DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION

META KHAMBHALIYA Village
RAJKOT District

PREPARED BY

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
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Shri Labhubhai Trivedi Institute
of Engineering & Technology
Rajkot.

Assi. Prof. Mehul M. Chavda
Dept. of Civil Engineering

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad – 382424 Gujarat

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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: META KHAMBHALIYA

DISTRICT: RAJKOT

Under

Vishwakarma Yojana: Phase-VIII

In partial fulfilment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

During the academic year 2020-21.

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

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Date of Report Submission:	
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College Name:	Shri Labhubhai Trivedi Institute of Engineering & Technology
College Stamp:	

ABSTRACT

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.

"Vishwakarma Yojana": The proposed scheme provided by the Gujarat Government to GTU students for making the development of village. This plan gives the detailed development of the village by providing different facilities in unlike categories such as Physical infrastructure and (Water tank, Roads and other), Social Infrastructure (Health, Community Hall and other) and Sustainable Infrastructure (Biogas plant, Solar Street and other).This helps the urban peoples together with the rural peoples towards the nation progress. Generally the peoples living in villages are working as a farmer in major, so their living standards are not levelized to the rural ones. So, villagers migrate to city for money purposed as well as for their own personal progress. By providing such rural amenities in the village, it will leads as a helping hand in resisting the migration. Also helps in increasing the lifestyle of the people living in the village.

Meta Khambhaliya village is located at 65km away from Rajkot district. It is located on SH 104.Pin code of Meta Khambhaliya village is 364465. Meta Khambhaliya village is located in Gondal Tehsil of Rajkot district in Gujarat, India. The total geographical area of village is 1,224.19 hectare. Meta Khambhaliya has a total population of 2,043 peoples. There are about 400 houses in Meta Khambhaliya village. Rajkot is nearest town to Meta Khambhaliya which is approximately 65km away. Language Spoken are Gujarati.

The village has facilities of Primary school, Healthcare centre, Main road construct by blocking system but narrow road condition is poor, Panchayat building, Village also have river but not use properly, Milk Co-operative society, Problem of wastewater disposal system is not good, solid waste facility not available.

The government can develop the village in such a way that it can become an Educational Hub. Some special type of buildings which are helpful for villagers can be constructed here, like community hall, library, public toilet etc. we also request provide LED light system in streets.

In Meta Khambhaliya village out of total population, 823 were engaged in work activities. 98.42 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 1.58 % were involved in Marginal activity providing livelihood for less than 6 months. Of 823 workers engaged in Main Work, 450 were cultivators (owner or co-owner) while 267 were Agricultural labourer.

Key Words: Public library, Public toilet, Community hall, LED lights, NGOs

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
RCC	Reinforced Cement Concrete
CC	Cement Concrete
DPC	Dump Proof Course
SQ.M	Square Meter
CM	Cubic Meter
CCTV	Closed Circuit Television
TDO	Taluka Development Officer
DDO	District Development Officer
BARC	Bhabha Atomic Research Centre
SP	Sanitation Program
PPP	Public Private Partnership
PCC	Plain Cement Concrete
NH	National Highway
SH	State Highway
ODR	Ordinary District Road
MDR	Major District Road
GDP	Gross Domestic Product
PHC	Primary Health Centre
CHC	Community Health Centers
SWM	Solid Waste Management
NGO	Non-Governmental Organization
SC	Scheduled Cast
LED	Light Emitting Diode

Chapter 1. Ideal village visit from District of Gujarat State

1.1 Background & Study Area Location

- **Background :**

Ideal village is a concept adopted by national, state and local governments of India, as a focused on holistic rural development, derived from Mahatma Gandhi's vision of Adarsh Gram (ideal village). 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 villages.

- **Study Area Location :**

According to Census 2011 Vasavad village location code is 364490. Vasavad is a large village located in Gondal Taluka of Rajkot district, Gujarat with total 1157 families residing.

The Vasavad village has population of 6069 of which 3131 are males while 2938 are females as per Population Census 2011.In Vasavad village population of children with age 0-6 is 646 which makes up 10.64 % of total population of village. Average Sex Ratio of Vasavad village is 938 which is higher than Gujarat state average of 919. Child Sex Ratio for the Vasavad as per census is 856, lower than Gujarat average of 890.Vasavad village has lower literacy rate compared to Gujarat. In 2011, literacy rate of Vasavad village was 73.93 % compared to 78.03 % of Gujarat. In Vasavad Male literacy stands at 81.42 % while female literacy rate was 66.02 %.As per constitution of India and Panchyati Raaj Act, Vasavad village is administrated by Sarpanch (Head of Village) who is elected representative of village. Our website, don't have information about schools and hospital in Vasavad village.

VILLAGE	VASAVAD
TALUKA	GONDAL
DISTRICT	RAJKOT
LANGUAGE	GUJARATI, HINDI, ENGLISH, URDU
PINCODE	364490

Table No. 1 Study area and Location

1.2 Concept: Ideal Village, Normal Village

The main concept or difference which we aspect and analyzed of ideal and normal villages is an unideal village have good enough facility or system availability like irrigation, drainage system, sanitation, etc. is in good enough but ideal village have the all facility is very good and neat condition available.

1.2.1 Objectives:

- For sustainable and rapid development.
- For provide easier, faster and cheaper access to urban markets for agriculture production and other marketable commodities produces in such village.
- To encourage people with new technology and beneficial use.
- To prevent distress migration from rural to urban areas.
- Contribution towards social empowerment.

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

According to Census 2011 Vasavad village location code is 364490. Vasavad is a large village located in Gondal Taluka of Rajkot district, Gujarat with total 1157 families residing. The Vasavad village has population of 6069 of which 3131 are males while 2938 are females as per Population Census 2011.

Gram Panchayat	**Vasavad**
Block / Tehsil	Gondal
District	Rajkot
Pin code	364490
Area	2429 hec.
Population	6069
Households	1157
Nearest town	Rajkot
Nearest railway station	Gondal r.s. 30+ km

Table No. 2 Vasavad village (ideal)

Figure: 1. Map of Vasavad village

1.2.3 The idea of model/smart village:

What is smart village?

In smart village access sustainable energy services 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.

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

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

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

2. The Konark sun temple is one of the UNESCO heritage site. The main attraction of the temple is its twelve pairs of wheels located at the base of the temple. These wheels are not 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.

3. 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.

4. Flush toilets were first used in the Indus Valley Civilization. These existed in most homes and were connected to a sophisticated sewage mechanism. The civilization was prominent in hydraulic engineering.

5. Around 2550 BC, Imhotep, the first documented engineer, built a famous stepped pyramid for King Djoser located at Saqqara Necropolis. With simple tools and mathematics he created a monument that stands to this day. His greatest contribution to engineering was his discovery of the art of building with shaped stones. Those who followed him carried engineering to remarkable heights using skill and imagination.

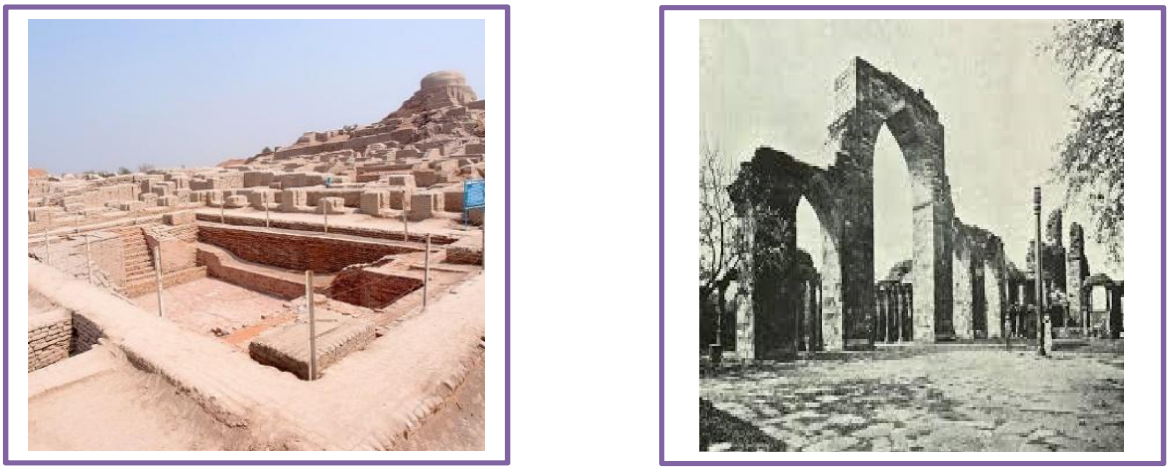


Figure 2 : Ancient History Civil concept about Village Perspective about village

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	Business	70%
	Labour work/own ship	16%
	Agriculture	15%

Table No. 3 Socio Economic Status

- **Physical and Demographic:**

Vasavad village is located in Gondal Tehsil of Rajkot district in Gujarat, India. Vasavad is located 80 km away from Rajkot. The area of village is 2429 hectares. Vasavad has a total population of 6069 peoples. There are about 1302 houses Vasavad village. Rajkot is nearest town to Vasavad which is approximately 80km away.

Sr. no	Census	Population	Male	Female
1	2001	6471	3335	3136
2	2011	6069	3131	2938

Table No. 4 Population of Vasavad village

Infrastructures details:

Bank

Temple

School

Bus Stop

Figure: 3.Vasavad village Bank, Bus stop, School, Temples

1.4 SWOT analysis of Ideal village / Smart Village

Strength	Weaknesses	Opportunities	Threats
Proper drainage facilities	Poor Waste Management	Improving in waste management	Not awareness of villagers about cleaning
Transportation facilities	Poor Public Building Condition	Maintenance of Public Buildings	Not awareness of villagers knowledge
Bank Facilities	No facilities for higher secondary Education	Educational awareness	Not awareness of villagers about educations

Table No. 5. SWOT Analysis

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

For future prospects, Vasavad village can use more advance technologies for agricultural, education, & for other requirements. For agricultural use different tech. like Soil and Water Sensors, Pervasive Automation, Minichromosomal Technology, Vertical Farming. For education use Wi-Fi system, computer lab, higher secondary school etc.

1.6 Benefits of the visits of Ideal village / Smart Village

We visited Vasavad village, Rajkot. By visit of this village Vasavad, 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 Electrical / Civil aspects required in Ideal village / Smart Village

After visit village we see many street light have solar system available but Some street lights not connect with this system and some streets not available, so we thin either LED system use or either Solar streets light system use.

Chapter 2. VILLAGE Literature Review

2.1 Introduction: Urban & Rural village concept

- **Urban :**
  An urban area is the region surrounding a city. Most people of urban areas have non-agricultural jobs. Urban areas are very developed, meaning there is a density of human structures such as houses, commercial buildings, roads, bridges, and railways. "Urban area" can refer to towns, cities, and sub-urban. According to census 2011, there are 7,935 towns, 4,041 statutory town and 3,894 census towns.

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

2.2 Importance of the rural development

Rural development is important not only for the majority of the population residing in a rural area but the growth of rural activities is necessary to stimulate the speed of overall economic expansion of the nation.
Rural development is a complete term that concentrates on the action taken for the development of rural areas improve the village economy. However, few areas that demand more focused attention and new initiatives are.

- Education
- Public Health and Sanitation
- Women Empowerment
- Infrastructure Development (e.g. electricity, irrigation, etc.)
- Facilities for agriculture extension and research
- Employment opportunity.

2.3 Ancient Villages / Different Definition of: Rural Urban Villages

- **Village :**

A village can be defined as a small community or clustered human settlement which is larger than hamlet but smaller then town with small population in which 75% male worker population is engaged with agricultural activity. Village is face some lack of facilities like water, transportation facility, education facility, employment and other technological facility, etc.

➢ **Urban:**

For the Census of India 2011, the definition of urban area is as follows;

1) All places with a municipality, corporation, cantonment board or notified town area committee, etc.

2) 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

The report speculates that by 2050, the urban population will have increased to 87.7 million and the rural population will account for 78.3 million people. The urban population of India has seen a rise from 17.1 per cent to 29.2 per cent between 1950 and 2015.

Meanwhile, the rural population declined from 82.9 per cent (in 1915) to 2015's 67.2 per cent. The speculation for the year 2050 suggests that the urban-rural segregation will be 52.8 and 47.2 with a difference of 5.6 per cent.

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

Population Growth: (for India)

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

Rural: 833,087,662 (68.84%)

Urban: 377,105,760 (31.16%)

INDIA	2001	2011	DIFFERENCE
Rural	74.3	83.3	9.0
Urban	28.6	37.7	9.1

Table No. 6. Population of Rural and Urban areas as per Census 2001 and 2011

Population Growth: (for Gujarat)
Total population: 60,439,692
Total population of male: 31,491,260
Total population of female: 28,948,432
Total population growth in decade is 19.28%
Out of total population of Gujarat, 42.60% people lives in urban region and rest in rural.

2.6 Rural Development Issues - Concerns - Measures

- A disproportionate burden of chronic disease relative to the general public.
- Restricted access to quality health care.
- Insufficient or lack of health insurance coverage.

- Geographic isolation.
- Lack of public transportation
- Poor infrastructure.
- Low educational attainment.
- The upper caste people still hold large lands while people of the lower castes own either marginal land or work as landless laborers.
- Lack of physical facilities in rural areas.
- Less awareness and less income opportunity.
- Economy of the people living in rural areas is low.
- Migration of people to urban areas.
- Fragmentation of land due to high rate of growth of population.
- Lack of skill development and lack of cash crunch.

2.7 Various infrastructure guidelines with the Norms for Villages for the provisions of different infrastructure facilities (Munjka Village)

Facilities	Planning Commission/UDPFI Norms	Required as per Norms
Education		
Anganwadi	Each Village	1
Primary School	Each Village	1
Secondary School	Per 7,500 Population	2
Higher Secondary School	Per 15,000 Population	0
College	Per 125,000 Population	0
Tech. Training Institute	Per 100,000 Population	0
Agriculture Research Centre	Per 100,000 Population	0
Medical Facility		
Gov./Panchayat Dispensary or Sub PHC or Health Centre	Each Village	1
PHC & CHC	Per 20,000 Population	0
Child Welfare and Maternity Home	Per 10,000 Population	1
Hospital	Per 100,000 Population	0
Transportation		
Pucca Village Approach Road	Each Village	
Bus/Auto Stand Provision	All Villages connected by PT (ST Bus or Auto)	1
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	1
Post Office	Per 10,000 Population	1
Gram Panchayat Building	Each individual/group Panchayat	1
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	1

Table No. 7. Norms for village for the provisions of different infrastructure facilities

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

- New technologies in education, e-learning, desktop publishing, horoscope generation of interested person of the village. Transportation of village into comfortable & safe space that enhance quality.
- Use of renewable energy.
- Smart security.
- Energy conservation.
- SOLAR STREET LIGHT
  Benefits:
  1. Zero running cost.
  2. Guarantied working in rainy weather.
  3. No schedule maintenance for up to 5 years.
  4. Environment friendly 100% powered by the sun.
  5. Solar panels reduce fossil fuel consumption.

Figure: 4. Solar Street lights

2.9 Other Projects / Schemes of Gujarat / Indian Government

- **Indira Awas Yojana (IAY) (1985):**

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

- **Central Rural Sanitation Programme (1986):**

This scheme aims at improving the quality of life of rural people and to provide privacy and dignity to women in rural areas. It led to the formulation of 'Total Sanitation Campaign' approach in 1999.

- **Pradhan Mantri Gram Sadak Yojna (PMGSY) (2000):**

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

According to latest figures made available by the State Governments under a survey to identify Core Network as part of the PMGSY program, about 1.67 lakh Unconnected Habitations are eligible for coverage under the program. This involves construction of about 3.71 lakh km. of roads 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 persons and above (500 persons and above in the case of hilly or tribal areas) with an all-weather road. A total of 59564 habitations are proposed to be provided new connectivity under Bharat Nirman. This would involve construction of 1, 46,185kms of rural roads. In addition to new connectivity, Bharat Nirman envisages up gradation/renewal of 1, 94,130kms of existing rural roads. This comprises 60% up gradation from Government of India and 40% renewal by the State Governments.

- **Provision of Urban Amenities in Rural Areas (PURA) (2004):**

The mission of this scheme was the holistic and accelerated development of compact areas around a potential growth center in a Gram Panchayat (or a group of Gram Panchayats) through Public Private Partnership (PPP) framework for providing livelihood opportunities and urban amenities to improve the quality of life in rural areas primary objective of this scheme is to provide good quality infrastructure and associate services in rural areas.

- **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) (2006):**

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

Other Yojanas & schemes:

National Agricultural Market (NAM)	Krishi Kalyan Abhiyaan
PM Fasal Bima Yojana	Krishi Vigyan Kendras (KVK)
Unified Package Insurance Scheme	Interest Subvention Scheme
Soil Health Card Scheme	National Mission on Sustainable Agriculture
Kisan Credit Card (KCC)	Soil Health Card Scheme
National Dairy Plan-I	Pandit Deen Dayal Upadhyay Unnat Krishi Shiksha Yojana
Arya Project	National Food Security Mission
Agri Udaan	Other Initiatives

Table No. 8. Yojanas & schemes

Chapter 3. Smart Concept Idea and its Visit (Civil Concept)

3.1 Introduction: Concepts, Definitions and Practices

- **Concept:**
  The basic concept of smart village is to collect community efforts and strength of people from various streams and integrate it with information technology to provide benefits to the rural community. According to Mahatma Gandhi's philosophy and thoughts smart village project provides, "Global means to the local needs."

- **Definitions:**

S	Social, skilled and simple.	Zero tolerance for caste and creed and no discrimination on gender and religion. Skilled simple living and high thinking.
M	Moral, methodical and modern.	Moral values of Mahatma Gandhi and Swami Vivekananda using modern (latest) methods.
A	Aware, adaptive and adjusting.	Awareness about global, social and economic issues adaptive and adjusting the fast changing environment.
R	Responsive and ready	Ready to generate all resources for self – sufficiency and self-governance. Responsive for co-operative movements and collective wisdom.
T	Techno savvy and transparent	Techno savvy for IT and transparent mobile usage harmonic relations.

Table No. 9. Definition of Smart village

3.2 Vision-Goals, Standards and Performance Measurement Indicators

- **Vision:**
  The vision of smart village is that modern energy access can act as catalyst for development in education, health, productive enterprise, clean water, sanitation, environmental sustainability and participatory democracy which helps to support further improvement in access to energy.

- **Goals:**
  - To provide global means to local needs to make village Rurban consisting of Rural Soul and Urban Facilities.
  - Provide basic amenities as well as sustainable and smart infrastructure and increasing citizen's accountability towards it.
  - Improving the economic conditions of the Semi-skilled and Un-skilled Labour by publishing their availability status on the Internet.
  - Identify the transport facility and need resident and business group of people and advantage technology can be used to address problems of safety and other facility.
  - To use the potential of IT to maximize the benefits for the rural community.

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

3.3 Technological Options

- **Smart bus stop:**
  In smart bus stop we can provide Wi-Fi 2G-3G antennas, Bus line status monitor, touch screen LCD monitor, USB recharging ports for mobile charging, security web cams. Etc.

Figure: 5. Smart bus stop

- **LED LIGHT:**
  LED lights to replace streetlights, pelican crossing, 3D zebra crossing, street furniture, Wi-Fi network, CCTV cameras and environment sensors. In Delhi, pilot on Mother Teresa Crescent road.

- **Smart water Harvesting and Irrigation:**
  In this type harvesting collect rain water through pipe connect with underground tank near farm and all harvest water use for irrigation different tech.

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

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

- **Smart people:**
  A Smart City needs the citizen to participate in order for the incoming initiatives to succeed. The existence of citizens able to participate wisely in smart urban life and to adapt to new solutions providing creative solutions, innovation and diversity to their communities is needed. Education appears as the main tool to improve this dimension, as well as initiatives to retain creative profiles.

- **Smart living:**
  As a conclusion, Smart Living is considered the wise management of facilities, public spaces and services using ICT technologies to put focus on improve accessibility, on flexibility of uses, and on getting closer to the citizens.

3.4 Road Map and Safe Guards

- **Study the Community:**
  Before deciding to build a smart city, first we need to know why. This can be done by defining the benefits of such an initiative. Study the community to know the Citizens, the business's needs – know the citizens and the community's unique qualities, such as the age of the citizens, their education, hobbies, and attractions of the city.

- **Engage the Citizens:**
  This can be done by engaging the citizens through the use of e- government initiatives, open data, sport events, etc.

- 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 (MoUD), among other

things, area-based plans allow for the purchase of buses and other means to augment public transportation.

3.5 Issues & Challenges

- **Role of Indigenous Technologies:**
  - Businesses and governments are starting to recognize the role of technology in meeting the goals of urban infrastructure provisioning both today and in the long term.
  - Dream of Smart cities can be achieved at accelerated pace with higher reliance on information and communications technology (ICT).
  - The smart city transformation would be fuelled by advance technology and the deployment of intelligence & information management systems.
  - Digital disruptions including social media, mobility, Machine-to-Machine, Internet of Things, Big Data, and Cloud Computing will become the backbone of next generation smart cities.
  - Higher levels of educational attainment are generally linked to better occupational prospects and higher income for individuals, hence having a positive effect on their quality of life.
  - People who have completed tertiary education improve their possibilities to secure a job: the unemployment rate decreases with the educational level.

- **Governmental Issues**
  - Improve supremacy.
  - India's pride lays having the longest and the most detailed constitution of the world.
  - Get better Infrastructure.
  - Raise essential Educational class.
  - Women Empowerment.
  - Poverty and inhabitants Explosion.
  - Privatization of Sports division.
  - Health Care Industries.

- 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

- **Define:**

  Smart Infrastructures comprise several operators from different domains of activity, such as energy, public transport, and public safety. They deploy and operate “cyber-physical systems”, that are data-controlled equipment which interact with the physical world.

- **Smart Infrastructure**: This includes the use of sensors and smart grid technologies to facilitate smart infrastructure, such as water and energy networks, streets, buildings, and so forth.

- **Smart Transportation (or Smart Mobility**): This includes transportation networks with improved, embedded real time monitoring and control systems.
- **Smart Environment**: This component provides a smart innovation and ICT to incorporate natural resource protection and supervision, such as a waste product management system, sensor based pollution control, and so on.
- **Smart Services**: Smart services utilize the technology and ICT for health, education, tourism, safety, and so forth.
- **Smart Governance**: This component introduces smart government in the urban space, associated with technology for service delivery and resource utilization with respect to government policy.
- **Smart People**: This component deals with creativity and innovation introduced by individuals in the society.
- **Smart Living**: This refers to the advancements that improve lifestyles and quality of life in the urban area.
- **Smart Economy**: This is the technology and innovation that escalate business growth, employment, and urban growth.

3.7 Cyber Security or any other concept

- **Cyber Security:**
  Hybrid cloud workload protection platforms (CWPP) provide information security leaders with an integrated way to protect these workloads using a single management console and a single way to express security policy, regardless of where the workload runs. Main areas sheltered in cyber security are:
  - Application Security
  - Information Security
  - Disaster recovery
  - Network Security

3.8 Retrofitting- Redevelopment- Greenfield Development District Cooling

- **Retrofitting** will introduce planning in an existing built-up area to achieve smart city objectives, along with other objectives, to make the existing area more efficient and liveable. 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 retrofitted smart city. This strategy may also be completed in a shorter time frame, leading to its replication in another part of the city.
- **Redevelopment** will effect a replacement of the existing built-up environment and enable co-creation of a new layout with enhanced infrastructure using mixed land use and increased density. Redevelopment envisages an area of more than 50 acres, identified by

Urban Local Bodies (ULBs) in consultation with citizens. For instance, a new layout plan of the identified area will be prepared with mixed land-use, higher FSI and high ground coverage.

- **Greenfield development** will introduce most of the Smart Solutions in a previously vacant area (more than 250 acres) using innovative planning, plan financing and plan implementation tools (e.g. land pooling/ land reconstitution) with provision for affordable housing, especially for the poor. Greenfield developments are required around cities in order to address the needs of the expanding population. One well known example is the GIFT City in Gujarat. Unlike retrofitting and redevelopment.

3.9 Strategic Options for Fast Development

There still isn't much of a consensus on how to define the term "smart city". Most explanations of the term, however, describe using information technology, most notably the quality of life for residents. The Smart Cities Council, a for-profit industry-led organization, states that a smart city harnesses information and communications technology to improve live ability, workability and sustainability. In essence, a smart city uses connected sensors and information technology to improve the quality of life of residents. There are few steps that have to be kept in mind while developing a Smart City:

- It starts with having the realistic plan
- Requirement of Extensive Experimentation of Smart Cities
- Energizing of private sector through Smart City Vision
- Smart Data demanded by the Smart Cities
- While rethinking about Transportation stay Creative
- Never underplay Digital Security

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

It is estimated that by 2050, half of India's population will be living in urban areas and will face acute water problems. At present, 163 million people do not have access to safe drinking-water and 210 million people lack access to improved basic sanitation in India. Whereas in rural areas, which accounts for 72% of India's population lives, only 84% have access to safe water and only 21% for sanitation.

- **Role of Indigenous Technologies:**

- Bhabha Atomic Research Centre (BARC) has developed several water purification devices and desalination techniques, as a part of its research and development efforts towards the betterment of society. These technologies or products are backed by robust design concepts

and pilot plant studies, which can cover the needs of households, communities, industries and metropolis.

- Unlike other devices available in the market which only deactivates the micro-organisms, this device physically eliminates them. This device does not require any electricity or any addition of chemicals.
- Removal of suspended particulates, colour and odour are additional benefits available in these units. A typical unit provides nearly sufficient water per day at 3 meters pressure head and can withstand up to 40 psig pressure (2.76bar).

3.11 Initiatives in village development by local self-government

- The function of a Government can be categorized into National, State and Local. Local Self-Governments are those bodies that look after the administration of an area and small community such as small village, town or a city.
- These bodies are appointed by the Government representing the local inhabitants, which raises its revenue partially through local taxation and other types of means. The Local Self-Government can be divided into various classes like Corporations, Cities, Town Municipalities and Town Panchayat on the basis of population. The administration system has 3 levels: village, block and district. Panchayat operate at a village level.
- Transforming existing Indian cities into Smart Cities or building new ones is a colossal task. Cities need to be able to assess their current situation and determine the critical capabilities needed to enable a Smart City.
- To help cities address these issues, the All India Institute of Local Self-Government (AIILSG) is assisting Raipur, Bilaspur, Chandigarh, Karnal and Faridabad in preparing for the proposal for the nationwide City challenge ‘being contested among 100 potential Smart Cities.

3.12 Smart Initiatives by District Municipal Corporation

➢ **RAJKOT:**

- Rajkot Municipal Corporation (RMC) will set up a sewage treatment plant (STP) with capacity of 80 million litters per day (MLD) at Madhapar. This will increase the civic body's installed STP capacity to nearly 170 MLD in couple of years.
- Deputy Chief Minister Nitin Patel will lay foundation stone for the Rs 45.7 Crore project at Madhapar. The central government has an approved 80 MLD plant under the AMRUT (Atal Mission for Rejuvenation and Urban Transformation). The Centre will contribute 33% towards the project, while state's share will be 37% and rest will be borne by the RMC. The new plant, with latest technology, will work according to new guidelines of the Central Pollution Control Board.
- According to RMC officials, the new STP will be take in operational in next two years and untreated sewage from various parts of the city will be treated at the new facility. “With addition of the new plant, there will be no release of untreated sewage into Nyari (2) and Aji.

- Recently Rajkot Municipal corporation is take a step for developing toward smart city and its vision to develop Rajkot as smart, liveable and iconic city of Gujarat with inclusive growth and sustainable development, by leveraging its historical strengths and providing state of the art infrastructure, delivery of services and empowering ecosystem by enabling citizens to realize their dreams.

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

- **Sansad Adarsh Gram Yojana:**
  Sansad Adarsh Gram Yojana is a rural development program generally focusing upon the development in the villages and rural which includes social-infrastructure development, sociocultural development. The program was launched by the Prime Minister of India, Narendra Modi on the birth anniversary of Jayaprakash Narayan, on 11 October, 2014.

  Goal: The goal is to develop three Adarsh Grams by March 2019, of which one would be achieved by 2016. Thereafter, five such Adarsh Grams (one per year) will be selected and developed by 2024.

  Objectives: 1. to trigger processes which lead to holistic development of the identified Gram Panchayats 2. To substantially improve the standard of living and quality of life of all sections of the population through

• Improved basic amenities • Higher productivity • Enhanced human development • Better livelihood opportunities	• Reduced disparities • Access to rights and entitlements • Wider social mobilization • Enriched social capital

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

- Life in Indian villages is simple and isolated; although they are connected now a days with cell phones and digital television transmission, yet they are cut off from the main stream of urban areas due to poor road connectivity and market for their agricultural commodities.
- The villages do not have enough electricity supply and all those work dependent on electricity, is affected.
- The health, educational and civil facilities are also either absent or not up to the mark. Making such villages as ‘Smart Villages’ is surely a noble program announced by Government”.

Chapter 4. About META KHAMBHALIYA Village

4.1 Introduction

4.1.1 Introduction About META KHAMBHALIYA Village details

Meta Khambhaliya village is located at 65km away from Rajkot district. It is located on SH 104.Pin code of Meta Khambhaliya village is 364465. Meta Khambhaliya village is located in Gondal Tehsil of Rajkot district in Gujarat, India.

4.1.2 Justification/ need of the study

- The village has facilities of Primary school, Healthcare center, Main road construct by blocking system but narrow road condition is poor, Panchayat building, Village also have river but not use properly, Milk Co-operative society, Problem of wastewater disposal system is not good, solid waste facility not available.
- For village development we design for public facilities are like Public toilet and garden, Community hall, Narrow road repair and maintenance, Public library etc.
- Physical infrastructure facilities such as Water, Drainage, Road network, transport facility, Electricity, sanitation, Irrigation, Solid waste Management, Storm Water Network, Telecommunication & other.
- Social infrastructural facilities such as Health, education etc.

4.1.3 Study Area (Broadly define)

Figure: 6 Map of Meta Khambhaliya

Village	Meta Khambhaliya
Tehsil	Gondal
District	Rajkot
State	Gujarat
Location	63.4km from Rajkot
Pin code	364465
Nearest Town	Rajkot (63.4km)

Table No. 10. Study area and Location

4.1.4 Objectives of the study

- To provide basic facilities in the village.
- To Reduce Migration.
- To provide the necessary designs of the public buildings which are not available in the village.
- Repair & maintenance of Existing Public Buildings like Gram Panchayat, Public Library, School Buildings, Health Center, and Public Toilet Block & Other.
- To promote integrated development of Munjka village with provision of required facilities, better connectivity, employment opportunities, etc.
- To develop the village such that it can be called a Smart Village.
- To collect socio-economic data through techno-economic survey.
- To propose the inclusive planning suited for ideal village.

4.1.5 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.
- Provide basic amenities in the rural area which are not existing with rural soul remain intact and to increase the livelihood of people.

4.1.6 Methodology Frame Work for development of your village

Concept
Literature review
Meeting with Surpanch
Meeting with revenue Talati
Techno Economic Survey

Collection of data
Analysis of data
Design Proposals
Future plan
Acknowledgement

4.1.7 Available Methodology for development of related to Civil

Primary school Anganwadi Reinforced cement concrete road Over headed water tank rectangular, circular Drainage System	Gram Panchayat Health Centre Road Community Hall Public Toilets Underground Sumps

4.2 META KHAMBHALIYA Study Area Profile

4.2.1 Study Area Location with brief History land use details

Meta Khambhaliya village is located at 65km away from Rajkot district. It is located on SH 104.Pin code of Meta Khambhaliya village is 364465. Meta Khambhaliya village is located in Gondal Tehsil of Rajkot district in Gujarat, India. The total geographical area of village is 1,224.19 hectare. Meta Khambhaliya has a total population of 2,043 peoples. There are about 400 houses in Meta Khambhaliya village. Rajkot is nearest town to Meta Khambhaliya which is approximately 65km away. Language Spoken are Gujarati.

4.2.2 Base Location map, Land Map, Gram Tal Map

Note: Based on Land fig. is already given im fig. no.6.

Figure: 7. Based on Location

4.2.3 Physical & Demographical Growth

The total geographical area of village is 1,224.19 hectare. Meta Khambhaliya has a total population of 2,043 peoples. There are about 400 houses in Meta Khambhaliya village. Rajkot is nearest town to Meta Khambhaliya which is approximately 65km away. Language Spoken are Gujarati.

- **Demographical Growth:**

Sr. No.	Census	Population	Male	Female	House Holds
1	2001	2012	1001	1011	378
2	2011	2043	1029	1014	400

Table No. 11. Demographical Growth

4.2.4 Economic generation profile / Banks

- The major population of Meta Khambhaliya village is engaged with Agricultural activities and Milk production, other some people is doing business and services.
- Some people are engaged with labor work.
- Some people also have shop keeping.
- In Agricultural activities major crops are: Peanuts • Cotton • Wheat • castor bean.

4.2.5 Actual Problem faced by Villagers and smart solution

The village has facilities of Primary school, Healthcare center, Main road construct by blocking system but narrow road condition is poor, Panchayat building, Village also have river but not use properly, Milk Co-operative society, Problem of wastewater disposal system is not good, Solid waste facility not available.

- **Problems:**
  - Solid Waste Management
  - Road embankment maintenance
  - Sanitary system
  - Water Harvesting system
  - Lake awareness of Knowledge
  - Lake awareness of Education

4.2.6 Social scenario -Preservation of traditions, Festivals, Cuisine

In Meta Khambhaliya many festivals are celebrating like Diwali, Makar sankranti, Holi, Ganesh chaturthi etc.

As mentioned before, the majority of residents are vegetarian. A traditional 'Gujarati Thali' consists of dal (lentils), rice, roti, and vegetables apart from farsan and a sweet dish

followed by Butter milk – a concoction of yoghurt, water and spices. Evening platter consist of khichdi kadhi or 'bhakri-shak'. Mainly, the diet of the people of Meta Khambhaliya consists of lentils, cereals, green leafy vegetables, milk, fruits, yoghurt, etc. A variety of accompaniments like pickles, papad, chutney, yoghurt, etc. serve as side dishes to the main menu.

4.2.7 Migration Reasons / Trends

Employment opportunities are the most common reason due to which people migrate. Except this, lack of opportunities, better education, construction of dams, globalization, natural disaster (flood and drought) and sometimes crop failure forced villagers to migrate to cities.

People may choose to immigrate for a variety of reasons, such as employment opportunities, to escape a violent conflict, environmental factors, educational purposes, or to reunite with family.

4.3. Data Collection Meta Khambhaliya Photograph/Graphs/Charts/Table)

4.3.1 Describe Methods for data collection

Data Collection of the village is first and most important step of this project. The Data of this village is collected from the records kept by The Surpanch, Talati Mantri, Anganwadi worker, etc. Also the information is obtained by communicating with villagers.

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.

4.3.2 Primary details of survey details

According to Census 2011 information the location code or village code of Meta Khambhaliya village is 513254. Meta Khambhaliya village is located in Gondal Tehsil of Rajkot district in Gujarat, India. It is situated 24km away from sub-district headquarter Gondal and 65km away from district headquarter Rajkot. As per 2009 stats, Meta Khambhaliya village is also a gram Panchayat.

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

The total geographical area of village is 1,224.19 hectare. Meta Khambhaliya has a total population of 2,043 peoples. There are about 400 houses in Meta Khambhaliya village. Rajkot is nearest town to Meta Khambhaliya which is approximately 65km away. Language Spoken are Gujarati.

4.3.4 No of Human being in One House

There are 400 household in the village and average no. of human in family is 4.

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

- In Meta Khambhaliya village uses stone, concrete, reinforcement, bricks, clay are used for construction and wooden also available for furniture works.
- Material outsource by villagers is Aggregate, sand main source out by the villagers.

4.3.6 Geographical Detail

The total geographical area of village is 1,224.19 hectare. Meta Khambhaliya has a total population of 2,043 peoples. There are about 400 houses in Meta Khambhaliya village. Rajkot is nearest town to Meta Khambhaliya which is approximately 65km away. Language Spoken are Gujarati.

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

Particular	Male	Female	Total
Population	1029	1014	2043
Child(0-6)	103	88	191
Schedule Caste	128	109	237
Literacy	82.34%	88.98%	74.6%
Workers	823	618	205
No of household	-	-	400

Table No. 12. Demographical Detail - Cast Wise Population Details

4.3.8 Occupational Detail - Occupation wise Details / Majority business

Labour (workers)	**70%**
Agriculture	20%
Business	10%

Table No. 13. Occupational Detail

4.3.9 Agricultural Details / Organic Farming / Fishery

- Main occupation of Meta Khambhaliya village is farming then most of people engaged with the farm.
- Main crops of the village is wheat, cotton, peanuts, all type grains etc. are the major crops of villages.

4.3.10 Physical Infrastructure Facilities - Manufacturing HUB / Ware Houses

- Local Transportation facility
- Electric facility
- Underground drainage
- Water tank
- Well
- Cement concrete road
- Underground sump
- Street road with conc. Block

4.3.11 Tourism development available in the village for attracting the tourist

In the village two famous tourist temple available, one Kolapari river is available which connect with Bhadar dam.

4.4 Infrastructure Details

4.4.1 Drinking Water / Water Management Facilities

- There is no facility in Meta Khambhaliya village drinking water facility but in temples provide drinking water facility or collect bottle from shop.
- In the village main water source is Municipal Narmada water or rain water use for daily routine.
- Water supply is collect from valve facility once or twice in week.
- For Agricultural activities water collect from river, rain or pumping through bore system.

Figure: 8. Overhead Tank

Figure: 9. Underground Sump

4.4.2 Drainage Network / Sanitation Facilities

Village drainage facility is normal because in Meta Khambhaliya village two types of drainage system under ground and open drainage system.
In village mostly area underground drainage system which good for village but, some area still have open drainage system.

4.4.3 Transportation & Road Network


Figure: 10. Road Network

The internal streets of village are made up of Cement concrete and conc. blocking system the outer road of the village is flexible pavement made up of mortar bituminous.

4.4.4 Housing condition


Figure: 11. Housing Network

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

Figure: 12. Social Infrastructure

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

In Meta Khambhaliya village have three public buildings available and village have public two temples.

- Condition of primary school is good enough.
- Condition of one Anganwadi is good one is poor condition.
- Condition of Panchayat building good condition.

4.4.7 Technology Mobile/ WIFI / Internet Usage Details

In this time all people using smartphone, so in Meta Khambhaliya most people using internet in mobile. In village no one using Wi-Fi system.

4.4.8 Sports Activity as Gram Panchayat

There is no Sport ground available in the village.

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

There is no Socio-Cultural Facilities, Public Garden /Park/Playground /Pond/ Other Recreation Facilities.

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

In Meta Khambhaliya No other facilities but in main street for security camera facility available.

4.4.11 Any other details

There is no other detail.

4.5 Existing Institution like - Village Administration – Detail Profile

4.5.1 Bachat Mandali

In Meta Khambhaliya village 12+ Bachat mandal in which money was raised and use for requirement purpose.

4.5.2 Dudh Mandali

There is two Dudh Mandali in village, one is government & one is Privet Mandali.

4.5.3 Mahila forum

In Meta Khambhaliya village 10 sakhi mandal working in which Many funds deposit in bank and after use who use for requirement.

4.5.4 Plantation for the Air Pollution

Meta Khambhaliya village have one garden site in which grow a flowers and vegetable parts, this site is near the SH road which good looking nature. This site grown by all villagers in “Vrikhsha ropan Day”.

4.5.5 Rain Water Harvesting - Waste Water Recycling

In this village no Knowledge about rain harvesting but many hoses use terrace water harvesting and collect water easily.

4.5.6 Agricultural Development

In village nowadays using Modified harvesting system using which good for farmers. For farming purpose use water village river collecting by pumping system.

4.5.7 Any Other

In village have announce system which get news about village or any meetings.

Chapter 5. Technical Options with Case Studies

5.1 Concept (Civil)

5.1.1 Advance Sustainable construction techniques / Practices and Quantity Surveying

Many organizations are recognizing the value of sustainable and green building methods. New advances in materials, technology and practices enable companies to use environmentally friendly processes that also lead to better overall efficiency.

Here are the top 10 sustainable building methods currently in use or under development:

1. IoT Integrated Automated Building Systems.
2. Synthetic Roof Underlayment.
3. Green Roofs.
4. Grid Hybrid System.
5. Passive Solar.
6. Greywater Plumbing Systems.
7. Electrochromic Glass.
8. Solar Thermal Cladding.
9. Structural 3D Printing.
10. Self-healing Concrete.

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.

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.

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. Storm water 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.

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. 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.

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.

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.

8. Solar Thermal Cladding

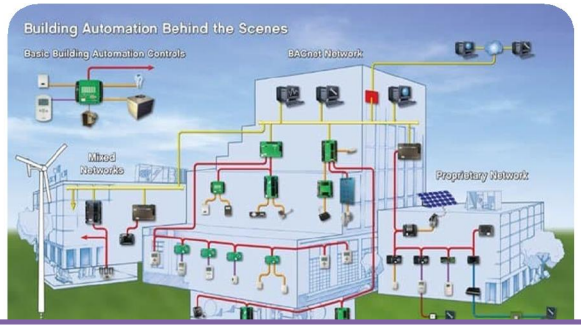
Solar thermal cladding is a passive solar building method designed specifically to hold heat during the winter. The sun's energy is stored within this material and passed through to the building for heat retention purposes.

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.

10. Self-healing Concrete

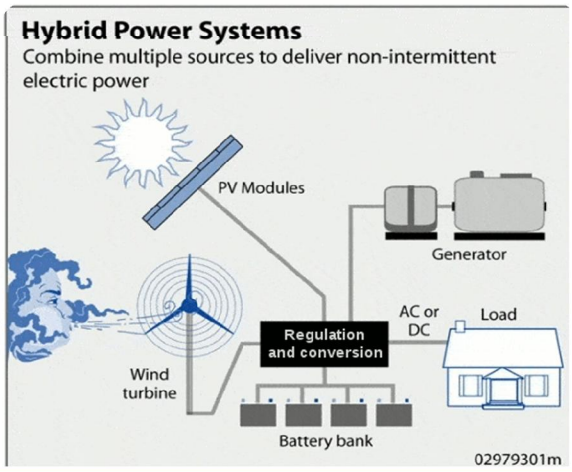
This material is in its early stages, but once it's commercially viable it opens up many sustainable possibilities. Everything from roads to walkways can benefit from concrete that heals itself. Road crews would no longer need to shut down busy streets and highway lanes to address potholes and cracks.



IoT Integrated Automated Building Systems.

