DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII

AN APPROACH TOWARDS RURBANISATION

CHOSAR Village

Ahmedabad District, Gujarat

PREPARED BY

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
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Narnarayan Shastri
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Jetalpur-382427

Nodal Officers Name:
Prof. Samir M. Gami
Civil Engineering
Department

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 CHOSAR

DISTRICT AHMEDABAD

Under

Vishwakarma Yojana: Phase-VIII

In partial fulfillment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

during the academic year 2020-21.

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

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
Contractor Marshni A.	Civil	170340106001
Patel Chanda V.	Civil	170340106006

Date of Report Submission:	**06/08/2021**
Principal Name and Signature:	**Dr. Kiritkumar Bhatt**
VY-Nodal Officer Name and Signature:	**Prof. Samir Gami**
Internal(Evaluator) Guide Name and Signature:	**Prof. Samir Gami**
College Name:	**Narnarayan Shastri Institute of Technology**
College Stamp:	

ABSTRACT

"Developing village with a 'rural soul' but with all urban amenities that a city may have"

Our vision of this project is to provide urban amenities in rural areas while maintaining the rural soul. This will help in developing villages in sustainable manner, reduce migration from villages and prevent the cities from the urban pressure.

Vishwakarma Yojana has provided the platform for real world experience to engineering students and simultaneously applies their technical knowledge in the rural infrastructure development. And also the main motive of Vishwakarma Yojana is developing village with a rural but with all urban amenities that a city may have.

The approach like Vishwakarma Yojana is a step towards nation development. The main aim of this project is to provide urban amenities in rural areas while maintaining the rural soul. This will help in developing villages in sustainable manner, reduces migration from villages and prevent the cities from the urban pressure. In Vishwakarma Yojana phase VIII, our allocated village is Chosar. This village is Daskroi Taluka of Ahmedabad District of Gujarat State. The population of the village is approximately 2328. The area of village is approx 577.1 hectare with 456 households.

We conclude about the information of village, geographical data, demographical data, occupational data and current infrastructure facilities such as water, waste water management, transportation, road network, drainage line, water supply for agricultural activities, electricity for residential use, electricity for irrigation work, educational facilities, etc. And after analyzing all data we realize that there are some major amenities which should be constructed in Chosar village, to make the life of the villagers easy and more comfortable. We designed some infrastructural facilities for Chosar which are Bank, Post Office, Community Hall, Library, PHC and Garden for all the facilities to the villagers. And also our aim is to implement this designs and in future we aim to design and implement other important facilities for Chosar.

ACKNOWLEDGEMENT

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

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

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

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

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

An act of gratitude is expressed to our internal guide / Evaluator / Nodal Officer,
Prof. Samir Gami from college **Narnarayan Shastri Institute of Technology** for their invaluable guidance, constant inspiration and active involvement in our project work.

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

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

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

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
PHC	Primary Health Care
PPP	Public Private Partnership
IAY	Indian Avas Yojana
JRY	Jawahar Rojgar Yojana
BPL	Below Poverty Line
PAY	Pradhan Mantri Awas Yojana
FWP	Food for Work Program
IRDP	Integrated Rural Development Program
SWOT	Strength Weakness Opportunity Threats
NREGA	National Rural Employment Guarantee Act
PMGSY	Pradhan Mantri Gram Swarojgar Yojana
SC	Scheduled Castes
ST	Scheduled Tribes

1: IDEAL VILLAGE VISIT (PUNSARI)

1.1 BACKGROUND AND STUDY AREA LOCATION

* Background:

- Punsari village is located in Sabarkantha District in the state of Gujarat, India.The village is located about 80 Km away from the state capital, Gandhinagar. The village follows the Panchayat system. The village is well developed under the panachayat system. They use many technologies in their village like in education, farming, etc. This village contains Wi-Fi system for all the villagers. They have been used many technologies like CCTV cameras for women security as well as for the villagers. They provided facilities like mineral water supply, health care centre, sewer and drainage project, banking facalities and toll-free complaint reception service.

- There is a facility of mobile library for villagers. The villagers have adopted the method of sprinkler irrigation for farming which is less water consuming method and has good efficiency.
- This village has been awarded as the best Gram Panchayat in Gujarat.

Figure 1: Location of Punsari Village in map

* Study Area Location:

Figure 2: Entrance of Punsari Village

Figure 3: Group Photo with Punsari's Gram Panchayat and Sarpanch

Coordinates : 23° 20’ 59.46”N 73° 8’ 12.48”, Country : India, State : Gujarat , District : Sabarkantha , Government 1) Type : Panchayat Raj2) Body :Gram Panchayat , Population :5500 , Languages : Hindi, Gujarati, English , Time zone : IST (UTC + 5:30), Pin :383307 , Vehicle registration :GJ , Website : www.punsarigrampanchayat.in

1.2 Concept: Ideal Village, Normal Village

1.2.1 Objectives:

- To build- infrastructure, communication, public services.
- To improve- health, education, living conditions.
- To generate- employment, farm and storage- commercial activities.

1.2.2Example / Live case studies of Ideal Village of India/Gujarat

- Punsari - The village with AC classrooms, Wi-Fi, CCTVs and more.
- Punsari is situated in Gujarat, India. This village is funded by the Indian Government and the village’s own funding. The ideal village is no NRI blessed zone. The village also provides a mini-bus commute system and various other facalities which is very helpful for the villagers.

1.2.3 The Idea of a Model / Smart Village

- The Smart Village has access to the sustainable energy services which acts as a catalyst for development enabling the provision of healthcare and good education. They also have access to gender equality and democratic engagement, clean water, growth of productive enterprises to boost incomes, sanitation and nutrition, etc.
- Smart village = ideal village + digital village.

1.2.4Ancient history civil / Electrical concept about Indian Village / other countries perspective about village and its new development

- Dharnai is a small village situated near Bodh Gaya in Bihar. This village is located in Jehanabad district. The village has a population of around 2400 people. In past times, this village didn’t have facility of electricity, but a few years ago, the villagers themselves changed this perspective. With the help of Greenpeace, the village installed a solar powered micro-grid which provides 24x7 electricity to more than 450 houses and 50 commercial establishments. The entire project cost them around 3 crores making their village India’s first fully solar powered village.
- The village has been running a website called “Dharnai Live” motivating other villages and asking them to adopt the method similar to them.
- Since the time, Dharnai declared itself an energy independent village, students are free to study anytime instead of studying at day only. Small industries are progressing ahead as the village heads for a brighter and better future. And the villages women now no longer fear stepping out of their homes at the night time.

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

• Social and Economic details

- The Panchayat in this village has made efforts to provide the best of education of the village's students. CCTV cameras and AC are provided in the primary schools. Apart from the schools, 25 CCTVs are installed at the prime junctions of the village so that the litterbugs are afraid from doing any crime.
- There is a facility of mini buses which is used for transportation purpose in the village. The Panchayat has also started a bus facility called the Atal Express for women which supplies milk.
- There is a 66 KV sub-station that supplies power in the village. The Sarpanch is looking forward at getting Wi-Fi connectivity in the entire village so that the villagers can use unlimited internet once they purchase the subscription from the Panchayat office.
- Punsari is 20 km away from Parvati Hills. Parvati Hills is the largest table top land of India.
- The Gram Panchayat has developed a system in which the village can pay their taxes online. They also have provided a Biometric attendance system for the government employees. The Gram Panchayat has digitalized all land records, which can be easily accessed any time. Also the Gram Panchayat facilitates people in paying the electricity and other bills
- Various programs like vocational training, English speaking video, etc are adopted in the village. Basics like library, beauty parlour, tailoring, stiching and sewing classes, etc are also there in the village.

* There is facility of CCTV cameras in Punsari village, which is one of the main reason for making it an ideal village.

* Now-a-days crime rate is increasing rapidly, so if any kind of crime happens they can easily get information regarding that crime.

* Due to the CCTV camera, people will think twice about doing any crime, so there will be decrease in crime rate.

Figure 4 : CCTV Cameras of Punsari Village

*****For nation's development, education is the prime requirement.

* There are total five primary school and four secondary school in Punsari village.

* This is really good amount of school in a village.

* They need not have to go far in the need of education, atleast for school.

Figure 5: Primary School of Punsari Village

- The Gram Panchayat is also assisting the women of the village. There are 109 self-help group (SHGs). Each group consists of 10-15 women. These groups contribute minimum amount each month. They receive around 8% on their contribution and this self-help group have value of Rs. 32 lakhs.

• Physical and demographic details

- The population of Punsari village as per 2011 census of India was 5500 which has increased to 6000 as of july 2012.

•Infrastructure details

- The village has underground drainage system with three-point outlet which dumps all the waste which gets absorbs into the soil in a landfill outside the village.
- For the garbage collection, a tractor travels from door to door and collects the waste twice a day from the village in order to collect most of the waste. The waste thus collected is 100% plastic only.
- There is proper sanitization containing toilets in all the houses of the village.
- Public Annoucement systems i.e PA system is installed at two places in the village. At this the announcements, bhajans and other news is been announced twice a day.
- There is 1 milk bank, 1 police station, 2 banks, 1 gram hat, 1 post office, 1 community hall and 24*7 primary health care centre, Talod railway station, block and CC road with internal GIS & GPS systems.
- There is also installation of Mineral RO plant for drinking of clean water. The RO plant is even installed in the schools.
- The Gram Panchayat has also started Internal Bus Service after analyzing one of the reasons of death of infants and pregnant women. This has helped in reductions of IMMR and IRMR rates.
- The Gram Panchayat has adopted 7P Model i.e. Punsari, Public, People, Panchayat, Private, Profit and Partnership.

Figure 6: Public Announcement System **Figure 7: Roads of Punsari Village**

Figure 8: Mobile Library **Figure 9: Facility of Public Toilets**

Figure 10: SBI Bank in Punsari Village

Figure 11: Anganwadi in Punsari Village

Figure 12: Bus Service delivering Milk

Figure13: Waste Collection

Figure 14: Solar System in Punsari VillageFigure 15: Home for Birds

1.4 SWOT analysis of Ideal Village / Smart Village

- SWOT analysis is an acronym for strength, weakness, opportunities and threats. It is structured planning method that evaluates those four elements of a project or business venture.
- A SWOT analysis can be carried out for a product, industry, company, person or place. It involves specifying the objective of the business venture or project and identifying the internal and external factors that are favourable and unfavourable to achieve the objective.
- Strength: It is the characteristics of the business or project that give it an advantage over others.
- Weakness: It is the characteristics that the business or project at a disadvantage relative to others.

- Opportunities: It elements that the business or project could exploit to its advantage.
- Threats: It elements the environment that could cause trouble for the business or project.
- Identification of SWOT is important because they can suggest later steps in planning to achieve the objective.
- Users SWOT analysis must ask and answer the questions that generate meaningful information for each category (SWOT) to make the analysis use in their competitive advantage.

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

- E- Auction of Agro products.
- Reusing of drainage water
- A public announcement system having two way enabling to communicate with people and create awareness about new government schemes and planned meeting including villagers, etc.
- Creating a database which is easy for the agriculture.
- Easy Mechanism requirement for penetration of E-commerce in rural areas. As the product that are available at local shops are not original and also they are buying various home appliances and electronics and apparels online.

1.6 Benefits of the visits of Ideal Village / Smart Village

- For ideal village visit we visited Punsari village. The village is located in Sabarkantha district. We went their to understand that how the village has been transformed in all these years. The main aim behind the visit was to get insight how the Gram Panchayat Mrs. Sunandaben Patel has transformed and maintained it since many years and what are the next development she is looking for his village in the near future.

1.7 Electrical / Civil aspects required in Ideal village / Smart Village

- Electrical aspects like smart buildings, security cameras, fire safety alarm, electricity managements, Smart dairy remote supervision and monitoring in open fields and barns, Smart farming-satellite data for farm activities, Smart agricultural equipment for crop production, Smart weather and irrigation-weather forecast water levels in dam, Smart health care-smart beds and equipments to monitor patient, Smart education-interactive learning through videos, Smart surveillance system-CC cameras and sensors to detect robbery, etc are required in an Ideal village.
- Civil aspects like Homes for all with access to toilet, safe drinking water and regular power, functional solid and liquid waste management, functional water conservation and harvesting structures, improving sanitation conditions, etc are required in an Ideal village.

2. CHOSAR VILLAGE LITERATURE REVIEW – (CIVIL CONCEPT)

2.1 Introduction: Urban & Rural Village Concept

* Urban Village Concept:

- Urban area typically would mean a well planned set-up with a village concept of being fairly self-sufficient and they should not have to travel long distance to fulfill their daily needs.
- Urban area contains a highly dense population with a good economic centre and plus diverse waterfall.
- In urban area at least 75% of the male working population is engaged in non-agricultural activities.
- The density of a population of at least 400 person per sq.km.
- Their minimum population is of 5000.

* Rural Village Concept:

- The rural village is a geographic area which is located outside town and cities.
- According to the planning commission, a town with a maximum population of 15,000 is considered rural in nature.
- In a rural area agriculture is the main source of livelihood along with fishing.
- Typical rural area have a low population density and small settlements.

2.2 Importance of the Rural Development

- In our country India majority of people near about 65% of population live in rural area, so India is primarily an agriculture based country.
- In India more than two-third (2/3) of the country's people is dependent on agriculture for their livelihood and 1/3 of rural India is still below the poverty line.
- For growth of India the development of rural area is become most important factor for Indian economy.
- Agriculture contribute nearly 1/5 of gross domestic product in India.
- Other things due to poor facilities like education, healthcare and quality of life the villagers are moving to urban areas. So by that many problems are happening like unemployment, increase in population and hazardous development of buildings.
- So if we provide the facilities to a rural area then they don't move to urban area which is good for both area.
- So majority of people live in rural area without developing that rural area can't become developed country because of the majority.
- To increase the quality of living of the under privileged population.

* Objectives:

- To provide the basic needs like education, healthcare, drinking water, connectivity of road, etc.
- To improve the productivity and as well as the wages of rural people.
- To provide the employment.

2.3 Ancient Villages / Different Definition of: Rural Urban Villages

- A village is a small settlement usually found in a rural setting. It is generally larger than a hamlet but smaller than a town.
- The rural village is geographical area which is located outside town and cities and the population is near about 500 to 2500 inhabitants.
- A place which have only few homes and the population density is very low.

2.4 Scenario: Rural / Urban Village of Indian Population Growth

Table 1: Population Growth in Gujarat

	2001 (in crore)	2011 (in crore)	Difference
India	102.9	121.0	18.1
Rural	74.3	83.3	9.0
Urban	28.6	37.7	9.1

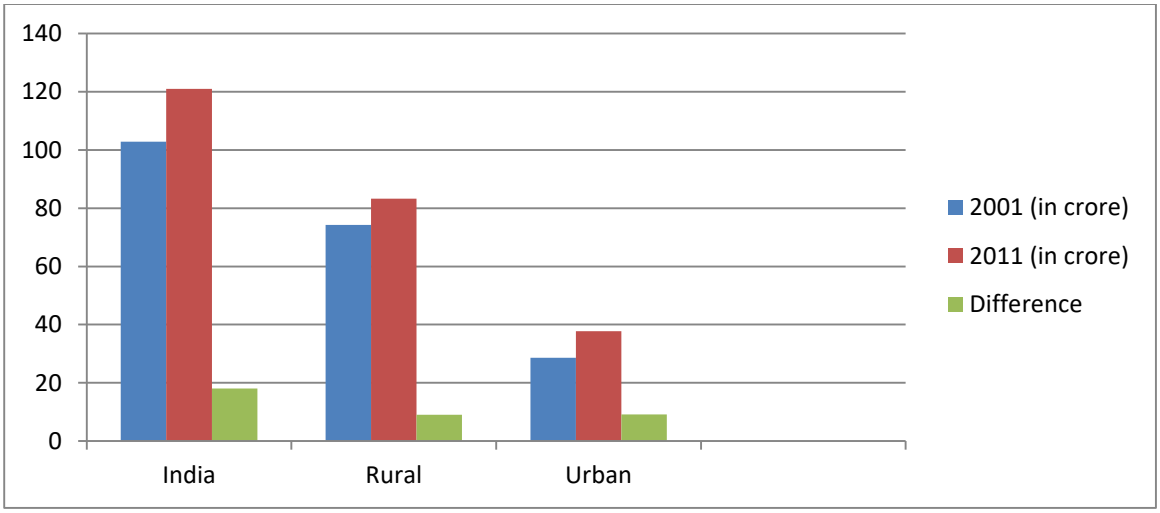


Figure 16: Population Data Graph

- The rural-urban distribution is 68.34% and 31.16% respectively.
- The level of urbanization increased from 27.81% in the census to 31.16% in the 2011 census while the population of rural declined from 12.19% to 68.84%.

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

- Gujarat's population has reached 6.03 crore, while the urban population has risen from 37% in 2001 to 43% in 2011.
- The total population of Gujarat according to census 2011 stood at 6,03,83,682-3,14,82,232 males and 2,89,01346 females.
- Out of total population 57.4% lives in rural areas and 42.6% resides in urban areas.
- In 2001 census, 62.6% population was living in rural areas, while 37.4% was in urban population.

	2011 (in %)	2001 (in %)
Urban	42.6 %	37.4 %
Rural	57.4 %	**1)** %

Table 2: Population Growth in Gujarat

2.6 Rural Development Issues – Concerns –Measures

- Poverty – Poverty is still major issue in India.
- Electricity- 63% of all rural households in India do not have electricity and use kerosene foe lighting.
- Even for those rural areas which are electrified there is tremendous shortages of power supply.
- Infrastructure- Agricultural, social and cultural, forest and agricultural degradation of land, public health.
- Concerns- Trust, empathy, aspiration, empowerment.

* Measures:

- Rural development actions aim is to develop the social and economical growth of rural area.
- So for that utility like water, drainage facilities, street lighting and garbage collection for hygiene & sanitation should be provided.
- Public transportation facilities are very limited in rural area, so by that it creates problem for them to travel from one to other place. They mainly depend on their own vehicle for that the public transportation should be added.
- Physical infrastructure, social infrastructure, education, entrepreneurship, healthcare facilities all play an important role in development of rural regions.

2.7 Various Infrastructure Guidelines with the Norms for Villages for the provisions of different Infrastructure facilities

- DRDAs must themselves be more professional and should able to interact effectively various other agencies. They coordinate with the line departments, the banks, the Panchayati Raj Institutes and other financial institutions, the NGO's as well as the technical institutions with a view of gathering the support and resources required for poverty reduction effort in the district. It shall be their endeavor and objective to secure inter sectoral, inter departmental coordination and cooperation for reducing poverty in the district. It is their ability to coordinate and bring a convergence approach among different agencies for poverty alleviation that would set them apart.
- The DRDAs are expected to oversee the implementation of different anti-poverty program of the Ministry of Rural Development in the district. This is not to be concluded with actual implementations, which will be by the Panchayati Raj and other Institutions. The DRDAs will also monitor closely the implementation through obtaining of periodic reports as well as frequent field visits.
- The purpose of the visit should be to facilitate the implementing agencies in improving implementation process, besides ensuring that the quality of implementation of programs is high. This would include over-seeing whether the intended beneficiaries are receiving the benefits under the different programs.

- The DRDAs shall keep the Zilla Parishad, the State and the Central Government duty informed of the progress of the implementation programs through periodic reports in the prescribed formats. Special report as well as when called for shall be provided.
- It shall be the duty of the DRDAs to oversee and ensure that the benefits specifically marked for certain target groups reach them. They shall take all necessary steps to achieve the prescribed norms.
- The DRDAs shall take necessary step to improve the awareness regarding rural development and poverty alleviation particularly among the rural poor. This would involve issues of poverty, the opportunities available to the rural poor and generally infusing a sense of confidence in their ability to overcome poverty. It would also involve sensing the different functions in the district to the different aspects of poverty and poverty alleviation programs.

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

- The casual relationships between electrification and development of poor, rural communities are complex and contextual. So the existing literature focuses mainly of rural electrification and electricity use on local socio-economic development.
- The International Energy Agency (IEA) estimates that 1.1 billion people do not have access to electricity, most of them living in rural areas.
- Rural electrification is the process of bringing electrical power to rural and remote areas. Electrification typically begins in cities and towns and gradually extends to rural areas, however, this process often runs into obstacles in developing nations.
- By providing this, we ensure rapid economic development by providing electricity as an input for productive uses in agriculture, rural industries, etc. It will also reduce the mass migration to our metros or urban areas.
- It also improves the quality of life of the rural people by supplying electricity for lighting of rural areas, etc.

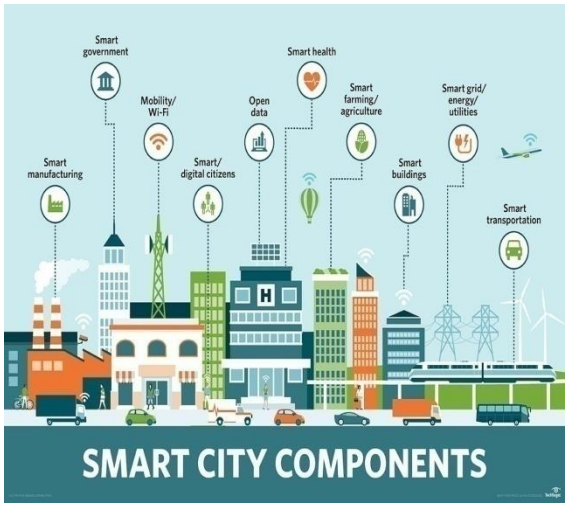
2.9 Other Projects / Schemes of Gujarat / Indian Government

- Bachat Lamp Yojana
- Central Government Health Scheme
- Dindayal Disabled Rehabilitation Scheme
- Digital India Programme
- Indira Avas Yojana
- Rajiv Awas Yojana
- National Service Scheme
- National Rural Livehood Mission… etc

3. SMART (CITIES/VILLAGE) CONCEPT IDEA AND ITS VISIT (CIVIL & ELECTRICAL CONCEPT)

3.1 Introduction: Concepts, Definitions and Practices

- The first question that arises is what is meant by "Smart City". The answer is there is no universally accepted definition of a Smart City. It means different things to different people. The concept of Smart City, therefore, varies from city to city and country to country, depending upon the level of development, willingness to change and reform, resources and aspirations of the city's residents. A Smart City would have a different connotation in India than other countries. Even in India, there is no way of defining a Smart City.
- Some definition boundaries are required to guide cities in the Mission, in the imagination of any city dweller in India. A Smart City contains Infrastructure and services that describes his/her level of aspiration. To provide for the aspirations and needs of the citizens, urban planners aim at development of the entire urban eco-system. This can be long term goal and cities can work towards developing such comprehensive infrastructure incrementally, adding on layers of "Smartness".
- In the approach to the Smart Cities Mission, the main objective is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' solutions. The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a light house to other aspiring cities. The Smart Cities Mission of the Government is a bold, new initiative. It is meant to set examples that can be replicated both within and outside the Smart City, catalyzing the creation of similar Smart Cities in various regions of the country.



3.2 Vision – Goals, Standards and Performance Measurement Indicators

- Promoting mixed land use in area based developments like planning for unplanned areas containing a range of compatible activities and land uses close to one another in order to make land use more. The States will enable some flexibility in land use and building bye-laws to adapt the change.
- Housing and Inclusiveness – expand housing opportunities for all.
- Creating walk able localities - reduce congestion, boost local economy, air pollution and resource depletion, promote interactions and ensure security. The road network is formed or created not only for vehicles and public transport, but also for pedestrians and cyclists.
- Promoting a variety of transport options – Transit Oriented Development (TOD).

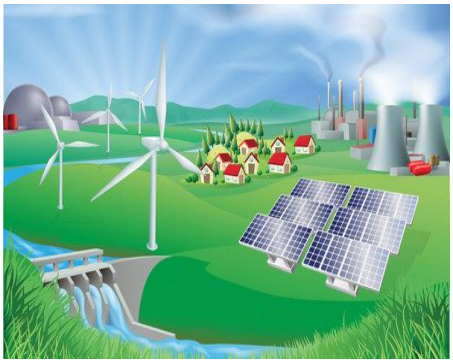
- Preserving and developing open spaces – Playgrounds, parks and recreational centers in order to enhance the quality of the citizens life, reduce the urban heat effects in areas and generally promote eco-balance.
- Giving an identity to the city – based on its main economic activity such as health, education, culture, furniture, local cuisine, arts and crafts, dairy, hosiery, textile, etc.
- Applying Smart solutions to Infrastructure and services in area-based development to make the better. For example, using fewer resources, proving cheaper services and making area less vulnerable to disasters.

3.3 Technological Options

Transportation

- **Technologies**: Multi modals integration applications and models, Electrification of motorized transportation Autonomous vehicles, On-demand Digitally enabled Transportation Design for biking and walking.
- **Objectives:** Low-cost mobility, reduced operating expenses to transportation providers, saves time, universal access, comfort or productivity, zero emissions, collisions, reduces noise pollution, Lifestyle bettered for undeserved, disabled and elderly.

Energy



- **Technologies**: Distributed renewable Co-generation District cooling and heating, low cost energy storage smart Grids, micro-grids, Energy efficient lighting Advanced HVAC systems.
- **Objectives:** Energy efficiency, low noise pollution, increased resilience against climate change and natural disasters, zero air pollution and water management and transportation.

Building and Housing

- **Technologies:**New construction technologies and designs life course design and optimization, Standards conductive to innovation, Sensing for real time space management, Adaptive space design and Financing codes.
- **Objectives:** Healthy living and working environments, thermal comfort, increased resilience, affordable housing, inexpensive innovation.

Urban Manufacturing

- **Technologies:**Small batch manufacturing, high tech, high value activities requiring human capital, design innovation parks and on-demand 3D printing.
- **Objectives:** Training and education, Urban space conversion and re-use close integration of living and work, new job creation.

Urban Farming

- **Technologies:** Urban agriculture and vertical farming
- **Objectives:** Low water use cleaner delivery fresher produce.

Water

- **Technologies:** Water efficiency via Smart Metering re-use in buildings and districts, integrated water systems design and management, local recycling.
- **Objectives:** Flood control, System increased resilience environment, agriculture, active ecosystem integration, Smart integration of water, sanitation.

3.4 Road Map and Safe Guards

- India's road to Smart Cities will use technology over the western models of building basic bricks and steel and push straight to create automated brick and steel, setting the precedent for future smart cities.
- The implementation of the Mission at the City level will be done by a Special Purpose Vehicle (SPV) created for the purpose. The SPV will release funds, implement, plan, manage, approve, operate, evaluate and monitor the Smart City development projects. Each Smart City will have a SPV which will be headed be a full time CEO and have Central Government, State Government and ULB on its Board.

- The States / ULBs shall ensure that, a dedicated and substantial revenue stream is made available to the SPV so as to make itself sustainable and could evolve its own credit worth for raising additional resources from the market and Government contribution for Smart City is used only to create infrastructure that has public benefit outcomes. The execution of projects may be done through public private partnership (PPP), subsidiaries, joint ventures, turkey contracts, etc suitably with revenue streams.

- The SPV will be a limited company incorporated under the Companies Act, 2013 at the city level, in which the State/UT and the ULB will be the promoters having 50-50 equity shareholdings. The private sector or financial institutions could be considered for taking equity stake in the SPV, provided the shareholding pattern of 50-50 of the State/UT and the ULB together have majority shareholding and control of the SPV.
- Funds provided by the Government of India in the Smart Cities Mission to the SPV will be in the form of tied grant and kept in a separate Grant Fund. These funds will be utilized only for the purposes for which the grants have been given and subject to the conditions laid down.
- The structure and functions of the SPV are given in Annexure 5 and the Articles of Association will contain such provisions. A model Article of Association is given in the toolkit.
- After selection of the cities in Stage 2 of the Challenge, the process of implementation will start with the setting up of the SPV. The SPV may appoint Project Management Consultants (PMC) for designing, developing, managing and implementing area-based projects. Model frameworks as developed may be used for smart City Projects.

3.5 Issues and Challenges

Having recognized that the cities are the engines of growth and drawing a million people every minute for rural areas, the Government has introduced the "Smart City Challenge", handling over the planned urbanization to the states. In the approach to the Smart Cities Mission, the objective is to promote cities that provide core infrastructure and offer quality of life to citizens, a clean and sustainable environment and application of 'smart' solutions. Those states that measure up to the guidelines and nominate cities could get funding of 100 crore Rs per year city for the next five years. The funding is a golden chance for states and their urban areas but the Smart Cities Mission still has its own challenges to face.

