132.6	0.3	0.15	5.967 m3
	Chhajja					

	Window	9	0.9	0.45	0.1	0.364 m3
	Door	2	1.2	0.45	0.1	0.108 m3
	RCC slab	1	19.4	9.7	0.1	18.82 m3
					Total	25.26 m3
8.	Providing mild steel reinforcement in RCC work					
	Quantity = 1% of volume of concrete					
	Q = 25.26 * 78.54 = 1983.92 kg					
					Total	1983.92 kg
9.	12 mm thick plaster					
	A] Internal plaster					
	1. Waiting Room					
	Ceiling	1	9.1	2	-	18.2
	Wall 1	2	2	-	3	12
	Wall 2	1	9.1	-	3	27.3
	Wall 3	1	2.3	-	3	6.9
	Wall 4	1	43	-	3	12.9
	2. Reception					
	Ceiling	1	2	2	-	4
	Wall	4	2	-	3	24
	3. Medical Store					
	Ceiling	1	4	2	-	8
	Wall 1	2	4	-	3	24
	Wall 2	2	2	-	3	12
	4. Doctor’s Cabin					
	Ceiling	1	3	3	-	9
	Wall	4	3	-	3	36
	5. Toilet					
	(Gents)					
	Ceiling	1	2	3	-	6
	Wall 1	2	1.9	-	3	11.4
	Wall 2	4	2	-	3	24
	Wall 3	2	1	-	3	6
	(Ladies)					
	Ceiling	1	2	3	-	6
	Wall 1	2	1	-	3	6
	Wall 2	2	2	-	3	12
	Wall 3	2	0.9	-	3	5.4
	Wall 4	4	1.9	-	3	22.4
	Wall 5	2	1	-	3	6
	6. Maternity Room					
	Ceiling	1	3	4.5	-	13.5
	Wall 1	2	3	-	3	18
	Wall 2	2	4.5	-	3	27
	7. General Room					
	Ceiling	1	4	10.1	-	40.4

	Wall 1	2	4	-	3	24
	Wall 2	2	10.1	-	3	60.6
	8. Operation Room					
	Ceiling	2	2	3	-	12
	Wall 1	2	4	-	3	24
	Wall 2	2	3.8	-	3	22.8
	9. Water Room					
	Ceiling	1	2	1.5	-	3
	Wall 1	2	2	-	3	12
	Wall 2	2	1.5	-	3	9
	10. Passage					
	Ceiling (Front)	1	2.5	2.3	-	5.75
	Ceiling (Middle)	1	1.5	13	-	19.5
	Ceiling (Last)	1	2.5	1.5	-	3.75
	Wall 1	2	16.8	-	3	100.8
	Wall 2	2	1	-	3	6
					Total	705.2 m2
	B] External wall up to parapet wall					
	Lw	2	19.4	-	4.6	178.48
	Sw	2	9.7	-	4.6	89.24
	1. Parapet Top					
	Lw	2	19.4	0.2	-	7.76
	Sw	2	9.3	0.2	-	3.72
	2. Parapet Inside					
	Lw	2	19	-	0.9	34.2
	Sw	2	9.3	-	0.9	16.74
	3. Chhajja					
	Window	18	0.9	0.45	-	7.29
	Door	4	1.2	0.45	-	2.16
	4. Chhajja (Front)					
	Window	9	0.9	-	0.1	0.81
	Door	2	1.2	-	0.1	0.24
	5. Chhajja (Side)					
	Window	9	-	0.45	0.1	0.405
	Door	2	-	0.45	0.1	0.09
					Total	341.135 m2
	Deduction					
	Door : D	2	1.2	-	2.1	5.04
	D1	2	1.5	-	2.1	6.3
	D2	6	0.9	-	2.1	11.34
	D3	3	0.75	-	2.1	4.725
	D4	3	0.65	-	2.1	4.095
	Window : W	11	0.9	-	1.2	11.88
					Total	43.38 m2
				Total Plaster = 1002.96 m2		

10.	5 cm thick mosaic tiles flooring					
	Waiting Room	1	9.2	2	-	18.4
	Reception	1	2	2	-	4
	Medical Store	1	4	2	-	8
	Doctor Cabin	1	3	3	-	9
	Toilet	2	1	1.9	-	3.8
	Maternity Room	1	3	4.5	-	13.5
	General Room	1	4	10.1	-	40.4
	Operation Room	1	4	3.8	-	15.2
	Water Room	1	2	1.5	-	3
	Passage 1	1	2.5	2.3	-	5.75
	Passage 2	1	1.5	13	-	19.5
	Passage 3	1	2.5	1.5	-	3.75
					Total	144.3 m2
11.	10 cm BBLC (1:2:4)					
	Waiting Room	1	9.1	1.9	0.1	1.729
	Reception	1	1.9	1.9	0.1	0.361
	Medical Store	1	3.9	1.9	0.1	0.741
	Doctor’s Cabin	1	2.9	2.9	0.1	0.941
	Toilet	2	2.9	1.9	0.1	1.102
	Maternity Room	1	2.9	4.4	0.1	1.276
	General Room	1	3.9	10	0.1	3.9
	Operation Room	1	3.9	3.7	0.1	1.443
	Water Room	1	1.9	1.4	0.1	0.266
	Passage 1	1	2.4	2.2	0.1	0.528
	Passage 2	1	1.4	12.9	0.1	1.806
	Passage 3	1	2.4	1.4	0.1	0.336
					Total	14.329 m2
12.	Sand Filling / Murom					
	Waiting Room	1	9.1	1.9	0.45	7.78
	Reception	1	1.9	1.9	0.45	1.62
	Medical Store	1	3.9	1.9	0.45	3.33
	Doctor’s Cabin	1	2.9	2.9	0.45	3.78
	Toilet	2	2.9	1.9	0.45	4.96
	Maternity Room	1	2.9	4.4	0.45	5.74
	General Room	1	3.9	10	0.45	17.55
	Operation Room	1	3.9	3.7	0.45	6.49
	Water Room	1	1.9	1.4	0.45	1.20
	Passage 1	1	2.4	2.2	0.45	2.38
	Passage 2	1	1.4	12.9	0.45	8.13
	Passage 3	1	2.4	1.4	0.45	1.51
					Total	64.47 m3
13.	Providing and laying white glazed tiles WC					
	1. WC – 1					
	I)	2	2	1	-	4

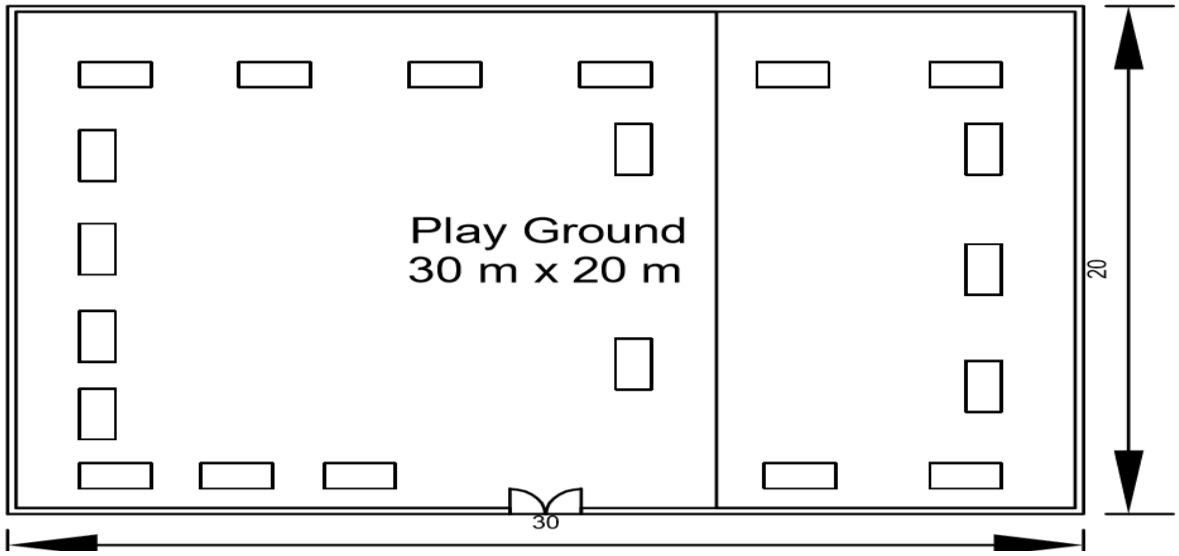
	II) Wall 1	4	1	-	2.1	8.4
	Wall 2	4	2	-	2.1	16.8
	2. WC – 2					
	I)	1	1.9	0.9	-	1.71
	II) Wall 1	2	1.9	-	2.1	7.98
	Wall 2	2	0.9	-	2.1	3.78
	Deduction					
	D4	3	0.65	-	2.1	4.1
					Total	38.57 m2
14.	Providing and laying skirting of mosaic tiles					
	Waiting Room					
	(I)	1	9.1	-	-	9.1
	(II)	2	2	-	-	4
	(III)	1	2.3	-	-	2.3
	(IV)	1	4.3	-	-	4.3
	Reception					
	(I)	4	2	-	-	8
	Medical Store					
	(I)	2	4	-	-	8
	(II)	2	2	-	-	4
	Doctor’s Cabin					
	(I)	4	3	-	-	12
	Toilet Passage					
	(I)	4	1.9	-	-	7.6
	(II)	4	1	-	-	4
	Maternity Room					
	(I)	2	3	-	-	6
	(II)	2	4.5	-	-	9
	General Room					
	(I)	2	4	-	-	8
	(II)	2	10.1	-	-	20.2
	Operation Room					
	(I)	2	4	-	-	8
	(II)	2	3.8	-	-	7.6
	Water Room					
	(I)	2	1.5	-	-	3
	(II)	2	2	-	-	4
	Passage					
	(I)	2	16.8	-	-	33.6
	(II)	2	1	-	-	2
	Deduction					
	Door					
	D	2	1.2	-	-	2.4
	D1	2	1.5	-	-	3
	D2	6	0.9	-	-	5.4

	D3	3	0.75	-	-	2.25
	D4	3	0.65	-	-	1.95
					Total	149.7 m

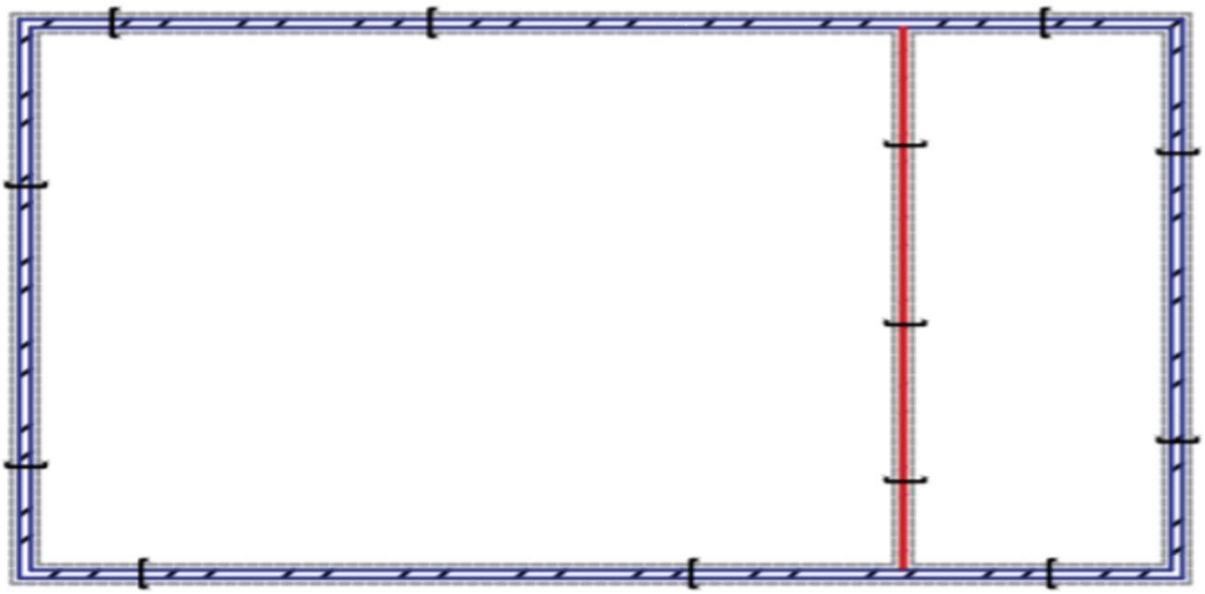
Abstract Sheet of Public Health Centre					
Sr. No.	**Description**	**Qty**	**Rate**	**Per**	**Amount**
1	Excavation for foundation up to 1.5 m depth in ordinary soil	99.266	153.5	M3	15237
2	Providing and laying PCC for foundation	33.23	3200	M3	106336
3	1st class brick masonry CM (1:6) for foundation	34.369	4000	M3	137476
4	1st class brick masonry from G. L. to P. L.	30.43	3500	M3	106505
5	Providing and laying DPC	47.68	4500	M2	214560
6	1st class brick masonry CM (1:6) for superstructure	93.911	3500	M3	328689
7	Providing and laying RCC (1:2:4) for slab, lintel, chhajja	25.26	8800	M3	222288
8	Providing mild steel reinforcement for RCC work	1984	50	kg	99200
9	12 mm thick plaster	1002.96	84	M2	84250
10	5 cm thick mosaic tiles flooring	144.3	600	M2	86580
11	10 cm thick BBLC (1:2:4)	14.329	1500	M3	21495
12	Sand filling / Murom filling	64.47	100	M3	6447
13	Providing and laying white glazed tiles WC	38.57	250	M2	9643
14	Providing and laying skirting of mosaic tiles	149.7	300	M	44910
				Total	1485216
		3% contingency			44568
		2% work charge establishment			29704
		Total			1559488
		10% contractor's profit			148522
		GRAND TOTAL			1708010

8.1.4 Socio-Culture Design (Civil)

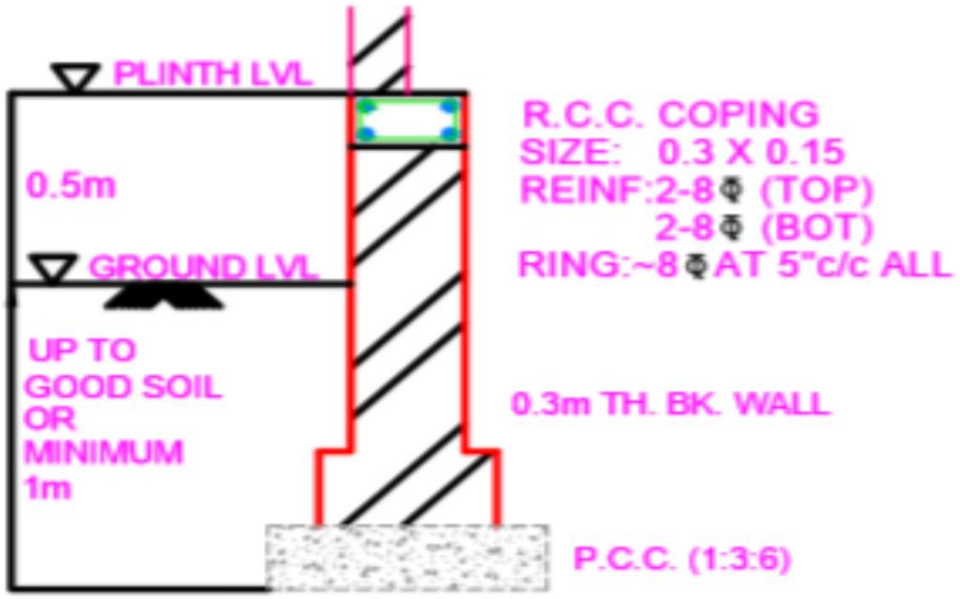
PLAY GROUND



Plan of Play Ground

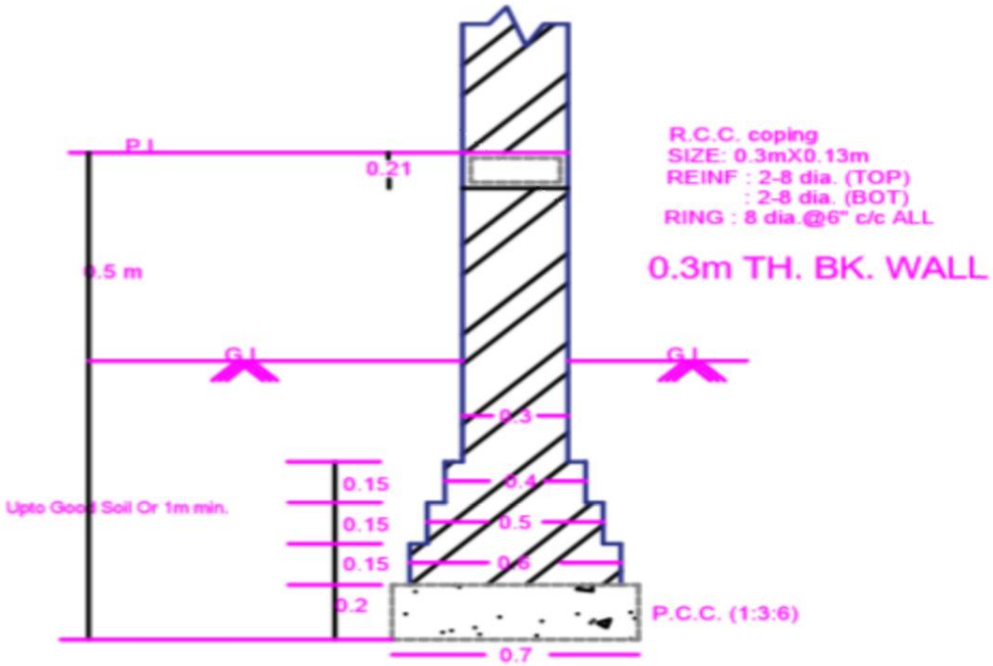


Plinth Level



FOUND. SECTION OF BK. PARTITION WALL

SECTION: Y-Y



FOUND. SECTION OF 0.3m MAIN BRICK WALL SECTION: X-X

Measurement Sheet						
Sr. No.	**Description**	**Nos.**	**L**	**B**	**H**	**Quantity**
	CL=(30.3)*2+(20.3)*2		101.2			
1	Earthwork in Foundation	1	101.2	0.7	1.15	81.456m^3
2	P.C.C in Foundation	1	101.2	0.7	0.2	14.168m^3
3	Brickwork up to plinth					
	Step-1	1	101.2	0.6	0.15	9.108 m^3
	Step-2	1	101.2	0.5	0.15	7.59 m^3
	Step-3	1	101.2	0.4	0.15	6.072 m^3
	Step-4	1	101.2	0.3	0.5	15.18 m^3
					Total	37.95 m^3
4	Brickwork in Superstructure					
	Wall boundary	1	101.2	0.3	1.5	45.54 m^3
	Internal wall	1	20	0.3	0.2	0.4 m^3
	Deduction					
	Gate	1	2	0.3	1.5	0.9 m^3
					Total	45.04 m3
5	Plaster					
	(Outer) Boundary wall 1	2	30.6	-	1.5	91.8 m2
	Boundary wall 2	2	20.6	-	1.5	61.8 m2

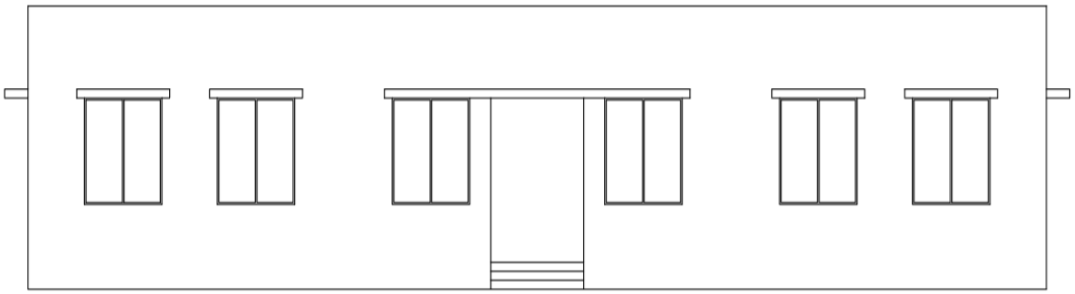
	(Inner) Boundary wall 1	2	30	-	1.5	90 m2
	Bouundary wall 2	2	20	-	1.5	60 m2
	Internal wall	2	20	-	0.2	8 m2
	Deduction					
	Door	2	20	-	1.5	6.5 m2
					Total	305.6 m2
6	Paint	As per plaster	As per plaster	As per plaster	As per plaster	
					Total	305.6 m2

Abstract Sheet

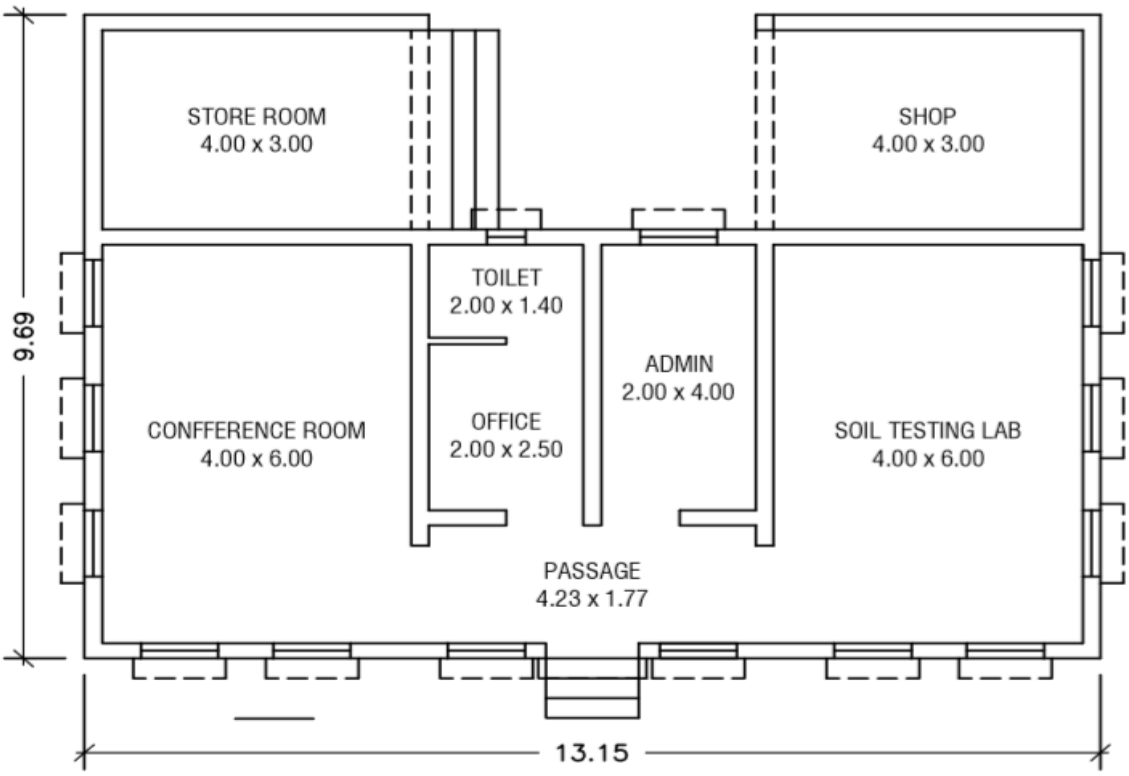
Sr. no.	Particular items	Quantity	Rate (Rs.)	Per	Amount (Rs.)
1.	Excavation for foundation	81.456	85	Cu. m	6924
2.	P.C.C work in foundation	14.168	3200	Cu. m	45337
3.	Brickwork in foundation up to Plinth	37.95	3200	Cu. m	121440
4.	Brickwork for super structure	45.04	3500	Cu. m	157640
5.	Plaster	305.6	150	Sq. m	45840
6.	Paint	305.6	120	Sq. m	36672
					Total = 413853 Rs.

8.1.5 Smart Village design (Civil)

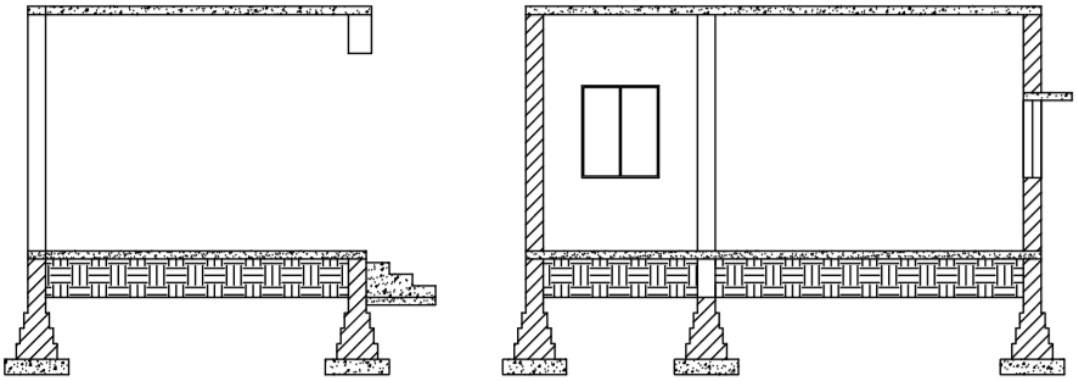
KRISHI SEVA KENDRA



Elevation of Krushi Seva Kendra



Plan of Krushi Seva Kendra



Section of Krushi Seva Kendra

MEASUREMENT SHEET							
Item No.	Description	No.	Dimensions			Quantity	Total
			L	B	H		
1	Excavation						
	For walls	1	78.45	0.9	1.1	77.666	78.426
	For steps	1	1.4	1	0.1	0.140	
	For steps (Shops)	2	3.1	1	0.1	0.620	
2	PCC						
	For walls	1	78.45	0.9	0.2	14.121	14.881
	For steps	1	1.4	1	0.1	0.140	
	For steps (Shops)	2	3.1	1	0.1	0.620	
3	Brick masonry up to plinth						
	For 60 cm thick wall	1	83.4	0.6	0.2	10.008	
	For 50 cm thick wall	1	84.05	0.5	0.2	8.405	
	For 40 cm thick wall	1	84.7	0.4	0.2	6.776	47.617
	For 30 cm thick wall	1	85.35	0.3	0.8	20.484	
	Steps	1	1.2	0.9	0.3	0.324	
	Steps (Shops)	2	3	0.9	0.3	1.620	
4	DPC	1	85.35	0.3	0.1	2.561	2.561
5	Brick masonry for Super structure	1	85.35	0.3	3	76.815	
	Deduction						
	D	1	1.2	0.3	2.1	0.756	
	D1	4	1	0.3	2.1	2.520	67.146
	S	2	3	0.3	2.56	4.608	
	W	2	0.9	0.3	1.5	0.810	
	W1	11	0.5	0.3	0.5	0.825	
	V	1	1	0.3	0.5	0.150	
6	Partition wall	1	2	2.1	1	4.200	2.730

	Deduction						
	D2	1	0.7	2.1	1	1.470	
7	Earth filling						
	Conference room	2	4	6	0.5	24.000	
	Admin / Office	2	2	4	0.5	8.000	47.655
	Passage	1	4.3	1.7	0.5	3.655	
	Shop	2	4	3	0.5	12.000	
8	Concreting below flooring						
	Conference room	2	4	6	0.075	3.600	
	Admin / Office	2	2	4	0.075	1.200	7.148
	Passage	1	4.3	1.7	0.075	0.548	
	Shop	2	4	3	0.075	1.800	
9	Flooring						
	Conference room	2	4	6	1	48.000	
	Admin / Office	2	2	4	1	16.000	
	Passage	1	4.3	1.7	1	7.310	
	Shop	2	4	3	1	24.000	98.740
	Opening						
	D	1	1.2	0.3	1	0.360	
	D1	4	1	0.3	1	1.200	
	D2	1	0.7	0.1	1	0.070	
	S	2	3	0.3	1	1.800	
10	Outside Plaster	1	46.8	3.775	1	176.67	
	Steps	1	0.9	0.9	1	0.810	
	Steps (Shops)	2	3	0.9	1	5.400	
	Deduction						
	D	0.5	1.2	1	2.1	1.260	170.965
	S	1	3	1	2.56	7.680	
	W	1	0.9	1	1.5	1.350	
	W1	5.5	0.5	1	0.5	1.375	
	V	0.5	1	1	0.5	0.250	
11	Inside Plaster						
	Admin / Office	2	12	1	3	72.000	
	Conference room	2	20	1	3	120.00	
	Shop	2	14	1	3	84.000	
	Passage	1	12	1	3	36.000	386.995
	Ceiling						
	Admin / Office	2	2	4	1	16.000	
	Conference room	2	4	6	1	48.000	
	Shop	2	4	3	1	24.000	
	Passage	1	4.3	1.7	1	7.310	

	Deduction						
	D	0.5	1.2	1	2.1	1.260	
	D1	4	1	1	2.1	8.400	
	S	1	3	1	2.56	7.680	
	W	1	0.9	1	1.5	1.350	
	W1	5.5	0.5	1	0.5	1.375	
	V	0.5	1	1	0.5	0.250	
12	White washing	387	1	1	1	386.995	386.995
13	Weather Sheds	1	19.55	0.5	0.1	0.978	0.978
14	Latrine block	1	1	1	1	1.000	1.000
15	Wash basin	1	1	1	1	1.000	1.000
16	Door						12.390
	D	1	1.2	1	2.1	2.520	
	D1	4	1	1	2.1	8.400	
	D2	1	0.7	1	2.1	1.470	
17	Window						13.700
	W	2	0.9	1	1.5	2.700	
	W1	11	1	1	1	11.000	
18	Ventilator						0.500
	V1	1	1	1	0.5	0.500	
19	Shutter	2	3	1	2.56	15.360	15.360

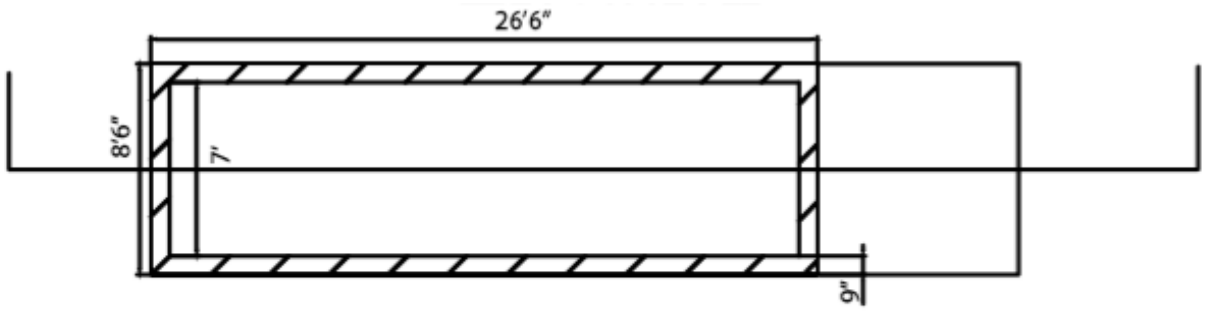
ABSTRACT SHEET

Item No.	Quantity	Description	Rate	Per	Amount
			Rs.		Rs.
1	78.43	EXCAVATION	240	M3	18823
2	14.81	PCC	3500	M3	51835
3	47.62	BRICK MASONARY UPTO PLINTH	5000	M3	238000
4	2.56	DPC	4700	M3	12034
5	67.15	BRICK MASONARY FOR SUPER STRUCTURE	4500	M3	302175
6	2.73	PARTITION WALL	750	M2	2047
7	47.66	EARTH FILLING	150	M3	7150
8	7.15	CONCRETING BELOW FLOORING	4300	M3	30736

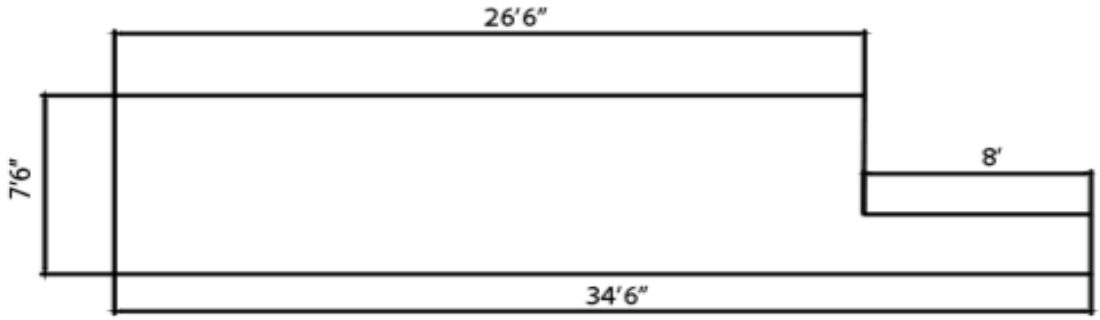
9	98.74	FLOORING	450	M2	44433
10	170.97	OUTSIDE PLASTER	300	M2	51291
11	387.00	INSIDE PLASTER	250	M2	96750
12	387.00	WHITE WASHING	18	M2	6966
13	0.98	WEATERSHEDS	5700	M3	5586
14	1.00	LATRINE BLOCKS	500	NOS	500
15	1.00	WASH BASING	500	NOS	500
16	12.39	DOOR	1200	M2	14868
17	13.70	WINDOW	1050	M2	14385
18	0.50	VENTILATOR	1050	M2	525
19	15.36	SHUTTER	1700	M2	26112
20	1.00	BEAM	10000	RS.	10946
21	1.00	SLAB	95000	RS.	112566
					1048228
ADD 5% CONTINGENCY					52411
* ALL ABOVE RATE FILLED MAY VARY DUE TO MARKET			**TOTAL**		**1100640**
* DETAILD BOQ OF R.C.C. MEMBERS ARE PROVIDED BELOW.					