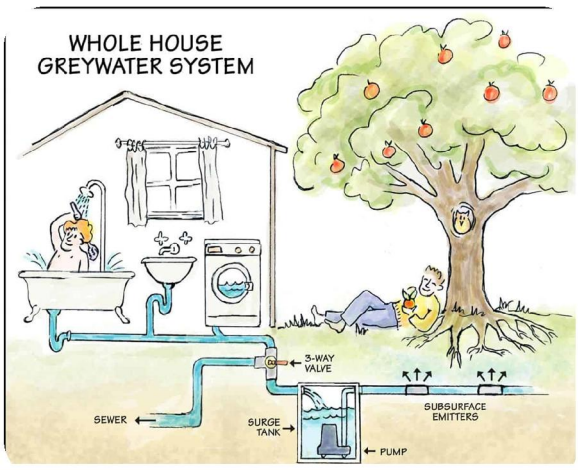
Synthetic Roof Underlayment.

Green Roofs.



Grid Hybrid System.

Electrochromic Glass.



Greywater Plumbing Systems.

Figure: 13. Advance Sustainable construction techniques

5.1.2 Soil Liquefaction

➢ **What is Soil liquefaction**?

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

- In soil mechanics, the term "liquefied" was first used by Allen Hazen in reference to the 1918 failure of the Calaveras Dam in California. He described the mechanism of flow liquefaction of the embankment dam as:

  "If the pressure of the water in the pores is great enough to carry all the load, it will have the effect of holding the particles apart and of producing a condition that is practically equivalent to that of quicksand the initial movement of some part of the material might result in accumulating pressure, first on one point, and then on another, successively, as the early points of concentration were liquefied."

Figure: 14. Soil liquefaction

5.1.3 Sustainable Sanitation

Sustainable sanitation is a sanitation system designed to meet certain criteria and to work well over the long-term. Sustainable sanitation systems consider the entire "sanitation value chain", from the experience of the user, excreta and wastewater collection methods,

transportation or conveyance of waste, treatment, and reuse or disposal. The Sustainable Sanitation Alliance (SuSanA) includes five features (or criteria) in its definition of……..
"Sustainable sanitation": Systems need to be economically and socially acceptable, technically and institutionally appropriate and protect the environment and natural resources.

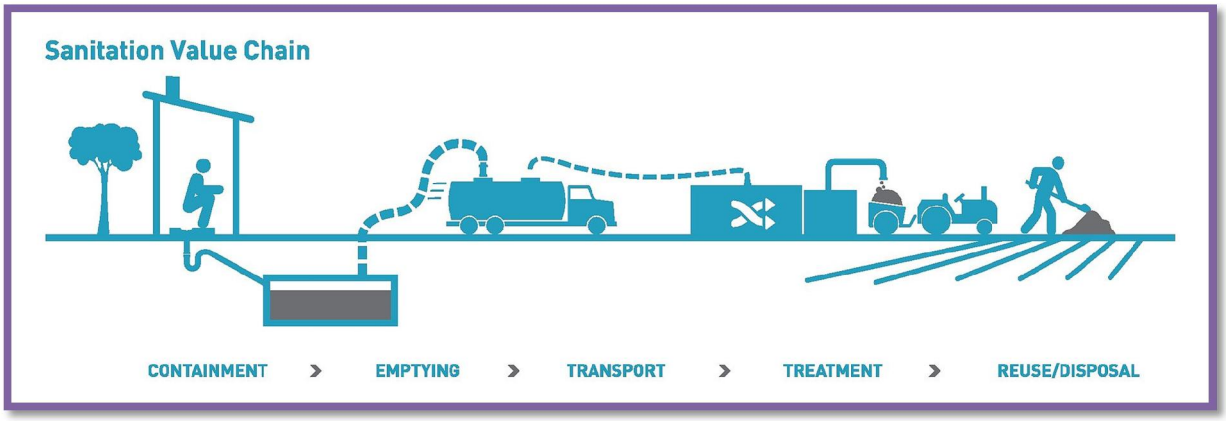


Figure: 15. Sustainable Sanitation

5.1.4 Transport Infrastructure / system

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

- **What is transport infrastructure?**
  They are often built on challenging and sensitive environments and over unexpected geotechnical conditions. Whether it's rural or urban roads, freight or passenger rail, commercial ports and airports or small regional or private operations – we have worked on transport infrastructure projects around the globe.

5.1.5 Vertical Farming

- **Define:**

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

  The modern concept of vertical farming was proposed in 1999 by Dickson Despommier, professor of Public and Environmental Health at Columbia University. Despommier and his students came up with a design of a skyscraper farm that could feed 50,000 people. Although the design has not yet been built, it successfully popularized the idea of vertical farming.

Figure: 16. Vertical Farming

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

Nowadays the increase content of pollutants in the city atmosphere has very much affected the lifespan of RCC structures. The increased content of pollutants include a very high rates of Sulphates and Chlorides which when these mixes with rain water and falls over these structures and damages the visible parts.

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

5.1.7 Sewage treatment plant

Sewage treatment is the process of removing contaminants from municipal wastewater, containing mainly household sewage plus some industrial wastewater. Physical, chemical,

and biological processes are used to remove contaminants and produce treated wastewater (or treated effluent) that is safe enough for release into the environment. A by-product of sewage treatment is a semi-solid waste or slurry, called sewage sludge. The sludge has to undergo further treatment before being suitable for disposal or application to land.

Sewage treatment may also be referred to as wastewater treatment. However, the latter is a broader term which can also refer to industrial wastewater. For most cities, the sewer system will also carry a proportion of industrial effluent to the sewage treatment plant which has usually received pre-treatment at the factories themselves to reduce the pollutant load. If the sewer system is a combined sewer then it will also carry urban runoff (storm water) to the sewage treatment plant. Sewage water can travel towards treatment plants via piping and in a flow aided by gravity and pumps. The first part of filtration of sewage typically includes a bar screen to filter solids and large objects which are then collected in dumpsters and disposed of in landfills. Fat and grease is also removed before the primary treatment of sewage.

- **Types of Sewage treatment plans**

- Activated sludge plant (ASP)
- Rotating disc system.
- Submerged aerated filter (SAF)
- Suspended Media Filters (SMF)
- Sequencing batch reactor (SBR)
- Non-electric filter.
- Trickling filter.

- **Process Flow**

1. **Primary Treatment**

In primary treatment, sewage is stored in a basin where solids (sludge) can settle to the bottom and oil and lighter substances can rise to the top. These layers are then removed and then the remaining liquid can be sent to secondary treatment. Sewage sludge is treated in a separate process called sludge digestion.

2. **Secondary Treatment**

Secondary treatment removes dissolved and suspended biological matter, often using microorganisms in a controlled environment. Most secondary treatment systems use aerobic bacteria, which consume the organic components of the sewage (sugar, fat, and so on). Some systems use fixed film systems, where the bacteria grow on filters, and the water passes through them. Suspended growth systems use “activated” sludge, where decomposing bacteria are mixed directly into the sewage. Because oxygen is critical to bacterial growth, the sewage is often mixed with air to facilitate decomposition.

3. Tertiary Treatment

Tertiary treatment (sometimes called "effluent polishing") is used to further clean water when it is being discharged into a sensitive ecosystem. Several methods can be used to further disinfect sewage beyond primary and secondary treatment. Sand filtration, where water is passed through a sand filter, can be used to remove particulate matter. Wastewater may still have high levels of nutrients such as nitrogen and phosphorus. These can disrupt the nutrient balance of aquatic ecosystems and cause algae blooms and excessive weed growth. Phosphorus can be removed biologically in a process called enhanced biological phosphorus removal. In this process, specific

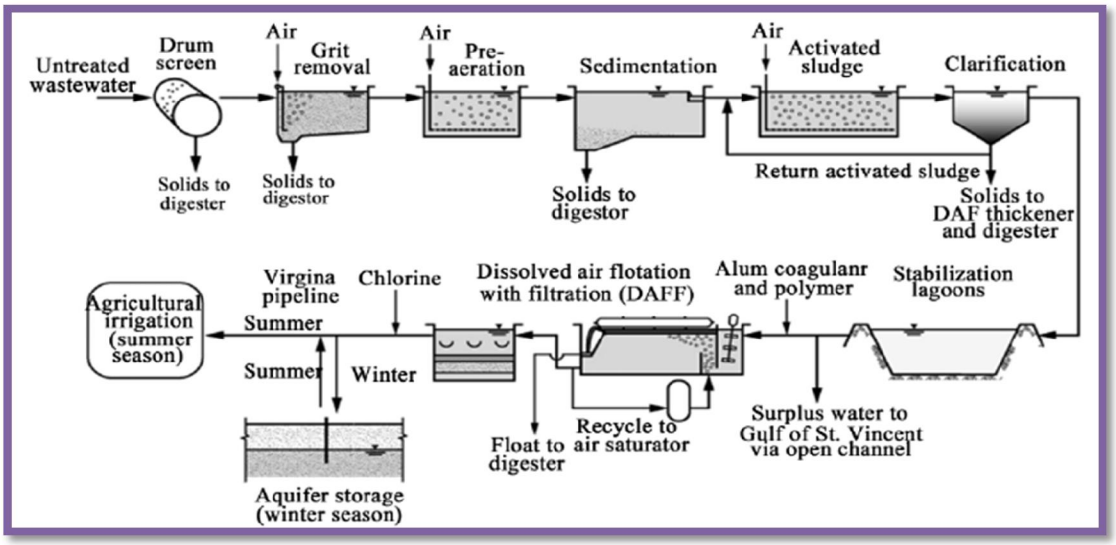


Figure: 17. Sewage Treatment process flow

5.1.8 Technical Case Study on "Atal Tunnel":

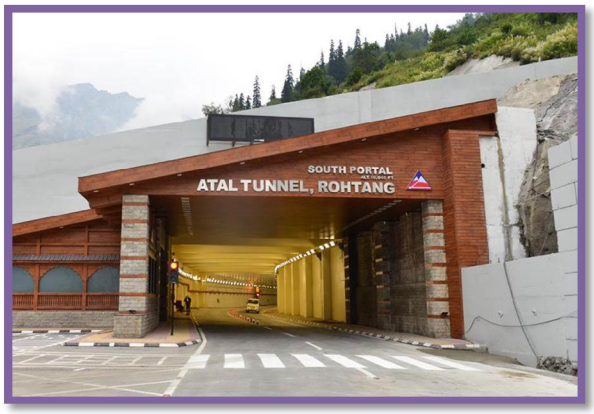
Atal Tunnel (also known as Rohtang Tunnel) is a highway tunnel built under the Rohtang Pass in the eastern Pir Panjal range of the Himalayas on the Leh-Manali Highway in Himachal Pradesh, India. At a length of 9.02 km, it is the longest tunnel above 10,000 feet (3,048 m) in the world and is named after former Prime Minister of India, Atal Bihari Vajpayee.

The tunnel reduces the travel time and overall distance between Manali and Keylong on the way to Leh. The route, which previously went through Gramphu, was 116 km (72.1 mi) long and took 5 to 6 hours in good conditions. The traveller now reaches the South Portal of the tunnel from Manali, a distance of 24.4 km (15.2 mi) in about 45 minutes, goes through the 9.02 km (5.6 mi) long tunnel in about 15 minutes, and reaches Keylong which is 37 km (23.0 mi) away in about 60 minutes. The new route via the tunnel brings down the total distance travelled to 71 km (44.1 mi) which can be covered in about 2 hours, a reduction of around 3 to 4 hours when compared to the earlier route. Moreover, the tunnel bypasses most of the sites that were prone to road blockades, avalanches, and traffic snarls.

The tunnel is at an elevation of 3,100 metres (10,171 ft.) whereas the Rohtang Pass is at an elevation of 3,978 metres (13,051 ft.). It was inaugurated by Prime Minister Narendra Modi on 3 October 2020. The cost of the entire project is ₹3,200 Crore (US$438 million).

Location & View:

The South Portal (SP) of Atal Tunnel is located at a distance of 25 Km from Manali at an altitude of 3060 Mtrs, while the North Portal (NP) of the tunnel is located near village Teling, Sissu, in Lahaul Valley at an altitude of 3071 Mtrs.



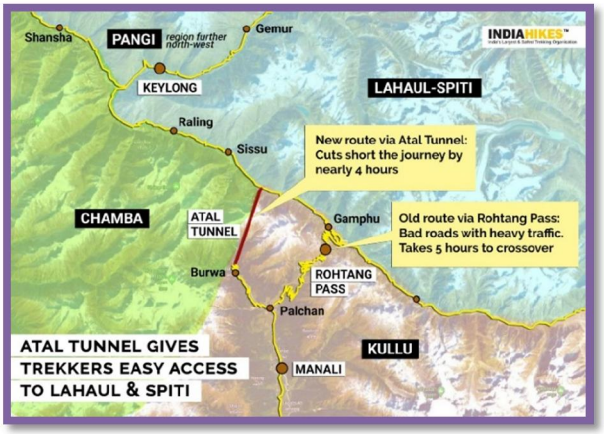


Figure: 18. Atal tunnel Location & view

History:

Prime Minister Nehru discussed a rope way to Rohtang Pass with local tribes in 1960. Almost 39 years after, when Atal Bihari Vajpayee became the Prime Minister, locals suggested his childhood friend Arjun Gopal visit him to talk about Rohtang Tunnel. Gopal and two companions, Chhering Dorje and Abhay Chand, moved to Delhi. After a year of discussions, Vajpayee went to Lahaul in June 2000 and declared that the Rohtang Tunnel would be constructed. RITES conducted a feasibility study.

In 2000, the project was estimated to cost ₹500 crore and be completed in seven years. On 26 May 2002, the Border Roads Organisation (BRO), a tri-service organisation of the Defence Ministry specialising in road and bridge construction in difficult terrains, headed by Lt. Gen. Prakash Suri, PVSM, was put in charge of construction. The approach road to the tunnel entrance was inaugurated by Atal Bihari Vajpayee.

However the project did not move beyond the tree-felling stage by May 2003. By December 2004, the cost estimate had grown to ₹900 crore. In May 2007, the government of Dr. Manmohan Singh awarded the contract to SMEC (Snowy Mountains Engineering Corporation) International Private Limited, an Australian company, and the completion date was revised to 2014. However, there was no progress for the next three years, until May 2010.

Finally, the Cabinet Committee on Security in UPA government cleared the Rohtang Tunnel Project. The work was awarded to a joint venture of AFCONS Infrastructure

Limited, an Indian construction company of Shapoorji Pallonji Group, and STRABAG AG, Austria, in September 2009. The drilling of the Rohtang Tunnel through the Himalayan ranges began on 28 June 2010 at the South Portal, 25 km (16 mi) north of Manali. Some of the anchoring and slope stabilisation work was subcontracted to Spar Geo Infra Pvt Ltd.

Prime Minister Narendra Modi renamed the tunnel as the Atal Tunnel, in honour of Shree Atal Bihari Vajpayee, on 25 December 2019, Vajpayee's birthday.

The Atal Tunnel has been planned to ensure an all-seasons, all-weather road route to strategically important areas of Ladakh and the remote Lahaul-Spiti valley. However, the tunnel will provide this connectivity only up to Darcha, north of Keylong in the Lahaul region of Himachal Pradesh. Connectivity to Ladakh will require more tunnels: either at Shikun La, or at the passes located on the present Leh-Manali road.

Design & Founding

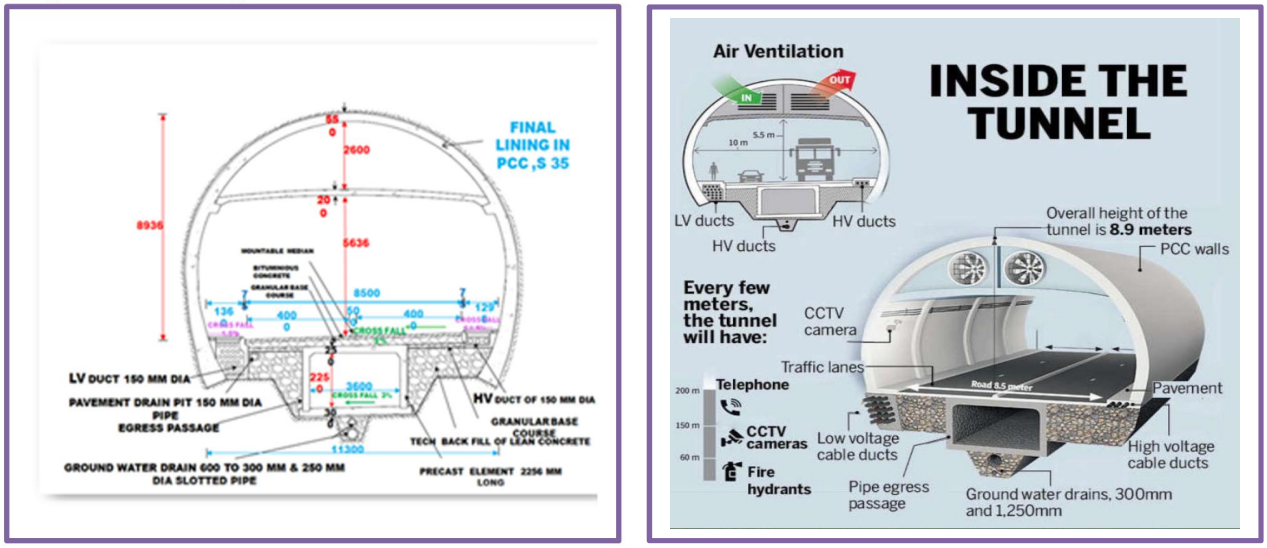


Figure: 19. Design & Founding of Atal Tunnel

Challenges:

The most challenging task was to continue the excavation during heavy snowfall in winter. Excavation for tunnelling was done from both ends. However, as Rohtang pass closes during the winter, the north portal was not accessible during winter and the excavation was being done only from the south portal in winters. Only about one-fourth of the entire tunnel was excavated from the north end and three-fourths was excavated from the south end. There were more than 46 avalanche sites on approaches to the tunnel.

Other challenges to the progress of the tunnel included difficulties in disposing more than 8 lakh m³ of excavated rock and soil, heavy ingress of water (as much as 30 lakh litres per day in June 2012) that required constant dewatering, costlier treatment and slowed the progress of excavation from 5-metre per day to just half a metre a day and unstable rocks that slowed blasting and digging. A cloud-burst and flash flood on 8 August 2003 killed 42 labourers who were building the temporary access road. Questions were also raised on the impact of cutting down more than 700 trees on the ecology.

Atal tunnel Specifications & Features:

- Length: 9.02 km (5.6 mi)
- Shape (cross-section) of Tunnel: Horseshoe
- Finished width: 10.00 m (32.8 ft) at road level. (8m pavement and 1m footpath on both sides)
- General altitude of the tunnel: 3,000–3,100 m or 9,840–10,170 ft.
- Designated vehicular speed: 80 km/h (50 mph)
- Geology of tunnelling media: Uniformly dipping alternate sequence of quartzites, quartzitic schists, quartz-diolite-schist with thin bands.
- Tunnel boring machines were not used because of the inability to see inside the mountain, instead blasting and digging used to build the tunnel.
- Temperature variation in the area: 25–30 °C (77–86 °F) during May–June, −30 to −20 °C (−22 to −4 °F) during Dec–Jan.
- Overburden: Maximum 1,900 metres (6,230 ft.), average more than 600 m (1,970 ft)
- Construction technique: Drill & Blast with NATM
- Support system: Fibre-reinforced concrete (100–300mm or 0–10 inch thick) combined with rock bolt (26.50mm dia., 5,000–9,000mm or 200–350 inch long) has been used as the principal support system. In areas of poor rock condition, yieldable steel ribs (ISMB 150/ISMB 300) have been used.
- Tunnel ventilation: Semi-transverse system of ventilation.
- A 2.25 m high and 3.6 m wide emergency tunnel is integrated in the tunnel cross-section beneath the main carriageway.

The following parameters have been set in design:

- (a) Upper tolerance limit for concentration – 150ppm
- (b) Visibility factor – 0.009/m
- (c) Vehicles
- (i) Cars – 3000 Nos.
- (ii) Trucks – 1500 Nos.
- (d) Peak hour traffic – 337.50 PCUs
- (e) Design vehicular speed in Tunnel
- (i) Maximum Speed – 80 km/h (50 mph)
- (ii) Minimum Speed – 30 km/h (19 mph)

Project Cost: Approximately ₹3,200 crore

Chapter 6. Swatchh Bharat Abhiyan (Clean India)

6.1 Swatchhta needed in allocated village -Existing Situation with photograph

Figure: 20. Meta Khambhaliya streets

In Meta Khambhaliya village we see in street sides many heaps full of kitchen waste, cow dung, and many other wastes and no one collect the waste. Some villagers use cow dung use for agricultural purpose as natural fertilizer, but lake awareness of clean villages' villager can't keep clean the village.

6.2 Guidelines - Implementation in allocated village with Photograph

To accelerate the efforts to achieve universal sanitation coverage and to put focus on safe sanitation, the Prime Minister of India launched the Swachh Bharat Mission on 2nd October, 2014. The Mission Coordinator shall be Secretary, Ministry of Drinking Water and Sanitation (MDWS) with two Sub-Missions, the Swachh Bharat Mission (Gramin) and the Swachh Bharat Mission (Urban), which aims to achieve Swachh Bharat by 2019, as a fitting tribute to the 150th Birth Anniversary of Mahatma Gandhi, which in rural areas shall mean improving the levels of cleanliness in rural areas through Solid and Liquid Waste Management activities and making Gram Panchayats Open Defecation Free (ODF), clean and sanitized.

- **Implementation:**
  Behaviour Change/IEC:
  Behaviour change has been the key differentiator of Swachh Bharat Mission and therefore emphasis is placed on Behaviour Change Communication (BCC). BCC is not a 'stand-alone' separate activity to be done as a 'component' of SBM-G, but about mobilizing and nudging communities into adopting safe and sustainable sanitation practices through effective BCC.

Inter Personal Communication (IPC):

Focus will be on use of Inter Personal Communication (IPC), especially for triggering of demand and use of toilets through social and behavioural change communication and house-to house interventions. Hygiene and sanitation intervention to include an essential element of social behaviour change, alongside infrastructure, without which the desired outcomes cannot be achieved.

6.3 Activities Done by Students for allocated village with Photograph

We design for solid waste management this work effect on village and Swachh Bharat Abhiyaan. In design we decide Meta Khambhaliya Village all street put a dustbin with different color for different types of waste.

We also decide home side bin system in this system all houses outside area put a bin and collect by municipal party workers.

Figure: 21. In village dustbin system

Chapter 7. Village condition due to Covid-19

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

In Meta Khambhaliya village in covid-19 situation all villagers are follow all rules given by government and also follow social distancing. In village many circles create around the shop and after follow the villagers shopping happily. Villagers also wear a mask and use sanitizer after do all work, also in shop or any other homes, Panchayat set a sanitizer stand.

Figure: 22. In village Covid-19 Safety Precautions

7.2 Activities Done by Students for allocated village Clean with Photograph

- In village some people still in this situation not follow the guideline and social distancing so in village 21+ covid-19 cases.
- We also inspect the village at that time some people are chilling outside of shops for no need or any other work so we give advice to sarpanch for reduce the cases and we suggest announce the village no one seat out of home if not necessary and when out of home or any work then wear a mask and always sanitize your hands.
- If other people come out in village then come to him and the report of covid-19 test or quarantine min. 14 days after enter in the village permission with the sarpanch.

7.3 Any other steps taken by the students / villagers

We suggest village surpanch for villagers to reduce covid-19 cases use sanitizers, wear a mask on face properly and keeping it short of going outside. And village streets, shops and houses always sanitize.

Chapter 8. Sustainable Design Planning Proposal Part- I

8.1 Design Proposals

- Public Library
- Community Hall
- Garden
- Water Tank
- Solid Waste Collection
- Public Toilets

8.1.1 Sustainable Design (Civil)

- **Solid Waste Collection**
  Once collected, municipal solid waste may be treated in order to reduce the total volume and weight of material that requires final disposal. Treatment changes the form of the waste and makes it easier to handle. It can also serve to recover certain materials, as well as heat energy, for recycling or reuse.
  As simple process define by fig. given below.

Figure: 23. Solid Waste Collection process

- We design a solid waste collection by using map and village different streets which needed dustbin make a mark and calculate estimate whole design, and we give named as Street Solid waste collection
-

Figure: 24. Solid Waste Collection Design

- Dustbin Point

- In village make 64 Point of dustbin as per village need and put a dustbin at sub street starts or crossing road side.
- After all the dustbin full of solid waste collecting process by municipal party worker.

➢ **Types of Collection System**

- Refuse Collection Systems - Household waste removed from the home
- Commercial Waste Collection - Commercial waste removed primarily using dumpsters
- Recyclable Material Collection - Collection of recyclable materials separated at the source of generation

➢ **Equipment**

- Both Vehicles and Containers are required
- Average life of vehicles: 5-7 yrs.
- Residential collection vehicles - Packer trucks
    - most have internal compactors
    - Rear loaders - larger hopper not as necessary with the elimination of larger, bulky items
    - Side loaders - 2 person crew (driver and loader)
    - Mechanically loaded
    - Front Loader, residential waste place in bin then cycled (Cal and western states)

Figure: 25. Solid Waste Collection Dustbin

Costing of Solid waste Collection

SR. NO	DESCRIPTION	Q	PER	RATE (RS)	COST
1	DUSTBEEN WITH FEETING COMPLETED WORK	64	UNIT	800	51200
2	LABOUR FOR COLLECTION ALL SOLID WASTE	2	MONTH	7000	14000
3	WASTE COLLECTER VEHICLE	1	UNIT	70000	70000
					135200
	10% CONTRACTOR PROFILE				13520
	5% OTHER CHARGES				6760
				TOTAL COST	**15500**
	+ 14000 LABOUR COST PER MONTH				

Table No. 14. Costing of Solid waste Collection

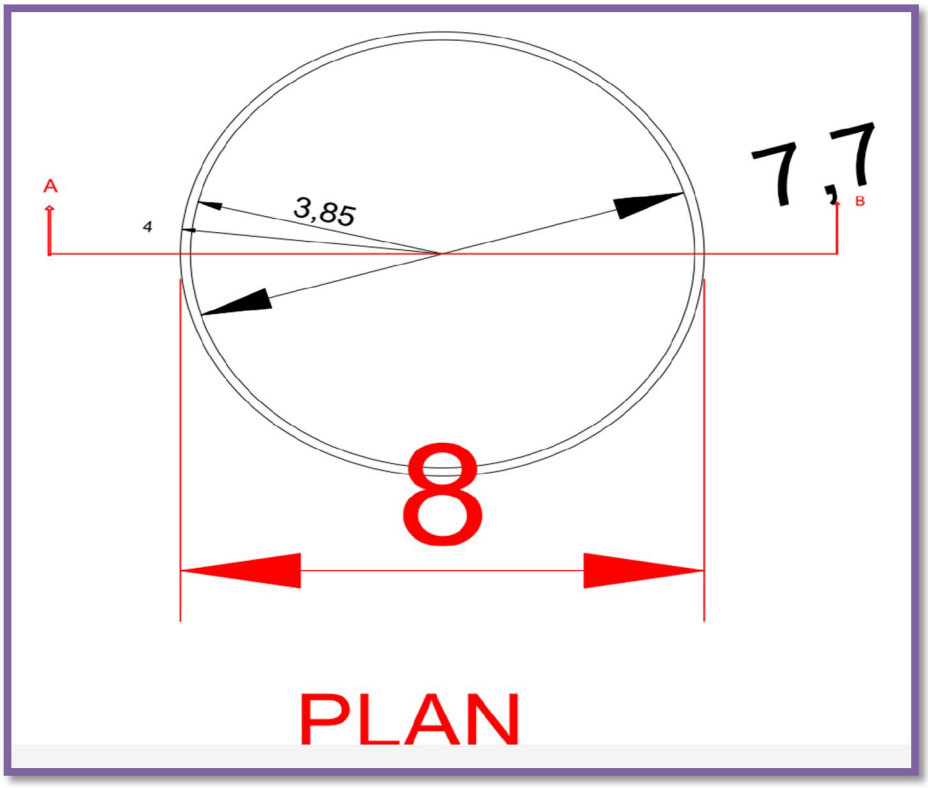
(Note: This all design costing rate according to USE R&B SOR of year 2015-2016.)

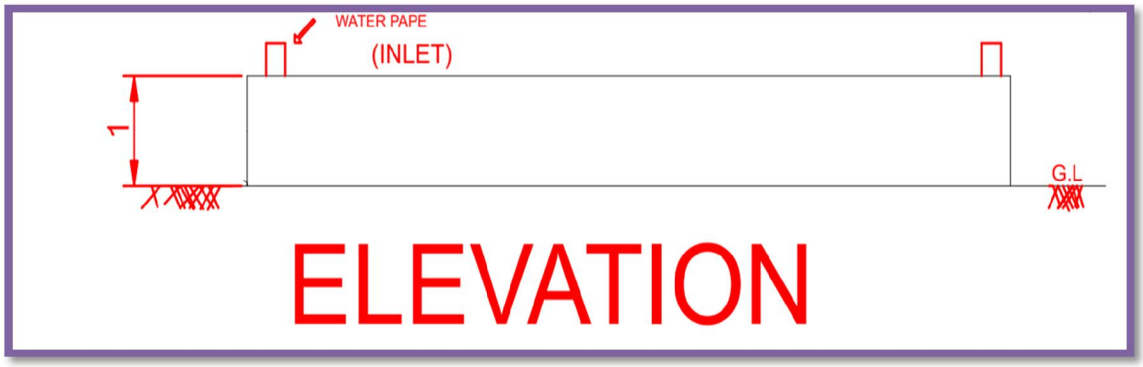
8.1.2 Physical design (Civil)

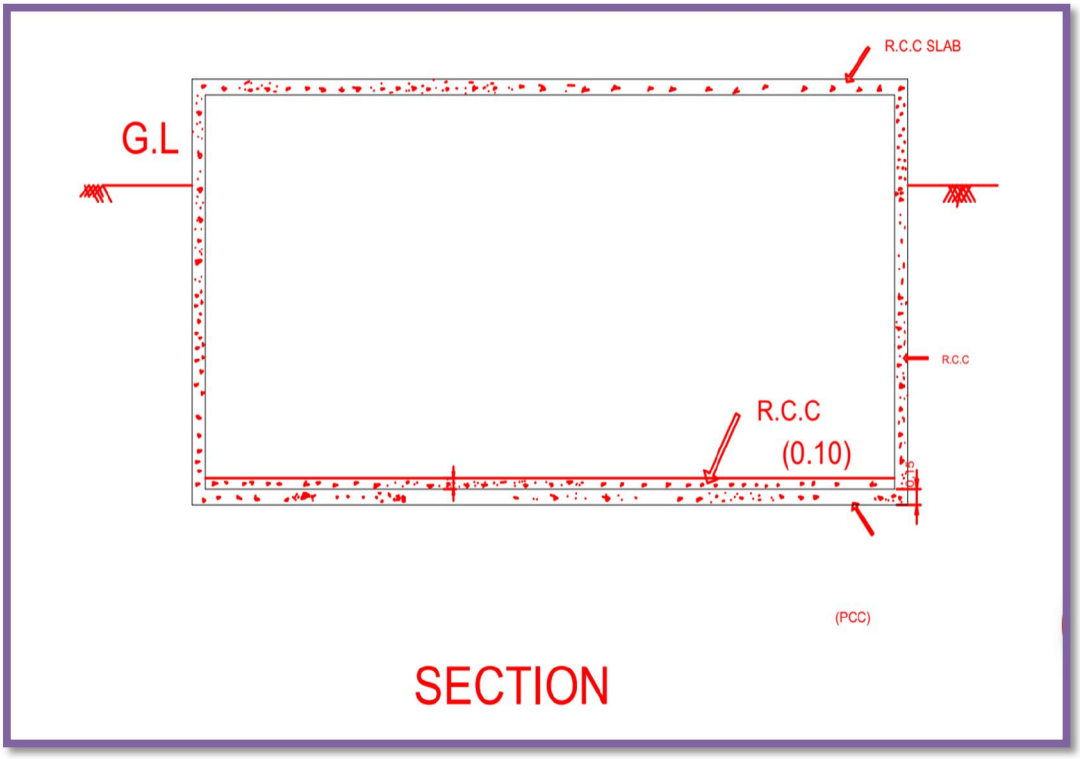
- **Water Tank**

  Basically water is most important part of life. We know that India has different seasons in the year. In during summer season, Meta Khambhaliya not able to getting water related problems. So we plan to design water tank near to village and try to solve that particular problem.

  Benefits using rainwater can reduce water bills, provide an alternative supply during water restrictions and help maintain a green, healthy garden. Depending on tank size and climate, mains water use can be reduced by up to 100%.







Note : Water tank design given in ch-12 at last A1 size because design fig. if not visible.

Measurement Sheet of Water tank

SR. NO	DESCRIPTION	NO	π	R×R	H	Q	TOTAL QUANTITY
1.	EXCAVATION IN FOUNDATION Π×R×R×H (3.14*4²*4)	1	3.14	4×4	4.0	CU.M	**30.144**
2.	P.C.C IN FOUNDATION	1	3.14	4×4	0.15	CU.M	**7.54**
3.	DPC (π×D) 3.14×7.7	1	3.14				**24.18**
4.	**R.C.C WORK**						
	(a)R.C.C WALL (π×R×R×H)-(π×r× r ×H) (3.14×4×4×3.70)						**13.14**

	-(3.14×3.85×3.86×3.70) =**13.14**						
4.	**R.C.C SLAB (TOP AND BOTTOM)**	2	3.14	4×4	0.15	CU.M	**7.54**
	TOTAL						**20.68**
5.	**PLASTERING WORK**						
	(a)wall (π×D×H) (3.14)×7.7×3.6	1			3.6	SQ.M	**87.04**
	(b) SLAB OR BOTTOM (π×D×) (3.15×7.7×2)	2	3.14			SQ.M	**48.36**
							135.4

Table No. 15. Measurement sheet of Water tank

Costing of Water Tank

SR NO	DESCRIPTION	QUANTITY	RATE (RS)	PER	COST
1.	EXCAVATION IN FOUNDATION UPTO 4M DEPTH .WITH COMPLETED WORK MOVING AND EXCAVATION	30.14	120	CU.M	3617
2.	P.C.C IN FOUNDATION WITH COMPLETE ALL WORK.	7.54	3300	CU.M	24882
3.	RCC WORK WITH STEEL AND ALL WORK COMPLETED	20.68	9500	CU.M	196460
4.	DPC WITH COMPLETED LAYING LAYER	3.72	90	SQ.M	335
5.	PLATER WITH COMPLETE SMOOTH SURFACE ,CURING ETC COMPLETE	135.4	185	SQ.M	25049
6.	CENTRIFUGAL PUMP 5HP	1	40000	UNIT	40000
					290325
	ADD 10% CONTRACTOR PROFIT				29032
	ADD 5% EXTRA CHARGE				14516
	1% WATER CHARGE				2904
	6% ELECTRIC CHARGE				23419
	TOTAL				360196
				SAY	**365000**

Table No. 16. Costing of Water tank

(Note: This all design costing rate according to USE R&B SOR of year 2015-2016.)

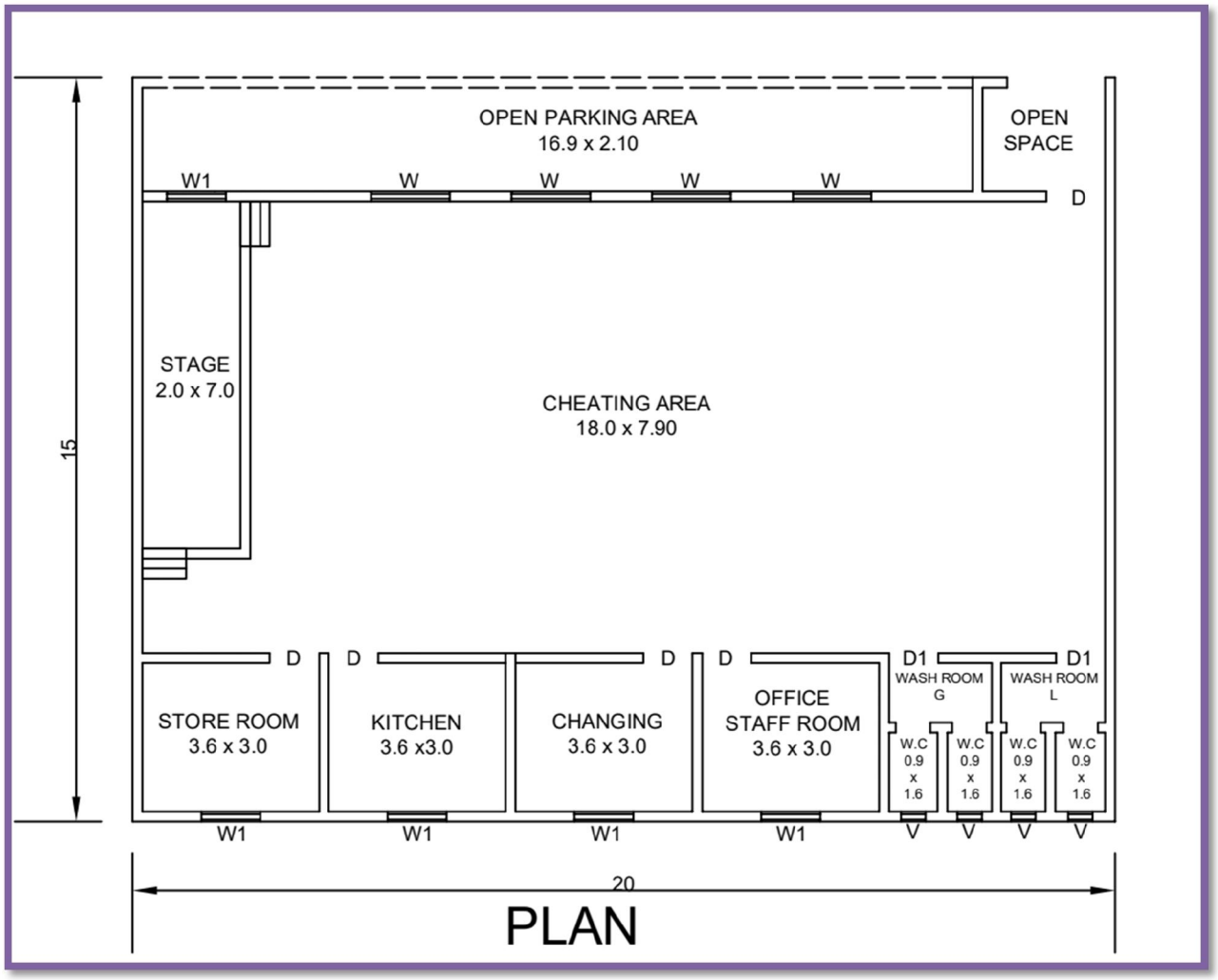
8.1.3 Social design (Civil)

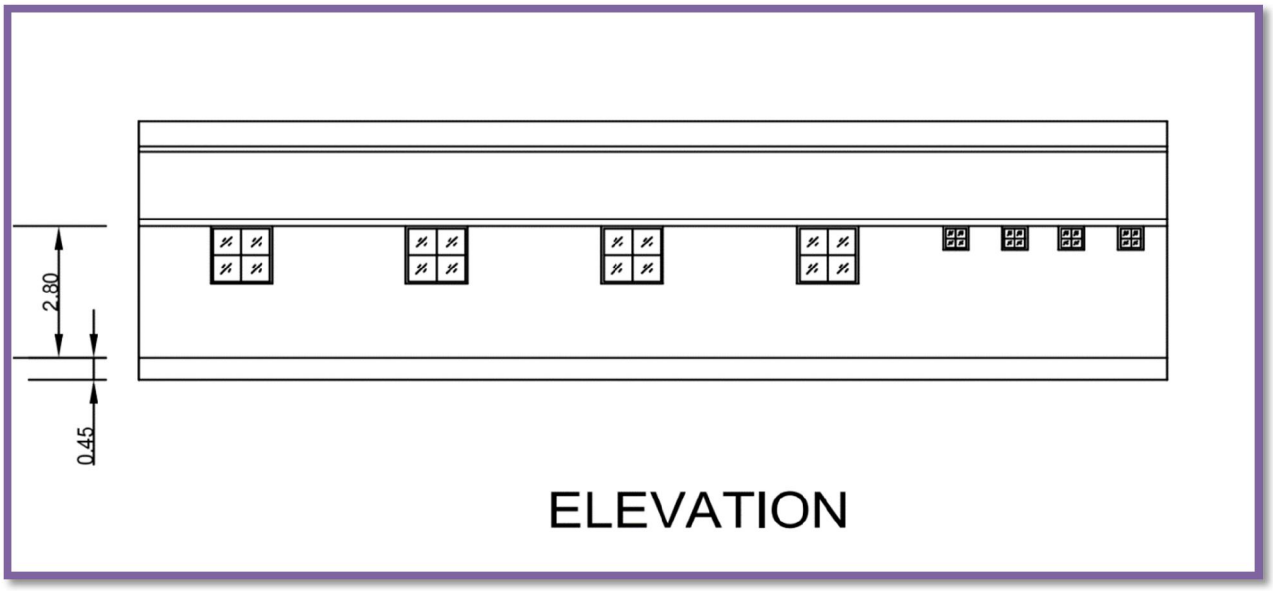
- **Community Hall**

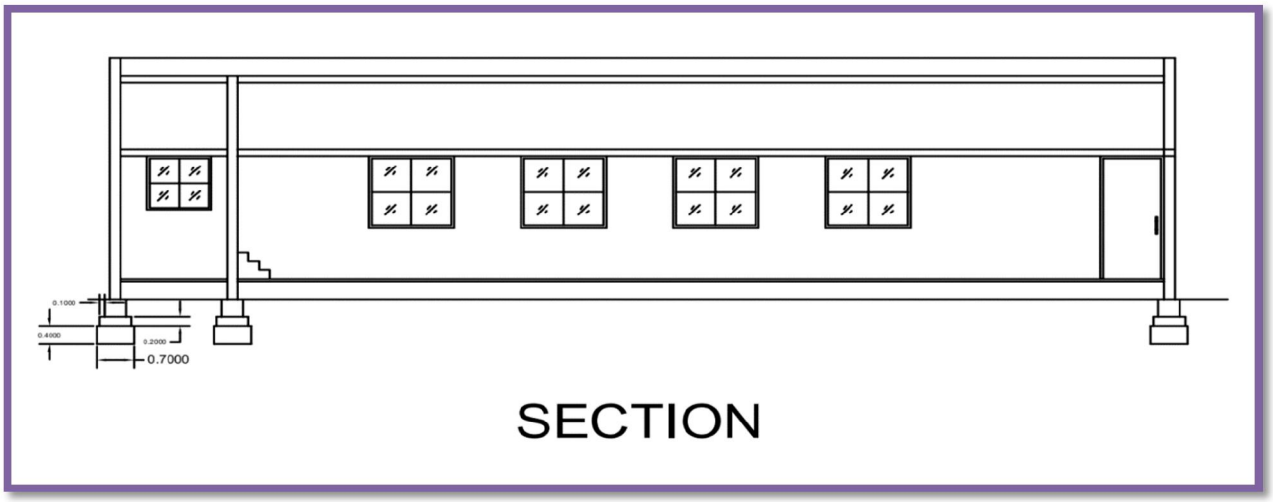
  "Community Hall": a large room or building for meetings, with basic facilities, where community activities take place. "Community Resource": the physical features within a community center or other building which can be used for the provision of community services or for community development.