- **Financing Smart Cities:** The High Power Expert Committee (HPEC) on investment estimates in Urban Infrastructure has assessed a per capita investment cost (PCIC) of Rs 43.386 for a 20 year period. The total estimate of investment required for the Smart City comes to Rs 7 lakh crore over 20 years. This translates into an annual requirement of Rs 35,000 crore.
- **Financial sustainability of ULBs:** Most ULBs are not financially self-sustainable and tariff levels fixed by the ULBs for providing services often do not provide the cost of supplying the same. Even if additional investments are recovered in a phased manner, inadequate cost recovery will lead to continued financial loss.
- **Technical constraints of ULBs:** Most ULBs have limited technical capacity to ensure timely and cost effective implementation and subsequent operations and maintain owing to limited recruitment over a number of years along with the inability of the ULBs to attract the talent at market competitive compensation rates.
- **Dealing with a multivendor environment:** Another major challenge in the Indian Smart City space is that software infrastructure in cities contains components supplied by different vendors. Hence, the ability to handle complex combinations of Smart City solutions developed by multiple technology vendors becomes very significant.
- **Reliability of utility services:** For any Smart City in the world, the focus is on reliability of utility services, whether it is electricity, telephone, broadband services or water. Smart Cities should have universal access to electricity 24*7, which is not possible with the existing supply and distribution system. Cities need to shift towards

renewable sources and focus on green buildings and green transport to reduce the need for electricity.

- **Three-tier Governance:** Successful implementation of Smart City solutions needs effective horizontal and vertical coordination between various institutions providing various municipal amenities as well as effective coordination between Central Government, State Government and Local Government agencies on various issues related to financing and sharing of best practices and service delivery process.
- **Available of Master plan or City development plan:** Most of our cities don't have master plans or city development plan, which is the key to smart city planning and implementation and encapsulates all a city needs to improve and provide better opportunities to its citizens. Unfortunately 70-80% of Indian cities don't have one.

3.6 Smart Infrastructure – Intelligent Traffic Management

1. There is no definition, but one by Cambridge Centre for Smart Infrastructure and Construction covers the essence of Smart Infrastructure.In a world where Infrastructure is truly smart, sensing technologies are embedded in infrastructure and the equipment it interacts. These sensors are connected to a communication backbone which allows real-time data acquisition and analysis. The information gathered is analyzed, interpreted and delivered as reliable, who can make better-informed decisions about the structural health and maintenance of their assets.

Figure 17: Smart Infrastructure

2. In a sensing environment, infrastructure is able to respond in real time to users needs. Self awareness infrastructure assets direct their own maintenance, leading to condition based maintenance, reduces time and greater operational efficiency of the infrastructure overall.
3. Better information leads to an enhanced understanding of the behavior of infrastructure. The impact of this will lead to transformations in the approaches to design and construction and step changes in improved health and productivity, low carbon society and sustainable urban planning and management and greater efficiency in design and performance.

3.7 Cyber Security

- **Definition:** Cyber Security or information technology security are the techniques of protecting computers, networks, programs and date from unauthorized access or attacks that are aimed for exploitation.
- **Description:**Major areas covered in Cyber Security are:

1) **Application Security**
2) **Information Security**
3) **Disaster Recovery**
4) **Network Security**

- Application security measures that they are taken during the development life-cycle to protect applications from threats that can come through flaws in the application design, development, upgrade, maintenance or deployment. Some basic techniques used for this are input parameter validation, session management, parameter manipulation & exception management, auditing and logging and user/role authentication & authorization.
- Information security protects information from unauthorized access to avoid identity theft and to protect privacy. Major techniques used to cover this are Cryptography, Identification, authentication & authorization of user.
- Disaster recovery planning is a process that includes performing risk assessment, developing recovery strategies in case of a disaster, establishing priorities. Any business should have a concrete plan for disaster recovery to resume normal business operations as quickly as possible after a disaster.
- Network security includes activities to protect the reliability, integrity, usability and safety of the network. The main components of this are Anti-virus and anti-spyware, Virtual Private Networks(VPNs), to provide secure remote access, Firewall to block unauthorized access to your network, intrusion prevention system (IPS) to identify fast spreading threats.

3.8 Retrofitting – Redevelopment – Greenfield Development District Cooling

- Retrofitting refers to the addition of new technology or features to older systems, for example: (1) power plant retrofit, improving power plant efficiency / increasing output / reducing emissions. (2) Home energy retrofit, the improving of existing buildings with energy efficiency equipment. (3) Seismic retrofit, the process of strengthening older buildings in order to make them earthquake resistant.

- Redevelopment is any new construction on a site that has pre-existing uses. It represents a process of land development uses to revitalize the physical, economic and social fabric of urban space. Redevelopment projects can be small or large ranging from a single building to entire new neighborhoods or "new town in town" projects. Other terms sometimes used to describe redevelopment include urban renewal.
- Greenfield Development District Cooling is the cooling equivalent of District Heating. Working on similar principles to district heating, District Cooling delivers chilled water to buildings like factories and offices needing cooling. In cold seasons, the source for electricity to run compressors for cooling. Alternatively, District Cooling can be provided by a Heat Sharing Network which enables each building on the circuit to use the heat pump to reject heat to an ambient ground temperature circuit.

3.9 Strategic Options for Fast Development

- The strategic components of area-based development in the Smart Cities Mission are Retrofitting, Redevelopment, and Greenfield Development plus a Pan-city initiative in which Smart solutions are applied covering larger parts of the city. The three models i.e. Retrofitting, Redevelopment and Greenfield development are described earlier. So the remaining model is described below.
- Pan-city development does application of selected Smart Solutions to the existing city wide infrastructure. Application of Smart Solutions will involve the usage of technology, information and data to make infrastructure and services better.
- The Smart City proposal of each selected city is expected to either adopt a Retrofitting, Redevelopment or Greenfield Development model or a mix thereof and a Pan-city feature with Smart Solutions.

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

- Nearly one quarter population of the world's population i.e. from 1.6 billion population, face economic water shortage. They lack basic access to water. The shortage of water across the world has in fact given rise to speculations over water wars becoming a distinct possibility in the future. In India, the problem is compounded in giving the rising population and urbanization.

Figure 18: Water and Sanitation Challenges

<u>Water challenges in Urban India</u>

- For Urban India, the situation is critical. In 2015, about 377 million Indians lived in Urban areas and by 2030, the Urban population is expected to rise 590 million.
- Any comprehensive solution to address the water problem in urban India needs to take into account the specific challenges around water management and distribution.
- Distribution and water loss issues- Distribution challenges, such as water loss due to theft, leaky pipes and faulty meter readings, result in unequal and unregulated distribution of water. Factors such as difficult terrain and legal issues over buildings also affect water supply to many parts.
- Pressure on water sources- Rising demand on water means rising pressure on water sources, especially in cities. When distribution becomes challenging, the workaround is to tap ground water. According to a study by the Centre for Science and

Environment, 48% of urban water supply in India comes from ground water. Ground water exploitation for commercial and domestic use in most cities is leading to reduction in ground water level.

India's Urban Sanitation Challenges

- Over the period of past decade, the pace of Urbanization has picked up steadily. Currently, more than half of the world's population of 3.9 billion people, or nearly 54% live in towns, cities and mega-cities. This number is expected to grow to 2/3 by 2050. As Urbanization is a must for economic growth, the rate of people's migration to cities is now happening at a breakneck speed, in the process putting huge pressure on the ability of cities to provide adequate infrastructure to support the population.
- These severely compromised sanitary conditions are not only damaging the environment but also posing a real-time health risk to the people in the form of communicable diseases such as cholera and more.
- The BJP Government, under the dynamic leadership of Prime Minister Narendra Modi, has recognized the urgency to address the rapidly deteriorating issue of sanitation. The Swachh Bharat Abhiyan is an encouraging step in this direction.
- The Government must also make efforts for a uniform roll-out of its policies, especially on the sanitation front. The focus on Urban setting must not in the rural areas getting marginal attention. An unbalanced implementation services and facilities, which in turn does not help in achieving the objectives of the policies and also erodes the confidence of the people in the Government.
- The intention of the Government to bring about a sanitation revolution and effect the Indian society and can only succeed if the authorities strive and remove the stigma which is associated with sanitation related issues.

Role of Indigenous Technologies

- Addressing these challenges and improving access to clean water for all needs a combination of short-term and medium-term solutions. It also means involving the community and various stakeholders in implementing the solutions. This is the recommendations put forth by BASF.
- Also, alternative rain water harvesting methods such as harvesting rain water from concrete surfaces using porous concrete can be used to supplement roof-top rain water harvesting to help replenish ground water.
- E-Toilets are unmanned toilets which work on an indigenous technology and are placed on a cement or metal base. On the roof is a 225 liter capacity water tank connected to the three flushes. A display light outside shows whether the unit is occupied or unoccupied. There are different variants of e-toilets starting from the Rs.1 lakh school model to the Rs.4 lakh public model.
- A total of 2000 e-toilets have currently been installed in 20 states: Assam, Andhra Pradesh, Bihar, Jammu and Kashmir, Karnataka, Kerala, Tamil Nadu, Uttar Pradesh, Punjab, Maharashtra, Telangana, Tripura Uttarakhand, Himachal Pradesh, Delhi, Gujarat, Chhattisgarh and Haryana.

3.11 Initiatives in Village Development by Local Self-Government

- Gram Panchayats / Taluka Panchayats / Zilla Panchayats are gross root level institutions, basically these PRIs monitors and plans schemes is a well developed strong network.

- Capacity Development Programs are required on energy conservation for these PRIs.There is an immediate need to replace the street lights with efficient LED systems. There is a need to replace the old water pumps and motors with efficient systems.
- Town Panchayats and city corporations require regular energy audit supports. Technical support staff needs to be strengthened in each Urban Local Bodies and a dedicated Energy Conservation Unit need to place at least in bigger urban local bodies.
- ULBs are more efficient to organize the massive Energy Conservation Campaigns. They can sell or promote energy efficient appliances to urban and rural households. They can take up plantation works in the vacant lands. They can constitute energy watch committees.

3.12 Smart Initiatives by District Municipal Corporation

- Managing solid waste is a hard task for every Urban Local Body (ULB) in India. The irony is such that out of 400 municipal corporations and councils in India, only a handful of ULBs are managing their solid waste, while reinventing some of the old garbage disposal methods with a touch of new technologies.
- The 300 TPD plant by Noble Exchange Environment Solutions Pvt. Ltd that coverts food waste to Bio-CNG, is a 300 tpb vermin-compos project by Ajinkya Biofert and Disha. It uses the Rochem Separation System that processes mixed water to produce 300 TPD of refuse derived fuel. This DBOT project by NEX, which converts food waste into valuable bio fuel and has already started producing 45 TPD of bio-CNG and 150 tonnes of organic manure, based on the anaerobic digestion system. At maximum capacity, it can process 300 tonnes of waste, making it the largest biogas plant in India.

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

- Integrated Ruler Development Program
- National Service Scheme
- Pradhan Mantri Adarsh Gram Yojana
- Pradhan Mantri Jan Dhan Yojana
- Pradhan Mantri Jivan Jyoti Bima Yojana
- Pradhan Mantri Mudra Loan Yojana
- Jawaharlal Nehru National Urban Renewable Mission, etc.

3.14 How to implement other Countries Smart Villages projects in Indian Village context (Regarding Environment, Employment)

- High tech Smart villages under construction in Malaysia are lifting incomes for scores of rural families while promoting environmental sustainability.
- Using a rural cottage industry business model we shall create a job-creating, eco-friendly enterprise manufacturing solar panels to dry an extensive variety agricultural and marine products.

4. ABOUT CHOSAR VILAGE

4.1 Introduction

4.1.1 Introduction about CHOSAR VILLAGE Village details

- **Vishwakarma Yojana** is a initiative towards Rurbanization by the Government of Gujarat, which was allotted as a pilot project to GTU.
- In that yojana the students meet the State holders in a village and survey the existing facilities like what facilities already there and which one is needed.
- For me it is not about to convert a rural village to urban area. Its about to convert rural village to ideal village.
- Where all kind of need and requirement means all facilities is there what one person need. Facilities like physical infrastructure (water, drainage, road, electricity, storm water networks, solid waste management, etc). Social infrastructure (education, health, sanitation). Socio-cultural facilities (community hall, library, recreation facilities and others). Sustainable infrastructures (rain water harvesting, biogas plant, eco toilet, solar street lights and other).
- After the survey of my allocated village Chosar, we found out that there is already few facilities but not all, and some infrastructures needs modification. Like there is no bank & post-office which is needed. The community hall is open to sky, there is no any infrastructure so it can be made. The Government primary health care centre is also not there.
- To enhance the beauty of village the garden can be built because the land is already available only need to modified that place can give pleasant and lake & temple is also there.
- There is no facility for solid waste management, we found out that the village is unclean and unhygienic so the garbage management should be done properly for that we can provide the facility.
- As we know that the wealth of villages depend on agriculture so the irrigation method and water become necessity for them after the survey the result came out that they don't get the sufficient amount of water through canal. So they harvest the rain water they made a under drainage by that they collect all the rain water into lake and there is two lake in that village.
- We want to modify that drainage by using our civil engineering knowledge and went to make good drainage structure.

4.1.2 Justification / need of the study

- To improve the quality of live hood of villagers.
- To improve the facilities in village.
- To improve the educational facilities.
- To develop the infrastructure.
- To improve the irrigation system.
- To collect all the data regarding the village.
- To know which Government scheme is there and which one is needed there.

4.1.3 Study Area (Broadly define)

- Chosar village is in Daskroi Taluka of Ahmedabad District of Gujarat state.

- With approximately population = 2328
- Address: Chosar village, Daskroi Taluka, Ahmedabad, Gujarat.
- Area of village = 577.1 hectares
- Households = 456
- Nearest town with distance = Ahmedabad

4.1.4 Objective of the study

- Promote integrated development of rural areas with provision of quality housing employment opportunities, better connectivity supporting physical and social infrastructure.
- Migration from rural to urban area due to lack of basic requirement and insufficient economic activities in rural areas.
- Providing renewable sources like solar street light which is eco-friendly.
- Refurbishing of village wells, lakes, water tanks, construction of rain water harvesting structure for sustainable development.
- Development of socio-cultural facilities like public library, community hall, recreational activities and repairing of existing amenities.
- Repair and maintenance of existing public buildings like public library, school building, public toilet block, gram panchayat, etc.

4.1.5 Scope of the study

- It is very essential to develop village because India's development also depends upon the progress of the village because rural population in India was reported at 65.53% in 2019 according to the world bank collection of development indicators. That number is huge without developing village we can't became developed country from developing country.
- India is agricultural country and poverty can be removed through improvement in agricultural sector by giving a good infrastructure education related irrigation, market etc.
- The country and its society can be reconstructed through rural development.

4.1.6 Methodology Frame Work for development of our village

- We observed all presence facilities and their condition.
- We visited Ideal village and performed survey of that village and fill up the techno-economic survey form also for getting idea from that village.
- We visited our allocated Chosar village and done the survey and also techno-economic survey also.
- We observed that the condition of bus stand is not good.
- There is not any kind of bank, post office, primary health care, community hall, etc.
- There is no proper management of solid waste.

4.1.7 Available Methodology for development of related to Civil / Electrical

- In methodology, first we have to survey and analyze all the facility, requirement and any infrastructure need any kind of modification or repair and maintenance.
- After survey we get sufficient knowledge about that village so we can perform ahead work.

- If any new infrastructure needed to make so for that we have to first know the available land then make a design plan then elevation then section and atlast structure analysis.
- After completing design make quantity sheet for estimation than valuation.

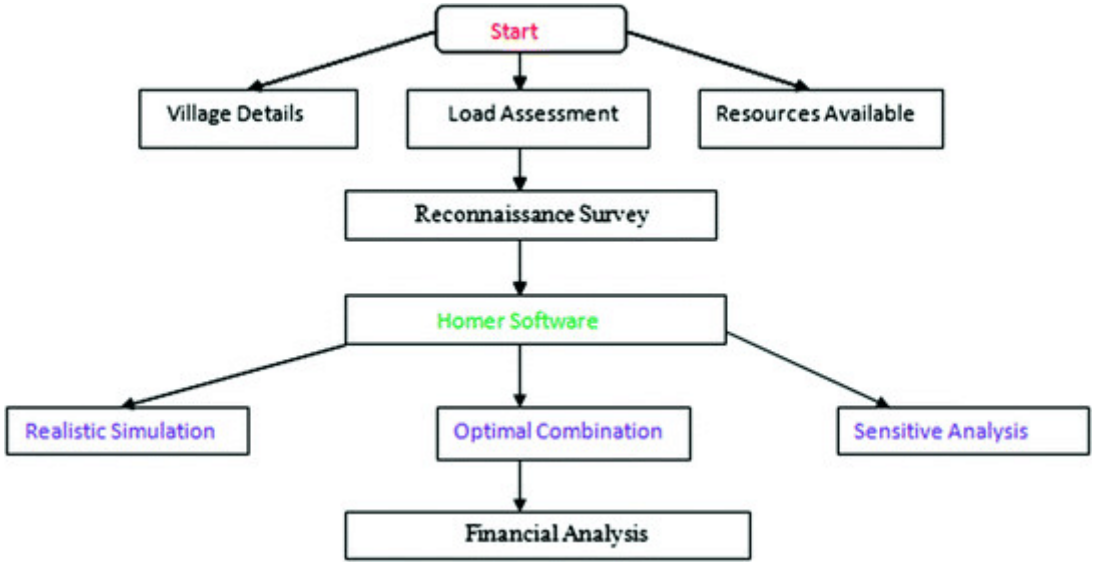


Figure 19: Flow chart of Methodology

4.2 CHOSAR VILLAGE Study Area Profile

4.2.1 Study Area Location with brief History land use details

Chosar village location

Gram Panchayat : Chosar

Block / Tehsil : Daskroi

District : Ahmedabad

State : Gujarat

Pin code : 382435

Area : 577.1 hectare

Population : 2328

Households : 456

Nearest town : Ahmedabad (16km)

Village code : 511674

History:

- According to census 2011 information the location code or village code of chosar is 511674.
- Chosar is located Daskroi Tehsil of Ahmedabad District in Gujarat, India. It is situated 16 km away from Ahmedabad.
- As per 2009 statement, Chosar village is also a Gram Panchayat.
- The total geographical area of village is 577.1 hectares. Chosar has a total population of 2328 peopless.
- There are about 456 houses in Chosar village. Ahmedabad is nearest town to Chosar which is 16 km away.

4.2.2 Base Location map, Land map, Gram Tal map

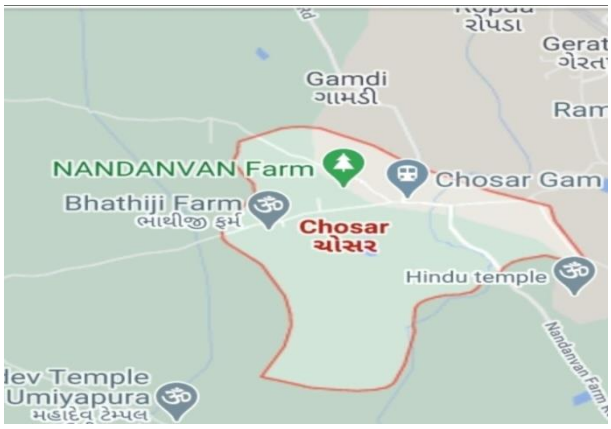


Figure 20: Base map of Chosar Village

4.2.3 Physical & demographical Growth

*** Physical Growth:**

Sr. No	Description	Information/Detail
1	Area of village	577.1 hectare
2	Forest area	30%
3	Water bodies	Well, borewell, canal
4	Nearest town with distance	Ahmedabad (16km)

Table 3: Physical Growth

***Demographical growth:**

Sr. No	Census	Population	Male	Female	Total Households
1	2001	-	-	-	-
2	2011	2328	1217	1111	456

Table 4: Demographical Growth

4.2.4 Economic generation profile / Banks

- There are no banks in the Chosar Village.
- They mainly depend on agriculture.

4.2.5 Actual Problem faced by Villagers and Smart solution

- The connectivity of our village is not that good, the only option is AMTS and their own vehicle.
- There is no management of solid waste so for that we can make bio-gas plant.
- They mainly depend on agriculture and the canal water is very irregular so for that they have two lake in village so rain water harvesting is good solution for that.

4.2.6 Social scenario – Preservation of Traditions, Festivals, Cuisine

- Due to corona virus pandemic we cannot visit the properly and can't ask the questions to the villagers about our project.

4.2.7 Migration Reasons / Trends

- Due to lack of industrialization they migrate other place for their livehood but its our point of view we should have to provide more technologies in agriculture education them about crops and harvesting, give knowledge about Government schemes and marketing so they don't have to move to urban areas for their livehood.
- There is no need to bring everywhere industry, village have their own natural beauty, peaceful environment need not to spoil that village environment and natural beauty.

4.3 Data Collection CHOSAR VILLAGEPhotograph /graphs / Charts / Table

4.3.1 Describe Methods for Data collection

- Base line survey is a benchmark for any intervention during and post implementation of any development programmer. A detailed baseline survey was undertaken which involved household census survey. Bio-physical survey and village level data collection from Gram Panchayat.
- This gave in the details of the demographic profile of the village, the literacy percentage, SC/ST population, number of BPL household, net consumption rate and cattle population in the village. Bio-physical survey was undertaken to identify various natural resources available in the village.
- It included the soil typology, well in the area, cropping pattern, fertilizer used, crop taken in the field and various sources of irrigation in the field.

4.3.2 Primary details of survey

- Primary survey is the first and basic survey which ic conducted by us in our allotted village Chosar.

Name of the Village	Chosar
Name of Taluka	Daskroi
Name of District	Ahmedabad
Pin code	382435
Name of Sarpanch	Pravin Raval
Nearest town	Ahmedabad
Existing building	Gram Panchayat, school, anganwadi, public toilet, etc

Need to build	Bank, post office, community hall, garden, modification of school, etc.

Table 5: Introduction of Village

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

- Population density of our village is 403 person per sq. km.

4.3.4 No. of Human Being in One House

- As per the population and household ratio there are 5 person per house.

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

- The Chosar village is near to Ahmedabad, so there is not any kind of problem related to availability of material. They can find all types of material which they want.
- The construction materials such as cement, sand, aggregate, steel, wood, etc are locally available.
- The material like marble, vitrified tiles, wall paper, etc may be out sourced.

4.3.6 Geographical Details

Sr. No	Description	Information
1	Area of village	577.1 hectare
2	Forest area	30%
3	Water bodies	Lakes, bore well, well
4	Nearest town with distance	Ahmedabad (16 km)

Table 6: Geographical Details

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

- The village is home to 2328 people, among them 1217 (52%) are male and 1111 (48%) are female.
- 86% of the whole population are from general caste, 13% are from schedule caste and 0% are scheduled tribes.
- Child (aged under 6 years) population of Chosar village is 3%, among them 53% are boys and 47% are girls.
- There are 456 households in the village and an average 5 persons live in every family.

4.3.8 Occupational Detail – Occupational wise Details / Majority business

* Name of the three major Occupation group in village:

- Agriculture
- Business
- Household works

4.3.9 Agricultural Details / Organic Farming / Fishery

- The Chosar village farmers mainly depend on agriculture. They irrigate the crop like rice, wheat, bajara, etc.
- The Chosar village is land lock place so they don't do fishing farming.

Figure 21: Farming techniques

4.3.10 Physical Infrastructure Facilities – Manufacturing HUB / Ware Houses

- During the visit of Chosar village we find out that there is already a warehouse for storing goods that will be sold or distributed later.

4.3.11 Tourism development available in the village for attracting the tourist

- There is not any kind of historical place and the Chosar village is also land lock place so not even any of natural thing like river, waterfall, dams, etc are available. So this is not any tourist place.

4.4 Infrastructure Details (with Exiting Village Photograph)

4.4.1 Drinking Water / Water Management Facilities

- Chosar village has tap water facilities in each and every house.
- There are the well in Chosar village and also tube / bore well are available.
- In that village there are two water tanks that supplies water to the entire village.

Figure 22: Facilities for water requirements

4.4.2 Drainage Network / Sanitation Facilities

- The Chosar village has drainage network but it definitely requires modification because we found out that its very unhygienic and unclean so it creates several problems like foul smelling, water logging, nuisance of flies, mosquitoes, etc especially during the monsoon season.
- Because there is no proper sanitation facility in our village so we will design one in future for the sake of the villagers.

Figure 23: Sanitation Facilities

4.4.3 Transportation and Road Network

- The road which connects the village to main road is really in good condition.
- The internal road is made of RCC whose condition is also quite good, but it does not cover the entire village area there are few internal roads which are still earthen roads.
- So we are planning in our future design that we will make all the roads of RCC.
- The bus stop is near the entrance of the village.
- On that road AMTS buses only travel, we didn't find out the private transportation there they use their own vehicle.**Figure 24: Internal Streets**

4.4.4 Housing Conditions

- Both kutchha and pucca houses are there but the approx ratio is 10:90 (kutchha:pucca).
- The condition of all the houses is good. There are good looking houses as well as expecting few pucca houses.
- So only the kutchha houses condition needed to be improved.

Figure 25: Conditions of Houses

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

- There is no Government PHC and library, which are needed to be built.
- The Government school is provided but needs to be modified.
- Community Hall is open to sky so infrastructure needs to be built on it.

Figure 26: Community HallFigure 27: Bus Stand

4.4.6 Existing Condition of Public Building and Maintenance of existing public Infrastructure

- The Sarpanch office's condition is good.
- Anganwadi and school needs to be modified.
- Overhead water tank is also in good condition.
- The street light needs maintenance, school, road of village also needs maintenance.

4.4.7 Technology Mobile / Wi-Fi / Internet Usage Details

- In the era of technology and internet, in that village most of the people use phones. The young generation of the village uses the Smart phone and also internet.
- There are no facilities of Wi-Fi in the village.

Figure 28: Cables

4.4.8 Sports Activity as Gram Panchayat

- In Chosar village they don't have any sports activity.

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

- In Chosar village there are no socio-cultural facilities available.
- There are no public gardens, recreational center, cinema and public library.

4.4.10 Other Facilities (e.g. Footpath development, Smart toilets, Coin operated entry, Self-cleansing waterless, Public buildings)

- They made RCC footpath.
- There is solar street light.
- The electricity is available for 24 hours.
- There is temple and the around land is empty so we can make the garden there.

4.4.11 Any other details

- The electricity is available for 24 hours. So there is no problem of electricity in the village.

4.6 Existing Institution like – Village Administration – Detail Profile

4.6.1 Bachat Mandali

- Contribution to a provident fund which has been constituted under section 72 of Gujarat Co-operative Society Act,1961 and administration under section 71 said act would be treated as a fund contemplated in definition of section 2(38) and provisioned of section 36(1),(4) and 40A(9) would apply such fund.
- Contribution is eligible for deduction (AY 2010-11), but it's not available in Chosar village.

4.6.2 Dudh Mandali

- Milk, fresh milk and fresh milk curd all the dairy products which are sale in wholesale by the Dudh Mandali.

4.6.3 Mahila Forum

- It is not there in our village.

4.6.4 Plantation for the Air Pollution

- Trees are able to clean the air and absorb harmful airborne particles and gaseous pollutants.
- Though the process of photosynthesis, trees are able to absorb carbon dioxide from our atmosphere and reduce the greenhouse effect, creating a less polluted, more sustainable world for our future generation.
- Different plant species respond differently to pollution while some plants can tolerate fairly high levels of pollution (suspended particulate matter, dust and gases) other are sensitive. The response of plants to air pollution depends upon the type of pollutant present, its concentration and the length if exposure to it.
- Researches in India are zeroing in air pollution gobbling plant species that could be used in green belt development along road sides, thermal power plants and for creating urban forests to sponge off foul air.
- Certain plants form a surface capable of absorbing particular matter, black carbon and dust thereby acting as a sink for pollutions.
- Example: Deciduous trees such as Indian redwood (caesalpinica sappan), shisham (dalbergia sissoo) and shrish (albizia lebbeck) were found to be most tolerant during

the present study, followed by the semi-deciduous trees such as neem (azadirachta indica) gulmohar and guava.

4.6.5 Rain Water Harvesting – Waste Water Recycling

- In our allocated village Chosar, they mainly depend on agriculture and for the irrigation purpose they need water.
- They get the water through canal but the supply of water in the canal is very irregular and insufficient for them so they made a drainage which collect the rain water and that drainage is connected to the lake.
- In that village they have two lakes, so when the canal water is unavailable they use that lake water for irrigation purpose.
- So in that we can modify the drainage system in proper way through our civil engineering knowledge.

4.6.6 Agricultural Development

- Agricultural development is defined as the process that creates the conditions for the fulfillment of agricultural potential. Those conditions include the accumulation of knowledge and availability of technology as well as allocation of inputs and outputs.
- India is principally an agricultural country. Agriculture with its allied sector is unquestionably the largest livehood provider in India, most of the industries also depend upon the sector for their raw materials.
- Steady investments in technology development, irrigation infrastructure emphasis on modern agricultural credits and subsidies are the major factors contributed to agricultural growth.