8.1.6 Heritage Design

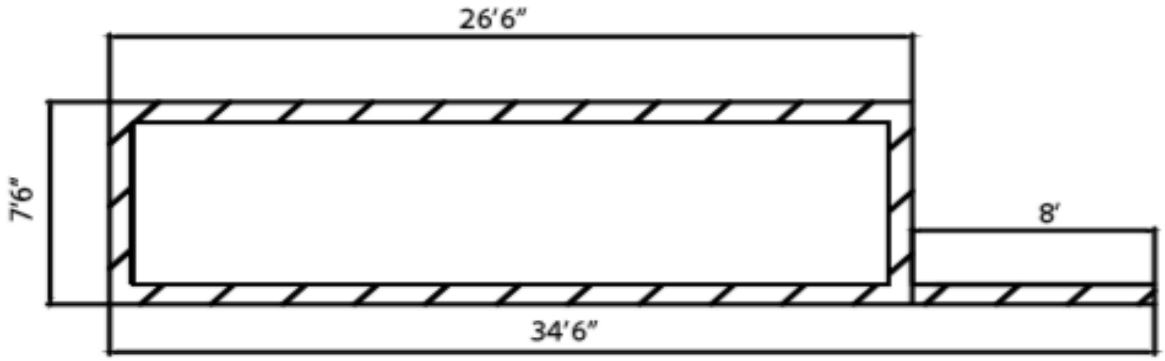
AVEDO



plan



Elevation



section

Measurement Sheet of Aveda							
Sr. No.	**Description**	**Nos.**	**L**	**B**	**H**	**Qty (Inch)**	**Quantity**
	CL = (26'6" + 8' + 8'6")		1014"				
	N. CL = 1014" – (0.5 * 2 * 30")		984"				
1.	Earthwork in foundation	1	984"	30"	36"	1062720"	17.42 m3
2.	PCC in foundation	1	984"	30"	6"	177120"	2.91 m3
3.	Brick work up to plinth						
	Step - 1 = 1014" – (0.5 * 2 * 14")	1	1000"	14"	7"	98000"	1.61 m3
	Step - 2 = 1014" – (0.5 * 2 * 9")	1	1005"	9"	23"	208035"	3.41 m3
						Total	5.02 m3
4.	Brick work in superstructure						
	CL = 25" + 25" + 717" + 36"	1	804"	9"	30"	217080"	3.56 m3
	For Food Zone	1	96"	102"	6"	58752"	0.97 m3
						Total	4.53 m3
5.	Plaster						

	External wall 1	2	318”	-	30”	19080”	12.31 m2
	External wall 2	2	102”	-	30”	6120”	3.95 m2
	Internal wall 1	2	300”	-	30”	18000”	11.62 m2
	Internal wall 2	2	84”	-	30”	5040”	3.26 m2
	Flooring plaster	1	84”	300”	-	25200”	16.26 m2
						Total	47.4 m2

Abstract Sheet of Aveda					
Sr. No.	**Description**	**Quantity**	**Rate**	**Per**	**Amount**
1.	Excavation for foundation	17.42	153.5	M3	2674
2.	PCC work in foundation	2.91	3200	M3	9312
3.	Brick work in foundation up to plinth	5.02	4000	M3	20080
4.	Brick work for superstructure	4.53	3500	M3	15855
5.	Plaster	47.4	84	M2	3982
				Total	51903/-

8.2 Reason for Student recommending this Design

- The Solid Waste Management system of the village must be improved for the sake of the cleanliness and health of the people of village because there is no provision for disposal of solid waste generated. People through it out open land areas.
- Recreational facilities can be provided like public garden, playground etc. for the recreational purpose because there are no such provisions made in the village.
- At KRUSHI SEVA KENDRA, such seminar can be organized by government to improve the crop production, fertility of the land and many other farmers’ issues.
- Water treatment plant is used to purify the water of whole village. We can use the water of treated water in irrigation activities and also use in other activities.

8.3 About design Suggestions / Benefit of the villagers

- The Solid Waste Management system of the village must be improved for the sake of the cleanliness and health of the people of village because there is no provision for disposal of solid waste generated.
- Outdoor step auditorium for some function milk co-operative for improvement of villagers’ wealth.
- Such seminars can be organized to improve the fertility of the agricultural land which can be helpful to improve the condition of the villagers.

Chapter 9. Proposing design for Future Development of the village for the PART-II Design

First of all we all are visited smart village. After that we thought that it's important to visit ideal village so that we visited Vadal. After all visits we are done gap analysis. We know form gap analysis that in an ideal village some facilities are very good. Some facility is still out in a Sukhpur. Which facilities are out than smart village. By given a design of that we want to fulfill our facilities.

- Aim of this study is to know the basic scenaior of village through techno economic survey and gap analysis done.
- Through this study, we will try to make a master developement plane for the village.
- Our master developement plane might be including provision all the facilities suggest by us, than we focus on the improvement on the existing facilities. Oue aim is to provide newly techonological facilities in the village.
- In next part,we will design bio-gas plant, post office, stationary shop, dispensary shop and ATM.
- These study frame work can enable to local bodies of sukhpur village tp approch the various Govt. schemes.
- As major facilities are already available in village, few facilities are required which we suggest. Once these all basic facilities will available in Sukhpur village, then we should focus in making the village smarter by adopting various technologies.
- As new designs proposed by us, we will focus on regular maintenance of these facilities, because due to lack of maintenance, people could be avoided to use and hence it become obsolete.
- For maintenance purpose, we should provide a maintenance plan which is economical and effective. It can be done by villagers themselves.

Chapter 10. Conclusion of the Entire Village Activities of the project

The motive of Vishwakarma Yojana phase - IV is to uplift the lifestyle of the rural areas to its certain extent up to the level of an ideal village situated at the nearby location of that particular jurisdiction. It is an effective government scheme to develop the rural areas under economical cost with good workability and efficiency during its usage. The project tends to improve the physical, social as well as socio-cultural aspects of the village by implementing and improvising various infrastructures with regards to lesser or least hindrance to its rural authenticity.

Main Smart Aim: ―Developing village with a rural soul' but with all Smart urban amenities tha a city may have‖. 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.

With Gap Analysis, we conclude that some of different Smart Village facilities are required as basic or primary level which still lack in village. So, according to Gap Analysis of Sukhpur village, we observed condition of existing infrastructure facilities in village such as- Primary school, Anganvadi etc. Smart Village can solve their problem itself can become a smart village.

Example to another village too.

According to UDPFI norms, lacking in basic amenities And Smart Amenities can be suggested as:

- Bio Gas Plant
- Post Office
- Dispensary Shop
- Stationary Shop
- ATM

Chapter 11. Reference Refereed For this Project

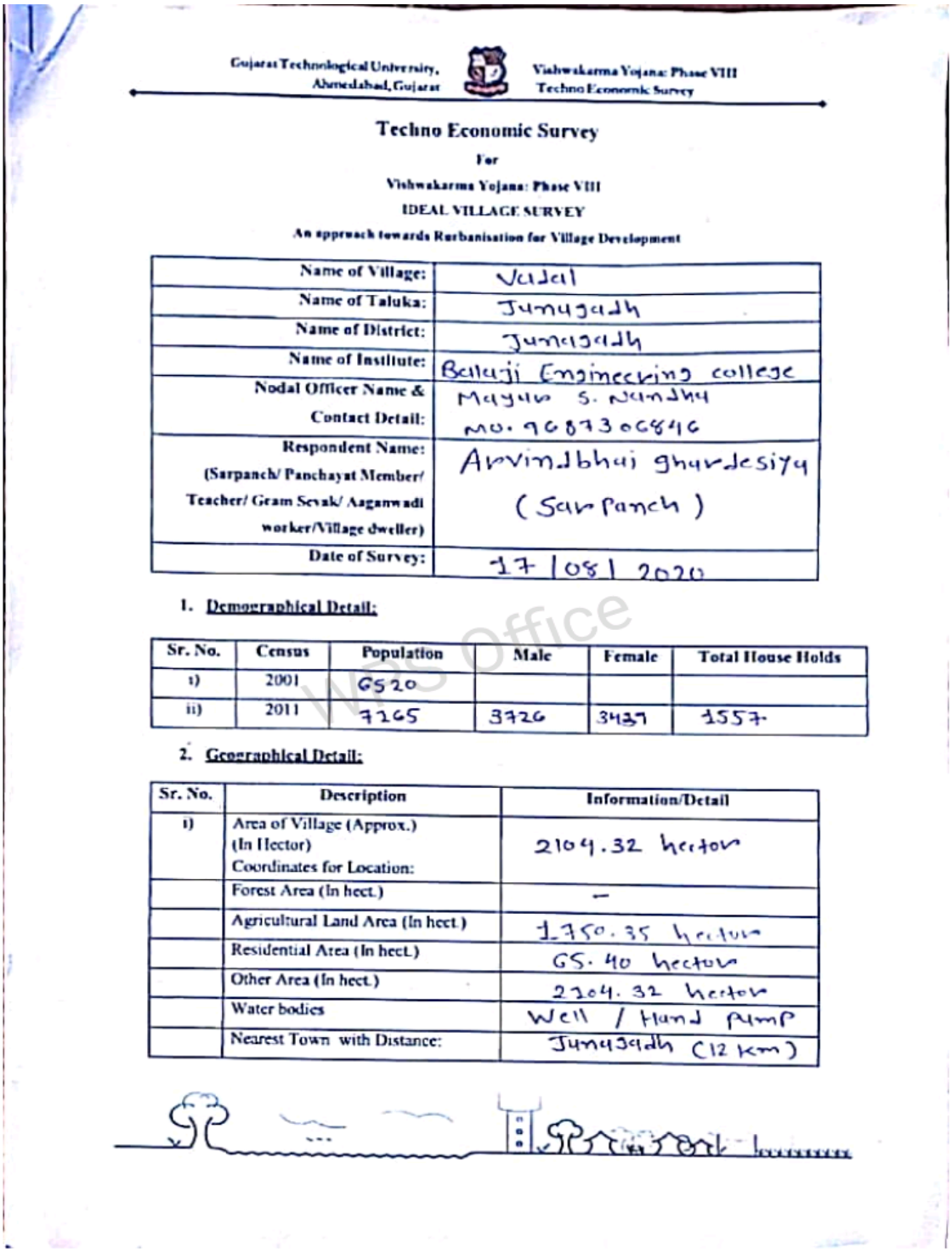
1. GTU Innovation Council – Guideline for Final Year B. E. Project & PMMS Activities.
2. The India Patent Office Database – http://ipindiaservices.gov.in/publicsearch/
3. The US Patent Database (USPTO) – http://worldwise.espacenet.com/advanceSearch
4. The Google Translate – www.translate.google.com
5. Business Model Canvas (BMC) Exercise – http://files.gtu.ac.in/circulars/14SEP/09092014_04.pdf
6. For Patent Drafting Exercise (PDE) – http://projects.gtu.ac.in
7. Census department website - http://censusindia.gov.in
8. UDPFI Guideline 2014
9. Schedule of rate 2014
10. http://vy.gtu.ac.in - vishwakarma literatures
11. Google maps
12. www.biotec-Asia.com
13. https://panchayat.gujarat.gov.in
14. www.niug,org
15. http://www.bis.nic.in
16. http://www.india.gov.in
17. http://www.surveysofindia.gov.in
18. www.gujaratindia.gov.in
19. http://smartcities.gov.in
20. http://www.gis.gov.in

❖ Various books referred:

- Model building bye-laws
- Design of RC structure
- General development control regulation
- SOR 2018-2019 of RMC

Chapter 12. Annexure attachment

12.1 Survey from of Ideal 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

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	Vadal
Name of Taluka:	Junagadh
Name of District:	Junagadh
Name of Institute:	Balaji Engineering college
Nodal Officer Name & Contact Detail:	Mayur S. Nandha mo. 9687306846
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Arvindbhai Ghardesiya (Sarpanch)
Date of Survey:	17/08/2020

1. Demographical Detail:

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	6520			
ii)	2011	7265	3726	3437	1557

2. Geographical Detail:

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	2104.32 hector
	Forest Area (In hect.)	–
	Agricultural Land Area (In hect.)	1750.35 hector
	Residential Area (In hect.)	65.40 hector
	Other Area (In hect.)	2104.32 hector
	Water bodies	Well / Hand pump
	Nearest Town with Distance:	Junagadh (12 km)

Scanned by CamScanner

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

3. **Occupational Details:**

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

4. **Physical Infrastructure Facilities:**

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated)	Yes	✓		
	• RO Water	NO			
	• Well (Covered/ Uncovered)	Yes (Uncovered)	✓		
	• Hand pumps	Yes	✓		
	• Tube well/ Borehole	Yes	✓		
	• River/ Canal/ Spring/ Lake/ Pond	Spring	✓		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	✓		1,00,000 lit.
	Underground Sump	Capacity:	✓		2,00,000 lit.
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	Yes	✓		
Suggestions if any					
D.	**Type of Drainage**				
	Closed/ Open	Both	✓		
	If Open than Pucca / Kutchcha	Pucca	✓		
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	water bodies	✓		
Suggestions if any:					

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

E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Yes	✓		RCC & Block
	Main road	Yes	✓		RCC
	Internal streets	Yes	✓		Block
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH:	✓		
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Yes	✓		
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes (Good)	✓		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes	✓		
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs / More Than 6 hrs)	Yes	✓		PGVCL (24 hr.)
	Power supply for Domestic Use	Yes	✓		24 hr. (single)
	Power supply for Agricultural Use	Yes	✓		8 hr.
	Power supply for Commercial Use	Yes	✓		24 hr.
	Road/ Street Lights	Yes	✓		

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

	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		24 hr.
	Renewable Energy Source Facilities (Y/ N)	No		X	
	LED Facilities	Yes	✓		
Suggestions if any:					
II.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	Yes	✓		
	Location Condition	centre Good			
	Community Toilet (With bath/ without bath facilities)	Yes (without bath)	✓		
	Solid & liquid waste Disposal system available	No			
	Any facility for Waste collection from road	No			
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Yes (Tube well)	✓		
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Both	✓		80% Pucca 20% Kutchha

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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

L.	Education Facilities:				
	Aaganwadi/ Play group	Yes	✓		
	Primary School	Yes	✓		
	Secondary school	Yes	✓		
	Higher sec. School	Yes	✓		
	ITI college/ vocational Training Center	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: ..31..kms.(Junagadh)				
Suggestions if any:					

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

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Condition:	well			
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	No			
	Public Garden Location: Condition:	No			
	Village Pond Location: Condition:	No			
	Recreation Center Location: Condition:	No			
	Cinema/ Video Hall Location: Condition:	No			
	Assembly Polling Station Location: Condition:	Yes school Good	✓		
	Birth & Death Registration Office Location: Condition:	Yes Grampan Panchayat Good	✓		
If any of the above Facility is not available in village than approx. distance from village: .....kms.					
Suggestions if any:					
N.	**Other Facilities**				
	Post-office	Yes	✓		
	Telecommunication Network/ STD booth	No			

	General Market	NO			
	Shops (Public Distribution System)	Yes	✓		
	Panchayat Building	Yes	✓		
	Pharmacy/Medical Shop	Yes	✓		
	Bank & ATM Facility	Yes	✓		
	Agriculture Co-operative Society	NO			
	Milk Co-operative Soc.	Yes	✓		
	Small Scale Industries	Yes	✓		
	Internet Cafes/ Common Service Center/Wi Fi	NO			
	Other Facility	-			
Suggestions if any					

6. Sustainable /Green Infrastructure Facilities:

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

7. Data Collection From Village

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

Recent Projects going on for Development of Village	ચેક ડેમ
Any NGO working for village development	No

8. Additional Information/ Requirement:

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities(School Building, Health Center, Panchayat Building, Public Toilets & any other)	No	
2.	Additional Information/ Requirement Road		
	Drainge		
	Water		

9. Smart Village Proposal Design

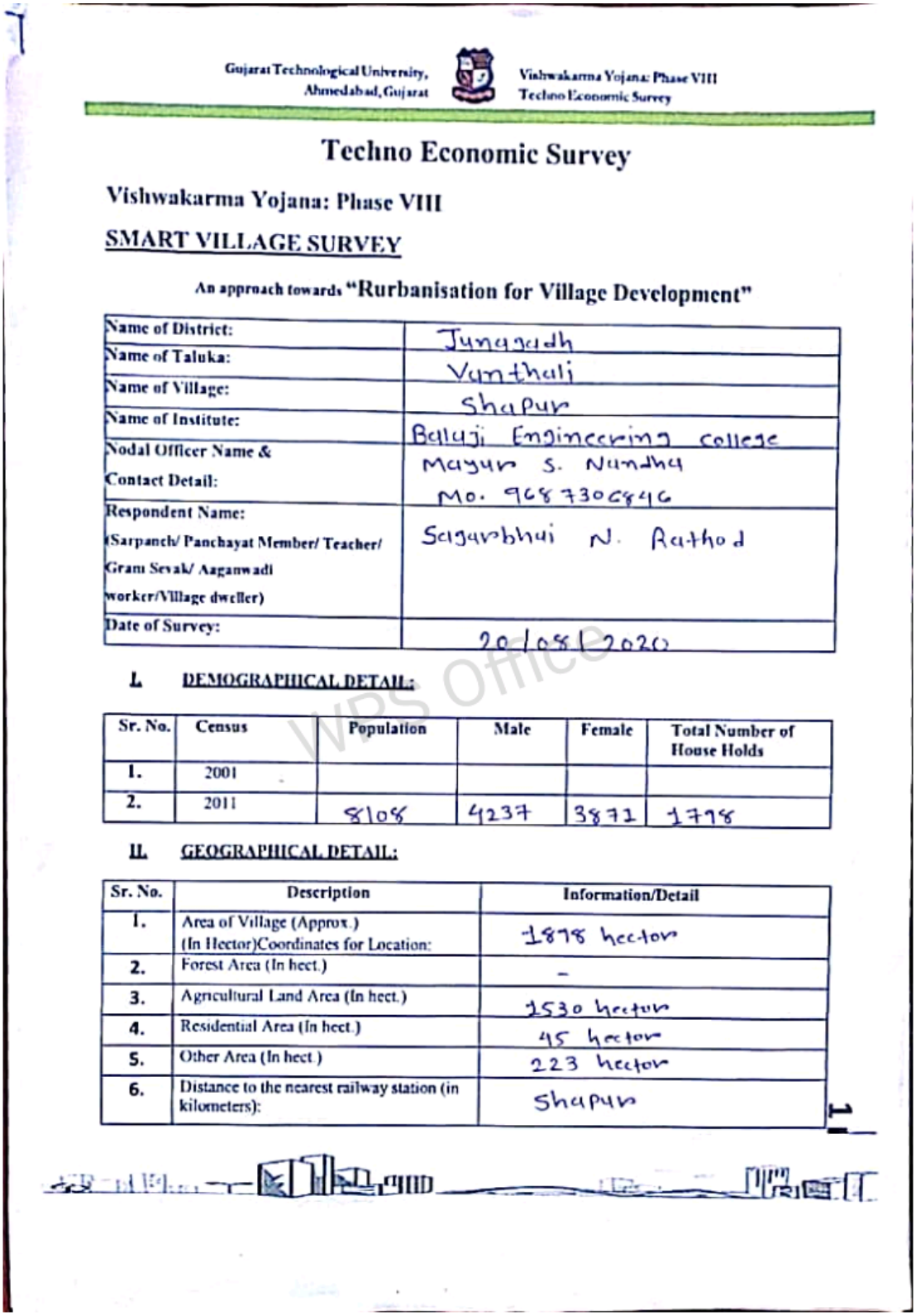
Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Wifi / Treatment plant/ Libreary		

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: ruban@gtu.edu.in

તલાટી-મંત્રી
A Ghodasiya

12.2 Survey from 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:	Junagadh
Name of Taluka:	Vanthali
Name of Village:	Shapur
Name of Institute:	Balaji Engineering college
Nodal Officer Name & Contact Detail:	Mayur S. Nandha Mo. 9687306846
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sagarbhai N. Rathod
Date of Survey:	20/08/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	8108	4237	3871	1798

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1878 hector
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	1530 hector
4.	Residential Area (In hect.)	45 hector
5.	Other Area (In hect.)	223 hector
6.	Distance to the nearest railway station (in kilometers):	Shapur

Scanned by CamScanner

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

7.	Name of Nearest Town with Distance:	Junagadh (13km.)
8.	Distance to the nearest bus station (in kilometers):	Junagadh (13km.)
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.	Industrial
	3.	Private Bussiness
Major crops grown in the village:	1.	Bajayati
	2.	Pinuts
	3.	cotton

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	Yes		5,00,000 lit.
	Underground Sump	Capacity:	Yes		4,00,000 lit
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	Yes Yes	✓ ✓		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Yes	✓		
	Main road	No		X	
	Internal streets	Yes	✓		
	Nearest NH/SH/MDR/ODR Dist. in kms.	Yes	✓		
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Yes	✓		
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	✓		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes	✓		
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs / More Than 6 hrs)	Govt. (Yes)	✓		more than 6 hrs.

3

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

	Power supply for Domestic Use	24 hr.	✓		
	Power supply for Agricultural Use	8 hr.	✓		
	Power supply for Commercial Use	24 hr.	✓		
	Road/ Street Lights	Yes	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	Yes	✓		
	LED Facilities	Yes	✓		

Suggestions if any:

G.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.	Yes	✓		
	Location Condition	Good			
	Community Toilet (With bath/ without bath facilities)	Yes (without bath)	✓		
	Solid & liquid waste Disposal system available	No		x	
	Any facility for Waste collection from road	No		x	

Suggestions if any:

H.	Main Source of Irrigation Facility:				
	TANK/POND	Yes	✓		
	STREAM/RIVER	No		x	
	CANAL	No		x	
	WELL	Yes	✓		
	TUBE WELL	Yes	✓		
	OTHER (SPECIFY)	-	-	-	

Suggestions if any:

I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	90% Pucca 10% Kutcha	✓		

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

V. SOCIAL INFRASTRUCTURAL FACILITIES:

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

5

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:

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

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

Suggestions if any:

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

19

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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

Suggestions if any:

N.	Other Facilities	Condition		Available (YES)	Available (NO)
	1. Have these programme implemented the village?	Good		Yes	
	2. Are there any beneficiaries in the village from the following programme?	Good		Yes	
	3. Janani Suraksha Yojana			Yes	
	4. Kishori Shakti Yojana			Yes	
	5. Balika Samriddhi Yojana			Yes	
	6. Mid-day Meal Programme			Yes	
	7. Intergrated Child Development Scheme (ICDS)				
	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)				

7

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	Renewable energy	Yes		
2.	Bio-Gas Plant	Yes	✓		
	Solar Street Lights Rain	Yes	✓		
	Water Harvesting System	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	✓		
2.	Recent Projects going on for Development of Village	Under ground drainage			
3.	Any NGO working for village development	Yes	✓		
4.	Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY)	No			

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

18

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	૧૫	
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING .....૩૦..... FOGGING.....૩૦..... Drive was undertaken in the village?		

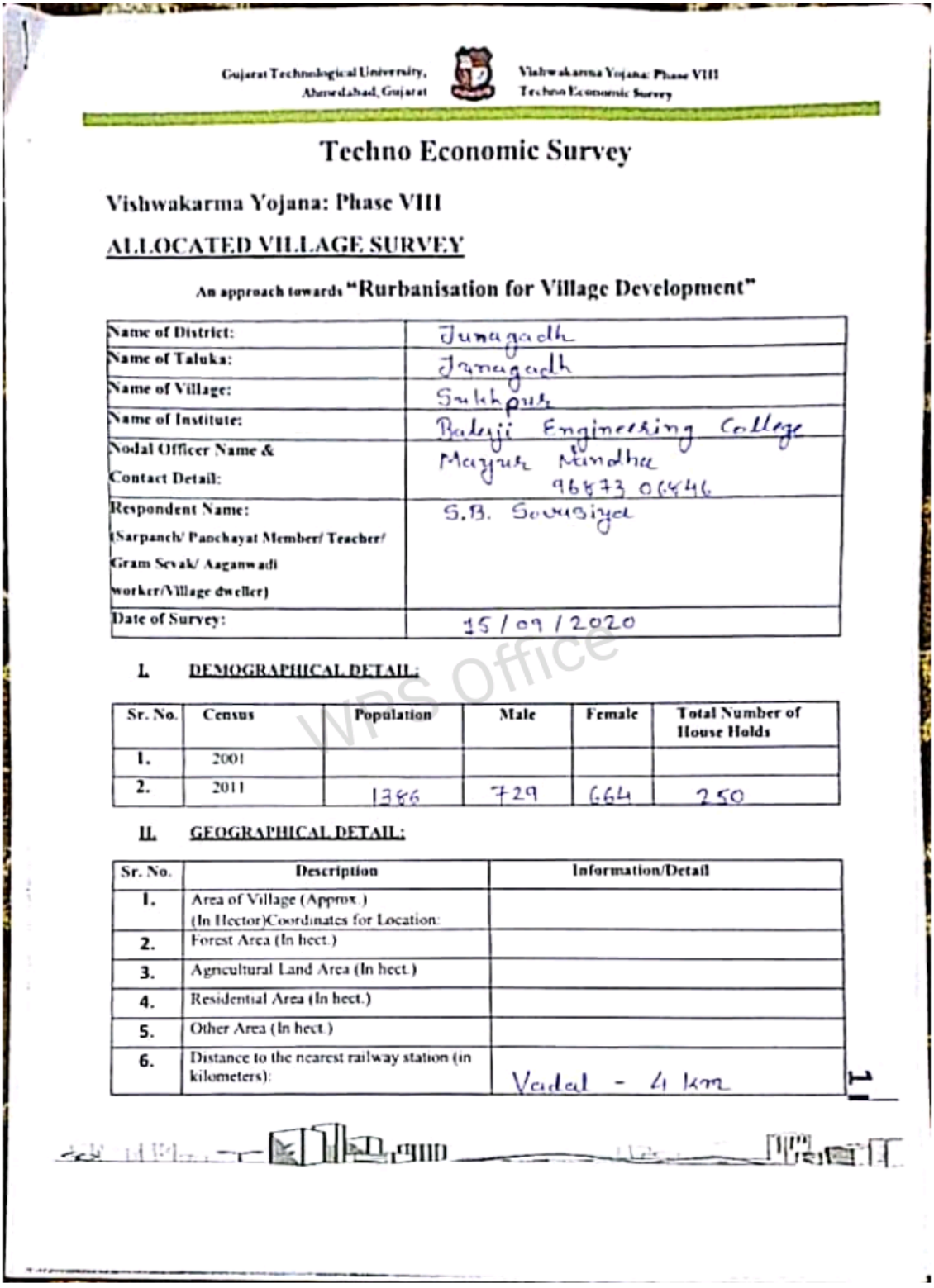
IX. Smart Village / Heritage Details

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 from 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:	Junagadh
Name of Taluka:	Junagadh
Name of Village:	Sukhpur
Name of Institute:	Bahauddin Engineering College
Nodal Officer Name & Contact Detail:	Mayur Nandha 96873 06446
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	S.B. Sonagiya
Date of Survey:	15/09/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	1386	729	664	250

II. GEOGRAPHICAL DETAIL:

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

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

7.	Name of Nearest Town with Distance:	Junagadh - 8 km
8.	Distance to the nearest bus station (in kilometers):	Junagadh - 4 km
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.	Industrial
	3.	Education

Major crops grown in the village:	1.	Pinuts
	2.	Cotton
	3.	Wheat

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

21

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Other(Specify)Lake/ Pond	No		x	
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity	Yes		Cap:- 40000 Ltr
	Underground Sump	Capacity	Yes		Cap.- 3,00,000 Ltr
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE	Yes	✓		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Yes	✓		Kutchha
	Main road	Yes	✓		Black Topped pucca
	Internal streets	Yes	✓		Black Topped pucca
	Nearest NH/SH/MDR/ODR Dist. in kms	NH - 151 1 km	✓		All Weather
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No		x	Nearest - 4 km
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	✓		Required To Maintain
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes			Auto, Chhakda, Private vehicles
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes	✓		More than 6 hrs

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Power supply for Domestic Use	Yes	✓		> 6 hrs
	Power supply for Agricultural Use	Yes	✓		> 6 hrs
	Power supply for Commercial Use	Yes	✓		> 6 hrs
	Road/ Street Lights	Yes	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	No		x	
	LED Facilities	Yes	✓		

Suggestions if any:

G.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.	No		x	
	Location Condition	No		x	
	Community Toilet (With bath/ without bath facilities)	No		x	
	Solid & liquid waste Disposal system available	No		x	
	Any facility for Waste collection from road	No		x	

Suggestions if any:

H.	Main Source of Irrigation Facility:				
	TANK/POND	Yes	✓		Temple
	STREAM/RIVER	No		x	
	CANAL	No		x	
	WELL	Yes	✓		
	TUBE WELL	Yes	✓		
	OTHER (SPECIFY)	Yes	✓		Submp chekdams

Suggestions if any:

I.	Housing Condition:				
	Kutchha Pucca (Approx. ratio)	Yes	✓		80% Pucca 20% Kutchha

4

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	Yes	✓		
	Sub-Centre	No		x	
	PHC	No		x	
	BLOCK PHC	No		x	
	CHC/RH	No		x	
	District/ Govt. Hospital	No		x	
	Govt. Dispensary	No		x	
	Private Clinic	No		x	
	Private Hospital/	No		x	
	Nursing Home	No		x	
	AYUSH Health Facility	No		x	
	sonography /ultrasound facility	No		x	
	If any of the above Facility is not available in village than approx. distance from village: ..14...kms.	Jetalsar			
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	Yes	✓		
	Primary School	Yes	✓		
	Secondary school	Yes	✓	.	
	Higher sec. School	No		x	
	ITI college/ vocational Training Center	No		x	
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	No		x	

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

If any of the above Facility is not available in village than approx. distance from village: 6 kms. Junagadh