  Community halls are public locations where members of a community tend to gather for group Activities, social support, public information, and other purposes. In Meta Khambhaliya village there is no Community hall. So, we provide a design of community hall.

  Village hall is a charitable community facility that is available to the public in a particular area for community-related recreational activities. Village halls are charitable because they held on trust to be used for purposes set out by the Recreational Charities Act 1958.







Note : Community hall design given in ch-12 at last A1 size because design fig. if not visible.

Measurement Sheet of Community Hall

SR No	DESCRIPTION	NO	L	B	H	Q	TOTAL QUANTITY
1.	EXCAVATION IN FOUNDATION	1	109.55	0.70	1.20	CU.M	98.20
2.	P.C.C IN FOUNDATION	1	109.55	0.70	0.40	CU.M	30.67
3.	**BRICK MASONRY**						
	(a)STEP-1	1	110.60	0.60	0.20	CU.M	13.27
	(b)STEP-2	1	112.2	0.40	0.20	CU.M	8.98
	(c)STEP-3	1	114.8	0.30	0.40	CU.M	9.18
							31.43
4.	**EARTH FEELING**						
	(a)STORE ROOM	1	3.6	0.3	3	CU.M	3.24
	(b) KITCHEN	1	3.6	0.30	3	CU.M	3.24
	(c)CHANGING ROOM	1	3.6	0.30	3	CU.M	3.24
	(d) OFFICE	1	3.6	0.30	3	CU.M	3.24
	(e)TOILET	4	1.6	0.30	1.6	CU.M	3.07
	(f) WASHROOM	2	1.2	0.30	2.0	CU.M	0.14
	(g) CHEATING AREA	1	18.0	0.3	7.9	CU.M	42.66
	(h)STAGE	1	2.0	0.8	7	CU.M	11.2
	(i)PASSAGE	1	1.4	0.2	2	CU.M	0.56
							70.59
5.	**DPC**	1	114.8	0.20		SQ.M	22.96
6.	**BBCC IN PLINTH WORK**						
	(a)STORE ROOM	1	3.0	3.6	0.1	CU.M	1.08
	(b) KITCHEN	1	3.0	3.6	0.1	CU.M	1.08
	(c) CHANGING ROOM	1	3.0	3.6	0.1	CU.M	1.08
	(d) OFFICE	1	3.0	3.6	0.1	CU.M	1.08
	(e) TOILET	4	1.6	1.0	0.1	CU.M	0.58
	(f) WASHROOM	2	1.2	2.0	0.1	CU.M	0.48
	(g) CHEATING	1	7.9	18	0.1	CU.M	14.22
	(h)STAGE	1	7.0	2.0	0.1	CU.M	1.40

	(i)PASSAGE	1	1.4	2.0	0.1	CU.M	0.28
							21.28
6	**MASONRY UPTO PARAPATE**	1	114.80	0.20	5.28	CU.M	122.22
	(a)STAIR						
	STEP 1	2	1.0	0.20	0.20	CU.M	0.4
	STEP 2	2	1.0	0.20	0.20	CU.M	0.4
7.	**DEDUCTION**						
	(a)DOOR						
	G	1	2.0	0.20	2.80	CU.M	1.12
	D	4	1.2	0.20	2.80	CU.M	2.69
	D1	2	1.0	0.20	2.80	CU.M	1.12
	D2	2	0.75	0.20	2.80	CU.M	0.84
	(b) WINDOW						
	W	4	1.60	0.20	1.60	CU.M	2.05
	W1	5	1.20	0.20	1.20	CU.M	1.44
	V	5	0.50	0.20	0.50	CU.M	0.20
							13.27
8.	**RCC LINTEL**						
	(a)DOOR						
	G	1	1.90	0.20	0.15	CU.M	0.057
	D	5	1.5	0.20	0.15	CU.M	0.23
	D1	2	1.30	0.20	0.15	CU.M	0.09
	D2	2	1.05	0.20	0.15	CU.M	0.06
	(b) WINDOW						
	W	4	1.9	0.20	0.15	CU.M	0.23
	W1	5	1.5	0.20	0.15	CU.M	0.23
	V	4	0.80	0.20	0.15	CU.M	0.48
							1.40
	TOTAL MASONRY						**120.42**
9.	**R.C.C SLAB**	1	15	20	0.15		45
	TOTAL RCC WORK						**46.40**
10.	**PLASTERING (INNER SIDE)**						
	(a)STORE WORK						
	H	2	3.0		4.85	SQ.M	29.10
	V	2	3.6		4.85	SQ M	34.92
	SLAB	1	3.0	3.60		SQ.M	10.80
	(b) KITCHEN						

	H	2	3.0		4.85	SQ.M	29.10
	V	2	3.6		4.85	SQ.M	34.92
	SLAB	1	3.0	3.60		SQ.M	10.80
	(c)OFFICE						
	H	2	3.0		4.85	SQ.M	29.10
	V	2	3.6		4.85	SQ.M	34.92
	SLAB	1	3.0	3.60		SQ.M	10.80
	(d) CHANGING ROOM						
	H	2	3.0		4.85	SQ.M	29.10
	V	2	3.6		4.85	SQ.M	34.92
	SLAB	1	3.0	3.60		SQ.M	10.80
	(e) TOILET						
	H	8	0.9		4.85	SQ.M	35.06
	V	8	1.6		4.85	SQ.M	62.34
	SLAB	4	1.6	0.90		SQ.M	5.76
	(f) WASHROOM						
	H	4	2.0		4.85	SQ.M	38.96
	V	4	1.20		4.85	SQ.M	25.38
	SLAB	2	1.20	2.0		SQ.M	4.80
	(g) CHEATING AREA						
	H	2	19.60		4.85	SQ.M	190.12
	V	2	7.9		4.85	SQ.M	76.63
	SLAB	1	7.9	19.60		SQ.M	154.84
	(h) PARAPATE						
	H	2	19.60		0.40	SQ.M	15.68
	V	2		14.60	0.40	SQ.M	11.68
	OUTERSIDE						
	H	2	20		5.28	SQ.M	211.2
	V	2	15		5.28	SQ.M	158.4
							1186.97
11.	**DEDUCTION IN PLASTERING**						
	(a)DOOR						
	G	1/2	2.8	2.0		SQ.M	2.8
	D	4/2	2.8	1.20		SQ.M	6.72
	D1	2/2	2.8	1.0		SQ.M	2.8
	D2	2/2	2.8	0.90		SQ.M	2.52
	(b) WINDOWS						
	W	4/2	1.6	1.6		SQ.M	5.12
	W1	5/2	1.2	1.2		SQ.M	3.6
	V	4/2	0.5	0.5		SQ.M	0.5

							24.06
	TOTAL PLASTERING						**1162.91**
12.	**WOODWORK**					SQ.M	**48.12**
13.	**FLOORING WORK**						
	(a)STORE ROOM	1	3.0	3.6		SQ.M	10.80
	(b) KITCHEN	1	3.0	3.6		SQ.M	10.80
	(c) CHANGING ROOM	1	3.0	3.6		SQ.M	10.80
	(d) OFFICE	1	3.0	3.6		SQ.M	10.80
	(e) TOILET	4	0.9	1.60		SQ.M	5.76
	(f) WASHROOM	2	2.0	1.20		SQ.M	4.80
	(g) CHEATING AREA	1	7.9	18		SQ.M	142.20
	(h)STAGE	1	7.0	2.0		SQ.M	14.0
	(i)PASSAGE	1	2.20	1.20		SQ.M	2.64
	TOTAL FLOORING						**212.65**
14.	**SKERTING**						**114.80**

Table No. 17. Measurement Sheet of Community hall

Costing Of Community Hall

ITEM	DESCRIPTION	QUANTITY	RATE (RS)	PER	AMOUNT
1.	EXCAVATION IN HARD MURAM SOIL OR SAND FROM 0M TO 1.10 M DEPTH INCLUDING LIFTING AND LAYING IN GOMTU HEAD AREA INCLUDED ETC, COMPLETE	98.80	104	CU.M	10275.20
2.	FOUNDATION FILLING WITH CC WORK IN PROPOSON (1:2:3). INCLUDING, RAMMING,CURING ETC,, COMPLETE	30.67	3200	CU.M	98144
3.	BRICK MASONRY WORK IN CM (1:6). CURING.ETC COMPLETE	120.42	4200	CU.M	505764
4.	DPC OF BITUMINOUS AT PLINTHS	114.80	70	SQ.M	8036

5.	FILLING OF PLINTH IN LAYER OF 0.35M THICK INCLUDING MURRAM AND SPRINKLING OF WATER COMPACTION ETC, COMPLETE	70.69	305	CU.M	21560.45
6.	B.B.C.C (1:4:8)	21.28	305	CU.M	6490.40
7.	TILES FLOORING	212.62	430	SQ.M	91426.60
8.	R.C.C WORK IN SLAB,BEAM,COLOMN LINTEL,CHAJJA,CURING,ROUGH FINNISH ETC. COMPLETE	46.40	8500	CU.M	394400
9.	SMOOTH CEMENT PLASTER (12MM) THIK USING CM IN PROPOSITION (1:6) WITH FINISHING CARRING .ETC COMPLETE	1162.80	185	SQ.M	215118
10.	WHITE WASHING	1162.80	11	SQ.M	12790.80
11.	PLASTIC IMMULSION PAINT (TWO COAST) ASIAN PAINT, DULUX	1162.80	92	SQ.M	106977.60
12.	SKERTING	114.8	30	M	444
13.	WOOD WORK	48.16	930	SQ.M	44788.80
					1516215.85
				Say	**1516216**
	10% CONTACTER PROFIT				**151621.59**
	1% WATER COST				**15163**
	6% COST OF ELECTRICITY				**90972.96**
	5% WATER SUPPLY				**75810.8**
	TOTAL COST OF CONSTRUCTION				**1849784**

Table No. 18. Costing of Community hall

(Note: This all design costing rate according to USE R&B SOR of year 2015-2016.

8.1.4 Socio-Cultural design (Civil)

- **Public Library**

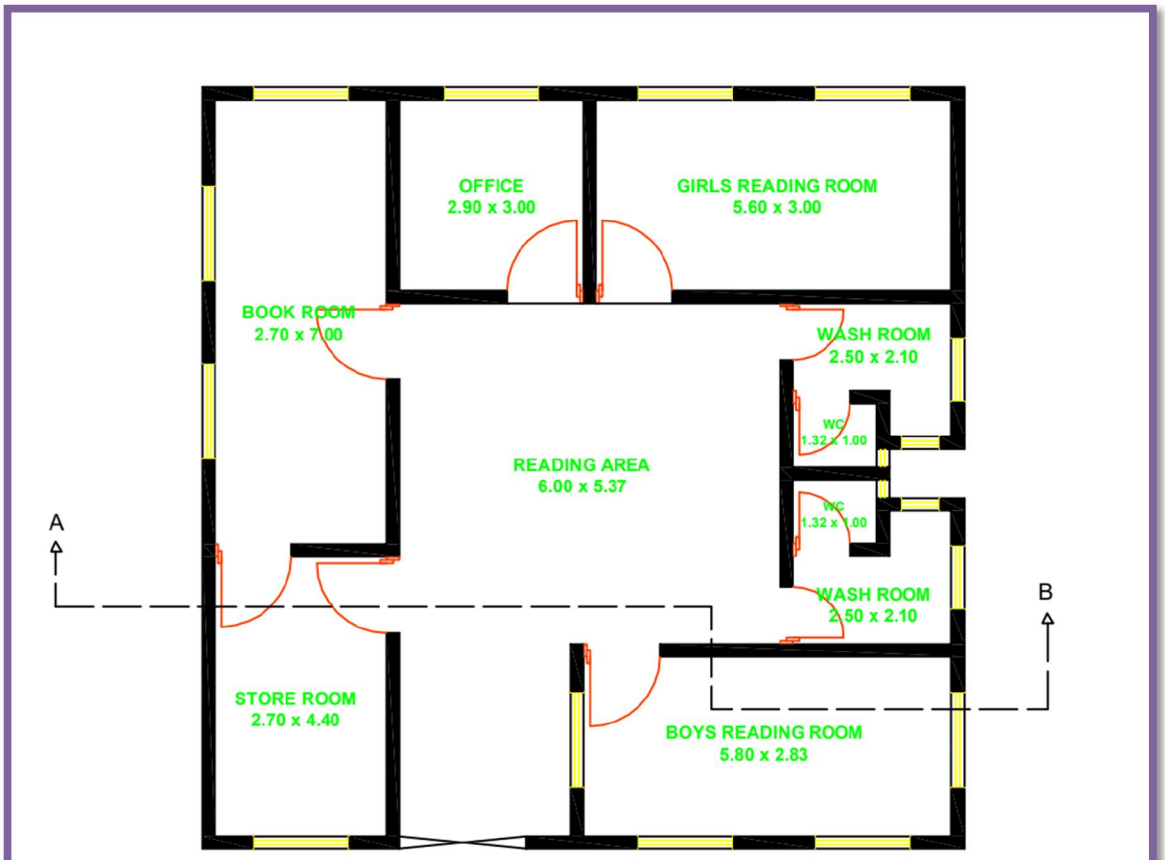
  For the educational and knowledge gaining point of view it is very important to develop this Types of infra-structures also. So we have proposed the design of public library for the villagers which will the motivate children and people to gain the knowledge.

  It seems like it would never work, but libraries have been successful for hundreds of years. People value libraries as enjoyable recreational and academic additions to their communities. A library offers a wealth of resources, space to study or hold events, and a world of books to discover and borrow.

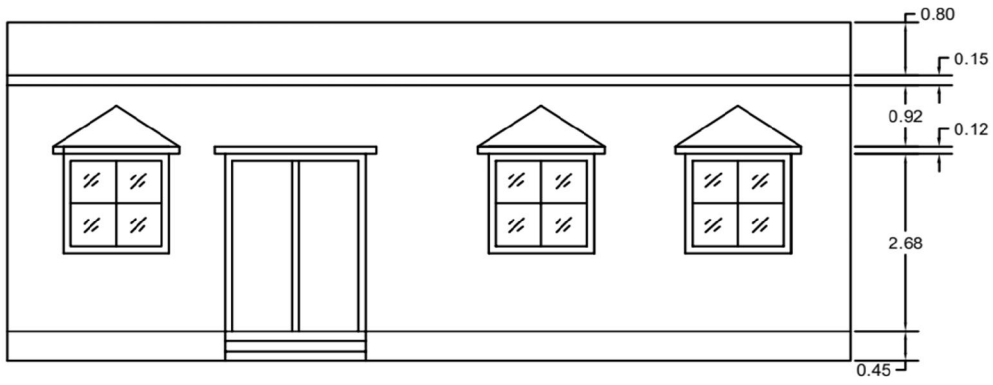
  To provide materials and resources that entertain and inspire as well as services offering space for people and information to come together, and programs that would create library awareness and consciousness.

  Benefits:-

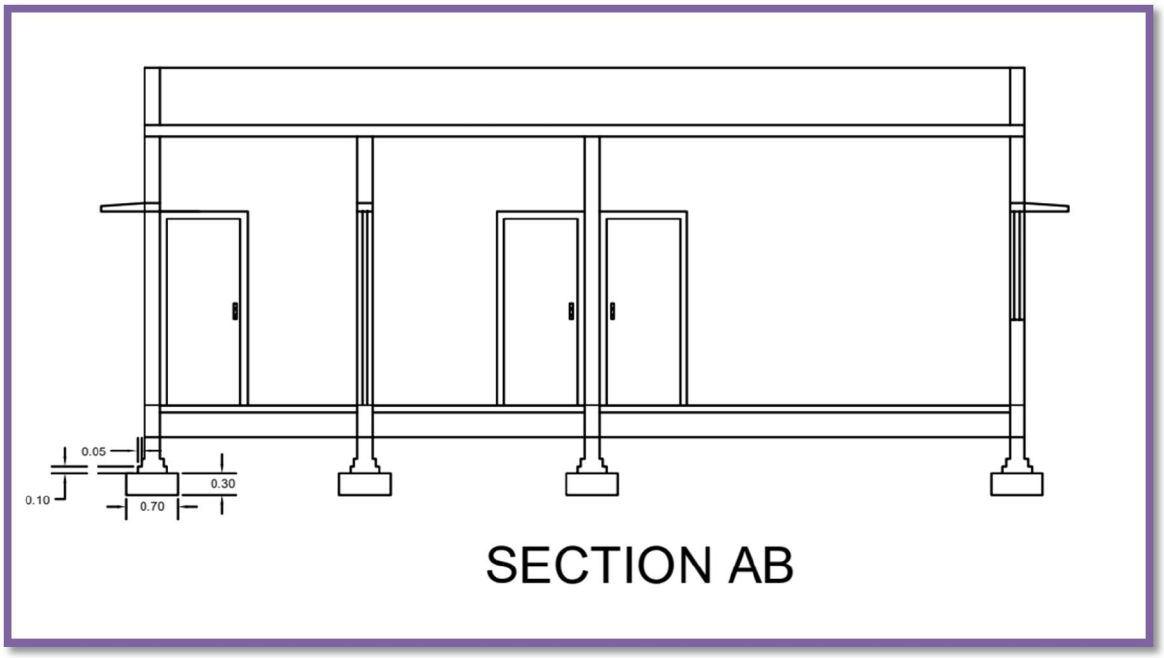
  - The first and foremost benefit is getting free books.
  - Availability of all kinds of books.
  - A disciplined area to study.
  - Free internet.
  - There's more to libraries than just paper books or the internet.
  - Many libraries now offer you different lectures and classes.
  - Librarians are awesome.



FLOOR PLAN



ELEVATION



Note : Public Library design given in ch-12 at last A1 size because design fig. if not visible.

Measurement Sheet of Public Library

DESCRIPTION	NO	L	B	H	Q	TOTAL Q
1.EXCAVATION (Up to 1.1m)	1	103.71	0.70	1.10	CU.M	79.86
(a) PCC in foundation(1:2:3)	1	103.71	0.70	0.03	CU.M	21.78
(b) brick masonry in foundation						
-Step 1	1	104.91	0.50	0.20	CU.M	10.49
-step 2	1	105.51	0.40	0.20	CU.M	4.41
Up to plinth (0.4m)	1	106.71	0.20	0.20	CU.M	4.27
						19.70
2.EARTH FILLING						
(a)Boys reading room	1	2.83	5.80	0.35	CU.M	5.75
(b) Girls reading room	1	3.0	5.60	0.35	CU.M	5.88

(c) Reading area	1	6.0	5.37	0.35	CU.M	11.28
(d) Office	1	3.0	2.90	0.35	CU.M	3.05
(e) Books Room	1	7.0	2.70	0.35	CU.M	6.62
(f) Store room	1	4.4	2.70	0.35	CU.M	4.16
(g) Toilet	4	1.0	1.32	0.35	CU.M	1.85
(h) washroom	2	2.1	1.0	0.35	CU.M	1.47
						40.06
3.BBCC						
(a)Boys reading room	1	2.83	5.80	0.10	CU.M	1.64
(b)girls reading room	1	3.0	5.60	0.10	CU.M	1.68
(c) reading area	1	6.0	5.37	0.10	CU.M	3.22
(d) office	1	3.0	2.90	0.10	CU.M	0.87
(e) Books room	1	7.0	2.70	0.10	CU.M	1.89
(f) Store room	1	4.4	2.70	0.10	CU.M	1.19
(g) Toilet	4	1.0	1.32	0.10	CU.M	0.53
(h) washroom	2	2.1	1.0	0.10	CU.M	0.43
						11.45
4.DPC	1	106.71	0.20		SQ.M	**21.43**
5.Brick masonry up to parapet (1:6)	1	106.71	0.20	5.12	CU.M	109.27
						95.68
6. DEDICATION						

(a) Doors(D)	7	2.68	1.2	0.20	CU.M	4.50
(b) Door (D1)	3	2.68	0.9	0.20	CU.M	1.45
(c) Windows (W)	10	1.5	1.5	0.20	CU.M	4.5
(d) Windows (W1)	2	1.0	1.5	0.20	CU.M	0.6
(e) Windows(W2)	2	0.75	0.75	0.20	CU.M	0.225
(f) Ventilation(v)	2	0.3	0.30	0.20	CU.M	0.036
(G) Gate(G)	1	2.0	2.68	0.20	CU.M	1.07
						-12.38
7.R.C.C LINTEL (1:2:3)						
(a) **Windows**						
W	10	1.8	0.20	0.15	CU.M	0.54
W1	2	1.3	0.20	0.15	CU.M	0.078
W2	2	1.05	0.20	0.15	CU.M	0.063
(b) **doors**						
G	1	2.3	0.20	0.15	CU.M	0.069
D	7	1.5	0.20	0.15	CU.M	0.315
D1	3	1.2	0.20	0.15	CU.M	0.108
(c) **Ventilation**	2	0.6	0.20	0.15	CU.M	0.036
						1.21
8. R.C.C SLAB(1:2:3)	1	12	0.15	12	CU.M	**21.6**
TOTAL R.C.C WORK					CU.M	**22.81**

9.PLASTER WORK						
INNER SIDE						
(a) BOYS READING ROOM						
H	2		5.8	4.20	SQ.M	48.72
V	2	2.83		4.20	SQ.M	23.77
SLAB	1	2.83	5.8		SQ.M	16.14
(b) READING AREA						
H	2		6.0	4.20	SQ.M	50.40
V	2	8.4		4.20	SQ.M	
SLAB 1	1	5.37	6.0		SQ.M	70.56
SLAB 2	1	3.03	3.0		SQ.M	9.09
(c) STORE ROOM						
H	1		4.4	4.20	SQ.M	18.48
V	2	2.7		4.20	SQ.M	22.68
SLAB	2	4.4	2.7		SQ.M	23.76
(d) BOOKS ROOM						
H	2		7.0	4.20	SQ.M	58.80
V	2	2.7		4.20	SQ.M	22.68
SLAB	1	2.7	7.0		SQ.M	18.90
(e) OFFICE						
H	2		3.0	4.20	SQ.M	25.20
V	2	2.90		4.20	SQ.M	24.36
SLAB	1	2.90	3.0		SQ.M	8.70

(f) GIRLS READING ROOM						
H	2		3.0	4.20	SQ.M	25.20
V	2	5.60		4.20	SQ.M	47.04
SLAB	1	6.60	3.0		SQ.M	19.80
(g) Toilet						
H	8		1.32	4.20	SQ.M	44.35
V	8	1.0		4.20	SQ.M	33.60
SLAB	4	1.32	1.0		SQ.M	5.28
(h) WASHROOM						
H	4		1.0	4.20	SQ.M	16.80
V	4	2.10		4.20	SQ.M	35.80
SLAB						
(i) PLASTER IN PARAPATE						
H	2		11.60	0.8	SQ.M	18.56
V	2	11.60		0.8	SQ.M	18.56
(j) PLASTERING AT OUTER SIDE						
H	2		12.0	5.12	SQ.M	122.88
V	12			5.12	SQ.M	122.88
						952.99
10.DEDACTION IN PLASTER						
(a) DOORS						
D	7/2		1.2	2.8	SQ.M	1.96
D1	3/2		0.9	2.8	SQ.M	3.78

G	1/2		2.8	2.8	SQ.M	3.92
(b) Windows						
W	10/2		1.50	1.5	SQ.M	11.25
W1	2/2		1.0	1.5	SQ.M	1.50
W2	2/2		0.75	0.75	SQ.M	0.56
(c) Ventilation	2/2		0.30	0.30	SQ.M	0.09
						23.06
TOTAL PLASTERING WORK					SQ.M	**929.93**
12.PAINTING					SQ.M	**928.98**
13.WHITEWASH					SQ.M	928.98
14.FLORING						
(a) BOYS READING ROOM	1	2.83	5.80		SQ.M	16.41
(b) READING AREA	1	5.37	6.0		SQ.M	32.22
(c) OPEN PASSAGE	1	3.03	2.30		SQ.M	6.99
(d) STORE ROOM	1	4.40	2.70		SQ.M	11.88
(e) BOOKS ROOM	1	7.0	2.70		SQ.M	18.90
(f) OFFICE	1	3.0	2.90		SQ.M	8.70
(g) GIRLS READING ROOM	1	3.0	5.6		SQ.M	16.80
(h) TOILET	4	1.0	1.32		SQ.M	5.28
(i) WASHROOM	2	2.10	1.0		SQ.M	4.20
						111.39
15. SKIRTING	1	106.7			M	**106.7**

16.WOODWORK					SQ.M	**50.915**

Table No. 19. Measurement sheet of Public Library

ITEM	DESCRIPTION	QUANTITY	RATE (RS)	PER	AMOUNT
1.	EXCAVATION IN HARD MURAM SOIL OR SAND FROM 0M TO 1.10 M DEPTH INCLUDING LIFTING AND LAYING IN GOMTU HEAD AREA INCLUDED ETC, COMPLETE	79.86	104	CU.M	8305.44
2.	FOUNDATION FILLING WITH CC WORK IN PROPOSON (1:2:3). INCLUDING, RAMMING,CURING ETC,, COMPLETE	21.78	3200	CU.M	69696
3.	BRICK MASONRY WORK IN CM (1:6). CURING.ETC COMPLETE	95.68	4200	CU.M	401856
4.	DPC OF BITUMINOUS AT PLINTHS	21.93	70	SQ.M	153.51
5.	FILLING OF PLINTH IN LAYER OF 0.35M THICK INCLUDING MURRAM AND SPRINKLING OF WATER COMPACTION ETC, COMPLETE	40.06	305	CU.M	122183
6.	B.B.C.C (1:4:8)	11.45	305	CU.M	3492.25
7.	TILES FLOORING	111.39	430	SQ.M	
8.	R.C.C WORK IN SLAB,BEAM,COLOMN LINTEL,CHAJJA,CURING,ROUGH FINNISH ETC. COMPLETE	22.81	8500	CU.M	193885
9.	SMOOTH CEMENT PLASTER (12MM) THIK USING CM IN PROPOSITION (1:6) WITH FINISHING CARRING .ETC COMPLETE	929.93	185	SQ.M	172037.05
10.	WHITE WASHING	929.93	11	SQ.M	10229.23
11.	PLASTIC IMMULSION PAINT (TWO COAST) ASIAN PAINT, DULUX	929.93	92	SQ.M	85552.64

12.	**SKERTING**	**106.7**	**30**	**M**	**3201**
13.	WOOD WORK	50.91	930	SQ.M	47346.3
					1117937.42
				Say	**1117938**
	10% CONTACTER PROFIT				**+111794**
	1% WATER COST				**+11180**
	6% COST OF ELECTRICITY				**+67077**
	5% WATER SUPPLY				**+55897**
	TOTAL COST OF CONSTRUCTION				**1363886**

Table No 20. Measurement sheet of Public Library

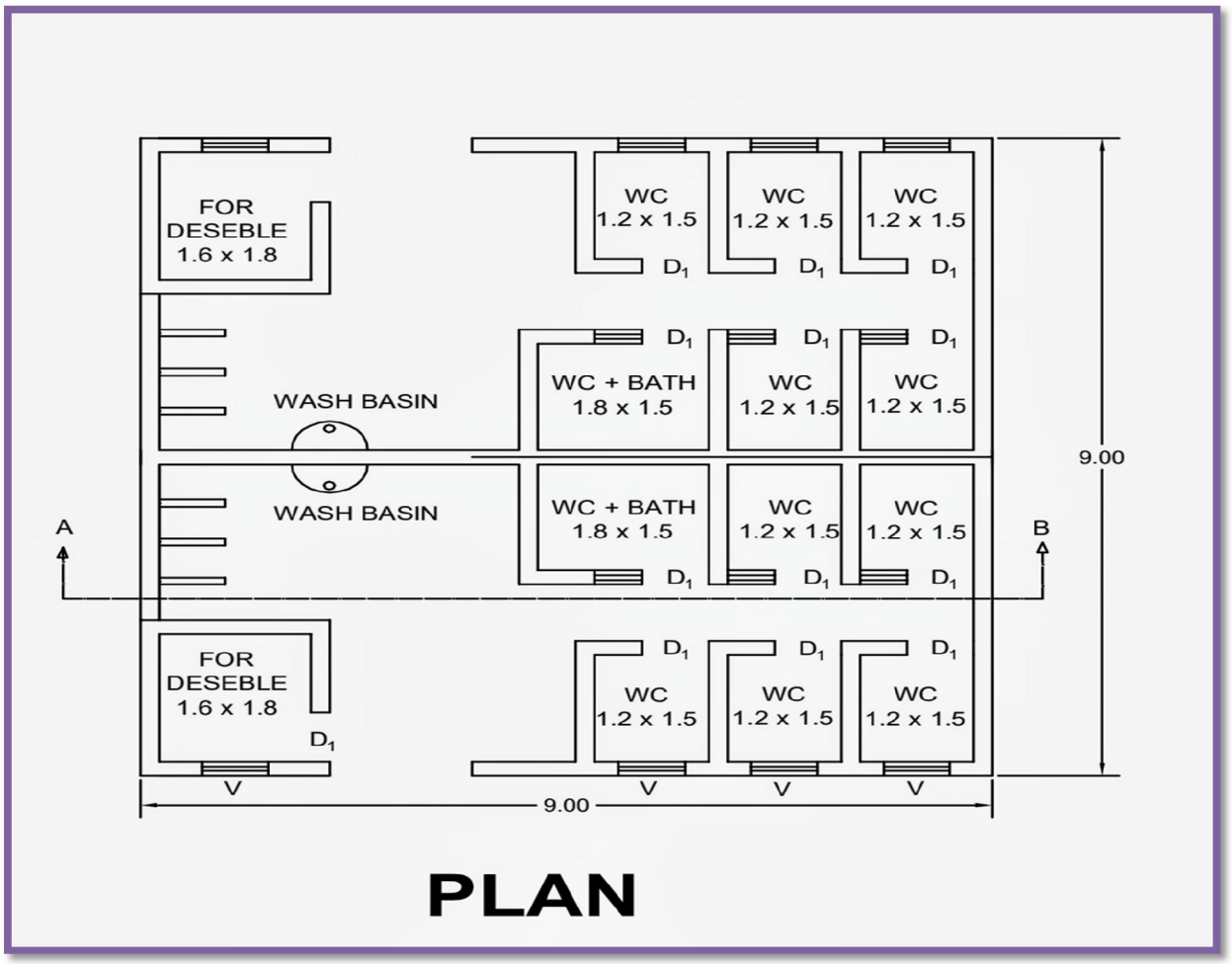
8.1.5 Smart Village Design (Civil)

- **Public Toilet**

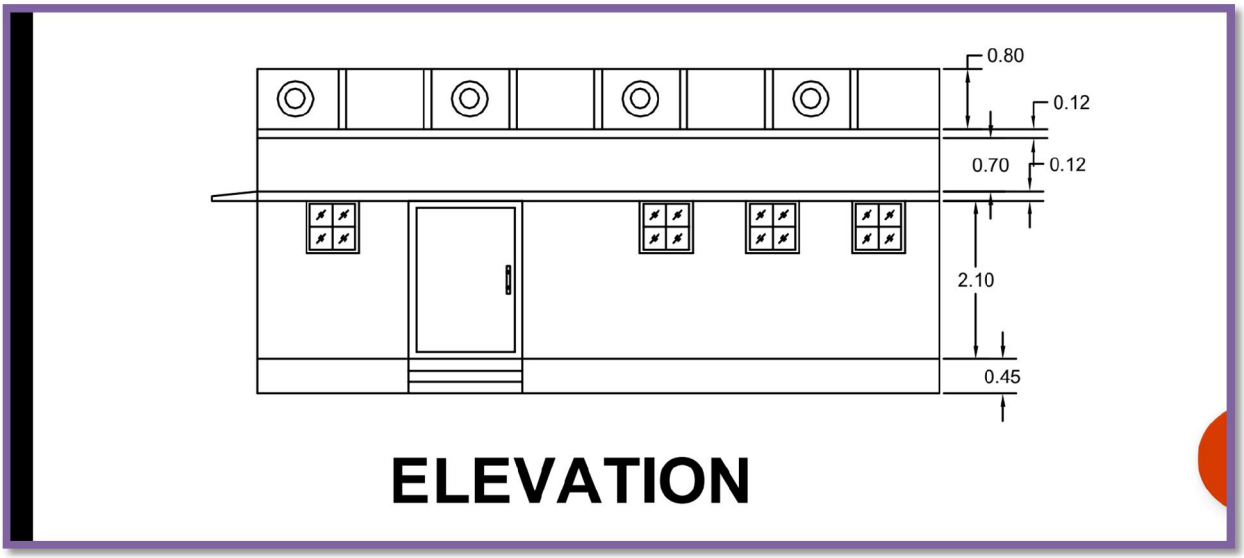
A public toilet is a room or small building with toilets (or urinals) and sinks that does not belong to a particular household. Rather, the toilet is available for use by the general public, customers, travellers, employees of a business, school pupils, prisoners etc. Public toilets are commonly separated into male and female facilities, although some are unisex, especially for small or single-occupancy public toilets. Increasingly, public toilets are accessible to people with disabilities. Public toilets are known by many other names depending on the country. Examples are: restroom, bathroom, men's room, and women's room in the US, washroom in Canada, and toilets, lavatories, water closet (W.C.), ladies and gents in Europe. In some parts of the world, they are referred to as the loo.

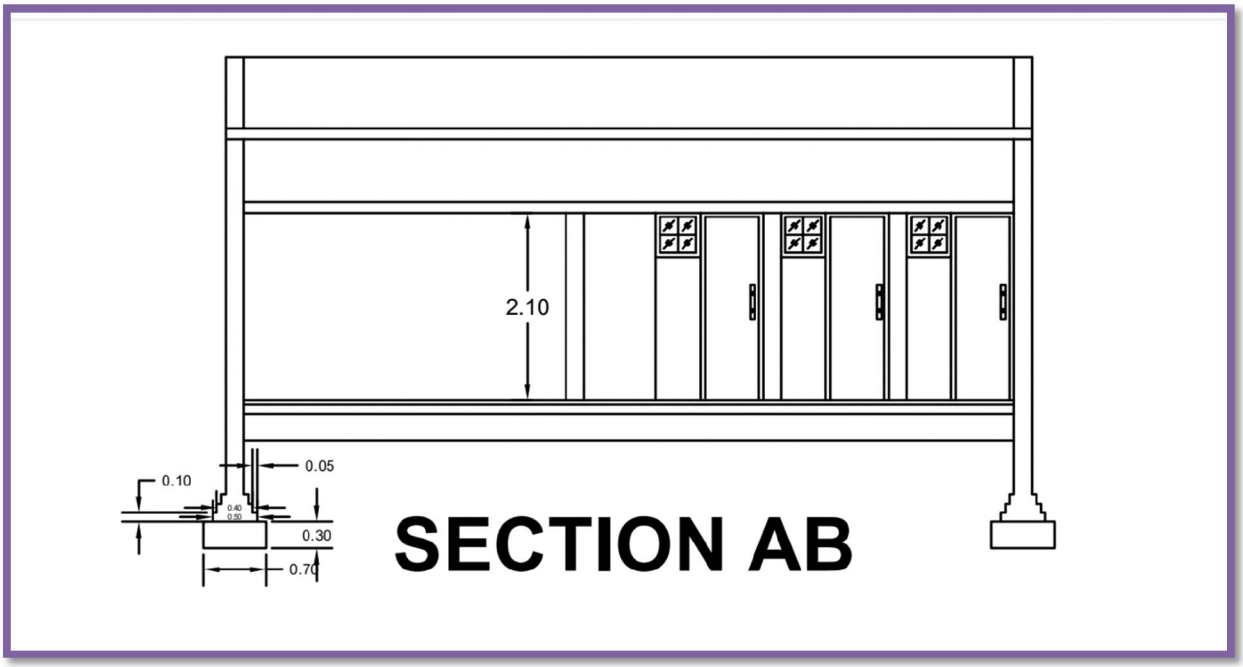
As an "away-from-home" toilet room, a public toilet can provide far more than access to the toilet for urination and defecation. People also wash their hands as safety purpose, use the mirrors for Grooming, get drinking water (e.g. refilling water bottles or barrel), attend to menstrual hygiene Needs, and use the waste dust bins.

To diarrhea and other serious health problems. Using toilets prevents germs from getting into the environment, and protects the health of the whole community. Health is not the only reason to build and use toilets.



PLAN





Note : Public toilet design given in ch-12 at last A1 size because design fig. is not visible.

Measurement Sheet of Public Toilet

SR. NO	DESCRIPTION	NO	L	B	H	Q	TOTAL QUANTITY
1.	**EXCAVATION**	1	79.50	0.70	1.20	CU.M	**66.78**
2.	**P.C.C**	1	79.50	0.70	0.30	CU.M	**16.70**
3	**BRICK MASONRY**						
	(a)STEP-1	1	82.50	0.50	0.20	CU.M	8.25
	(b)STEP-2	1	84.0	0.40	0.20	CU.M	6.72

	(c)UPTO PLINTH	1	87.0	0.20	0.50	CU.M	8.70
							23.67
	(e)	1	87.0	0.20		SQ.M	**17.40**
4.	**EARH FEELING**						
	(a)TOILET	10	1.50	1.20	0.35	CU.M	6.30
	(b) ATTACHED WC WITH BATH	2	1.50	1.80	0.35	CU.M	1.89
	(c) FOR DESEBLE	2	1.80	1.60	0.35	CU.M	2.02
	(d) WASHROOM	2	2.20	4.3	0.35	CU.M	6.62
	(e) WASHROOM	2	2.0	3.0	0.35	CU.M	4.20
	(f)OPEN PASSAGE	2	1.0	4.0	0.35	CU.M	2.89
							23.92
5.	**MASONRY** UPTO PARAPATE	1	87.0	0.20	3.90	CU.M	**67.86**
6.	**DEDUCTION IN MESONARY**						
	(a)DOOR						
	D	2	2.10	1.50	0.20	CU.M	1.26
	D1	14	2.10	0.70	0.20	CU.M	4.12
	(b) VENTILATION						
	V	8	0.70	0.70	0.20	CU.M	0.78
	V1	6	0.50	0.50	0.20	CU.M	0.30
							-6.46
7.	R.C.C LINTEL						
	(a)DOORS						
	D	2.0	2.10	1.70	0.12	CU.M	0.86
	D1	14	2.10	1.00	0.12	CU.M	3.53
	(b) VENTILATION						
	V	8	0.70	1.00	0.12	CU.M	0.67
	V1	6	0.50	0.80	0.12	CU.M	0.29
							5.35
	TOTAL MASONRY WORK					CU.M	**79.72**
8.	**RCC SLAB**	1	9.0	0.9	0.15	CU.M	**9.31**
	TOTAL RCC WORK						**14.67**
9.0	**PLASTERING WORK (INNER SIDE)**						
	(a)TOILET						
	H	20		1.2	3.05	SQ.M	73.20
	V	20	1.5		3.05	SQ.M	91.50
	SLAB	10	1.5	1.2			18.0

	(b) ATTACHED BATH						
	H	4		1.8	3.05	SQ.M	21.96
	V	4	1.5		3.05	SQ.M	18.30
	SLAB	2	1.5	1.8		SQ.M	5.40
	(c)WC FOR DISEBLE						
	H	4		1.6	3.05	SQ.M	19.52
	V	4	1.8		3.05	SQ.M	21.96
	SLAB	2	1.8	1.6		SQ.M	5.76
	(d) WASHROOM						
	H	2		4.0	3.05	SQ.M	24.40
	V	2	4.6		3.05	SQ.M	28.6
	SLAB1	2	2.2	4.0		SQ.M	17.60
	SLAB2	2	2.0	2.9		SQ.M	11.60
	(e)OTHER						
	H	2		4.8	3.05	SQ.M	29.28
	H1	2		4.2	3.05	SQ.M	25.62
	V1	2	1.0		3.05	SQ.M	6.10
	V2	2	1.70		3.05	SQ.M	10.37
	SLAB	2	1.0	4.8		SQ.M	9.6
	(f) PARAPATE WALL						
	H	2		8.8	0.40	SQ.M	7.04
	V	2	8.8		0.40	SQ.M	7.04
	PLASTERING IN OUT SIDE						
	H	2		9.0	3.90	SQ.M	70.20
	V	2	9.0		3.90	SQ.M	70.20
							593.25
10.	**DEDUCTION IN PLASTERING**						
	(a)DOOR						
	D	2/2		1.50	2.10	SQ.M	3.15
	D1	14/2		0.70	2.10	SQ.M	10.29
	(b) VENTILATION						
	V	5/2		0.70	0.70	SQ.M	1.23
	V1	9/2		0.50	0.50	SQ.M	1.23
							15.80
	TOTAL PLASTERING						**577.45**
11.	**FLOORING**						
	(a)TOILET	10	1.50	1.20		SQ.M	18.0
	(b) ATTACHED	2	1.50	1.80		SQ.M	5.40
	(c)FOR DESEBLE	2	1.80	1.60		SQ.M	5.76

	(d) WASHROOM	2	4.30	2.30		SQ.M	19.78
	(d) WASHROOM	2	2.00	2.90		SQ.M	11.60
	(e)OPEN PASSAGE	2	4.20	1.00		SQ.M	8.40
							68.94
12.	**WOOD WORK =DEDUCTION IN PLASTERING×2**						31.60
13.	**PLUMBING WORK**						
	(a)GULLY TRAPE	14				NUM.	**14**
	(b)SINK	2				NUB	**2**
	(c)SOIL PIPE 10CM DIA	2	10			M	**20**
	(d) WATER DISTRIBUTION PIPE 5CM	2	30			M	**60**
14.	INDIAN FOOT STLE	10				N	**10**
15.	WESTERN STYLE	4				N	**4**
16.	BBCC	1	87	0.2	0.10	CU.M	**1.78**
17.	SKERTING	1	87			M	**87.0**
18.	**URINALS**	3				NUB	**3**

Table No. 21. Measurement Sheet of Public Toilet

Costing of Public Toilet

ITEM	DESCRIPTION	QUANTITY	RATE (RS)	PER	AMOUNT
1.	EXCAVATION IN HARD MURAM SOIL OR SAND FROM 0M TO 1.10 M DEPTH INCLUDING LIFTING AND LAYING IN GOMTU HEAD AREA INCLUDED ETC, COMPLETE	66.77	104	CU.M	6944.08
2.	FOUNDATION FILLING WITH CC WORK IN PROPOSON (1:2:3). INCLUDING, RAMMING,CURING ETC,, COMPLETE	16.70	3200	CU.M	53440
3.	BRICK MASONRY WORK IN CM (1:6). CURING.ETC COMPLETE	79.72	4200	CU.M	334824
4.	DPC OF BITUMINOUS AT PLINTHS	17.40	70	SQ.M	1218

5.	FILLING OF PLINTH IN LAYER OF 0.35M THICK INCLUDING MURRAM AND SPRINKLING OF WATER COMPACTION ETC, COMPLETE	23.92	305	CU.M	7295.60
6.	B.B.C.C (1:4:8)	1.78	305	CU.M	543
7.	TILES FLOORING	68.74	430	SQ.M	29558.20
8.	R.C.C WORK IN SLAB,BEAM,COLOMN LINTEL,CHAJJA,CURING,ROUGH FINNISH ETC. COMPLETE	14.67	8500	CU.M	124695
9.	SMOOTH CEMENT PLASTER (12MM) THIK USING CM IN PROPOSITION (1:6) WITH FINISHING CARRING .ETC COMPLETE	577.45	185	SQ.M	106828.25
10.	WHITE WASHING	577.45	11	SQ.M	6351.95
11.	PLASTIC IMMULSION PAINT (TWO COAST) ASIAN PAINT, DULUX	577.45	92	SQ.M	53126
12.	SKERTING	87	30	M	2610
13.	WOOD WORK	31.60	930	SQ.M	29388
14.	SOIL PIPE(10CM) WITH FEETING ALL WORK COMPLETED	20	800	M	16000
15.	WATER SUPPLY PIPE 5CM WITH ALL COMPLETE WORK DONE WICH IS FEETING DRILLING ETC. COMPLETE	60	200	M	12000
16	INDIAN TYPE FOOT TOILET WITH ALL COMPLETED WORK	10	1000	UNIT	10000
17.	WESTERN TYPE TOILET WITH ALL COMPLETED WORK	4	3500	UNIT	14000
18.	SINK WITH ALL COMPLETED	2	3500	UNIT	7000
					815825
				Say	**816000**

	10% CONTACTER PROFIT				**81600**
	1% WATER COST				**8160**
	6% COST OF ELECTRICITY				**48960**
	5% WATER SUPPLY				**40800**
	TOTAL COST OF CONSTRUCTION				**987360**
				SAY	**990000**

Table No. 22. Costing of Public Toilet

(Note: This all design costing rate according to USE R&B SOR of year 2015-2016.)