4.6.7 Any Other

- The Government has taken several steps to revitalize agriculture sector and improve the conditions of farming community on sustainable basis by increasing investment, improving farm practices, rural infrastructure, delivery of credit, technology and other inputs.
- The Government has allowed 100% FDI under automatic route in storage and warehousing including cold storages. 100% FDI is also permitted for development of seeds.
- The Government has launched an initiative to spend US $65.1 million to promote 60,000 pluses villages in rain fed areas for increasing crop productivity and strengthening market linkages.

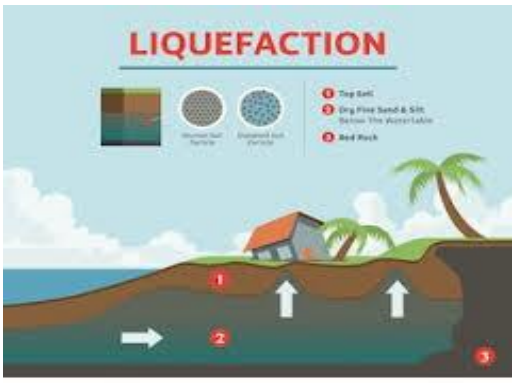
5. TECHNICAL OPTIONS WITH CASE STUDIES

5.1 Concept (Civil)

5.1.1 Advance Sustainable construction techniques / Practices and Quantity Surveying

- The Advance Sustainable construction techniques are like Public electric transport, electric trucks, LED light efficiency, plastic recycling, etc.
- Usually, these techniques include efficient use of energy specifically renewable energy, such as solar energy, water other resource, pollution and waste reduction measures, enabling of reuse and recycling, good environmental air quality indoor, use of non-toxic and sustainable materials, the environment friendly design, etc.
- The three principles of sustainability are solar energy, biodiversity and nutrient cycling.
- There are many ways like changing all of light bulbs to LED, get an energy audit, switch to reusable water bottles, installing a low-flow showerhead or a shower timer, etc to be more advanced sustainable.
- In many developed countries “appropriate and sustainable technology” (AST) is used, which is functional and relatively cheap and is durable and employs renewable resources.

5.1.2 Soil Liquefaction

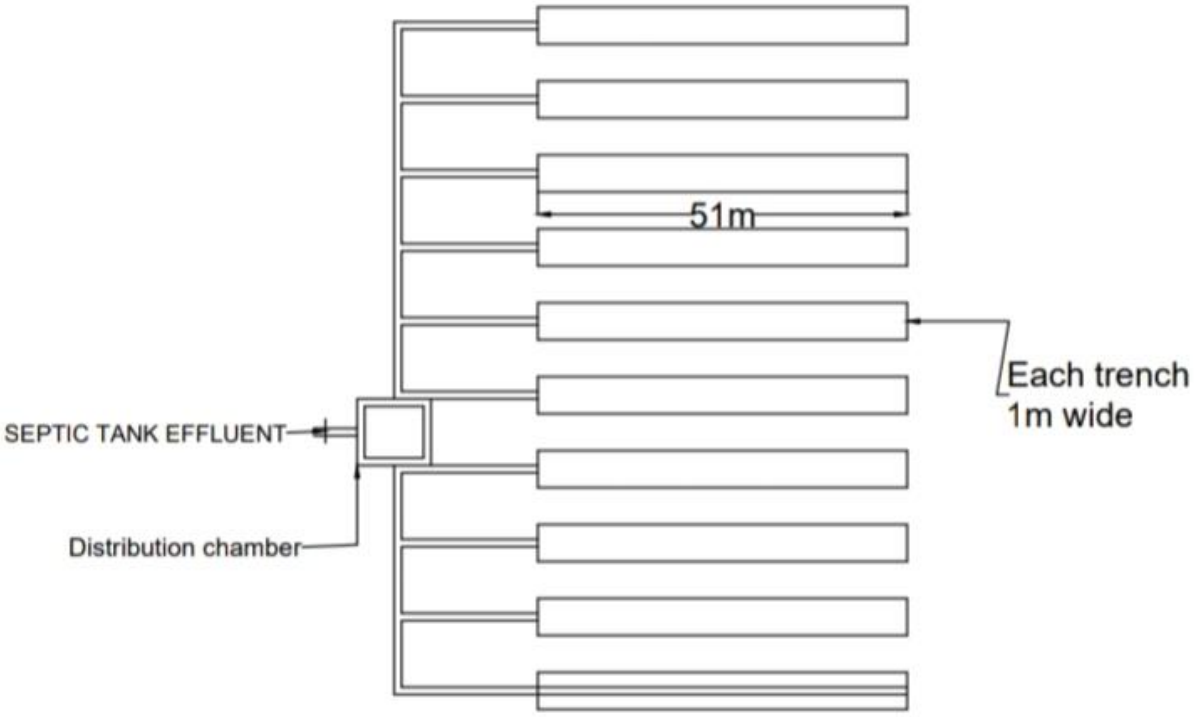


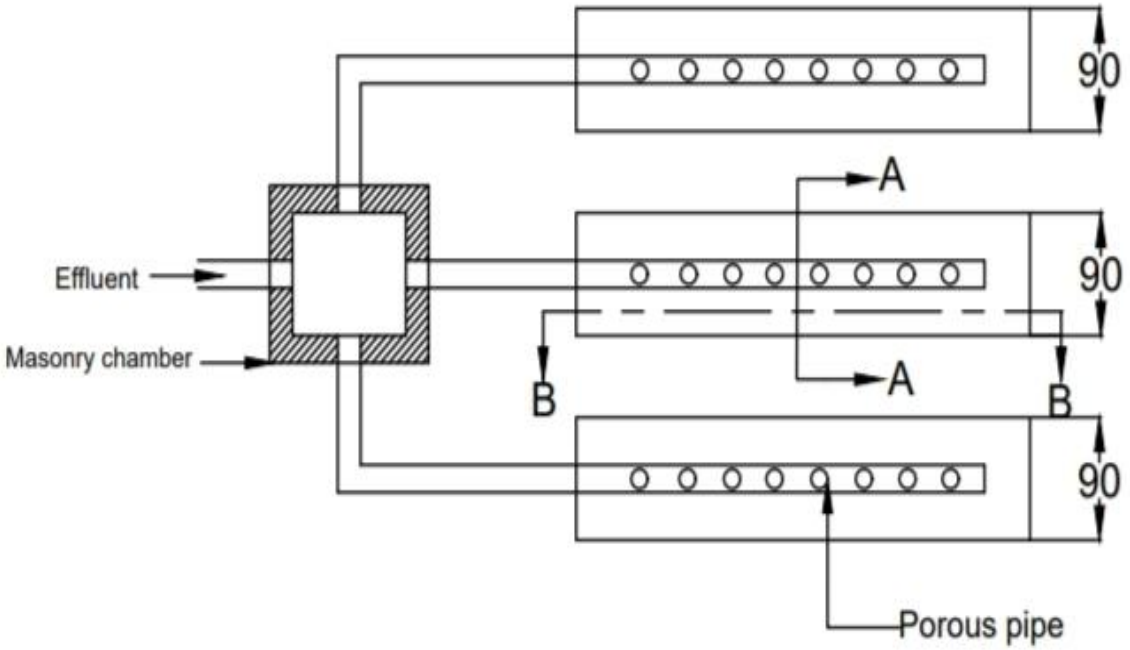
- Soil liquefaction process occurs when a saturated or partially saturated soil substantially loses strength and stiffness in response to an applied stress such as shaking during an earthquake or other sudden change in stress condition in which material that is ordinarily a solid behaves like a liquid.
- 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.
- Our village Chosar is free from soil liquefaction. The soil of our village is very good and is in stable condition.

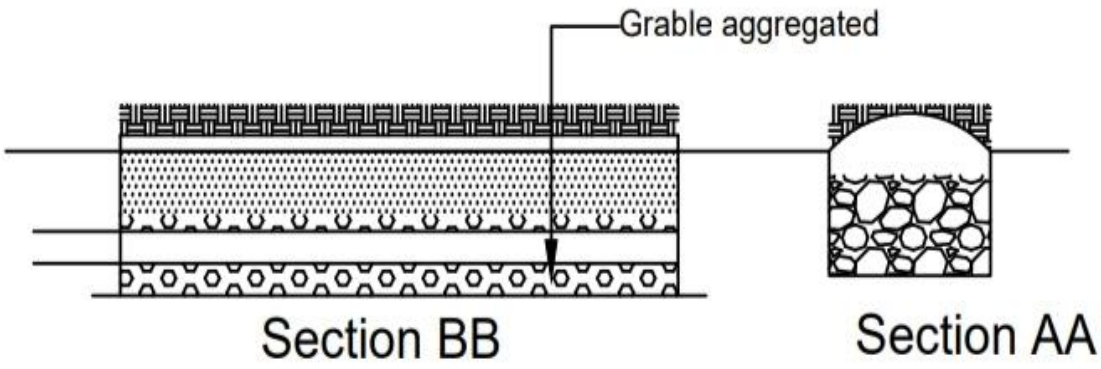
5.1.3 Sustainable Sanitation

- There are adequate facilities of public toilets in our village.
- For waste management, there is a facility of a van which collects the waste from door to door.

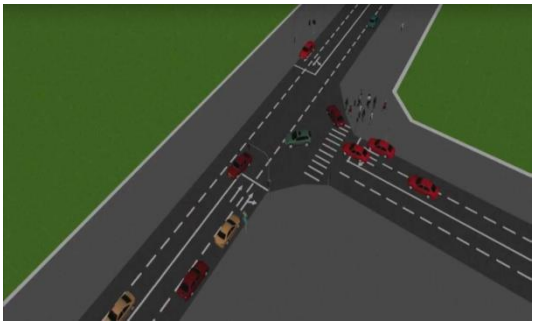
■ **Design of Sustainable Sanitation:**







5.1.4 Transport Infrastructure



- There is no proper requirement of any kind of transportation to reach the village.
- There is only one state bus which travels to the village or the person has to take his/her own vehicle to reach the village.

5.1.5 Vertical Farming

- Vertical Farming is the practice of growing crops in vertically stacked layers. It often incorporates controlled environment agriculture, which aims to optimize plant growth and soilless farming techniques such as hydroponics, aquaponics and aeroponics.
- In our allocated village there is no vertical farming done. But we hope that if the villagers get proper knowledge about it, they can do this type of farming in the village.

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

- Generally corrosion occurs in rainy season. When water remains on any metal surface for longer time, the atoms of the surface gets oxidized damaging the surface.

Prevention

- The simple way to prevent corrosion is to use metal in our construction. Another way is to apply a paint coating which is preventing corrosion or applying oil on the

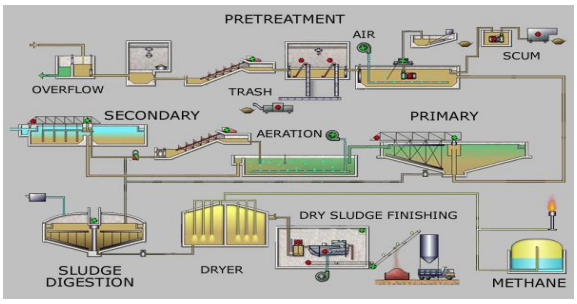
surface which is corroded.

Repair Measures of RCC structures

- For repairing a RCC structure we must first repair the full extent of damage and ensure that the structure is protected from further damage. The repair can be done on two structures the one with corrosion deteriorated concrete and non-corrosion deteriorated concrete, i.e. accidental damage.
- Methods for repairing:
  1) Recasting with new concrete
  2) Patching with cement repair mortars
  3) Rebuilding with free flowing grouts and fluid micro-concretes

5.1.7 Sewage Treatment Plant

- For sewage, an underground drainage facility is provided which supplies the sewage directly to the sewage treatment plant.



- Sewage treatment (or domestic wastewater treatment, municipal wastewater treatment) is a type of wastewater treatment which aims to remove contaminants from sewage. Sewage contains wastewater from households and businesses and possibly pre-treated 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. The term "sewage treatment plant" is often used interchangeably with the term "wastewater treatment plant".
- For most cities, the sewer system will also carry a proportion of industrial effluent to the sewage treatment plant that has usually received pre-treatment at the factories to reduce the pollutant load. If the sewer system is a combined sewer, then it will also carry urban runoff (stormwater) to the sewage treatment plant. Sewage is conveyed in sewerage which comprises the drains, pipework and pumps to convey the sewage to the treatment works inlet. The treatment of municipal wastewater is part of the field of sanitation. Sanitation also includes the management of human waste and solid waste as well as storm water (drainage) management.

6. SWATCHH BHARAT ABHIYAN (CLEAN INDIA)

6.1 Swatchha needed in Chosar village – Existing Situation with photograph

- The strategy is to move toward a Swatch Bharat by making it a massive mass movement that seeks to engage everyone in the task of cleaning homes, street, work places, village, cities and surrounding locality.
- Our allocated village's existing situation is not that good. The drainage line is open due to poor maintenance so that make the whole village unhygienic and unclean. There is also not any kind of solid waste management and bio-gas plant.
- So due to not proper waste management that village is somehow look unclean.
- When we visited Chosar village and that time we also talked about solid waste management to Sarpanch so he said that there is not any kind of facilities for solid waste management so they use nearby empty land to put garbage.
- Then the Government vehicle come and takes that waste. But it takes lot of time during that so all the waste is there which is also make that village unhygienic, unclean, bas smell specially during the monsoon season.
- So here we didn't find out that much progress related to Swatchh Bharat Abhiyan (Clean India) have been done.

6.2 Guidelines – Implementation in Chosar village with Photograph

- The main objectives of the SBM(G) are: Bring about an improvement in the general quality of life in the rural areas, by promoting cleanliness, hygiene and eliminating open defecation; Accelerate sanitation coverage in rural areas to achieve the vision of Swachh Bharat by 2nd October 2019; Motivate Communities and Panchayati Raj Institutions to adopt sustainable sanitation practices and facilities through awareness creation and health education; Encourage cost effective and appropriate technologies for ecologically safe and sustainable sanitation; and Develop where required,

Community managed sanitation systems focusing on scientific Solid & Liquid Waste Management systems for overall cleanliness in the rural areas.

- Household toilets, including conversion of insanitary latrines into pour-flush latrines , Community toilets , Public toilets , Solid waste management , IEC & Public Awareness , Capacity building and Administrative & Office Expenses (A&OE).
- The Guidelines should be like: The villagers should have to keep their organic and inorganic in different box.
- The organic waste they can use for making bio-fuel after making a bio-gas plant.
- For inorganic waste the Government or Sarpanch should have to provide door to door garbage collection trolly so the villagers don't have to throw garbage on empty land in the village.
- The villagers should have to keep their surrounding place clean and hygienic, through cleaning the street and collecting the waste from streets.
- The Sarpanch should have to pay attention on repair and maintenance of road, drainage and sewer lines, because in few place the drainage is open which lead to water logging, foul smelling, etc due to blockage.


6.3 Activities Done by Students for Chosar village with Photograph

- Due to COVID-19 pandemic situation we are not been able to perform any activity in that village, because of our and villagers health concerns.
- In future when this situation is under control we will perform all the activities which are required.

7. VILLAGE CONDITION DUE TO COVID-19

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

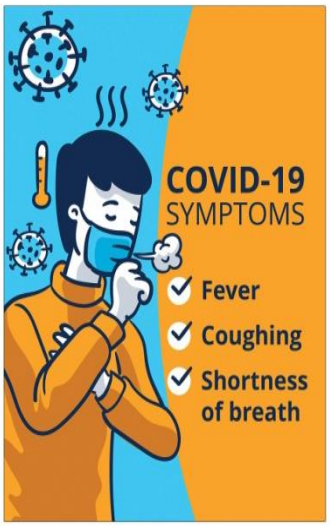
- In our village there are total 3 cases of corona virus. In which 2 recovered and 1 died. The person who died was very old and was affected from other diseases also.
- During that time, the near by health centre which is located in Jetalpur they shifted in that hospital and provided all the facilities which are required.
- When the first case happened the Sarpanch took various steps regarding the situation.
- Due to the corona virus pandemic, various steps are taken in the village related to the condition.
- The village was fully sanitized so the situation is under control and there is not any kind of active case.
- They ensure that they maintain lock down conditions and are not violated and norms of social distancing are scrupulously followed to stop the spread of the disease.
- Rations are distributed by the Government in the village and the villagers are adopting the steps which are taken by the Government and Sarpanch.
- The villagers who come in contact with the covid patients they also undergo the covid test. And they assure it that all the villagers are free from covid.
- The Sarpanch took various steps like giving information regarding wearing masks, applying sanitizer, follow social distancing, etc.
- The Government has also taken various steps like putting holding regarding to covid 19.
- The Government has put the holdings regarding the following symptoms. The symptoms are Fever or chills , Cough , Shortness of breath or difficulty breathing , Fatigue , Muscle or body aches , Headache , New loss of taste or smell , Sore throat , Congestion or runny nose , Nausea or vomiting , Diarrhea.
- If any person fells that he/she has any kind of these symptoms, they should immediately go for a checkup in near by hospital.
- The Doctor’s for nearby village Jetalpur also visit the village and collect the whole information regarding the situation. And if there is requirement of covid test so they collect sample of the affected.

7.2 Activities done by students for Chosar village with photograph

- Due to COVID-19 pandemic, we were not been able to go to the village, so it was the major step taken by us. And also due to this we cannot take any major step in our village.
- But after the situation is under control we will make sure that we do all the activities which make our village a Smart village.

7.3 Any other steps taken by the students / villagers

- Due to these pandemic we cannot take any step in our allocated village. We only design the infrastructures which are not available in the village.
- As the Government and Sarpanch has told about various rules and regulation regarding covid, the villagers are strictly following all the norms like wearing masks, appling sanitizer, social distancing, etc.
- There is various guidelines provided by Government in that we should have to avoid to engage with people and we belong to Ahmedabad and the condition of Ahmedabad is very worst. So we do not want to step out, because if we go out then it will create trouble not only for us but as well as for villagers.
- So thereby we are following Government guidelines that's why we are not taking any physical step.



8.SUSTAINABLE DESIGN PLANNING PROPOSAL (PROTOTYPE DESIGN) PART-1

8.1 Design Proposals

Amenities	Proposal Designed by our group
Sustainable Infrastructure	Garden
Physical Infrastructure	Bank
Social Infrastructure	Library
Socio-economic Infrastructure	PHC
Smart Village Infrastructure	Community Hall
Heritage Infrastructure	Post Office

8.1.1 Sustainable Design (Civil)

Design 1: Garden in Chosar Village

- Scenario: There are two lakes in our village, but there is not any garden. There is large area beside the lake, so we decided to make a garden there.
- Existing condition- The area is already available, only infrastructure is needed.

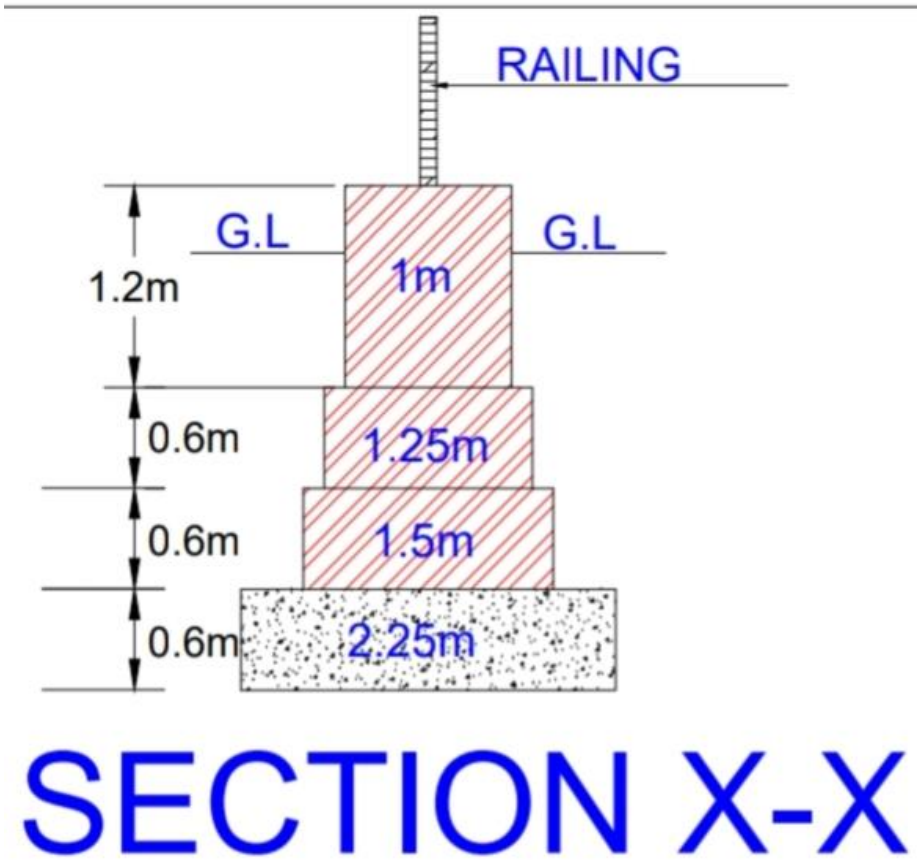


Figure 29: Foundation of Garden

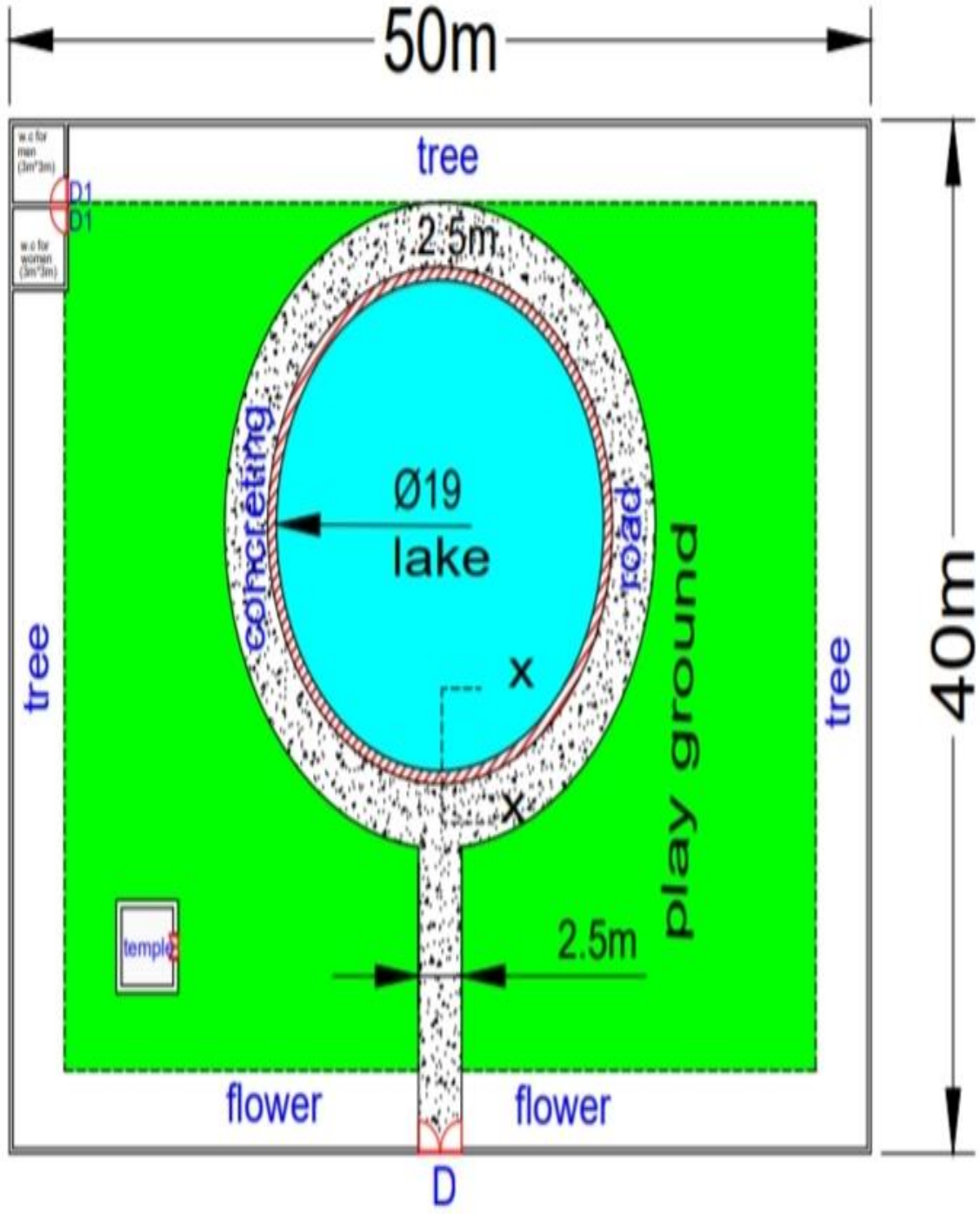


Figure 30: Garden Layout Plan

Type	Dimensions
D	2.5x1.5
D_1	1x2.10

Table 7: Measurement Sheet

Sr No.	Item Description	No.	Length (m)	Breath (m)	Height (m)	Quantity
1.	**Earthwork in excavation foundation in ordinary soil upto 1.5m depth** C.L=192-(4x1/2x0.4) =191.2	1	191.2	0.4	0.9	68.832m^3
2.	**Foundation Concrete C.C (1:4:8)** For lake C.L= 62.8	1	62.8	2.25	0.6	84.78m^3
3.	**2nd class brick masonry for CM (1:6) for foundation and plinth** For lake wall 1st footing C.L=62.8	1	62.8	1.5	0.6	56.52
	2nd footing, C.L= 62.8	1	62.8	1.25	0.6	47.1
	3rd footing, C.L= 62.8	1	62.8	1.0	1.20	75.36
	For boundary C.L= 191.2	1	191.2	0.4	0.9	68.832
						Total=247.812m^3
4.	**Damp proof course DPC (1:1$^{1/2}$:3) 2.5cm thick**					
	C.L=62.8	1	62.8	1.0	-	62.8
5.	**1st class brick masonry in CM (1:6) for superstructure** For boundary wall C.L=192-(3x1/2x0.2)=191.7	1	191.7	0.2	2	76.68
	For lake wall C.L=62.8	1	62.8	0.75	1	47.1
						Total=121.98m^3
	Deduction D D_1	 1 2	 2.5 1	 0.2 0.2	 2.0 2.0	 1 0.8
						=1.8
						Total=121.98m^3
6.	**C.C (1:2:4) for RCC, slab, beam, lintel, chajjas, etc include formwork exclude steel reinforcement** W.C. slab	1	3.2	6.4	0.1	2.048m^3

7.	**Steel reinforcement work include bending, binding, placing in position** C.L=1% volume of concrete = 1/100x2.048x78.54x100 =160.849 kg					160.849kg
8.	**Woodwork for doors** D_1	2	1	-	2.0	$4m^2$
9.	**12mm thick cement plastering in CM (1:4)** For boundary wall Internal External	1x2 1x2 1x2 1x2	49.6 39.6 50 40	- - - -	2 2 2 2	198.4 158.4 200 160
	On top	1	191.7	0.2	-	38.34
	Plaster in W.C Ceiling plaster	2x4 1x2	3 3	- 3	2 -	48 18
	Plaster for lake wall 1st footing (H) (V) 2nd footing (H) (V) 3rd footing (H) (V)	 1 1 1 1 1 1	 62.8 62.8 62.8 62.8 62.8 62.8	 - 0.125 - 0.125 - 1	 0.6 - 0.6 - 1.20 -	 37.68 7.85 37.68 7.85 75.36 62.8
						$=984.36m^2$
	Deduction D D_1	 1 2	 2.5 1	 - -	 2 2	 5 4
						$Total=975.36m^2$
10.	**Surface Concreting** A=101.265 V=101.265x0.2 =20.253					$20.253m^3$
11.	**5cm thick marble mosaic tiled flooring** Floor Area	2	3	3	-	$18m^2$
12.	**BBLC (1:2:4) for floor base-10cm thick** Floor area	2	3	3	-	$18m^2$
13.	**Sand / Murrum filling in plinth** Floor area	2	3	3	0.45	$8.1m^3$
14.	**Skirting of mosaic tiled**					

	W.C	2X4	3	-	-	24Rm
15.	**White washing / color washing 3-coats** **Quantity as per items of plaster**					782.8 m^2

Table 8: Abstract Sheet

No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	68.832	100	m^3	6883
2.	Foundation concrete (1:4:8)	84.78	2000	m^3	169560
3.	2^{nd}class brick masonry for foundation and plinth (1:6)	247.812	2700	m^3	669.087
4.	D.P.C (1:$1^{1/2}$:3) 2.5cm thick	62.8	70	m^2	4396
5.	1^{st} class brick masonry for superstructure (1:6)	121.98	3000	m^2	365.940
6.	C.C for slab, beam, lintel, etc (1:2:4)	2.048	5500	m^2	11264
7.	Steel reinforcement	160.85	60	Kg	9651
8.	12mm thick cement plastering (1:4)	975.36	250	m^2	243840
9.	Surface concreting	20.25	2000	m^3	40500
10.	5cm thick marble mosaic tile flooring	18	700	m^2	12600
11.	BBLC for floor base (1:2:4)	18	1500	m^3	27000
12.	Sand / Murrum filling in plinth	8.1	450	m^3	3645
13.	Wood work or Glass work for window, door & ventilator	4	4500	m^2	18000
14.	Skirting of mosaic	24	70	rm	1680
15.	White Washing	782.8	10	m^2	7828
				Rs.	**557,882.027**
				Contractor's Profit (10%)	**557,88.2**
				Add 5% contingencies	**27,894.1**
				Total	**641,564.33**

8.1.2 Physical Design (Civil)

Design 2: Bank In Chosar Village

- Scenario- There is no bank in Chosar village. Visitors face many problems in Chosar, therefore we design bank. For overall development of the village a bank is required.
- Existing Situation- There is not any bank in the village.