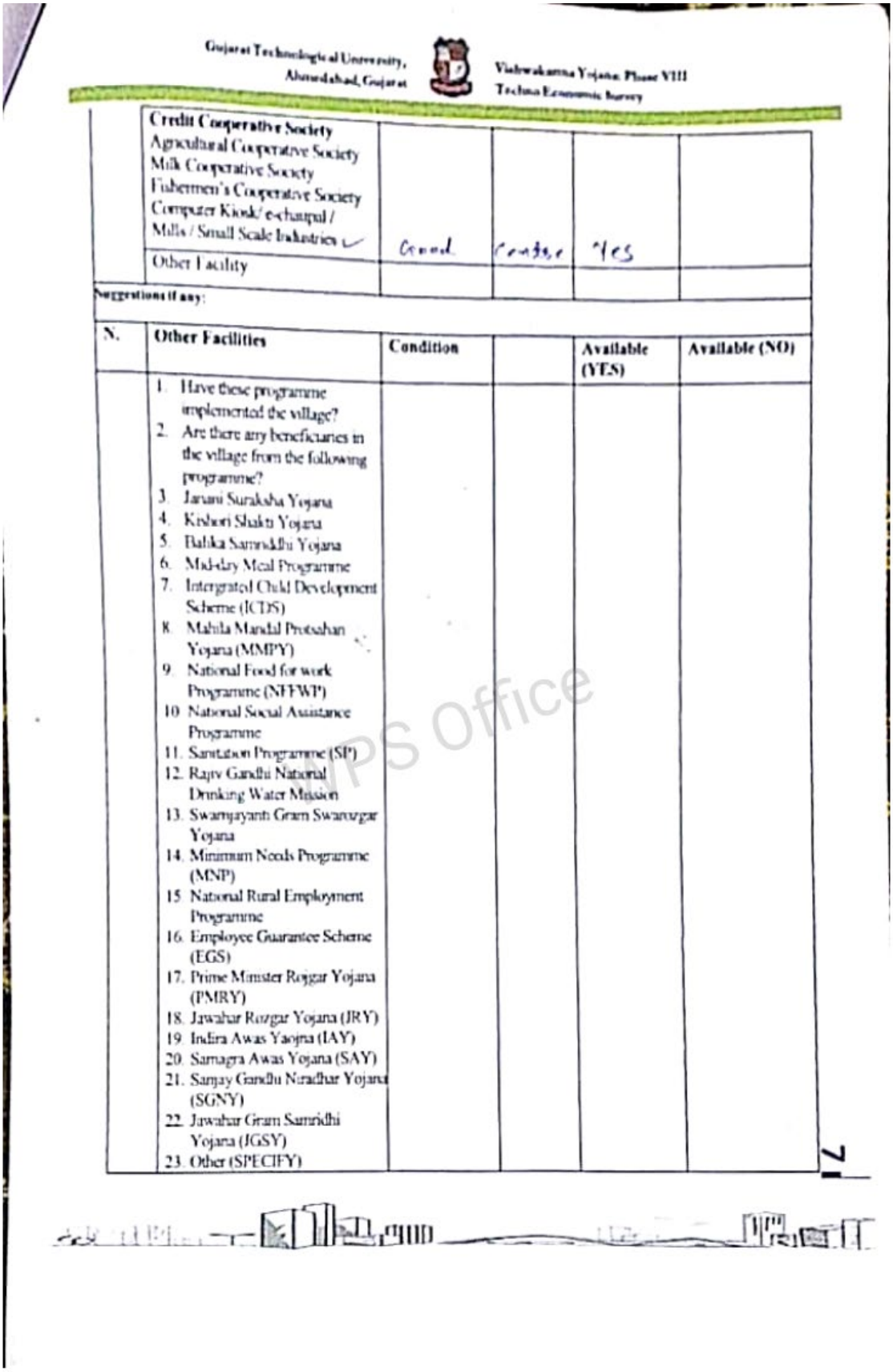
Suggestions if any:

I..	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				No
	Recreation Center				No
	Cinema/ Video Hall				No
	Assembly Polling Station	Good	School	Yes	
	Birth & Death Registration Office	Good	Gram Panchayat	Yes	

If any of the above Facility is not available in village than approx. distance from village: 4 kms. Jetpur

Suggestions if any:

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



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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

Suggestions if any:

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

71

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 Lights Rain Water Harvesting System		No		
3.	Any Other		No		

VII. DATA COLLECTION FROM VILLAGE

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Village Base Map Available: Hard Copy/Soft Copy		Yes		Soft copy
2.	Recent Projects going on for Development of Village		Yes		Road development
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	

18

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	No	
2.	Additional Information/ Requirement	NO	
3.	During the last six months how many times CLEANING ....12 times..... FOGGING.....12 times..... Drive was undertaken in the village?	Yes	

IX. Smart Village / Heritage Details

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

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

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

16

12.4 Gap Analysis of the Allocated Village

VILLAGE GAP Analysis					
Village Facilities	**Planning Commission/UDPFI Norms**	**Village Name:**	SUKHPUR		
		Population:			1386
		Existing	**Required as per Norms**	**Smart Village / Cities / Heritage Future Projection Design**	**Gap**
Social Infrastructure Facilities					
Education					
Aanganwadi	Each or per 2500 population	1	1	-	2
Primary School	Each or per 2500 population	1	0	-	1
Secondary School	Per 7500 population	1	0	-	1
Higher Secondary School	Per 15000 Population	0	0	-	0
College	Per 125000 Population	0	0	-	0
Tech. Training Institute	Per 100000 Population	0	0	-	0
Agriculture Research Centre	Per 100000 Population	0	0	-	0
Skill Development Centre	Per 100000 Population	0	0	-	0
Health Facility					
Govt. / Panchayat Dispensary or Sun PHC or Health Centre	Each Village	0	1	-	-1
Primary Health & Child Health Centre	Per 20000 Population	0	0	-	0
Child Welfare & Maternity Home	Per 10000 Population	0	0	-	0
Multi speciality Hospital	Per 100000 Population	0	0	-	0
Public Latrines	1 for 50 families (if toilets is not therein home, specially for slum pockets & kutcha	0	2	-	-2

	house				
Transportation		**Adequate / Inadequate**			
Pucca Village Approach Road	Each Village	Adequate			Adequate
Bus / Auto Stand Provision	All Villages connected by PT (ST Bus or Auto)	Adequate			Adequate
Drinking Water (Minimum 70 lpcd)		**Adequate / Inadequate**			
Over Head Tank	1/3 of Total Demand	Adequate			Adequate
U/G Sump	2/3 of Total Demand	Adequate			Adequate
Drainage Network – Open		Adequate			10%
Drainage Network – Cover		Adequate			90%
Waste Management System		Adequate			Adequate
Socio – Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	0	1	-	-1
Community Hall & Public Library	Per 15000 Population	0	0	-	0
Cremation Ground	Per 20000 Population	1	0	0	1
Post Office	Per 10000 Population	0	1	-	-1
Gram Panchayat Building	Each individual / group panchayat	1	0	-	1
APMC	Per 100000 Population	0	0	0	0
Fire Station	Per 100000 Population	0	0	0	0
Public Garden	Per village	1	0	-	1
Police post	Per 40000 Population	0	0	0	0
Shopping Mall					
Electrical Design					
Electricity Network		**Adequate / Inaequate**			
Govt. Electricity	Each Village	Adequate			Adequate (24 hrs)
Any Smart Village Facilities					
Technologies					
CCTV Camera	-	Adequate			Adequate
WIFI	-	Adequate			Adequate
		ESR cap	0		

		Sump cap	0		
		Lat	0		

12.5 Summary Details of All the Village Design in the Table form Part-I and Part-II

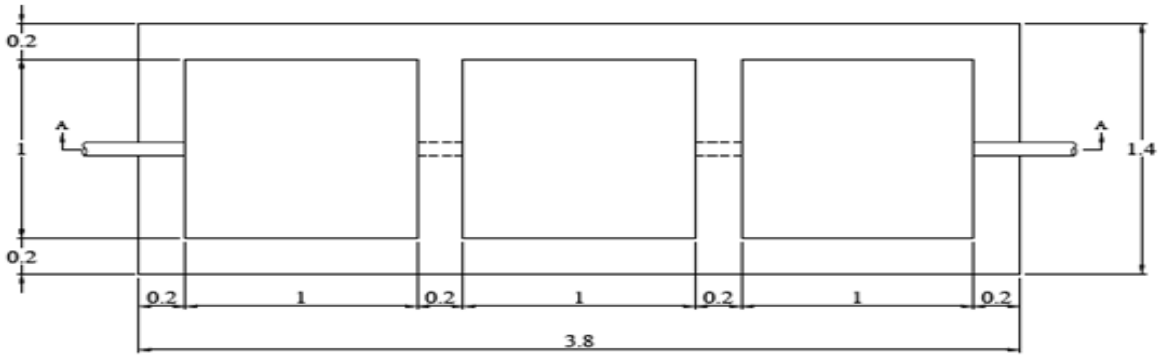
Village	Part - I	Part – II
Sukhpur	Septic tank	Bio Gas Plant
	Cemetery	Post Office
	PHC	Dispensary Shop
	Krushi Seva Kendra	Stationary Shop
	Play ground	ATM
	Aveda	
Jhalansar	Bio Gas Plant	Aanganwadi
	Bus Station	R. O. Water
	Public Toilet	Play Ground
	Community Hall	Library
	Bank	Skill Development Centre
	Gate	
Makhiyala	Public Library	Super Market
	Medical Shop	Animal Shelter
	Internet Cafe	Party Plot
	Public Garden	Hospital
	Solar Water Purification	Statue
	Gate	

Table No. 11 Summary Detail

12.6 Drawings

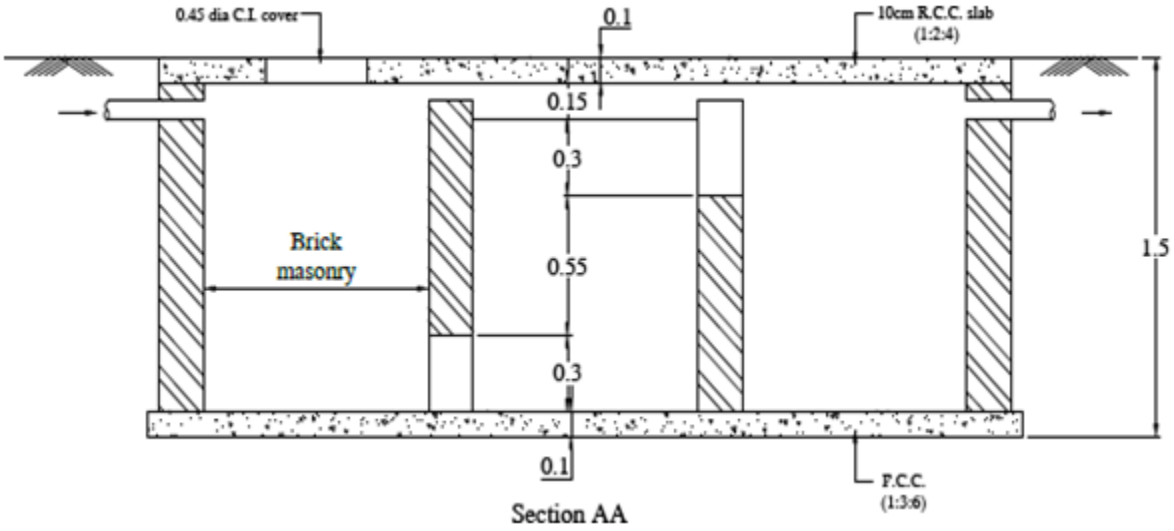
Sustainable Design (Civil)

SEPTIK TANK



Plan

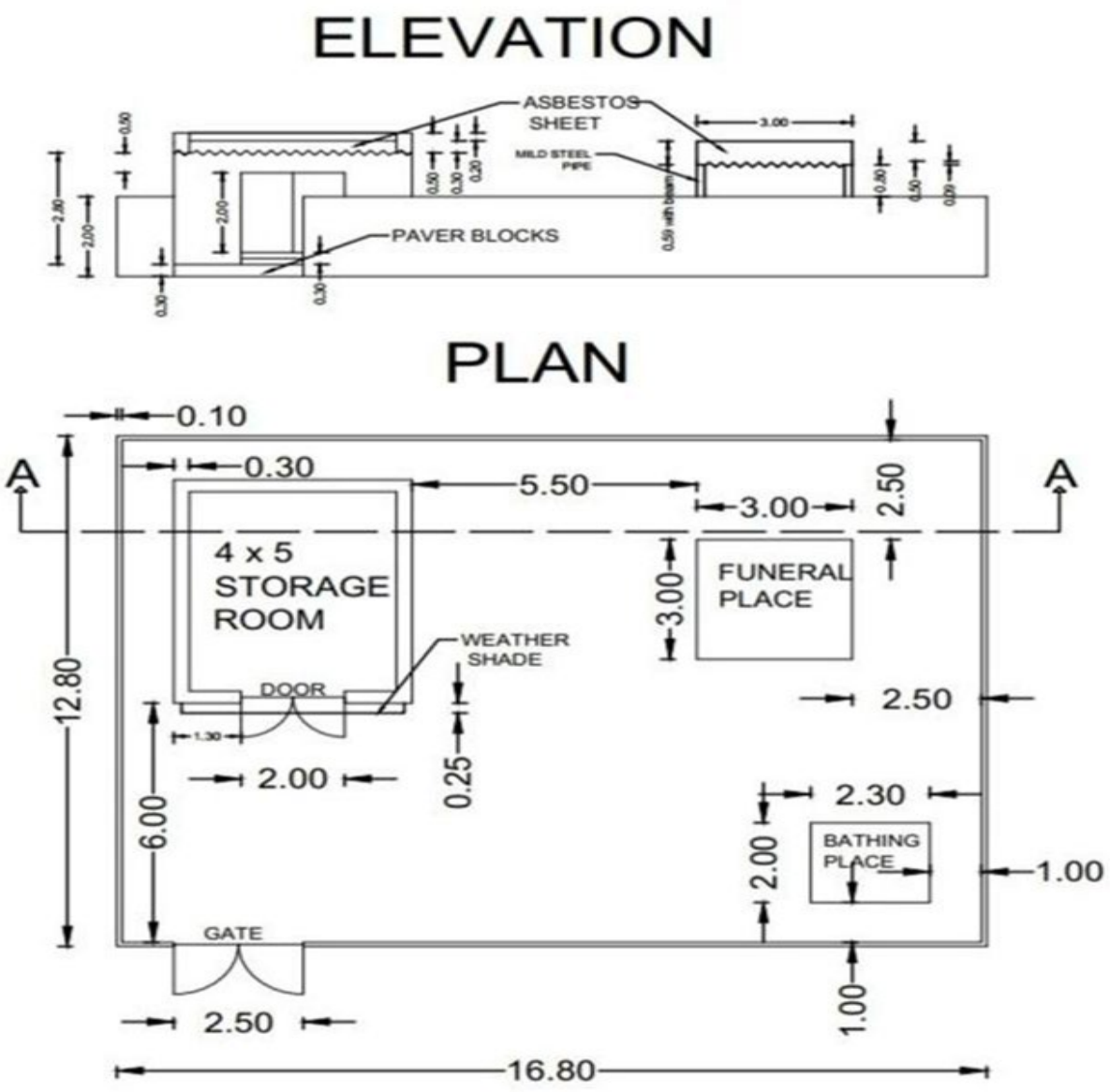
All dimensions are in meters.

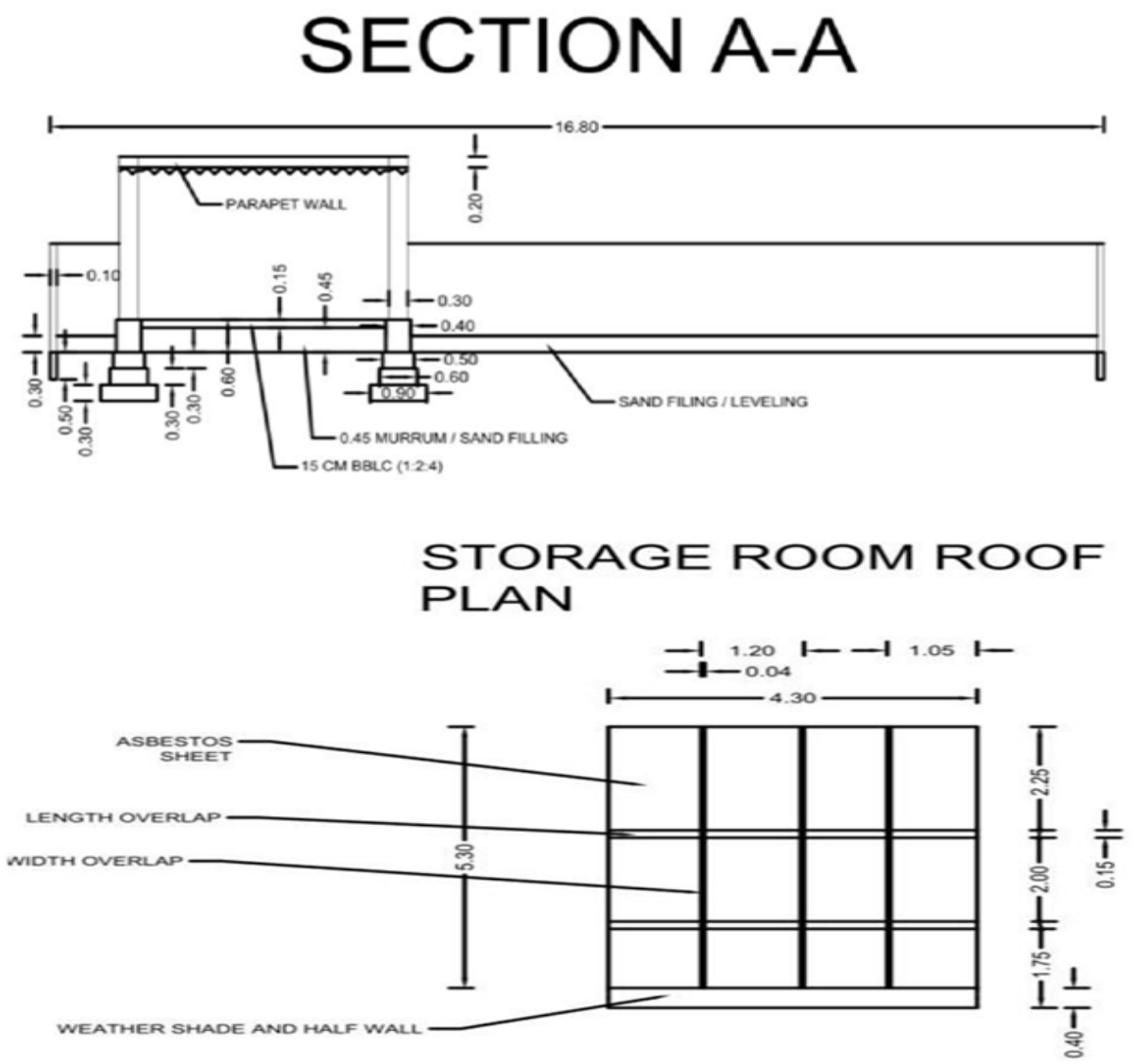


Section AA

Physical Design (Civil)

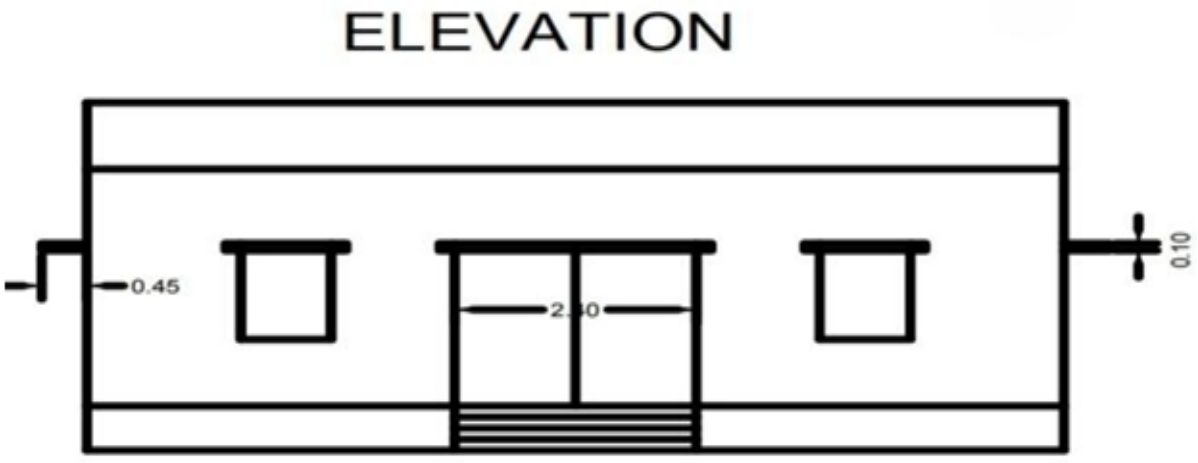
CEMETARY



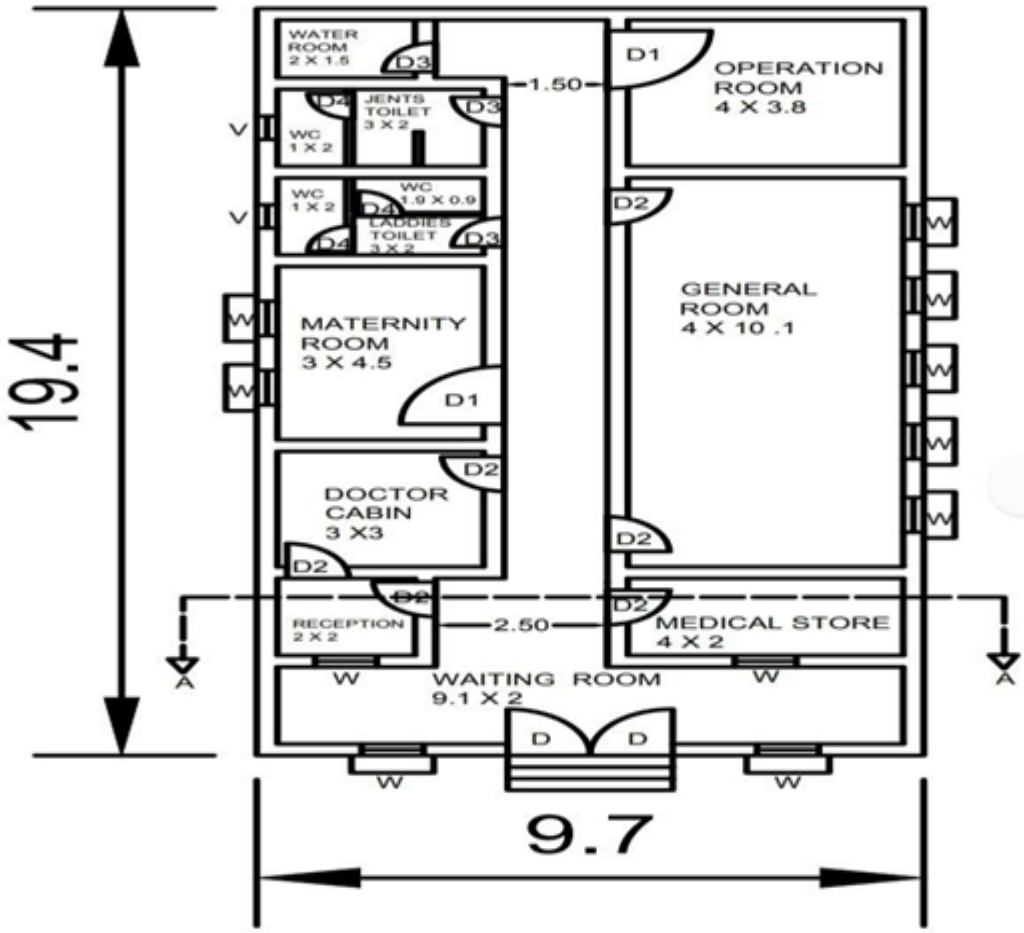


Social Design (Civil)

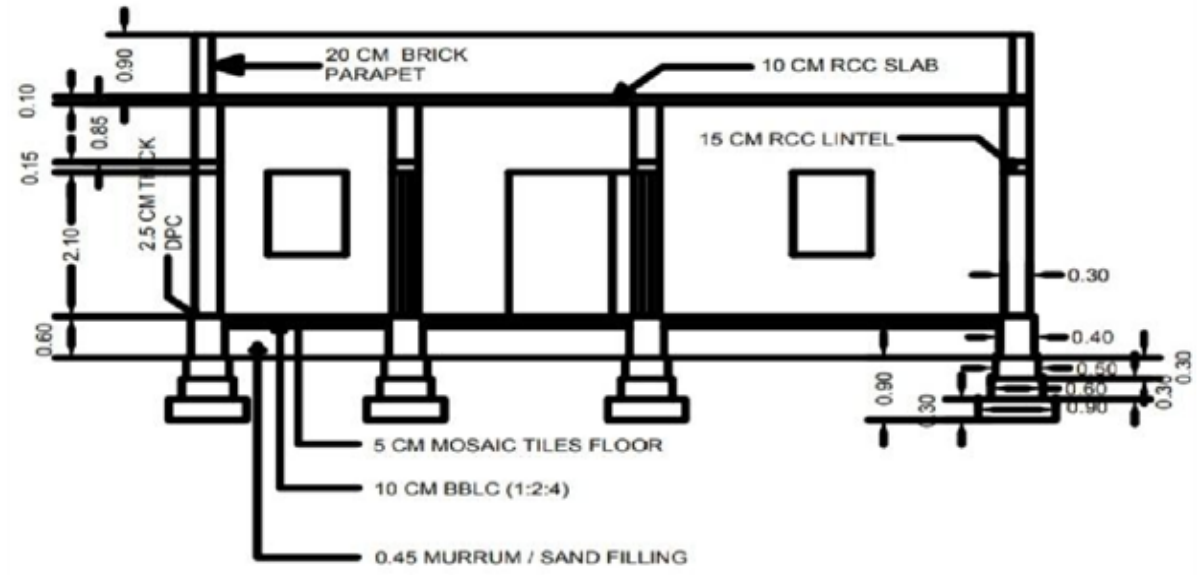
PUBLIC HEALTH CENTRE



PLAN

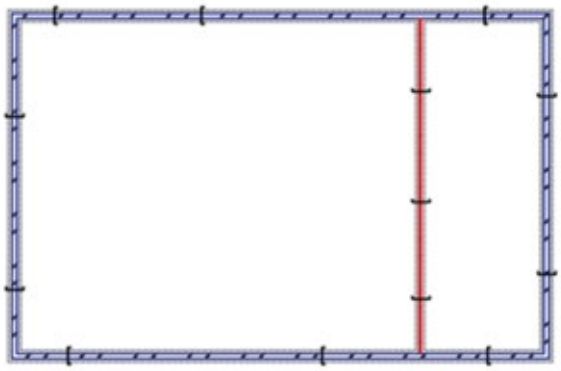


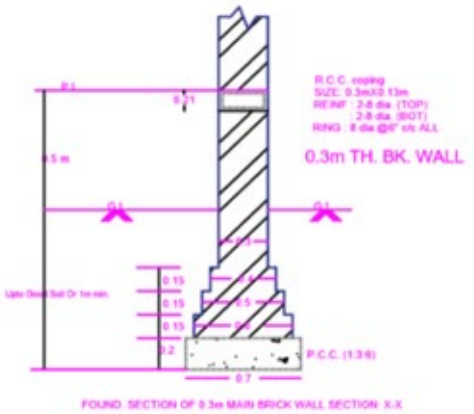
SECTION A-A

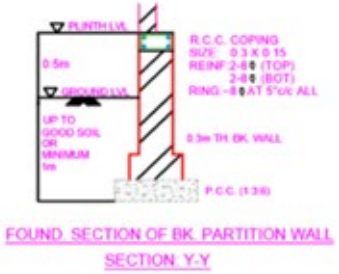


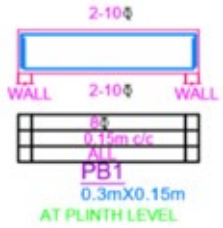
Socio-Culture Design (Civil)

PLAY GROUND





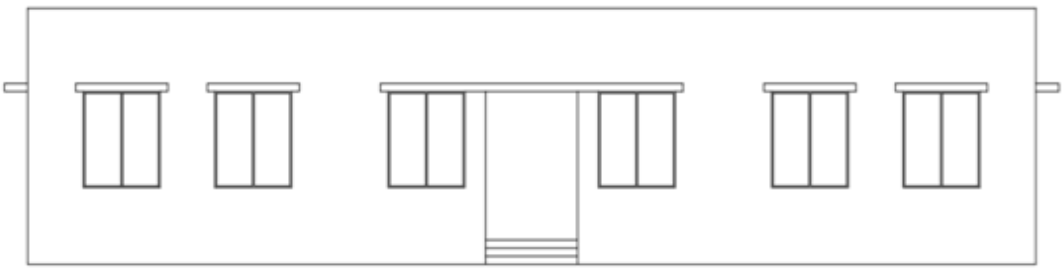


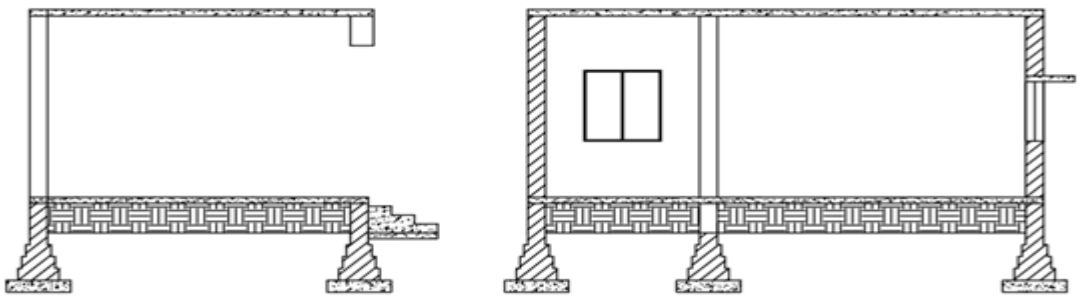


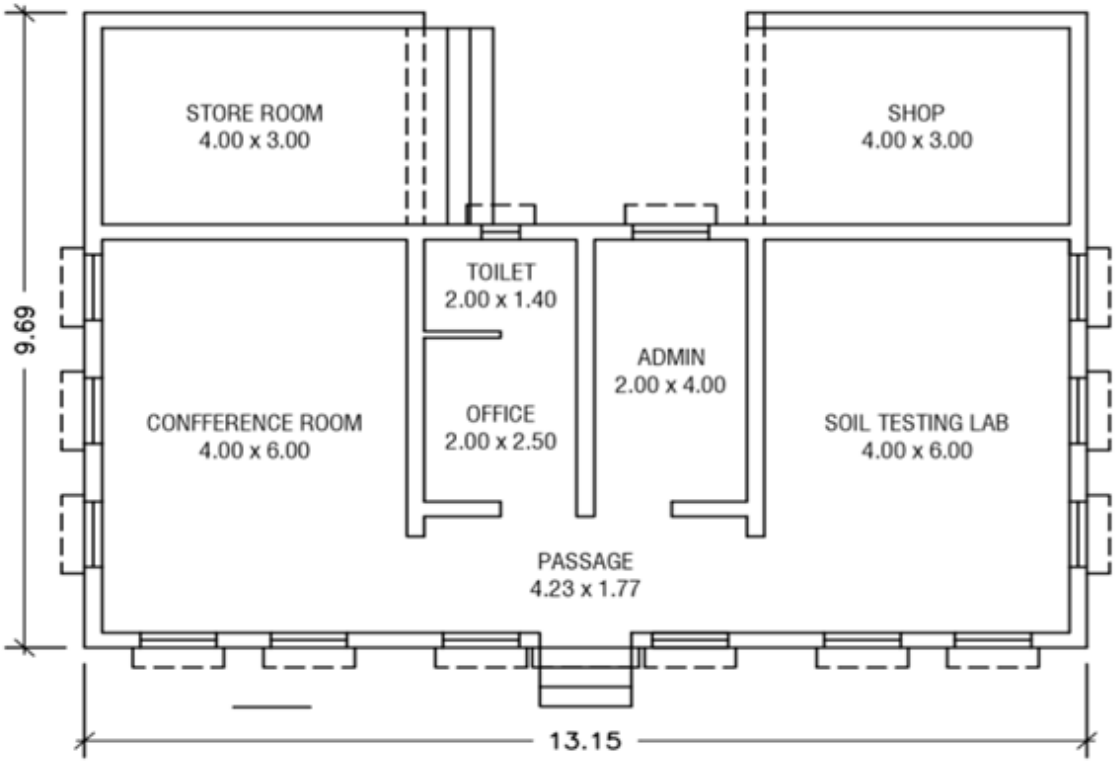
PUBLIC GARDEN
FOUND. DETAIL
SCALE: N.T.S.
DATE:

Smart Village design (Civil)