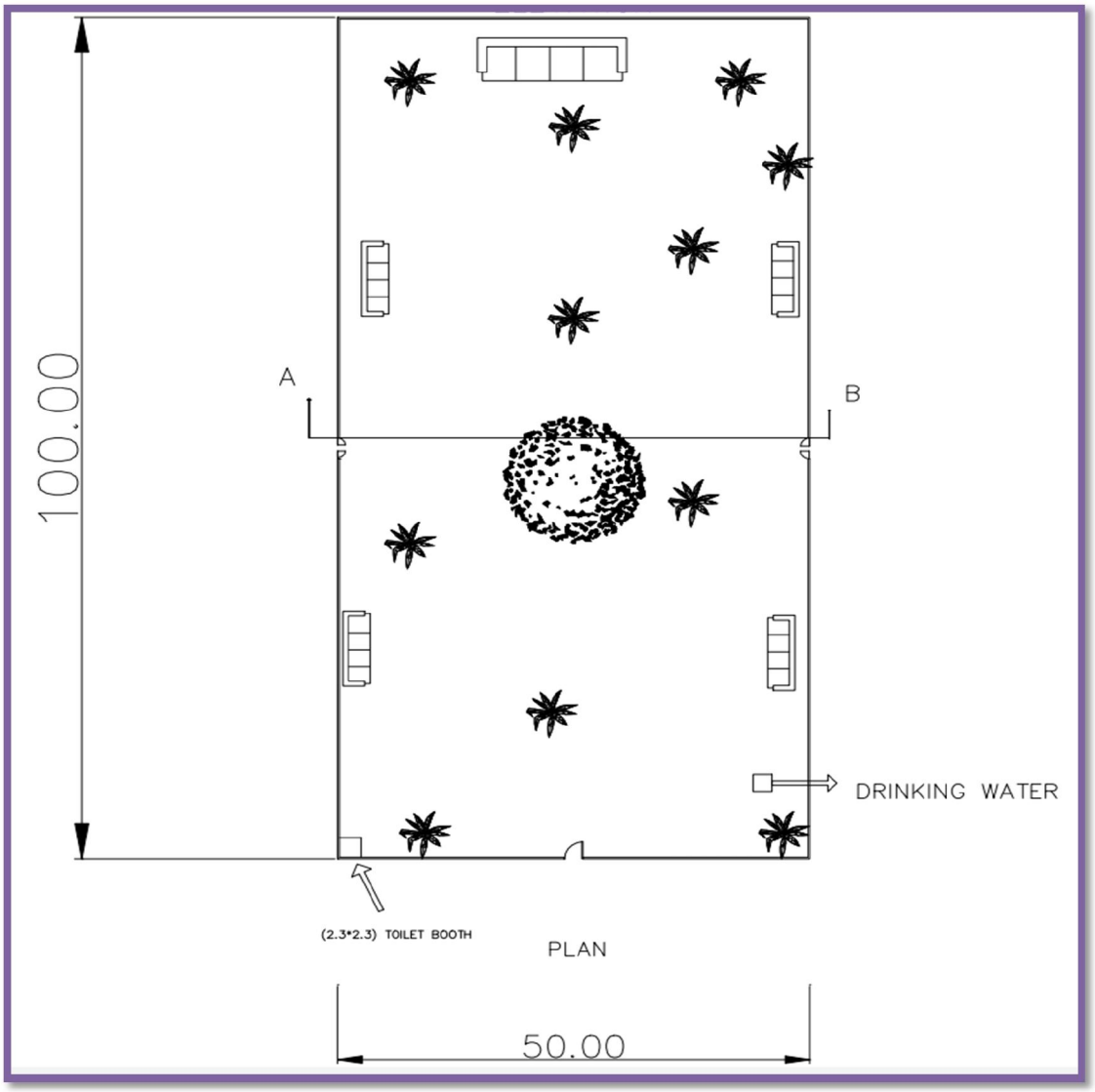
8.1.6 Heritage Village Design (Civil)

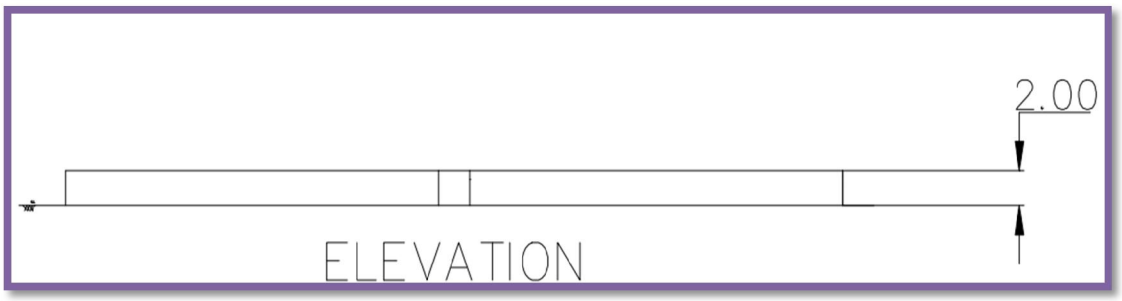
- **Public Garden**

A garden is a planned space, usually outdoors, set aside for the display, cultivation, or enjoyment of plants and other forms of nature, as an ideal setting for social or solitary human life.
Public gardens have always enjoyed the respect of the communities in which they are located. They are resources for recreation, as well as education and research opportunities. Public gardens can play very significant roles in sustainable community development.

Benefits:-

- Increase access to fresh foods
- Improve food security.
- Increase physical activity through garden maintenance activities
- Improve dietary habits through education
- Increase fruit and vegetable intake
- Reduce risk of obesity and obesity-related diseases
- Improve mental health and promote relaxation
- Helps fight disease.
- Builds strength.
- Improves memory.
- Boosts mood.
- Reduces stress.
- Helps addiction recovery.
- Fosters human connections.
- Heals and empowers.


100.00
A
B
DRINKING WATER
(2.3*2.3) TOILET BOOTH
PLAN
50.00


2.00
ELEVATION

Note : Public Garden design given in ch-12 at last A1 size because design fig. if not visible.

Measurement Sheet of Public Garden

SR. no	DESCRIPTION	NO	L	B	H	Q	TOTAL QUANTITY
1	**EXCAVATION**						
	UPTO 0.70M	1	299.20	0.8	0.7	CU.M	**167.55**
2.	**PCC IN FOUNDATION**	1	299.20	0.8	0.20	CU.M	**47.87**
3.	**BRICK MASONRY WORK**						
	STEP 1	1	299.20	0.40	0.20	CU.M	**23.94**
	UPTO FINISH LEVEL	1	299.20	0.20	2.30	CU.M	**137.63**
4.	**DEDUCTION**						
	DOOR	3	2.50	0.20	2.0	CU.M	**3.0**
	TOTAL MASONRY WORK						**158.57**
5	**PLASTERING WORK(INSIDE)**						
	(a)HORIZONTAL	2	49.60		2.0	SQ.M	99.20
	(b) VERTICAL	2	99.60		2.0	SQ.M	199.20
							298.40
6.	**PLASTERING AT OUT SIDE**						
	H	2		50	2.0	SQ.M	200
	V	2	100.		2.0	SQ.M	400
							898.40
	DEDUCTION	3/2	2.50	0.2	2.0		**1.5**
							896.90

7.	**TOILET BOOTH**	1				UNIT	1
8.	**DRINKING WATER**	1				UNIT	**1**

Table No. 23. Measurement Sheet of Public Garden

Costing of Public Garden

SR. NO	DESCRIPTION	Q	RATE	PER	COST
1.	EXCAVATION OF FOUNDATION IN SOFT SOIL .UPTO 0.7M. COMPLETE ALL WORK LIKE MOVING,ECT	167.55	105	CU.M	17593
2.	PCC IN FOUNDATION WITH COMPLETE WORK WITH CURING	47.55	3200	CU.M	152169
3	BRICK MASONRY WORK WITH ALL COMPLETED WORK	158.57	4200	CUM	665994
4.	PLASTERING WORK WITH ALL COMPLETED	896.90	185	SQ.M	165926.5
5.	STEEL DOOR WITH COMPLETE WORK	15	1500	SQ.M	22500
6.	TOILET BOOTH	1	20000	UNIT	20000
7.	DRINKING WATER COOLER	1	20000	UNIT	20000
					1064182
8.	MALI	2	7000	MOUTHS	**14000**
	ADD1% WATER CHARGE				**10641**
	10% CONTACTER PROFILE				**106418**
	5%OTHER CHARGES				**53210**
				TOTAL	**1234451**
				SAY	**1235000**
	ADD 14000 PER MOUTHS FOR MAINTAINS CHARGE			**M**	**14000**

Table No. 24. Costing of Public Garden

(Note: This all design costing rate according to USE R&B SOR of year 2015-2016.)

8.2 Reason for Students Recommending this Design

We recommending this design because we visit the village and analyse to see many problems facing because of the less available of some needful infrastructures like toilet, garden, Godown, community hall, public library, rain water harvesting system, etc. some other system and structures. That's why we recommended this designs.

8.3 About designs Suggestions / Benefit of the villagers

Benefits of the design for the villagers:

- The first and foremost benefit is getting free books.
- Availability of all kinds of books.
- A disciplined area to study.
- Free internet.
- There's more to libraries than just paper books or the internet.
- Many libraries now offer you different lectures and classes.
- Librarians are awesome.
- Increase access to fresh foods.
- Improve food security.
- Increase physical activity through garden maintenance activities.
- Improve dietary habits through education.
- Increase fruit and vegetable intake.
- Reduce risk of obesity and obesity-related diseases.
- Improve mental health and promote relaxation.
- Helps fight disease.

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

After completion of visit & data collection of the Meta Khambhaliya village, we have given some of the designs which were to be provided under this project.

PART- I Designs	PART- II Designs
Public Library	Godown
Community Hall	Rain Water Harvesting
Garden	Bank
Water Tank	Play Ground
Solid Waste Collection	Biogas Plant
Public Toilets	Chabutro

Table No. 25. Proposing Design for Future Develop

Future Development:

- Future scope would be study over other unusual urban facilities that would be sustainable in rural areas of Gujarat.
- The village still lacks in preservation of the building and a variety of structures. Taking this into reflection the judgment of its treatment with other necessary facilities will be designed in the next semester.
- Step to become an 'Adarsh gram'
- Identify people's needs and priorities.
- Define activities that can mobilize the complete community.

Godown: A warehouse is a building for storing goods. Warehouses are used by manufacturers, importers, exporters, wholesalers, transport businesses, customs, etc.
Rainwater Harvesting: Rainwater harvesting (RWH) is the collection and storage of rain, rather than allowing it to run off. Rainwater is collected from a roof-like surface and redirected to a tank, cistern, deep pit (well, shaft, or borehole), aquifer, or a reservoir with percolation.
Bank: A bank is a financial institution licensed to receive deposits and make loans. Banks may also provide financial services such as wealth management, currency exchange, and safe deposit boxes.
Play ground: A playground, play park, or play area is a place specifically designed to enable children to play there. It is typically outdoors. While a playground is usually designed for children, some target other age groups or people with disabilities.
Bio-gas Plant: A biogas plant is where biogas is produced by fermenting biomass. The substrate used for the production of this methane-containing gas usually consists of energy crops such as corn, or waste materials such as manure or food waste.
Chabutaro: Chabutro or Chabutaro or Chabutra is a structure mostly found in India. They are a tower-like structure with octagonal or pentagonal shaped enclosures at the top. In the upper enclosure are several holes, wherein birds can make their nests.

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

As per VY-VIII goal is “AN APPROACH TOWARDS RURBANISATION”. It means make allocated village to smart village. In analysis of allocated village survey many problems phase as compare to smart village.

We fully analyses the village & with help of 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 Meta Khambhaliya village, we observed condition of existing infrastructure facilities in village.

“Developing village with a rural soul but with all smart urban amenities that a city may have” This should guide to some rethinking about the import of efficiency further than the normal conceptions of economic or technical efficiency. In fact, employment growth is at least as significant as growth in productivity. In a sense, both represent the utilization of labor as a resource. This will help in developing Smart villages in sustainable way, reduce relocation from villages and avoid the cities from the urban force.

It can be help to develop the other village as increase basic services and after that smart facilities on any country with the help smart village visit and it’s also help to boost GDP Of state And Also increase country image in front of world as superior infrastructure, economic profile as well as an Employment Solution.

In the sphere of economics, the sense of efficiency must make bigger beyond production per worker or growth in efficiency to include employment growth and Labour utilize. In the area of politics, livelihoods, employment and supported by off-grid energy rider, must become an integral part of the conversation and the development, as a primary objective rather than a residual result.

As per UDPFI norms this lack of infrastructure facilities we provide….
Godown, Rainwater, harvesting system, Biogas plant, Chabutaro, Bank, Playground

This all infrastructure facilities are needful for villagers to fulfil their working purpose and needful. By providing required amenities to village, development of village can be possible. So ultimately migration to the city from village will be reduced and livelihood of villagers will increase. So healthy and prosperous life can be possible for the villagers. Ultimate growth of village and people is base step for the development of country.

India is developing country and GDP is highly depended on farming. As the development of village would be possible, farming techniques will increase and percentage of GDP will increase.

Chapter 11. References refereed for this project

- Dr. H.J. Shah (2014), "Reinforced Concrete Vol. II [Advanced Reinforced Concrete], Charotar Publisher.
- Prajapati K.P. ET. All: – ―Vishwakarma Yojana an Approach towards Rurbanisation VALAD Village‖ IJIRST –International Journal for Innovative Research in Science & Technology| Volume 2 | Issue 11 | April 2016.
- Chavda N.K. ET. All: – ―Vishwakarma Yojana an Approach towards Rurbanisation PANSAR Village‖ IJIRST –International Journal for Innovative Research in Science & Technology| Volume 2 | Issue11|April2011.
- B. N. Dutta (2016), "Estimation and Costing In Civil Engineering Theory and Practice", UBS Publisher.
- Dr. H.J. Shah (2014), "Reinforced Concrete Vol. II [Advanced Reinforced Concrete], Charotar Publisher.
- Repair and Rehabilitation of Structure by Dr. R. P. Rethaliya, Atul Publication
- "Urban and Regional Development Plans Formulation &Implementation Guidelines", 2014, by Urban Development Ministry, Central Govt. Of India.

- https://villageinfo.in
- http://www.onefivenine.com
- https://en.wikipedia.org
- http://wikiedit.org
- https://www.mapsofindia.com
- https://www.census2011.co.in
- https://vlist.in
- http://www.gloriousindia.com
- https://www.google.com
- https://www.wikivillage.in/town/gujarat/rajkot/rajkot/munjka
- http://www.onefivenine.com/india/villages/Rajkot/Rajkot/Munjka

- PDFs
  - UDPFI (urban development plans formulation and implementation) Vol. I
  - UDPFI (urban development plans formulation and implementation) Vol. II
  - S.O.R. of Rajkot 2019-20
  - Phase VII old Reports refer
- Other
  - Ideal Village Profile and Taluka Planning Atlas Summary Report of Rajkot Dist.

Chapter 12. Annexure

12.1 Scanned copy of Vasavad (Ideal Village) Survey Form

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:	Vasavad
Name of Taluka:	GONDAL
Name of District:	RAJKOT
Name of Institute:	S.L.T.I.E.T.
Nodal Officer Name & Contact Detail:	Prof Mehul.M.C. (9427665085)
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Kokilaben Bakul bhai Jajsvai
Date of Survey:	1/9/2020

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	6471	3335	3136	10898
ii)	2011	6069	3232	2938	1302

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	2429.
	Forest Area (In hect.)	20
	Agricultural Land Area (In hect.)	2083
	Residential Area (In hect.)	
	Other Area (In hect.)	
	Water bodies	
	Nearest Town with Distance:	

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3. **Occupational Details:**

Name of Three Major Occupation groups in Village	1. Farmer 2. Shop keeper 3. Labours

4. **Physical Infrastructure Facilities:**

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated) • RO Water • Well (Covered/ Uncovered) • Hand pumps • Tube well/ Borehole • River/ Canal/ Spring/ Lake/ Pond	Untreated Uncovered River	✓ ✓ ✓ ✓ ✓ ✓		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	✓		1 No
	Underground Sump	Capacity: 5L	5 Lac		
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	Yes	✓		
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	closed.			
	If Open than Pucca / Kutchcha	Pucca.			
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	Water bodies			
Suggestions if any:					

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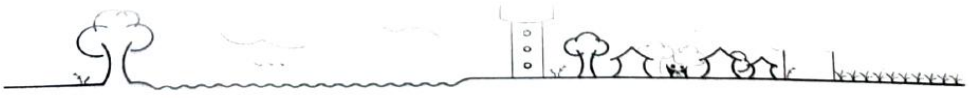
E.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	All weather	✓		
	Main road	WBM			
	Internal streets	Gravel			
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH 10 K			
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	N/O.			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Bus, Privet Vehicles others	✓		
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	YES			
	Power supply for Domestic Use	Yes			
	Power supply for Agricultural Use	Yes			
	Power supply for Commercial Use				
	Road/ Street Lights	Yes			Solar Street



	Electrification in Government Buildings/ Schools/ Hospitals	All Types			
	Renewable Energy Source Facilities (Y/ N)				
	LED Facilities				
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	1			
	Location Condition	Near Bus stand.			
	Community Toilet (With bath/ without bath facilities)	with Bath			
	Solid & liquid waste Disposal system available	No			
	Any facility for Waste collection from road				
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	River well other			
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)				

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

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K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	PHC			
	Private Clinic/Private Hospital/ Nursing Home	Private Hospital			2 Nos.
	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				
	Primary School	Yes			3 nos.
	Secondary school	Yes			1 nos.
	Higher sec. School	-			
	ITI college/ vocational Training Center	-			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	-			
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	No		✓	

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Techno Economic Survey

	Condition:	–			
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	No		✓	
	Public Garden Location: Condition:	yes good enough			
	Village Pond Location: Condition:	River very good			
	Recreation Center Location: Condition:				
	Cinema/ Video Hall Location: Condition:	No		✓	
	Assembly Polling Station Location: Condition:				
	Birth & Death Registration Office Location: Condition:	Panchayat office			

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				
	Telecommunication Network/ STD booth	yes			

	General Market	Yes			
	Shops (Public Distribution System)	Yes			
	Panchayat Building	Yes			
	Pharmacy/Medical Shop	Medical Shop			
	Bank & ATM Facility	Bank			
	Agriculture Co-operative Society				
	Milk Co-operative Soc.				
	Small Scale Industries				
	Internet Cafes/ Common Service Center/Wi Fi				
	Other Facility	Petrol Pump			
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				
P.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System				
Q.	Any Other				

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	

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Recent Projects going on for Development of Village	No
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)		
2.	Additional Information/ Requirement		

9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

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

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

સરપંચ
વાસાવડ ગ્રામ પંચાયત

તલાટી કમ મંત્રી
પંચાયત
વાસાવડ ગ્રામ પંચાયત

12.2 Scanned copy of Munjka (Smart village) survey form

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

Name of District:	RAJKOT
Name of Taluka:	RAJKOT
Name of Village:	MUNJKA
Name of Institute:	SIJET
Nodal Officer Name & Contact Detail:	MEHUL CHAVDA 9427665095
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	JAYESH BHAI SANDEEP BHAI (TALATI)
Date of Survey:	06/10/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	2191	1148	1043	440
2.	2011	3483	1816	1667	752

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	748
2.	Forest Area (In hect.)	86
3.	Agricultural Land Area (In hect.)	200
4.	Residential Area (In hect.)	448
5.	Other Area (In hect.)	14
6.	Distance to the nearest railway station (in kilometers):	20KM (RAJKOT)

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7.	Name of Nearest Town with Distance:	RAJKOT
8.	Distance to the nearest bus station (in kilometers):	10 KM
9.	Whether village is connected to all road for the any facility or town or City?	RAJKOT

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	BUSSENES
	2.	LABOUR WORK
	3.	AGRICULTURE
Major crops grown in the village:	1.	MILK
	2.	COTTON
	3.	GRAIN, VEGITABLE

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	PIPE LINE			
2.	**DUG WELL** Protected Well Un Protected Well	SUPPLY			
3.	**WATER FROM SPRING** Protected Spring Unprotected Spring	DONE BY MUNICIPL -			
	Rainwater Tanker Truck Cart With Small Tank	CO-OPERA-TION			
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water Hand Pump Other(Specify)**Lake/ Pond**				

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Suggestions if any:

B.	**Water Tank Facility**					
	Overhead Tank	Capacity:	2 LACK	Yes		
	Underground Sump	Capacity:		NO		

Suggestions if any:

C.	**The Type of Drainage Facility**					
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	ALL DONE BY MUNICIPLE. CO-OPERATION	YES			

Suggestions if any:

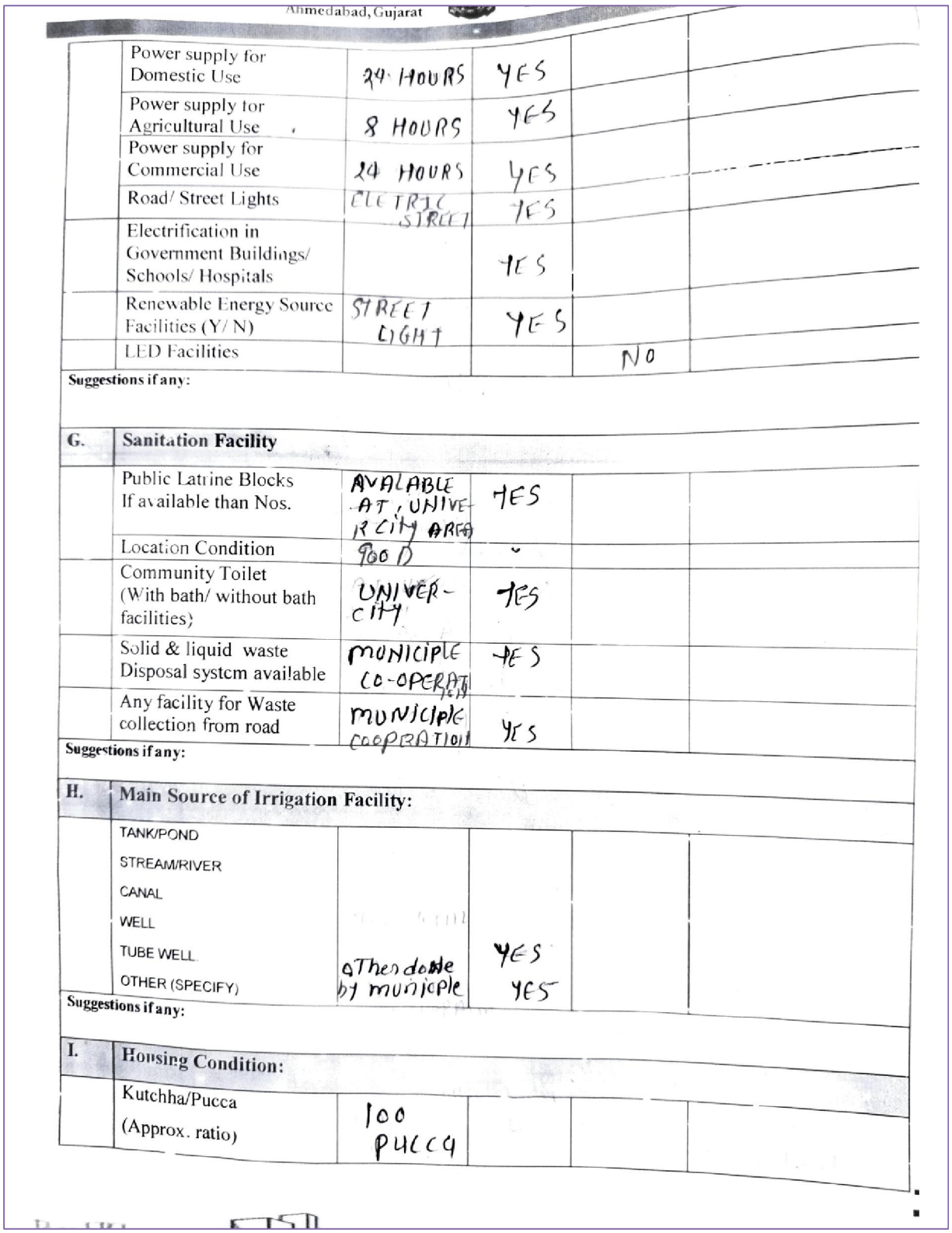
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Bituminus	Yes		
	Main road	RURAL	YES		
	Internal streets	R.C.C	YES		
	Nearest NH/SH/MDR/ODR Dist. in kms.	S.H	YES		4

Suggestions if any:

E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO	No		8KM (RAJKOT)
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	NO	No		10KM RAJKOT
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	ALL ARE AVALABLE	Yes		

Suggestions if any:

F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	MORE THAN 6 HOUR	YES		



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	Power supply for Domestic Use	24 HOURS	YES		
	Power supply for Agricultural Use	8 HOURS	YES		
	Power supply for Commercial Use	24 HOURS	YES		
	Road/ Street Lights	ELETRIC STREET	YES		
	Electrification in Government Buildings/ Schools/ Hospitals		YES		
	Renewable Energy Source Facilities (Y/ N)	STREET LIGHT	YES		
	LED Facilities			NO	

Suggestions if any:

G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	AVALABLE AT, UNIVERCITY AREA	YES		
	Location Condition	GOOD			
	Community Toilet (With bath/ without bath facilities)	UNIVER-CITY	YES		
	Solid & liquid waste Disposal system available	MUNICIPLE CO-OPERATION	YES		
	Any facility for Waste collection from road	MUNICIPLE COOPERATION	YES		

Suggestions if any:

H.	**Main Source of Irrigation Facility:**				
	TANK/POND				
	STREAM/RIVER				
	CANAL				
	WELL				
	TUBE WELL		YES		
	OTHER (SPECIFY)	aThen done by municple	YES		

Suggestions if any:

I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	100 PUCCA			

INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	3	YES		
	Sub-Centre	1	YES		
	PHC				
	BLOCK PHC				
	CHC/RH				
	District/ Govt. Hospital				
	Govt. Dispensary				
	Private Clinic	2	YES		
	Private Hospital/ Nursing Home	2	YES		
	AYUSH Health Facility	1			
	sonography /ultrasound facility			NO	
	If any of the above Facility is not available in village than approx. distance from village: 00.....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	3	YES		
	Primary School	1	YES		
	Secondary school	UNIVERCITY	YES		
	Higher sec. School	UNIVERCITY	YES		
	ITI college/ vocational Training Center			NO	
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	ALL ARE IN SAURASTRA UNIVERCITY AREA	YES		(FOR ENGINEERING, they goes to AT RAJKOT)
	If any of the above Facility is not available in village than approx. distance from village: 12....kms.				

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Suggestions if any:

L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)	RUNNING	NEAR PANCHAYA -T	YES	
	Public Library (With daily newspaper supply: Y/N)	GOOD	UNIVER-CITY	YES	
	Public Garden	GOOD	UNIVERCITY	YES	
	Village Pond				NO
	Recreation Center	GOOD	UNIVERCITY	YES	
	Cinema/ Video Hall				NO
	Assembly Polling Station	(SUB-DIVIS-ION)		YES	
	Birth & Death Registration			YES	

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

Suggestions if any:

M.	Other Facilities	Condition	Location	Available (YES)	Available (NO)
	Post-office	GOOD	MUNJKA	YES	
	Telecommunication Network/ STD booth			YES	NO
	General Market	LOCAL MARKET	MUNJKA	YES	
	Shops (Public Distribution System)	good	MUNJKA	YES	
	Panchayat Building	NEW	MUNJKA	YES	
	Pharmacy/Medical Shop	good	MUNJKA	YES	
	Bank & ATM Facility	good	UNIVERCITY	YES	
	Agriculture Co-operative Society				NO
	Milk Co-operative Soc.		MUNJKA	YES	
	Small Scale Industries		RAJKOT	YES	
	Internet Cafes/ Common Service Center/Wi Fi	AT 5KM AWAY	RAJKOT	YES	
	Youth Club				NO
	Mahila Mandal		MUNJKA	YES	

	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries	(malk (cooperative are more)	At MUNJKA	YES	
	Other Facility			YES	

Suggestions if any:

N.	Other Facilities	Condition		Available (YES)	Available (NO)
	1. Have these programme implemented the village?			YES	
	2. Are there any beneficiaries in the village from the following programme?			YES	
	3. Janani Suraksha Yojana	MORE THAN 50 + YOJANA AVALABLE	MUNJKA	YES	
	4. Kishori Shakti Yojana			YES	
	5. Balika Samriddhi Yojana			YES	
	6. Mid-day Meal Programme			YES	
	7. Intergrated Child Development Scheme (ICDS)			YES	
	8. Mahila Mandal Protsahan Yojana (MMPY)			YES	
	9. National Food for work Programme (NFFWP)			YES	
	10. National Social Assistance Programme			YES	
	11. Sanitation Programme (SP)			YES	
	12. Rajiv Gandhi National Drinking Water Mission			YES	
	13. Swarnjayanti Gram Swarozgar Yojana			YES	
	14. Minimum Needs Programme (MNP)			YES	
	15. National Rural Employment Programme			YES	
	16. Employee Guarantee Scheme (EGS)			YES	
	17. Prime Minister Rojgar Yojana (PMRY)			YES	
	18. Jawahar Rozgar Yojana (JRY)			YES	
	19. Indira Awas Yaojna (IAY)			YES	
	20. Samagra Awas Yojana (SAY)			YES	
	21. Sanjay Gandhi Niradhar Yojana (SGNY)			YES	
	22. Jawahar Gram Samridhi Yojana (JGSY)			YES	
	23. Other (SPECIFY)			YES	

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	SOLAR STREET.	YES		
2.	Bio-Gas Plant Solar Street Lights Rain 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	NOT REQUIRE		NO	
3.	Any NGO working for village development	BUXUK (MAHILA)	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

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1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	ALL ARE Good CONDITION	
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING ...DONE by MUNCIPLE... FOGGING......6 MONTS.............. Drive was undertaken in the village?		

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
i.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	ALL ARE IN GOOD CONDITIONS	

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

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

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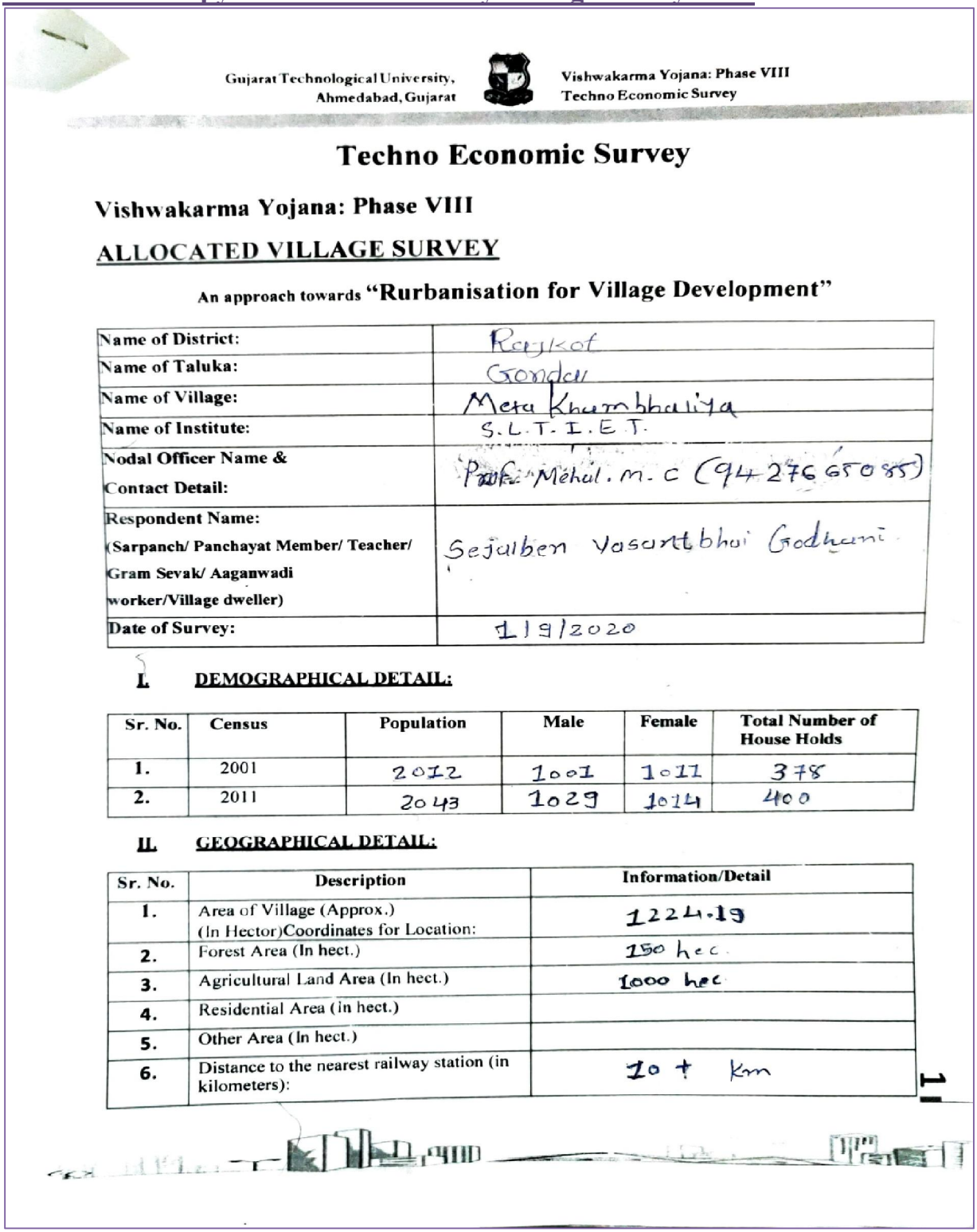
12.3 Scanned copy of Meta Khambhaliya village survey form



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Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

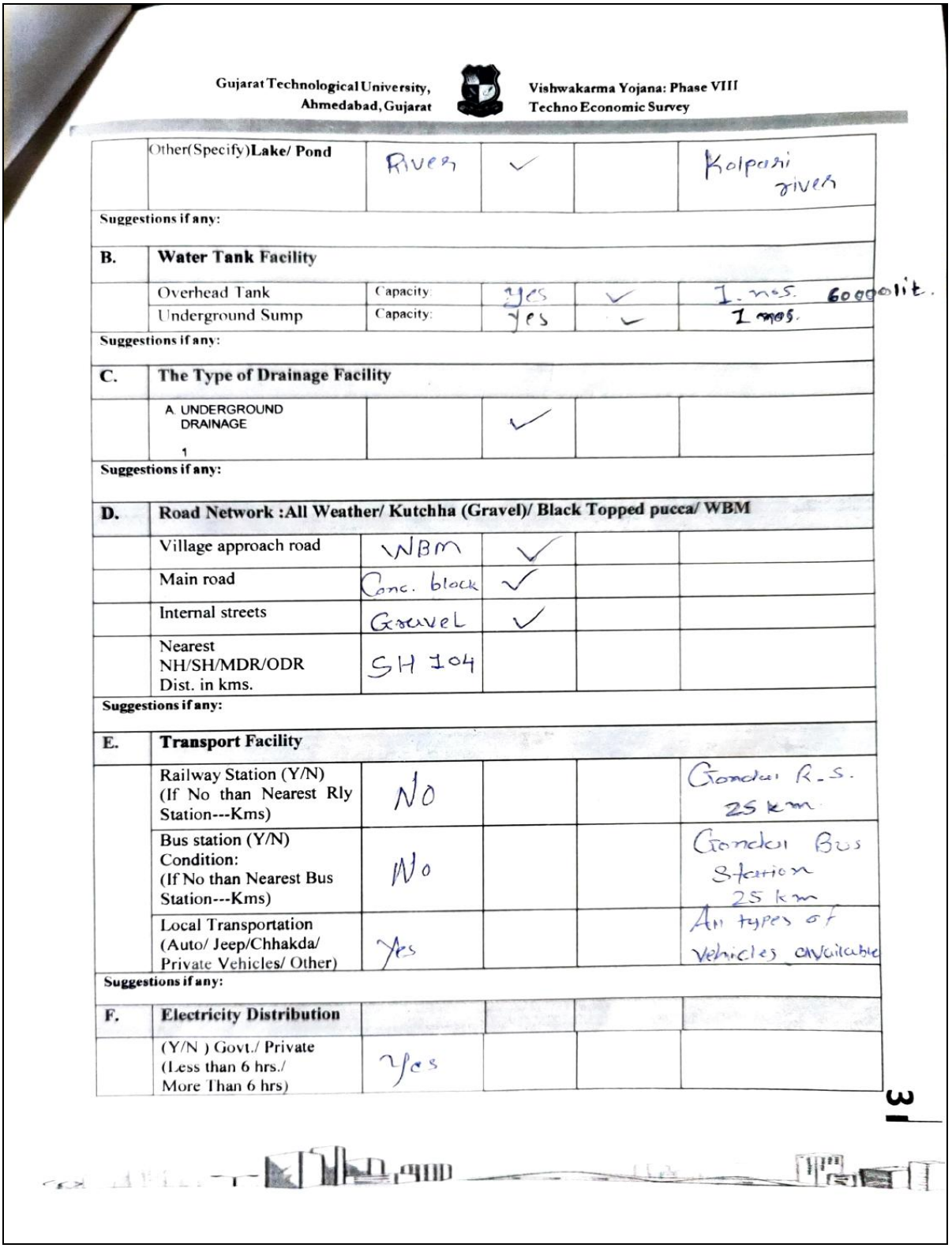
Name of District:	Rajkot
Name of Taluka:	Gondal
Name of Village:	Meta Khambhaliya
Name of Institute:	S.L.T.I.E.T.
Nodal Officer Name & Contact Detail:	Prof. Mehul. M. C (9427665085)
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sejalben Vasantbhai Godhani
Date of Survey:	1/9/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	2012	1001	1011	378
2.	2011	2043	1029	1014	400

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1224.19
2.	Forest Area (In hect.)	150 hec.
3.	Agricultural Land Area (In hect.)	1000 hec.
4.	Residential Area (in hect.)	
5.	Other Area (In hect.)	
6.	Distance to the nearest railway station (in kilometers):	10 + km



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	Other(Specify)**Lake/ Pond**	River	✓		Kolpari river
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	Yes	✓	1 nos. 60000 lit.
	Underground Sump	Capacity:	Yes	✓	1 nos.
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A UNDERGROUND DRAINAGE 1		✓		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	WBM	✓		
	Main road	Conc. block	✓		
	Internal streets	Gravel	✓		
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH 104			
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No			Gondal R.S. 25 km
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	No			Gondal Bus Station 25 km
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes			All types of Vehicles available
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes			

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7.	Name of Nearest Town with Distance:	Rajkot (63 km)
8.	Distance to the nearest bus station (in kilometers):	25 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.	Farmer
	2.	Shopkeeper
	3.	Labour

Major crops grown in the village:	1.	Cotton.
	2.	Peanuts
	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 Yard/Plot				
	Public Tap/Standpipe				undrinkable
	Tube Well Or Bore Well		✓		
2.	**DUG WELL**				
	Protected Well	2 nos.	✓		
	Un Protected Well		✓		
3.	**WATER FROM SPRING**				
	Protected Spring		✓		
	Unprotected Spring		✓		
	Rainwater		✓		
	Tanker Truck			✓	
	Cart With Small Tank			✓	
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/**				
	Irrigation Channel			✓	
	Bottled Water	1 nos.	✓		
	Hand Pump	2 nos.	✓		

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	Other(Specify)**Lake/ Pond**	River	✓		Kolpasi river
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	Yes	✓	1 nos. 6000 lit.
	Underground Sump	Capacity:	Yes	✓	1 nos.
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1		✓		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	WBM	✓		
	Main road	Conc. block	✓		
	Internal streets	Gravel	✓		
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH 104			
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No			Gondal R.S. 25 km
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	No			Gondal Bus Station 25 km
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes			All types of Vehicles available
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes			

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	Power supply for Domestic Use	Yes	PGVCL		
	Power supply for Agricultural Use	Yes	20Hr.		
	Power supply for Commercial Use				
	Road/ Street Lights	Yes			
	Electrification in Government Buildings/ Schools/ Hospitals				
	Renewable Energy Source Facilities (Y/ N)				
	LED Facilities	—			

Suggestions if any:

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

Suggestions if any:

H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	Yes	✓		All types of irrigation facility is Available

Suggestions if any:

I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Pucca			

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	LKG School (2 nos)	✓	2 nos	Balmandir
	Sub-Centre				
	PHC	Yes	✓		
	BLOCK PHC			✓	
	CHC/RH			✓	
	District/ Govt. Hospital			✓	
	Govt. Dispensary				
	Private Clinic		✓		Two privet clinic
	Private Hospital/		✓		
	Nursing Home				
	AYUSH Health Facility				
	sonography /ultrasound facility				
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	No		✓	
	Primary School	Yes	✓		
	Secondary school	No		✓	
	Higher sec. School	No		✓	
	ITI college/ vocational Training Center	No		✓	
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	No		✓	

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

Suggestions if any:

L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)				No
	Public Library (With daily newspaper supply: Y/N)				No
	Public Garden	Yes			No
	Village Pond	5 nos		Need Maintenance	Yes
	Recreation Center				No
	Cinema/ Video Hall				No
	Assembly Polling Station				No
	Birth & Death Registration Office		Panchyat	Yes	

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

Suggestions if any:

M.	Other Facilities	Condition	Location	Available (YES)	Available (NO)
	Post-office			Yes	Yes
	Telecommunication Network/ STD booth				No
	General Market				No
	Shops (Public Distribution System)				No
	Panchayat Building			Yes	
	Pharmacy/Medical Shop				No
	Bank & ATM Facility				No
	Agriculture Co-operative Society				No
	Milk Co-operative Soc.	1. Gov. 1. Privet		Yes	
	Small Scale Industries				No
	Internet Cafes/ Common Service Center/Wi Fi				No
	Youth Club				No
	Mahila Mandal	1a. Sukhi mandal			No

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

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

Suggestions if any:

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

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VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	Road, Street Lights System, Proper Drainage System	
2.	Additional Information/ Requirement	Community hall, Library.	
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?		