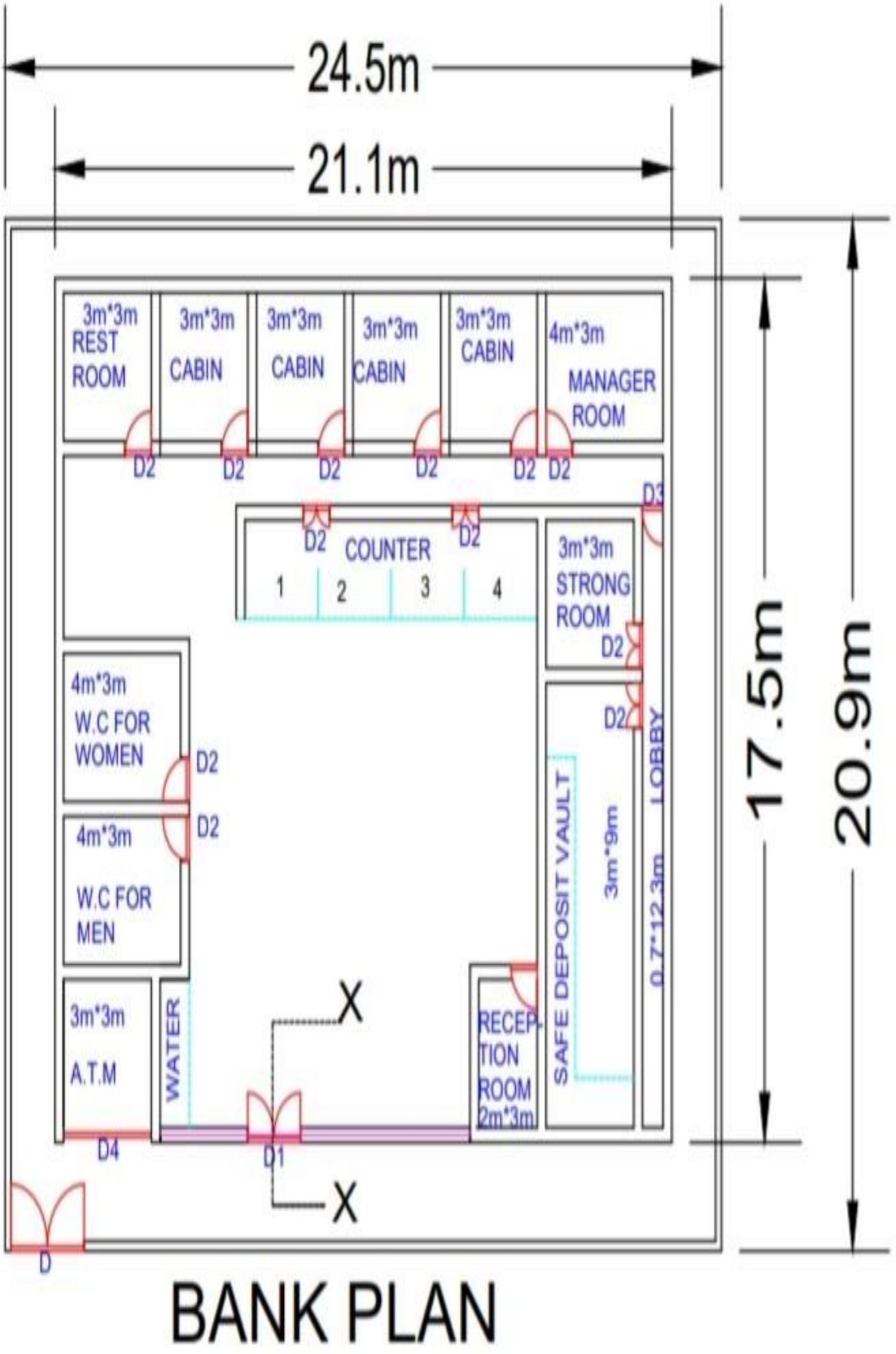


Figure 31: Bank Layout Plan

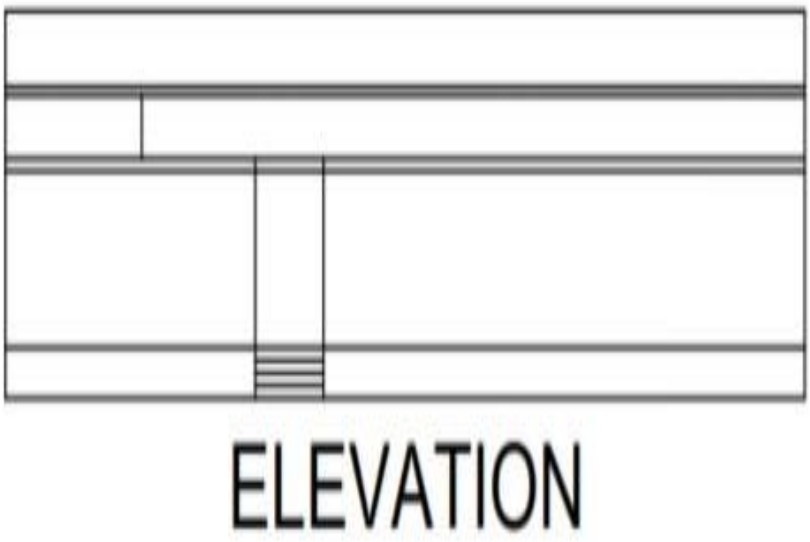


Figure 32: Front Elevation of Bank

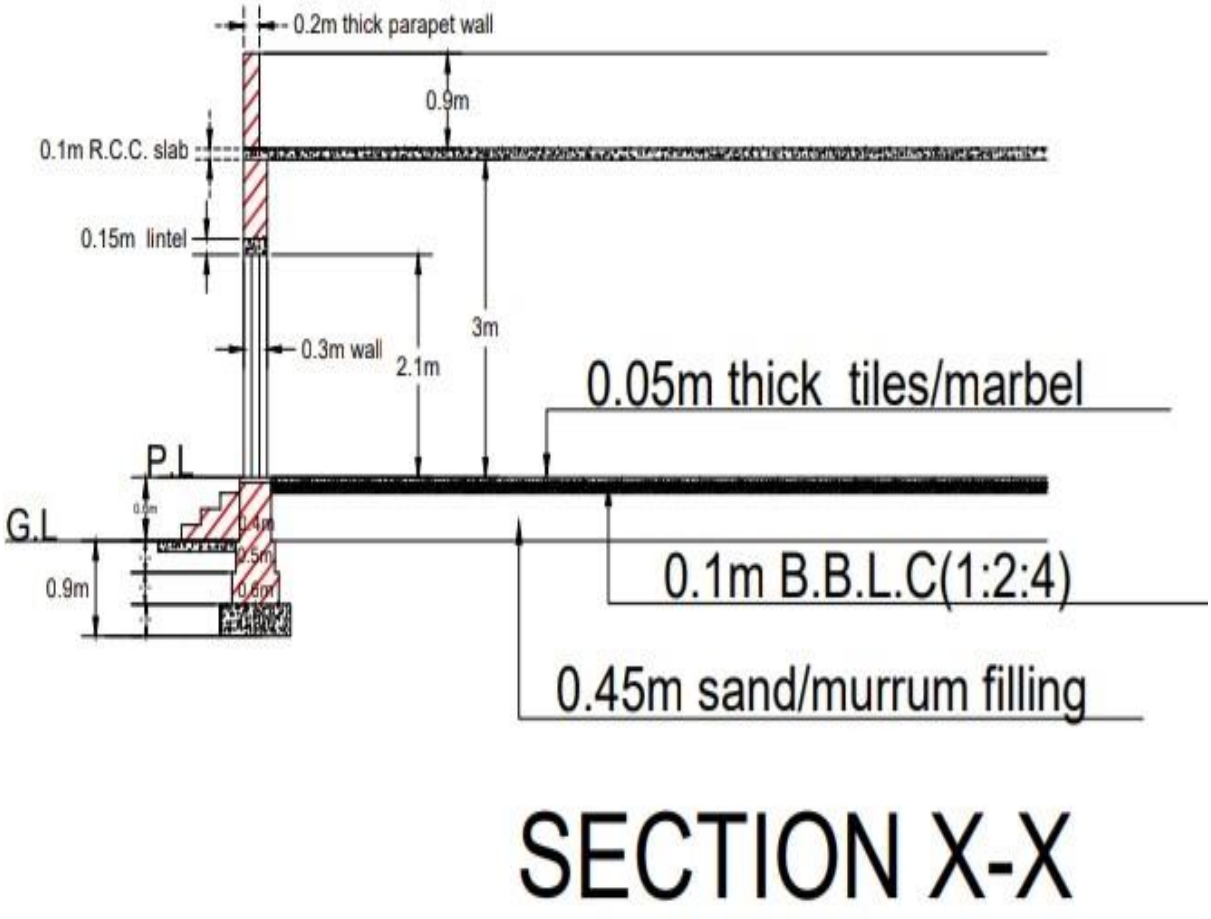


Figure 33: Section of Bank

Type	Dimensions
D	2x1.5
D_1	1.5x2.10
D_2	1.2x2.10
W	0.6x0.25
V	1x1.20

Table 9: Measurement Sheet

Sr No.	Item Description	No.	Length (m)	Breath (m)	Height (m)	Quantity
1.	**Earthwork in excavation foundation in ordinary soil upto 1.5m depth** C.L for building C.L= 186.15-(24x1/2x0.90) = 175.35	1	175.35	0.90	0.90	142.033 m^3
	For boundary wall C.L= 90.0	1	90.0	0.40	0.90	32.4
	For steps	1	1.80	0.80	0.15	0.216
						Total=174.659m^3
2.	**Foundation Concrete C.C (1:4:8)** C.L= 175.35	1	175.35	0.90	0.3	45.562m^3
3.	**2nd class brick masonry for CM (1:6) for foundation and plinth** For building 1st footing, C.L=186.15-(24x1/2x0.6) =178.95	1	178.95	0.6	0.3	32.211
	2nd footing, C.L=186.15-(24x1/2x0.5) =180.15	1	180.15	0.5	0.3	27.022
	3rd footing, C.L= 186.15-(24x1/2x0.4) =181.35	1	181.35	0.4	0.6	43.524
	For boundary C.L= 90.0	1	90.0	0.4	0.9	32.4
						Total=135.157m^3
4.	**Damp proof course DPC (1:$1^{1/2}$:3) 2.5cm thick**					
	For building C.L= 181.35	1	181.35	0.4	-	72.54
	For step	1	1.80	0.80	-	1.44

	Deduction					
	D_1	1	1.8	0.4	-	0.72
	D_2	3	0.9	0.4	-	4.68
	D_3	1	0.7	0.4	-	0.28
	D_4	1	2.5	0.4	-	1.0
						Total=68.30m^2
5.	**1st class brick masonry in CM (1:6) for superstructure**					
	Parapet wall					
	C.L= 76.4	1	76.4	0.2	0.9	13.752
						Total=219.411m^3
6.	**C.C (1:2:4) for RCC, slab, beam, lintel, chajjas, etc include formwork but exclude steel reinforcement**					
	Lintel	1	181.35	0.3	0.15	8.160
	Beam	1	181.35	0.3	0.3	16.322
	Slab	1	21.1	17.5	0.1	36.925
						Total= 61.407m^3
7.	**Steel reinforcement work include bending, binding, placing in position**					
	C.L=1% volume of concrete					
	= 1/100x61.407x100					
	=4822.905 kg					4822.905 kg
8.	**12mm thick cement plastering in CM (1:4)**					
	Internal plaster					
	Cabin	4x4	3	-	3	144
	Lunch room	1x4	3	-	3	36
	Strong room	1x4	3	-	3	36
	ATM	1x4	3	-	3	36
	Manager office	1x2	3	-	3	18
		1x2	4	-	3	24
	S.D.V	1x2	3	-	3	18
		1x2	9	-	3	54
	W.C men	2x2	4	-	3	48
	W.C women	2x2	3	-	3	36
	Drinking water	1x2	1	-	3	6
		1x1	3	-	3	9
	Reception	1x2	2	-	3	12
		1x2	3	-	3	18
	Waiting area	1x1	10.3	-	3	30.9
		1x1	10.6	-	3	31.8
		1x1	6.0	-	3	18.0
	Counter area	1x1	2	-	3	6.00
		1x1	2.15	-	3	6.45
		1x1	10.15	-	3	30.45

		1x1	10.45	-	3	31.35
	Other wall	1x1	20.5	-	3	61.5
		1x1	12.3	-	3	73.8
	External wall upto parapet	1x2	21.1	-	4.6	168.8
		1x2	17.5	-	4.6	140
	Boundary wall in side	1x2	23.9	-	1.5	71.7
		1x2	20.3	-	1.5	60.9
	Outside	1x2	20.9	-	1.5	62.7
		1x2	24.5	-	1.5	73.5
						=1362.85
	Deduction					
	D	1x2	2.5	-	1.5	7.5
	D_1	1x1	1.8	-	2.10	3.78
	D_2	3x1	0.9	-	2.10	24.57
	D_3	1x2	0.7	-	2.10	1.47
	D_4	1x2	2.5	-	2.10	10.5
	V	1x2	20.5	-	0.6	24.6
						=-72.42
						Total=1290.43m^2
9.	**5cm thick marble mosaic tiled flooring**					
	Building area	1	21.1	17.5	-	369.25
	Deduction wall C.L=186.15-(24x1/2x0.3) =182.55	1	182.55	0.3	-	54.765
	External wall upto parapet	1x2	21.1	-	4.6	194.12
		1x2	17.5	-	4.6	161.0
	D_1	1	1.8	0.3	-	0.54
	D_2	3	0.9	0.3	-	3.51
	D_3	1	0.7	0.3	-	0.21
	D_4	1	2.5	0.3	-	0.75
						=5.01
						Total=319.495m^2
10.	**BBLC (1:2:4) for floor base-10cm thick**					
	Building area	1	21.1	17.5	-	369.25
	Deduction of wall C.L=182.55	1	182.55	0.3	-	54.756
	External wall upto parapet	1x2	21.1	-	4.6	194.12
		1x2	17.5	-	4.6	161.0
	D_1	1	1.8	0.3	-	0.54
	D_2	3	0.9	0.3	-	3.51
	D_3	1	0.7	0.3	-	0.21
	D_4	1	2.5	0.3	-	0.75
						Total=319.495m^2

11.	**Sand / Murrum filling in plinth**	1	21.1	17.5	0.45	166.162
	Building					
	Deduction					
	C.L=182.55	1	182.55	0.3	0.45	24.64
						Total=141.517m^3
12.	**Skirting of mosaic**					
	Cabin	4x4	3	-	-	48
	Lunch room	1x4	3	-	-	12
	Strong room	1x4	3	-	-	12
	ATM	1x4	3	-	-	12
	Manager room (H)	1x2	4	-	-	8
	(V)	1x2	3	-	-	6
	W.C (H)	2x2	4	-	-	16
	(V)	2x2	3	-	-	12
	Drinking water (H)	1x2	1	-	-	2
	(V)	1x1	3	-	-	3
	Reception (H)	1x2	2	-	-	4
	(V)	1x2	3	-	-	6
	S.D.V (H)	1x2	3	-	-	6
	(V)	1x2	9	-	-	18
	Counter area	1x1	2	-	-	2
		1x1	2.15	-	-	2.15
		1x1	10.15	-	-	10.15
		1x1	10.45	-	-	10.45
	Other area	1x1	20.5	-	-	20.5
		1x2	12.3	-	-	24.6
	Waiting area	1x1	10.3	-	-	10.3
		1x1	10.6	-	-	10.6
		1x1	6.0	-	-	6.0
						=261.75Rm
	Deduction					
	D_1	1x1	1.8	-	-	1.8
	D_2	3x2	0.9	-	-	23.4
	D_3	1x2	0.7	-	-	1.4
	D_4	1x1	2.5	-	-	2.5
						=-29.1
						Total=232.56Rm
13.	**White washing / color washing 3-coats Quantity as per items of plaster**					1290.43 m^2

Table 10: Abstract Sheet

No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	174.659	100	m^3	17465
2.	Foundation concrete (1:4:8)	45.562	2000	m^3	91124
3.	2^{nd}class brick masonry for foundation and plinth (1:6)	135.157	2700	m^3	364924
4.	D.P.C (1:$1^{1/2}$:3) 2.5cm thick	68.30	70	m^2	4781
5.	1^{st} class brick masonry for superstructure (1:6)	219.411	3000	m^2	658233
6.	C.C for slab, beam, lintel, etc (1:2:4)	61.407	5500	m^2	337738
7.	Steel reinforcement	4822.905	60	Kg	289374
8.	12mm thick cement plastering (1:4)	1290.48	250	m^2	322620
9.	5cm thick marble mosaic tile flooring	319.495	700	m^2	223646
10.	BBLC for floor base (1:2:4)	319.495	1500	m^3	479242.5
11.	Sand / Murrum filling in plinth	141.517	450	m^3	63682
12.	Skirting of mosaic	232.65	70	rm	16285
13.	White washing	1290.43	10	m^2	12904
				Rs.	**2,882,019**
				Contractor's Profit (10%)	**288,201.9**
				Add 5% contingencies	**144,100.9**
				Total	**3,314,321.8**

8.1.3 Social Design (Civil)

Design 3: Library in Chosar village

- Scenario- There is no library in our village. The students living there are having problems due to this. So a library should be constructed for studying in the village.
- Existing Situation- No library is provided in the village.

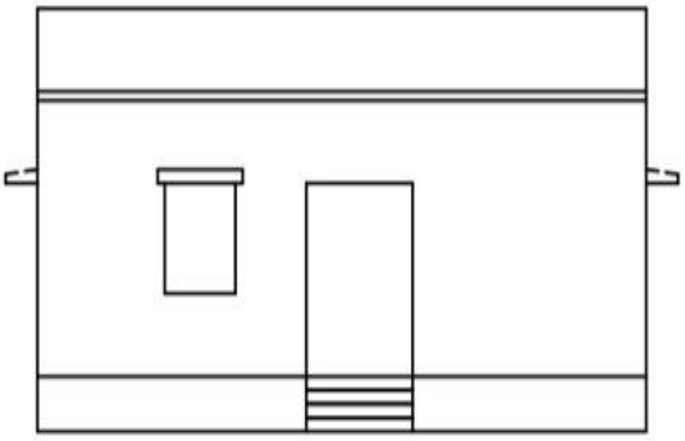


Figure 34: Front Elevation of Library

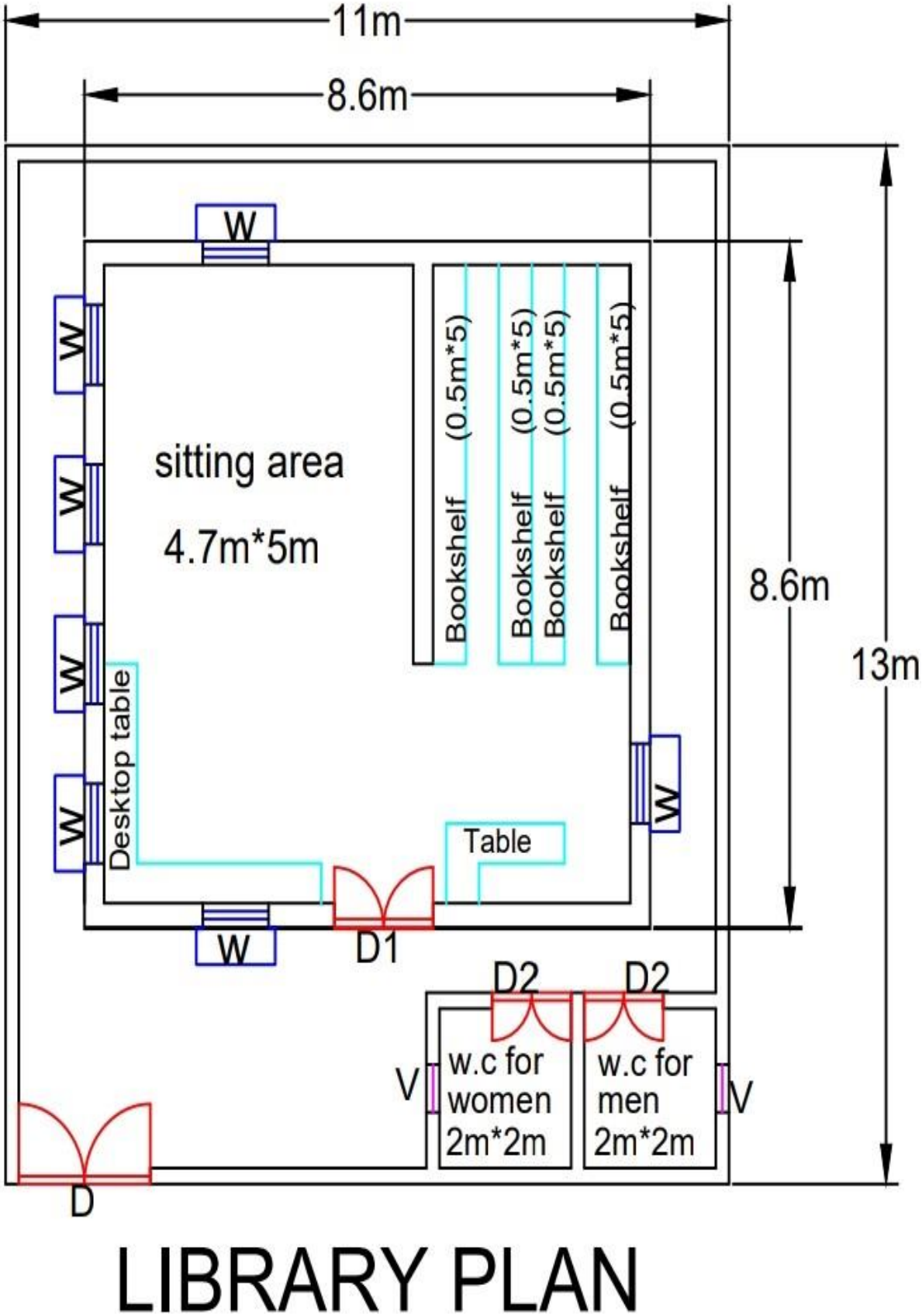
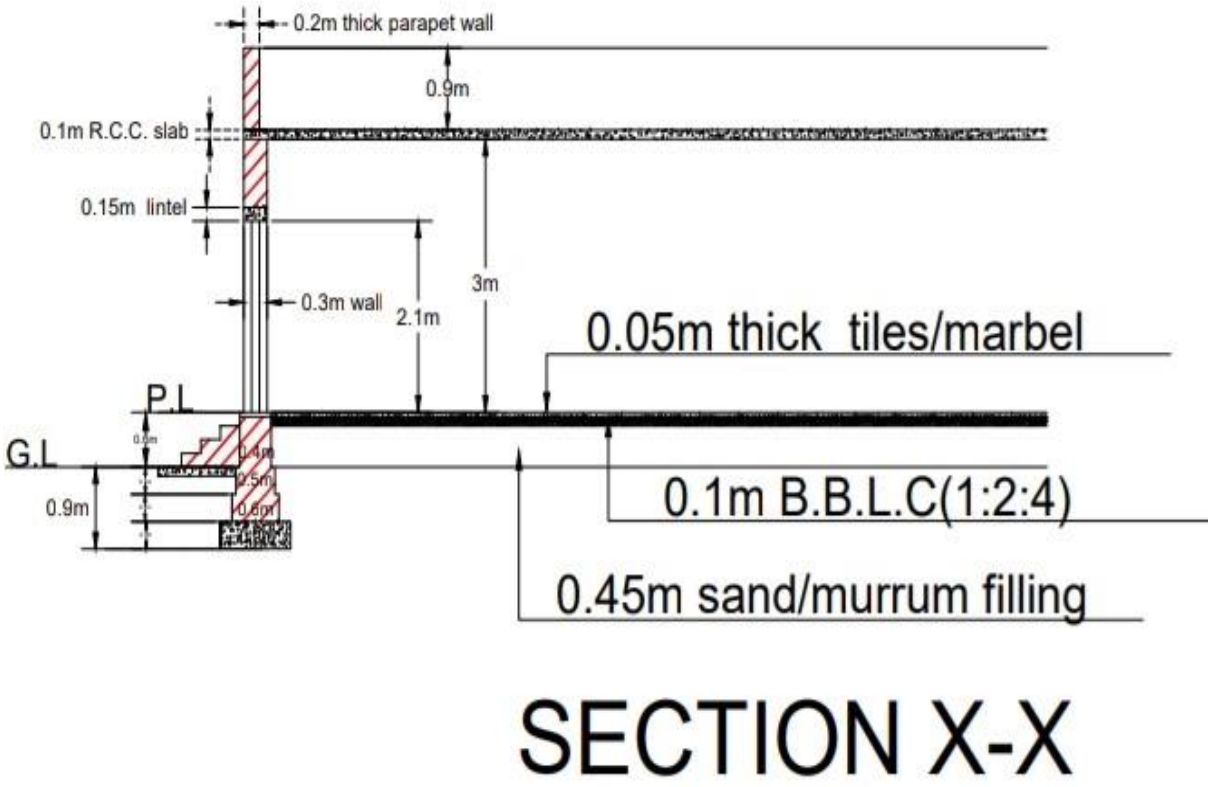


Figure 35: Library Layout Plan



Type	Dimensions
D	**2x1.5**
D_1	**1.5x2.10**
D_2	**1.2x2.10**
W	**0.6x0.25**
V	**1x1.20**

Figure 36: Section of Library

Table 11: Measurement Sheet

Sr No.	Item Description	No.	Length (m)	Breath (m)	Height (m)	Quantity
1.	**Earthwork in excavation foundation in ordinary soil upto 1.5m depth** C.L for building C.L= 38.35-(1x1/2x0.9) = 37.9	1	37.9	0.90	0.90	30.699 m^3
	For boundary wall +WC wall C.L= 56x(4x1/2x0.4)=55.2	1	55.2	0.40	0.90	19.872
	For steps	1	1.5	0.80	0.15	0.18
						Total=50.751m^3
2.	**Foundation Concrete C.C (1:4:8)** C.L= 37.9	1	37.9	0.90	0.3	10.233m^3

3.	**2nd class brick masonry for CM (1:6) for foundation and plinth**					
	For building 1st footing, C.L=38.35-(1x1/2x0.6) =38.05	1	38.05	0.6	0.3	6.849
	2nd footing, C.L=38.35-(1x1/2x0.5) =38.1	1	38.10	0.5	0.3	5.715
	3rd footing, C.L=38.35-(1x1/2x0.4) =38.15	1	38.15	0.4	0.6	9.156
	For boundary C.L= 55.2	1	55.2	0.4	0.9	19.872
						Total=41.592m^3
4.	**Damp proof course DPC (1:1$^{1/2}$:3) 2.5cm thick**					
	For building C.L= 38.15	1	38.15	0.4	-	15.26
	For step	1	1.5	0.80	-	1.2
	Deduction D_1	1	1.5	0.4	-	0.6
						Total=15.86m^2
5.	**1st class brick masonry in CM (1:6) for superstructure**					
	For building C.L=56-(4x1/2x0.3)=38.20	1	38.20	0.3	3	34.38
	For boundary wall C.L=56-(4x1/2x0.2)=55.6	1	55.6	0.2	1.5	16.68
	Above WC portion C.L=2(4.4)=3(2.2)=15.4	1	15.2	0.2	1	3.04
	Parapet wall C.L= 76.4	1	32.8	0.2	0.9	5.904
						=57.004
	Deduction					
	D	1	2	0.2	1.5	0.6
	D_1	1	1.5	0.3	2.10	0.945
	D_2	2	1.2	0.2	2.10	1.008
	W	8	1	0.3	1.20	2.88
	Ventilator	2	0.6	0.2	0.25	0.06
	Lintel	1	38.20	0.3	0.15	1.719
	Beam	1	38.20	0.3	0.3	3.48
						=-10.65
						Total=46.354m^3

6.	**C.C (1:2:4) for RCC, slab, beam, lintel, chajjas, etc include formwork but exclude steel reinforcement**					
	Lintel	1	38.20	0.3	0.15	1.719
	Beam	1	38.20	0.3	0.3	3.438
	Chajjas	8	1	0.45	0.050	0.18
	W.C Slab	2	2.2	2.2	0.1	0.968
	Main slab	1	8.3	8.3	0.1	6.889
						Total= 13.194m^3
7.	**Steel reinforcement work include bending, binding, placing in position** C.L=1% volume of concrete = 1/100x13.194x78.54x100 =1036.256 kg					1036.256 kg
8.	**12mm thick cement plastering in CM (1:4)**					
	Internal plaster					
	Building wall	4	8	-	3	96
		2	5	-	3	30
	W.C plaster	2x4	2	-	2.65	40
	External plaster upto parapet					
	Building wall	4	8.6	-	4.6	158.24
	Boundary wall					
	Internal	1x2	10.6	-	1.5	31.8
		1x2	12.6	-	1.5	37.8
	External	1x2	11.0	-	1.5	33.0
		1x2	13.0	-	1.5	39.0
	Parapet top	1	38.20	0.20	-	7.64
	Chajja	8x2	1	0.45	-	7.2
	Ceiling plaster	1	8	8	-	64
	Parapet internal plaster	2x2	8.2	-	0.9	29.52
						Total=574.200m^2
	Deduction					
	D	1	2	-	1.5	
	D_1	1	1.5	-	2.10	3.0
	D_2	2	1.2	-	2.10	3.15
	W	8	1.0	-	1.20	5.04
	V	2	0.6	-	0.25	9.6
						0.3
						=-21.09
						Total=553.11m^2
9.	**5cm thick marble mosaic tiled flooring**					

	Building area	1	8	8	-	64
	W.C	2	2	2	-	8
						Total=72m^2
10.	**BBLC (1:2:4) for floor base-10cm thick**					
	Building area	1	8	8	-	64
	W.C	2	2	2	-	8
						Total=72m^2
11.	**Sand / Murrum filling in plinth**					
	Building	1	8	8	0.45	28.8
	W.C	2	2	2	0.45	3.6
						Total=32.4m^3
12.	**Wood work or glass work for windows, doors and ventilation**					
	D_1	1	1.5	-	2.10	3.15
	D_2	2	1.2	-	2.10	5.04
	W	8	1.0	-	1.20	9.6
	V	2	0.6	-	0.25	0.3
						Total=18.09m^2
13.	**Skirting of mosaic**					
	Building	4	8	-	-	32
	W.C	2x4	2	-	-	16
						=261.75Rm
	Deductions					
	D_1	1	1.5	-	-	1.5
	D_2	2	1.2	-	-	2.4
						=-3.9
						Total=44.1Rm
14.	**White washing / color washing 3-coats Quantity as per items of plaster**					553.11 m^2
15.	**Filling**					8.082m^3

Table 12: Abstract Sheet

No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	30.699	100	m^3	3069
2.	Foundation concrete (1:4:8)	10.233	2000	m^3	20466
3.	2^{nd}class brick masonry for foundation and plinth (1:6)	41.592	2700	m^3	112298

4.	D.P.C (1:1$^{1/2}$:3) 2.5cm thick	15.86	70	m^2	1110.2
5.	1st class brick masonry for superstructure (1:6)	46.354	3000	m^2	139062
6.	C.C for slab, beam, lintel, etc (1:2:4)	13.194	5500	m^2	72567
7.	Steel reinforcement	1036.256	60	Kg	62175.36
8.	12mm thick cement plastering (1:4)	553.11	250	m^2	138277.5
9.	5cm thick marble mosaic tile flooring	72	700	m^2	50400
10.	BBLC for floor base (1:2:4)	72	1500	m^3	108000
11.	Sand / Murrum filling in plinth	32.4	450	m^3	14580
12.	Wood work or Glass work for window, door & ventilator	18.09	4500	m^2	81405
13.	Skirting of mosaic	261.75	70	rm	18322
14.	White Washing	553.11	10	m^2	5531
15.	Filling	8.082	50	m^3	404
				Rs.	**827,667.06**
				Contractor's Profit (10%)	**82,766.7**
				Add 5% contingencies	**41,383.35**
				Total	**951,817**

8.1.4 Socio-Cultural Design (Civil)

Design 4: Community Hall

- Scenario- In our village Chosar there is no facility of community hall. So we designed one, so it is the major step in taking forward the village ahead and make it a smart village.
- Existing Situation- There is currently no community hall in the village.