KRISHI SEVA KENDRA

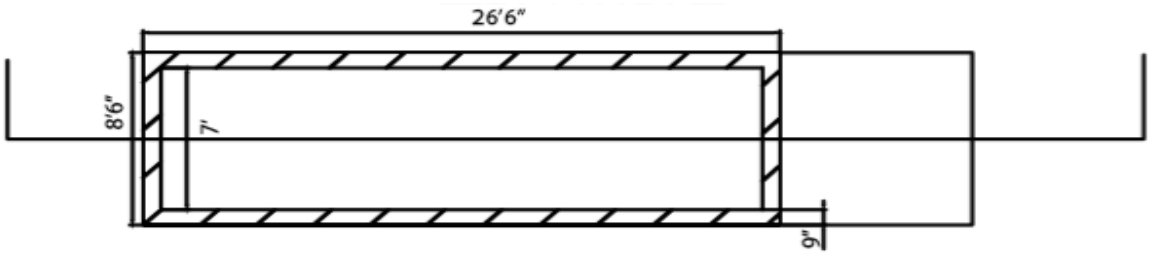




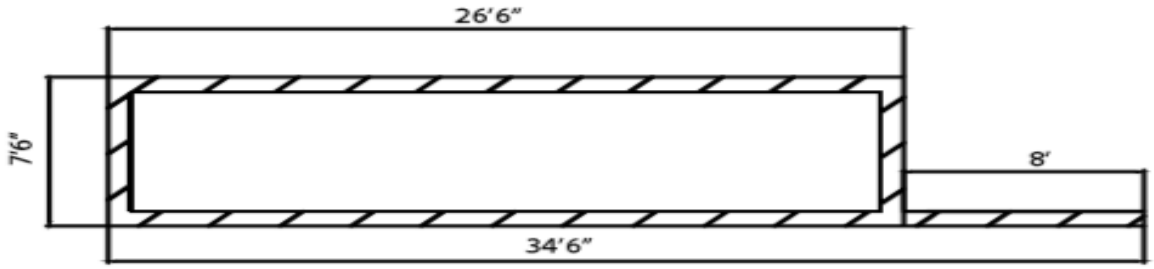


Heritage Design

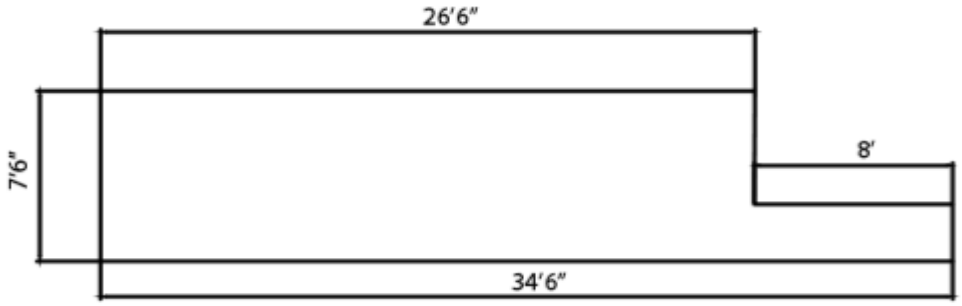
Aveda



plan



section



Elevation

12.7 Summary of Good Photographs in Table Format

Figure No. 46 Ideal Village

Figure No. 47 Smart Village

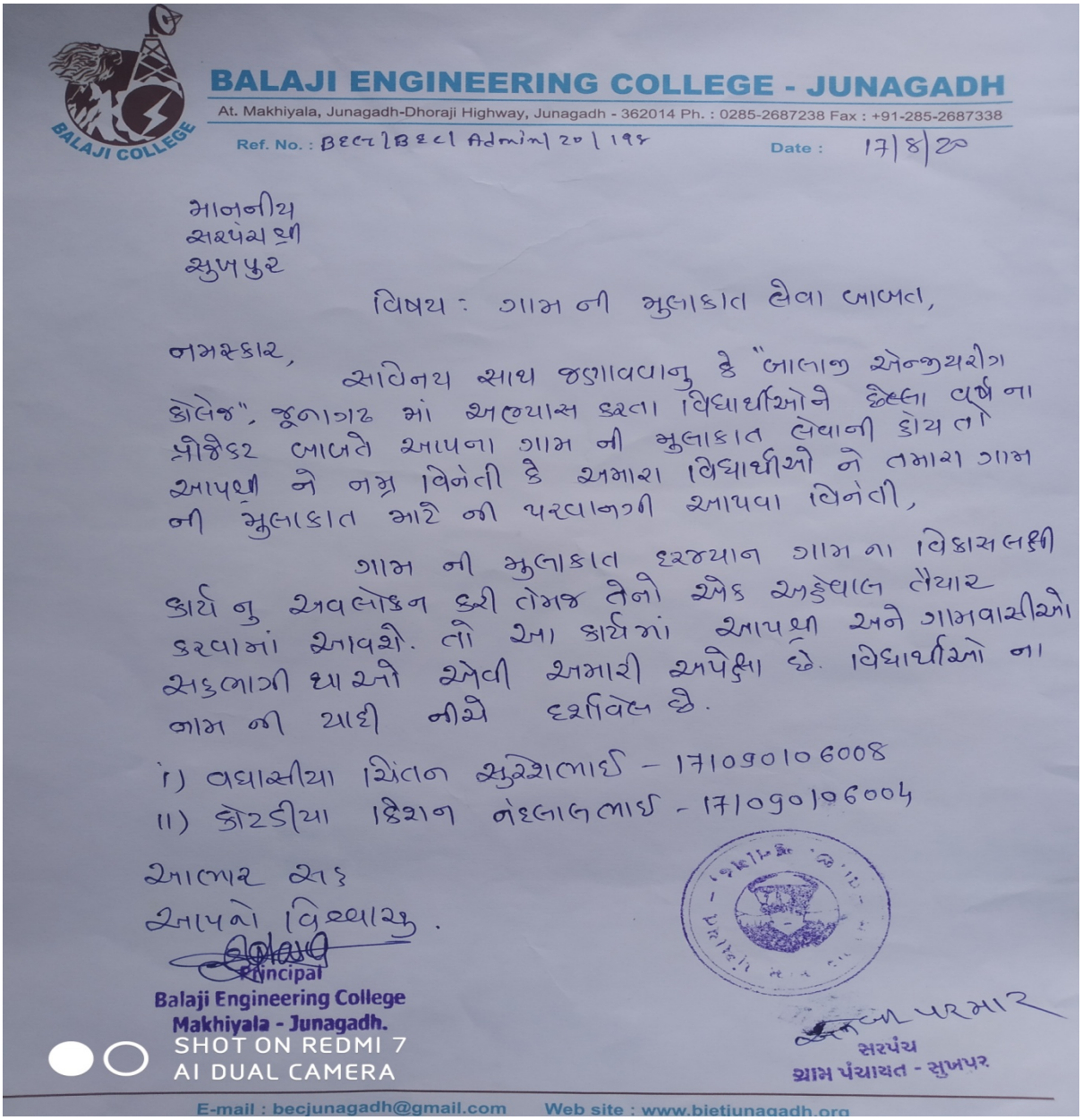
Figure No. 48 Allocated Village

12.8 Village Interaction with sarpanch Report with photograph

Fig No. 49 Sarpanch

- As per the guideline of Vishwakarma Yojana VIII, we visited Shukapur village for the study purpose.
- We met Sarpanch and Talati Mantri.We met other staff member also, and they gave us good response. Still we tried our best for collection of data from other sources.
- We also visited through the village and interacted with villagers directly and asked them about the present situation of village. We had conducted a Techno-economic survey of Sukhpur village.
- After doing the survey of the village, we prepared gap analysis and designed necessary facilities for Sukhpur village.
- We designed Bio Gas Plant, Bus Stand, PHC, community Toilet, Solar light and Entrances gate.

12.9 Sarpanch letter giving information about the village development



BALAJI ENGINEERING COLLEGE - JUNAGADH

At. Makhiyala, Junagadh-Dhoraji Highway, Junagadh - 362014 Ph. : 0285-2687238 Fax : +91-285-2687338

Ref. No. : BEC/BEC1 Admin/20/198 Date : 17/8/20

માનનીય
સરપંચ શ્રી
સુખપુર

વિષય : ગામ ની મુલાકાત લેવા બાબત,

નમસ્કાર,

સવિનય સાથ જણાવવાનુ કે "બાલાજી એન્જીયરીંગ કોલેજ", જૂનાગઢ માં અભ્યાસ કરતા વિદ્યાર્થીઓને છેલ્લા વર્ષ ના પ્રોજેક્ટ બાબતે આપના ગામ ની મુલાકાત લેવાની કોય તો આપશ્રી ને નમ્ર વિનંતી કે અમારા વિદ્યાર્થીઓ ને તમારા ગામ ની મુલાકાત માટે ની પરવાનગી આપવા વિનંતી,

ગામ ની મુલાકાત દરમ્યાન ગામ ના વિકાસલક્ષી કાર્ય નુ અવલોકન કરી તેમજ તેનો એક અહેવાલ તૈયાર કરવાનાં આવશે. તો આ કાર્યમાં આપશ્રી અને ગામવાસીઓ સહકારી થાઓ એવી અમારી અપેક્ષા છે. વિદ્યાર્થીઓ ના નામ ની યાદી નીચે દર્શાવેલ છે.

i) વઘાસીયા ચિંતન સુરેશભાઈ - 171090106008
ii) કોટડીયા કિશન નંદલાલભાઈ - 171090106004

આભાર સહ
આપનો વિશ્વાસુ.

Principal
Balaji Engineering College
Makhiyala - Junagadh.

SHOT ON REDMI 7
AI DUAL CAMERA

સરપંચ
ગ્રામ પંચાયત - સુખપર

E-mail : becjunagadh@gmail.com Web site : www.bietjunagadh.org

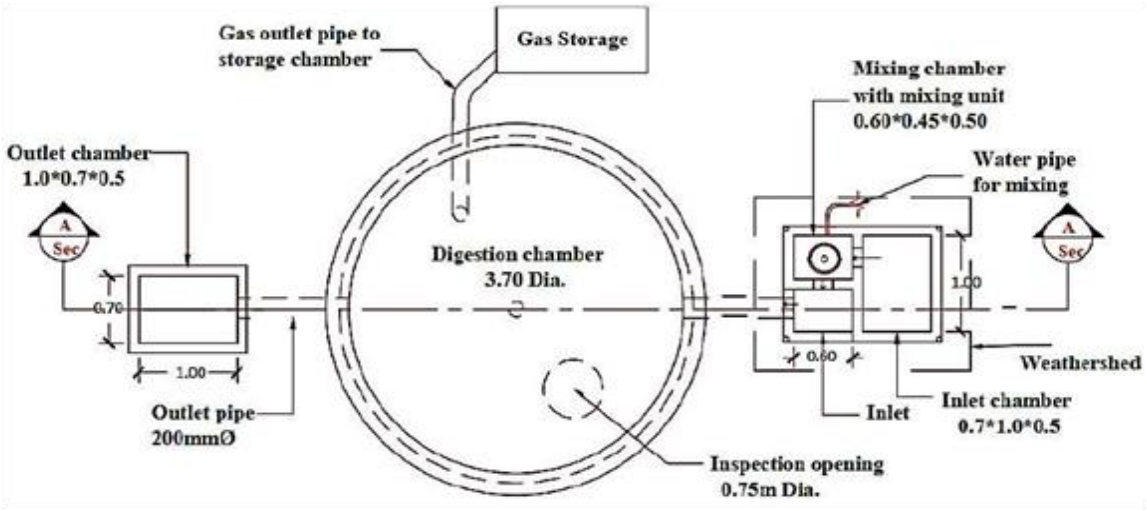
12.10 Comprehensive report preparation as per format

- 0Sukhpur is a village in junagadh Taluka in Junagadh District of Gujarat, State India. It is located 08Km from Junagadh Sukhpur village population is 1386
- Sarpanch, Talati, panchayat member and village dweller remind present to know how the development of Sukhpur village is possible and to give their feedback.
- Sarpanch and village dweller shared various problem faced by them while designing such a facility. We gave various approaches and also presented management techniques of such facility with proposed design.
- We explained all the parameters of various design such as sustainable, physical, social, socio- culture, smart and heritage village design.
- The Bus-stand, solar light and PHC are required for repair & maintenances.
- Our team of vy thanked all the member of the village for their support during this work period and made than understand that the implantation of such facilities can build implantation of such facilities can build a better village and hence lead to build a strong.
- The presentation was very much interactive and helpful to understand various amenities to be designed at village level for me overall development of the Sukhpur village as Rurbanisation.

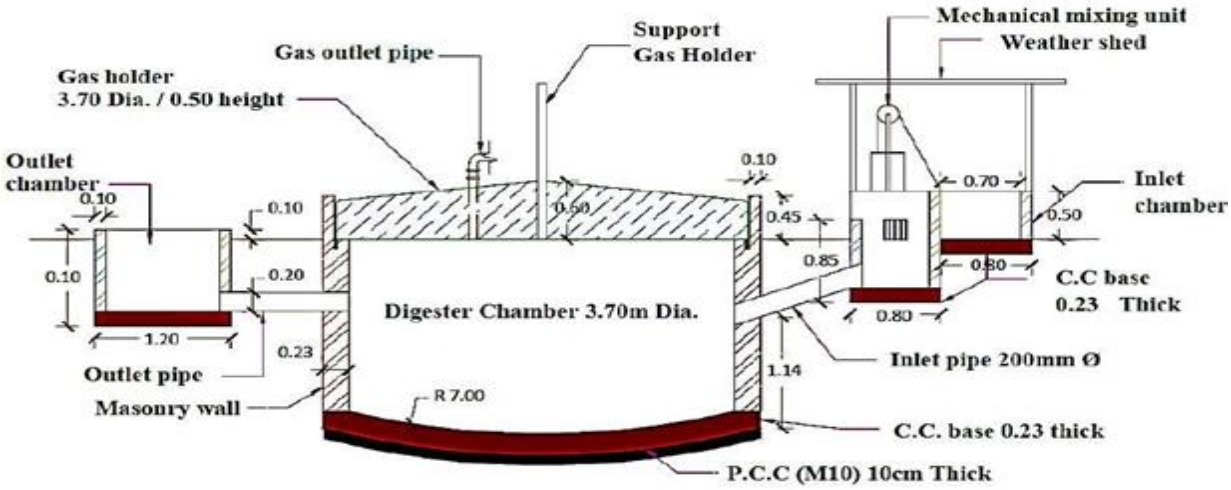
Chapter: 13 Future development if the village detail implementation of the future scope of work design planning proposal (Prototype design) – Part – II

13.1 Design Proposal

13.1.1 Bio Gas Plant:



Plan of Bio Gas Plant

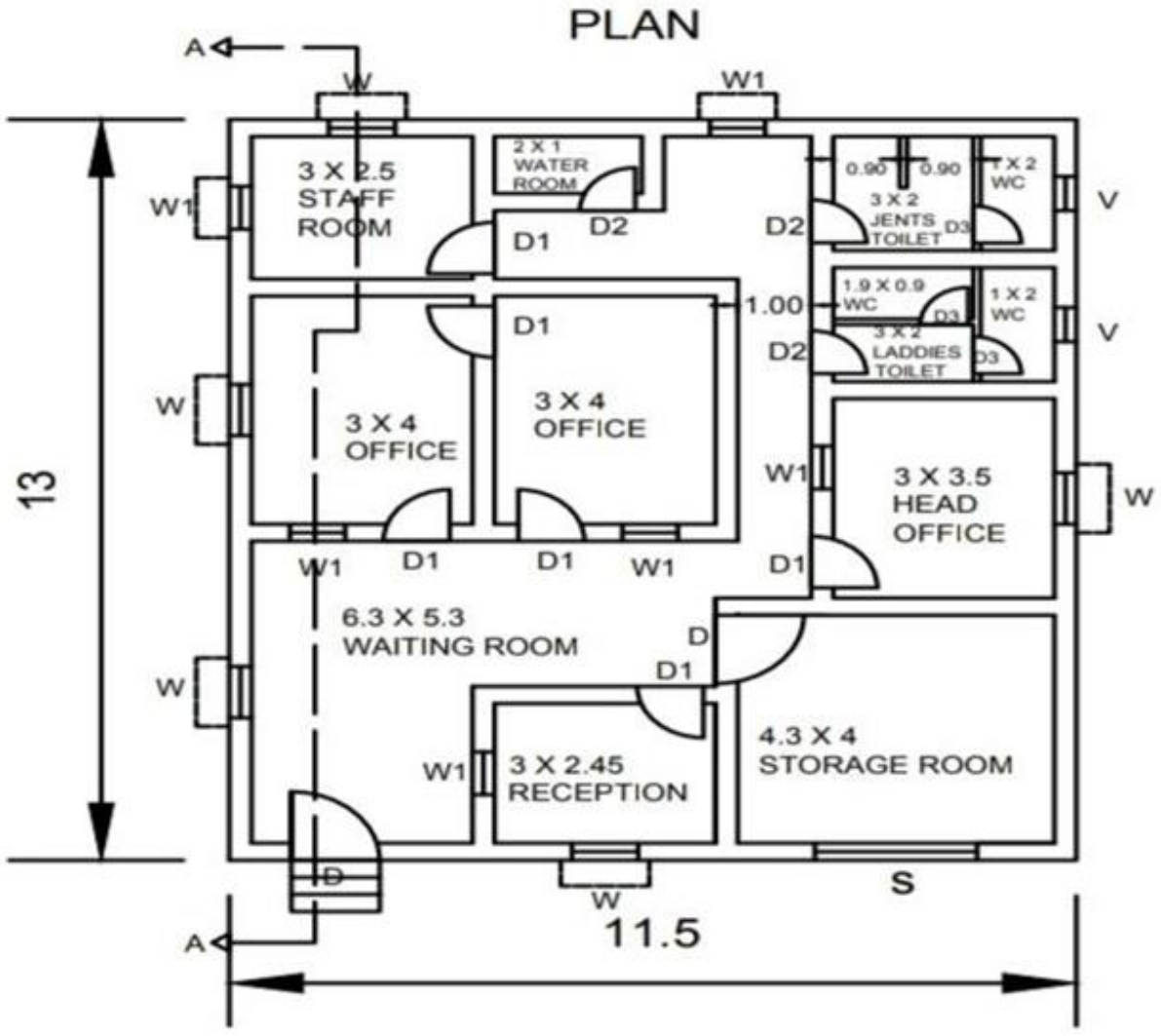


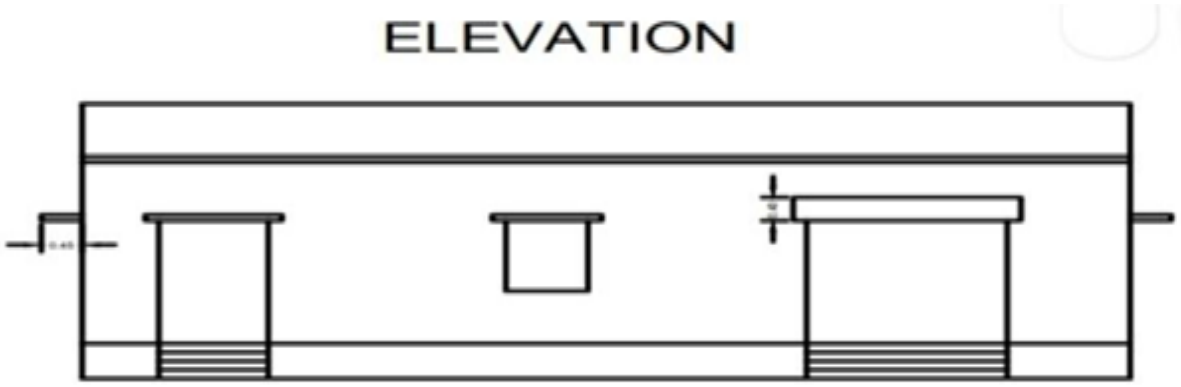
Section A-A

Measurement Sheet of Bio Gas Plant						
Sr. No.	**Description**	**Nos.**	**L**	**B**	**H**	**Quantity**
1.	Excavation for foundation					
	Inlet chamber	1	0.9	1.2	0.25	0.27 m3
		1	0.7	0.7	0.25	0.12 m3
		1	0.7	0.7	0.75	0.37 m3
	Digester chamber	1	10.75	-	2.33	25.05 m3
	Outlet chamber	1	1	0.9	1	0.9 m3
	For inlet and outlet pipe	2	0.9	0.3	0.8	0.43 m3
					Total	27.14 m3
2.	P. C. C. in foundation					
	Inlet chamber	1	0.9	1.2	0.1	0.11 m3
		1	0.7	0.7	0.1	0.05 m3
		1	0.7	0.7	0.1	0.05 m3
	Digester chamber	1	10.75	-	0.1	1.08 m3
	Outlet chamber	1	0.9	1	0.1	0.09 m3
					Total	1.37 m3
3.	Cement concrete for foundation					
	Inlet chamber	1	0.9	1.2	0.23	0.25 m3
		1	0.7	0.7	0.23	0.11 m3
		1	0.7	0.7	0.23	0.11 m3
	Digester chamber	1	10.75	-	0.23	2.47 m3
	Outlet chamber	1	0.9	1	0.23	0.21 m3
					Total	3.15 m3
4.	Brick masonry work					
		1	0.9	1.2	0.23	0.25 m3
		1	0.7	0.7	0.23	0.11 m3
	Digester chamber	1	12.56	0.23	1.77	5.11 m3
	Outlet chamber	1	3.7	0.1	1.3	0.48 m3
					Total	5.96 m3
5.	Plastering double coat water proof					
	Inlet chamber	1	3.7	-	0.5	1.85 m3
		1	2.8	-	1.15	3.22 m3
	Digester chamber	1	23.68	-	1.77	41.91 m3
		1	24	-	1	24 m3
	Outlet chamber	1	3.7	-	1.3	4.81 m3
					Total	75.79 m3
6.	200 mm dia. Pipe required	1	2.33	-	-	2.33 m

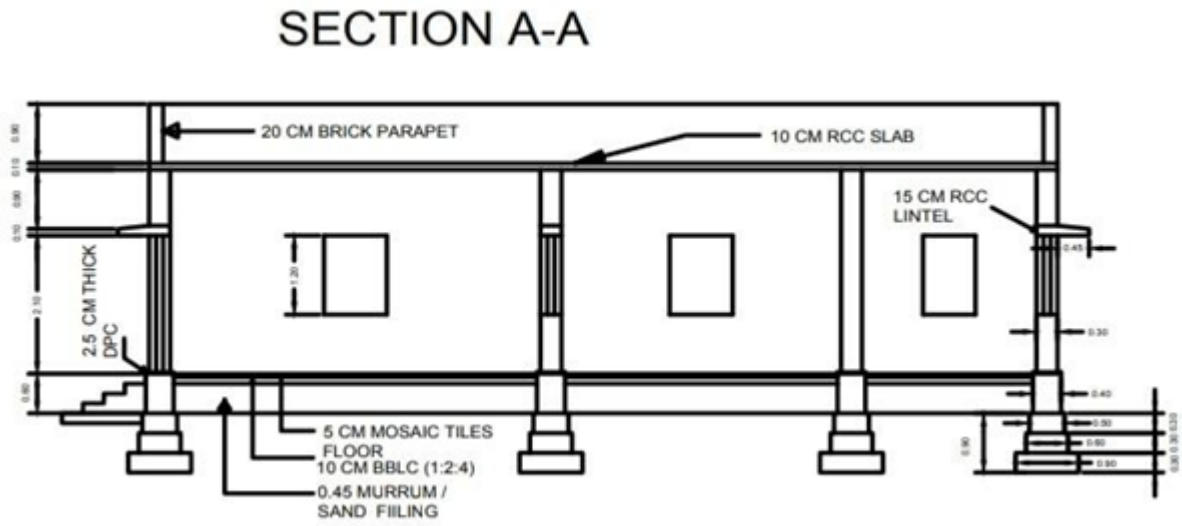
Abstract sheet of Bio Gas Plant					
Sr. No.	**Description**	**Quantity**	**Per**	**Rate**	**Amount**
1.	Excavation for foundation	27.14	M3	153.5	4166
2.	P. C. C. in foundation	1.37	M3	3200	4384
3.	Cement concrete for foundation	3.15	M3	5000	15750
4.	Brick Masonry work	5.96	M3	4000	23840
5.	Plastering double coat water proof	75.79	M2	280	21221
6.	200 mm dia. Pipe required	2.33	M	120	280
		Total			69641/-
		3% contingency			2090/-
		2% work charge establishment			1393/-
		Total			73124/-
		10% Contractor's profit			7312/-
		GRAND TOTAL			80436/-

13.1.2 Post Office:





Elevation of Post Office



Section of Post Office

Measurement Sheet of Post Office						
Sr. No.	**Description**	**Nos.**	**L**	**B**	**H**	**Quantity**
	Total Centre Line = (11.2 * 4) + (12.7 * 3) + 23 + 4.6 +3.3 + 2.75 + 7.1 + 8.4 = 111.35 m No. of T-junctions = 26					
1.	Excavation for foundation up to 1.5 m depth					
	L = total centre line – (number of junction * Width / 2) = 111.35 – (26 * 0.9 / 2) = 99.66 m	1	99.65	0.9	0.9	80.72 m3
	For steps: L = 1.2 + 0.15 = 1.5 m	1	1.5	0.6	1.5	0.135 m3
					Total	80.86 m3
2.	Providing and laying P. C. C. (1:4:8) for					

	foundation					
		1	99.65	0.9	0.3	26.91 m3
	Steps	1	1.5	0.9	0.15	0.236 m3
					Total	27.15 m3
3.	First class brick masonry CM (1:6) for foundation					
	Step – 1 (60 cm)					
	L = 103.55 m	1	103.55	0.6	0.3	18.64 m3
	Step – 2 (50 cm)					
	L = 104.85 m	1	104.85	0.5	0.3	15.75 m3
					Total	34.37 m3
4.	Back filling in foundation					
	= 80.72 – 34.37 = 46.35 m3				Total	46.35 m3
5.	First class brick masonry G. L. to P. L.					
	L = 106.15 m	1	106.15	0.4	0.575	24.42 m3
	Step - 1	1	1.2	0.3	0.15	0.054 m3
	Step - 2	1	1.2	0.3	0.15	0.108 m3
	Step - 3	1	1.2	0.3	0.45	0.162 m3
					Total	24.74 m3
6.	D. P. C. (2.5 cm thick)	1	106.15	0.4	-	42.46 m2
	Deduction					
	S	1	2.2	0.4	-	0.88 m2
	D	2	1.2	0.4	-	0.96 m2
	D1	6	0.9	0.4	-	2.16 m2
	D2	3	0.75	0.4	-	0.9 m2
					Total	37.56 m2
7.	First class brick masonry for superstructure					
	L = 107.45 m	1	107.45	0.3	3	96.71 m3
	Deduction					
	1. Lintel	1	107.45	0.3	0.15	4.84 m3
	2. Door					
	a. D	2	1.2	0.3	2.1	1.512 m3
	b. D1	6	0.9	0.3	2.1	3.402 m3
	c. D2	3	0.75	0.3	2.1	1.42 m3
	3. Shutter	1	2.2	0.3	2.1	1.386 m3
	4. Window					
	a. W	5	0.9	0.3	1.2	1.62 m3
	b. W1	6	0.75	0.3	1.2	1.62 m3
	5. Ventilation	2	0.6	0.3	0.6	0.216 m3
					Total	80.96 m3
8.	Providing and laying R. C. C. (1:2:4) for slab, lintel, chhajja					
	1. Lintel L = 107.45 m	1	107.45	0.3	0.15	4.84 m3
	2. Chhajja					
	a. W	5	0.9	0.45	0.1	0.2 m3
	b. W1	6	0.75	0.45	0.1	0.2 m3
	c. D	1	1.2	0.45	0.1	0.054 m3
	3. R. C. C. slab	1	13	11.5	0.1	14.95 m3
					Total	20.24 m3
9.	Providing mild steel reinforcement for R. C. C. work including building and placing in position					

	Quantity = 1% of volume of concrete					
	= 20.24 * 78.54 = 1589.65 kg				Total	1589.65 kg
10.	12 cm thick plaster					
	A.] Internal plaster					
	1. Waiting Room					
	Ceiling (I)	1	5.3	3	-	15.9 m2
	Ceiling (II)	1	3.3	2.55	-	8.42 m2
	Wall (I)	1	5.3	-	3	15.9 m2
	Wall (II)	1	6.6	-	3	19.8 m2
	Wall (III)	1	2.75	-	3	8.25 m2
	Wall (IV)	1	3.3	-	3	9.9 m2
	Wall (V)	1	3	-	3	9 m2
	Wall (VI)	1	1.25	-	3	3.75 m2
	2. Reception					
	Ceiling	1	3	2.45	-	7.35 m2
	Wall (I)	2	3	-	3	18 m2
	Wall (II)	2	2.45	-	3	14.7 m2
	3. Storage Room					
.	Ceiling	1	4.3	4	-	17.2 m2
	Wall (I)	2	4.3	-	3	25.8 m2
	Wall (II)	2	4	-	3	24 m2
	4. Head Office					
	Ceiling	1	3	3.5	-	10.5 m2
	Wall (I)	2	3	-	3	18 m2
	Wall (II)	2	3.5	-	3	21 m2
	5. Toilet [Gents]					
	Ceiling	1	2	3	-	6 m2
	Wall (I)	2	1.9	-	3	11.4 m2
	Wall (II)	4	2	-	3	24 m2
	Wall (III)	2	1	-	3	6 m2
	6. Toilet [Ladies]					
	Ceiling	1	2	3	-	6 m2
	Wall (I)	2	1	-	3	6 m2
	Wall (II)	2	2	-	3	12 m2
	Wall (III)	4	1.9	-	3	22.8 m2
	Wall (IV)	2	0.9	-	3	5.4 m2
	Wall (V)	2	1	-	3	6 m2
	7. Drinking Water					
	Ceiling	1	2	1	-	2 m2
	Wall (I)	2	2	-	3	12 m2
	Wall (II)	2	1	-	3	6 m2
	8. Staff Room					
	Ceiling	1	2.5	3	-	7.5 m2
	Wall (I)	2	3	-	3	18 m2
	Wall (II)	2	2.5	-	3	15 m2
	9. Office					
	Ceiling	2	3	4	-	24 m2
	Wall (I)	4	3	-	3	36 m2
	Wall (II)	4	4	-	3	48 m2
	10. Passage					
	Ceiling (I)	1	1	1.3	-	1.3 m2
	Ceiling II)	1	1	4.6	-	4.6 m2
	Ceiling (III)	1	2	2.5	-	5 m2

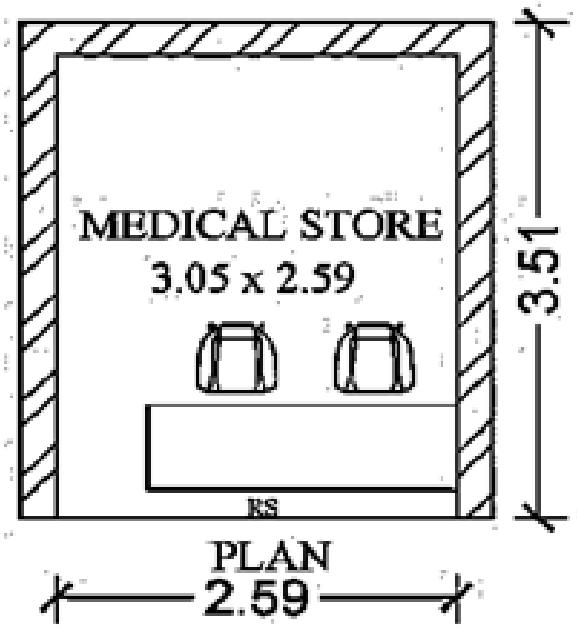
	Ceiling (IV)	1	1.2	2.3	-	2.76 m2
	Wall (I)	1	1.3	-	3	3.9 m2
	Wall (II)	1	8.1	-	3	24.3 m2
	Wall (III)	1	4.6	-	3	13.8 m2
	Wall (IV)	1	2	-	3	6 m2
	Wall (V)	1	2.5	-	3	7.5 m2
	Wall (VI)	1	3.3	-	3	9.9 m2
					Total	396.6 m2
	B.] External wall up to parapet top					
	LW	2	13	-	4.6	119.6 m2
	SW	2	11.5	-	4.6	105.8 m2
	1. Parapet top					
	LW	2	13	0.2	-	5.2 m2
	SW	2	11.1	0.2	-	4.44 m2
	2. Parapet inside					
	LW	2	12.6	-	0.9	22.68 m2
	SW	2	11.1	-	0.9	19.98 m2
	3. Chhajja					
	W	10	0.9	0.45	-	4.05 m2
	W1	12	0.75	0.45	-	4.05 m2
	D	2	1.2	0.45	-	1.08 m2
	4. Chhajja (Front)					
	W	5	0.9	-	0.1	0.45 m2
	W1	6	0.75	-	0.1	0.45 m2
	D	1	1.2	-	0.1	0.12 m2
	5. Chhajja (Side)					
	W	10	-	0.45	0.1	0.45 m2
	W1	12	-	0.45	0.1	0.54 m2
	D	2	-	0.45	0.1	0.09 m2
	Deduction					
	a. Door					
	D	2	1.2	-	2.1	5.04 m2
	D1	6	0.9	-	2.1	11.34 m2
	D2	3	0.75	-	2.1	4.725 m2
	D3	3	0.65	-	2.1	4.095 m2
	b. Window					
	W	5	0.9	-	1.2	5.4 m2
	W1	6	0.75	-	1.2	5.4 m2
					Total	36 m2
				Net	Total	649.58 m2
11.	5 cm thick mosaic tiles flooring					
	1. Waiting Room					
	(i)	1	5.3	3	-	15.9
	(ii)	1	3.3	2.55	-	5.4
	2. Reception	1	3	2.45	-	7.35
	3. Head Office	1	3	3.5	-	10.5
	4. Storage Room	1	4.3	4	-	17.2
	5. Toilet	2	1	1.9	-	3.8
	6. Drinking Water	1	2	1	-	2
	7. Staff Room	1	3	2.5	-	7.5
	8. Office	2	3	4	-	24
	9. Passage					
	(i)	1	1	1.3	-	1.3