IX. Smart Village / Heritage Details

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

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

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

સરપંચશ્રી
મેતા ખંભાળીયા ગ્રામ પંચાયત

12.4 Gap Analysis of the Allocated Village

VILLAGE GAP Analysis					
Village Facilities	**Planning Commission/UDPFI Norms**	**Village Name:**	Meta Khambhaliya		
		Population:		2043	
		Existing	**Required as per Norms**	**Smart Village / Cities / Heritage Future Projection Design**	**Gap**
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	2	1		1
Primary School	Each Per 2500 population	1	1		0
Secondary School	Per 7,500 population	0	0		0
Higher Secondary School	Per 15,000 Population	0	0		0
College	Per 125,000 Population	0	0		0
Tech. Training Institute	Per 100000 Population	0	0		0
Agriculture Research Centre	Per 100000 Population	0	0		0
Skill Development Center	Per 100000 Population	0	0		0
Health Facility					
Govt/Panchayat Dispensary or Sub PHC or Health Centre	Each Village	1	1		0
Primary Health & Child Health Center	Per 20,000 population	0	0		0
Child Welfare and Maternity Home	Per 10,000 population	0	0		0
Multispecialty Hospital	Per 100000 Population	0	0		0
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutcha	0	8		8

	house)				
Physical Infrastructure Facilities					
Transportation		**Adequate**	1		0
Pucca Village Approach Road	Each village	**Adequate**	1		0
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	**Adequate**	1		0
Drinking Water (Minimum 70 lpcd)		**Inadequate**	1		1
Over Head Tank	1/3 of Total Demand	**Adequate**	0		0
U/G Sump	2/3 of Total Demand	**Inadequate**	1		1
Drainage Network - Open		**Adequate**	0		0
Drainage Network - Cover		**Adequate**	1		0
Waste Management System		**Inadequate**	0		1
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	0	1		1
community hall and Public Library	Per 15000 Population	0	1		1
Cremation Ground	Per 20,000 population	0	0		0
Post Office	Per 10,000 population	1	1		0
Gram Panchayat Building	Each individual/group Panchayat	1	1		0
APMC	Per 100000 Population	0	0		0
Fire Station	Per 100000 Population	0	1		1
Public Garden	Per village	0	1		1
Police post	Per 40,000Population	0	0		0
Shopping Mall					
Electrical Design					
Electricity Network		**Adequate**	1		0

Table No. 26. Gap Analysis

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

Sr. No.	Village	Discipline	Part I	Part II
1	Meta Khambhaliya	Civil	Public Library	Godown
			Community Hall	Rain Water Harvesting
			Garden	Bank
			Water Tank	Play Ground
			Solid Waste Collection	Biogas Plant
			Public Toilets	Chabutaro
2	Nagar Pipaliya	Civil	Community hall + Library	Internal Road
			Post office	Public Garden
			Panchayat Building	Biogas Plant
			Public Toilet	General Market
			Skill Development Center	Canteen for old People
			Animal Shelter	Forestation
		Electrical	Automatic on-off Switch for Water tank	Community Hall Wiring
			Photovolic Water Pump	Solar Cleaning System
			Solar Water Purifier	Street Lights
3	Jaliya	Civil	Chanakya Library	Soil testing laboratory
			Panchayat Building	Smart garden
			Pay and Use	Reaction center
			General Market	Biogas plant
			Bus stand	Anganwadi
			Community Hall	Solid Waste Collection
		Electrical	Solar street lights	Smart garden
			Solar Rooftop	Solar laboratory
			Solar Cleaning System	Irrigation by solar
4	Moviya	Civil	Public Garden	Biogas Plant
			Community Hall	General Market
			Public Library	Anganwadi
			Bus Stand	Post Office
			Panchayat Building	Police Station
			Public Toilet	Godown For Agriculture Product
		Electrical	House wiring	Solar library
			Street light	Commercial wiring
			Solar roof top	Solar street light
5	Isra	Civil	Biogas plant	Community Hall
			Garden	Solid waste collection
			Public Toilet	Library
			Post Office	Internal road
			Water Harvesting	Recreation center
			Waste water treatment plant	Police station
			Solar panel fitting	Small hydropower station

		Electrical	Solar street light	Temperature control fan
			Solar cleaning system	Water level indicators
6	Derdi Kumbhaji	Civil	PHC	Rain water harvesting
			Public Library	Cyber cafe
			Community Hall	Skill development center
			Public Garden	Gym
			Police Station	Soil testing laboratory
			Bachat Mandali	Agriculture Store
		Electrical	Solar street light installation design	CCTV
			Solar Pump System	Solar Rooftop Installation Design
			Piezoelectric speed barker power generation design	Purification Water Plant
7	Visaman	Civil	Compost pit	Bio-gas plant
			public garden	PHC
			solid waste management	Rain water harvesting
			Chabutaro	Public Library
			shopping mall	ATM
			community hall	
		Electrical	pizo electricity generation	Solar street light
			Smart energy meter	Central control unit for irrigation water pump construction
			solar tree	Design proposal of electrical wiring and cost estimation of post office
8	Khorona	Civil	Public toilet	ATM
			Bus stand	Post Office
			Community hall	STP
			PHC center	Bank
			Public garden	Rain water harvesting
			Public library	Hall Paver Block
		Electrical	Solar roof top	Solar panel
			Street light	Power generate by river water
			Solar pump	Wind farm

Table No. 27. Summary Details of All the Villages Designs in Table form as Part-I and Part-II

12.6 Drawings (If, required, A1, A2, A3 design is not visible then only)

Note: Attached all design end of report.

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

Figure No.26 Kutcha pucca houses in Meta Khambhaliya village

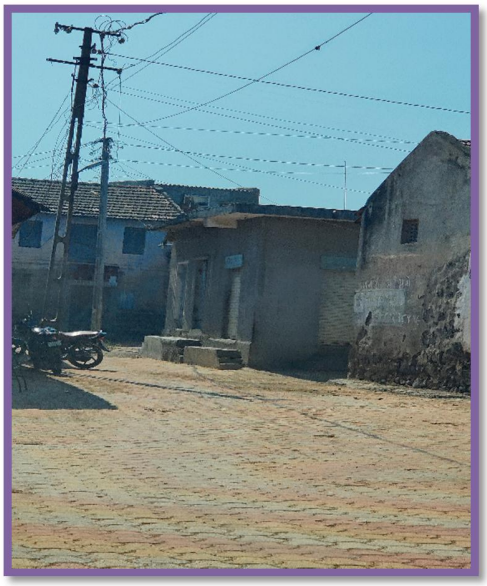


Figure No.27 Blocking system in village

Figure No.28 Meta Khambhaliya Village River & Main road

Figure No.29 Munjka village overhead water tank and Gram Panchayat

Figure No.30 Meta Khambhaliya village “Vrikhsha Ropan” area

12.8 Village Interaction with sarpanch Report with the photograph

Figure No.31 Meta Khambhaliya Village Sarpanch

Figure No.32 Munjka Village Sarpanch

12.9 Sarpanch Letter giving information about the village development

MAHATMA GANDHI CHARITABLE TRUST MANAGED

SHRI LABHUBHAI TRIVEDI INSTITUTE OF ENGINEERING & TECHNOLOGY

Approved by AICTE, New Delhi & Affiliated to GTU, Ahmedabad (Degree & Diploma)

Date:7/10/2020

To,
DDO,
Rajkot

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

As per Vishwakarma Yojana Phase VIII guidelines, students of Shri Labhubhai Trivedi institute of engineering and technology selected different villages of Rajkot district as a part of project of GTU. Vishwakarma Yojana Phase VIII project is offered by GTU to the final year engineering students in which smart, developed and allocated village actual data are collected by students by taking visit of villages and students will gives the designs with a detail Design Plan, Estimation and Coasting of various units in the village.

The following villages are allocated to students for their projects.

1. KHORANA
2. MOVIYA
3. JALIYA
4. META KHAMBHALIYA
5. VISAMAN
6. NAGAR PIPALIYA
7. DERDI KUMBHAJI
8. ISRA

I request you to provide us permission letter so that Talati Mantri/Sarpanch can allow and help students by giving actual information and data about villages.

I request you to kindly support our project students. Be assuring that this project is allocated by **Government of Gujarat** to **Gujarat Technological University**. So, we are proposing the design for study purpose only.

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

for Yavmeet 7/10/20

Prof. Mehul M Chavda
VY-Nodal officer,
SLTIET, Rajkot
Mo.9427665085

S.L.T.I.E.T. (RAJKOT)

7/10/2020

Dr. B M Ramani
Principal,
SLTIET, Rajkot
Mo.9825779590

Principal
Shri Labhubhai Trivedi Institute of Engineering and Technology
Kalawad Road-Rajkot.

Mavdi, Nr. Government Engineering College, Kalawad Road, Rajkot - 360005,
Tel: (0281) 6564011-16, Fax: (0281) 2466150, Mob. : 99045 44407,
Web: www.ltiet.com, Mail: info@ltiet.com

12.10 Comprehensive report preparation as per format

Concept

Vishwakarma Yojana is provides special scheme for development of village by GTU and Government of Gujarat in which students work together and collect data and information regards village development with the help of gram Panchayat and stake holders. Village have some basic facilities likes drinking water, drainage system, pucca road, and other facilities like primary school, primary health center, community hall, library, public latrine block, are sufficient so that village can develop. So, we will give proposal regarding sustainable energy sources and solution related to infrastructure problems. Efforts have been made in this project work to identify and plan some of the below facilities for sustainable development of village and to meet need of future population. Vishwakarma Yojana is one of the initiatives towards Rurbanisation that is village development by the government of Gujarat, which was allotted as a real time situation type project provides to GTU.

It is one of the strategies to reduce urban city pressure and lower the migration rate by developing village with a "rural soul" but with all urban amenities that a city may have. In this project the students meet the relevant citizens of village and survey the existing facilities. Then design of the sustainable infrastructure which is to be modified is carried out for the village. This includes implementation of engineering skills to prepare detailed project reports for village as a part of the final year project work. By this project certain experiences recreates a real work and need of application of an individual technical knowledge on any existing problems. Based on survey we tried to give design of basic facilities to fulfill their needs. By providing these basic facilities to village for reduce urban city pressure and decrease migration rate, which is ultimate aim of Vishwakarma Yojana.

After annalise whole village we seen many lake awareness of villagers needful facilities, some cleanly and smartness of village we decide to provide some facilities like Public Library, Community Hall, Garden, Water Tank, Solid Waste Collection, Public Toilets, Godown, Rain Water Harvesting, Bank, Play Ground, Biogas Plant, Chabutaro etc. all of this facility we create a design and estimate with sarpanch and nodal officer permission.

PART-II

Chapter-13 From the Chapter- 9 future designs of the aspects (Feasibility, Construction, Operation and maintenance of various design options in Rural Areas along with cost with AutoCAD designs / planning with any software).

13.1 Design Proposals:

- Godown
- Rain Water Harvesting
- Bank
- Play Ground
- Biogas Plant
- Chabutro

13.1.1 Civil Design 1 Sustainable Design

Rain Water Harvesting:

Rooftop Rain Water Harvesting is the technique through which rain water is captured from the roof catchments and stored in reservoirs. Harvested rain water can be stored in sub-surface ground water reservoir by adopting artificial recharge techniques to meet the household needs through storage in tanks. The Main Objective of rooftop rain water harvesting is to make water available for future use. Capturing and storing rain water for use is particularly important in dry land, hilly, urban and coastal areas. In alluvial areas energy saving for 1m. Rise in ground water level is around 0.40 kilo watt per hour.

Need for Rooftop Rain Water Harvesting:

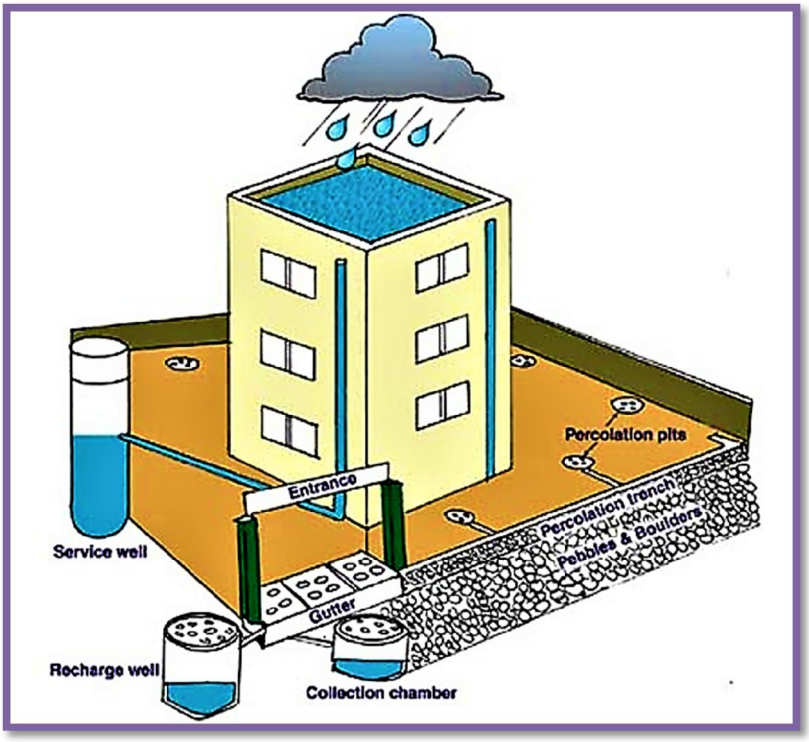
1. To meet the ever increasing demand for water
2. To reduce the runoff which chokes storm drains
3. To avoid flooding of roads
4. To augment the ground water storage and control decline of water levels
5. To reduce ground water pollution
6. To improve the quality of ground water
7. To reduce the soil erosion
8. To supplement domestic water requirement during summer, drought etc.

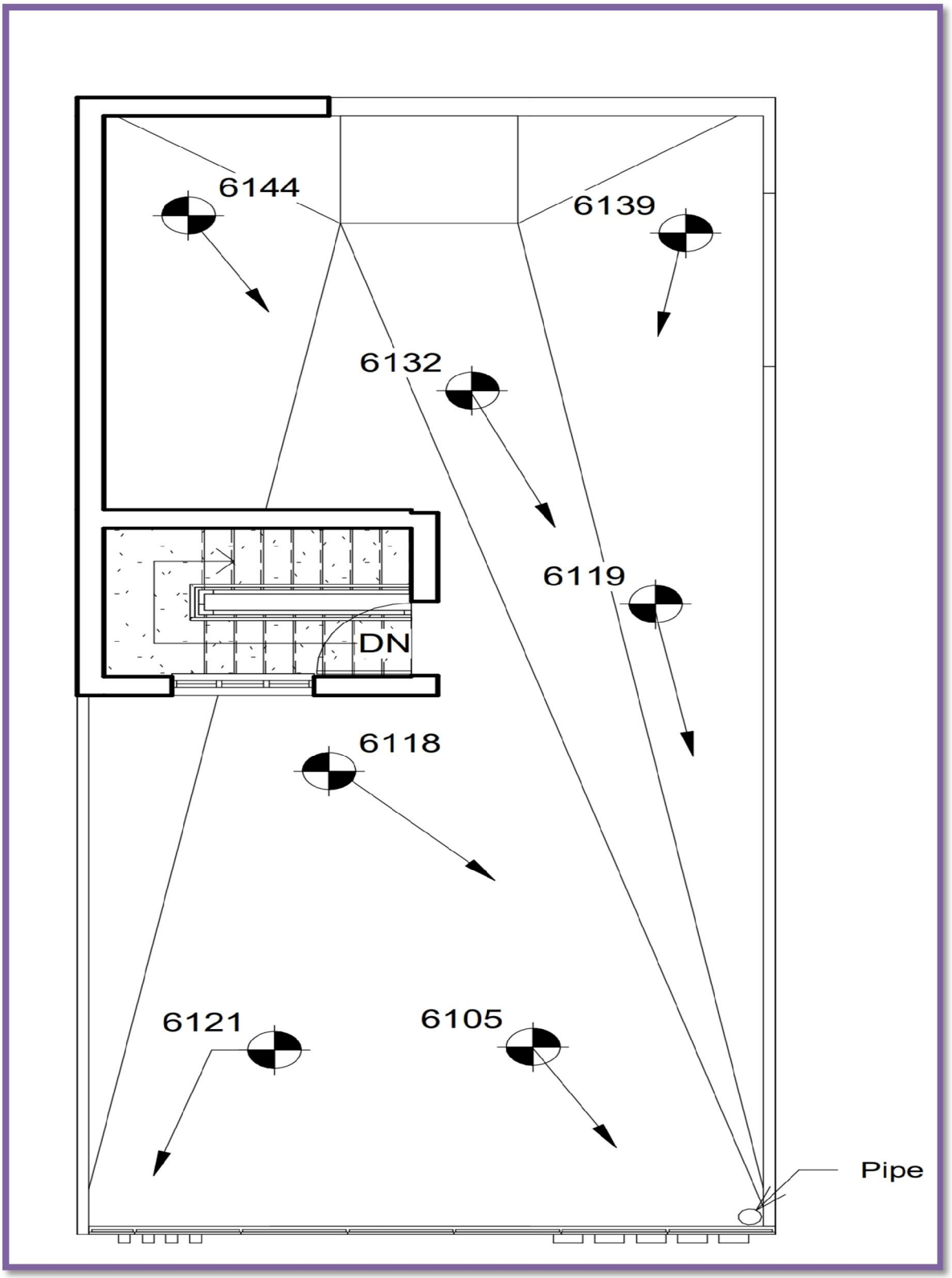
Advantages of Rain Water Harvesting:

1. Provides self-sufficiency to your water supply
2. Reduces the cost for pumping of ground water

3. Provides high quality water, soft and low in minerals
4. Improves the quality of ground water through dilution when recharged to ground water
5. Reduces soil erosion in urban areas
6. The rooftop rain water harvesting is less expensive
7. Rainwater harvesting systems are simple which can be adopted by individuals
8. Rooftop rain water harvesting systems are easy to construct, operate and maintain
9. In hilly terrains, rain water harvesting is preferred
10. In saline or coastal areas, rain water provides good quality water and when recharged to ground water, it reduces salinity and also helps in maintaining balance between the fresh-saline water interfaces
11. In Islands, due to limited extent of fresh water aquifers, rain water harvesting is the most preferred source of water for domestic use
12. In desert, where rain fall is low, rain water harvesting has been providing relief to people.

Roof-top rainwater harvesting (RRH) involves diverting and recharging (or) storing part of the rainwater that falls on the roof of a house. ... In such cases, harvested water is directed into a recharge pit which collects and slowly recharges into the groundwater storage / aquifer in that area.





PLAN

ELEVATION

Costing of Rainwater Harvesting

Pipe line cost per (m): 200

Need per house pipe (m): 10/15

Therefore, total cost of pipeline per house: 200*15

=3000m

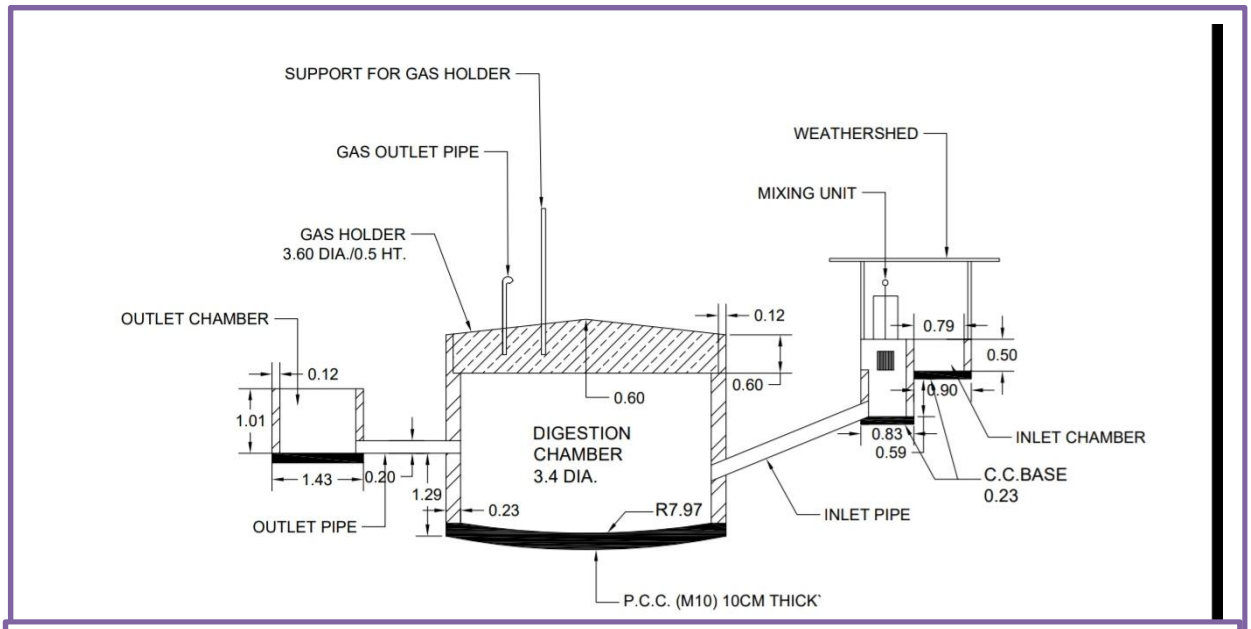
Labour work per house pipeline work = 500

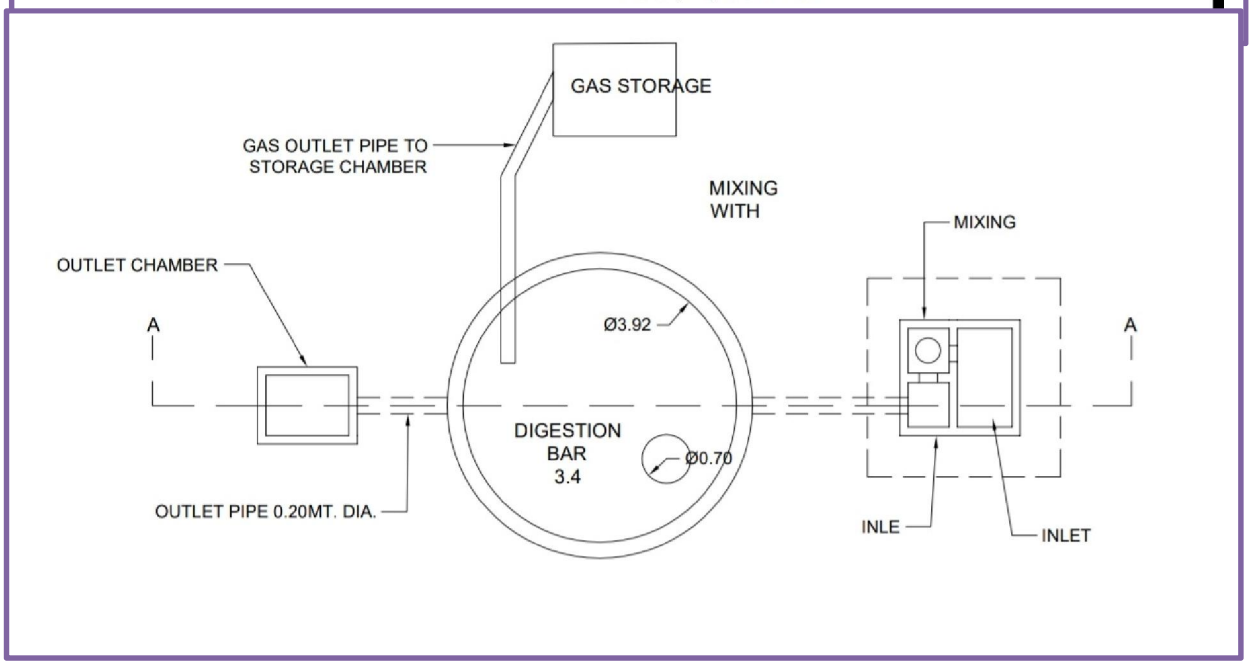
Total cost of Rainwater Harvesting work is = 3000+500

= 3500 Rs.

13.1.2 Civil Design 2 Physical design

Biogas Plant:





- Benefits of Biogas for Rural Areas:

- They provide reliable fuel as well as improved public health and sanitation. Also, they save people the labour of collecting large amounts of firewood, freeing them up to do other activities. Thus, biomass-based energy systems can help in rural development.

- Biogas is Eco-Friendly.
- Biogas Generation Reduces Soil and Water Pollution.
- Biogas Generation Produces Organic Fertilizer.
- It's A Simple and Low-Cost Technology That Encourages A Circular Economy.
- Healthy Cooking Alternative For Developing Areas.

Measurement sheet of Biogas Plant:

SR. NO	DESCRIPTION	NO	L	B	H	Q	TOTAL QUANTITY
1.	**EXCAVATION**						
	(a)INLET CHAMBER	1	0.90	1.29	0.25	CU.M	0.29
		1	0.79	0.80	0.25	CU.M	0.158
		1	0.79	0.80	0.75	CU.M	0.376
	(b)DIGERSTER CHAMBER	1	9.07	1.29	2.19	CU.M	25.63
	(c)OUTLET CHAMBER	1	1.43	1.00	1.01	CU.M	1.44
	(d)FOR INLET AND OUTLET PIPE	2	0.90	0.30	0.80	CU.M	0.216
						CU.M	**28.10**
2.	**P.C.C**						
	(a)INLET	1	0.90	1.29	0.10	CU.M	0.116
		1	0.79	0.80	0.10	CU.M	0.063
		1	0.79	1.00	0.10	CU.M	0.143
	(b)OUTLET CHAMBER	1	1.43	1.00	0.10	CU.M	0.143
						CU.M	**0.385**
3.	CEMENT CONCRETE FOR FOUNDATION						
	(a)INLET CHAMBER	1	0.90	1.29	0.23	CU.M	0.267
		1	0.79	0.70	0.23	CU.M	0.127
		1	0.79	0.70	0.23	CU.M	0.127
	(b)DIGESTER CHAMBER	1	9.07		0.23	CU M	2.29
	(C)OUTLET CHAMBER	1	0.90	1.00	0.23	CU.M	0.207
							3.018
3	**BRICK MASONRY**						
	(a)STEP-1	1	391.20	0.80	0.20	CU.M	62.69
	(b)STEP-2	1	391.20	0.60	0.20	CU.M	46.94
	(c)UPTO PLINTH	1	391.20	0.40	0.50	CU.M	78.24
							187.87
4	**MASONRY WORK**						
		1	4.50	0.12	0.50	CU.M	0.27
		1	1.40	0.12	0.70	CU.M	0.117
	(a)DIGESTER CHAMBER LENGTH=2πR(2*3.14*1.7)	1	10.68	0.23	1.73	CU.M	4.25

	(b)OUTLET CHAMBER	1	0.10	0.45	0.78	CU.M	0.035
		1	0.10	0.85	0.323	CU.M	0.027
							4.69
5.	**PLASTERING WORK (INNER SIDE)**						
	(a)INLET CHAMBER	1	3.40		0.50	SQ.M	1.70
		1	2.70		1.00	SQ.M	2.70
	(b)DIGESTER CHAMBER	1	21.00		1.72	SQ.M	36.12
		1	22.25		1.0	SQ.M	22.25
	(c)OUTLET CHAMBER	1	3.40		0.80	SQ.M	2.72
							65.49
5.	200MM DIA PIPE	1		2.4		M	**2.4**
6.	MECHANICAL MIXING UNIT	90				NOS	**90**

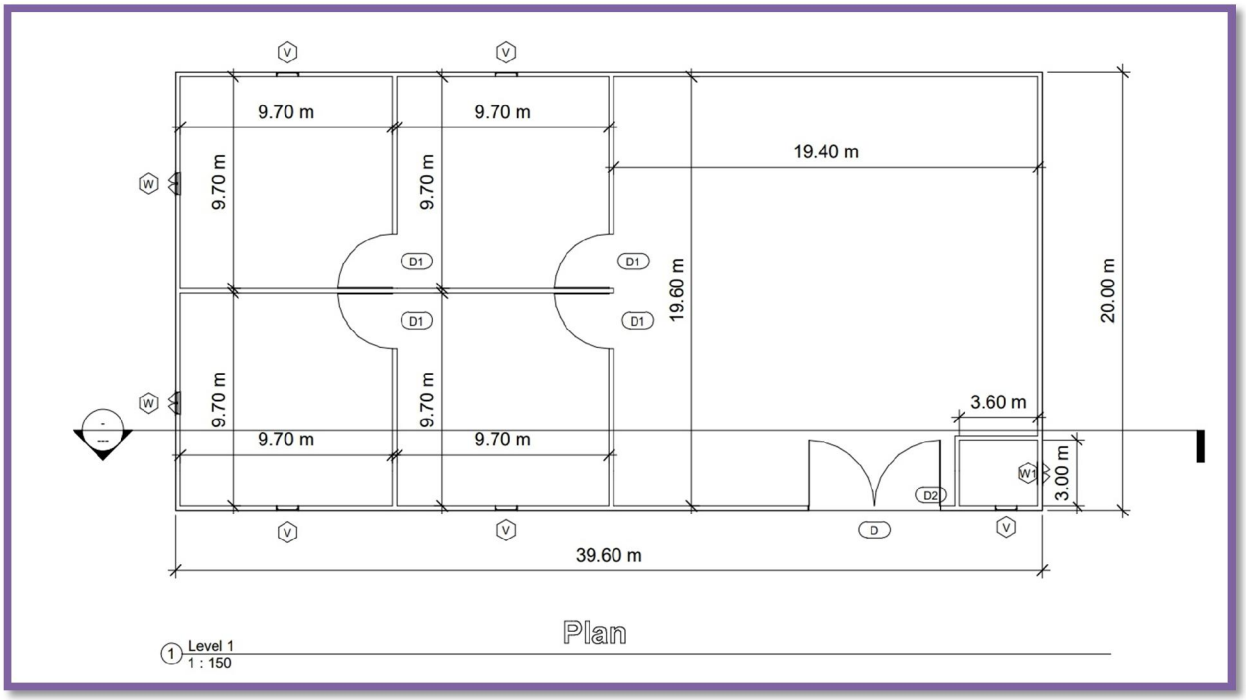
Costing of Biogas Plant

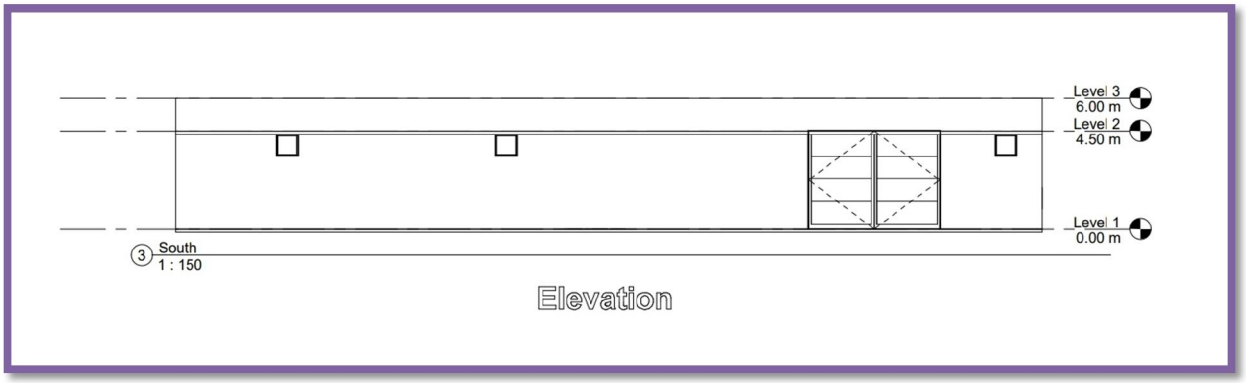
ITEM	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
1.	EXCAVATION IN HARD MURAM SOIL OR SAND FROM 0M TO 1.20 M DEPTH INCLUDING LIFTING AND LAYING IN GOMTU HEAD AREA INCLUDED ETC, COMPLETE	28.10	104	CU.M	2922.4
2.	FOUNDATION FILLING WITH CC WORK IN PROPOSON(1:2:3). INCLUDING, RAMMING,CURING ETC,, COMPLETE	0.385	3200	CU.M	1292
3.	BRICK MASONRY WORK IN CM(1:6) . CURING..ETC COMPLETE	4.69	4200	CU.M	19698
4.	R.C.C WORK IN SLAB,BEAM,COLOMN LINTEL,CHAJJA,CURING,ROUGH FINNISH ETC. COMPLETE	3.018	8500	CU.M	25653
5.	SMOOTH CEMENT PLASTER (12MM) THIK USING CM IN PROPOSITION (1:6) WITH FINISHING CARRING .ETC COMPLETE	65.49	185	SQ.M	12116
6.	HEAVY DUTY PIPE	2.4	400		960

					62641
				Say	**65000**
	10% CONTACTER PROFIT				6500
	1% WATER COST				650
	6% COST OF ELECTRICITY				3900
	5% WATER SUPPLY				3250
	TOTAL COST OF CONSTRUCTION				**79300**
				SAY	**80000**
	MOUNLY MAINTAINANCE AND CLEANING(EVERY MOTHS)	**1**	**7000**	**PER MOUNTHS**	**7000*12= 840000**

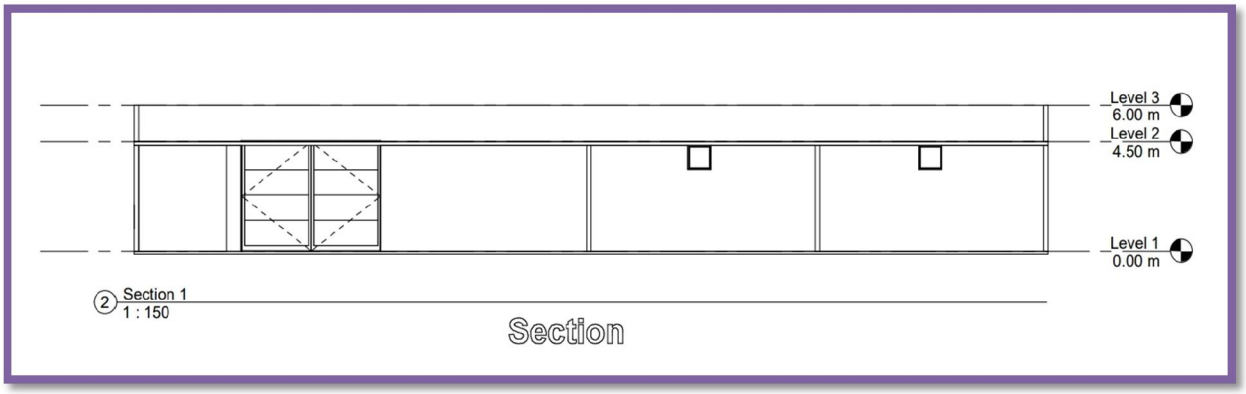
13.1.3 Civil Design 3 Social design

Godown:





Elevation



Section

Window Schedule

Family and Type	Type Mark	Width	Height	Sill Height
Fixed: V 1*1m	V	1.00 m	1.00 m	3.35 m
Fixed: V 1*1m	V	1.00 m	1.00 m	3.35 m
Fixed: V 1*1m	V	1.00 m	1.00 m	1.90 m
Fixed: V 1*1m	V	1.00 m	1.00 m	1.90 m
Window-Casement-Double: W1 1*1m	W	1.00 m	1.00 m	2.00 m
Window-Casement-Double: W1 1*1m	W	1.00 m	1.00 m	2.00 m
Fixed: V 1*1m	V	1.00 m	1.00 m	3.35 m
Window-Casement-Double: 1*1	W1	1.00 m	1.00 m	0.91 m

Door Schedule

Family and Type	Type Mark	Width	Height
Door-Exterior-Double-Full Glass-Wood_Clad: D 6.0*4.5m	D	6.00 m	4.50 m
Single-Flush: D1 2*5m	D1	2.50 m	2.60 m
Single-Flush: D1 2*5m	D1	2.50 m	2.60 m
Single-Flush: D1 2*5m	D1	2.50 m	2.60 m
Single-Flush: D1 2*5m	D1	2.50 m	2.60 m
Single-Flush: D2 1*2m	D2	1.00 m	2.00 m

In India where small and marginal farmers constitute major farming community, do not have the facility to retain the farm products with themselves till the market prices are favourable. It is very much essential to provide them with facilities for scientific storage so that to avoid produce deterioration and enable them to meet their credit requirement. An establishment of rural Godown will enable small and marginal farmers to increase their holding capacity which will make them to sell their produce at remunerative prices and avoid distress sales. Accordingly, Gramin Bhandaran Yojana, a Capital Investment Subsidy Scheme for Construction / Renovation / Expansion of Rural Godown has been introduced by Govt. of India.