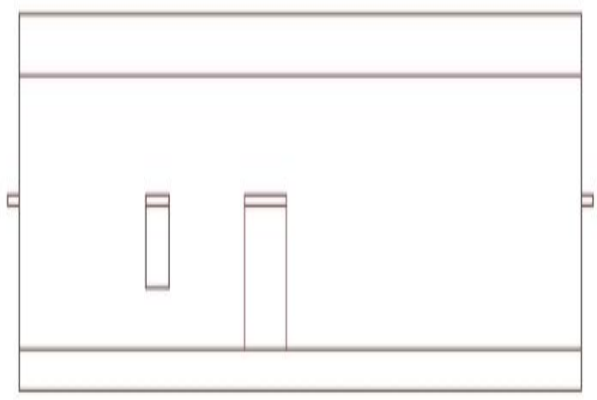


Figure 37: Front Elevation of Community Hall

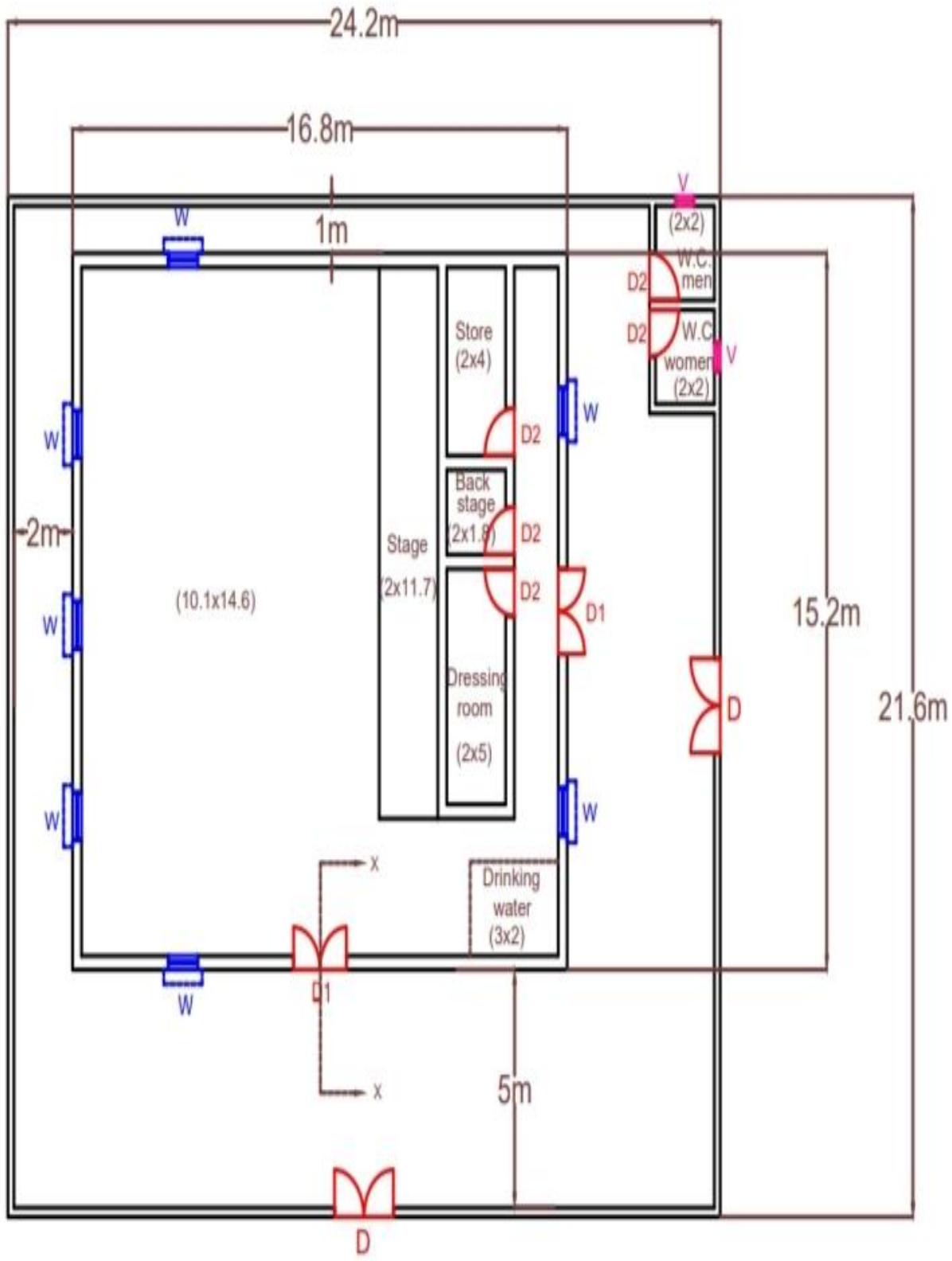


Figure 38: Community Hall Layout Plan

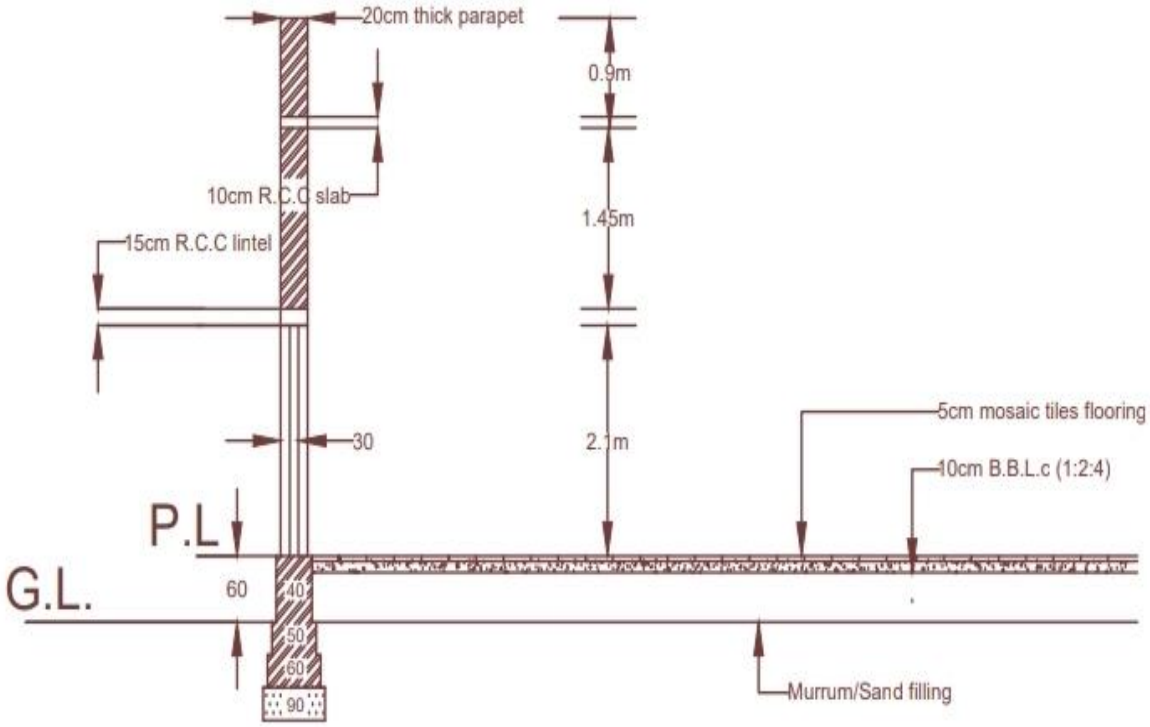


Figure 39: Section of Community Hall

Type	Dimensions
D	2x1.5
D	1.8x2.10
D	1x2.10
W	1x1.20
V	0.6x0.3

Table 13: Measurement Sheet

Sr No.	Item Description	No.	Length (m)	Breath (m)	Height (m)	Quantity
1.	**Earthwork in excavation foundation in ordinary soil upto 1.5m depth** C.L for building C.L= 93.1-(6x1/2x0.9) =90.4	1	90.4	0.90	0.90	73.224 m^3
	For boundary wall C.L= 103.6- (6x1/2x0.4)=102.4	1	102.4	0.40	0.90	36.864
						Total=110.088m^3
2.	**Foundation Concrete C.C (1:4:8)** C.L= 90.4	1	90.4	0.90	0.3	24.408m^3

3.	**2nd class brick masonry for CM (1:6) for foundation and plinth** For building 1st footing, C.L=93.1-(6x1/2x0.6) =91.3	1	91.3	0.6	0.3	16.434
	2nd footing, C.L=93.1-(6x1/2x0.5) =91.6	1	91.6	0.5	0.3	13.74
	3rd footing, C.L=93.1-(6x1/2x0.4) =91.9	1	91.9	0.4	0.6	22.056
						Total=52.23m^3
4.	**Damp proof course DPC (1:1$^{1/2}$:3) 2.5cm thick** For building C.L= 91.9	1	91.9	0.4	-	36.76
	For W.C C.L=20.42	1	20.42	0.4	-	8.08
						=52.23
	Deduction D_1 D_2	 2 6	 1.8 1	 0.4 0.4	 - -	 1.44 2.4
						=-3.84
						Total=41.00m^2
5.	**1st class brick masonry in CM** **(1:6) for superstructure** For building C.L=93.1-(3x1/2x0.3)=92.65	1	92.65	0.3	3	83.385
	Parapet wall C.L= (2x16.6)+(2x15)=63.2	1	63.2	0.2	0.9	11.376
	For boundary + W.C C.L=103.6-(4x1/2x0.2)=103.2	1	103.2	0.2	1.5	30.96
	Above portion of W.C C.L=21.4-(4x1/2x0.2)=21	1	21.0	0.2	1	4.2
						=129.921
	Deductions D D_1 D_2 D_3	 2 2 4 2	 2 1.8 1.0 1.0	 0.2 0.3 0.3 0.2	 1.5 2.10 2.10 2.10	 1.2 2.268 2.52 0.84

	W	7	1.0	0.3	1.20	2.52
	V	2	0.6	0.2	0.3	0.072
	Lintel-Building	1	92.65	0.3	0.15	4.169
	W.C	1	21	0.2	0.15	0.63
	Beam	1	92.65	0.3	0.3	8.338
						=-22.577
						Total=107.344m^3
6.	**C.C (1:2:4) for RCC, slab, beam, lintel, chajjas, etc include formwork but exclude steel reinforcement**					
	Lintel-Building	1	92.65	0.3	0.15	4.169
	W.C	1	21	0.2	0.10	0.42
	Beam	1	92.65	0.3	0.3	8.338
	Chajja	8	1	0.45	0.050	0.18
	W.C-Slab	2	4.4	4.2	0.1	3.696
	Main Slab	1	16.5	14.9	0.1	24.535
						Total= 41.388m^3
7.	**Steel reinforcement work include bending, binding, placing in position** C.L=1% volume of concrete = 1/100x41.388x78.54x100 =3238.611 kg					3238.611 kg
8.	**Woodwork or Glass work for windows, doors and ventilators**					
	D_1	2	1.8	-	2.10	7.56
	D_2	4	1	-	2.10	3.4
	D_3	2	1	-	2.10	4.2
	W	7	1	-	1.20	8.4
	V	2	0.6	-	0.3	0.36
						Total=28.92m^2
9.	**12mm thick cement plastering in CM (1:4)**					
	Internal plaster					
	Store room (H)	1x2	2	-	3	12
	(V)	1x2	4	-	3	24
	Back stage (H)	1x2	2	-	3	12
	(V)	1x2	1.8	-	3	10.8
	Dressing room (H)	1x2	2	-	3	12.0
	(V)	1x2	5	-	3	30
	Other walls			-	3	
		1x2	14.6	-	3	87.6
		1x2	16.2	-	3	97.2
		1x2	11.7	-	3	70.2

	W.C (H)	2x2	2	-	2.5	20
	(V)	2x2	4	-	2.5	40
	External plaster of building					
	upto parapet (H)	1x2	16.8	-	4.0	134.4
	(V)	1x2	15.2	-	4.0	121.6
	Inside parapet (H)	1x2	16.4	-	0.9	29.52
	(V)	1x2	14.8	-	0.9	26.64
	Parapet top	1	63.2	0.2	-	12.64
	Boundary wall					
	Inside (H)	1x2	23.8	-	1.5	71.4
	(V)	1x2	21.2	-	1.5	63.6
	Outside (H)	1x2	24.2	-	1.5	72.6
	(V)	1x2	21.6	-	1.5	64.8
	Chajja	7x2	1	0.45	-	6.3
	Ceiling plaster	1	16.8	15.2	-	225.36
						=1274.66
	Deduction					
	D	2x2	2	-	1.5	12
	D_1	2x2	1.8	-	2.10	15.12
	D_2	4x1	1	-	2.10	8.4
	D_3	2x1	1	-	2.10	4.2
	W	7x1	1	-	1.20	8.4
	V	2x1	0.6	-	0.3	0.216
	Net C.L of building	1x1	92.65	0.3	-	27.795
						=-76.131
						Total=1198.529m^2
10.	**5cm thick marble mosaic tiled flooring**					
	Floor area	1	14.8	15.2	-	225.36
	Deduction					
	C.L=92.65	1	92.65	0.3	-	27.795
						Total=227.565m^2
11.	**BBLC (1:2:4) for floor base-10cm thick**					
	Floor area	1	16.8	15.2	-	255.36
	Deduction	1	92.65	0.3	-	27.795
						Total=227.565m^2
12.	**Sand / Murrum filling in plinth**					
	Building	1	16.8	15.2	0.45	114.912
	Deduction					
	C.L=182.55	1	92.65	0.3	0.45	-12.507
						Total=102.40425m^3

13.	**Skirting of mosaic**					
	Store room (H)	1x2	2	-	-	4
	(V)	1x2	4	-	-	8
	Back stage (H)	1x2	2	-	-	4
	(V)	1x2	1.8	-	-	3.6
	Dressing room (H)	1x2	2	-	-	4
	(V)	1x2	5	-	-	10
	Other wall	1x2	14.6	-	-	29.2
		1x2	16.2	-	-	32.4
		1x2	11.7	-	-	23.4
	W.C (H)	2x2	2	-	-	8
	(V)	2x2	4	-	-	16
						=142.6Rm
	Deductions					
	D_1	2x1	1.8	-	-	3.6
	D_2	4x2	1.0	-	-	8
	D_3	2x1	1.0	-	-	2
						=-13.6
						Total=129rm
14.	**White washing / color washing 3-coats Quantity as per items of plaster**					1198 m^2

Table 14: Abstract Sheet

No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	110.088	100	m^3	11009
2.	Foundation concrete (1:4:8)	24.408	2000	m^3	48816
3.	2^{nd}class brick masonry for foundation and plinth (1:6)	52.23	2700	m^3	141021
4.	D.P.C (1:$1^{1/2}$:3) 2.5cm thick	41.00	70	m^2	2870
5.	1^{st} class brick masonry for superstructure (1:6)	107.344	3000	m^2	322032
6.	C.C for slab, beam, lintel, etc (1:2:4)	41.388	5500	m^2	227634
7.	Steel reinforcement	3238.611	60	Kg	194316.66
8.	Woodwork or glass work for doors, windows & ventilator	28.92	4500	m^2	130140
9.	12mm thick cement				

	plastering (1:4)	1198.529	250	m^2	299632.25
10.	5cm thick marble mosaic tile flooring	227.565	700	m^2	159295.5
11.	BBLC for floor base (1:2:4)	227.565	1500	m^3	341347.5
12.	Sand / Murrum filling in plinth	102.40425	450	m^3	46081.9125
13.	Skirting of mosaic	129	70	rm	9030
14.	White washing	1198	10	m^2	11980
				Rs.	**1,945,206**
				Contractor's Profit (10%)	**194,520.6**
				Add 5% contingencies	**97,260.3**
				Total	**2,236,987**

8.1.5 Smart Village Design (Civil)

Design 5: Primary Health Care Center in Chosar Village

- Scenario- There is no PHC in Chosar village, so we made a design of it. Because there is no PHC villagers are facing difficulties in their day to day life. So it is necessary to built PHC.
- Existing situation- There is no PHC in the village.

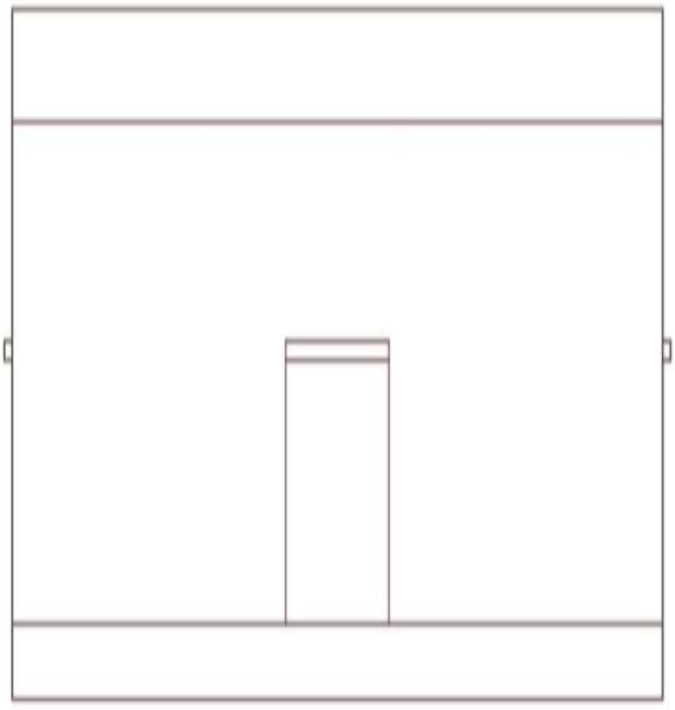


Figure 40: Front Elevation of PHC

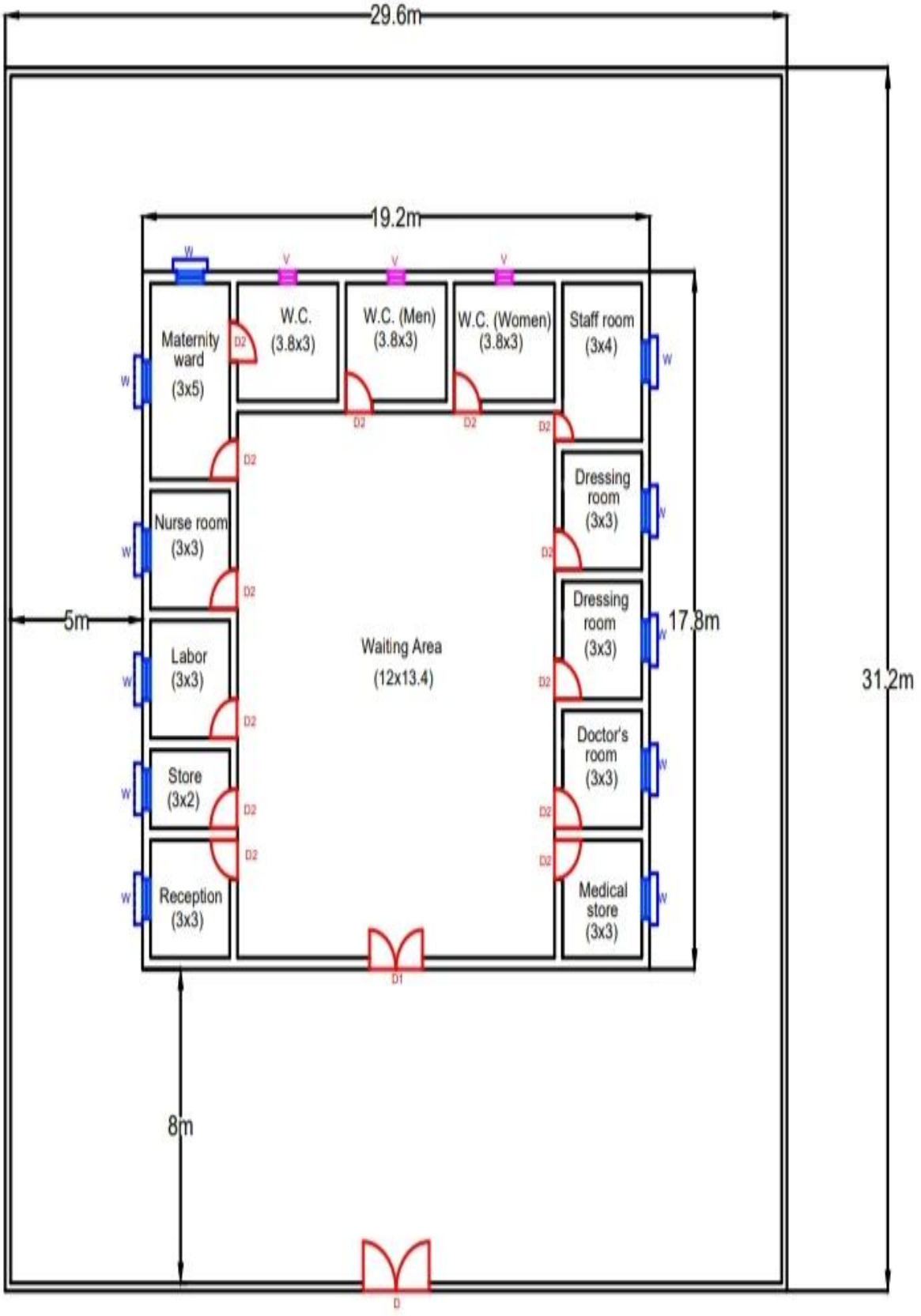
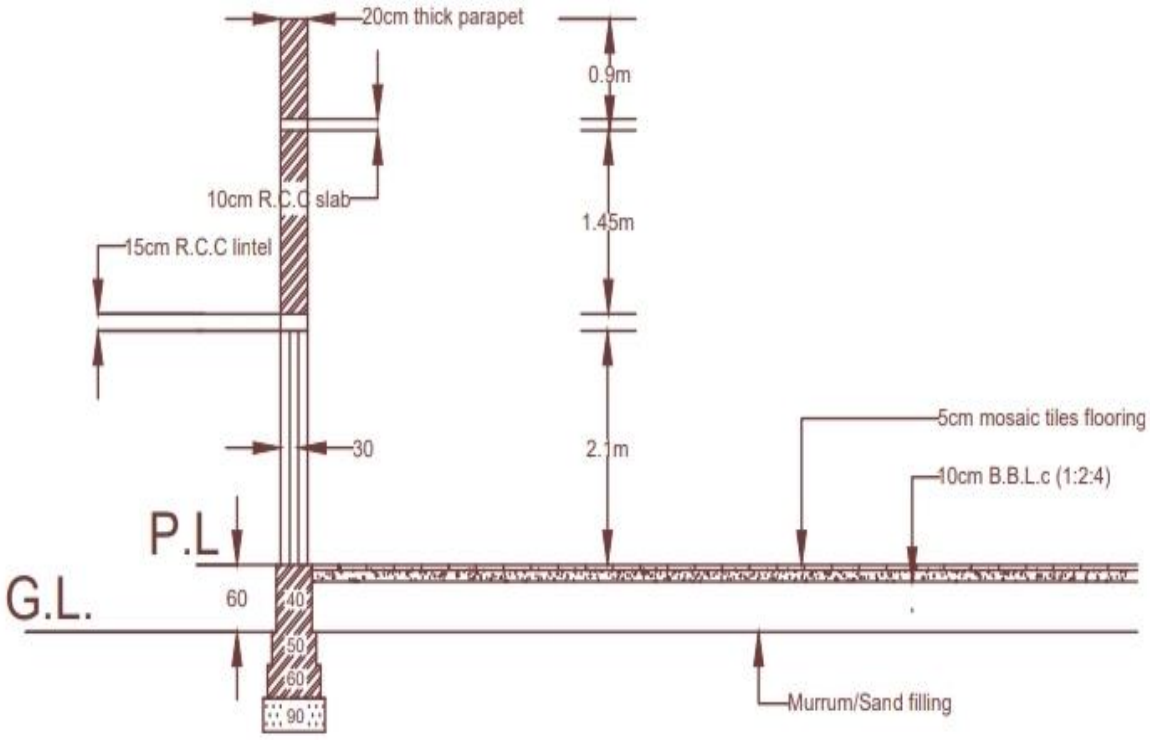


Figure 41: PHC Layout Plan



Type	Dimensions
D	2.5x1.5
D_1	2x2.10
D_2	1x1.20
W	1x1.20
V	0.6x0.6

Figure 42: Foundation of PHC

Table 15: Measurement Sheet

Sr No.	Item Description	No.	Length (m)	Breath (m)	Height (m)	Quantity
1.	**Earthwork in excavation foundation in ordinary soil upto 1.5m depth** C.L for building C.L= 120.1-(2x1/2x0.90) = 108.4	1	103.4	0.90	0.90	87.804
	For boundary wall C.L= 120.8	1	120.8	0.40	0.90	43.488
						Total=131.292m^3
2.	**Foundation Concrete C.C (1:4:8)** C.L= 108.4	1	108.4	0.90	0.3	29.268m^3