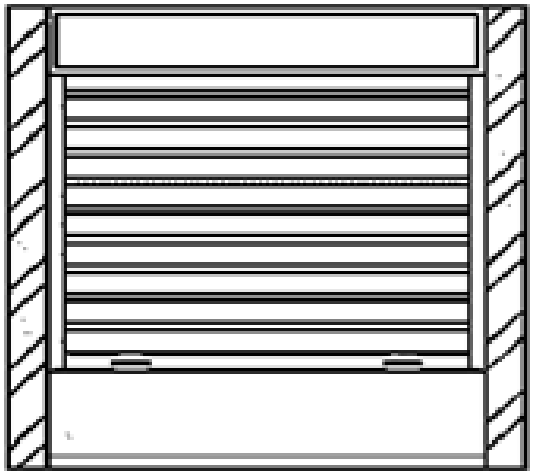
	(ii)	1	1	4.6	-	4.6
	(iii)	1	2	2.5	-	5
	(iv)	1	1.2	2.3	-	2.76
					Total	110.33 m2
12.	10 cm BBLC (1:2:4)					
	1. Waiting Room					
	(i)	1	5.2	2.9	0.1	1.51
	(ii)	1	3.2	2.45	0.1	0.784
	2. Reception	1	2.9	2.35	0.1	0.68
	3. Head Office	1	2.9	3.4	0.1	0.99
	4. Storage Room	1	4.2	3.9	0.1	1.64
	5. Toilet	2	2.9	1.9	0.1	1.102
	6. Drinking Water	1	1.9	0.9	0.1	0.171
	7. Staff Room	1	2.9	2.4	0.1	0.7
	8. Office	2	2.9	3.9	0.1	2.26
	9. Passage					
	i.	1	0.9	1.2	0.1	0.11
	ii.	1	0.9	4.5	0.1	0.41
	iii.	1	1.9	2.4	0.1	0.46
	iv.	1	1.1	2.2	0.1	0.24
					Total	11.58 m3
13.	Sand filling / Murom					
	1. Waiting Room					
	i.	1	5.2	2.9	0.45	6.79
	ii.	1	3.2	2.45	0.45	3.53
	2. Reception	1	2.9	2.35	0.45	3.07
	3. Head office	1	2.9	3.4	0.45	4.44
	4. Storage Room	1	4.2	3.9	0.45	7.4
	5. Toilet	2	2.9	1.9	0.45	4.96
	6. Drinking Water	1	1.9	0.9	0.45	0.77
	7. Staff Room	1	2.9	2.4	0.45	3.132
	8. Office	2	2.9	3.9	0.45	10.18
	9. Passage					
	i.	1	0.9	1.2	0.45	0.49
	ii.	1	0.9	4.5	0.45	1.82
	iii.	1	1.9	2.4	0.45	2.05
	iv.	1	1.1	2.2	0.45	1.09
					Total	49.72 m3
14.	Providing and laying white glazed tiles WC					
	1. WC - 1					
	i.	2	2	1	-	4
	ii. Wall A	4	1	-	2.1	8.4
	Wall B	4	2	-	2.1	16.8
	2. WC - 2					
	i.	1	1.9	0.9	-	1.71
	ii. Wall A	1	1.9	-	2.1	7.98
	Wall B	2	0.9	-	2.1	3.78
	Deduction					
	D3	3	0.65	-	2.1	4.1
					Total	38.57 m2
15.	Providing and laying skirting of mosaic tiles					

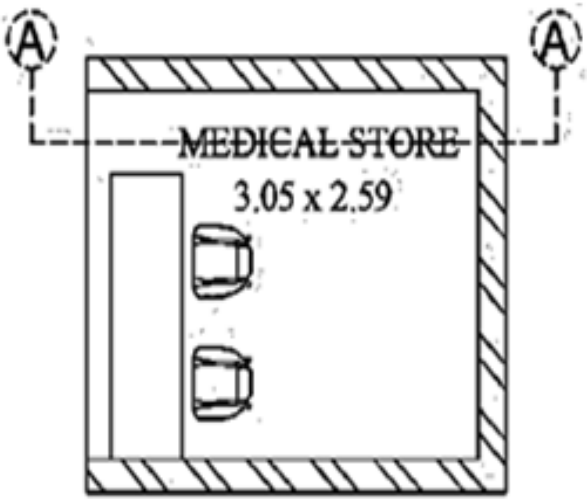
	1. Waiting Room					
	i.	1	5.3	-	-	5.3
	ii.	1	6.6	-	-	6.6
	iii.	1	3	-	-	3
	iv.	1	2.75	-	-	2.75
	v.	1	3.6	-	-	3.6
	vi.	1	2.55	-	-	2.55
	2. Reception					
	i.	2	3	-	-	6
	ii.	2	2.45	-	-	4.9
	3. Storage Room					
	i.	2	4.3	-	-	8.6
	ii.	2	4	-	-	8
	4. Head Office					
	i.	2	3	-	-	6
	ii.	2	3.5	-	-	7
	5. Toilet Passage					
	i.	4	1.9	-	-	7.6
	ii.	4	1	-	-	4
	6. Drinking Water					
	i.	2	2	-	-	4
	ii.	2	1	-	-	2
	7. Staff Room					
	i.	2	3	-	-	6
	ii.	2	2.5	-	-	5
	8. Office					
	i.	2	3	-	-	6
	ii.	2	4	-	-	5
	9. Passage					
	i.	1	1.3	-	-	1.3
	ii.	1	4.6	-	-	4.6
	iii.	1	8.1	-	-	8.1
	iv.	1	2	-	-	2
	v.	1	2.5	-	-	2.5
	vi.	1	3.3	-	-	3.3
	Deduction					
	D	2	1.2	-	-	2.4
	D1	6	0.9	-	-	5.4
	D2	3	0.75	-	-	2.25
	D3	3	0.65	-	-	1.95
					Total	116.7 m

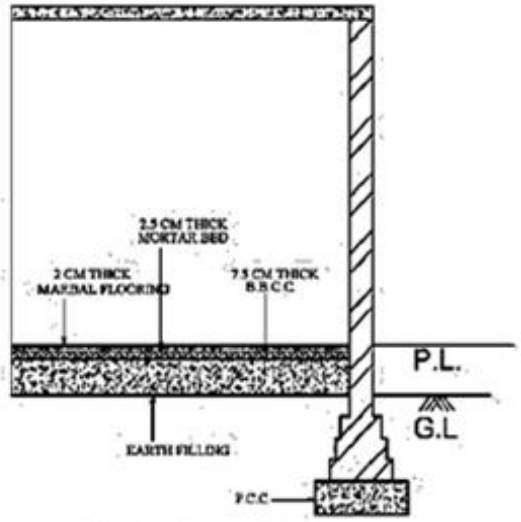
Abstract Sheet of Post Office					
Sr. No.	**Description**	**Quantity**	**Rate**	**Per**	**Amount**
1.	Excavation for foundation up to 1.5 m depth	80.86	153.5	M3	12412
2.	Providing and laying PCC for foundation	27.15	3200	M3	86880
3.	1st class masonry CM (1:6) for foundation	34.37	4000	M3	137480
4.	Back filling in foundation	46.35	100	M3	4635
5.	1st class brick masonry from GL to PL	24.74	3500	M3	86590
6.	Providing and laying DPC	37.56	4500	M2	169020
7.	1st class brick masonry CM (1:6) for superstructure	80.69	3500	M3	282415
8.	Providing and laying RCC (1:2:4)	20.24	8800	M3	178112
9.	Providing Mild steel reinforcement for RCC work	1590	50	Kg	79500
10.	12 mm thick cement plaster	649.58	84	M2	54565
11.	5 cm thick mosaic floor	110.33	600	M2	66342
12.	10 cm thick BBLC (1:2:4)	11.57	1500	M3	17355
13.	Sand filling / Murom	49.72	100	M3	4972
14.	Providing and laying white glazed tiles WC	38.57	250	M2	9642
15.	Providing and laying skirting of mosaic tiles	116.7	300	M	35010
		Total			1224930/-
		3% contingency			36748/-
		2% work charge establishment			24500/-
		Total			1286178/-
		10% Contractor's profit			128617.8/-
		GRAND TOTAL			1414796/-

13.1.3Medical Store









Measurement Sheet of Medical Store						
Sr. No.	**Description**	**Nos.**	**L**	**B**	**H**	**Qty**
1.	Excavating in foundation					
	LW	1	3.51	0.9	1.5	4.74
	SW	2	2.59	0.9	1.5	7
					Total	11.74 m3

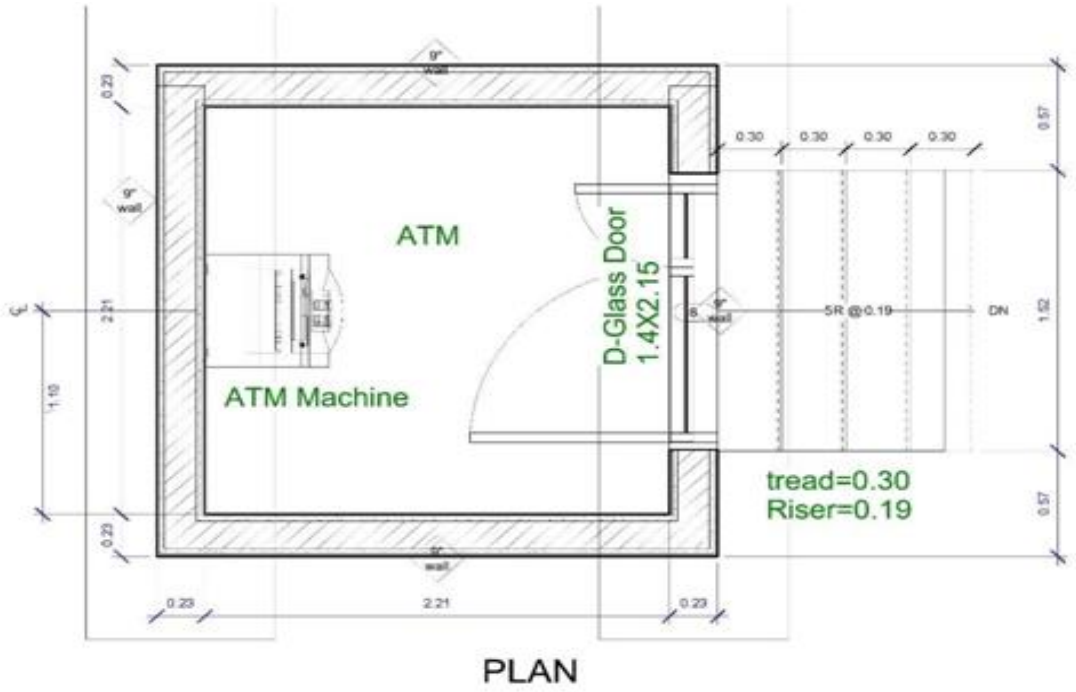
2.	Plain cement concrete in foundation (1:2:4)					
	LW	1	3.51	0.9	0.3	0.95
	SW	2	2.59	0.9	0.3	1.4
					Total	2.35 m3
3.	Brickwork in foundation CM (1:6)					
	LW					
	Step – 1	1	4.11	0.6	0.2	0.49
	Step – 2	1	4.01	0.5	0.2	0.4
	Step – 3	1	3.91	0.4	0.2	0.31
	Step – 4	1	3.81	0.3	0.6	0.69
	SW					
	Step – 1	2	1.99	0.6	0.2	0.48
	Step – 2	2	2.09	0.5	0.2	0.42
	Step – 3	2	2.19	0.4	0.2	0.35
	Step – 4	2	2.29	0.3	0.6	0.82
					Total	3.96 m3
4.	Brickwork in superstructure					
	LW	1	3.51	0.3	3	3.16
	SW	2	2.59	0.3	3	4.67
					Total	7.83 m3
5.	RCC (slab, chhajja, lintel)					
		1	3.51	2.59	0.12	1.1 m3
					Total	1.1 m3
6.	2 cm marble flooring					
	Room	1	3.05	2.59	-	7.9
					Total	7.9 m2
7.	Earth filling plinth					
		1	3.05	2.59	0.48	3.8
					Total	3.8 m3
8.	Plastering					
	A. Internal plaster					
	Room	1	3.05	-	3	9.15
		2	2.59	-	3	15.54
					Total	24.69 m2
	B. Outer plaster					
		1	3.51	-	3	10.53
		2	2.59	-	3	15.54
					Total	26.07 m2
				Total Plaster		50.76 m2
9.	Painting	As per plastering				50.76 m2
10.	Rolling Shutter	1	2.59	-	2.6	6.73 m2

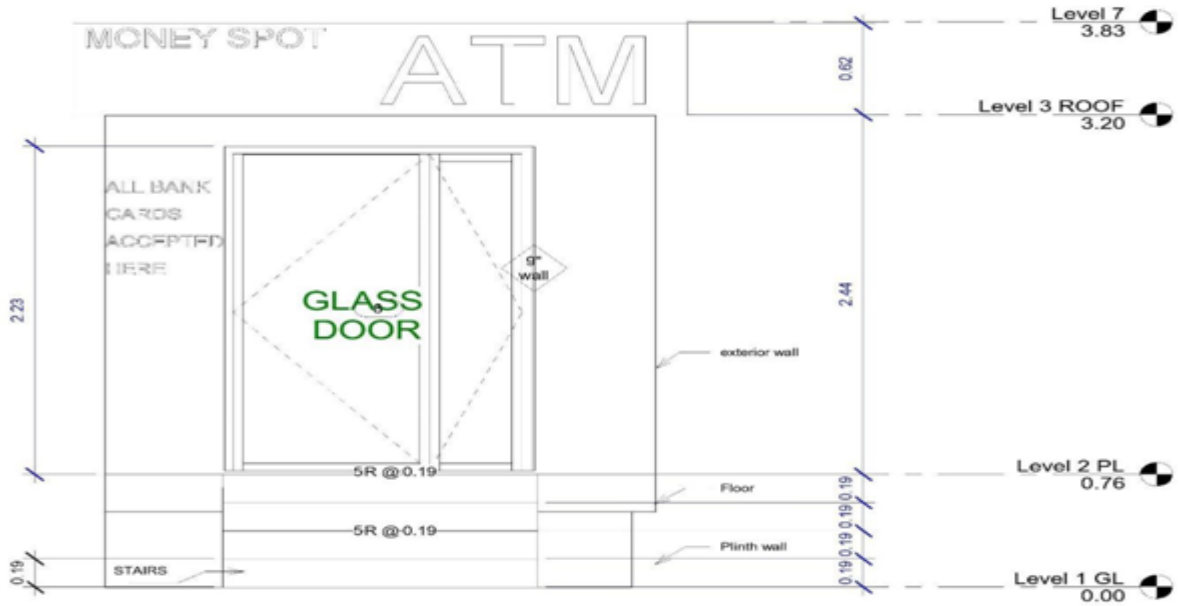
Abstract Sheet of Medical Shop

Sr. No.	Description	Qty	Rate	Per	Amount
1.	Excavation in foundation	11.74	153.5	M3	1802
2.	PCC in foundation	2.35	3200	M3	7520
3.	Brick work in foundation	3.96	4000	M3	15840
4.	Brick work in superstructure	7.83	3500	M3	27405

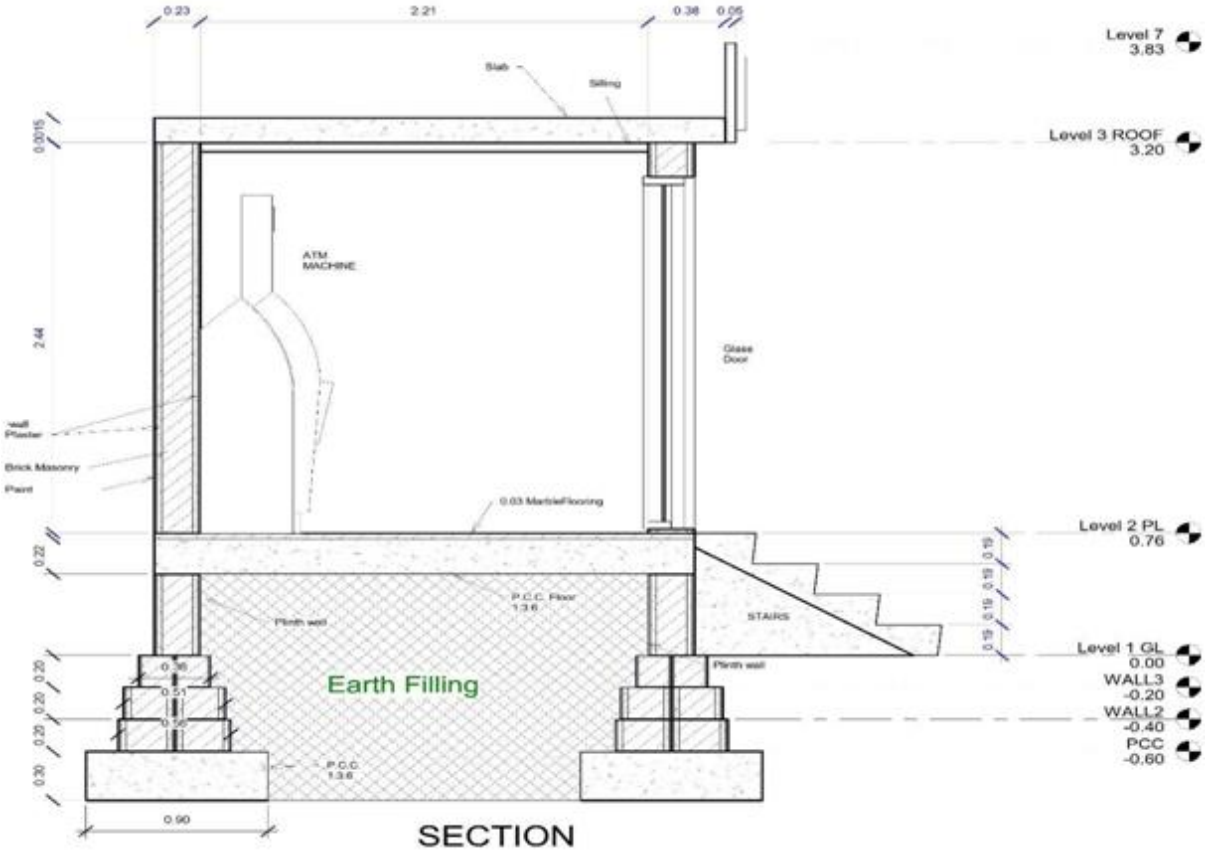
5.	RCC work (slab, lintel and chhajja)	1.1	8800	M3	9680
6.	2 cm marble flooring	7.9	600	M2	4740
7.	Earth filling	3.8	100	M3	380
8.	Plastering	50.76	84	M2	4264
9.	Painting	50.76	330	M2	16750
10.	Rolling Shutter	3.73	1210	M2	4513
11.	Switchboard and wiring	2	450	Nos.	900
12.	CCTV camera	1	7999	Nos.	7999
		Total			97149/-
		2% work charge establishment			1943/-
		3% contingency			2914/-
		Total			102006/-
		10%			10200/-
		Grand total			112206/-

13.1.4 ATM





ELEVATION

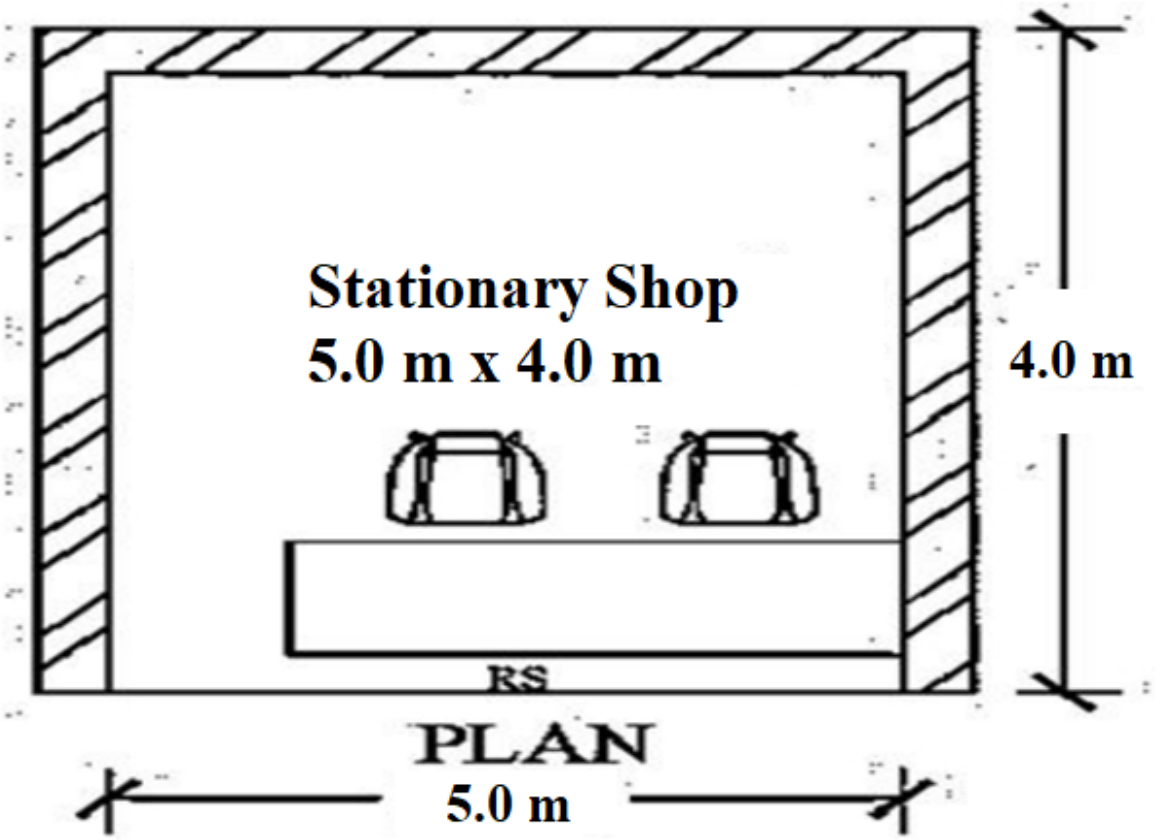


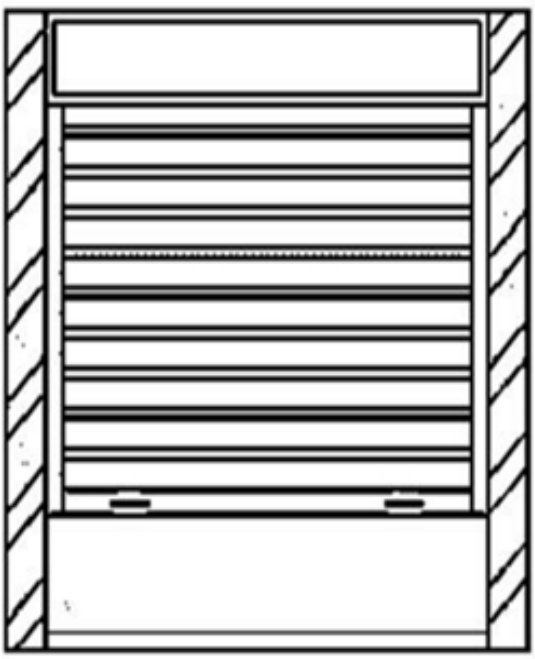
SECTION

Measurement Sheet Of ATM						
Sr. No.	**Description**	**Nos.**	**L**	**B**	**H**	**Qty**
1	Excavation	1	10.22	1.2	1.5	18.40 m3
2	PCC in footing	1	10.22	0.9	0.4	2.80 m3
3	1st class masonry in foundation					
	Step – 1 (50 cm)	1	10.22	0.5	0.4	2.04
	Step – 2 (40cm)	1	10.22	0.4	0.4	1.64
	Step – 3 (30 cm)	1	10.22	0.3	0.4	1.23
					Total	4.91 m3
4	Back filling in foundation					
	= 18.4 – 4.91 = 13.49 m3				Total	13.49 m3
5	Stair	4	0.18	1.52	0.18	0.20 m3
6	1st class masonry in superstructure					
	Wall 1	2	2.44	0.23	3	3.37
	Wall 2	1	1.60	0.23	3	1.10
					Total	4.47 m3
7	Flooring	1	2.67	2.67	0.25	1.78 m3
8	Roof top	1	2.67	2.67	0.15	1.07 m3
9	Glass door with Aluminum frame	1	1.40	0.02	2.21	1

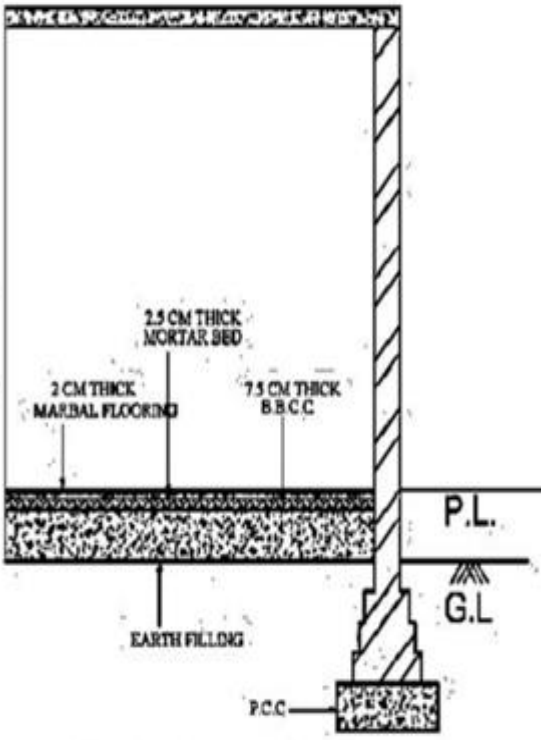
Abstract Sheet of ATM					
Sr. No.	**Description**	**Qty**	**Rate**	**Per**	**Amount**
1	Excavation	18.40	153.5	M3	2825
2	PCC in footing	2.80	3200	M3	8960
3	1st class masonry in foundation	4.91	4000	M3	19640
4	Back filling in foundation	13.49	100	M3	1349
5	Stair	0.20	3000	M3	600
6	1st class masonry in superstructure	4.47	3500	M3	15645
7	Flooring	1.78	600	M3	1068
8	Rooftop	1.07	3500	M3	3745
9	Glass door with Aluminum frame	1	3000	Nos.	3000
		Total			56832/-
		2% work charge establishment			1136/-
		3% contingency			1705/-
		Total			59673/-
		10% contractor’s profit			5967/-
		Grand Total			65640/-

13.1.5 Stationary Shop





ELEVATION

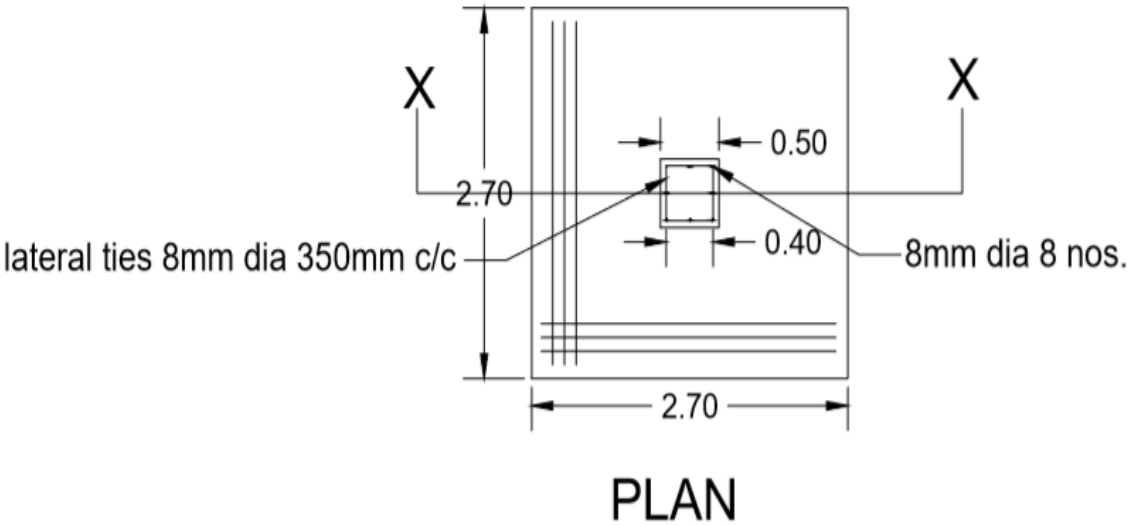


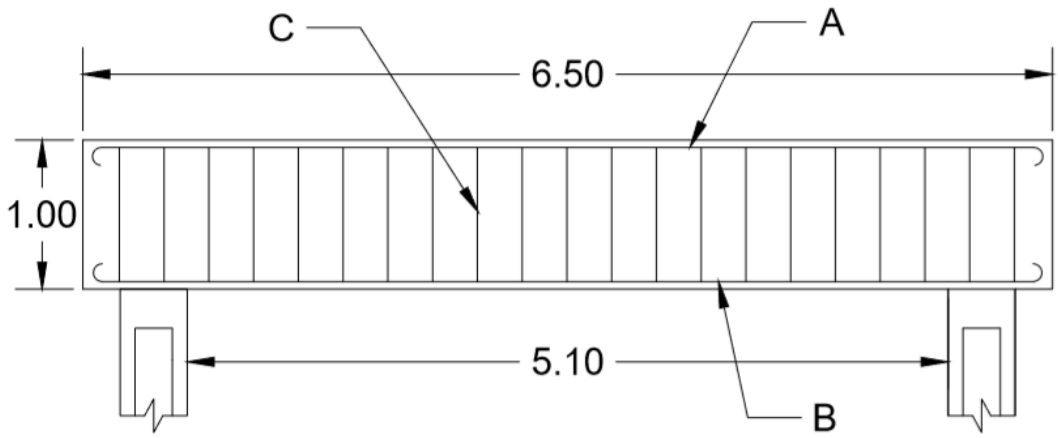
SECTION A-A

Measurement Sheet of Stationary Shop						
Sr. No.	**Description**	**Nos.**	**L**	**B**	**H**	**Qty**
1	Excavation					
	LW	1	5.00	0.9	1.5	6.75
	SW	2	4.00	0.9	1.5	5.4
					Total	12.15 m3
2	PCC in foundation					
	LW	1	5.00	0.9	0.3	1.35
	SW	2	4.00	0.9	0.3	1.08
					Total	2.43 m3
3	1st class masonry in foundation					
	LW: Step - 1	1	4.11	0.6	0.2	0.49
	Step - 2	1	4.01	0.5	0.2	0.40
	Step - 3	1	3.91	0.4	0.2	0.31
	Step - 4	1	3.81	0.3	0.6	0.69
	SW					
	Step - 1	2	1.99	0.6	0.2	0.48
	Step - 2	2	2.09	0.5	0.2	0.42
	Step - 3	2	2.19	0.4	0.2	0.35
	Step - 4	2	2.29	0.3	0.2	0.82
					Total	5.86 m3
4	1st class masonry in superstructure					
	LW	1	5.00	0.3	3	4.5
	SW	2	4.00	0.3	3	3.6
					Total	8.1 m3
5	RCC (slab, lintel & chhajja)					
	Slab	1	5.00	4.00	0.12	2.4
					Total	2.4 m3
6	2 cm marble flooring					
	Room	1	4.54	4.00	-	18.16
					Total	18.16 m2
7	Earth filling	1	4.54	4.00	0.48	8.72
					Total	8.72 m3
8	Plaster (1:3)					
	Internal plaster					
	LW	1	4.54	-	3	13.62
	SW	2	4.00	-	3	12.00
	External plaster					
	LW	1	5.00	-	3	15.00
	SW	2	4.00	-	3	12.00
					Total	52.62 m2
9	Painting					
	Internal painting					
	LW	1	4.54	-	3	13.62
	SW	2	4.00	-	3	12.00
	External painting					
	LW	1	5.00	-	3	15.00
	SW	2	4.00	-	3	12.00
					Total	52.62 m2
10	Rolling shutter	1	4.00	-	2.6	10.4
					Total	10.4 m2