Measurement sheet of Godown:

SR. NO	DESCRIPTION	NO	L	B	H	Q	TOTAL QUANTITY
1.	**EXCAVATION**	1	185.6	0.70	1.20	CU.M	**155.90**
2.	**P.C.C**	1	185.6	0.70	0.30	CU.M	**38.98**
3	**BRICK MASONRY**						
	(a)STEP-1	1	182.6	0.50	0.20	CU.M	18.26
	(b)STEP-2	1	183.2	0.40	0.20	CU.M	14.66
	(c)UPTO PLINTH	1	184.4	0.20	0.50	CU.M	18.44
						CU.M	**51.36**
4.	**EARH FEELING**						
	(a)STORE ROOM	4	9.7	9.7	0.35	CU.M	131.76
	(b)OPEN STORAGE	1	19.4	19.6	0.35	CU.M	134.46
						CU.M	**266.22**
5.	**MASONRY** UPTO PARAPATE	1	184.4	0.20	6.0	CU.M	**221.28**
6.	**DEDUCTION IN MESONARY**						
	(a)DOOR						
	D	1	6.0	4.5	0.20	CU.M	5.40
	D1	4	2.5	2.6	0.20	CU.M	5.2
	D2	1	1.0	2.10	0.20	CU.M	0.42
							11.02
	(b) VENTILATION						
	V	5	1.0	1.0	0.20	CU.M	1.0
	(c)WINDOWS	4	1.0	1.0	0.2	CU.M	0.80
							12.82
7.	R.C.C LINTEL						
	(a)DOORS						
	D	1	6.0	0.20	0.15	CU.M	0.14
	D1	4	2.5	0.20	0.15	CU.M	0.30
	D2	1	1.0	0.20	0.15	CU.M	0.03
	(b) VENTILATION						**0.47**

	V	5	1.0	0.20	0.15	CU.M	0.25
	W	4	1.0	0.20	0.15	CU.M	0.04
							0.29
							24.60
	TOTAL MASONRY WORK					CU.M	**272.64-42.60 =230.04**
8.	**RCC SLAB**	1	40	20	0.15	CU.M	**120**
	TOTAL RCC WORK						**120+24.60 =144.60**
9.0	**PLASTERING WORK (INNER SIDE)**						
	(a)STORE ROOM						
	H	16	9.7		6.0	SQ.M	931.20
	V	16	9.7		6.0	SQ.M	931.20
	SLAB	4	9.7	9.7		SQ.M	376.36
	(b)OPEN STORAGE						
	H	4	19.40		6.0	SQ.M	465.60
	V	4	19.60		6.0	SQ.M	470.40
	SLAB	1	19.40	19.60		SQ.M	380.24
	(c) PARAPATE WALL						
	H	2		39.60	0.40	SQ.M	31.68
	V	2	19.60		0.40	SQ.M	15.68
	PLASTERING IN OUT SIDE						
	H	2		40	6.4	SQ.M	512
	V	2	20		6.4	SQ.M	256
							4370.36
10.	**DEDUCTION IN PLASTERING**						
	(a)DOOR						
	D	1/2		6.0	4.5	SQ.M	13.50
	D1	4/2		2.5	2.6	SQ.M	13.0
	(b) VENTILATION						
	V	5/2		1.0	1.0	SQ.M	2.5
	W	4/2		1.0	1.0	SQ.M	2
							31.0
	TOTAL PLASTERING					SQ.M	**4339.36**
11.	**FLOORING**						
	(a)STORE ROOM	4	9.7	9.7		SQ.M	376.36
	(b)OPEN STORAGE	1	19.40	19.60		SQ.M	380.24
	(c) SECURITY CABIN	1	3.6	3.0		SQ.M	10.80

							767.40
12.	**WOOD WORK =DEDUCTION IN PLASTERING×2**						**62.0**
13.	SKERTING	1	155.60			M	**155.60**

Costing of Godown:

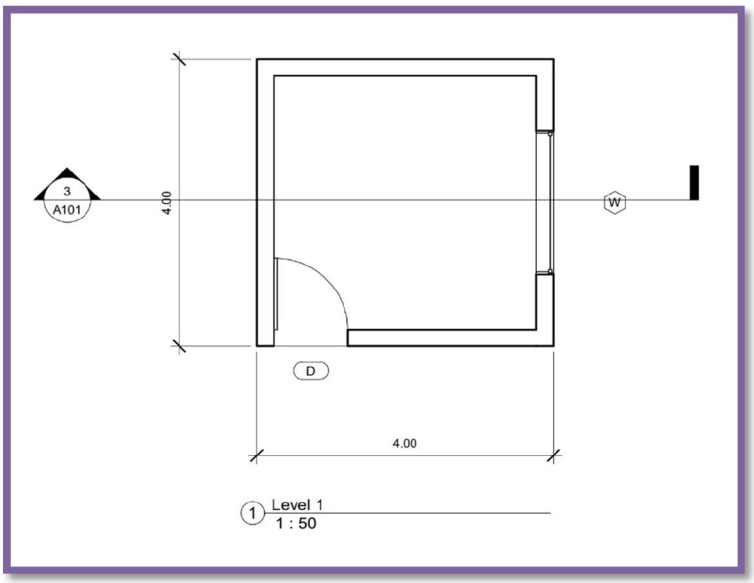
ITEM	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
1.	EXCAVATION IN HARD MURAM SOIL OR SAND FROM 0M TO 1.20 M DEPTH INCLUDING LIFTING AND LAYING IN GOMTU HEAD AREA INCLUDED ETC, COMPLETE	155.90	104	CU.M	16214.02
2.	FOUNDATION FILLING WITH CC WORK IN PROPOSON(1:2:3). INCLUDING, RAMMING,CURING ETC,, COMPLETE	38.98	3200	CU.M	124736
3.	BRICK MASONRY WORK IN CM(1:6) . CURING..ETC COMPLETE	230.04	4200	CU.M	966168
4.	DPC OF BITUMINOUS AT PLINTHS	5.53	70	SQ.M	387.24
5.	FILLING OF PLINTH IN LAYER OF 0.35M THICK INCLUDING MURRAM AND SPRINKLING OF WATER COMPACTION ETC, COMPLETE	266.22	305	CU.M	81197
6.	TILES FLOORING	767.40	430	SQ.M	329982
7.	R.C.C WORK IN SLAB,BEAM,COLOMN LINTEL,CHAJJA,CURING,ROUGH FINNISH ETC. COMPLETE	144.60	8500	CU.M	1229100
8.	SMOOTH CEMENT PLASTER (12MM) THIK USING CM IN PROPOSITION (1:6) WITH FINISHING CARRING .ETC COMPLETE	3873.96	185	SQ.M	716683
8.	SKERTING	177	30	M	5310
9.	STEEL WORK	31.60	1500	SQ.M	47400

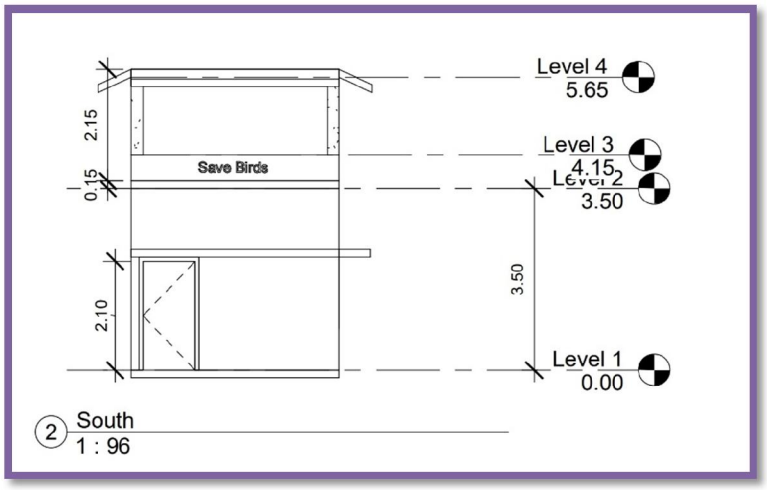
					3517179
				Say	**3518000**
	10% CONTACTER PROFIT				**351800**
	1% WATER COST				**35180**
	6% COST OF ELECTRICITY				**211080**
	5% WATER SUPPLY				**17590**
	TOTAL COST OF CONSTRUCTION				**4291960**
				SAY	**4292000**

13.1.4 Civil Design 4 Socio-Cultural design

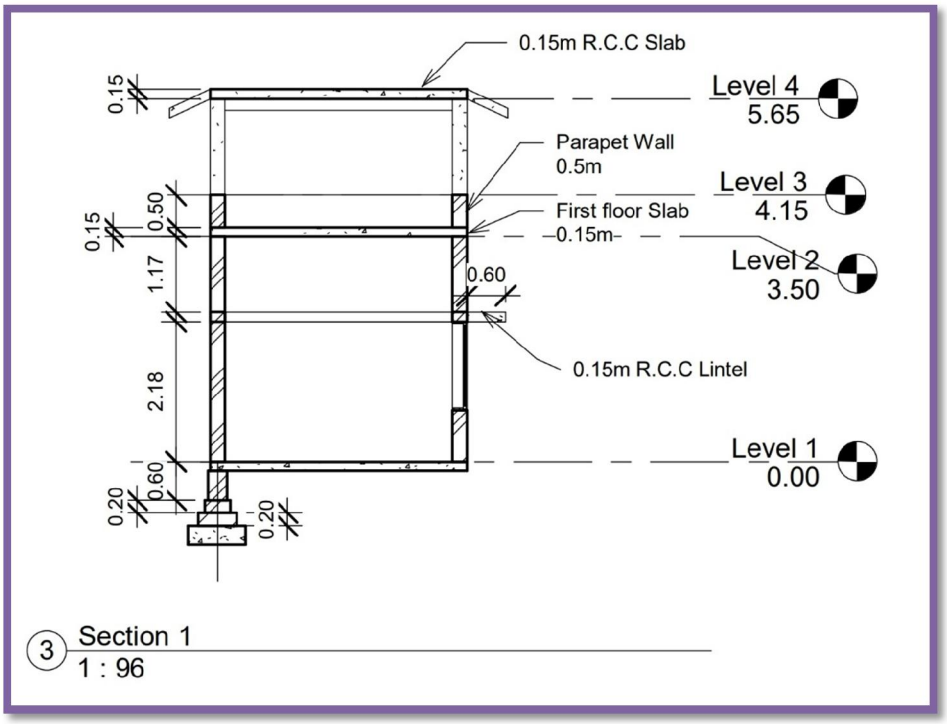
Chabutro:

- Chabutro or Chabutaro or Chabutra is a structure mostly found in India. They are a tower-like structure with octagonal or pentagonal shaped enclosures at the top. In the upper enclosure are several holes, wherein birds can make their nests.
- The word Chabutra or Chabutro is also sometimes used to indicate a sitting platform, usually under a tree or beside any water-body like lake, pond, etc. But commonly it is used to indicate the tower-like structure explained above.




Level 4
5.65
Level 3
4.15
Level 2
3.50
Level 1
0.00
2.15
0.15
2.10
3.50
Save Birds
2 South
1 : 96


Save Birds
4 3D View 1_1
1 : 1



③ Section 1
1 : 96

Window Schedule			
Family and Type	Mark	Width	Height
Fixed: W 2*2m	W	2.00	1.38

Door Schedule			
Family and Type	Mark	Width	Height
Single-Flush: D 1*2.1m	D	1.00	2.10

Measurement Sheet of Chabutro:

SR. NO	DESCRIPTION	NO	L	B	H	Q	TOTAL QUANTITY
1.	**EXCAVATION**	1	15.20	0.90	1.20	CU.M	**16.42**
2.	**P.C.C**	1	15.20	0.90	0.30	CU.M	**4.10**
3	**BRICK MASONRY**						
	(a)STEP-1	1	15.20	0.80	0.20	CU.M	2.43
	(b)STEP-2	1	15.20	0.60	0.20	CU.M	1.82
	(c)UPTO PLINTH	1	15.20	0.40	0.50	CU.M	3.04
							7.29
4.	**EARH FEELING**						
	(a)STORE ROOM	1	3.60	3.60	0.35	CU.M	**12.96**
5.	**DPC**	1	15.30	0.20		SQ.M	**3.06**
6.	**MASONRY** UPTO PARAPATE	1	15.30	0.20	3.50	CU.M	**10.71**
7.	**DEDUCTION IN MESONARY**						
	(a)DOOR						
	D	1	1.0	2.10	0.20	CU.M	0.42
	(b) WINDOWS	1	2.0	2.0	0.20	CU.M	0.40
							0.82
8.	R.C.C LINTEL	1	9.60	0.20	0.15		**0.29**
	TOTAL MASONRY WORK					CU.M	**9.30**
9.	**RCC SLAB**	2	4.25	4.25	0.15	CU.M	**5.42**
	RCC COLLUM	4	0.40	0.20	1.65	CU.M	**0.53**
	TOTAL RCC WORK						**6.24**
10.	**PLASTERING WORK (INNER SIDE)**						
	(a)STORE ROOM						
	H	2		3.60	3.50	SQ.M	25.20
	V	2	3.60		3.50	SQ.M	25.20
	SLAB	2	3.60	3.60			25.92
	(b)2nd FLOOR						
	RCC COLLUMN						
	H	8		0.20	1.65	SQ.M	2.65
	V	8	0.40		1.65	SQ.M	0.54
	PLASTERING IN OUT SIDE						
	H	2		4.0	5.80	SQ.M	46.40

	V	2	4.0		5.80	SQ.M	46.40
							172.31
10.	**DEDUCTION IN PLASTERING**						
	(a)DOOR	1/2	1.0		2.10	SQ.M	1.05
	(b) WINDOW	1/2	2.0		2.0	SQ.M	2.0
							3.05
	TOTAL PLASTERING						**169.26**
11.	**FLOORING**						
	(a)STORE ROOM	1	3.60	3.60		SQ.M	12.96
	(b)2nd FLOOR	1	3.69	3.60		SQ.M	12.96
							25.92
12.	**WOOD WORK =DEDUCTION IN PLASTERING×2**					SQ.M	**6.10**
13	**BBCC**	1	15.20	0.2	0.10	CU.M	**0.30**
14	**SKERTING**	2	15.20			M	**30.40**

Costing of Chabutro

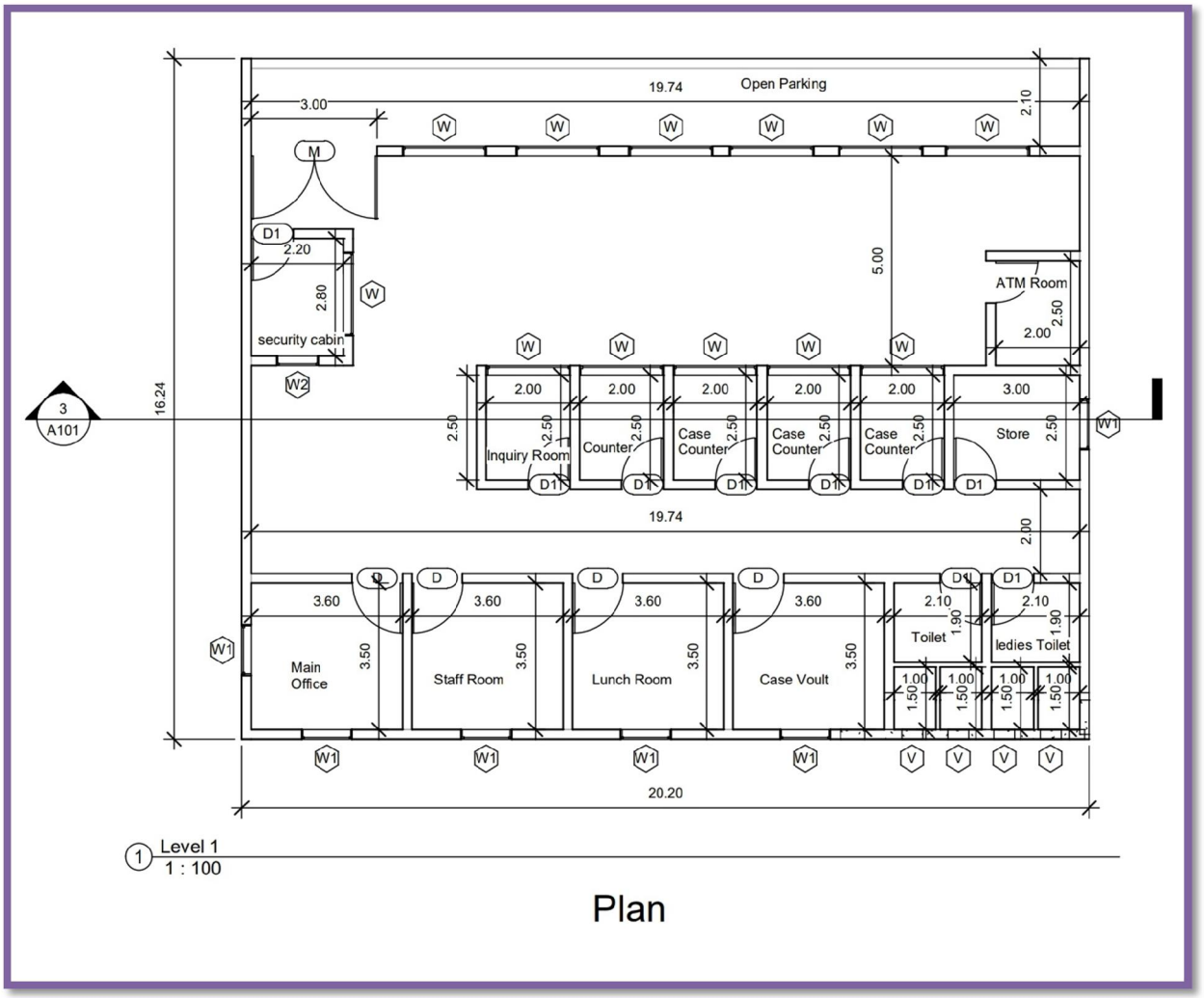
ITEM	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
1.	EXCAVATION IN HARD MURAM SOIL OR SAND FROM 0M TO 1.20 M DEPTH INCLUDING LIFTING AND LAYING IN GOMTU HEAD AREA INCLUDED ETC, COMPLETE	16.42	104	CU.M	1708
2.	FOUNDATION FILLING WITH CC WORK IN PROPOSON(1:2:3). INCLUDING, RAMMING,CURING ETC,, COMPLETE	4.10	3200	CU.M	13120
3.	BRICK MASONRY WORK IN CM(1:6) . CURING..ETC COMPLETE	9.30	4200	CU.M	39060
4.	DPC OF BITUMINOUS AT PLINTHS	3.06	70	SQ.M	215
5.	FILLING OF PLINTH IN LAYER OF 0.35M THICK INCLUDING MURRAM AND SPRINKLING OF WATER COMPACTION ETC, COMPLETE	12.96	305	CU.M	3953
6.	TILES FLOORING	25.92	430	SQ.M	11146

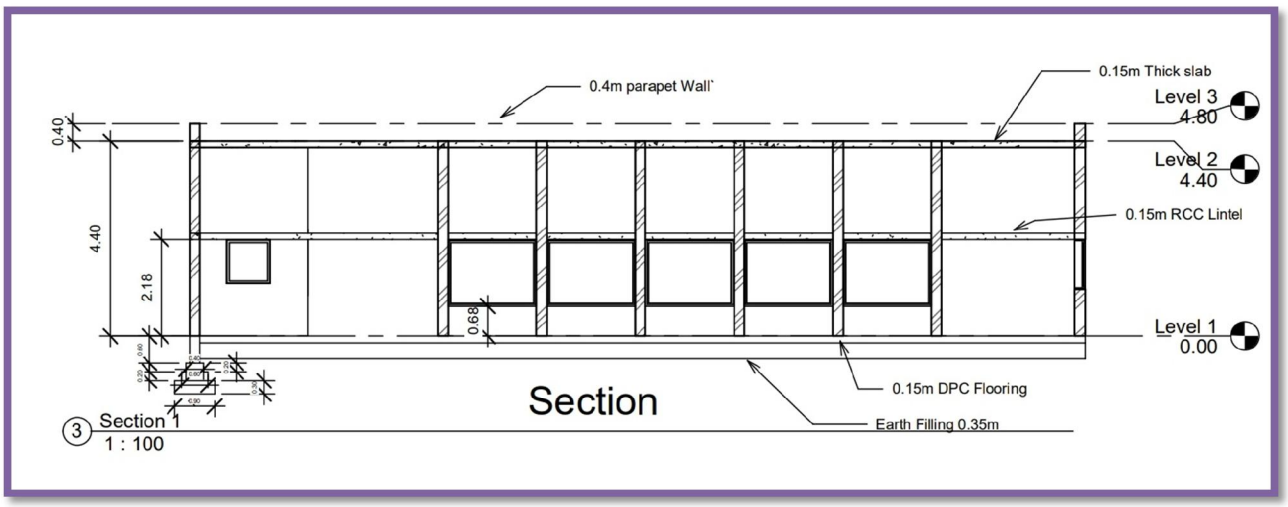
7.	R.C.C WORK IN SLAB,BEAM,COLOMN LINTEL,CHAJJA,CURING,ROUGH FINNISH ETC. COMPLETE	6.10	8500	CU.M	51850
8.	SMOOTH CEMENT PLASTER (12MM) THIK USING CM IN PROPOSITION (1:6) WITH FINISHING CARRING .ETC COMPLETE	169.26	185	SQ.M	31332
8.	SKERTING	30.40	30	M	912
9.	STEEL WORK	6.10	1500	SQ.M	9150
10.	WHITE WASHING	169.26	11	SQ.M	1862
11.	PLASTIC IMMLSION PAINT (TWO COATS)ASIAN PAINT DULUX	169.26	92	SQ.M	15572
					179879.92
				Say	**180000**
	10% CONTACTER PROFIT				**18000**
	1% WATER COST				**1800**
	6% COST OF ELECTRICITY				**10800**
	5% WATER SUPPLY				**9000**
	TOTAL COST OF CONSTRUCTION				**219600**
				SAY	**220000**

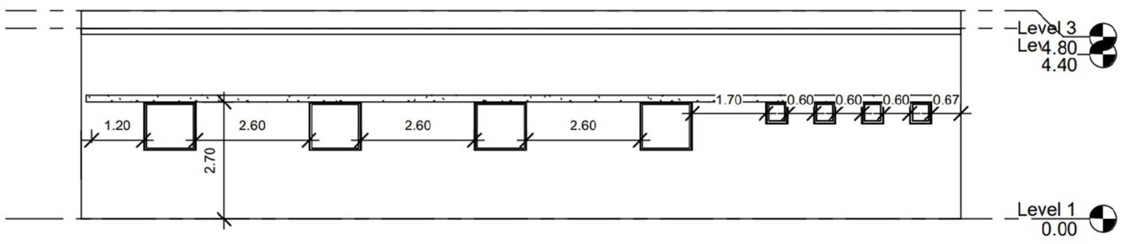
13.1.5 Civil Design 5 Smart Village Design

Bank:

- Before the introduction of the modernized banking system, people used to save their money in hard cash. They stored this cash in lockers, underground, with the grains, etc. There were so many instances when the money got stolen, eaten by the rats or simply rot through the years. However, the modern banking system completely eliminated the need to store hard cash. It actually helps save a huge proportion of public wealth that used to get spoiled in storage.
- Safety of Public Wealth. Availability of Cheap Loans. Propellant of Economy. Economies of Large Scale. Development in Rural Areas. Global Reach.


19.74
Open Parking
3.00
2.10
M
D1
2.20
2.80
W
security cabin
W2
5.00
ATM Room
2.50
2.00
3
A101
16.24
2.00
3.00
Inquiry Room
Counter
Case Counter
Store
W1
19.74
2.00
3.60
3.50
Main Office
Staff Room
Lunch Room
Case Voult
2.10
1.90
Toilet
ledies Toilet
1.00
1.50
V
20.20
1 Level 1
1 : 100
Plan


0.4m parapet Wall`
0.15m Thick slab
Level 3
4.80
Level 2
4.40
0.15m RCC Lintel
0.40
4.40
2.18
0.68
Level 1
0.00
0.15m DPC Flooring
Earth Filling 0.35m
Section
3 Section 1
1 : 100



ELEVATION

Door Schedule			
Family and Type	Mark	Width	Height
Single-Flush: D 1.2 *2.1m	D	1.20	2.10
Single-Flush: D 1.2 *2.1m	D	1.20	2.10
Single-Flush: D 1.2 *2.1m	D	1.20	2.10
Single-Flush: D 1.2 *2.1m	D	1.20	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Door-Double-Glass: M 6*2.2m	M	3.00	2.20
Single-Flush: D1 1*2.1m	N	1.00	2.10

Window Schedule			
Family and Type	Mark	Width	Height
Fixed: V 0.5*0.5	V	0.50	0.50
Fixed: V 0.5*0.5	V	0.50	0.50
Fixed: V 0.5*0.5	V	0.50	0.50
Fixed: V 0.5*0.5	X	0.50	0.50
Fixed: W2 1*1	W2	1.00	1.00
Fixed: W1 1.2*1.12m	W1	1.20	1.12
Fixed: W1 1.2*1.12m	W1	1.20	1.12
Fixed: W1 1.2*1.12m	W1	1.20	1.12
Fixed: W1 1.2*1.12m	W1	1.20	1.12
Fixed: W1 1.2*1.12m	W1	1.20	1.12
Fixed: W1 1.2*1.12m	W1	1.20	1.12
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50

Grand total: 23

Measurement Sheet of Bank

SR. NO	DESCRIPTION	NO	L	B	H	Q	TOTAL QUANTITY
1.	**EXCAVATION**	1	155.15	0.90	1.20	CU.M	**167.62**
2.	**P.C.C**	1	155.15	0.90	0.20	CU.M	**27.93**
3	**BRICK MASONRY**						
	(a)STEP-1	1	162.95	0.60	0.20	CU.M	19.55
	(b)STEP-2	1	164.90	0.40	0.20	CU.M	13.19

	(c)UPTO PLINTH	1	168.90	0.20	0.60	CU.M	20.26
							53.00
4.	**EARH FEELING**						
	(a)TOILET	2	2.10	3.50	0.35	CU.M	5.15
	(b)MAIN OFFICE,AREA	4	3.6	3.50	0.35	CU.M	17.64
	(c) COUNTERS	5	2.00	2.50	0.35	CU.M	8.75
	(d)STORE ROOM	1	3.00	2.50	0.35	CU.M	2.63
	(e) ATM ROOM	1	2.00	2.5	0.35	CU.M	1.75
	(f) SECURITY CABIN	1	2.80	2.20	0.35	CU.M	2.16
	(g) OPEN PASSAGE	1	19.60	7.0	0.35		48.02
							86.10
5.	DPC	1	168.90	0.20		CU.M	**33.78**
6.	**MASONRY** UPTO PARAPATE	1	168.90	0.20	4.80	CU.M	**173.90**
7.	**DEDUCTION IN MESONARY**						
	(a)DOOR						
	M	1	3.00	2.70	0.20	CU.M	1.62
	D	4	1.20	2.10	0.20	CU.M	10.08
	D1	10	1.0	2.10	0.20	CU.M	4.20
	(b) VENTILATION						
	V	4	0.50	0.50	0.20	CU.M	0.20
	(c) WINDOWS						
	W	12	2.00	1.50	0.20	CU.M	7.20
	W1	5	1.20	1.10	0.20	CU.M	1.32
	W2	1	1.00	1.00	0.20	CU.M	0.20
							-25.54
	R.C.C LINTEL	1	168.90	0.20	0.15		**-5.067**
	TOTAL MASONRY WORK					CU.M	**53+173.90 -25.54-5.07=196.29**
8.	**RCC SLAB**	1	20.20	16.30	0.15	CU.M	**49.39**
	TOTAL RCC WORK						**+5.07 =54.46**
9.0	**PLASTERING WORK (INNER SIDE)**						
	(a)TOILET						
	H	8		1.00	4.40	SQ.M	35.20
	V	8	1.5		4.40	SQ.M	52.80
	SLAB	4	1.5	1.00		SQ.M	6.00
	(b) WASHBAY						
	H	4		2.10	4.40	SQ.M	36.96

	V	4	1.90		4.40	SQ.M	33.44
	SLAB	2	1.5	1.80		SQ.M	5.40
	(c)MAIN OFFICE AREA						
	H	16		3.60	4.40	SQ.M	253.44
	V	16	3.50		4.40	SQ.M	246.40
	SLAB	4	3.50	3.60		SQ.M	50.4
	(d) COUNTERS AND ATM						
	H	24		2.00	4.40	SQ.M	211.20
	V	24	2.50		4.40	SQ.M	264.00
	SLAB	6	2.50	2.00		SQ.M	30.00
	(e)STORE ROOM						
	H	2		3.00	4.40	SQ.M	26.40
	V	2	2.50		4.40	SQ.M	22.00
	SLAB	1	2.50	3.00		SQ.M	7.50
	(f) SECURITY CABIN						
	H	2		2.20	4.40	SQ.M	19.36
	V	2	2.80		4.40	SQ.M	24.64
	(i)OPEN PASSAGE AND REAMING WALL						
	H	2		19.60	4.40	SQ.M	39.20
	H1	2		16.6	4.40	SQ.M	146.08
	V	1	5.70		4.40	SQ.M	25.08
	(j)PARAPATE						
	H	2		19.80	0.40	SQ.M	15.84
	V	2	15.90		0.40	SQ.M	12.72
10.	**PLASTERING IN OUT SIDE**						
	H	2		20.20	4.80	SQ.M	193.92
	V	2	16.20		4.80	SQ.M	156.48
							1914.48
11.	**DEDUCTION IN PLASTERING**						
	(a)DOOR						
	M	1/2		3.00	2.70	SQ.M	4.05
	D	4/2		1.20	2.10	SQ.M	5.04
	D1	10/2		1.00	2.10	SQ.M	10.50
	(b) VENTILATION						
	V	4/2		0.50	0.50	SQ.M	0.50
	W	12/2		2.0	1.50	SQ.M	18.00
	W1	5/2		1.20	1.10	SQ.M	3.30

	W2	1		1.00	1.00	SQ.M	1.00
							42.39
	TOTAL PLASTERING						**1914.48-42.38 =1872.09**
12.	**WHITE WASHING**	1					**1872.09**
13	**FLOORING**						
	(a)TOILET	4	1.50	1.00		SQ.M	6.00
	WASHROOM AREAM	2	2.10	1.90		SQ.M	7.98
	(b) MAINE OFFICE AND STAFF ROOM'	4	3.60	3.50		SQ.M	50.40
	(c) INQUIRY,AND BANKING BOOTH	6	2.00	2.50		SQ.M	30.00
	(d)STORE ROOM	1	3.00	2.50		SQ.M	7.50
	(e) SECURITY CABIN	1	2.20	2.80		SQ.M	6.16
	(f)OPEN PASSAGE	1	19.90	7.0		SQ.M	139.30
							247.34
14	**STEEL WORK =DEDUCTION IN PLASTERING×2**						**51.08**
15.	BBCC	1	168.90	0.2	0.10	CU.M	**3.38**
16.	SKERTING	1	168.90			M	**168.90**

Costing of Bank

ITEM	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
1.	EXCAVATION IN HARD MURAM SOIL OR SAND FROM 0M TO 1.20 M DEPTH INCLUDING LIFTING AND LAYING IN GOMTU HEAD AREA INCLUDED ETC, COMPLETE	167.62	104	CU.M	17433
2.	FOUNDATION FILLING WITH CC WORK IN PROPOSON(1:2:3). INCLUDING, RAMMING,CURING ETC,, COMPLETE	27.93	3200	CU.M	95776
3.	BRICK MASONRY WORK IN CM(1:6) . CURING..ETC COMPLETE	196.29	4200	CU.M	823998
4.	DPC OF BITUMINOUS AT PLINTHS	33.78	70	SQ.M	2365
5.	FILLING OF PLINTH IN LAYER OF 0.35M THICK INCLUDING MURRAM	86.10	305	CU.M	26360

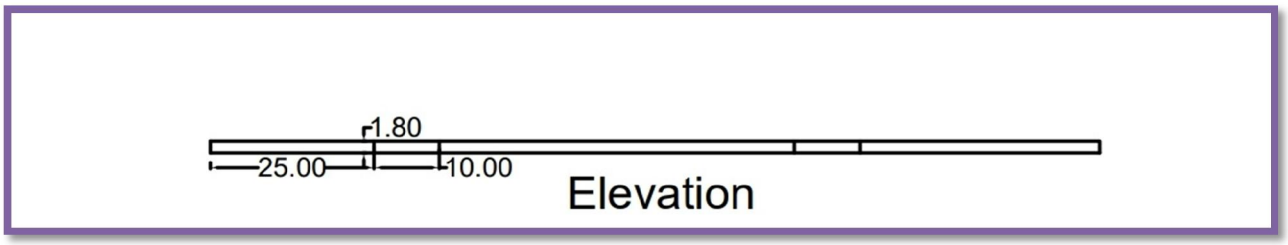
	AND SPRINKLING OF WATER COMPACTION ETC, COMPLETE				
6.	TILES FLOORING	247.34	430	SQ.M	106356
7.	R.C.C WORK IN SLAB,BEAM,COLOMN LINTEL,CHAJJA,CURING,ROUGH FINNISH ETC. COMPLETE	54.46	8500	CU.M	462910
8.	SMOOTH CEMENT PLASTER (12MM) THIK USING CM IN PROPOSITION (1:6) WITH FINISHING CARRING .ETC COMPLETE	1872.09	185	SQ.M	346337
8.	SKERTING	168.80	30	M	5064
9.	STEEL WORK	51.8	1500	SQ.M	77700
10.	WHITE WASHING	1872.09	11	SQ.M	20593
11.	PLASTIC IMMLSION PAINT (TWO COATS)ASIAN PAINT DULUX	1872.09	92	SQ.M	172233
					2157125
				Say	**2158000**
	10% CONTACTER PROFIT				**215800**
	1% WATER COST				**21580**
	6% COST OF ELECTRICITY				**129480**
	5% WATER SUPPLY				**107900**
	TOTAL COST OF CONSTRUCTION				**2632760**
				SAY	**2633000**

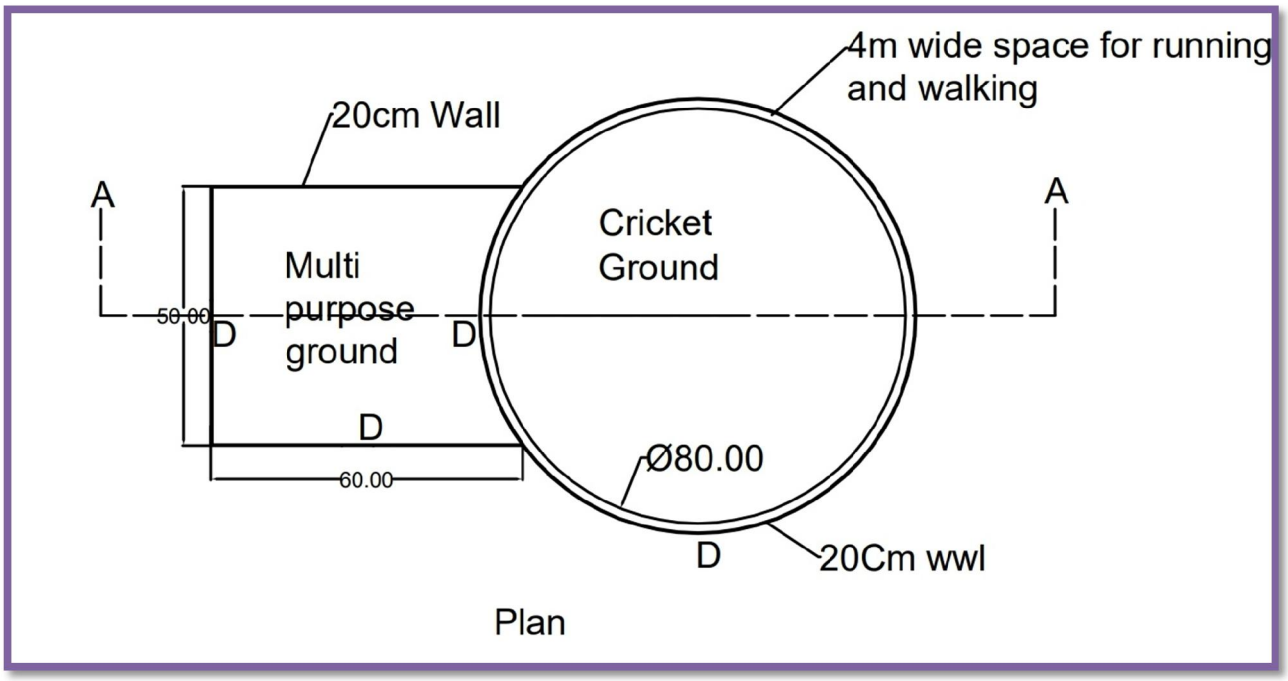
13.1.6 Civil Design 6 Heritage Village Design

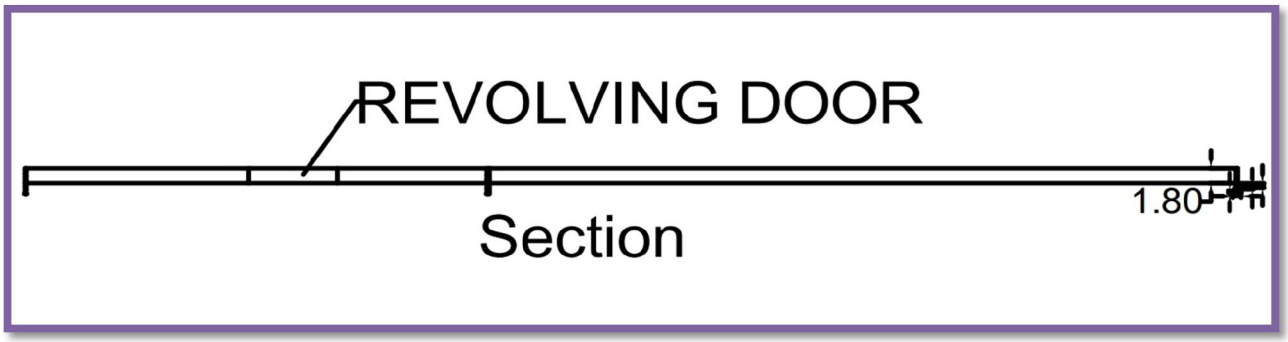
Play Ground:

- First Playground are good appear for the village and for children's.
- Playgrounds are fun for children and families.
- Children gain self-confidence and increased self-esteem when they master an activity that was previously challenging.
- Free activity for families.
- Grow kids' creativity and imagination.
- Increased physical activity helps fight childhood obesity.

- Opportunity for parents, grandparents or caregivers to engage with children through play.
- Reinforce and build social skills when kids play with other children and make new friends.
- Multisensory experiences, like the We-saw, Sensory Play Centre and Roller Table, help to build a child's brain more quickly.
- Brings people together and creates a sense of belonging.
- Outside activity helps to boost mood, reduce stress and increase happiness.







Measurement Sheet of Playground

SR. NO	DESCRIPTION	NO	L	B	H	Q	TOTAL QUANTITY
1.	**EXCAVATION**	1	391.20	0.90	1.20	CU.M	**422.50**
2.	**P.C.C**	1	391.20	0.90	0.30	CU.M	**104.62**
3	**BRICK MASONRY**						
	(a)STEP-1	1	391.20	0.80	0.20	CU.M	62.69
	(b)STEP-2	1	391.20	0.60	0.20	CU.M	46.94
	(c)UPTO PLINTH	1	391.20	0.40	0.50	CU.M	78.24
							187.87
4.	**DPC**	1	391.20	0.20		SQ.M	**78.24**
5	**MASONRY** UPTO 1.80M	1	391.20	0.20	1.80	CU.M	**140.83**
6.	**DEDUCTION IN MESONARY**						
	(a)DOOR						
	D	3	10	1.80	0.20	CU.M	**10.80**
	TOTAL MASONRY WORK					CU.M	**130.03**
7.	**PLASTERING WORK (INNER SIDE)**						
	(a)CIRCLE GROUND (2πR=2*3.14*30)	1	188.40		1.80	SQ.M	339.12
	(b) RECTANGLE GROUND						
	H	2		59.60	1.80	SQ.M	214.56
	V	1	49.60		1.80	SQ.M	89.20
	PLASTERING IN OUT SIDE						
	(a)CIRCLE GROUND (2πR=2*3.14*40)	1	251.20		1.8	SQ.M	452.16
	(b)RENTANGULAR		4.0		5.80	SQ.M	46.40
	H	2	60		1.8		216.00
	V	1		50	1.80	SQ.M	90.00
						SQ.M	**1507.44**
8.	**DEDUCTION IN PLASTERING**						
	(a)DOOR	3/2	10		1.8	SQ.M	**27**
							3.05
	TOTAL PLASTERING						**1480.44**
9.0	**STEEL WORK**					SQ.M	**54.00**

	=DEDUCTION IN PLASTERING×2						
10.	DPC	1	391.20	0.20		SQ.M	**78.20**

Costing of Playground

ITEM	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
1.	EXCAVATION IN HARD MURAM SOIL OR SAND FROM 0M TO 1.20 M DEPTH INCLUDING LIFTING AND LAYING IN GOMTU HEAD AREA INCLUDED ETC, COMPLETE	422.50	104	CU.M	43940
2.	FOUNDATION FILLING WITH CC WORK IN PROPOSON(1:2:3). INCLUDING, RAMMING,CURING ETC,, COMPLETE	104.62	3200	CU.M	334784
3.	BRICK MASONRY WORK IN CM(1:6) . CURING..ETC COMPLETE	130.62	4200	CU.M	548646
4.	DPC OF BITUMINOUS AT PLINTHS	78.20	70	SQ.M	5474
5.	SMOOTH CEMENT PLASTER (12MM) THIK USING CM IN PROPOSITION (1:6) WITH FINISHING CARRING .ETC COMPLETE	1480.40	185	SQ.M	273874
6.	STEEL WORK	54.00	1500	SQ.M	81000
					1287719
				Say	**1287800**
	10% CONTACTER PROFIT				**128780**
	1% WATER COST				**12878**
	6% COST OF ELECTRICITY				**77268**
	5% WATER SUPPLY				**64390**
	TOTAL COST OF CONSTRUCTION				**1571116**
				SAY	**1572000**

13.2 Reason for Students Recommending this Design

After we second time visit meta Khambhaliya village for other lack of system we aspect all villagers need bank for security of money, playground for children fitness and village appearance, bio-gas plant for cooking foods, Chabutro for saving birds and for birds food, Godown for villagers agricultural crops and security and business of agricultural products space, rain water harvesting for collect and storage of water.

After we collect this all information we make all six design and estimate, and after this needful system provide villagers will no need other lackness of services.

13.3 About designs Suggestions / Benefit of the villagers

- Provides self-sufficiency to your water supply
- Reduces the cost for pumping of ground water
- Provides high quality water, soft and low in minerals
- In hilly terrains, rain water harvesting is preferred
- Biogas Generation Reduces Soil and Water Pollution.
- Biogas Generation Produces Organic Fertilizer
- Safety of Public Wealth. Availability of Cheap Loans. Propellant of Economy. Economies of Large Scale. Development in Rural Areas. Global Reach.
- Free activity for families.
- Grow kids' creativity and imagination.
- Increased physical activity helps fight childhood obesity.

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

There are two types of Earthquake Resistant method:
1. Base Isolation
2. Energy Dissipation Devices

1. Base Isolation Method of Earthquake Resistant Design:

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

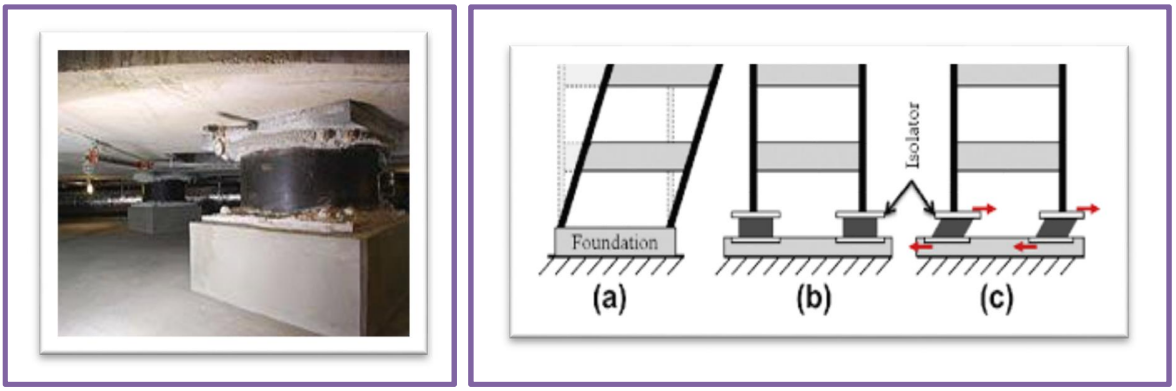


Figure No.33 Base Isolation Method of Earthquake Resistant Design

2. Energy Dissipation Devices:

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

Figure No.34 Energy Dissipation Devices

14.1.2 Seismic Retrofitting of Buildings

Seismic retrofitting is the modification of existing structures to make them more resistant to seismic activity, ground motion, or soil failure due to earthquakes. With better understanding of seismic demand on structures and with our recent experiences with large earthquakes near urban centers, the need of seismic retrofitting is well acknowledged. Prior to the introduction of modern seismic codes in the late 1960s for developed countries (US, Japan etc.) and late 1970s for many other parts of the world (Turkey, China etc.),many structures were designed without adequate detailing and reinforcement for seismic protection.

The retrofit techniques outlined here are also applicable for other natural hazards such as tropical cyclones, tornadoes, and severe winds from thunderstorms. Whilst current practice of seismic retrofitting is predominantly concerned with structural improvements to reduce the seismic hazard of using the structures, it is similarly essential to reduce the hazards and losses from non-structural elements. It is also important to keep in mind that there is no such thing as an earthquake-proof

structure, although seismic performance can be greatly enhanced through proper initial design or subsequent modifications.

Figure No.35 Seismic Retrofitting of Buildings

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

1. Materials:

1. Liquid granite:

Liquid Granite is a self-contained, pre-mixed cement, blended with specially selected aggregates. It's handled bucket means that it can be carried to the site of repair with ease and only needs to be mixed with water to produce a firm mortar.

Liquid Granite can repair a range of problems from holes and cracks in the floor to crumbling walls and ceilings, plus loose bolts and posts. Mix to a firm consistency to repair overhead or vertical surfaces. Pour a more fluid mixture into horizontal areas. Trowel to finish.

Figure No.36 Liquid Granite

2. Translucent concrete:

Translucent concrete has been first mentioned in a 1935 Canadian patent. But since the development of optical glass fibres and polymer based optical fibres the rate of inventions and developments in this field has drastically increased. There have also been inventions that apply

this concept to more technical applications like fissure detection. In the early 1990s forms like translucent concrete products popular today with fine & layered patterns were developed.