3.	**2nd class brick masonry for CM (1:6) for foundation and plinth**					
	For building 1st footing, C.L=120.1-(26x1/2x0.6) =112.3	1	112.3	0.6	0.3	20.214
	2nd footing, C.L=120.1-(26x1/2x0.5) =112.3	1	113.6	0.5	0.3	17.04
	3rd footing, C.L=120.1-(26x1/2x0.4) =114.9	1	114.9	0.4	0.6	27.576
	For boundary C.L= 120.8	1	120.8	0.4	0.9	43.488
						Total=108.310m^3
4.	**Damp proof course DPC (1:1$^{1/2}$:3) 2.5cm thick**					
	For building C.L= 114.9	1	114.9	0.4	-	45.96
	Deduction					
	D_1	1	2	0.4	-	0.8
	D_2	13	1	0.4	-	5.2
						=-6.0
						Total=39.96m^2
5.	**1st class brick masonry in CM (1:6) for superstructure**					
	For building C.L=120.1-(16x1/2x0.3)=117.7	1	117.7	0.3	3	105.93
	For boundary C.L=120.8	1	120.8	0.2	1.5	36.24
	Parapet wall C.L= 2(19)+2(17.6)=73.2	1	73.2	0.2	0.9	13.176
	Deduction					
	D	1	2.5	0.2	1.5	0.75
	D_1	1	2	0.3	2.10	1.26
	D_2	13	1	0.3	2.10	8.19
	W	12	1	0.3	1.20	4.32
	V	9	0.6	0.3	0.6	0.324
						=-14.844
						Total=124.613m^3
6.	**C.C (1:2:4) for RCC, slab, beam, lintel, chajjas, etc include formwork but exclude steel reinforcement**					
	Lintel	1	117.7	0.3	0.15	5.2965

	Beam	1	117.7	0.3	0.3	10.593
	Chajja	12	1.0	0.45	0.050	0.270
	Slab	1	18.9	17.5	0.1	33.075
						Total= 49.234m^3
7.	**Steel reinforcement work include bending, binding, placing in position** C.L=1% volume of concrete = 1/100x49.234x78.54x100 =3866.838 kg					3866.838 kg
8.	**Woodwork or glass work for doors, windows & ventilator**					
	D_1	1	2	-	2.10	4.2
	D_2	13	1	-	2.10	27.3
	W	12	1	-	1.20	14.4
	V	3	0.6	-	0.6	1.08
						Total=46.98m^2
9.	**12mm thick cement plastering in CM (1:4)**					
	Internal plaster					
	Reception	1x4	3	-	3	36
	Nurse room	1x4	3	-	3	36
	Doctor room	1x4	3	-	3	36
	Medicine room	3x4	3	-	3	108
	Store room	1x4	3	-	3	36
		1x2	3	-	3	18
	Maternity ward	1x2	2	-	3	12
		1x2	3	-	3	18
	Toilet (W.C)	1x2	5	-	3	30
		3x2	3.8	-	3	68.4
	Staff room	3x2	3	-	3	54
		1x2	3	-	3	18
	Waiting area	1x2	4	-	3	24
		1x2	12	-	3	72
		1x2	13.9	-	3	83.4
	External plaster upto parapet	1x2	19.2	-	4	153.6
		1x2	17.8	-	4	142.4
	Inside parapet plaster	1x2	18.8	-	0.9	33.84
		1x2	17.4	-	0.9	31.32
	Boundary wall plaster					
	Inside	1x2	29.2	-	1.5	87.6
		1x2	30.8	-	1.5	92.4
	Outside	1x2	29.6	-	1.5	88.8
		1x2	31.2	-	1.5	93.6
	Parapet top	1	73.2	0.20	-	14.64
	Chajja	12x2	1	0.45	-	10.8
	Ceiling plaster	1	18.6	17.2	-	319.92
	Deductions					

	Net C.L	1	117.7	0.3	-	35.31
	D	1x2	2.5	-	1.5	7.5
	D_1	1x2	2	-	2.10	8.4
	D_2	13x1	1	-	2.10	27.3
	W	12x1	1	-	1.2	14.4
	V	3x1	0.6	-	0.6	1.08
						=-93.99
						Total=1624.73m^2
10.	**5cm thick marble mosaic tiled flooring**					
	Building area	1	18.6	17.2	-	319.92
	Deduction wall C.L=117.7	1	117.7	0.3	-	-35.31
						Total=284.61m^2
11.	**BBLC (1:2:4) for floor base-10cm thick**					
	Building area	1	18.6	17.2	-	319.92
	Deduction of wall C.L=117.7	1	117.7	0.3	-	-35.31
						Total=284.61m^2
12.	**Sand / Murrum filling in plinth**					
	Building	1	18.6	17.2	0.45	143.964
	Deduction C.L=117.7	1	117.7	0.3	0.45	-15.889
						Total=128.075m^3
13.	**Skirting of mosaic**					
	Reception	1x4	3	-	-	12
	Labor room	1x4	3	-	-	12
	Nurse room	1x4	3	-	-	12
	Doctor room	3x4	3	-	-	36
	Medicine room	1x4	3	-	-	12
	Store room (H)	1x2	3	-	-	6
	(V)	1x2	3	-	-	4
	Maternity ward (H)	1x2	3	-	-	6
	(V)	1x2	5	-	-	10
	W.C (H)	3x2	3.8	-	-	22.8
	(V)	3x2	3	-	-	18
	Staff room (H)	1x2	3	-	-	6
	(V)	1x2	4	-	-	8
	Waiting area (H)	1x2	12	-	-	24
	(V)	1x2	13.9	-	-	27.8
						=216.6
	Deduction					
	D_1	1x1	2	-	-	2
	D_2	13x2	1	-	-	26
						=-28

						Total=183.6Rm
14.	**White washing / color washing 3-coats Quantity as per items of plaster**					1624.73 m^2

Table 16: Abstract Sheet

No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	131.292	100	m^3	13129.2
2.	Foundation concrete (1:4:8)	29.268	2000	m^3	58536
3.	2^{nd}class brick masonry for foundation and plinth (1:6)	108.310	2700	m^3	292437
4.	D.P.C (1:$1^{1/2}$:3) 2.5cm thick	39.96	70	m^2	2797
5.	1^{st} class brick masonry for superstructure (1:6)	124.613	3000	m^2	37384
6.	C.C for slab, beam, lintel, etc (1:2:4)	49.234	5500	m^2	270787
7.	Steel reinforcement	3866.838	60	Kg	232010
8.	Woodwork or Glass work for doors, windows & ventilators	46.98	4500	m^2	211410
9.	12mm thick cement plastering (1:4)	1624.73	250	m^2	406182
10.	5cm thick marble mosaic tile flooring	284.61	700	m^2	199227
11.	BBLC for floor base (1:2:4)	284.61	1500	m^3	426915
12.	Sand / Murrum filling in plinth	128.075	450	m^3	57633
13.	Skirting of mosaic	28	70	rm	1960
14.	White washing	1624.73	10	m^2	16247
				Rs.	**2,226,654.2**
				Contractor's Profit (10%)	**222,665.4**
				Add 5% contingencies	**1,113,327.1**
				Total	**3,562,646.7**

8.1.6 Heritage Village Design (Civil)

Design 6: Post Office

- Scenario: There is no requirement of post office in our village. Post office is one of the main needs in day to day life. So we design one post office for our village.
- Existing situation: There is no post office till now in Chosar village.

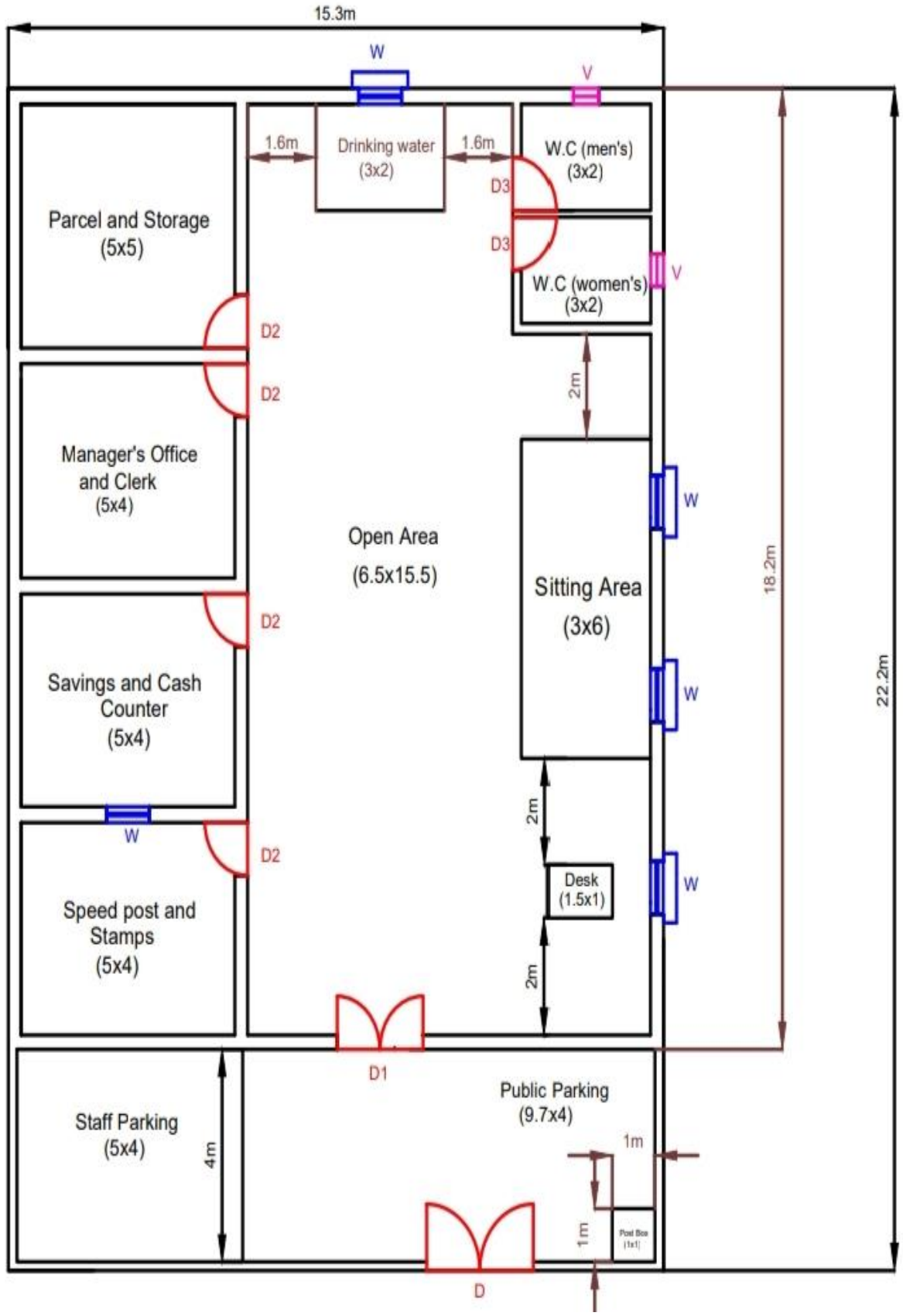


Figure 43: Post Office Layout Plan

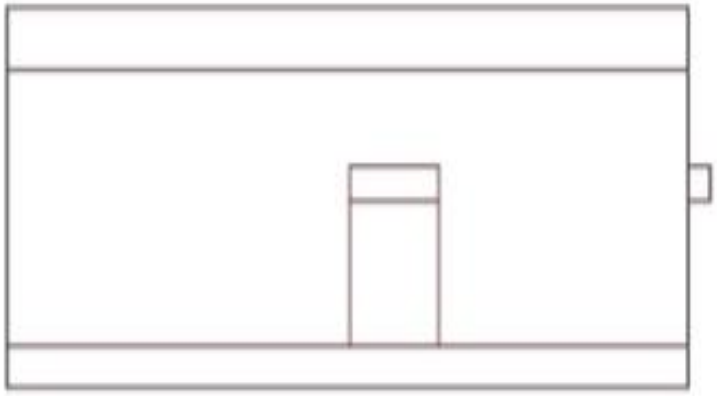


Figure 44: Front Elevation of Post Office

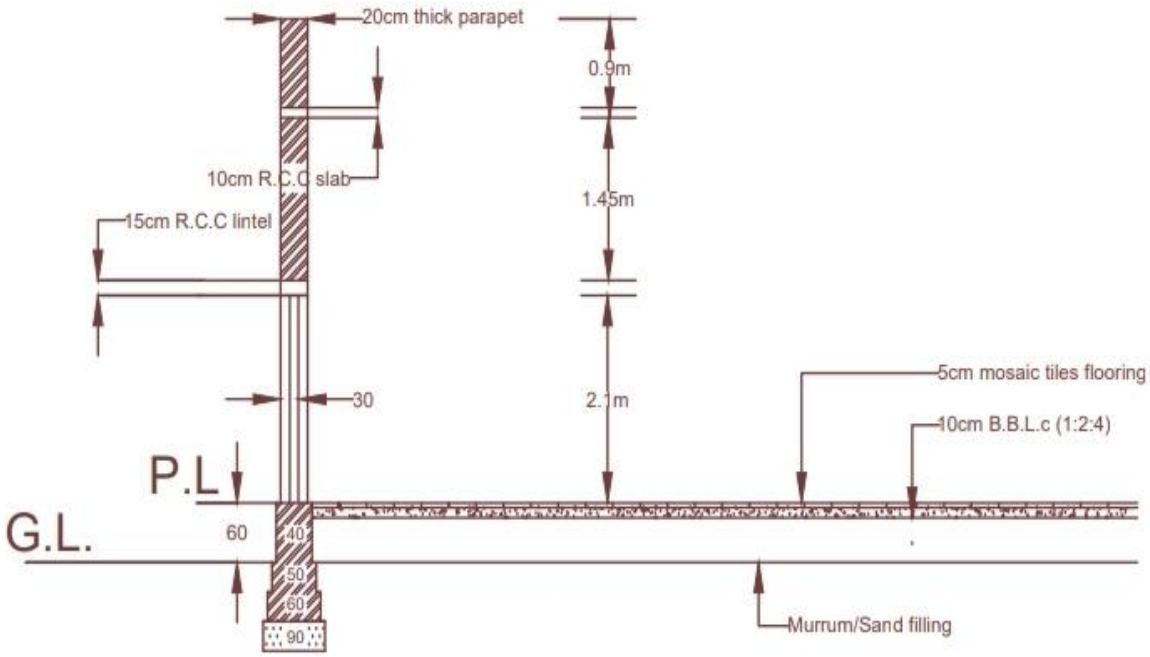


Figure 45: Section of Post Office

Type	Dimensions
D	2.5x1.5
D_1	2x2.10
D_2	1x2.10
D_3	1x2.10
W	1x1.20
V	0.6x0.3

Table 17: Measurement Sheet

Sr No.	Item Description	No.	Length (m)	Breath (m)	Height (m)	Quantity
1.	**Earthwork in excavation foundation in ordinary soil upto 1.5m depth** C.L for building C.L= 95.55-(14x1/2x0.90) = 89.25	1	89.25	0.90	0.90	72.292 m^3
	For boundary wall C.L= 23.6-(2x1/2x0.4)=23.2	1	23.2	0.40	0.90	8.352
						Total=80.644m^3
2.	**Foundation Concrete C.C (1:4:8)** C.L= 89.25	1	89.25	0.90	0.3	24.097m^3
3.	**3rdclass brick masonry for CM (1:6) for foundation and plinth** For building 1st footing, C.L=95.55(14x1/2x0.6) =91.35	1	91.35	0.6	0.3	16.443
	2nd footing, C.L=95.55-(14x1/2x0.5) =92.05	1	92.05	0.5	0.3	13.8075
	3rd footing, C.L=95.55(14x1/2x0.4) =92.75	1	92.75	0.4	0.6	22.260
						Total=52.510m^3
4.	**Damp proof course DPC (1:1$^{1/2}$:3) 2.5cm thick**					
	C.L=92.75	1	92.75	0.4	-	34.1m^2
5.	**1st class brick masonry in CM (1:6) for superstructure** For building C.L=95.55-(10x1/2x0.3)=94.05	1	94.05	0.3	3	84.645
	Parapet wall C.L= (2x15.1)+(2x18.3)=66.8	1	66.8	0.2	0.9	12.024
	For boundary wall C.L=23.6-(2x1/2x0.2)=23.4	1	23.4	0.2	1.5	7.02 =103.689
	Deductions					
	D	1	2.5	0.2	1.5	0.75
	D_1	1	2	0.3	2.10	1.26
	D_2	4	1	0.3	2.10	2.52
	D_3	2	1	1.20	2.10	0.84
	V	2	0.6	0.3	0.3	0.072

	W	9	1	1.20	1.20	3.2
						=-8.682
						Total=95.007m^3
6.	**C.C (1:2:4) for RCC, slab, beam, lintel, chajjas, etc include formwork but exclude steel reinforcement**					
	Lintel	1	94.05	0.3	0.15	4.232
	Beam	1	94.05	0.3	0.3	8.464
	Slab	1	15	18.2	0.1	27.3
						Total=39.996m^3
7.	**Steel reinforcement work include bending, binding, placing in position** C.L=1% volume of concrete = 1/100x39.996x78.54x100 =3141.28 kg					3141.28 kg
8.	**Woodwork or Glass work for window, door & ventilator**					
	D_1	1	2	-	2.10	4.2
	D_2	4	1	-	2.10	8.4
	D_3	2	1	-	2.10	4.2
	W	9	1	-	1.20	10.8
	V	2	0.6	-	0.3	0.63
						Total=27.96m^2
9.	**12mm thick cement plastering in CM (1:4)** Internal plaster					
	Parcel + Storage room	1x4	5	-	3	60
	Manager's office (H)	1x2	5	-	3	30
	(V)	1x2	4	-	3	24
	Saving and Cash counter (H)	1x2	5	-	3	30
	(V)	1x2	4	-	3	24
	Speed post & stamps	1x2	5	-	3	30
		1x2	4	-	3	24
	W.C (H)	2x2	3	-	3	30
	(V)	2x2	2	-	3	24
	Waiting area (H)	1x2	9.4	-	3	56.40
	(V)	1x2	17.9	-	3	107.4
	External plaster building upto	1x2	15.3	-	4.0	122.4
	parapet	1x2	18.5	-	4.0	148
	Inside parapet	1x2	14.9	-	0.9	26.82
		1x2	18.1	-	0.9	32.58
	Parapet top	1	66.8	0.2	-	13.36

	Boundary wall					
	Inside (H)	1x1	14.9	-	1.5	22.35
	(V)	1x2	4.0	-	1.5	12.0
	Outside(H)	1x1	15.3	-	1.5	22.95
	(V)	1x2	4.2	-	1.5	12.6
	Ceiling plaster	1	15.3	18.5	-	283.05
						=141.91m^2
	Deduction					
	D	1x2	2.5	-	1.5	7.5
	D_1	1x2	2	-	2.10	8.4
	D_2	4x1	1	-	2.10	8.4
	D_3	4x1	1	-	2.10	8.4
	D_4	9x1	1	-	1.2	10.8
	V	2x1	0.6	-	0.3	0.36
	C.L of the building	1	94.05	0.3	-	28.25
						=-72.075
						Total=1069.835m^2
10.	**5cm thick marble mosaic tiled flooring**					
	Building area	1	15.3	18.5	-	283.05
	Deduction wall					
	C.L=94.05	1	94.05	0.3	-	28.215
						Total=254.835m^2
11.	**BBLC (1:2:4) for floor base-10cm thick**					
	Building area	1	21.1	17.5	-	369.25
	Deduction of wall					
	C.L=94.05	1	94.05	0.3	-	28.215
						Total=254.835m^2
12.	**Sand / Murrum filling in plinth**					
	Building area	1	15.3	18.5	0.45	127.372
	Deduction					
	C.L=94.05	1	94.05	0.3	0.45	12.691
						Total=114.675m^3
13.	**Skirting of mosaic**					
	Parcel + Storage room	1x4	5	-	-	20
	Manager's office (H)	1x2	5	-	-	10
	(V)	1x2	4	-	-	8
	Saving & Cash counter (H)	1x2	5	-	-	10
	(V)	1x2	4	-	-	8
	Speed Post & Stamps (H)	1x2	5	-	-	10
	(V)	1x2	4	-	-	8
	W.C (H)	2x2	3	-	-	12
	(V)	2x2	2	-	-	8
	Waiting area (H)	1x2	9.4	-	-	18.8
	(V)	1x2	17.9	-	-	35.8

						=148.6rm
	Deduction D_1 D_2 D_3	 1x1 4x2 2x2	 2 1 1	 - - -	 - - -	 2 8 4
						=-14
						Total=134.6Rm
14.	**White washing / color washing 3-coats** **Quantity as per items of plaster**					1069.835m^2
15.	**Earth filling in foundation trench** =80.644-24.097-16.443-13.807 =26.297					26.297m^3

Table 18: Abstract Sheet

No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	80.644	100	m^3	8064.4
2.	Foundation concrete (1:4:8)	24.097	2000	m^3	48194
3.	3rdclass brick masonry for foundation and plinth (1:6)	52.510	2700	m^3	141777
4.	D.P.C (1:1$^{1/2}$:3) 2.5cm thick	34.1	70	m^2	2387
5.	1st class brick masonry for superstructure (1:6)	95.007	3000	m^2	285021
6.	C.C for slab, beam, lintel, etc (1:2:4)	39.996	5500	m^2	219978
7.	Steel reinforcement	3141.28	60	Kg	188476.8
8.	Woodwork or glass work for doors, windows & ventilator	27.96	4500	m^2	125820
9.	12mm thick cement plastering (1:4)	1069.835	250	m^2	267458.75
10.	5cm thick marble mosaic tile flooring	254.835	700	m^2	178384.5
11.	BBLC for floor base (1:2:4)	254.835	1500	m^3	382252.5
12.	Sand / Murrum filling in plinth	114.675	450	m^3	51603.75
13.	Skirting of mosaic	134.6	70	rm	9422
14.	White Washing	1069.835	10	m^2	10698
15.	Earth filling	26.297	50	m^3	1315
				Rs.	**1,920,852.7**
				Contractor's Profit (10%)	**192,085**
				Add 5% contingencies	**96,042.64**
				Total	**2,208,980.34**

8.2 Reason for Students Recommending this Design

- Garden – When we visited Chosar village we saw that the lake can be used as the rain water harvesting and there is empty space also so we decided to convert that palace into a beautiful garden.
- Bank – After visiting our allocated village Chosar, we came to know that there is no bank in the village. It is one of the basic requirements in day to day life. Because there is no facility of bank it creates problems for the villagers. They have to go to other palaces for bank work. So we designed one bank for Chosar village.
- Library – Because there is no facility of library n our village we decided to make one for the easement of their education.
- Community Hall – When we visited our village we get to know that there is no facility of community hall in the village. Various functions are held in community hall so we designed one for the enjoyment of the villagers. So that they can arrange any type of function in it.
- PHC – PHC is one of the basic amenities in our life. Our village Chosar has no PHC. The villagers have to go to another village for the treatment. So we designed one PHC for the sake of the villagers.
- Post Office – There is not any post office in our village, so we decided to make one. So that it would be easy for the villagers to communicate to their respective known ones.

8.3 About designs Suggestions / Benefit of the villagers

- Garden – Due to irregular canal water for irrigation purpose they need source of water for irrigation, using that lake water they can fulfill the requirement of irrigation water. And the surrounding area of that place can be convert into the Garden so the villagers can use that place for walking, running, to get fresh air and children can get playground also. The garden also increases the beauty of the village.
- Bank – The villagers don't have to go far for banking facilities, their money will be protected from theft and fires. The villagers can put their money in bank into saving account from that they can get interest rate as well.
- Library – Libraries are important cornerstones of a healthy community. Libraries give people the opportunity to find jobs, explore medical research, experience new ideas, got lost in wonderful stories while at the same time providing a sense of place for gathering.
- Community Hall –The villagers can gather for group activities, social support, public information and other purposes. They can sometimes provide the hall for the whole community or for a specialized group within the community, as per required.
- PHC – Within the help of PHC the villagers can get a wide range of variety of health services like preventive care, care for chronic conditions such as asthma, diabetes, etc and acute care for problems like coughs, digestive issues, etc. So the villagers can get the treatment in their own village.
- Post Office – The villagers can now send the letters from their own village's post office. They can also deposit their money in post office. For their parcel recovery they need not to go to other places, they will get their parcel from their village only.

9. PROPOSING DESIGNS FOR FUTURE DEVELOPMENT OF THE VILLAGE FOR THE PART-2 DESIGN

- For the future requirements of our allocated village Chosar, we decided some designs for the betterment of our village and to make it one of the smart village.

- Design 1: School
- Design 2: Drainage network
- Design 3: Bituminous road for internal streets
- Design 4: Bio gas plant
- Design 5: Reconstructing the lake walls
- Design 6: RO water

(1) R.O. Plant:

- Due to the GIDC is located few kilometers far from Chosar village and the industries dump their chemical waste in mini canal which pass near by the village.That canal is badly polluted the ground water of that area. The water having yellowish color and bad test.

(2) Drainage System:

- So they depend on canal water but problem is that the canal water is very irregular so they can't fully depend on the canal water.So they need alternative source of water. So rain water harvesting is the best solution for that.

(3) Concrete Roads:

- The concrete road is provides more comfort and safety to villagers.Because if road is sandy then the possibility of the accident will increase due to less friction and in the village we can easily find out the animals on the road , so it is necessary.

(4) Animal Hospital:

- During the village visit we found the animal hospital there but the condition of the hospital is not that good and may be due to the lack of doctors or bad infrastructure the hospital is closed. So we decided to modify/repair the existing animal hospital so that it can be reused again.

(5) Bus Stand:

- By traveling by bus it reduces pollution and road congestion, because the people who travel by bus are more and thus the lesser are cars.

(6) School:

- In our village Chosar there is only primary education but the facility of secondary education is not there. So if we provide secondary education in the village, they don't have to go far and atleast they will get secondary education in their own village.

10. CONCLUSION OF THE ENTIRE VILLAGE ACTIVITIES OF THE PROJECT

- The main aim of the Vishwakarma Yojana is to provide the all amenities such as the urban amenities with rural soul to villages. So to provide that we discussed with the Sarpanch and the villagers of the Chosar and also conducted different types of survey and analyzed the village.
- We conclude about the introduction of village, geographical data, demographical data, occupational data, current infrastructure facilities such as water, waste water management, transportation, road network, drainage line, water supply for agricultural activities, electricity for residential use, electricity for irrigation water, educational facilities, etc.
- As per all our studies we tried to design all the primary facilities which are required or needs to be required in Chosar village.
- According to UDPFI norms, lacking in basic amenities and smart amenities can b provided as-
    1. Garden
    2. Bank
    3. Library
    4. Community hall
    5. PHC
    6. Post office
- By providing these amenities in the village, the villagers can live their life easily. This amenities can help the villagers to increase their growth and for betterment of their works.