Abstract Sheet of Stationary Shop					
Sr. No.	**Description**	**Qty**	**Rate**	**Per**	**Amount**
1	Excavation	12.15	153.5	M3	1865
2	PCC in foundation	2.43	3200	M3	7776
3	1st class masonry in foundation	5.86	4000	M3	23440
4	1st class masonry in superstructure	8.10	3500	M3	28350
5	RCC	2.40	8800	M3	21120
6	2 cm marble flooring	18.16	600	M2	10896
7	Earth filling	8.72	100	M3	872
8	Plastering	52.62	84	M2	4420
9	Painting	52.62	330	M2	17365
10	Rolling shutter	10.40	1210	M2	12584
11	Switchboard & wiring	2	450	Nos.	900
12	CCTV camera	1	7999	Nos.	7999
		Total			137587/-
		2% work charge establishment			2752/-
		3% contingency			4128/-
		Total			144467/-
		10% Contractor's profit			14447/-
		Grand total			158914/-

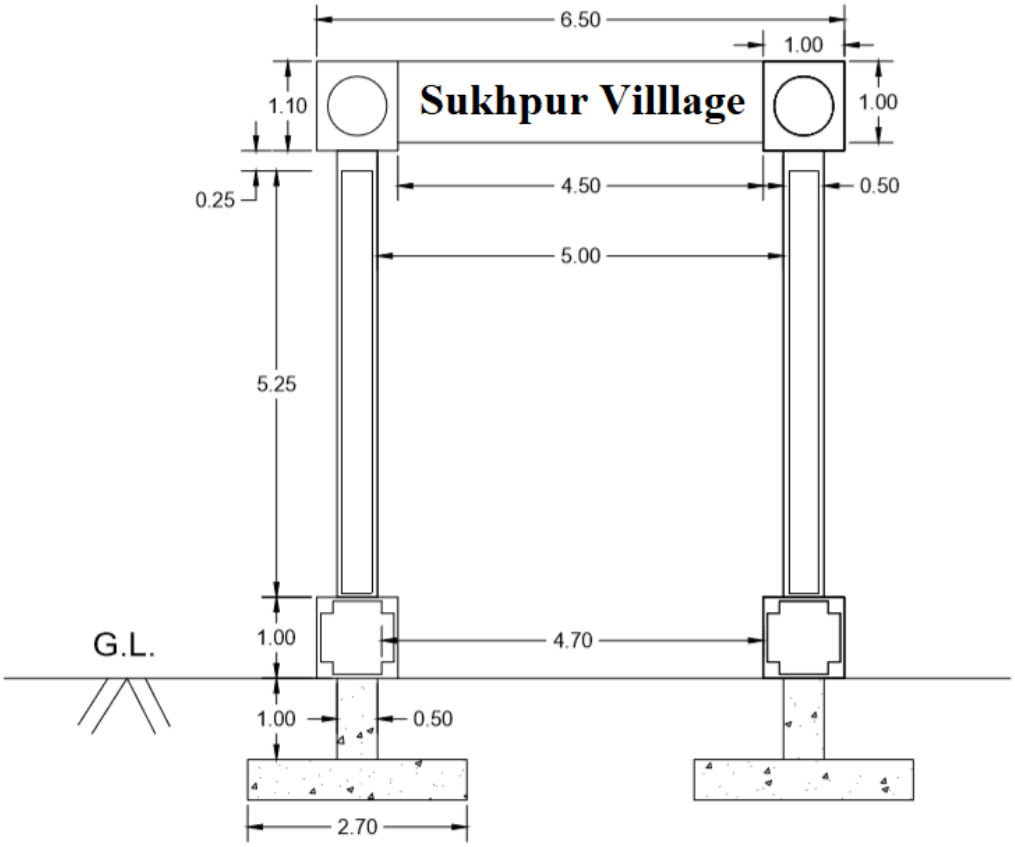
13.1.6 Gate:





A = 10mm straight bar 2 nos. @ 0.62 kg/m
B = 12mm straight bar 2nos. @ 0.89 kg/m
C = 8mm stirrups 300mm c/c @ 0.4 kg/m

Beam



Elevation

Measurement Sheet						
Measurement of Beam of Gate (Span = 4.51 m)						
Sr. No.	**Description**	**Nos.**	**L**	**B**	**H**	**Quantity**
1	Quantity of concrete: L = 6.5 m, B = 1 m, H = 1m	1	6.5	1	1	6.5 m3
2	Formwork					
	Bottom	1	4.51	1	-	4.51 m2
	Side 1	2	6.5	-	1	13 m2
	Side 2	2	1	-	1	2 m2
3	Weight of Steel in kg					
	Type A:					
	L = 6.5 – (2x0.05) + (2x9x0.01) = 6.58 m					
	No. of bars = 2	2	6.58	-	@0.62	8.16
	Type B:					
	L = 6.5 - (2x0.05) + (2x9x0.012) = 6.62 m					
	No. of bars = 2	2	6.62	-	@0.89	11.7
	Type C:					
	A = 1 – (2x0.025) – (2x0.008) = 0.934 m					
	B = 1 – (2x0.025) – (2x0.008) = 0.934 m					
	L = 2(A+B) + 24D					
	= 2(0.934 + 0.934) + 24(0.008) = 3.93 m					
	Nos. = (6.5/0.3) + 1 = 22.67 says 23	23	3.93	-	@0.4	36.15
Measurement of Column + Footing of Gate						
1	Excavation for Foundation					
	H = 7 + 0.5 + 0.5 = 8	1	2.7	2.7	8	58.32
2	R.C.C. (1:2:4)					
	Footing	1	2.7	2.7	0.5	3.645
	Column	1	0.5	0.5	7.5	1.875
3	Filling of Foundation trench					
	= 588.30 – 5.52 = 52.8	-	-	-	-	52.8
4	Steel for column and footing					
	Vertical bars of column:					
	L = 5.95 + (9x0.01) = 6.04 m	8	6.04	-	@0.62	30
	Dowel bars:					
	L = 0.9 + 0.15 + 0.15 + 0.5 + (9x0.008) – 0.05 - (2x0.016) = 2.04 m	8	2.04	-	@0.4	6.53
	Lateral ties of column:					
	A = 0.5 – (2x0.025)–(2x0.008) = 0.434 m					
	B = 0.5 – (2x0.025)–(2x0.008) = 0.434 m					
	L = 2(A+B) + 24D					
	= 2(0.434 + 0.434) + 0.192 = 1.928 m					
	No. of ties:					
	= (7.5 – 0.05 – (2x0.016)) / 0.35 = 21.19 says 22	22	1.928	-	@0.4	17
	Footing bars:					
	L = 2.7–(2x0.05) + (2x9x0.016) = 2.89 m					
	No of bars					

	= (2.7 – (2x0.05)) / 0.17 = 15.29 says 16	32	2.88	-	@1.58	140
5	Formwork for column and footing					
	Column	4	0.5	-	7	14
	Footing	4	2.7	-	0.5	5.4

Abstract Sheet

Sr. No.	Description	Quantity	Rate	Per	Amount
1	Excavation for Foundation	58.32	153.5	M3	8912/-
2	Filling of Foundation Trench	52.80	100	M	5280/-
3	Placing of Concrete	5.52	8800	M	48576/-
4	16 mm dia. bar	146	73	Kg	10658/-
5	10 mm dia. bar	30	58	Kg	1740/-
6	8 mm dia. bar	23.53	65	Kg	1530/-
7	Charge for cutting, bending and placing	199.53	113	Kg	22547/-
8	Centering Shuttering	19.4	4500	M2	87300/-
		Total			183543/-
		Add 3% Contingency			5506/-
		Add 2% Work Charged Establishment			3671/-
		Total			192720/-
		10% contractor's profit			19272/-
		Grand Total			211992/-

13.2 Region for students recommending this design

- Animal husbandry business is big Proportion develop in Sukhpur. So this animal vest use for make bio-gas plant.
- We found out that the bank is a bit far from the village. So in times of crisis, it was necessary to make an ATM in order to take the rupee.
- In Part 1, we have given the PHC. There is also a need for a dispensary shop for many medicines.
- Many books of primary school, secondary school and high school are not available in the village. So there is a great need for stationery for many things.
- There are many transport facilities in Sukhpur, but there is no facility for any post or currier so requires a post office.

13.3 About designs Suggestions / Benefit of the villagers

- The biogas plant will increase the source of energy in the village. This gas will be used in cooking and Dirt will also decrease.
- ATM is very necessary to provide money in times of crisis.
- Dispensary Shop is required for any small Illness.
- Being a stationery shop, children will not have to go outside the village to buy books.
- Currier and post facility will be available faster and better through post office.

Chapter 14. Technical Options with Case Studies (Explain All Topic And For Minimum One Topic Explain New Concept, Design, Prototype Model With Actual Cost Estimation)

14.1 Civil Engineering:

14.1.1 Advanced Earthquake Resistant:

The design of buildings wherein there is no damage during the strong but rare earthquake shaking is called "Earthquake Resistance Building".

Earthquake Design Philosophy:

The earthquake design philosophy may be summarized as follows:

The design philosophy adopted in the code is to ensure that structures posses at least a minimum strength as below.

A.) Under minor but frequent shaking, the main members of the building that carry vertical and horizontal forces should not be damaged; however building parts do not carry load may sustain repairable damage.
i.e. minor earthquake < DBE.
Design Basic Earthquake (DBE) is defined as the maximum earthquake that reasonably can be expected to occur at least once during the design life of the structure.

B.) Under moderate but occasional shaking, the main members may sustain repairable damage, while the other parts of the building may be damaged such that they may even have to be replaced after the earthquake.
i.e. moderate earthquake = DBE.

C.) Under strong but rear shaking, the main members may sustain server damage or irreparable damage, but the building should not collapse.
i.e. Major earthquake > MCE.
Generally, the DBE is half of MCE.
Maximum Considered Earthquake (MCE) is the earthquake corresponding to the ultimate safety requirements.

Thus, after minor shaking, the building will be fully operational within a short time and the repair costs will be small. And, after moderate shaking, the building will be operational once the repair and strengthening of the damaged main members is completed. But after a strong earthquake, the building may become dysfunctional for further use, but will stand (does not collapse) so that people can be evacuated and property recovered.

The consequences of damage have to be kept in mind in the design philosophy. For example, important buildings, like hospitals, fire stations, play a critical role in post-earthquake activities and must remain functional immediately after the earthquake. These structures must sustain very little damage and should be designed for a higher level of earthquake protection.

Collapse of dams during earthquakes can cause flooding in the downstream reaches, which itself can be a secondary disaster. Therefore, dams and nuclear power plants should be designed for still higher level of earthquake.

Design of buildings to resist earthquakes involves controlling the damage to acceptable levels at a reasonable cost. Contrary to the common thinking that any crack in the building after an earthquake means the building is unsafe for habitation, engineers designing earthquake-resistant buildings recognize that some damage is unavoidable.

Earthquake-resistant design is therefore concerned about ensuring that the damages in buildings during earthquakes are of the acceptable variety and also that they occur at the right places and in right amounts. This approach of earthquake resistant design is much like the use of electrical fuses in houses: to protect the entire electrical wiring and appliances in the house, you sacrifice some small parts of the electrical circuit, called fuses; these fuses are easily replaced after the electrical over-current. Likewise, to save the building from collapsing, you need to allow some pre-determined parts to undergo acceptable type and level of damage.

General Principles in construction of Earthquake Resistant Buildings:

1. Lightness
2. Symmetry
3. Regularity
4. Simplicity
5. Continuity
6. Size of building

Failure Mechanism of Masonry building:

1. Sliding shear failure

It results in a building sliding off its foundation or on one of the horizontal mortar joints. It is caused by low vertical load and poor mortar. If the building is adequately anchored to the foundation, the next concern is for adequate resistance of the foundation itself, in the form of some combination of horizontal sliding friction and lateral earth pressure. The dislocation of a lightly attached roof is also an example of this type of failure. A wall with poor shear strength, loaded predominantly with horizontal forces can exhibit this failure mechanism. Aspect ratio for such walls is usually 1:1 or less (1:1.5).

2. Diagonal cracks

Diagonal cracks in masonry walls when the tensile stresses, developed in the wall under a combination of vertical and horizontal loads, exceed the tensile strength of the masonry material.

3. Nonstructural failure

While structural elements of a building should be the prime concern for earthquake resistance, everything in the building construction should resist forces generated by earthquakes. Nonstructural walls, suspended ceilings, window frames and fixtures should be secure against movement during the shaking actions. Failure here may not lead to building collapse, but it still constitutes danger for occupants and requires costly replacements or repair.

Interior partitions, curtain walls, wall finishes, windows and similar building elements are often subjected during earthquakes to shear stresses, for which they do not have sufficient resistive strength. The most common damage resulting from this is breakage of window panes and cracks in internal plaster and external rendering. A possible remedy for the former is to isolate the window frames from the surrounding walls by the introduction of flexible joints; the latter can be avoided by reinforcing the plaster or to pre-crack it by introducing control joints (groves).

4. Failure due to overturning

The critical nature of the overturning effect has much to do with the form of the building's vertical profile. A wall that is too tall or too long in comparison to its thickness is particularly vulnerable to shaking in its weak direction. Thus the tendency of a wall to topple when pushed in the weak direction can be reduced by limiting its length-to-thickness and height-to-thickness ratios.

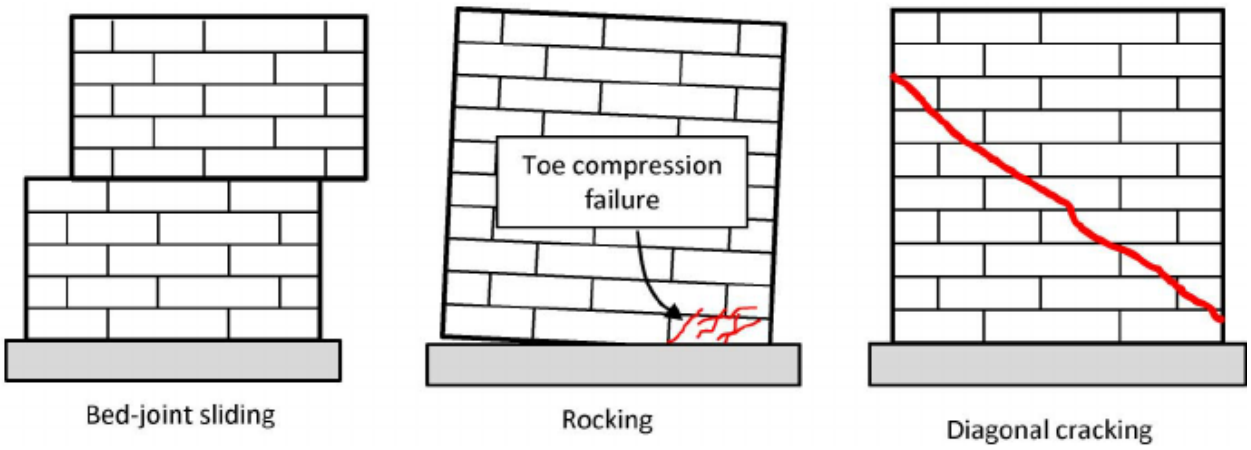


Fig No. 50 Failure due to overturning

Guidelines for design of Non-engineered Earthquake Resistance Masonry Building:

Three members of the committee for the 1986 edition, i.e. Anand S. Arya, Teddy Boen and Yuji Ishiyama met in Tokyo, Japan during "The International Symposium 2008 on Earthquake Safe Housing", which was held on November 28 and 29 in 2008. Since more than twenty years had passed after the publication and also the guidelines are still used in many parts in the world, they discussed the possible revision of the guidelines and agreed to make a working group in IAEE including the original members who are willing to participate in it and some new members who are also willing to join it. Since there is no special fund allocated to the working group in IAEE, the revision is mainly done through e-mail communications. The activities on the revision have been supported in parts by UNESCO and the International Institute of Seismology and Earthquake Engineering (IISEE), JAPAN. The three members met in Delhi, India in April, 2010 and in Singapore in March 2011. The draft for the IAEE Guidelines can be downloaded at the website of IISEE (http://iisee.kenken.go.jp).

Since the principles included in the Guidelines still apply until now, this revised edition essentially retains the Guidelines in the original form except for some minor editorial changes and modifications. Some building damage photographs from recent earthquakes have been included for illustration so that the concept of the guidelines will be easily understood. A major addition is Confined Masonry and Appendices in Chapter 10 giving the MSK Intensity Scale as related to buildings, a table for assessment of seismic safety of a masonry building, and examples of posters on brick and wooden buildings.

As to the confined masonry, the finished appearance looks similar to the ordinary RC frame construction with masonry infills, but they are very different. The differences are related to the construction sequence, as well as to the manner in which these structures resist gravity and lateral loads. In RC frames, columns and beams are constructed, then the masonry wall units infill the frames. In confined masonry, usually masonry walls are constructed and then the tie-columns and tie-beams are constructed. In RC frames, the RC columns and beams carry the vertical gravity as well as the lateral loads from earthquakes or wind storms unaided by the masonry in fills. In the case of confined masonry buildings, the wall panels are the main load carrying elements (both vertical and horizontal) aided by the confining elements (tie-columns and tie-beams) for resisting tensile forces.

Suggestions for construction of new masonry buildings in earthquake sensitive area:

1. Site investigation must be carried out. Bearing capacity of soils should be more than the required safe bearing capacity.
2. Construction work should be carried out by qualified civil engineer.
3. Plan of building should be square or rectangle.
4. Flat concrete roof is preferred.
5. The thickness of wall should not be less than 230 mm.
6. All the construction materials like cement, steel, sand, aggregates, bricks, stone, timber, tiles, etc. should be of good quality confirming to IS specifications.
7. The proportion of cement : sand mortar should not be weaker than 1 : 4.
8. First class bricks should be used. Minimum compressive strength of bricks should not be less than 35 kg/cm2.
9. Number of stories should not be more than four.
10. The total height of building should not exceed 15 m.
11. Openings in walls should be minimum and centrally located. Total length of opening in a wall should not exceed 33% of the length of wall.
12. Vertical reinforcement must be provided at corners of walls and at door jambs.
13. Proper R.C.C. bands should be provided at plinth level, lintel level, caves level, etc.
14. At window sill level, U-shaped, 8 f bars should be provided in masonry.
15. In partition walls, 2 – 6 f bars should be provided at every sixth layer.
16. Masonry work should be carried out in proper bond so that vertical joints are broken.
17. Horizontal dowel bars should provide at all T and L-junctions. Dowels are placed in every fourth course or at 50 cm intervals. 8 mm dia. bars are used as dowel bars.
18. At T-junctions and L-junctions, toothed joints should be provided in masonry.

14.1.2 Seismic Retrofitting of Buildings:

Definition of SDOF Equivalent Systems

The seismic resistance and, consequently, vulnerability of reinforced concrete constructions may be evaluated by means of a procedure proposed within some documents of the Federal Emergency Management Agency (BSSC, 1997a, 1997b). These documents have been subsequently upgraded to pre- standard level, FEMA 356 (BSSC, 2000); however, while document FEMA 356 (BSSC, 2000) is intended to supersede document FEMA 273 (BSSC, 1997a), document FEMA 274 (BSSC, 1997b) remains the basic commentary also to the pre-standard. The FEMA procedure has been modified by some research work carried out at the University of Catania (Oliveto et al., 2001). The results that will be obtained within the present paper use the modified procedure. An elastic-plastic incremental analysis of the structure under the seismic action is a necessary prerequisite. The seismic action is defined in terms of the forces corresponding to the first few modes of vibration of the structure or in terms of the pseudo- static

forces prescribed by seismic regulations. The results of the incremental analysis come in the form of storey force-displacement curves commonly known as push-over curves. On the basis of these curves a single-degree-of-freedom (SDOF) equivalent system is defined.

Before describing the procedure in some detail it is appropriate to notice that the procedure may be used for the evaluation of the seismic resistance of existing buildings as well as that of new ones (in the design stage). As such the procedure may also be used for the evaluation of the effectiveness of seismic retrofitting projects. Figure 10 shows a reinforced concrete building before and after retrofitting according to the stiffness and resistance increment concept. Besides demonstrating the type of retrofitting system which has been used in this case, the pictures illustrate the complexity of the structure on which the incremental analysis must be performed.

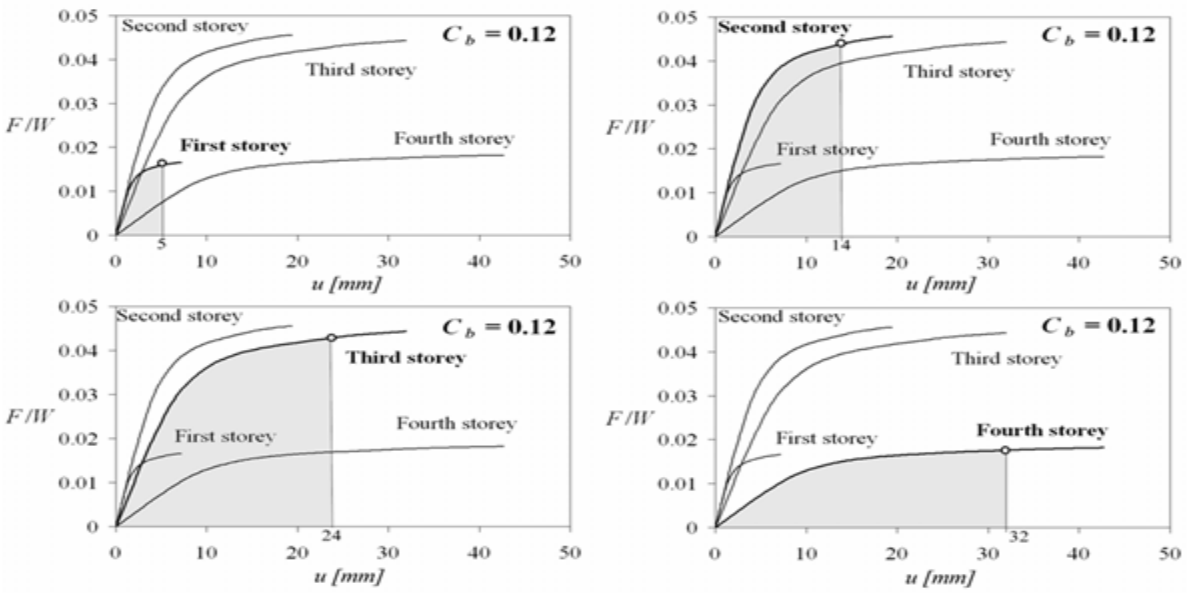
Building owned by IACP of Syracuse in the Saline district of Augusta (seismic retrofitting by increment of strength and stiffness provided by newly inserted reinforced concrete cores)

Further details on the procedure used for the design of the retrofitting systems for a class of buildings of the type shown in Figure 10 may be found in Oliveto and Decanini (1998). For the sake of clarity it should be noted that the building in Figure 10 was retrofitted in the early nineties, before the FEMA procedures became available and before the subsequent studies by the senior author and his co-workers. The building is shown here to provide an example of seismic retrofitting by increase of resistance and stiffness and to illustrate the complexity of systems on which push-over analyses must be performed. This is the reason why the push-over analysis described below was not performed on this building but on a four storey building described in detail in Oliveto et al. (2001).

The storey force-displacement (push-over) curves have been constructed using commercial and research computer programs. The use of commercial programs has been undertaken in order to ensure a

quick transfer of the research results to the seismic engineering profession. More details and the relevant literature may be found in Oliveto et al. (2001). The analyses have been performed along two orthogonal directions roughly corresponding to the axes of symmetry of the plan of the building; in fact the chosen directions were those of the corresponding first modes of vibration of the building. The analyses have been performed, using approximations described in detail in Oliveto et al. (2001), on 3D models of the buildings considered.

The results of the push-over analyses are shown in Figure 11. Here the storey force-displacement curves are shown for each of the storey of the building considered, together with the work performed by the storey forces as functions of the base shear of the building. Because the floors are considered as rigid for in-plane strains and the building is nearly symmetrical, any floor point may be considered in the construction of the storey force-displacement curves in Figure 11. For each step of the incremental (push- over) elastic-plastic analysis the storey forces are known and the corresponding floor displacements are calculated. The analysis is stopped when the first plastic hinge breaks, on the assumption that this leads to a stress redistribution and subsequent plastic hinge failures as in a chain reaction. The displacement of the SDOF equivalent system is evaluated on the basis of the work equivalence. The equivalence is established in incremental as well as in global terms and the result is shown in Figure 12. The shaded area in Figure 12 is the sum of the shaded areas in Figure 11. The work equivalence defined above is not limited to symmetrical buildings with in-plane rigid floor slabs, but can be established for any structural system. A mathematical equivalence for general multi-degree-of-freedom (MDOF) systems may be found in Oliveto et al. (2004a).



Storey force-displacement (push-over) curves for the construction of the equivalent SDOF system

The graph in Figure 12 defines the equivalent SDOF system of the building in terms of base shear and the corresponding displacement as established by using work equivalence. Perhaps it may be worth noticing at this point that the base shear coefficient Cb = 0.12 in and in Figure 12 is an arbitrarily chosen value of the ratio between the base shear force and the weight of the building in the interval 0 < Cb < Cb,c with Cb,c = 0.125 being the collapse base shear coefficient. Given the weight W of the building, to each Cb there corresponds a specific base shear force and specific storey forces as shown in Figures 11 and 12 for Cb = 0.12 .

Obviously the equivalent SDOF system should be defined for the two principal directions of the building. Therefore at least two equivalent SDOF systems of the form shown in Figure 12 must be evaluated for each building according to the previously outlined procedure.

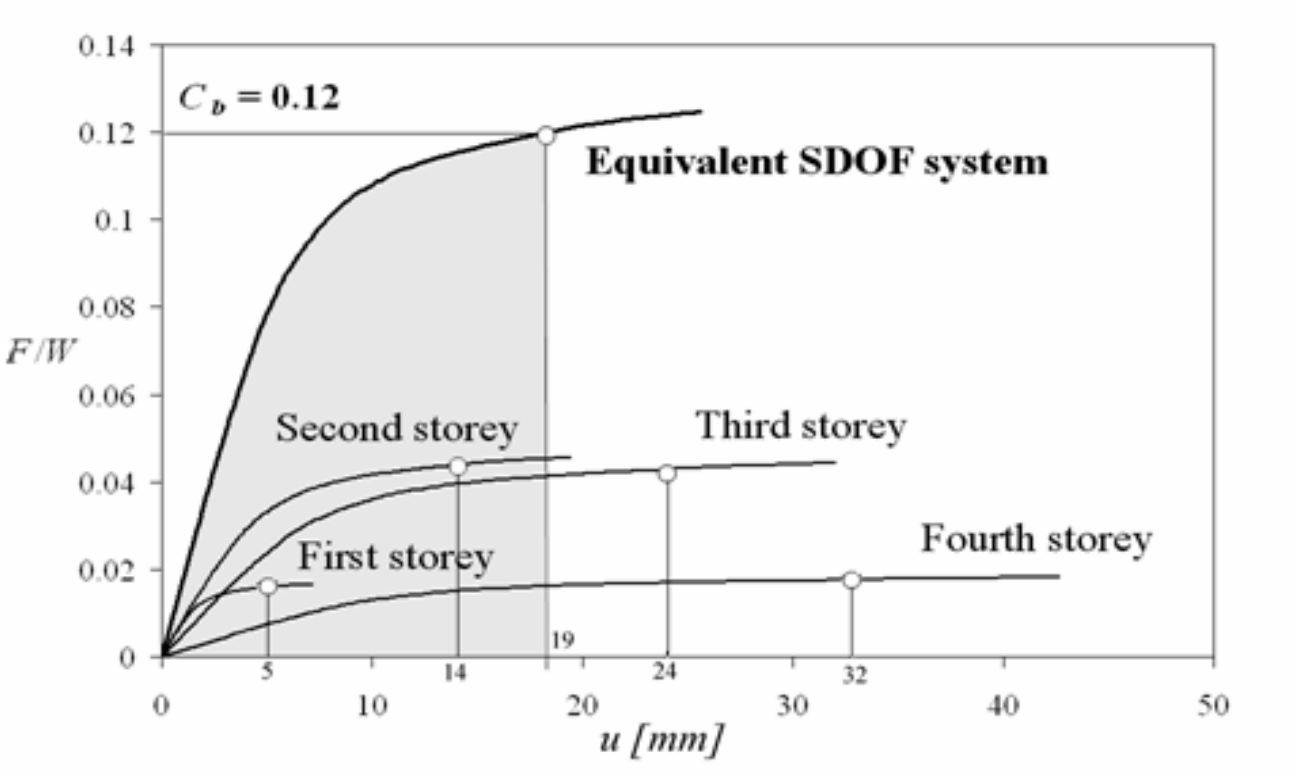


Fig No. 51 Equivalent SDOF System

Evaluation of the equivalent SDOF system on the basis of the storey force- displacement (push-over) curves

14.1.3 Advance Practices in Construction field in Modern Material, Techniques and Equipments

The building construction activity, especially the residential and commercial complex is highly labor intensive with very little mechanization. Approximately 35% of the total construction cost is spent on labor.

The laborers have their limitations and may fail to meet the time limits. The quality of workmanship, too, differs from person to person. Hence, quality standards cannot be maintained. Wastage of material is considerably high as it is handled and utilized manually.

The objective of the construction organizations should be ‘speed and economy’. This cannot be achieved with labor oriented advanced construction techniques.

Only studying and adopting modern industrial techniques and equipment is the solution. By this, one can save material, reduce labor expenses, and increase the speed of work, leading to the economy in construction.

Though the scope of the subject is vast, in this chapter we shall discuss only the advanced techniques to be used in advanced construction techniques activities.

Equipment Used For Small And Medium Construction Work

The equipment with proven utility in building construction may be as listed below:

1. Chain and pulley block
2. Grouting pumps
3. Sprayers for painting work
4. Tile cutters
5. Portable hand drilling machines
6. Horizontal trolleys, wheelbarrows
7. Pumps
8. Vibrators for compaction of concrete, surface vibrators
9. Auto ramming concrete block machine
10. Sand washing machine
11. Vertical lifts, hoists, winches
12. M.S. tubular scaffolding, and formwork
13. Concrete mixers
14. Cranes
15. Earth excavators
16. Earthmovers

- The engineer in-charge should study, develop, and implement the advanced techniques, to improve the quality of work, with speed and economy. Some of the techniques are listed below
- The different work stages through which basic material is converted into the finished product, maybe studied.
- The relation between different works stages are established as a flowchart.
- Works are planned and executed according to the work and time study.
- Planning and execution of the activities is done according to bar charts, C.P.M., and P.E.R.T.
- Suggestions are put forth, discussed, and implemented to improve quality.
- Prefabricated and precast units are utilized, wherever possible.
- Admixtures and plasticizers are used for concreting and water-proofing.
- 'Design mix and weigh batching' are used for mass concreting.
- Easily detachable lightweight tubular structures are used.
- Modern methods of curing are adopted.
- Advanced adhesives and chemicals are used.
- Simultaneous execution of the activities are arranged.
- Work is executed in shifts.
- Activities are crashed.
- Task work is delegated to the laborers along with incentives.