Figure No.37 Translucent concrete

3. Fly ash Bricks:
Fly ash bricks are lighter and stronger than clay bricks. Main ingredients include fly ash, water, quicklime or lime sludge, cement, aluminium powder and gypsum. Autoclaving increases the hardness of the block by promoting quick curing of the cement. Gypsum acts as a long term strength gainer.

Figure No.38 Fly ash Bricks

2. Techniques:
1. 3D Volumetric Construction
As the name implies, the 3D volumetric construction involves the manufacture of 3D units in the form of modules in off site. At the time of installation, they are brought to the site and assembled module by module.
Each modular unit manufactured are 3D units, hence this construction is called as 3D volumetric construction or modular construction.

Figure No.39 3D Volumetric Construction

2. Precast Concrete Foundations

For the rapid construction of foundation, the precast concrete system can be employed. This method is more suited for a bespoke design.

Here, the elements required for the construction of foundation are constructed separately in the factory (off site) and brought to the site and assembled. The manufactured product must have the assured quality as specified by the designer.

The foundation assembled is mainly supported by concrete piles. During assembling, both the systems are connected together. These foundation systems helps in increasing the productivity, increase quality, decrease the soil excavation quantity.

Figure No.40 Precast Concrete Foundations

3. Twin Wall Technology

The twin wall technology is a hybrid solution of wall system that combines the qualities of erection speed and precast concrete with the structural integrity of in-situ concrete. This type of wall system guarantees structural integrity and waterproof reliability for the structure.

The twin wall system has two walls slabs that are separated as shown in the figure-6. The two slabs are separated by a cast in lattice girders. The procedure involves:

1. The wall units are placed in the site.
2. The twin units are propped temporarily.

3. The wall units are later joined by means of reinforcing.
4. The gap between the walls units are filled by means of concrete.

Figure No.41 Twin Wall Technology

This system of construction is faster than normal construction methods and economical. The twin wall system is mainly employed in association with the construction of precast floors.

4. Precast Flat Panel Modules

These are primarily wall and floor modules which are manufactured away from the actual site and then transported to site for erection. Load bearing components like decorative cladding and insulation panels can also be produced.

Figure No.42 Precast Flat Panel Modules

Also called cross-wall construction, the technology has gained momentum due to seamless adherence to specifications and ease as well as swiftness of construction.

3. Equipment's:

1. Excavators:

Excavators are important and widely used equipment in construction industry. Their general purpose is to excavation but other than that they are also used for many purposes like heavy lifting, demolition, river dredging, cutting of trees etc. Excavators contains a long arm and a cabinet. At the end of long arm digging bucket is provided and cabinet is the place provided for machine

operator. This whole cabin arrangement can be rotatable up to 360o which eases the operation. Excavators are available in both wheeled and tracked forms of vehicles.

Figure No.43 Excavators

2. Dragline Excavator

Dragline excavator is another heavy equipment used in construction which is generally used for larger depth excavations. It consists a long length boom and digging bucket is suspended from the top of the boom using cable. For the construction of ports, for excavations under water, sediment removal in water bodies etc. can be done by dragline excavator.

Figure No.44 Dragline Excavator

14.1.4 Engineering Aspects of Soil mechanics - Environmental Impact Assessment

1. Soil Pollution Processes

The environment can contaminate soil water by three basic mechanisms:
(i) Rainfall, such as acid rains falling onto a sanitary landfill, oil or chemical waste spilled into the ground (ii) Human activities (iii) Physico chemical alterations, which allow polluting substances to move within or between soil layers.

2. Effects on Soil Properties

Soil response to environments depends on Soil structure, geochemical parameters (Mineralogical and chemical characteristics), and Soil-water interaction.

3. Soil Sensitivity to Environment

The sensitivity of soil to environment depends not only on the local environment but also influenced by mineral structure, such as particle size, bonding characteristics between particles, ion exchange capacity, etc. The smaller the soil particle greater is its ability to interact with the environment (Fig. 1). The weaker the bonding energy between particles or higher the cation exchange capacity, the higher the sensitivity of the particles to the environment. For, example, montmorillonite is potentially more sensitive to the environment than illite and kaolinite.

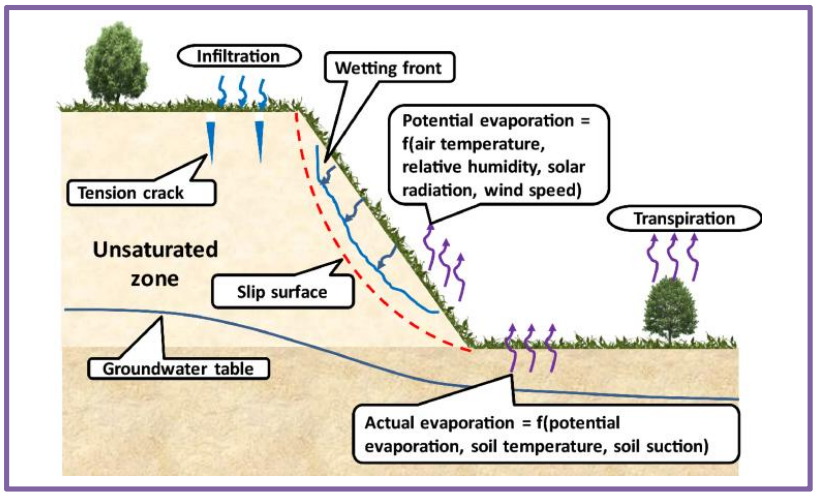


Figure No.45 Engineering Aspects of Soil mechanics - Environmental Impact Assessment

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

1. Sustainability in Water Supply:

Sustainable water supply means to find reliable and resilient approaches to various human needs for water for that does neither exhaust the water sources and the local economy nor have long term negative impact on the environment. Agriculture consume about 70% of the current world water supply, whereas domestic and industrial use is about 8% and 22% respectively (WBCSD 2009). Read more about the water cycle here. This course focuses on domestic water supply. Potable water for domestic use is normally derived from surface or groundwater sources or from rainwater harvesting (RWH). Other sources are harvesting of fog or air moisture, bottled water or even melting of snow or ice or sea water desalination. Methods for desalination of seawater have improved, but are still requiring substantial energy input and are thus not sustainable from an energy perspective.

2. Sustainability in Sewerage system:

Sustainable sewerage infrastructure projects are essential in achieving sustainable development, as infrastructure directly affects all measures of such development. However, sewerage infrastructures face a variety of challenges and threats to their sustained performance throughout their life cycle, including effects of aging, aggressive environmental factors, inadequate design, underfunding, improper operation, and maintenance activities. These challenges lead to the enhancement of the risks of failure, for example, sewer leakage, overflow, and odor. These issues can have serious impacts on the environment, public health and safety, the economy, and the service lives of assets.

3. Sustainability in Waste Water:

Wastewater treatment is a procedure of removing all the pollutants in the form of organic matter and cleaning the domestic water and sewage. Water is treated with the purpose of reusing the water either by humans or animals or for any other purposes.

Water discharged from houses, factories or industries are made to enter sewers. Water from rains enter storm water sewers. Water from these sewers reach wastewater plant by means of gravity flow.

Various stages of wastewater treatment:

1. Pre-treatment:

Pre-treatment of wastewater is done prior to discharge from industries or factories. This treatment is required to avoid discharge of any chemicals surplus nutrients from the wastewater.

2. Preliminary Treatment:

Preliminary treatment is done to remove large objects/debris and non-degradable objects from the wastewater. This treatment saves the equipment from any kind of damage. The assembly for this treatment has a bar screen, mesh screen and grit chamber to remove garbage.

3. Primary Treatment:

It is a physical process which is done to remove any suspended sand particles from wastewater. The velocity of wastewater is reduced so that all the suspended particles settle down due to gravity force. The settled material is called “Bio solids” or sludge.

4. Secondary Treatment:

It is a biological process which makes use of microbes/ bacteria and algae to absorb the organic matter present in wastewater. Microbes consume all the organic impurities and convert them into Carbon dioxide, water or energy for their own growth.

5. Disinfection:

This is sometimes stated as the tertiary treatment. Generally, Chlorine and chloramines are used for the wastewater treatment for disinfection process. Sometimes, UV radiations are used to disinfect the water.

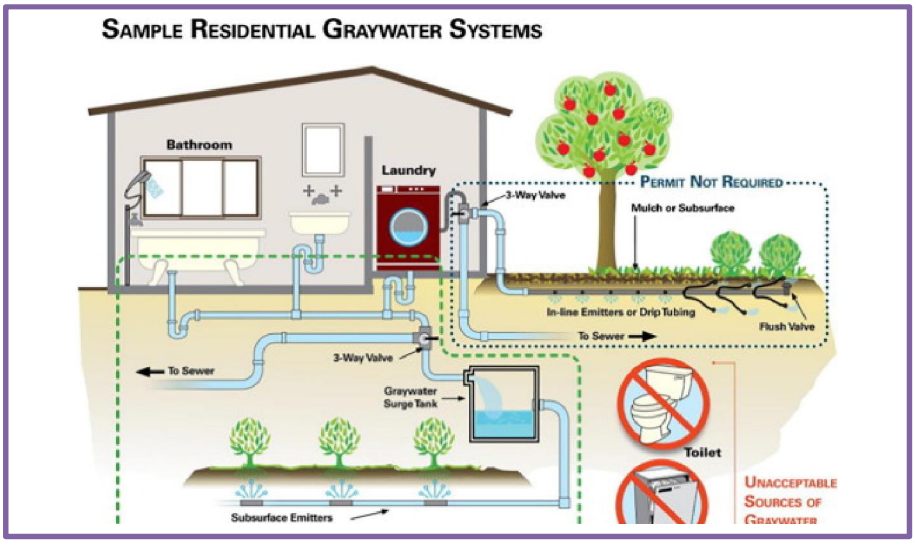


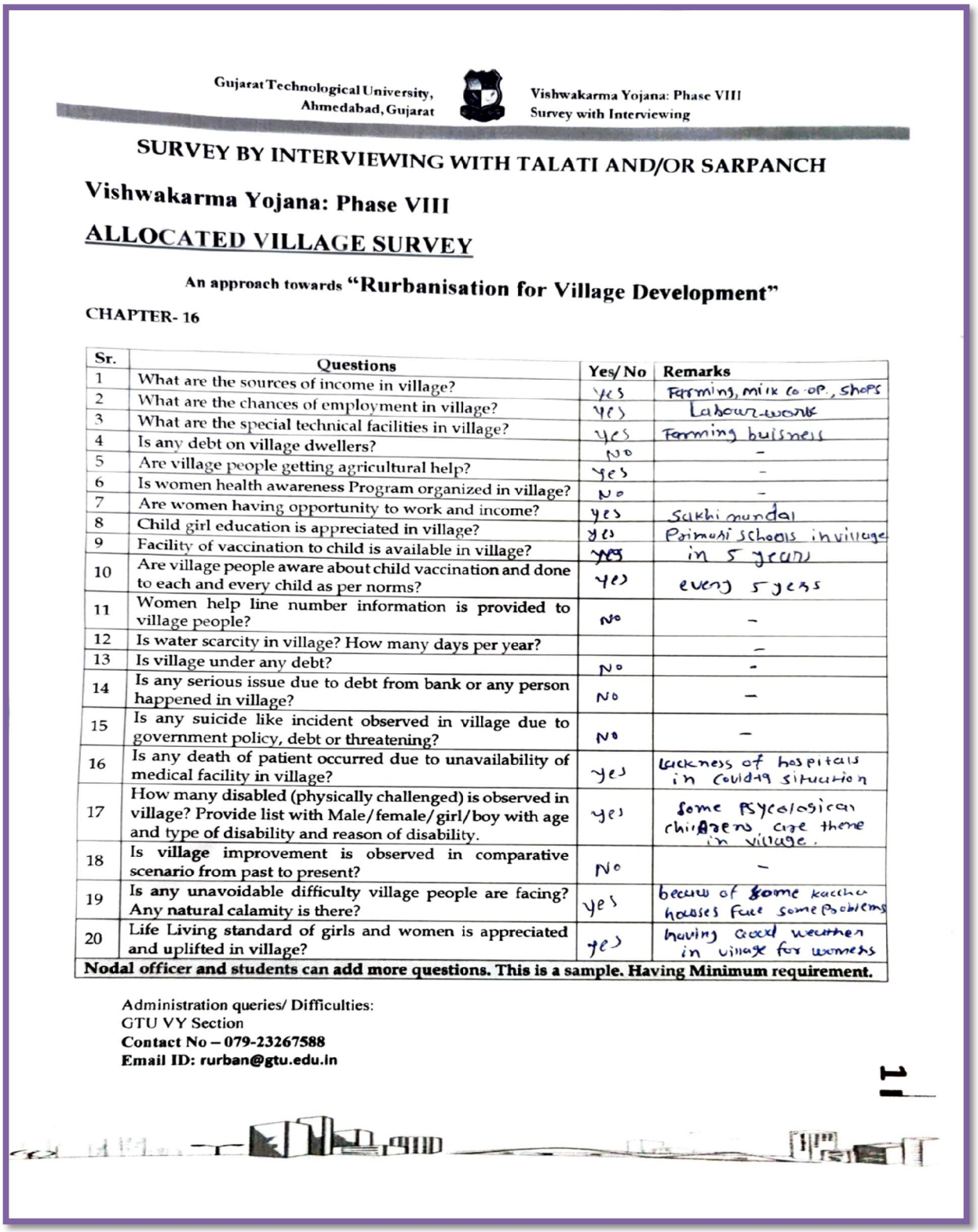
Figure No.46 Sustainability in Water Supply-Sewerage system-Waste Water

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

Sr. No.	Design Name	Period Implement	Amount(RS)
1	**Sustainable Design (Civil)**		
	Solid Waste Collection	Immediately	**15500**
	Rain water Harvesting	Long Term 3-5 year	
2	**Physical design (Civil)**		
	Water Tank	Within 1 year	**365000**
	Biogas Plant	Long Term (3-5 year)	**840000**
3	**Social design (Civil)**		
	Community Hall	Long Term 3-5 year	**1849784**
	Godown	Long Term 3-4 year	**4292000**
4	**Socio-Cultural design (Civil)**		
	Public Library	Within 1 year	**1363886**
	Chabutro	Long Term 2-3 year	**220000**
5	**Smart Village Design (Civil)**		
	Public Toilet	1-2 year	**990000**
	Bank	3-4 year	**2633000**
6	**Heritage Village Design (Civil)**		
	Public Garden	Long Term 3-5 year	**1235000**
	Playground	Within 1 year	**1572000**

Table No. 28 Smart and/or Sustainable features of Chapter 8 & 13 designs, Impact on society.

Chapter 16. Survey by Interviewing With Talati and/or Sarpanch



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

CHAPTER- 16

Sr.	Questions	Yes/ No	Remarks
1	What are the sources of income in village?	Yes	Farming, milk co-op., shops
2	What are the chances of employment in village?	Yes	Labour work
3	What are the special technical facilities in village?	Yes	Farming buisness
4	Is any debt on village dwellers?	No	-
5	Are village people getting agricultural help?	Yes	-
6	Is women health awareness Program organized in village?	No	-
7	Are women having opportunity to work and income?	yes	Sakhi mandal
8	Child girl education is appreciated in village?	yes	Primary schools in village
9	Facility of vaccination to child is available in village?	~~yes~~	in 5 years
10	Are village people aware about child vaccination and done to each and every child as per norms?	yes	every 5 years
11	Women help line number information is provided to village people?	No	-
12	Is water scarcity in village? How many days per year?		-
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?	yes	sickness of hospitals in Covid-19 situation
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	some Psycological children are there in village.
18	Is village improvement is observed in comparative scenario from past to present?	No	-
19	Is any unavoidable difficulty village people are facing? Any natural calamity is there?	yes	because of some kaccha houses face some problems
20	Life Living standard of girls and women is appreciated and uplifted in village?	yes	having good weather in village for womens

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

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

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

Types of Irrigation

There are different types of irrigation practised for improving crop yield. These types of irrigation systems are practised based on the different types of soils, climates, crops and resources. The main types of irrigation followed by farmers include:

Surface Irrigation

In this system, no irrigation pump is involved. Here, water is distributed across the land by gravity.

Localized Irrigation

In this system, water is applied to each plant through a network of pipes under low pressure.

Sprinkler Irrigation

Water is distributed from a central location by overhead high-pressure sprinklers or from sprinklers from the moving platform.

Drip Irrigation

In this type, drops of water are delivered near the roots of the plants. This type of irrigation is rarely used as it requires more maintenance.

Centre Pivot Irrigation

In this, the water is distributed by a sprinkler system moving in a circular pattern.

Manual Irrigation

This a labour intensive and time-consuming system of irrigation. Here, the water is distributed through watering cans by manual labour.

Traditional Methods of Irrigation

In this method, irrigation is done manually. Here, a farmer pulls out water from wells or canals by himself or using cattle and carries to farming fields. This method can vary in different regions.

The main advantage of this method is that it is cheap. But its efficiency is poor because of the uneven distribution of water. Also, the chances of water loss are very high.

Some examples of the traditional system are pulley system, lever system, chain pump. Among these, the pump system is the most common and used widely.

Modern Methods of Irrigation

The modern method compensates the disadvantages of traditional methods and thus helps in the proper way of water usage.

The modern method involves two systems:

- Sprinkler system
- Drip system

Sprinkler System

A sprinkler system, as its name suggests, sprinkles water over the crop and helps in an even distribution of water. This method is much advisable in areas facing water scarcity.

Here a pump is connected to pipes which generate pressure and water is sprinkled through nozzles of pipes.

Drip System

In the drip system, water supply is done drop by drop exactly at roots using a hose or pipe. This method can also be used in regions where water availability is less.

Importance of Irrigation

The importance of irrigation can be explained in the following points:

- Insufficient and uncertain rainfall adversely affects agriculture. Droughts and famines are caused due to low rainfall. Irrigation helps to increase productivity even in low rainfall.
- The productivity on irrigated land is higher as compared to the un-irrigated land.
- Multiple cropping is not possible in India because the rainy season is specific in most of the regions. However, the climate supports cultivation throughout the year. Irrigation facilities make it possible to grow more than one crop in most of the areas of the country.
- Irrigation has helped to bring most of the fallow land under cultivation.
- Irrigation has stabilized the output and yield levels.
- Irrigation increases the availability of water supply, which in turn increases the income of the farmers.

Modern Farming Methods:
Different types of modern farming methods:

- Aeroponics System of Modern Farming Methods
- Aquaponics of Modern Farming Methods
- Hydroponics of Modern Farming Methods
- Monoculture of Modern Farming Methods
- Tissue culture of Modern Farming Methods

- Drones in Modern Farming Methods
- Vertical Farming
- Hybrid Seed Technology

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

1. COVID-19 awareness by using social media platforms
Due to COVID-19 we can't make any camp, so we plan to provide true precautions and Awareness using Whatsapp group. In this group we provide right and truth information about COVID-19. Also we provide the all government update. So villagers get all updates and awareness using by social media platforms. Also they don't be panic about fake news. For farmers we provide the all required news for them so they can manage easily.

2. Plantation
In Meta Khambhaliya 1 years ago tree plantation done by gram Panchayat. So we just try to provide water and treatment of tree plantation and right methodology to increase
Wealth of trees.

3. Cyclone awareness
We got update about Tauktae from government authorities' source .and we know that is very harmful for us. So in group we provide all precautions about that. And say to live with safe place. Also pass emergency massages' to all ''please help each other's and provide the basic necessary things that require''

4. School camp
We go our primary school and we plan to take one section about basic computer Learning. In this sections we provide the all basic knowledge about computer (word, excel, Power point) and also we provide that's field uses. We try to them interest in computer. Also we provide some interest site that like
Wikipedia, you tube, google, Quora etc. in internet portion they all are existing and try to all required search. Also we provide the cyber awareness for internet.

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

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Meta Khambhaliya Gram Panchayat: Meta Khambhaliya Ward No. 5

Block: – District: Rajkot

State: Gujrat L S Constituency: Gondal

1. Family Identity and Size

Name of Head of Household	Kapadiya Purshottam bhai Gunaji bhai						Male/ Female	M
SECC Survey ID:	–	Family Size	5	Over 18	5	6 to 18	0	Under 6	0

2. Category & Entitlement Details (Tick as appropriate)

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

2. Adults (above 18 years)

Name	Age	Sex M/F/O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/ N)	Bank A/C (Y/N)	Social Security Pension[5]
Purshottambhai G. Kupadiya	56	M	N	married	10	Y	Y	
Geetaben P. Kapadiya	48	F	N	"	10	Y	Y	
Jumna ben G. Kupadiya	69	F	N	"	–	Y	Y	
Bhakti ben P. Kupadiya	18	F	N	–	12+	Y	N	

3. Children from 6 years and up to 18 years

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

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

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

Source of Water		Distance
Piped Water at Home	Yes / No	0 M
Community Water Tap	Yes / No	-
Hand Pump (Public / Private)	Yes / No	-
Open Well(Public / Private)	Yes / No	-
Other (mention):		

11. Source of Lighting and Power

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

12. Landholding (Acres)

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

13. Principal Occupations in the Household

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

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

15. Agriculture Inputs

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

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

Name	Unit	Quantity

17. Livestock Numbers

Cows: 1	Bullocks: 1	Calves: 2
Female Buffalo: 1	Male Buffalo: 1	Buffalo Calves: 2
Goats/ Sheep: 1	Poultry/ Ducks: 0	Pigs: 0
Any other: Type _____		No. ____
Shelter for Livestock: Pucca / Kutcha / None		
Average Daily Production of Milk(Litres): _____		

18. What games do Children Play
cricket, indoor games

19. Do children play musical instrument (mention)
No

Schedule Filled By:
Principal Respondent:
Date of Survey:

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: Meta Khambaliya

b. Block: _____

c. District: Rajkot

d. State: Gujarat

e. Lok Sabha Constituency: Gondal

f. Number of Wards in the Gram Panchayat: _____

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages:

Meta Khambhaliya

Demographic Information

Number of Households 400 Total Population 2043 Male 1029 Female 1014

SC HHs 17.60 % 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	Yes	in village
b.	Nearest Primary Health Centre (PHC)	Yes	1.2 km
c.	Nearest Community Health Centre (CHC)	No	-
d.	Nearest Post Office	Yes	in village
e.	Nearest Bank Branch (Any)	Yes	3 km
f.	Nearest Bank with CBS Facility	No	—
g.	Nearest ATM	No	-
h.	Nearest Primary School	Yes	8 KM
i.	Nearest Middle School	Yes	in village
j.	Nearest Secondary School	Yes	8 km
k.	Nearest Higher Secondary School / +2 College	Yes	25 km
l.	Nearest Graduate College	Yes	25 km
m	Nearest ITI / Polytechnic Centre	Yes	25 km
n	Kisan Seva Kendra	Yes	in village

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society	No	No
p	Nearest Agro Service Centre	Yes	25 km
p	MSP based Government Procurement Centre	No	–
q	Milk Cooperative /Collection Centre	Yes	in village
r	Veterinary Care Centre	No	–
s	Ayurveda Centre	No	–
t	E – Seva Kendra	No	–
u	Bus Stop	Yes	in village
v	Railway Station	No	–
w	Library	No	–
x	Common Service Centre	No	–

IV. Sports Facilities in the Gram Panchayat

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

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 2

b. Number of villages without Angan Wadi Centres 0

Names of such villages: _____

c. Schools (Number)

Primary Private: 0 Primary Govt.: 1

Middle Private: 0 Middle Govt.: 0

Secondary Private: 0 Secondary Govt.: 0

Higher Secondary Private: 0 Higher Secondary Govt: 0

VI. Public Distribution System

	Item	Private Contractor	Women's SHG	Gram Panchayat	Cooperative	Other (Mention)	Location in GP (mention Location)	If outside GP, Location & distance from GP HQrs)
a.	Cereal (Rice/ Wheat/ Millets)	–	–	–	–	Gov.	in village	–
b.	Kerosene	–	–	–	–	Gov.	11	–
c.	Other (mention)	–						

2

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

VII. Coverage of Villages under different Facilities & Services

	Parameter	Villages Status[1]	Names of Villages Covered	Names of Villages not Covered
a.	Piped Water Supply Coverage to Villages	Covered: Yes / Not Covered:	Meta khambhaliya	-
b.	Hand Pump Coverage in Villages:	Covered: Both / Not Covered:	Meta khambhaliya	Meta Khambhaliya
c.	Coverage under Covered Drains:	Covered: Both / Not Covered:	Meta khambhaliya	Meta Khambhaliya
d.	Coverage under Open Drains:	Covered: / Not Covered:	-	-
e.	Villages with Household Electricity Connection (Numbers)	Connected: / Not Connected:	Meta Khambhaliya (400)	

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	1000 (Acre)	d.	Pasture / Grazing Land	0	g.	Check Dam	4
b.	Irrigated Land	1000 (Acre)	e.	Forests/ Plantations	150 (Acre)	h.	Wells/Bore Wells	-
c.	Un-irrigated Land	0	f.	Other Common Land	-	i	Tanks /Ponds	5

[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)	-
b)	Number of Households receiving pension (old age, widow, disability)	-
c)	Number of eligible Households who are not receiving pension	369
d)	Number of Households eligible for Ration Card	400
e)	Number of eligible HHs having ration cards	0
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	39
j)	Number of shops selling alcohol	0
k)	Number of BPL families	96
l)	Number of landless households	0
m)	Number of IAY beneficiaries	43
n)	Number of FRA[2] beneficiaries	0
o)	Number of Community Sanitary Complexes	1
p)	Number of Households headed by single women	6
q)	Number of Households headed by physically handicapped persons	5
r)	Total number of Persons with Disability in the village	9
s)	Number of SHGs	0
t)	Number of active SHGs	0
u)	Number of SHG Federations	0
v)	Number of Youth Clubs	0
w)	Number of Bharat Nirman Volunteers	0

Name and Signature of Surveyor and Respondent'

Vrushabh P. Kapadiya	સરપંચશ્રી મેતા ખંભાળીયા ગ્રામ પંચાયત		5/5/2021
Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey

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

4

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: Meta Khambhaliya

b. Ward Number: 5

c. Gram Panchayat: Meta Khambhaliya

d. Block: _____

e. District: Rajkot

f. State: Gujrat

g. Lok Sabha Constituency: Gondal

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

i. Names of Habitations / Hamlets:

Demographic Information

Number of Households 400 Total Population 2043 Male 1029 Female 1014

SC HHs 11.16% ST HHs 0 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	Yes	in village
b.	Nearest Middle School	yes	8km
c.	Nearest Secondary School	Yes	25 km
d.	Kisan Seva Kendra	No	–
e.	Milk Cooperative /Collection Centre	Yes	in village
g.	Health Sub Centre	Yes	in village
h.	Bank	No	–
i.	ATM	No	–
j.	Bus Stop	Yes	in village
k.	Railway Station	No	–

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

1

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
l	Library	No	25 km
m	Common Service Centre	No	25 km
n	Veterinary Care Centre	No	25 km

ii. Road Connectivity
a. Habitations connected by All-weather Roads *(1-All 2-None 3-Some)*
If 3 mention the name of the habitations where not available: 1 - All

iii. Drinking Water Facilities
a.Piped Water Supply Coverage to Habitations: 1 *(1-All 2-None 3-Some)*
If 3 mention the name of the habitations not covered: 1- All

b.Hand Pump Coverage in Habitations: 3 *(1-All 2-None 3-Some)*
If 3 mention the name of the habitations not covered: 3- Some

iv. Coverage of Habitations under Waste Management System
a. Coverage under Covered Drains: 2 *(1-All 2-None 3-Some)*
If 3 mention the name of the habitations not covered: 2. none

b. Coverage under Open Drains: 3 *(1-All 2-None 3-Some)*
If 3 mention the name of the habitations not covered: Some

c. Coverage under Doorstep Waste Collection: *(1-All 2-None 3-Some)*
If 3 mention the name of the habitations not covered: 2 - None

v. Coverage of Habitations under Electrification
a. Coverage under Household Connections: *(1-All 2-None 3-Some)*
If 3 mention the name of the habitations not covered: 1 - All

b.Coverage under Street Lighting: All*(1-All 2-None 3-Some)*
If 3 mention the name of the habitations not covered: 1 - All

vi. Sports Facilities in the Village
a.Number of Play Grounds in the Village (minimum size 200 square meters): 0
b.Mini Stadium : N Yes(Y) /No (N)

vii. Education, ICDS
a. Number of Anganwadi Centres: 2
c. Schools (Number)
Primary Private: 0 Primary Govt.: 1
Middle Private: 0 Middle Govt.: 0
Secondary Private: 0 Secondary Govt.: 0
Higher Secondary Private: 0 Higher Secondary Govt: 0

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	1000 (Hec)	d.	Pasture / Grazing Land	0	g.	Check Dam	4
b.	Irrigated Land	1000 (Hec)	e.	Forests/ Plnatations	180 (Hec)	h.	Wells/Bore Wells	-
c.	Un-irrigated Land	-	f.	Other Common Land	-	I	Tanks /Ponds	5

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	
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	
13	Number of Bharat Nirman Volunteers	

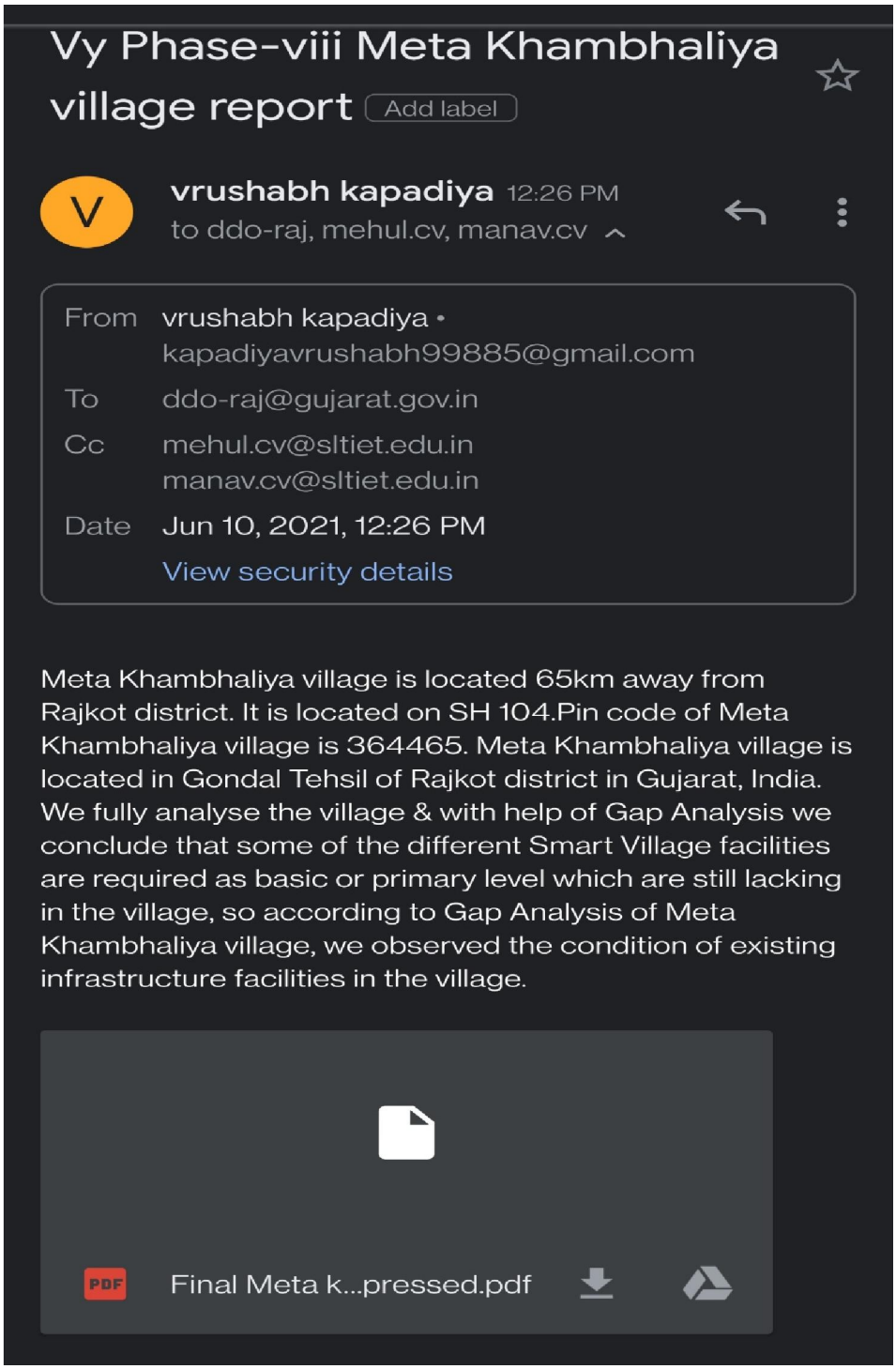
Name and Signature of Surveyor and Respondent'

Vaishakh P. Kapadiya	ગોવિંદભાઈ મેરજ મી. સરપંચશ્રી મેતા ખંભાળીયા ગ્રામ પંચાયત		5/5/2021
Surveyor	PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey

મેતા ખંભાળીયા ગ્રામ પંચાયત

3

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



Chapter 21. Comprehensive report for the entire village

The motive of Vishwakarma Yojana phase - VII 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 that 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.

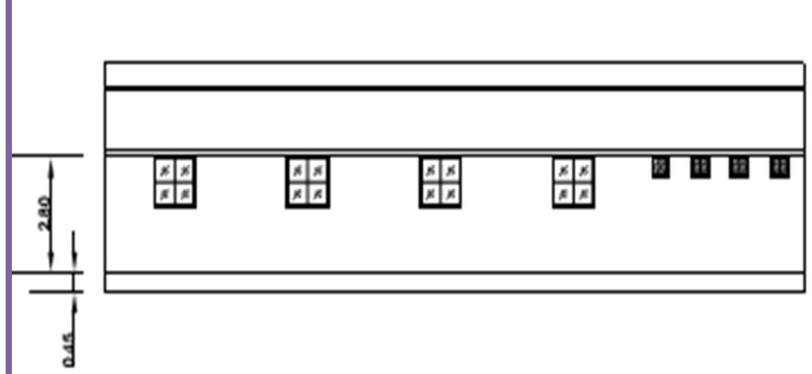
Indeed, employment expansion is at least as important as growth in productivity. In a sense, both represent the utilization of labour as a resource. Why, then, does thinking about efficiency focus on one and neglect the other It is important to reflect on this question.

After we second time visit meta Khambhaliya village for other lack of system we aspect all villagers need bank for security of money, playground for children fitness and village appearance, bio-gas plant for cooking foods, Chabutro for saving birds and for birds food, Godown for villagers agricultural crops and security and business of agricultural products space, rain water harvesting for collect and storage of water.

After we collect this all information we make all six design and estimate, and after this needful system provide villagers will no need other lackness of services.

Now it can be help to develop the other village as increase basic amenities and after that smart amenities on any country with the help Smart (Ideal) Village visit and solid and liquid waste water management system Survey and Analysis. And it's also help to increase GDP Of state And Also increase country image in front of world as Good infrastructure; Good Economic Profile and Good Employment Solution; Good (Ideal Example) Smart Example of New infrastructure with Uses Of renewable energy Solution Country.

PART – I Designs A3 size sheet



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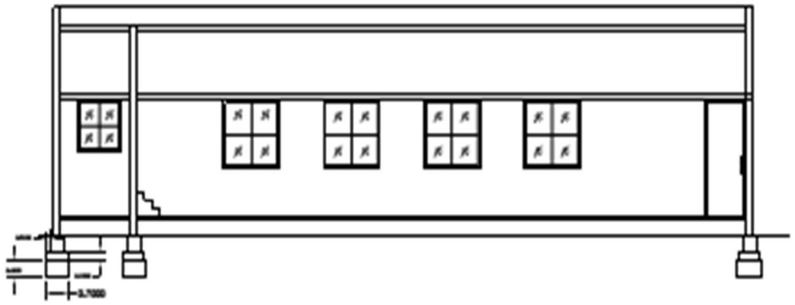

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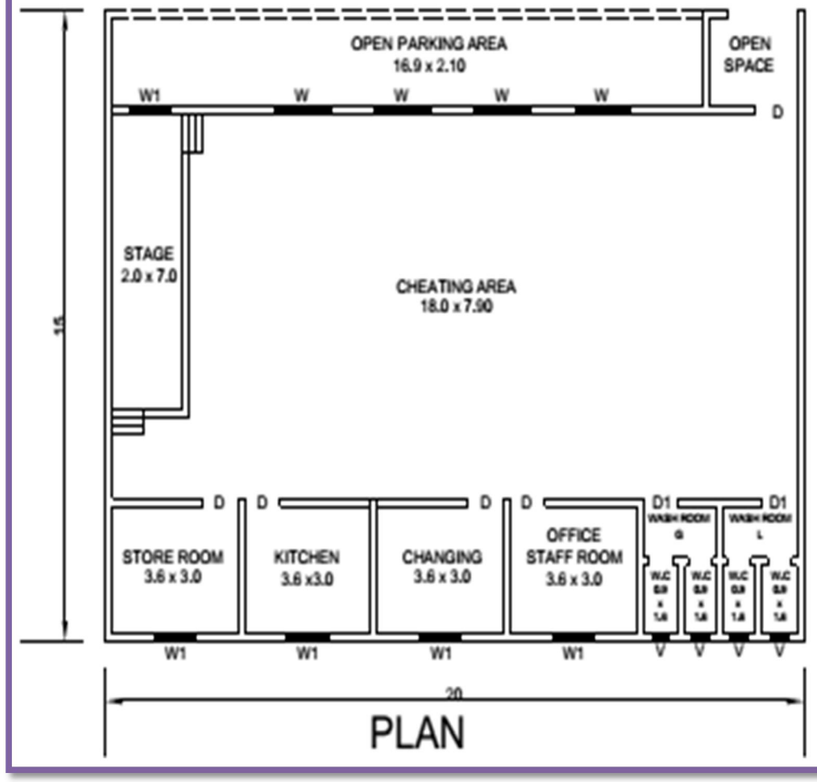
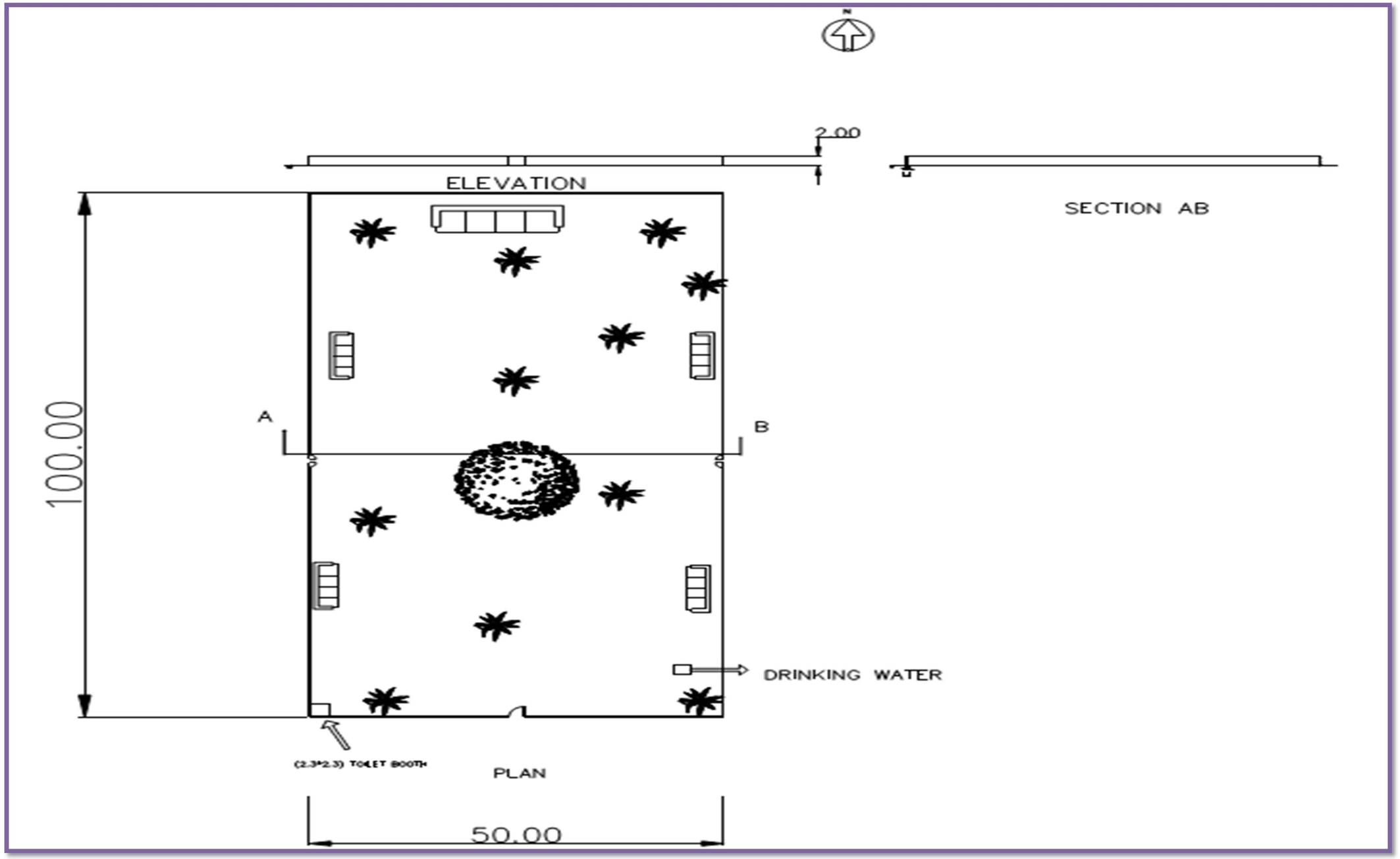


PLAN

WINDOW	W	1.6X1.6
WINDOW 1	W1	1.6X1.6
VENTILATION	V	1.6X1.6
GATE	G	1.6X1.6
DOOR	D	1.6X1.6
DOOR 1	D1	1.6X1.6

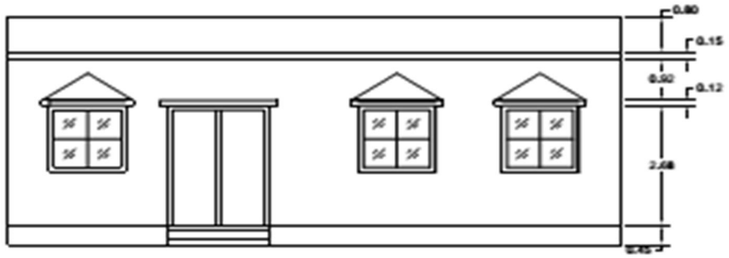
ALL DIMENSIONS ARE IN METER.
ALL WALLS IS 0.20METER.