11. REFERENCES REFERRED FOR THIS PROJECT

- Professional Practice and Valuation by A.S. Kotadia-4th edition
- Irrigation Engineering by D.r R.P. Rethaliya and S.K. Dave
- Design of Reinforced Concrete Structures by Dr. R.P Rethaliya
- Traffic Engineering by Dr. R.P. Rethaliya
- Balacharan, S. (1977), "Civil Engineering: A Reference Guide", Vol. 5 No. 2, pp. 21-26.
- Strength of Materials by TR Graves Smith MA, PhD, CE, MICE

Website Links:

- https://www.environmentalpollution.in/waste-management/waste-management-of-solid-liquid-and-gaseous-wastes/377
- https://www.thebetterindia.com/112312/punsari-best-village-sarpanch
- http://www.swachhbharaturban.in/sbm/home/
- https://en.wikipedia.org/wiki/infrastructure
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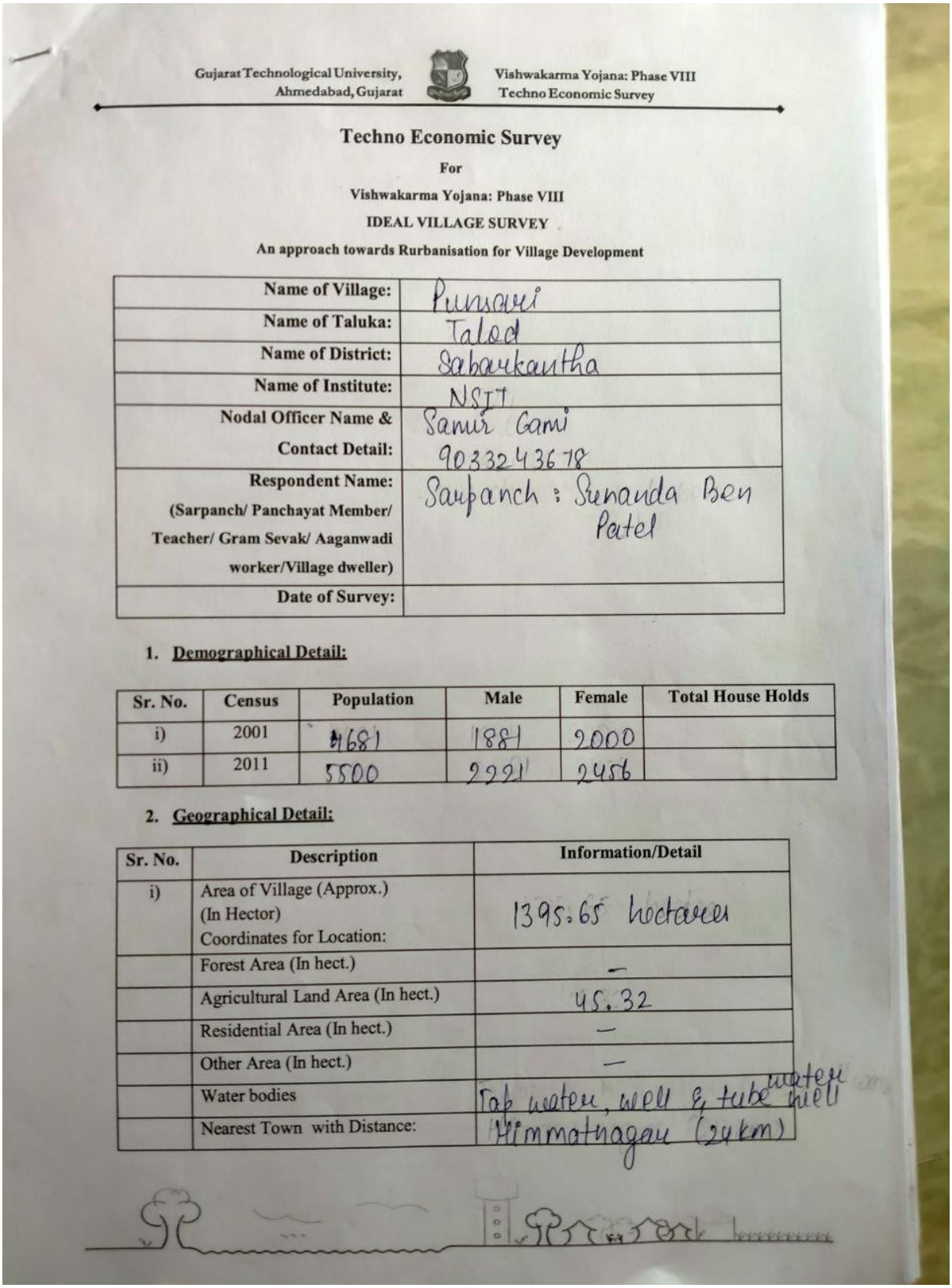
- https://doi.org/10.1108/eb048609
- https://doi.org/10.1016/B978-0-408-01208-9.50006-3

12. ANNEXURE ATTACHMENT

12.1 Survey Form of Ideal Village



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:	Punsari
Name of Taluka:	Talod
Name of District:	Sabarkantha
Name of Institute:	NSIT
Nodal Officer Name & Contact Detail:	Samir Gami 9033243678
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sarpanch : Sunanda Ben Patel
Date of Survey:	

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	4681	1881	2000	
ii)	2011	5500	2221	2456	

2. **Geographical Detail:**

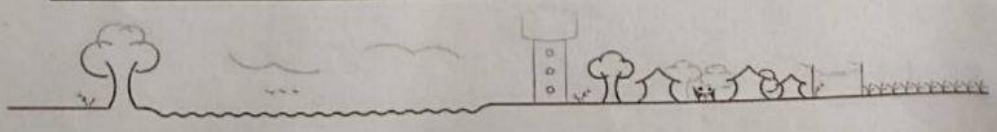
Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	1395.65 hectares
	Forest Area (In hect.)	–
	Agricultural Land Area (In hect.)	45.32
	Residential Area (In hect.)	–
	Other Area (In hect.)	–
	Water bodies	Tap water, well & tube well water
	Nearest Town with Distance:	Himmatnagar (24km)

3. Occupational Details:

Name of Three Major Occupation groups in Village	1. Aquiculture 2. Business 3. Household work

4. Physical Infrastructure Facilities:

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



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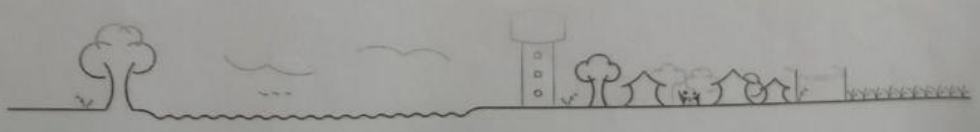
Vishwakarma Yojana: Phase VIII
Techno Economic Survey

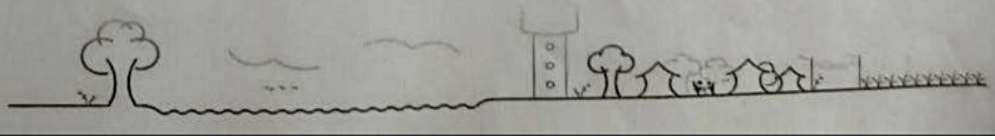
E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Yes	✓		Bitumen
	Main road	Yes	✓		R.C.C
	Internal streets	Yes	✓		R.C.C
	Nearest NH/SH/MDR/ODR Dist. in kms.	Yes	✓		
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No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



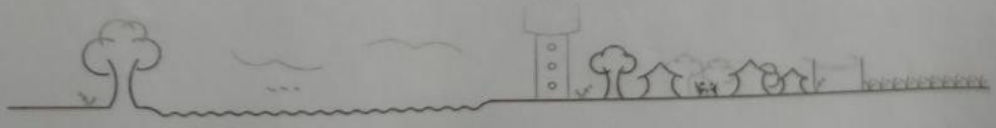
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	Yes	✓		Solar street light
	LED Facilities	Yes	✓		
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	Yes	✓		Mobile
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	Yes	✓		
	Solid & liquid waste Disposal system available	–			
	Any facility for Waste collection from road	Yes	✓		
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Yes	✓		
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Yes	✓		

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks



K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	Yes Yes	✓ ✓		
	Private Clinic/Private Hospital/ Nursing Home	—			
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
L.	**Education Facilities:**				
	Aaganwadi/ Play group	Yes			8
	Primary School	Yes			5
	Secondary school				4
	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:	Yes	✓		



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Vishwakarma Yojana: Phase VIII
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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	Good		✓	
	Other Facility				

Suggestions if any:

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

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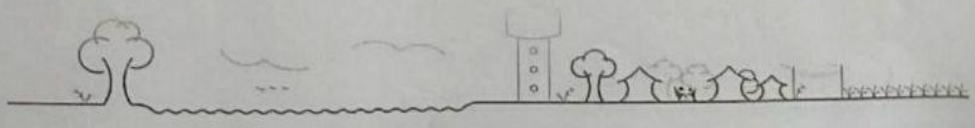
	General Market	Yes	✓		1
	Shops (Public Distribution System)	Yes	✓		
	Panchayat Building	Yes	✓		
	Pharmacy/Medical Shop	Yes	✓		
	Bank & ATM Facility	Yes	✓		2
	Agriculture Co-operative Society	Yes	✓		
	Milk Co-operative Soc.	Yes	✓		2
	Small Scale Industries	Yes	✓		
	Internet Cafes/ Common Service Center/Wi Fi	Yes	✓		
	Other Facility	Yes	✓		C.C.T.V. & LED Screens
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	Yes			solar street light
P.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	Yes	✓		
Q.	Any Other				

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	



Recent Projects going on for Development of Village	Yes
Any NGO working for village development	Yes

8. **Additional Information/ Requirement:**

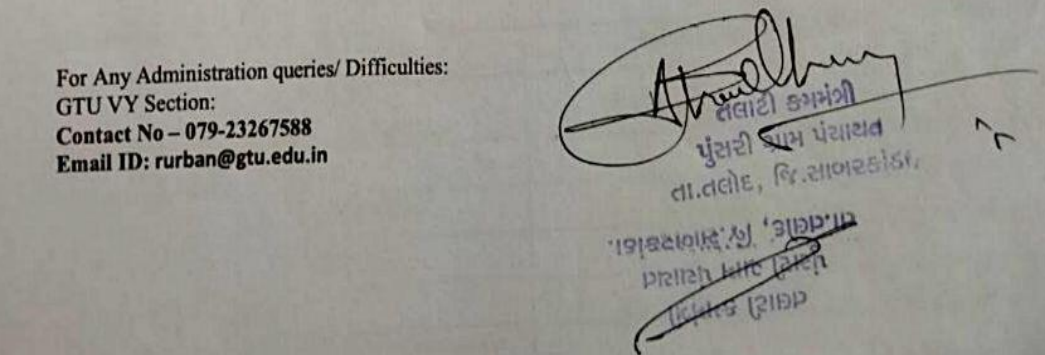
Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities(School Building, Health Center, Panchayat Building, Public Toilets & any other)		
2.	Additional Information/ Requirement		

9. **Smart Village Proposal Design**

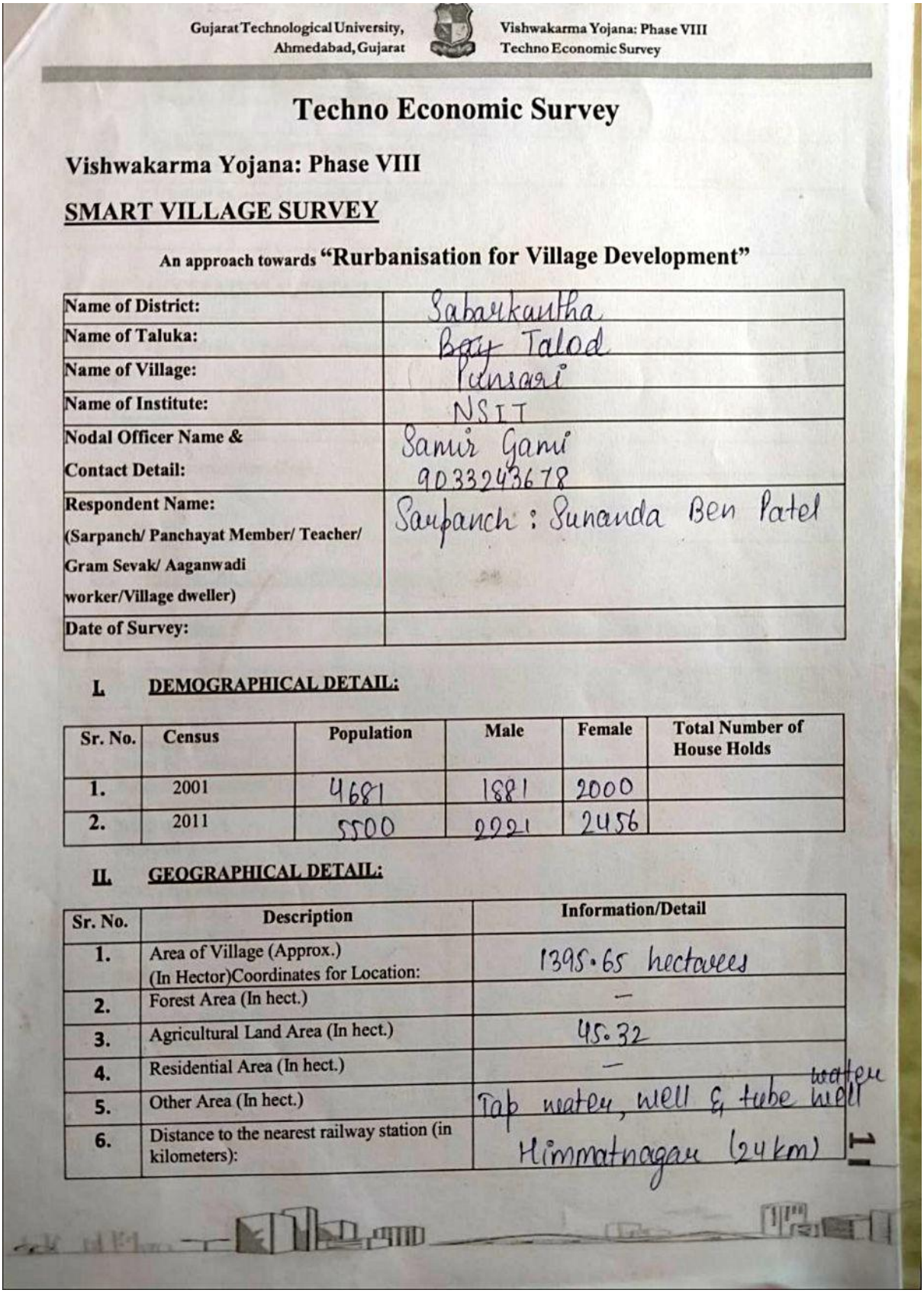
Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

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



12.2 Survey Form of Smart Village



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

Name of District:	Sabarkantha
Name of Taluka:	~~Bay~~ Talod
Name of Village:	Punsari
Name of Institute:	NSIT
Nodal Officer Name & Contact Detail:	Samir Gami 9033243678
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sarpanch : Sunanda Ben Patel
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	4681	1881	2000	
2.	2011	5500	2221	2456	

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1395.65 hectarees
2.	Forest Area (In hect.)	–
3.	Agricultural Land Area (In hect.)	45.32
4.	Residential Area (In hect.)	–
5.	Other Area (In hect.)	Tap water, well & tube well water
6.	Distance to the nearest railway station (in kilometers):	Himmatnagar (24 km)

7.	Name of Nearest Town with Distance:	Himmatnagar (24km)
8.	Distance to the nearest bus station (in kilometers):	
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.	Agriculture
	2.	Business
	3.	Household works

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

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

Gujarat Technological University, Ahmedabad, Gujarat

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

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Power supply for Domestic Use	Yes	✓		
	Power supply for Agricultural Use	Yes	✓		
	Power supply for Commercial Use	Yes	✓		
	Road/ Street Lights	Yes	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	Yes	✓		
	LED Facilities	Yes	✓		
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	Yes	✓		
	Location Condition	Good			
	Community Toilet (With bath/ without bath facilities)	-			
	Solid & liquid waste Disposal system available	-			
	Any facility for Waste collection from road	Yes	✓		door to door
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND	Yes	✓		
	STREAM/RIVER	-			
	CANAL	Yes	✓		
	WELL	Yes	✓		
	TUBE WELL	Yes	✓		
	OTHER (SPECIFY)				
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Yes	✓		Pucca

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	Yes	✓		8
	Sub-Centre				
	PHC	Yes	✓		
	BLOCK PHC				
	CHC/RH				
	District/ Govt. Hospital				
	Govt. Dispensary				
	Private Clinic				
	Private Hospital/ Nursing Home				
	AYUSH Health Facility				
	sonography /ultrasound facility				
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	Yes			8
	Primary School	Yes			5
	Secondary school	Yes			4
	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.				

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:

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

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		✓	
	Telecommunication Network/ STD booth				
	General Market	Good		✓	
	Shops (Public Distribution System)	Good		✓	
	Panchayat Building	Good		✓	
	Pharmacy/Medical Shop	Good		✓	
	Bank & ATM Facility	Good		✓	
	Agriculture Co-operative Society	Good		✓	
	Milk Co-operative Soc.	Good		✓	
	Small Scale Industries				
	Internet Cafes/ Common Service Center/Wi Fi	Good	Wi-Fi	✓	
	Youth Club				
	Mahila Mandal	Good		✓	

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Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
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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	Good		✓	
	Other Facility				

Suggestions if any:

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

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	Yes	✓		
3.	Any Other				

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

8

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

IX. Smart Village / Heritage Details

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

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

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

તલાટી કમમંત્રી
પુંસરી ગ્રામ પંચાયત
તા.તલોદ, જિ.સાબરકાંઠા.

12.3 Survey Form of Allocated Village

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey literature - 81.62%

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	Ahmedabad
Name of Taluka:	Daskroi
Name of Village:	Chosar
Name of Institute:	NSIT
Nodal Officer Name & Contact Detail:	Darshana Chauhan
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Pravin Rawal
Date of Survey:	16/9/2020.

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	—	—	—	—
2.	2011	2328	1217	1111	456

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	577.1 hectares
2.	Forest Area (In hect.)	30% of village area
3.	Agricultural Land Area (In hect.)	20% of village area
4.	Residential Area (In hect.)	1% of village area
5.	Other Area (In hect.)	—
6.	Distance to the nearest railway station (in kilometers):	

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7.	Name of Nearest Town with Distance:	Ahmedabad - 16 km
8.	Distance to the nearest bus station (in kilometers):	
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. Agriculture 2. Business 3. Household works

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

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

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	Other(Specify)Lake/ Pond	Yes	✓		2lakes
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	2	11-Litre	
	Underground Sump	Capacity:	-		
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1	Yes	✓		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Yes	✓		
	Main road	Bitumenous	✓		
	Internal streets	concrete	✓		
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH-Ahmedabad to Vadodara	✓		6 km away
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Yes	✓		Genatpur
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	✓		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes	✓		Auto
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes	✓		More than 6 hrs

3

	Power supply for Domestic Use	Yes	✓		
	Power supply for Agricultural Use	Yes	✓		
	Power supply for Commercial Use	Yes	✓		
	Road/ Street Lights	Yes	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	Yes No			
	LED Facilities	No			
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	Yes	✓		
	Location Condition	Good			
	Community Toilet (With bath/ without bath facilities)	No			
	Solid & liquid waste Disposal system available				
	Any facility for Waste collection from road	Yes			Van from door to door
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND	Yes	✓		lake
	STREAM/RIVER				
	CANAL	Yes	✓		Narmada canal water
	WELL				
	TUBE WELL.				
	OTHER (SPECIFY)				
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Yes 1:9	✓		

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	Yes	✓		
	Sub-Centre				
	PHC				
	BLOCK PHC				
	CHC/RH				
	District/ Govt. Hospital	No			
	Govt. Dispensary	No			
	Private Clinic	Yes	✓		
	Private Hospital/	No			
	Nursing Home	No			
	AYUSH Health Facility	No			
	sonography /ultrasound facility	No			
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	Yes	✓		
	Primary School	Yes	✓		1 to 8 Std
	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: .....kms.
Suggestions if any:	

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

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				✓
	Telecommunication Network/ STD booth				✓
	General Market	Nice		✓	
	Shops (Public Distribution System)	Nice		✓	
	Panchayat Building	Good		✓	
	Pharmacy/Medical Shop				✓
	Bank & ATM Facility				✓
	Agriculture Co-operative Society				✓
	Milk Co-operative Soc.	Good		✓	
	Small Scale Industries	Good		✓	
	Internet Cafes/ Common Service Center/Wi Fi				✓
	Youth Club				✓
	Mahila Mandal				✓

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

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

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

IX. Smart Village / Heritage Details

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

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

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સરપંચ
ચોસર ગ્રામ પંચાયત
તા.દસ્ક્રોઈ, જિ.અમદાવાદ

12.4 Gap Analysis of the CHOSAR Village

VILLAGE GAP Analysis					
Village Facilities	**Planning Commission/ U DPFI Norms**	**Village Name:**	**Chosar**		
		Population:		**2328**	
		Existing	**Required as per Norms**	**Smart Vilage / Citie/ Heritage Future Projection Design**	**Gap**
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	1	1		Not required
Primary School	Each Per 2500 population	1	1		Not required
Secondary School	Per 7,500 population	0	1	1	Can be provided
Higher Secondary School	Per 15,000 Population	0	0	0	0
College	Per 125,000 Population	0	0	0	0
Tech. Training Institute	Per 100000 Population	0	0	0	0
Agriculture Research Centre	Per 100000 Population	0	0	0	0
Skill Development Center	Per 100000 Population	0	1	1	Can be provided
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	0	1	1	Can be provided
Primary Health & Child Health Center	Per 20,000 population	0	1	1	Can be provided
Child Welfare and Maternity Home	Per 10,000 population	0	0	0	0
Multi-speciality Hospital	Per 100000 Population	0	0	0	0
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets	2	0	0	Not required

	& kutcha house) PhysicalIn				
Infrastructure Facilities					
		Adequate	**Inadequate**		
Drinking Water (Minimum 70 lpcd)					
Over Head Tank	1/3 of Total Demand	yes	0		0
U/G Sump	2/3 of Total Demand	yes	0		0
Drainage Network - Open		-	-		-
Drainage Network - Cover		yes			Needs to be modify
Waste Management System			no		Needs to be provided
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	0	1	1	Can be provided
community hall and Public Library	Per 15000 Population	0	1	1	can be provided
Cremation Ground	Per 20,000 population	0	0	0	0
Post Office	Per 10,000 population	1	1	1	Re design required
Gram Panchayat Building	Each individual/group panchayat	1	0	0	Not required
APMC	Per 100000 Population				
Fire Station	Per 100000 Population				
Public Garden	Per village	0	1	1	Can be provided
Police post	Per 40,000Population				
Shopping Mall					
Electrical Design					
Electricity Network					
Any Smart Village Facility					
Technology					
Solar street lights	yes	-	-	-	-
Bio gas plant	-	no	-	-	Required
Wi-fi services	-	no	-	-	Required

Vehicles for waste collection	yes	-	-	-	Required
Training hub	-	no	-	-	Required
		Adequate	Inadequate		
Transportation		yes			Not required
Pucca Village Approach Road	Each village	yes			Not required
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)		no		Bus station needs to be modified

12.5 Summary Details of All the Villages Designs in Table Form

No.	Village name	Discipline	Part 1	Part 2
1.	Chosar	Civil	Garden	RO Plant
2.	Chosar	Civil	Bank	Drainage System
3.	Chosar	Civil	Library	Concrete Roads
4.	Chosar	Civil	Community Hall	Animal Hospital
5.	Chosar	Civil	PHC	Bus Stand
6.	Chosar	Civil	Post Office	School