SR. NO.	USE OF TECHNIQUE/ EQUIPMENT	WORK ACTIVITY	ADVANTAGES
01	Precast lintel and chajja	Masonry work above lintel level	Saving of time
02	Providing cavities in masonry during execution	Concreting of hold fast for doors and windows	Breaking of concrete block/brick is avoided, which saves labour time
03	Wheel barrows, trolleys cranes, chain pulley block	Shifting/lifting of any type of material	Shifting by manual head load is avoided. Maximum output with minimum efforts
04	Prefabricated units	Doors, windows, grills, walls, slabs, etc.	Fast erection, saving of time in casting and curing
05	Steel shuttering material	All centering work	Works out to be cheaper as more repetition is possible
06	Auto ramming block machine (For mechanical compaction)	Casting of concrete blocks for masonry	Increases the production and quality remarkably
07	Sand washing machines	Concreting, masonry, plastering	Decrease in silt content, results into better plastering and uniform higher strength concrete
08	Small capacity concrete mixers	Concreting at upper floors	Portable, speed and quality is maintained without extra consumption of cement
09	Sand screening machines	Masonry, plastering etc.	Time saving for screening and less wastage of sand

SR. NO.	USE OF TECHNIQUE/ EQUIPMENT	WORK ACTIVITY	ADVANTAGES
10	Form vibrator	Casting of slab	Better compaction, less honeycombing of the concrete
11	Tower hoist bucket	Transporting material e.g. bricks, sand, cement	Shifting of material vertically with speed and extra quantity
12	Travelling belt conveyor/trolley	Slab concreting	Labour required to transport wet concrete is reduced, speed and quality increases
13	Dumpers	Transporting building material	Unloading operation is easy, and can be done as and when required. Speed increases
14	Admixtures and plasticizers	Concreting and water-proofing	Increases the workability strength, reduces the curing period and improves the quality
15	Loaders	Shifting of material and refilling	Reduces the labour for loading of trucks. Speed increases
16	Road rollers	Compacting the filling material	Compaction is achieved as specified which is not possible manually
17	Plate/earth vibratory compactors	Compacting the filling material in building plinth	Rapid and better compaction than manual process of *dhummas*. Larger area can be covered
18	Pneumatic tools (Jack hammer)	Excavation in rock	Excavates the hard rock with ease where normal chisels do not work. Increases the output remarkably
19	Excavators	Excavation and levelling	Excavates, dumps and levels the soft strata as desired. Completes the work of three manual shifts in one shift
20	Bull-dozer	Dismantling and excavating	Dismantles and disposes off the excavated stuff as and when required
21	Vacuum de-watering system for concreting	Factory flooring for achieving better compressive strength	Saves cement, curing period is reduced

USE OF COMPUTER IN BUILDING CONSTRUCTION TECHNOLOGY

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

- Construction management
- Structural design
- Estimating and Costing
- Financial management

Types of Modern Methods of Construction

1. Precast Flat Panel System
2. 3D Volumetric Modules
3. Flat Slab Construction
4. Precast Cladding Panels
5. Concrete Wall and Floors
6. Twin Wall Technology
7. Precast Concrete Foundation
8. Concrete Formwork Insulation

14.1.4 Engineering Aspects of Soil Mechanics - Environmental Impact Assessment

Environmental assessment (EA) is the assessment of the environmental consequences of a plan, policy, program, or actual projects prior to the decision to move forward with the proposed action. In this context, the term "environmental impact assessment" (EIA) is usually used when applied to actual projects by individuals or companies and the term "strategic environmental assessment" (SEA) applies to policies, plans and programmes most often proposed by organs of state. It is a tool of environmental management forming a part of project approval and decision-making. Environmental assessments may be governed by rules of administrative procedure regarding public participation and documentation of decision making, and may be subject to judicial review.

The purpose of the assessment is to ensure that decision makers consider the environmental impacts when deciding whether or not to proceed with a project. The International Association for Impact Assessment (IAIA) defines an environmental impact assessment as "the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made". EIAs are unique in that they do not require adherence to a predetermined environmental outcome, but rather they require decision makers to account for environmental values in their

decisions and to justify those decisions in light of detailed environmental studies and public comments on the potential environmental impacts.

The Ministry of Environment, Forests and Climate Change (MoEFCC) of India has been in a great effort in Environmental Impact Assessment in India. The main laws in action are the Water Act (1974), the Indian Wildlife (Protection) Act (1972), the Air (Prevention and Control of Pollution) Act (1981) and the Environment (Protection) Act (1986), Biological Diversity Act (2002). The responsible body for this is the Central Pollution Control Board.

Environmental Impact Assessment (EIA) studies need a significant amount of primary and secondary environmental data. Primary data are those collected in the field to define the status of the environment (like air quality data, water quality data etc.). Secondary data are those collected over the years that can be used to understand the existing environmental scenario of the study area. The environmental impact assessment (EIA) studies are conducted over a short period of time and therefore the understanding of the environmental trends, based on a few months of primary data, has limitations. Ideally, the primary data must be considered along with the secondary data for complete understanding of the existing environmental status of the area. In many EIA studies, the secondary data needs could be as high as 80% of the total data requirement. EIC is the repository of one-stop secondary data source for environmental impact assessment in India.

The Environmental Impact Assessment (EIA) experience in India indicates that the lack of timely availability of reliable and authentic environmental data has been a major bottleneck in achieving the full benefits of EIA. The environment being a multi-disciplinary subject, a multitude of agencies is involved in collection of environmental data. However, no single organization in India tracks available data from these agencies and makes it available in one place in a form required by environmental impact assessment practitioners. Further, environmental data is not available in enhanced forms that improve the quality of the EIA. This makes it harder and more time-consuming to generate environmental impact assessments and receive timely environmental clearances from regulators. With this background, the Environmental Information Centre (EIC) has been set up to serve as a professionally managed clearinghouse of environmental information that can be used by MoEF, project proponents, consultants, NGOs and other stakeholders involved in the process of environmental impact assessment in India. EIC caters to the need of creating and disseminating of organized environmental data for various developmental initiatives all over the country.

EIC stores data in GIS format and makes it available to all environmental impact assessment studies and to EIA stakeholders. In 2020, the Government of India proposed a new EIA 2020 Draft, which was widely criticized for heavily diluting the EIA. Many Environmental groups started a campaign demanding the withdrawal of the Draft, in face of these campaigns; the Government of India resorted to banning/blocking the websites of these groups.

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

Definition of Water Supply System:

Water Supply Systems are networks whose edges and nodes are pressure pipes and either pipe junctions, water sources or end-users, respectively.

Function of Water Supply System:

There is function to provide end-users with potable water with a sufficient pressure level.

Components of Water Supply System:

There are four components of water supply project or water supply scheme.

Collection works:

In collection works, water is collected from the source. There are two major source of water. Surface water and ground water. In order to collect surface water, dams and barrages are constructed whereas to collect ground water, tube wells are used.

Treatment works:

In treatment works, water obtained through the source is treated. Most of the surface water need treatment as it is contaminated by suspended particles. Ground water may or may not need treatment. One of the problems with ground water is high salt concentration. It is more expensive to treat this. In such case surface water is used, when ground water contains high salt concentration. Ground water may also contain elements like iron, magnesium.

If collected water is contaminated with pathogens, it must be treated to kill the germs. So treatment works may or may not be the part of water supply project.

Transmission works:

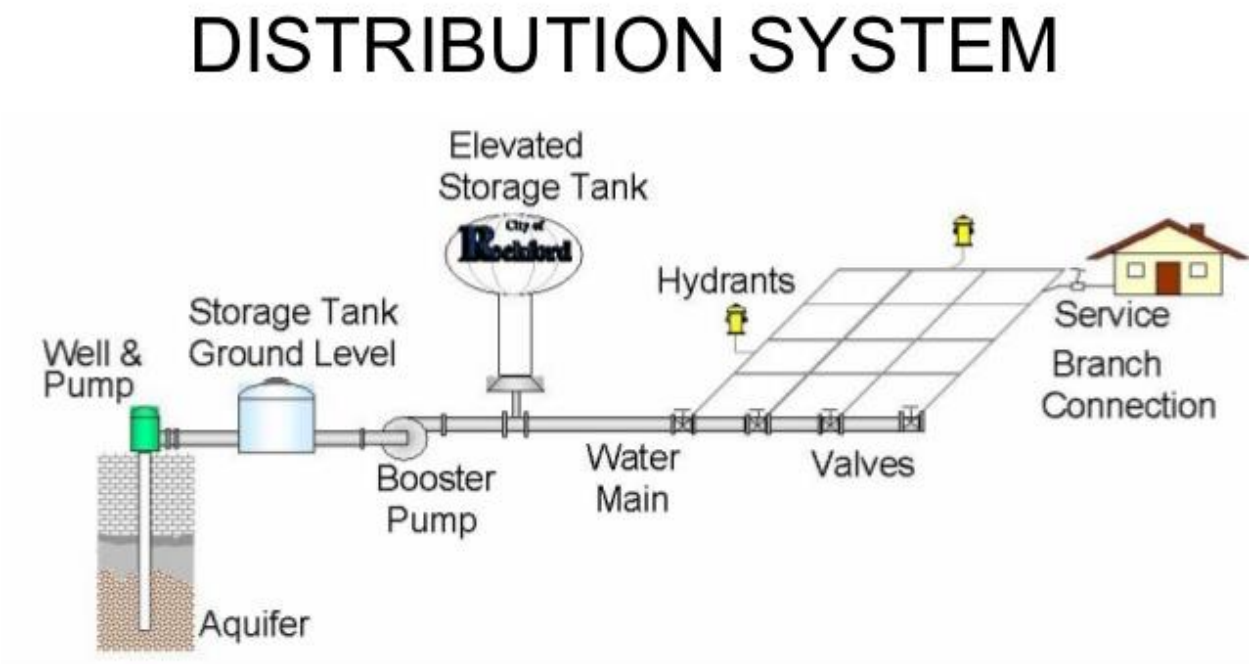
If source of water is away from the community, transmission work is required to transport water the treatment plant and then the treated water from treatment plant to the community. In some cases, transmission work may be eliminated.

Distribution works:

In Distribution works, treated water is supplied to the consumers at the point of use from overhead tanks. Following two requirements should be fulfilled while distribute water to the community:

1. Quantity of water must be sufficient according to demand.
2. Pressure should be sufficient.

Layout of Water Supply System:



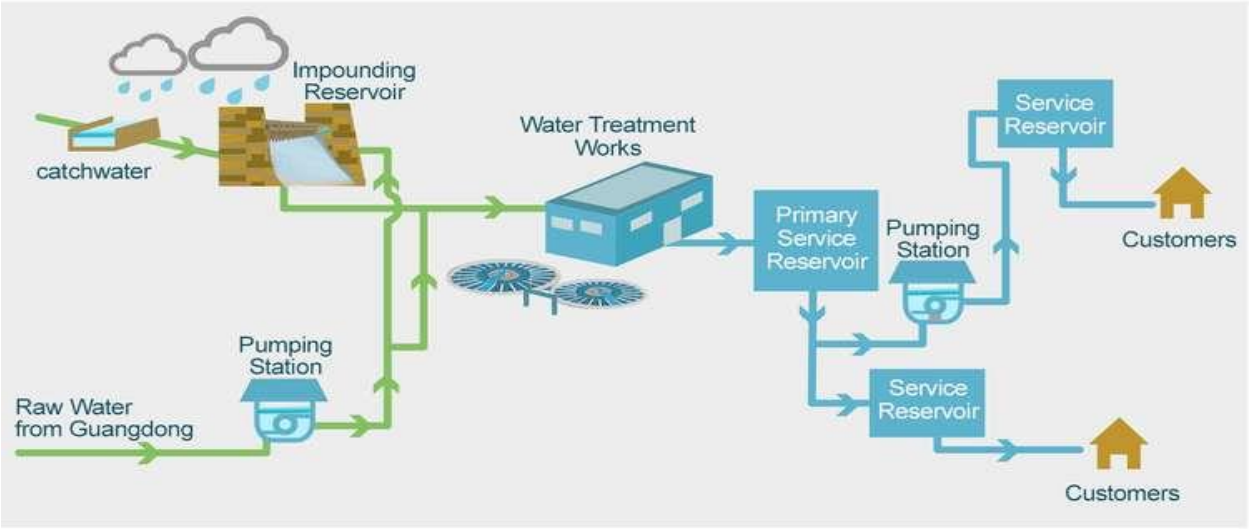


Fig No. 52 Distribution System

Water Supply System is depended upon the water demand by public.

Water Demand:

Determination of water demand is indispensable when it comes to the design of a proper water work project. An accurate estimation of water demand helps to determine the quantities of water and moments when the water will be used therefore generating various demand patterns. The demand arises mainly for residential, institutional, industrial and public uses.

The different types of water demands and their variations are briefly described.

Types of Water Demands

Water demands can be classified into:

1. Domestic Water Demand
2. Industrial Water Demand
3. Institutional and Commercial Water Demand
4. Demand for Public
5. Fire Demand
6. Water and Thefts

Water Consumption for Various Purposes

	Types of Consumption	Normal Range (lit/capita/day)	Average	%
1	Domestic Consumption	65-300	160	35
2	Industrial and Commercial Demand	45-450	135	30
3	Public Uses including Fire Demand	20-90	45	10
4	Losses and Waste	45-150	62	25

1. Domestic Water Demand

Domestic water demand accounts for 55 to 60% of the total water consumption. As per IS 1172-1983, the domestic consumption in India accounts for 135 lpcd (liters/capita/day).

2. Industrial Water Demand

The per capita consumption of industries is generally taken as 50 lpcd.

3. Institutional and Commercial Water Demand

On an average, per capita demand of 20 lpcd is required to meet institutional and commercial water demand. For highly commercialized cities, this value can be 50 lpcd.

4. Public and Civil Use

The per capita consumption for public and civic use can be taken as 10 lpcd. This water is used for road washing, public parks, sanitation etc.

5. Fire Demand

Per capita fire demand is ignored while calculating the total per capita water requirement of a particular city because most areas have fire hydrants placed in the water main at 100 to 150 meters apart. The fire demand is generally taken as 1 lpcd.

When population is greater than 50000,

$$\textbf{Water required} = 100\sqrt{P}\ \textbf{Kilo Litres}$$

Where, P = Population in Thousand

Rate of fire demand is given by:

1. Kuichling's Formula

$$Q = 3182\sqrt{P}$$

2. Freeman's Formula

$$Q = 1136\left[\frac{P}{10} + 10\right]$$

$$Q = 4637\sqrt{P}\,[1 - .01\sqrt{P}] \quad \{\text{For Congested high value city}\}$$

Q = Amount of water required in litres per minute

6. Waste and Thefts

This consumption accounts for 55 lpcd. Even if the waterworks are managed with high proficiency, a loss of 15% of total water consumption is expected.

Sewer System:

Definition of Sewage:

The term sewage is used to indicate the liquid-wastes from the community. It includes discharge from bathrooms, kitchens, washing places, wash basins, latrines, urinals, industrial wastes and storm water.

Definition of Sewer:

An underground pipe or conduit which carries sewage is called Sewer.

Principle of Sewer System:

- Sewage may be treated to control water pollution before discharge to surface waters. Sanitary sewers serving industrial areas also carry industrial wastewater.
- Separate sanitary sewer systems are designed to transport sewage alone. In municipalities served by sanitary sewers, separate storm drains may convey surface runoff directly to surface waters.
- Sanitary sewers are distinguished from combined sewers, which combine sewage with storm water runoff in one pipe.
- Sanitary sewer systems are beneficial because they avoid combined sewer overflows.

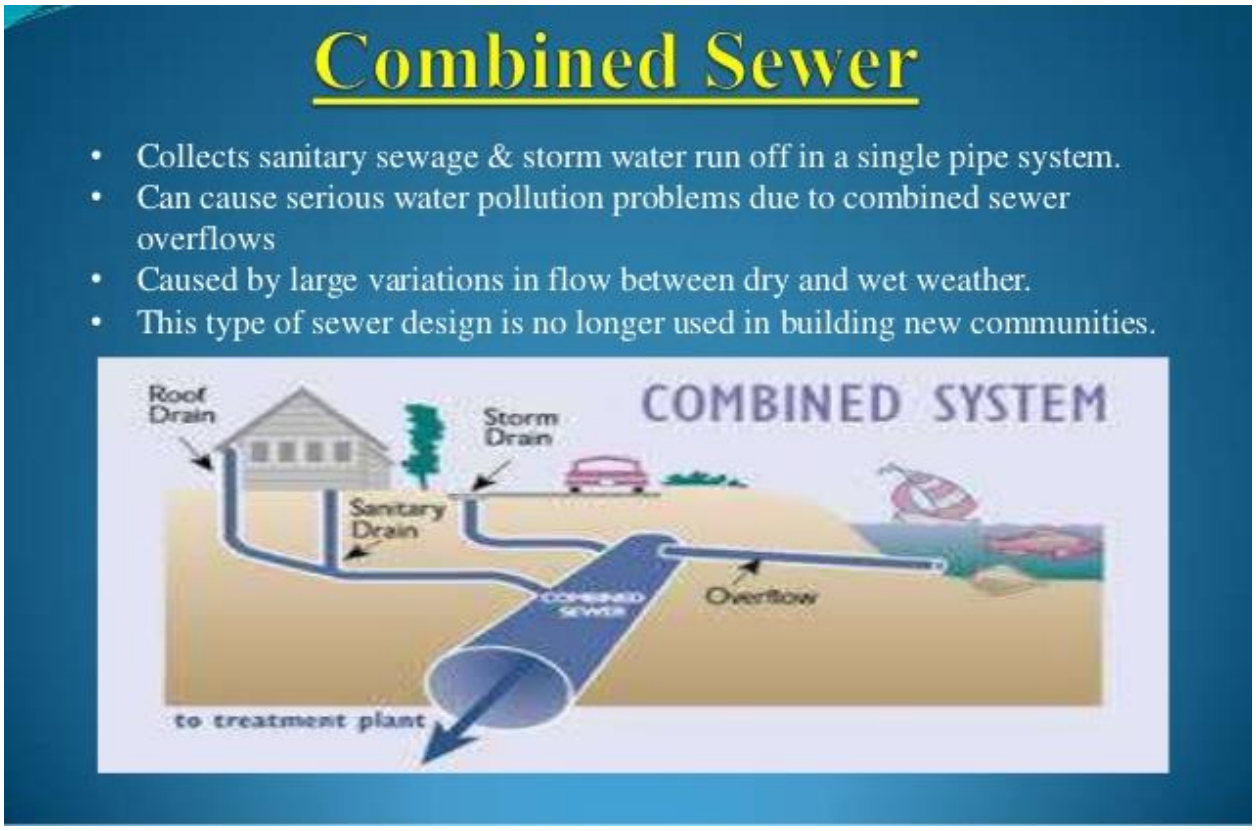


Fig No. 53 Combined Sewer

Types of Sewer System:

Storm water drains:

The detailed design of storm water drains should be carried out by engineers and take into account climatic and hydrological data. These data may be scarce, or may not cover the community where work is to be carried out. In such cases, the community can help by describing where major flood problems occur in the village and providing information about previous floods. Storm water drains should be designed to collect water from all parts of the Community and lead it to a main drain, which then discharges into a local river . The size of the drains should be calculated according to the amount of water they would be expected to carry in a storm. More extreme floods occur relatively infrequently; to provide a safety margin, the maximum.

Combined drains:

Combined drains are designed to carry both storm water and sullage. Unless a combined drain is well designed and maintained, however, sullage will pool within the drain and form insect breeding sites. These problems can be over-come by using a system with a small insert drain that carries the sullage into a larger drain for carrying storm water. As with all drainage systems, it is essential that the drains are properly operated and maintained, and that refuse is cleared from the drains.

Buried drains and combined sewers:

Drains may also be incorporated into sewerage systems and be buried. This is more appropriate for urban areas, but can be considered in rural areas if the village roads are paved and if flood flows are significant. Buried drains have inlet chambers at regular intervals, usually along roadsides, that allow the entry of storm water. The drains then lead directly either to a watercourse or to a sewage-treatment works. When drains flow directly into sewage-treatment works, care must be taken not to overload the works. The storm-water should always flow either into a stabilization pond, or into storage pool constructed to take storm water flows above a certain volume.

15. Smart and/or Sustainable features of Chapter 8 & 13 designs, Impact on society (For Sukhpur village development, villagers' happiness, comfortable and for enhancement of the village) A) Immediately b) Within 1 year c) Long term (3-5 years) along with cost estimation.

Sr. No	Design Name	Period to Implement	Amount (Rs)	Benefit
1	**PHYSICAL INFRASRUCTURE**			
	POST - OFFICE	Long Term (3-5 years)	14,14,796.00	-public facility provide accepting letter and parcels, selling postage stumps etc. -in village where there is no ban, people can also open their saving accounts in post office
	CEMETARY	Immediately	12,42,252.00	-cemeteries have a deep historical connection to the local community. -a location of memorial for the deceased
2	**SOCIAL INNFRASTRUCTURE**			
	MEDICAL - STORE	Long Term (3-5 years)	1,12,206.00	-it is necessary for the best pharmacy to have a large number of drugs in stock. -there must be the availability of both general and herbal drug in the store.
	PUBLIC HEALTH CENTER	Immediately	17,08,010.00	-health awareness in village people -Health workers get support their activities. -quality of health care improves.
3	**SUSTAINBLE INFRASTRUCTURE**			
	BIO – GAS PLANT	Long Term (3-5 years)	80,436.00	-this is natural resource and non polluting -it is very sustainable way to get energy in the village there is lot of dung so it is very economical.
	SEPTIK TANK	Short Term (1 years)	26,565.00	-environmentally friendly - septic tank have their own water filter system so you don't have to very on the

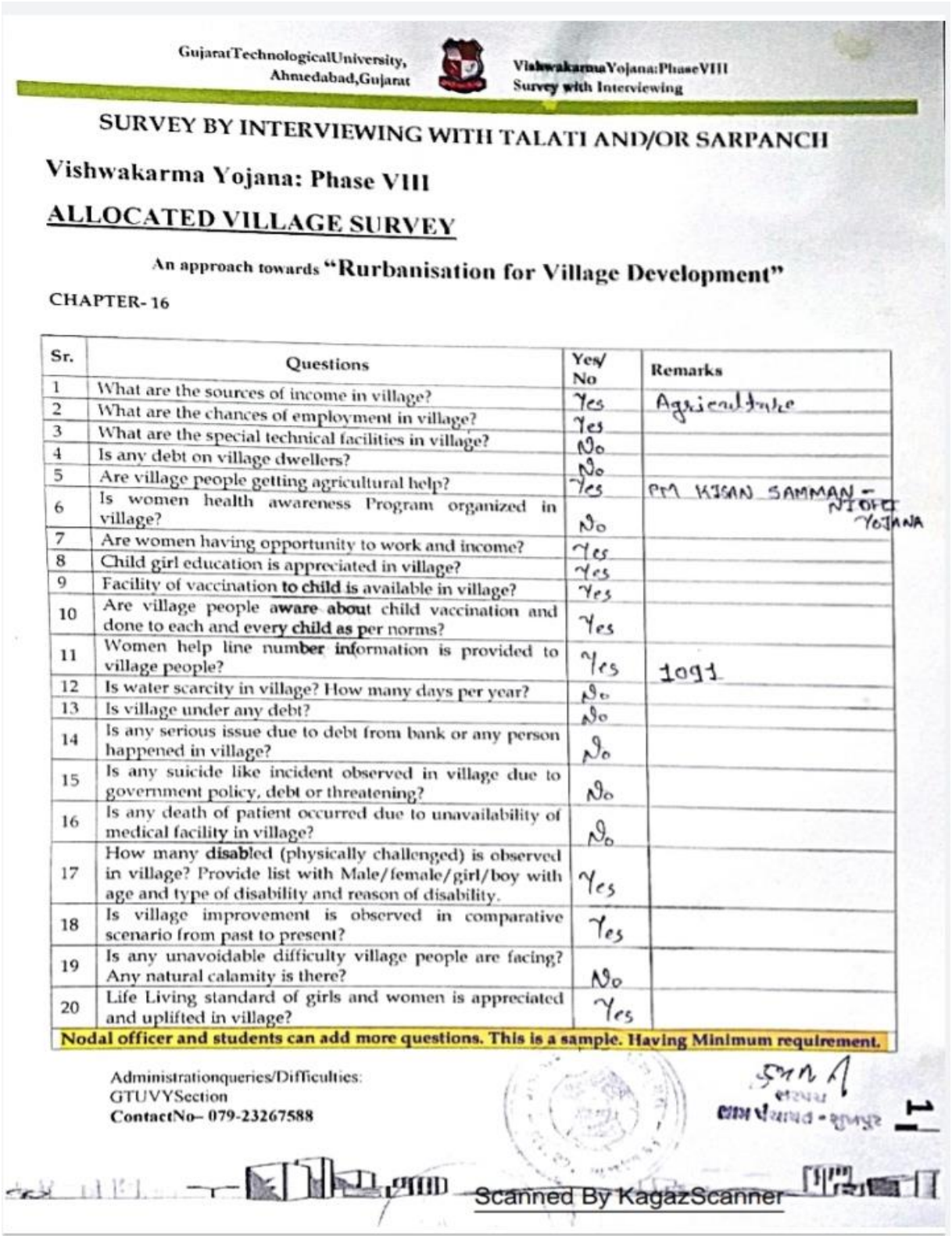
				safety of village sewer system.
4	**SMART VILLAGE DESIGN**			
	STATINARY SHOP	Long Term (3-5 years)	1,58,914.00	-children going to school easily provide like books, pen etc. -by creating your own personalized business.
	KRISHI SEVA KENDEA	Long Term (3-5 years)	11,00,640.00	-good platform for farmers to sell their cultivated product. -improvement in the area of farming -100% genuine product.
5	**SOICIO – CULTURE INFRASTRUCTURE**			
	ATM	Immediately	65,640.00	-villagers are also to do financial transaction conveniently with the use of atm. -unlike bank branches, it does not have any time schedule for its operation (offer 24 × 7 service.)
	PLAY GROUNG	Within 1 year	4,13,853.00	-children use for playing. -the villagers do exercise like walking, running etc.

Table No 12 Impact on society

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

- Fourteen (14^{th}) finance commission
- MLA Grant
- Member of Parliament Grant
- Gram Panchayat Grant
- Private founders and trust.

Chapter 16 Survey by Interviewing with Talati And / Or Sarpanch



GujaratTechnologicalUniversity, Ahmedabad,Gujarat

VishwakarmaYojana:PhaseVIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

CHAPTER- 16

Sr.	Questions	Yes/ No	Remarks
1	What are the sources of income in village?	Yes	Agriculture
2	What are the chances of employment in village?	Yes	
3	What are the special technical facilities in village?	No	
4	Is any debt on village dwellers?	No	
5	Are village people getting agricultural help?	Yes	PM KISAN SAMMAN - NIDHI YOJANA
6	Is women health awareness Program organized in village?	No	
7	Are women having opportunity to work and income?	Yes	
8	Child girl education is appreciated in village?	Yes	
9	Facility of vaccination to child is available in village?	Yes	
10	Are village people aware about child vaccination and done to each and every child as per norms?	Yes	
11	Women help line number information is provided to village people?	Yes	1091
12	Is water scarcity in village? How many days per year?	No	
13	Is village under any debt?	No	
14	Is any serious issue due to debt from bank or any person happened in village?	No	
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	No	
16	Is any death of patient occurred due to unavailability of medical facility in village?	No	
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	Yes	
18	Is village improvement is observed in comparative scenario from past to present?	Yes	
19	Is any unavoidable difficulty village people are facing? Any natural calamity is there?	No	
20	Life Living standard of girls and women is appreciated and uplifted in village?	Yes	

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

Administrationqueries/Difficulties:
GTUVYSection
ContactNo– 079-23267588

Scanned By KagazScanner

Chapter 17. Irrigation / Agriculture Activities And Agro Industry, Alternate Techniques

17.1 Introduction of Irrigation System

17.1.1 Introduction of Irrigation:

Irrigation is defining the process of artificially supplying water to soil for raising crops.

In a country like India, where the natural precipitation during the monsoon (June to September), irrigation is essential for the proper growth of plants.

A review of the development of irrigation in the world is fascinating. It reveals the ingenuity and foresightedness of many of the ancient civilizations in harnessing the resources of nature for the benefit of man. It also shows the importance of careful planning of irrigation systems and efficient water management for maintaining the productivity of the land.

The decline of irrigated agriculture in many countries has been due to unstable governments and lack of proper measures to ensure efficient water management.

The principal irrigation practice of the ancient times was diverting the flow of springs and streams with temporary barriers constructed across them and irrigating the adjoining fields.

A watering can (or watering pot) is a portable container, usually with a handle and a funnel, used to water plants by hand. It has been in use since at least 79 A.D. and has since seen many improvements in design. Apart from watering plants, it has varied uses, as it is a fairly versatile tool.

A simple irrigation method is to bring water from the source of supply, e.g. a well, to each plant with a bucket or a watering cane.

17.1.2 Irrigation develops in India:

Irrigation development in India in the first to third century A.D. has been mainly in southern India which was not influenced by the cultural ingression of tribes from central Asia. The Sangam literature gives detailed description of the Tamil dynasties of Pandya, Chera, Chola, Pallava, Chalukya and Rashtrakuta and their contribution to development projects. Kings of these dynasties took great interest in promoting agriculture. Situated in the deltaic or valley regions, most of these kingdoms had fertile soil. With the expansion of irrigated agriculture, South India became the rice bowl of India. Sangam literature gives descriptions of the sites chosen for storing run-off water. Both tank and well irrigation were in practice in South India.

There are distinct references to lift irrigation, where bullocks were used for lifting water from deep wells.

An important irrigation work has been the construction of large embankments (both stone and earth) on Kaveri flood waters. Karikala, a Chola king (A.D. 180) constructed a 160 km long embankment along the Kaveri River primarily to protect from recurrent floods. The grand Anicut in the Kaveri delta built in the second century A.D. is the first major irrigation system in the Indian sub-continent. He also patronized the construction of a large number of irrigation tanks. The Muslim rulers also took interest in constructing canals for irrigation.

The Muslim rulers also took interest in constructing canals for irrigation. In the 14th century, sultan FirozTaghlaq constructed a large number of canals from Satluj& Yamuna Rivers. Akbar in the 16th century renovated the Satluj canal.

When the British country, there were numerous canals in the upper areas in the north, numerous of inundation canals along the Indus system of rivers, numerous small & large tanks in Central & Southern India. The British rulers remodelled the existing canals in the 19th century. A large number of new Study irrigation works were also constructed. Some of the important works constructed in the 19th century is,

- Western Yamuna canal
- Ganga canal
- Lower Ganga canal
- Sirhind canal
- Sarda canal, etc.

17.2 Motivation & Literature Review:

17.2.1 Study of drip irrigation system:

The main purpose of this paper is analyses, identify and make Conclusion based on this paper. A literature review means a collecting related data, analyses business process, identify underlying patterns and create conclusion. Another description of the literature review is a systematic, explicit and reproducible method to identify evaluating and synthesizing the exiting body of completed and recorded work produced by researcher, scholar's and practitioners.

In orders to develop a successful project, the current system is identified. The system of conventional drip irrigation system based on soil moisture sensor is analyses. Studies of these systems are significant to develop a valid, reliable and efficient up grade project.

The literature review part acts as a mean to discover which methodology should be chosen in developing this system. Facts and findings established what the existing system does and the problem are leads to a definition of a set of options from which users may choose their required

system. This section will be discussing about the domain of this project. The existing system is finally the other techniques that applicable to be used while developing this project.

If focused on the how to design and develop the project systematically according to the requirement of minimize the functional of conventional project. In the other situation these will be describing any element or method which is useful to be used for the purpose of searching and gathered useful information in developing this project.

17.2.2 Author detail:

- Ramya. K. M, M. Saranya working from Department of Civil Engineering, Valliammai engineering college, Kattankulathur, India.
- Tupe Alok R. working from Department of Information Technology, JSPM's JSCOE, Pune, India.
- Gaikwad Apurva A. working from Department of Information Technology, JSPM's JSCOE, Pune, India.
- Pokharkar Pooja, Dhobale Pranali, Sayyad Asmabi, Prof. Nalawde Priyanka working from Department of Computer Engineering, Pune, India.