Community Hall



Public Garden

N



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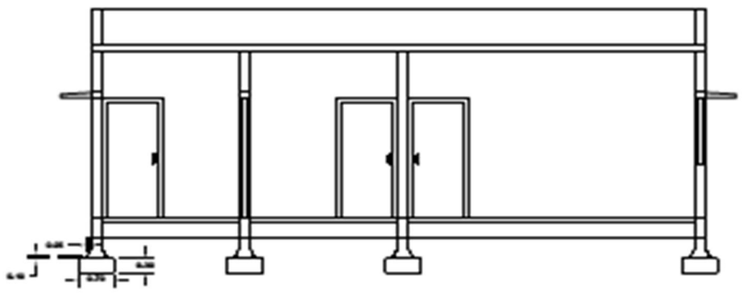
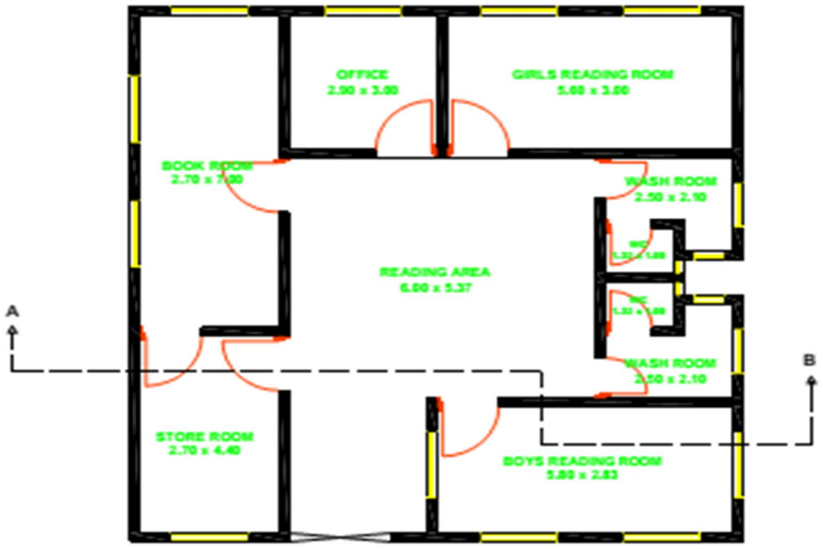


SECTION AB

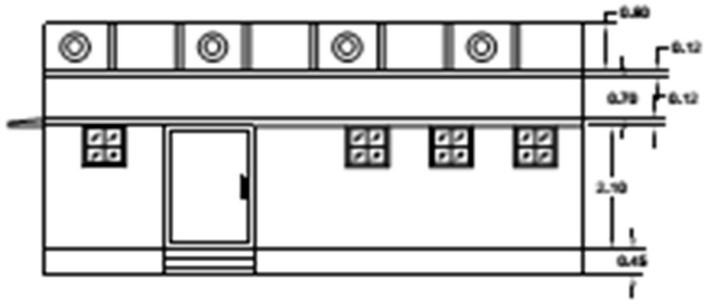


FLOOR PLAN

Schedule For Opening	
D	1.2 x 2.8
D_1	0.9 x 2.8
W	1.5 x 1.5
W_1	1.0 x 1.5
V	0.3 x 0.3
GATE	2.0 x 2.8

ALL DIMENSIONS ARE IN METER.
ALL WALLS IS 0.20METER.

Public Library



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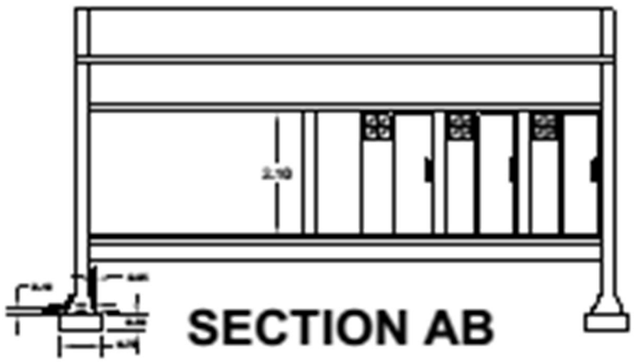

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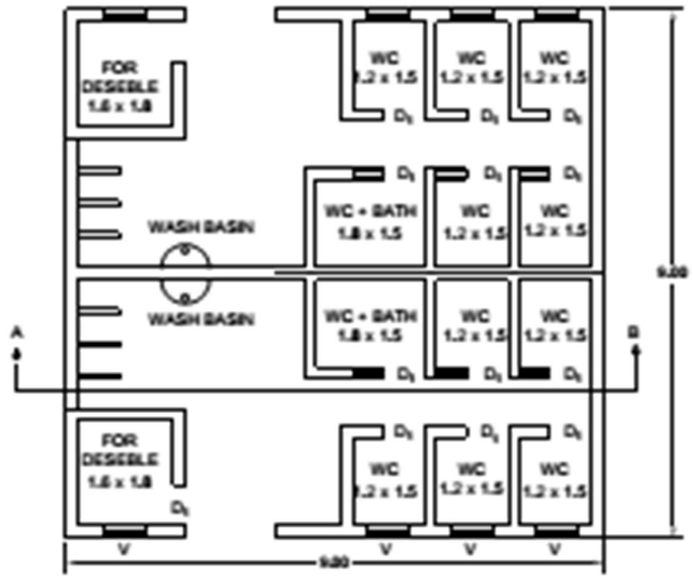


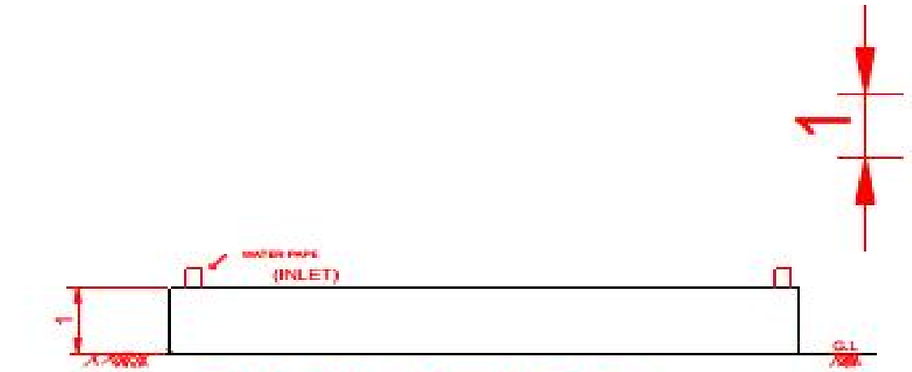
PLAN

N

Schedule For Opening	
D	1.5 x 2.1
D_1	0.7 x 2.1
V	0.7 x 0.7
V_1	0.5 x 0.5

ALL DIMENSIONS ARE IN METER.
ALL WALLS IS 0.20METER.

Public Toilet



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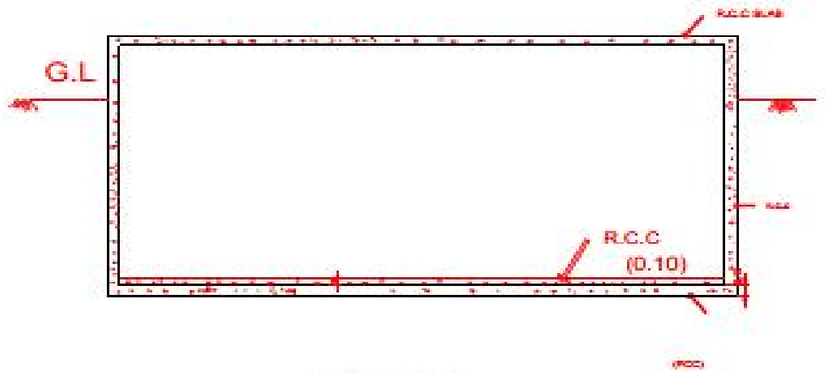

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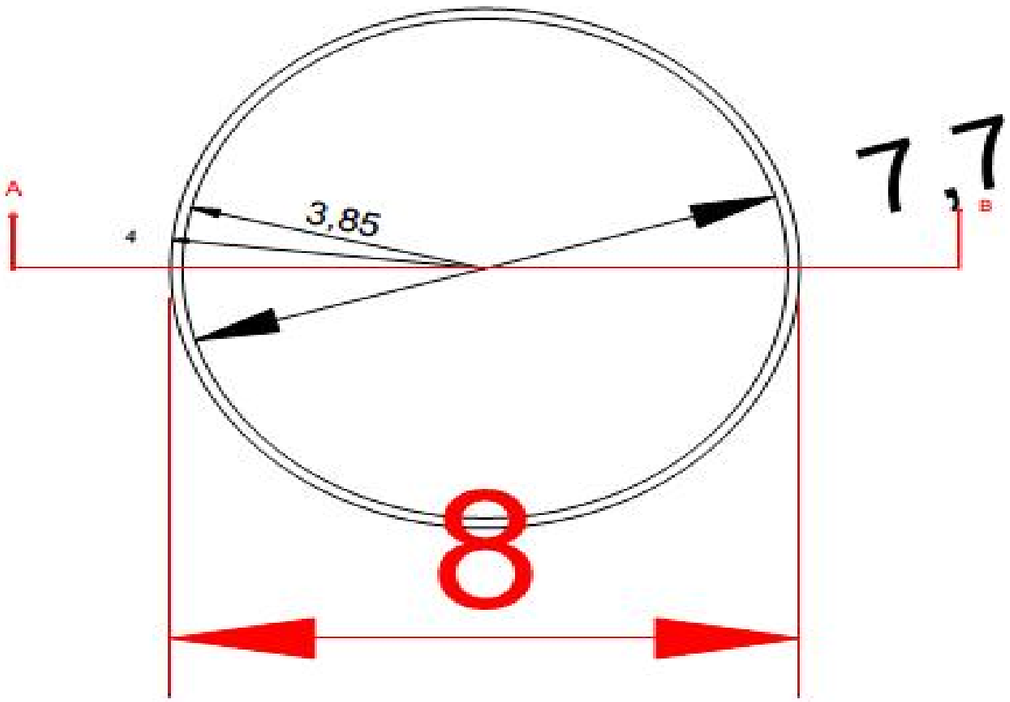
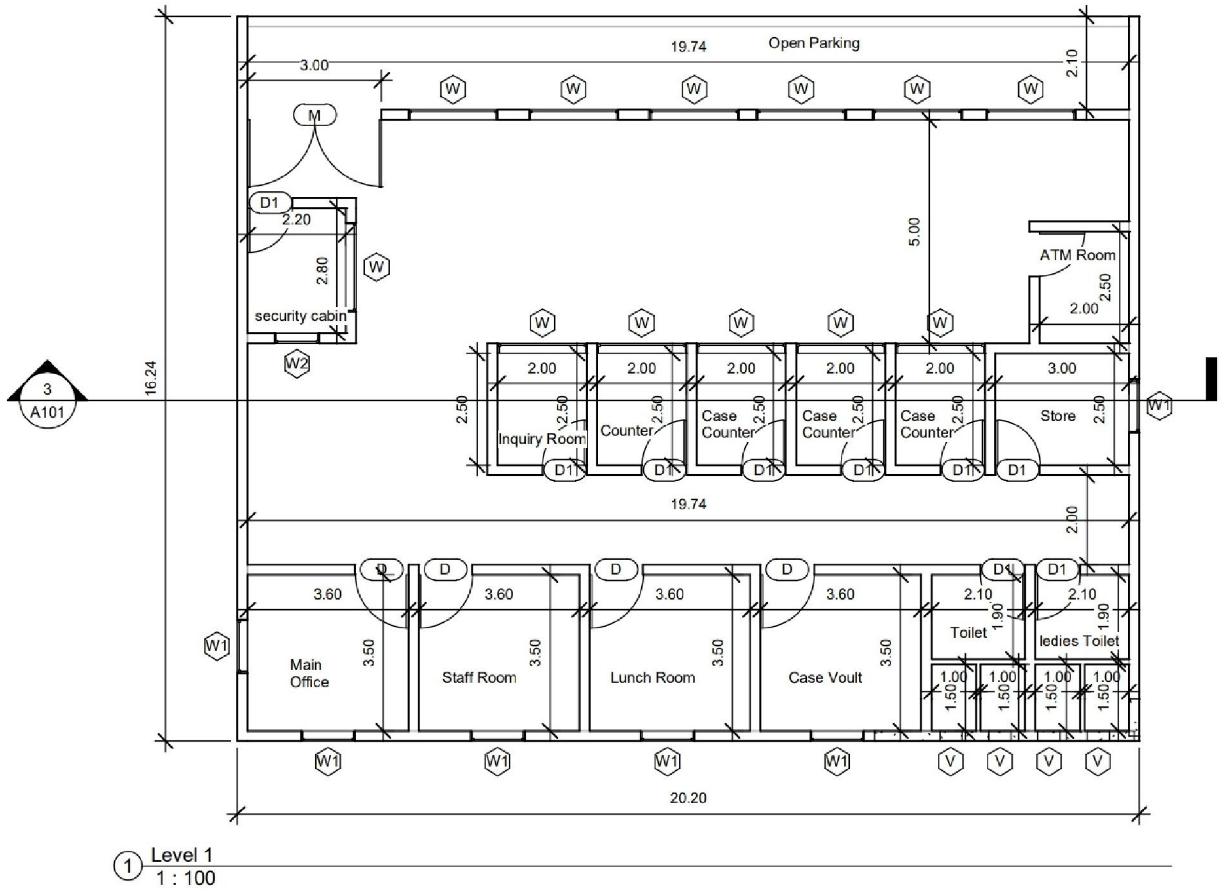


PLAN

ALL DIMENSION ARE IN M

Water Tank

PART- II A3 size Design sheets

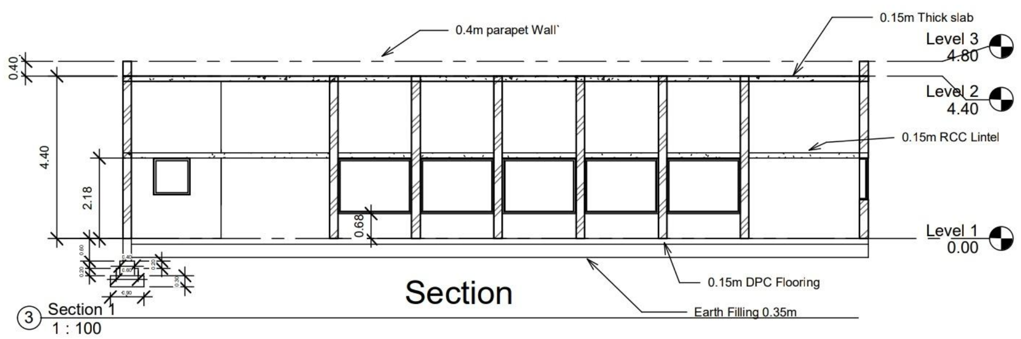


Plan

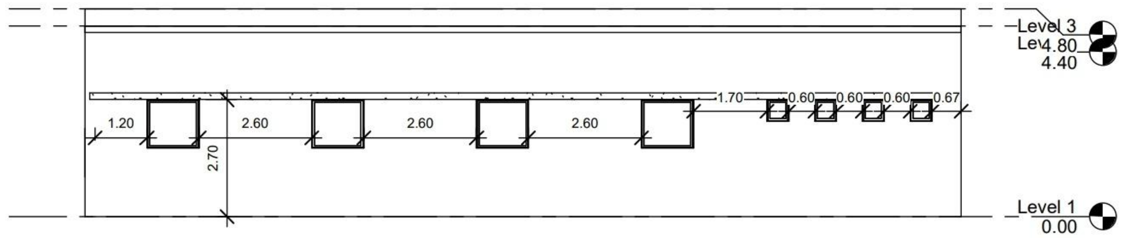
Door Schedule			
Family and Type	Mark	Width	Height
Single-Flush: D 1.2 *2.1m	D	1.20	2.10
Single-Flush: D 1.2 *2.1m	D	1.20	2.10
Single-Flush: D 1.2 *2.1m	D	1.20	2.10
Single-Flush: D 1.2 *2.1m	D	1.20	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Single-Flush: D1 1*2.1m	D1	1.00	2.10
Door-Double-Glass: M 6*2.2m	M	3.00	2.20
Single-Flush: D1 1*2.1m	N	1.00	2.10

Window Schedule			
Family and Type	Mark	Width	Height
Fixed: V 0.5*0.5	V	0.50	0.50
Fixed: V 0.5*0.5	V	0.50	0.50
Fixed: V 0.5*0.5	V	0.50	0.50
Fixed: V 0.5*0.5	X	0.50	0.50
Fixed: W2 1*1	W2	1.00	1.00
Fixed: W1 1.2*1.12m	W1	1.20	1.12
Fixed: W1 1.2*1.12m	W1	1.20	1.12
Fixed: W1 1.2*1.12m	W1	1.20	1.12
Fixed: W1 1.2*1.12m	W1	1.20	1.12
Fixed: W1 1.2*1.12m	W1	1.20	1.12
Fixed: W1 1.2*1.12m	W1	1.20	1.12
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50
Fixed: W 2*1.5	W	2.00	1.50

Grand total: 23

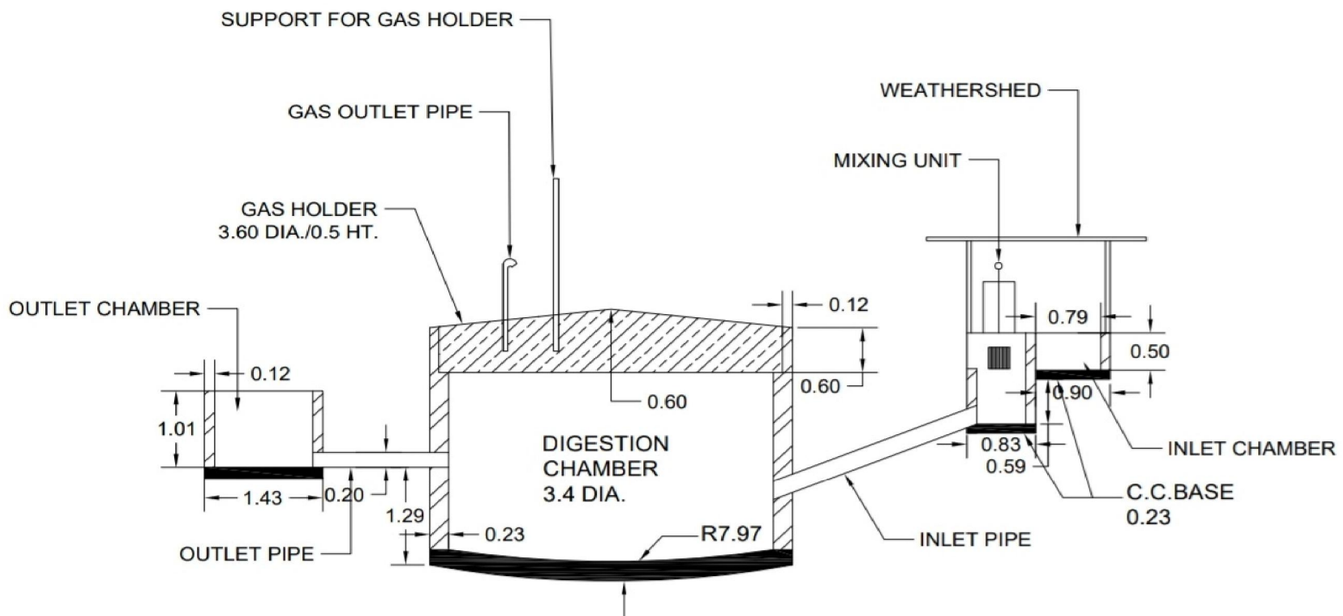


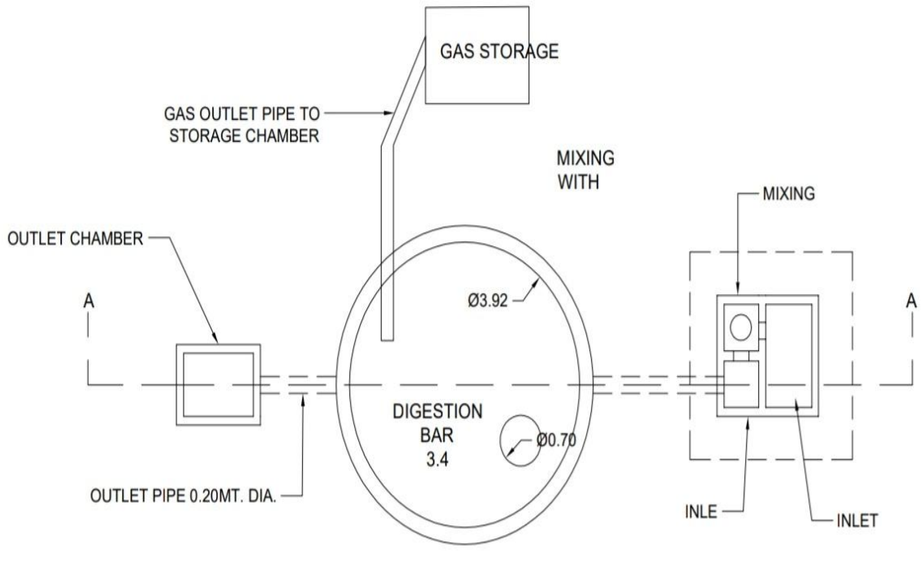
Section



ELEVATION

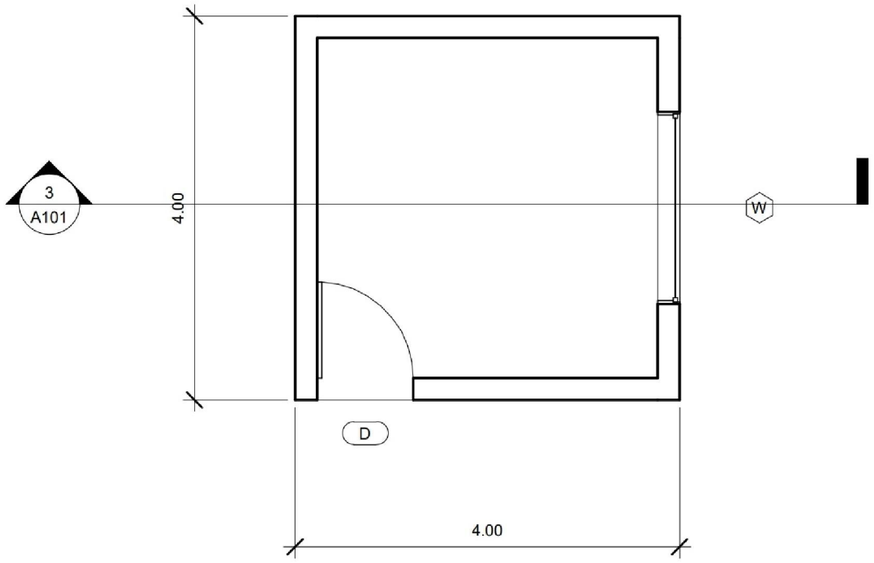
BANK



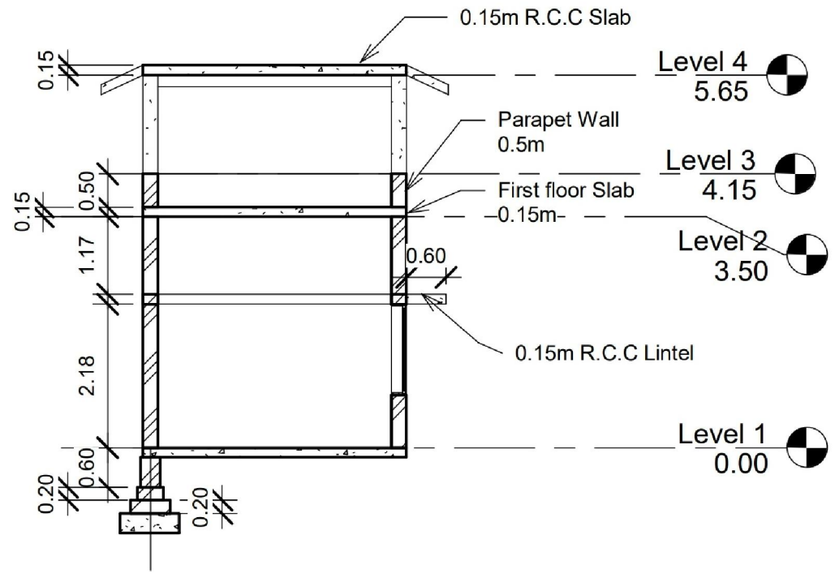


PLAN

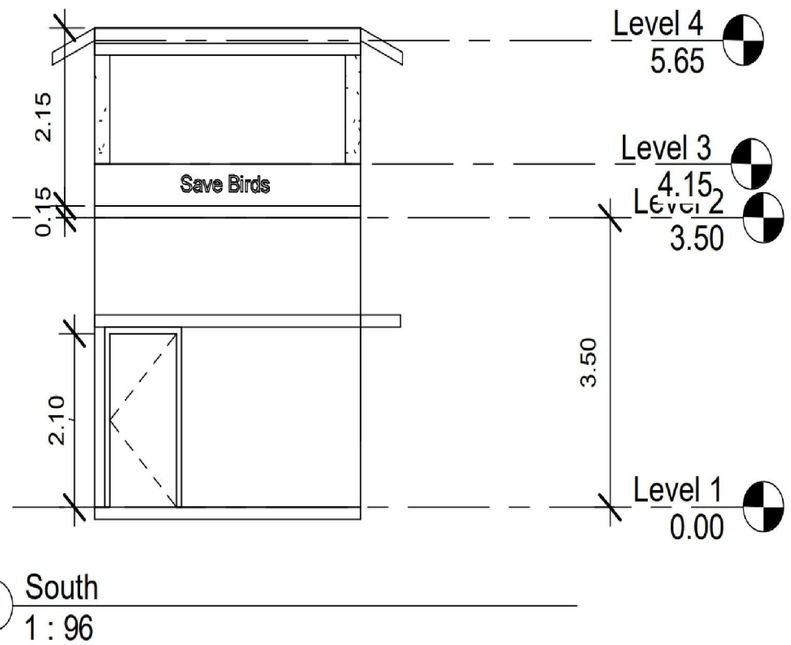
Bio-gas Plant



1 Level 1
1 : 50



3 Section 1
1 : 96



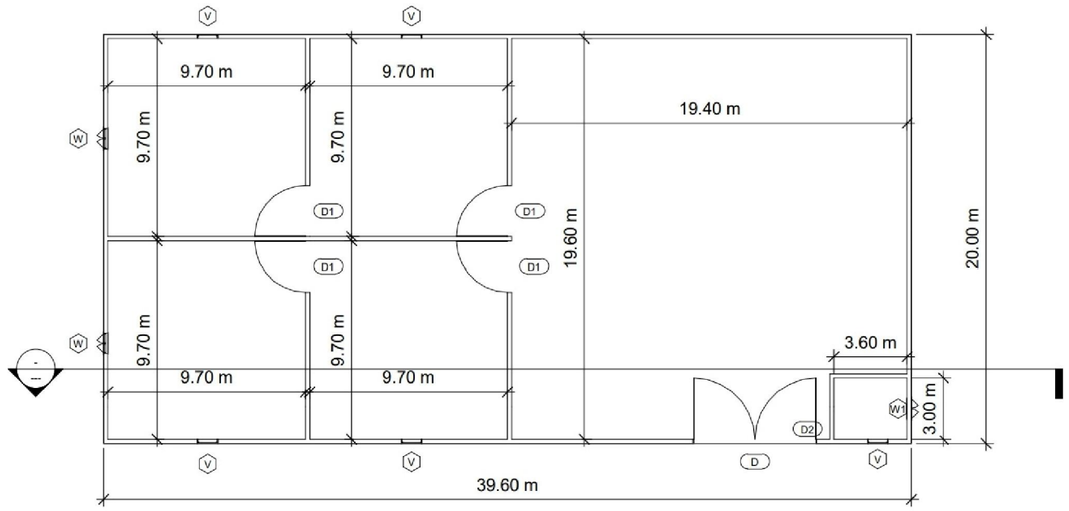
2 South
1 : 96

Window Schedule			
Family and Type	Mark	Width	Height
Fixed: W 2*2m	W	2.00	1.38

Door Schedule			
Family and Type	Mark	Width	Height
Single-Flush: D 1*2.1m	D	1.00	2.10

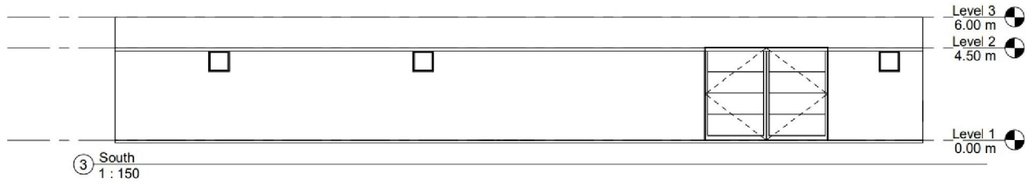
Chabutro

4 3D View 1_1
1 : 1



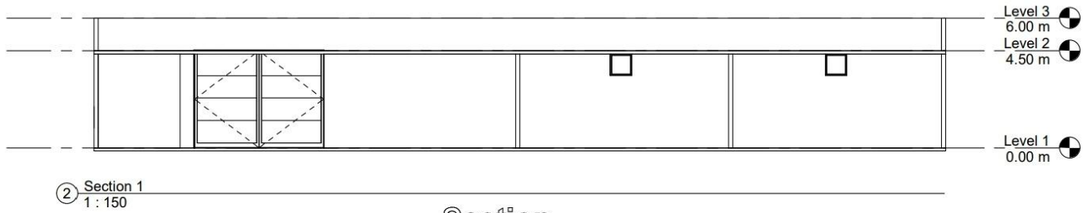
Plan

1 Level 1
1 : 150



3 South
1 : 150

Elevation



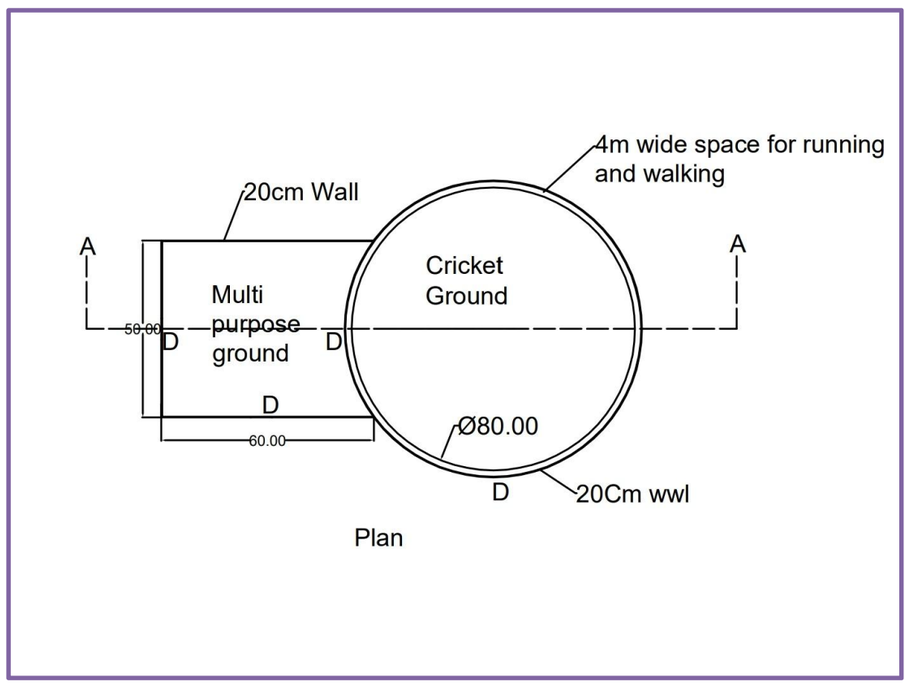
2 Section 1
1 : 150

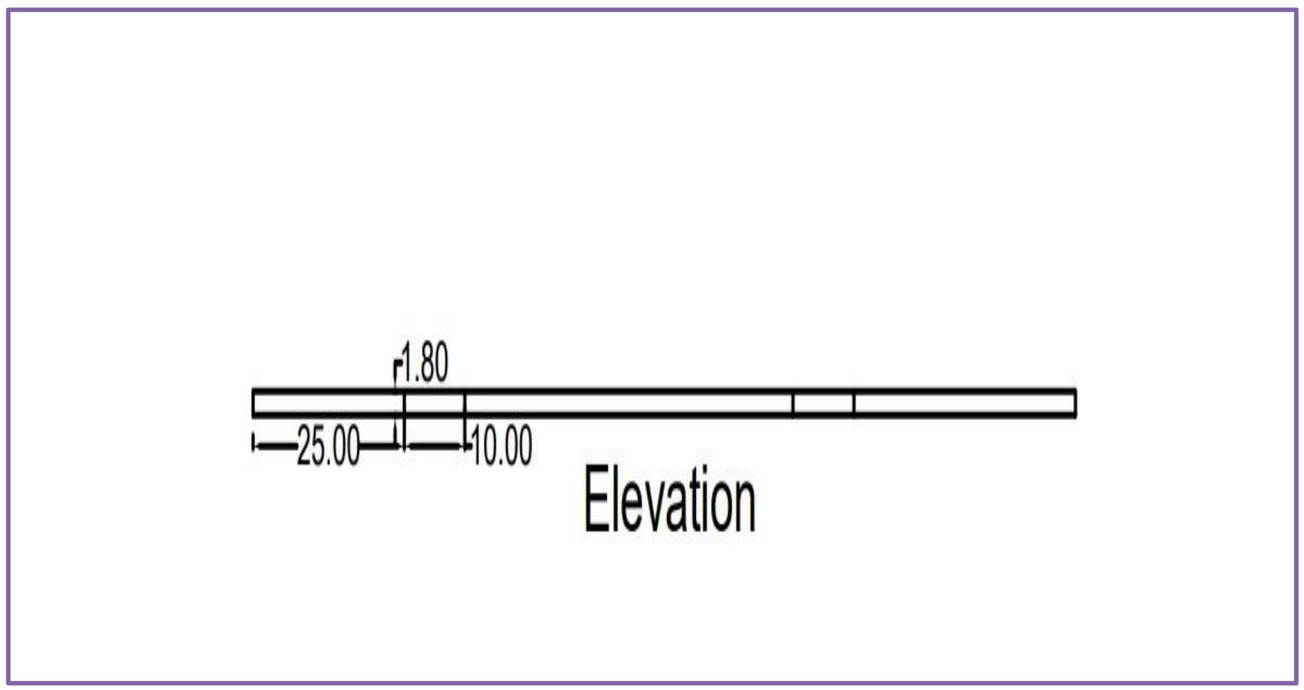
Section

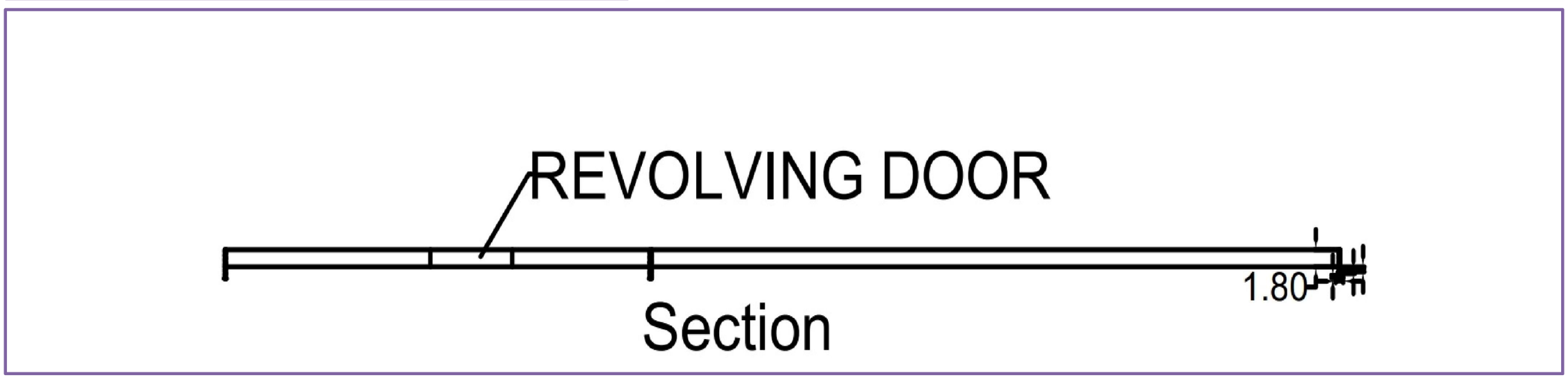
Window Schedule				
Family and Type	Type Mark	Width	Height	Sill Height
Fixed: V 1*1m	V	1.00 m	1.00 m	3.35 m
Fixed: V 1*1m	V	1.00 m	1.00 m	3.35 m
Fixed: V 1*1m	V	1.00 m	1.00 m	1.90 m
Fixed: V 1*1m	V	1.00 m	1.00 m	1.90 m
Window-Casement-Double: W1 1*1m	W	1.00 m	1.00 m	2.00 m
Window-Casement-Double: W1 1*1m	W	1.00 m	1.00 m	2.00 m
Fixed: V 1*1m	V	1.00 m	1.00 m	3.35 m
Window-Casement-Double: 1*1	W1	1.00 m	1.00 m	0.91 m

Door Schedule			
Family and Type	Type Mark	Width	Height
Door-Exterior-Double-Full Glass-Wood_Clad: D 6.0*4.5m	D	6.00 m	4.50 m
Single-Flush: D1 2*5m	D1	2.50 m	2.60 m
Single-Flush: D1 2*5m	D1	2.50 m	2.60 m
Single-Flush: D1 2*5m	D1	2.50 m	2.60 m
Single-Flush: D1 2*5m	D1	2.50 m	2.60 m
Single-Flush: D2 1*2m	D2	1.00 m	2.00 m

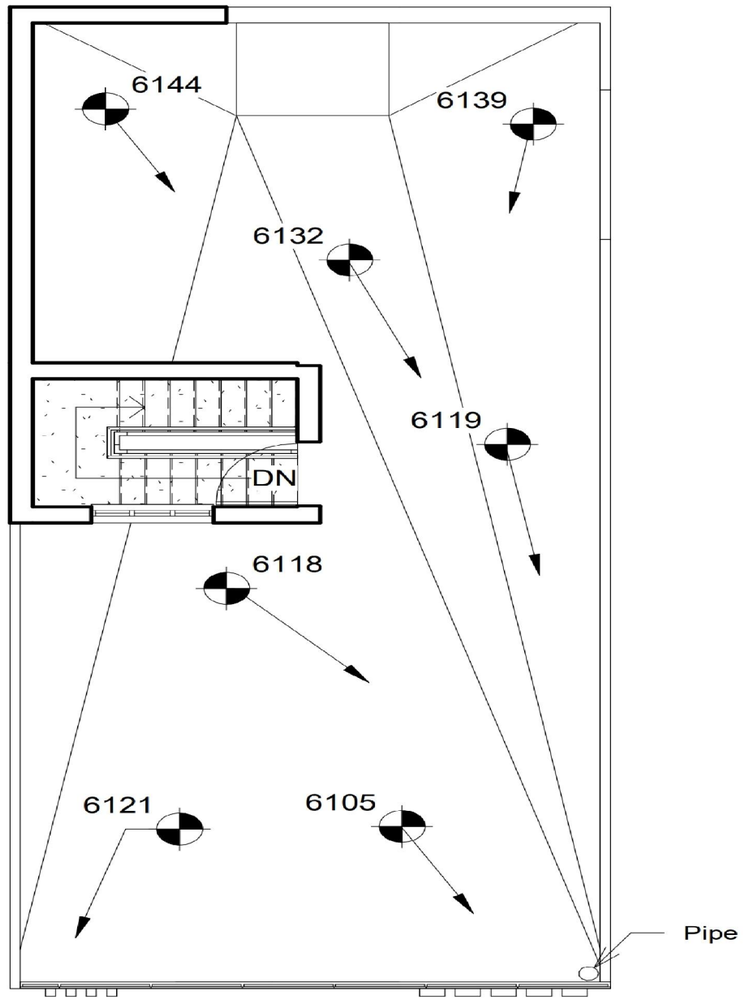
Godown

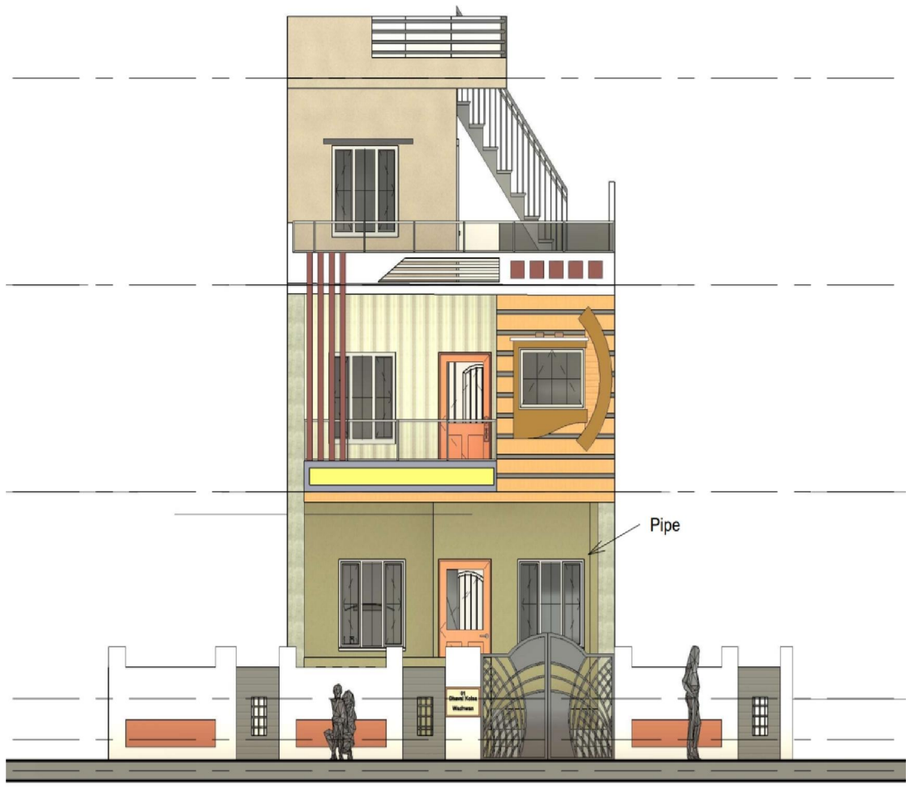

4m wide space for running and walking
20cm Wall
A
A
Cricket Ground
Multi purpose ground
50.00
D
D
D
60.00
Ø80.00
D
20Cm wwl
Plan


1.80
25.00
10.00
Elevation


REVOLVING DOOR
1.80
Section

Play Ground





Rainwater Harvesting