17.3 Types and/or Irrigation Method:

17.3.1Types of irrigation system:

Irrigation systems may be classified in two different ways shown in below:-

A. Classification based on availability of water:

Based on availability of water can be classified into two types:

1. Flow irrigation
2. Lift irrigation

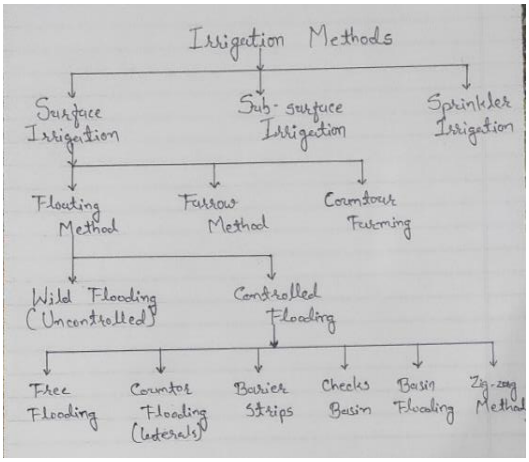


Fig No. 54 Types and/or Methods of Irrigation Systems

B. Classification based on cultural command area (CCA):

Based on the CCA can be classified in three types:

1. Major projects

2. Medium projects

3. Minor projects

1. Major irrigation projects:-

All irrigation schemes with a cultural Command are of 10,000 ha is classified as major irrigation projects. They have essentially surface water projects involving large-scale Storage/diversion works.

2. Medium irrigation projects:-

Projects having a cultural command area of 2000 ha to 10,000 ha are classified as medium irrigation projects. Medium irrigation projects are also usually surface water projects, excepting a few large lift irrigation schemes.

3. Minor irrigation projects:-

All irrigation schemes having a cultural command area up to 2000 ha individually are classified as minor irrigation projects. Minor irrigation schemes are further grouped as

(a) Surface water minor irrigation schemes,

(b) Ground water minor irrigation schemes..

17.4 Drip Irrigation System:

17.4.1 Introduction of drip irrigation:

Drip irrigation is sometimes called trickle irrigation and involves dripping water onto the soil at very low rates (2-20 liters/hour) from a system of small diameter plastic pipes fitted with outlets called emitters or drippers. It is one of the latest developed methods of irrigation which is becoming increase popular in areas with water scarcity and salt problems.

Water is applied close to plants so that only part of the soil in which the roots grow is wetted, unlike surface and sprinkler irrigation, which involves wetting the whole soil profile. With drip irrigation water, applications are more frequent (usually every 1-3 days) than with other methods and this provides a very favorable high moisture level in the soil in which plants can flourish.

This method is first introduced in Israel. In India, it is being increasingly practiced in Gujarat, Maharashtra, Kerala, Rajasthan and Karnataka.

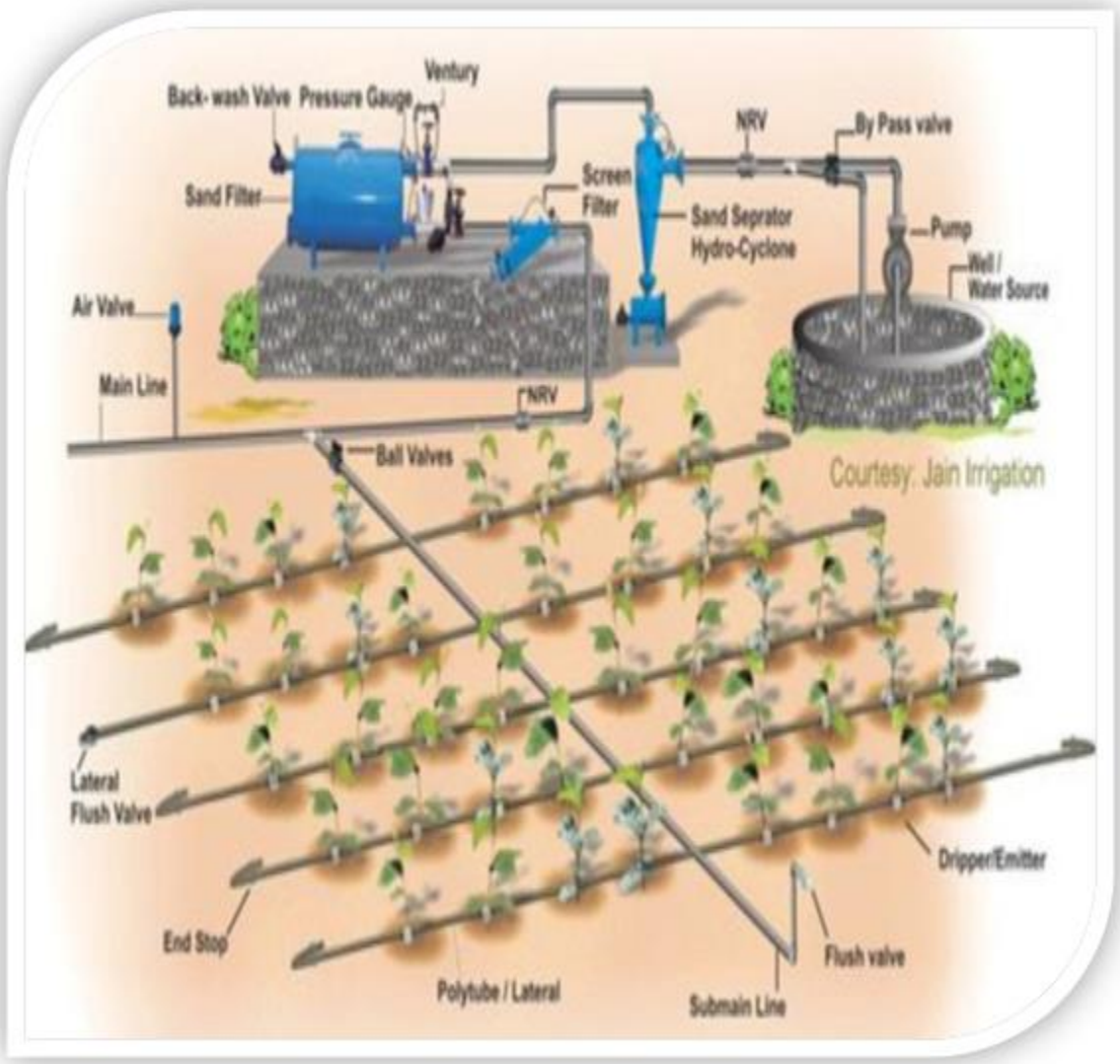


Fig No. 55 The sketch of layout of drip irrigation

Drip irrigation is best suited to water scarcity areas and regions where irrigation water quality is marginal or low (saline water). Due to the frequent application of irrigation water, salts are pushed to the periphery of the moist zone, away from the root spread area.

It is suitable to almost all types of soils. In clay soils with low Infiltration rates, water is to be applied slowly to prevent surface water ponding and runoff. In sandy soils with high infiltration rates, higher dipper discharge rates will be required to ensure adequate lateral wetting of the soil.

Drip irrigation is advantageous on lands with undulating topography without undertaking major land leveling operations and on slopes where the soil depth is limited and the crop value is high.

Drip irrigation is suitable for almost all orchard crops, plantation crops and most of the row crops.

The method has been observed to be highly economical and beneficial in water scarcity areas to grow orchard and plantation crops like coconut, tea, coffee, citrus, grapes, banana, mango, pineapple; row crops like sugarcane, cotton, groundnut and vegetable crops including tomato, potato and other widely spaced vegetable crops, and flower plants.

17.4.2 Components used in drip irrigation system:

The three main components of drip irrigation is shown in below. Also shown figure of components of drip irrigation unit is fig (a) & (b).

1. Control head
2. Pipe network
3. Emitters

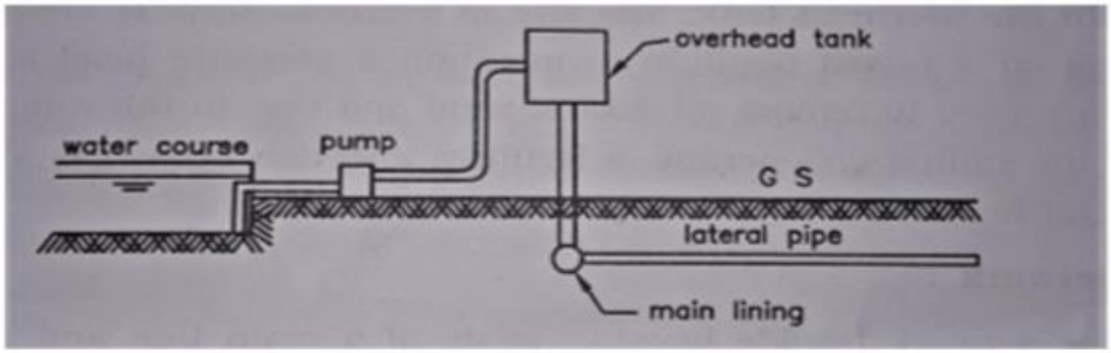


Fig No. 56 Section of drip irrigation unit

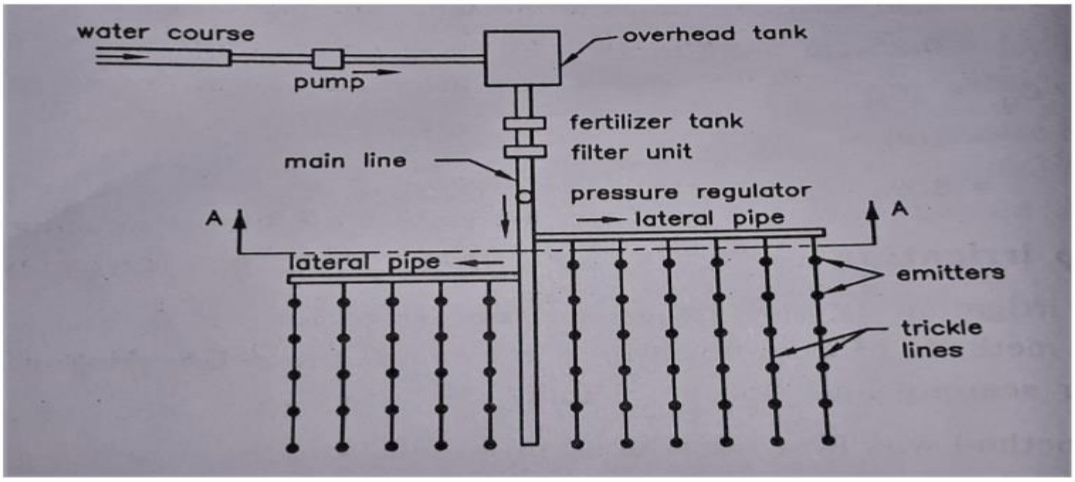


Fig No. 57 Plan of drip irrigation unit

1. Control head:-

The control head consists of

- an overhead tank
- a flow control valve
- a water measuring device
- Pressure control device
- Filters
- Pumping unit, etc.

The control head is usually located near the source of water. The water pumped into the overhead tank. The size of tank is mainly 3*3*3 m, resting on a raise platform to maintain pressure head of 3 to 6 m. the filters are used to remove all sand & clay in water to prevent clogging of the emitters. Generally, a fertilizer injection system is also provide at control head.

2. Pipe network:-

The pipe network consists of a main line and number of lateral pipes. Sometimes sub main lines are also required between main lines and lateral pipes. A number of small diameter pipes is 10 to 20 mm known as trickle lines are provide from lateral pipes to carry water to the roots of the crops. Generally, there is one trickle line for each row of the crops. All the pipes are usually made of P.V.C.

3. Emitters:-

Emitters are provided on each trickle line at suitable spacing depend upon the type of crop and soil condition. Emitter is a precise metering device, which has very low flow rate, usually 1 to 10 liters per hour.

17.4.3 Advantages of drip irrigation:

- Water requirement is less. Saves 40 to 70 % water when compared with the others method.
- Evaporation losses are very low. The deep percolation losses are eliminated.
- Labor cost is less as no field channels are required to be constructed.
- Water logging is avoided.
- The drip irrigation is more suitable for small trees and widely spaced plants.
- It is most suitable for irrigation of fruit plants.
- The problems related with weeds and soil crusting are eliminated.
- The problems related with fungus and insects diseases can be considerably controlled.
- The method is suitable for arid regions where the water is limited.
- Over irrigation is avoided.

- In drip irrigation, all the land area is effectively utilized as there is no wastage of land for the preparation of levees, bunds, ditches, field channels, etc.
- Levelling of the land is not required; it can be used for any topography.
- In this method, soil nutrients are preserved because of reduction in deep percolation losses.
- The drip irrigation can also be used when the water is saline. As the water is applied through emitters, the salts move to the outer edge of the wetted zone and hence the water near the root zone is less saline.

17.4.4 Disadvantages of drip irrigation:

- The initial cost of various components such as pumping unit, filters, pipelines, nozzles, etc. is very high.
- The nozzle (emitter) holes are very small (0.5 to 1.0 mm dia.) Hence they are frequently clogged by clay and silt particles, resulting reduction of flow.
- Due to change in the crops may result in frequent replacement of trickle lines.
- This method is not suitable for closely planted crops such as wheat.
- During high winds, the plants may topple, due to shallow root depth.

17.4.5 Use of drip irrigation:

1. Suitable crops:

Drip irrigation is most suitable for row crops (vegetables, soft fruit), tree and vine crops where one or more emitters can be provided for each plant. Generally only high value crops are considered because of the high capital costs of installing a drip system.

2. Suitable slopes:

Drip irrigation is adaptable to any farmable slope. Normally the crop would be planted along contour lines and the water supply pipes (laterals) would be laid along the contour also. This is done to minimize changes in emitter discharge as a result of land elevation changes.

3. Suitable soils:

Drip irrigation is suitable for most soils. On clay soils water must be applied slowly to avoid surface water ponding and runoff. On sandy soils higher emitter discharge rates will be needed to ensure adequate lateral wetting of the soil.

4. Suitable irrigation water:

One of the main problems with drip irrigation is blockage of the emitters. All emitters have very small waterways ranging from 0.2-2.0 mm in diameter and these can become blocked if the water is not clean. Thus it is essential for irrigation water to be free of sediments. If this is not so then filtration of the irrigation water will be needed.

17.5 Components of Automatic Drip Irrigation System:

1. Arduino Uno
2. USB Programming cable
3. Soil moisture sensor
4. Motor Pump
5. 5V SMPS Adapter
6. LCD 16*2 Display
7. Water level switch
8. 10K Potentiometer
9. Bread board
10. Male Female Wires

Chapter 18 Social Activities – Any Activates Planned by Students (e. g. Teaching Learning activities, awareness camp, business idea for SELF HELP GROUP OR ANY OTHER)

Corona virus awareness program

❖ Do this to avoid corona virus

- ✓ Face don't touch it
- ✓ Mandatory wearing of mask
- ✓ Maintaining social distance
- ✓ Do not leave the house with any reason.(stay home stay safe)
- ✓ Wash hand frequently
- ✓ Take a vaccine compulsory

Fig No. 58 Covid Vaccine Carrier

Know how it spreads

- ✓ There is currently vaccine to prevent corona virus disease (COVID-19).
- ✓ The best way to prevent illness is to avoid being exposed to this virus.
- ✓ The virus is thought to spread mainly from person-to-person.
- ✓ Between people who are in close contact with one another (within about 6 feet).
- ✓ Through respiratory droplets produced when an infected person coughs or sneezes.

Take step:

Clean your hands often

- ✓ Wash your hands often with soap and water for at least 20 seconds especially after you have been in a public place or after blowing your nose, coughing, or sneezing.
- ✓ If soap and water are not readily available, use a hand sanitizer that contains at least 60% alcohol. Cover all surfaces of your hands and rub them together until they feel dry.
- ✓ Avoid touching your eyes, nose, and mouth with unwashed hands.

Avoid close contact

- ✓ Avoid close contact with people who are sick
- ✓ Put distance between yourself and other people if COVID-19 is spreading in your community. This is especially important for people who are at higher risk of getting very sick.

Take steps to protect others

- ✓ Stay home if you're sick

Cover coughs and sneezes

- ✓ Cover your mouth and nose with a tissue when you cough or sneeze or use the inside of your elbow.
- ✓ Throw used tissues in the trash.
- ✓ Immediately wash your hands with soap and water for at least 20 seconds. If soap and water are not readily available, clean your hands with a hand sanitizer that contains at least 60% alcohol.

Wear a facemask if you are sick

- ✓ If you are sick: You should wear a facemask when you are around other people (e.g., sharing a room or vehicle) and before you enter a healthcare provider's office. If you are not able to wear a facemask (for example, because it causes trouble breathing), then you should do your best to cover your coughs and sneezes, and people who are caring for you should wear a facemask if they enter your room. Learn what to do if you are sick.
- ✓ If you are NOT sick: You do not need to wear a facemask unless you are caring for someone who is sick (and they are not able to wear a facemask). Facemasks may be in short supply and they should be saved for caregivers.

Clean and disinfect

- ✓ Clean AND disinfect frequently touched surfaces daily. This includes tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets, and sinks.
- ✓ If surfaces are dirty, clean them: Use detergent or soap and water prior to disinfection

Take a vaccine

- ✓ The vaccine is an effective way to prevent corona virus. So he inspired the people to take the vaccine to create awareness among the villagers and explained its benefits.

Chapter 19. Sukhpur Village SAGY Questionnaire Survey form with the Sarpanch Signature (Scanned copy attachment in the soft copy report and Original copy in hardbound report)

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Sukhpur Gram Panchayat: Sukhpur Ward No 1

Block: 1 District: Junagadh

State: Gujarat L S Constituency: —

1. Family Identity and Size

Name of Head of Household	Vandlal Veljibhai Hirapara						Male/ Female	M
SECC Survey ID:		Family Size	4	Over 18	3	6 to 18	1	Under 6	0

2. Category & Entitlement Details (Tick as appropriate)

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

2. Adults (above 18 years)

Name	Age	Sex M/F/O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/N)	Bank A/C (Y/N)	Social Security Pension[5]
Vandlal Veljibhai	51	M	Y	M	10th	Y	Y	No
Pitaben	46	F	Y	M	6th	Y	Y	No
Jipchi	21	F	Y	Un-M	B.Com	Y	Y	No
Divyesh	19	M	Y	Un-M	12th	Y	Y	No

3. Children from 6 years and up to 18 years

Name	Age	Sex M/F/O	Disability Y/N	Marital Code*	Level of Education: Code#	Going to School /College (Y/N)	Current Class	Computer Literate Y/N
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

4. Children below 6 years

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

[1] Scheduled Caste 1, Scheduled Tribe 2, Other Backward Castes 3, Other 4
[2] Enter the BPL Survey round being used in the Gram Panchayat for identification of BPL Families (e.g. 1997/2002/2011)
[3] Marital Status Not Married – 1, Married – 2, Widowed – 3, Divorced/Separated – 4
[4] Level of Education: Not Literate – 01, Literate – 02, Completed Class 5 - 03, Class 8th – 04, Class 10th-05, Class 12th-06, ITI Diploma-07, Graduate-08, Post Graduate/Professional – 09 (write the highest level applicable)
[5] No Pension – 0, Old Age Pension – 1, Widow Pension – 2, Disability Pension – 3, Other Pension – 4 (mention)

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

5. Hand washing

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

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

7. Do members take Regular Physical Exercise

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

8. Consumption of Tobacco

	Smoking	Chewing
Adults	No	No
Children	No	No

9. House & Homestead Data

Own House: Yes / ~~No~~	No. of Rooms: 3
Type: ~~Kutcha~~ / Semi ~~Pucca~~ / Pucca	
Toilet: Private / ~~Community~~ / ~~Open Defecation~~	
Drainage linked to House: Covered / ~~Open~~ / ~~None~~	
Waste Collection System	~~Door Step~~ / Common Point / ~~No~~ Collection System
Homestead Land: Yes / ~~No~~	Kitchen Garden : Yes / ~~No~~
Compost Pit: ~~Individual~~/ Group/ ~~None~~	Biogas Plant: ~~Individual~~/ ~~Group~~/ None

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

Source of Water		Distance
Piped Water at Home	Yes / ~~No~~	0.1 Km
Community Water Tap	~~Yes~~ / No	
Hand Pump (Public / Private) ~~Yes~~ / No		
Open Well(Public / Private) ~~Yes~~ / No		
Other (mention): Bore well		

11. Source of Lighting and Power

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

12. Landholding (Acres)

1. Total	2.6	2. Cultivable Area	6
3. Irrigated Area	6	4. Uncultivable Area	No

13. Principal Occupations in the Household

Livelihood	Tick if applicable
Farming on own Land	✓
Sharecropping /Farming Leased Land	–
Animal Husbandry	✓
Pisciculture	–
Fishing	–
Skilled Wage Worker	–
Unskilled Wage Worker	✓
Salaried Employment in Government	No
Salaried Employment - Private Sector	No
Weaving	–
Other Artisan(mention) –	
Other Trade & Business (mention) Farmer	

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

15. Agriculture Inputs

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

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

Name	Unit	Quantity
મગફળી	ગુણોમાં	5 ગણી
ચણાની	ગુણોમાં	10 ગણી
ઘઉંની	ગુણોમાં	10 ગણી

17. Livestock Numbers

Cows: –	Bullocks: 2	Calves: –
Female Buffalo: –	Male Buffalo: 2	Buffalo Calves: –
Goats/ Sheep: –	Poultry/ Ducks: –	Pigs: –
Any other: Type No		No. –
Shelter for Livestock: Pucca / Kutcha / None		
Average Daily Production of Milk(Litres): –		

18. What games do Children Play

No

19. Do children play musical instrument (mention)

No

Schedule Filled By: Chintan Jughersiga. Krishan Kotadiya
Principal Respondent:
Date of Survey: 16-03-2021

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

I. Basic Information

a. Gram Panchayat: Sukhpur

b. Block: 1

c. District: Junagadh

d. State: Gujarat

e. Lok Sabha Constituency: Junagadh

f. Number of Wards in the Gram Panchayat: 8 Wards

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages: Sukhpur

Demographic Information

Number of Households 250 Total Population 1366 Male 729 Female 664

SC HHs _____ ST HHs _____ OBC HHs _____ Other HHs _____

I. Access to Infrastructure / Facilities / Services

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
a.	ANM/ Health Sub Centre	No	–
b.	Nearest Primary Health Centre (PHC)	No	–
c.	Nearest Community Health Centre (CHC)	No	–
d.	Nearest Post Office	No	–
e.	Nearest Bank Branch (Any)	No	–
f.	Nearest Bank with CBS Facility	No	–
g.	Nearest ATM	No	–
h.	Nearest Primary School	✓	200 m
i.	Nearest Middle School	✓	200 m
j.	Nearest Secondary School	✓	200 m
k.	Nearest Higher Secondary School / +2 College	✓	450 m
l.	Nearest Graduate College	No	–
m	Nearest ITI / Polytechnic Centre	No	–
n	Kisan Seva Kendra	No	–

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

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society	No	–
p	Nearest Agro Service Centre	No	–
p	MSP based Government Procurement Centre	No	–
q	Milk Cooperative /Collection Centre	✓	100 m
r	Veterinary Care Centre	No	–
s	Ayurveda Centre	No	–
t	E – Seva Kendra	No	–
u	Bus Stop	No	–
v	Railway Station	No	–
w	Library	No	–
x	Common Service Centre	Yes	–

IV. Sports Facilities in the Gram Panchayat

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

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 1

b. Number of villages without Angan Wadi Centres –

Names of such villages: –

c. Schools (Number)

Primary Private: – Primary Govt.: ✓

Middle Private: – Middle Govt.: ✓

Secondary Private: – Secondary Govt.: ✓

Higher Secondary Private: – Higher Secondary Govt: –

VI. Public Distribution System

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

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

VII. Coverage of Villages under different Facilities & Services

	Parameter	Villages Status[1]	Names of Villages Covered	Names of Villages not Covered
a.	Piped Water Supply Coverage to Villages	Covered ✓ / Not Covered ✗	Sukh pur	—
b.	Hand Pump Coverage in Villages:	Covered ✓ / Not Covered ✗	Sukhpur	—
c.	Coverage under Covered Drains:	Covered ✓ / Not Covered ✗	Sukhpur 70 %	—
d.	Coverage under Open Drains:	Covered ✓ / Not Covered ✗	Sukhpur 80 %	—
e.	Villages with Household Electricity Connection (Numbers)	Connected ✓ / Not Connected ✗	Sukhpur	—

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land		d.	Pasture / Grazing Land	–	g.	Check Dam	5
b.	Irrigated Land		e.	Forests/ Plantations 1	20	h.	Wells/Bore Wells – 3 0	
c.	Un-irrigated Land		f.	Other Common Land	–	i	Tanks /Ponds	1

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

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

IX. Parameters relating to Households & Institutions

		Number
a)	Number of eligible Households for pension (old age, widow, disability)	320
b)	Number of Households receiving pension (old age, widow, disability)	–
c)	Number of eligible Households who are not receiving pension	2
d)	Number of Households eligible for Ration Card	
e)	Number of eligible HHs having ration cards	
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	
h)	Number of active Job Card holders under MGNREGA	
i)	Number of Job Card holders who completed 100 days of work during 2013-14	
j)	Number of shops selling alcohol	–
k)	Number of BPL families	
l)	Number of landless households	90
m)	Number of IAY beneficiaries	
n)	Number of FRA[2] beneficiaries	–
o)	Number of Community Sanitary Complexes	–
p)	Number of Households headed by single women	4
q)	Number of Households headed by physically handicapped persons	6
r)	Total number of Persons with Disability in the village	
s)	Number of SHGs	–
t)	Number of active SHGs	–
u)	Number of SHG Federations	–
v)	Number of Youth Clubs	1
w)	Number of Bharat Nirman Volunteers	–

Name and Signature of Surveyor and Respondent'

Kisham Kotadiya Chintan Vaghasiya Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	16-03-2021 Date of Survey

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

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: Sukhpur

b. Ward Number: 1

c. Gram Panchayat: Sukhpur

d. Block: 1

e. District: Junagadh

f. State: Gujarat

g. Lok Sabha Constituency: Junagadh

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

i. Names of Habitations / Hamlets: Sukhpur

Demographic Information

Number of Households 250 Total Population 1386 Male 729 Female 664

SC HHs _____ ST HHs _____ OBC HHs _____ Other HHs _____

II. Access to Infrastructure/Amenities etc.

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
a.	Nearest Primary School	✓	200 m
b.	Nearest Middle School	✓	200 m
c.	Nearest Secondary School	✓	200 m
d.	Kisan Seva Kendra	No	-
e.	Milk Cooperative /Collection Centre	✓	100 m
g.	Health Sub Centre	No	-
h.	Bank	No	-
i.	ATM	No	-
j.	Bus Stop	✓	1 km
k.	Railway Station	No	-

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

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

ii. Road Connectivity

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

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

iii. Drinking Water Facilities

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

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

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

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

iv. Coverage of Habitations under Waste Management System

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

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

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

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

c. Coverage under Doorstep Waste Collection: *(1-All 2-None 3-Some)*

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

v. Coverage of Habitations under Electrification

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

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

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

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

vi. Sports Facilities in the Village

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

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 1

c. Schools (Number)

Primary Private: - Primary Govt.: 1

Middle Private: - Middle Govt.: 1

Secondary Private: - Secondary Govt.: 1

Higher Secondary Private: - Higher Secondary Govt: -

2

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

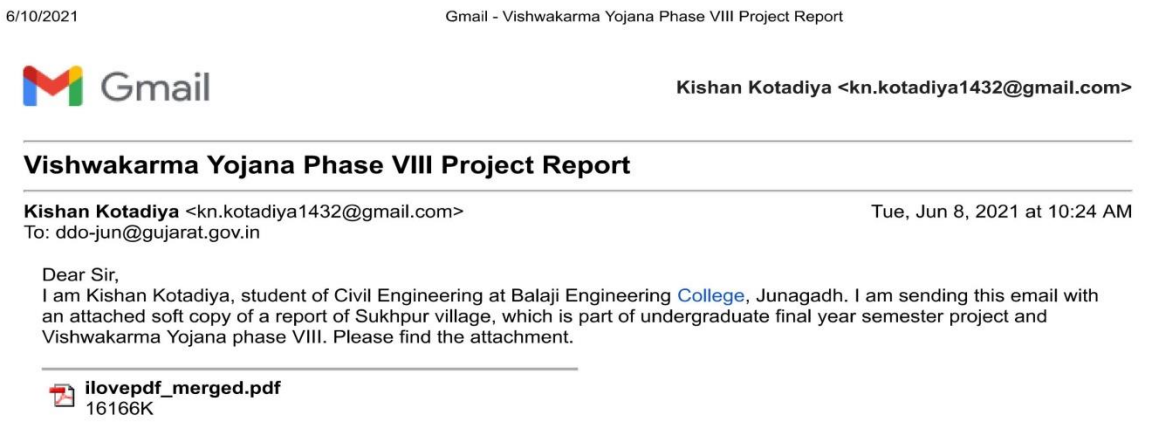
viii. Land Category		Area in Acres		Land Category	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land		d.	Pasture / Grazing Land	–	g.	Check Dam	5
b.	Irrigated Land		e.	Forests/ Plnatations 1	20	h.	Wells/Bore Wells –3 0	
c.	Un-irrigated Land		f.	Other Common Land	–	I	Tanks /Ponds	1

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	
2	Number of active Job Card holders who have completed 100 days of work	
3	Number of shops selling alcohol	–
4	Number of BPL families	
5	Number of landless households	90
6	Number of IAY beneficiaries	
7	Number of FRA beneficiaries	–
8	Number of common sanitation complexes	–
9	Number of SHGs	–
10	Number of active SHGs	–
11	Existence of SHG Federation in the Village (Yes / No)	–
12	Number of Youth Clubs	1
13	Number of Bharat Nirman Volunteers	–

Name and Signature of Surveyor and Respondent'

Kishan Kotadiya Chintan Jughasiya Surveyor	સરપંચ ગ્રામ પંચાયત - સુખપુર PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	સરપંચ ગ્રામ પંચાયત - સુખપુર Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	16-05-2021 Date of Survey

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



6/10/2021 Gmail - Vishwakarma Yojana Phase VIII Project Report

Gmail

Kishan Kotadiya <kn.kotadiya1432@gmail.com>

Vishwakarma Yojana Phase VIII Project Report

Kishan Kotadiya <kn.kotadiya1432@gmail.com> Tue, Jun 8, 2021 at 10:24 AM
To: ddo-jun@gujarat.gov.in

Dear Sir,
I am Kishan Kotadiya, student of Civil Engineering at Balaji Engineering College, Junagadh. I am sending this email with an attached soft copy of a report of Sukhpur village, which is part of undergraduate final year semester project and Vishwakarma Yojana phase VIII. Please find the attachment.

ilovepdf_merged.pdf
16166K

https://mail.google.com/mail/u/0?ik=3ed8dd1de3&view=pt&search=all&permmsgid=msg-a%3Ar-8547237797377385454&simpl=msg-a%3Ar-8547237… 1/1

Chapter 21. Comprehensive report for the entire village

- ✓ As per the guideline of Vishwakarma Yojana VIII we visited Sukhpur village is a Junagadh taluka in Junagadh district of Gujarat state, India. It is located 8 km away from Junagadh. Sukhpur village population is 1386.
- ✓ To know or to understand the actual necessities of village by interacting with Sarpanch, Talati and other village dowelled.
- ✓ Techno-economic survey forms give much information about village by interacting with Sarpanch and Talati. But interactions with village dealers and observation of village condition are required.
- ✓ We visited all the internal part of the village and interacted with villagers directly and ask them about the present situation of the village. We conducted a techno-economic the gap analysis and provide the necessary facilities to village. We saw that as per UDPEI Norma there are some non-adequate facilities.
- ✓ We provide Septic tank, Cemetery, Public Health Centre, Playground and Krishi Seva Kendra. Then in second stage we will provide Bio-gas plant, Post office, Medical Store, ATM and Stationary shop. We explained all the parameters of various design such as sustainable, physical, social, socio-cultural, and smart and heritage village design.
- ✓ Our team of vy thanked all the members of the village for their support during this work period and made than understand that the implantation of such facilities can build a better village and hence lead to build a strongation.
- ✓ The presentation was very much interactive and helpful to understand various amenities to be designed at village level for me overall development of the Sukhpur village as Rurbanisation.