12.6 Drawings

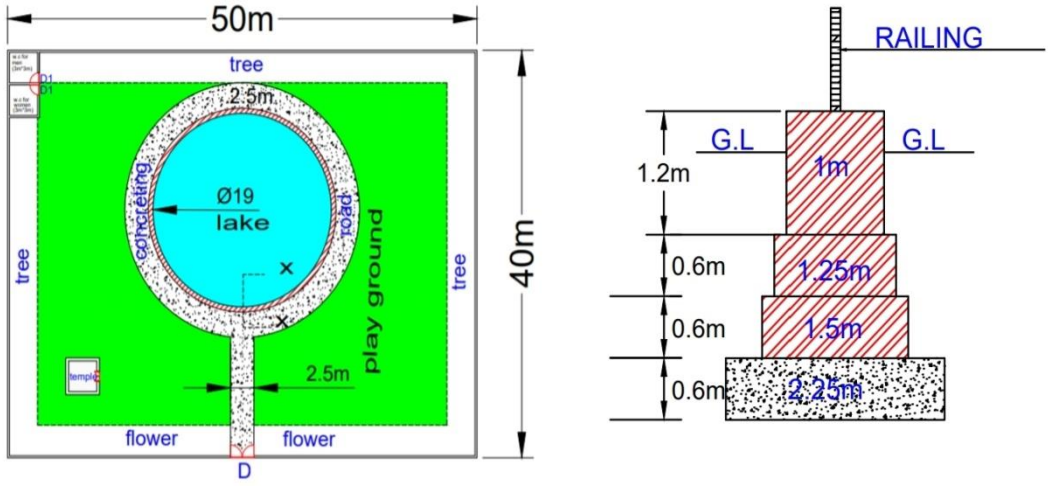


Figure 46: Design of Garden

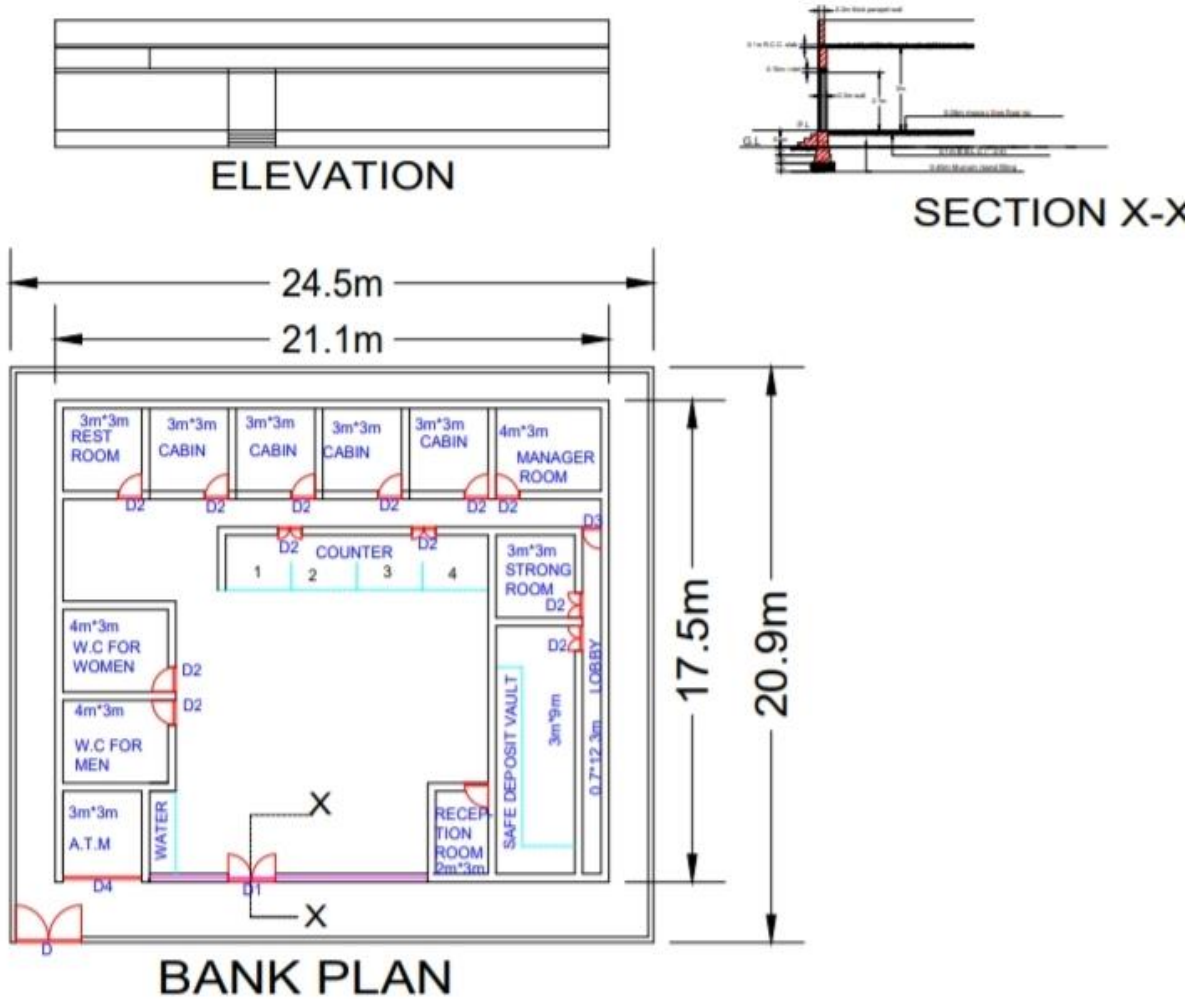


Figure 47: Design of Bank

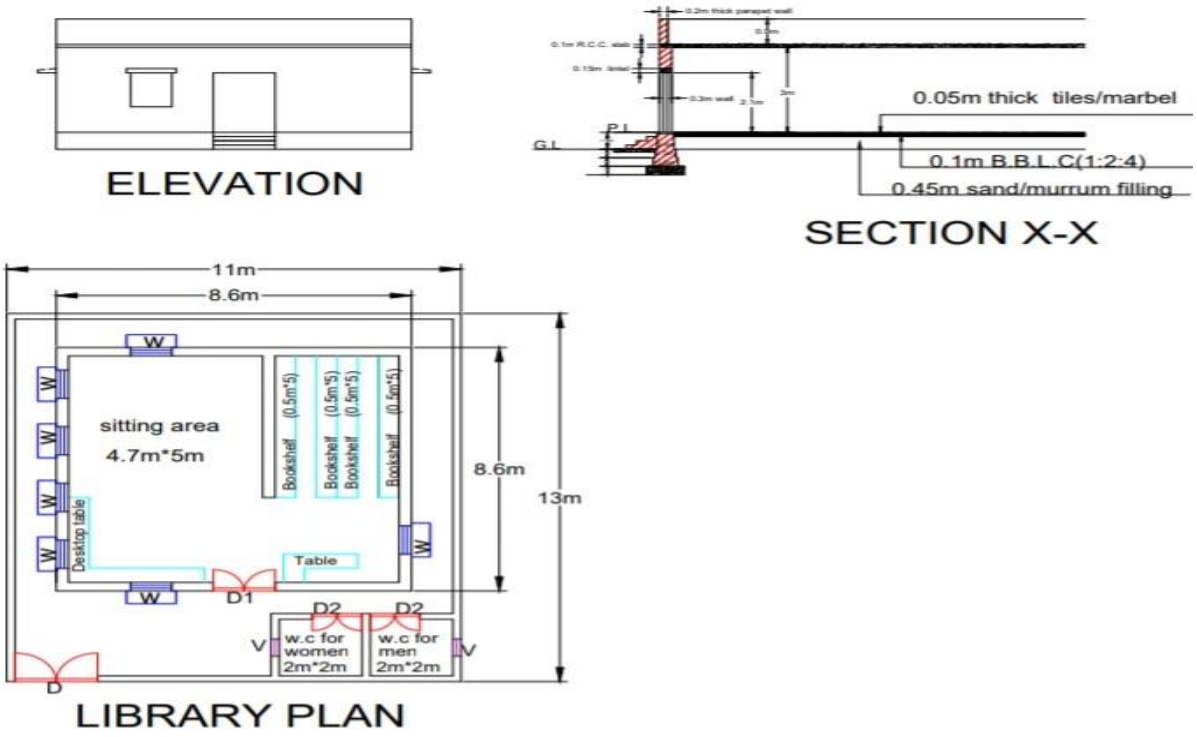


Figure 48: Design of Library

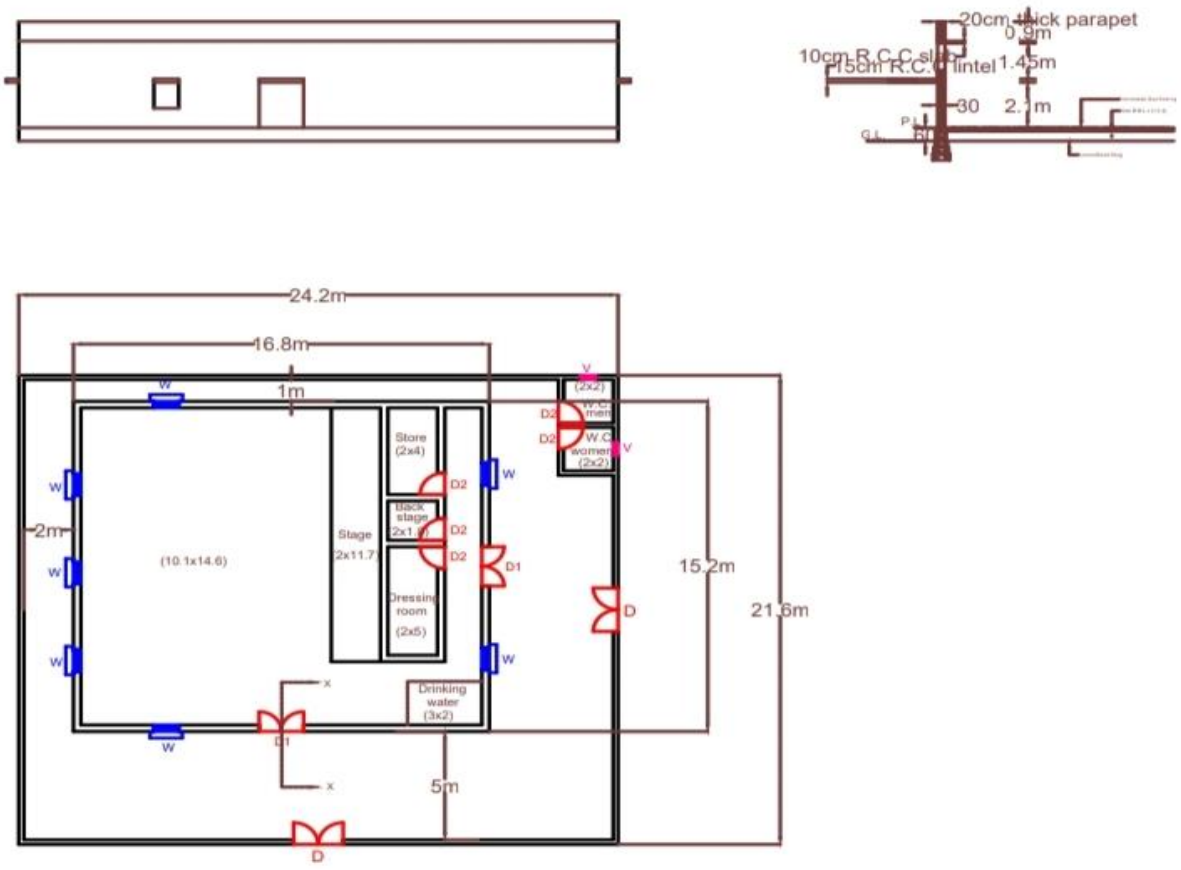


Figure 49: Design of Community Hall

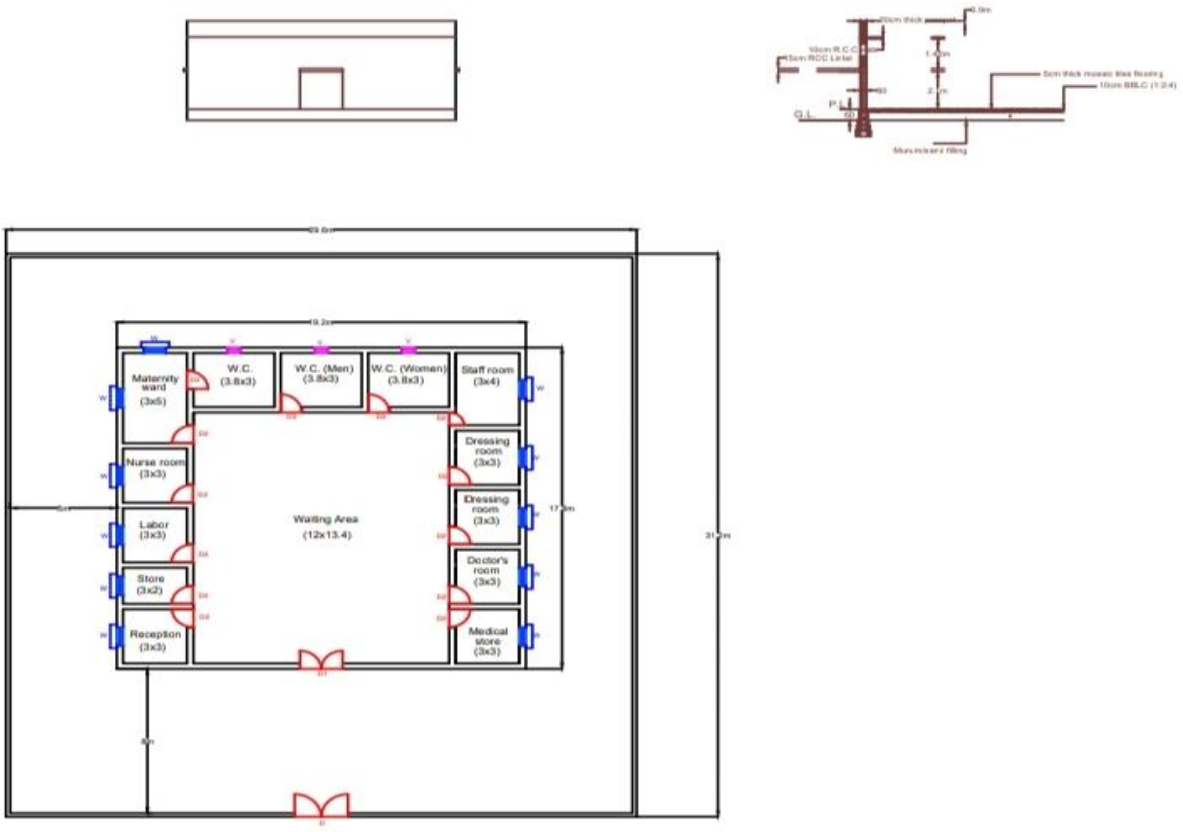


Figure 50: Design of PHC

Figure 51: Design of Post Office

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

Group photo with Sarpanch

School

Bank

Anganwadi

Mobile Library

Figure 52: Photos of Ideal Village (Punsari)

Garbage Collection

Bus Stand

Houses and streets

Lake

Figure 53: Photos of Allocated Village (Chosar)

12.8 Village Interaction with Sarpanch Report with the photograph

- Due to this COVID-19 pandemic we were not been able to meet the Sarpanch for long time. The Sarpanch meet us for only 5 minutes and many precautions were taken during that time. In that 5 minutes we were only able to ask him the basic requirements what they have in the village and what they need to be built in the village in future. He told us many facilities like school, gram panchayat, bus stand, drainage networks, etc are already available in the village. And facilities like community hall, library, post office, etc needs to be built in the village.
- He also told us that there are two lakes in the village for water requirements. The water comes from Narmada river in the lake, and then the water is provided in the village. The villagers use this water for their personal use and for irrigation facilities.
- There is no personal waste collection management. So the village affects very badly. There should be some kind of waste collection management.
- All the houses of the villages are well developed and the road needs to be reconstructed, because there are many potholes in the roads of the internal village.
- And we also filled the survey form regarding this information.
- So this is the interaction we had with our allocated village and its Sarpanch.

12.9 Sarpanch Letter giving information about the village development

- Our allocated village was Chosar. The Sarpanch of Chosar village gave us many useful information regarding the village and its development.
- He told us that what facilities already exists and what facilities needs to be developed.
- He told us that there is school, bus stand, concrete streets, lakes, etc which are facilities already there and some needs to be modified.
- And facilities like community hall, post office, bank, library, garden, PHC are not there and needs to be provided.
- As a Sarpanch he told us many things which are useful in our report and he also gave us the information regarding the survey forms.

12.10 Comprehensive report preparation as per format

- We will attach comprehensive report in the end of 8th semester.

VY – 8 PART – 2

13. FROM THE CHAPTER-9 FUTURE DESIGNS OF THE ASPECTS

13.1 Design Proposals

13.1.1 Design 1- RO Plant

- District Rural Development Agency (DRDA) has working on installation of RO Plant which nearly cost 8.5 lakh and the capacity varies from 3000 to 5000 liters a day to day life requirement of a household.

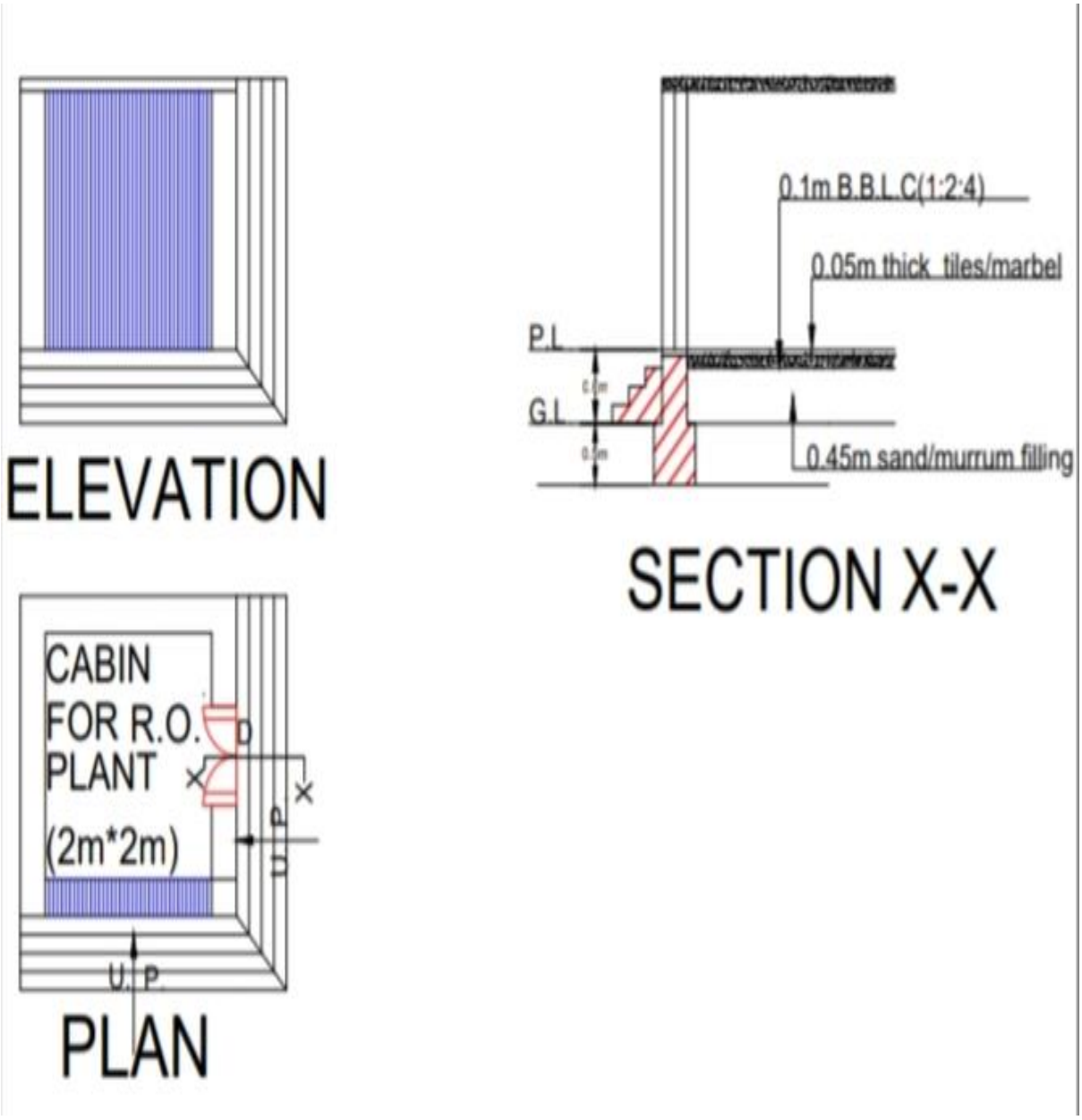


Figure 54: Design of R.O. Plant

Table 19: Measurement Sheet

Sr no.	Description	No.	Length (m)	Breath (m)	Height (m)	Quantity
1.	**Excavation**					
	C.L.=4.6m	1	4.6	0.4	0.5	0.92
	Excavation for step	1x2	0.8	0.15	0.15	0.624
						=1.544m^3
2.	**2nd class brick masonry for foundation in CM (1:6) and plinth**					
	1st footing	1	4.6	0.4	0.5	0.92
	C.L.=4.6m					
	2nd footing	1	4.6	0.3	0.6	0.83
	C.L.=4.6m					=1.75m^3
3.	**Damp proof course DPC (1:1.5:3)**					
	C.L.=4.6m	1	4.6	0.3	-	1.36m^2
4.	**1st class brick masonry for super structure**					
	C.L.=4.6m	1	4.6	0.3	2.1	2.898
	Deduction					
	D	1	0.8	0.3	2.1	0.504
	front open space	1	2	0.3	2.1	1.26
						=1.13m^3
5.	**BBLC (1:2:4)**					
	Excavated part	1	0.8	2.6	0.15	0.624
	Step 1	1x2	0.6	2.6	0.15	0.47
	Step 2	1x2	0.4	2.6	0.15	0.31
	Step3	1x2	0.2	2.6	0.15	0.16
						=1.56m^3
6.	**C.C (1:2:4) for RCC slab including formwork and excluding steel reinforcement**					
	Slab	1	2.6	2.6	0.1	0.68
	Chajjas	1	2.6	0.45	0.1	0.12
						=0.80m^3
7.	**Steel reinforcement work including binding, placing in position= 1% of concrete volume**					
	1/100x0.788x78.54x100=61.89	-	-	-	-	62kg
	Bars in front open space	-	-	-	-	30kg
						=92kg
8.	**Murrum/sand filling in plinth**	1	2	2	0.45	1.8m^3
9.	**BBLC (1:2:4) for floor base 10cm thick**	1	2	2	0.1	0.4m^3
10.	**5cm thick marble mosaic tiled flooring**	1	2	2	-	4m^3
11.	**Skirting of mosaic**	1x2	2	-	-	4
		1x1	2	-	-	2

						=6rm
12.	**Woodwork for door**	1	0.8	-	2.1	1.68m^2
13.	**12mm thick cement plastering**					
	Internal plaster					
	Walls	1x2	2	-	2.1	8.4
		1x2	2	-	2.1	4.2
	Ceiling	1x1	2	2	-	4
	External plaster					=16.6
	Wall	1x2	2.6	-	2.2	11.44
		1x1	2.6	-	2.2	5.72
						=17.16
	Chajjas	1x1	2.6	0.45	-	1.17
		1x1	2.6	-	0.2	0.26
						=1.43
	Step	1x3	2.6	0.2	-	1.56
		1x4	2.6	-	0.15	1.56
						=3.12
						=33.31m^2
14.	**White washing-3coats**	-	-	-	-	30.19m^2

Table 20: Abstract Sheet

No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	1.544	100	m^3	154
2.	2^{nd}class brick masonry for foundation and plinth (1:6)	1.75	2700	m^3	4725
3.	D.P.C (1:$1^{1/2}$:3) 2.5cm thick	1.36	70	m^2	95.2
4.	BBLC	1.56	2000	m^3	2260
5.	1^{st} class brick masonry for superstructure (1:6)	1.13	3000	m^2	3390
6.	C.C for slab, beam, lintel, etc (1:2:4)	0.80	5500	m^2	4400
7.	Steel reinforcement	92	60	Kg	5520
8.	12mm thick cement plastering (1:4)	33.31	250	m^2	8327.5
9.	5cm thick marble mosaic tile flooring	4	700	m^2	2800
10.	BBLC for floor base (1:2:4)	0.4	1500	m^3	600
11.	Sand / Murrum filling in plinth	1.8	450	m^3	810
12.	Wood work or Glass work for window, door & ventilator	1.68	4500	m^2	7560
13.	Skirting of mosaic	6	70	rm	420
14.	White Washing	30.19	10	m^2	301.9
15.	RO Plant price	-	-	-	850000
				Rs.	**891,364**
			Contractor's Profit (10%)		**891,36.4**

	Add 5% contingencies	**445,682**
	Total	**1,426,182.4**

13.1.2 Design 2- Drainage System

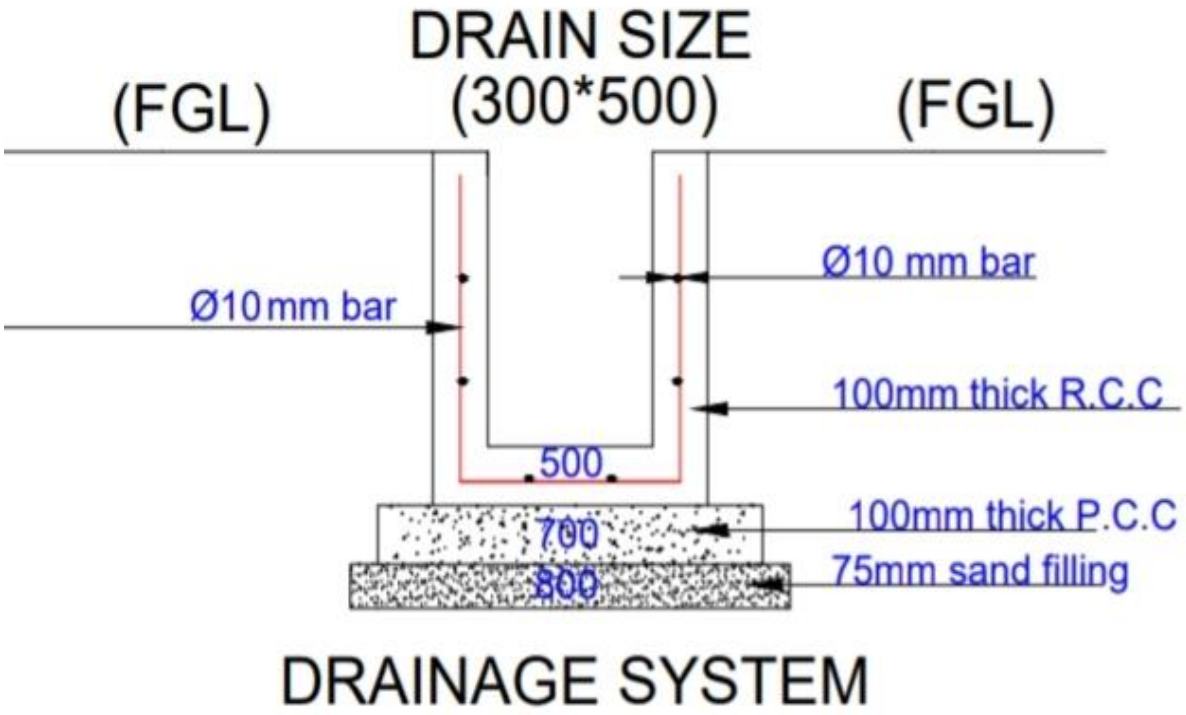


Figure 55: Design of Drainage System

Table 21: Measurement Sheet

Sr no.	Description	No.	Length (m)	Breath (m)	Height (m)	Quantity
1.	**Excavation for drainage system in ordinary soil upto 1.5m depth** L=5000m	1	5000	0.8	0.8	3200m^3
2.	**Sand filling**	1	5000	0.8	0.1	400m^3
3.	**PCC (1:4:8)** L=5000	1	5000	0.7	0.1	350m^3
4.	**C.C. (1:2:4) for R.C.C work including formwork but excluding reinforcement** Wall concrete Base width	1x2 1x1	5000 5000	0.1 0.5	0.5 0.1	5.20 250 =750m^3
5.	**Steel reinforcement work including**					

	bending, binding and placing in position= 1% volume of concrete =1/100x750x78.54x100=58905	-	-	-	-	58905kg

Table 22: Measurement Sheet

No.	Item Description	Qty.	Rate	Per	Amount
1.	Excavation	3200	100	m^3	320,000
2.	Sand Filling	400	450	m^3	180,000
3.	P.C.C	350	2000	m^3	700,000
4.	C.C. work	750	5500	m^2	4,125,000
5.	Steel Reinforcement	58905	60	kg	3,534,300
				Rs.	**8,859,300**
				Contractor's Profit (10%)	**885,930**
				Add 5% contingencies	**442,965**
				Total	**10,188,195**

13.1.3 Design 3-Concrete Roads

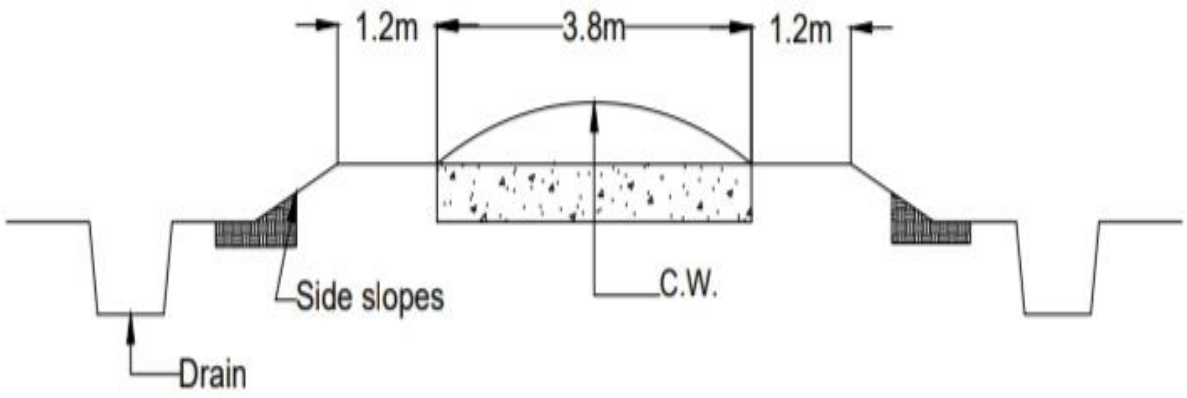


Figure 56: Design of Concrete Road

Table 23: Measurement Sheet

Sr no.	Description	No.	Length (m)	Breath (m)	Height (m)	Quantity
1.	**500mm compaction**	-	-	-	-	-
2.	**Sand filling**	1	5000	3.8	0.1	1900m^3
3.	**PCC**	1	5000	3.8	0.1	1900m^3

Table 24: Abstract Sheet

No.	Item Description	Qty.	Rate	Per	Amount

1.	Sand Filling	1900	450	m^3	355,000
2.	P.C.C.	1900	2000	m^3	3,800,000
				Rs.	**4,155,000**
				Contractor's Profit (10%)	**415,500**
				Add 5% contingencies	**207,750**
				Total	**4,778,250**

13.1.4Design 4-Animal Hospital

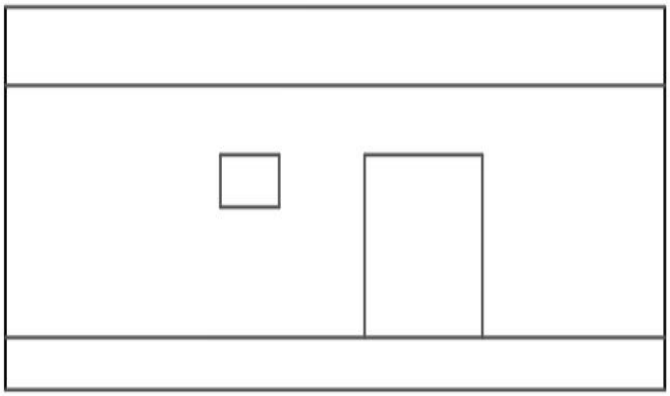


Figure 57: Front Elevation of Animal Hospital

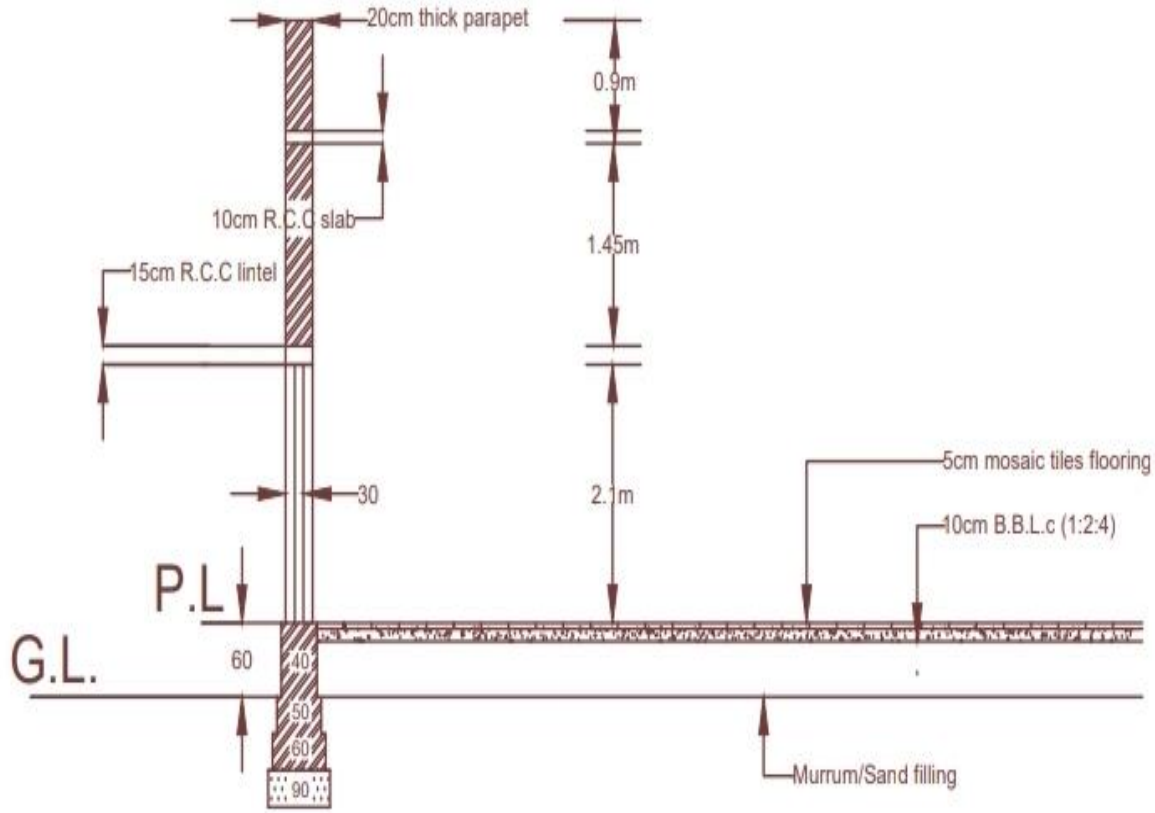


Figure 58: Section of Animal Hospital

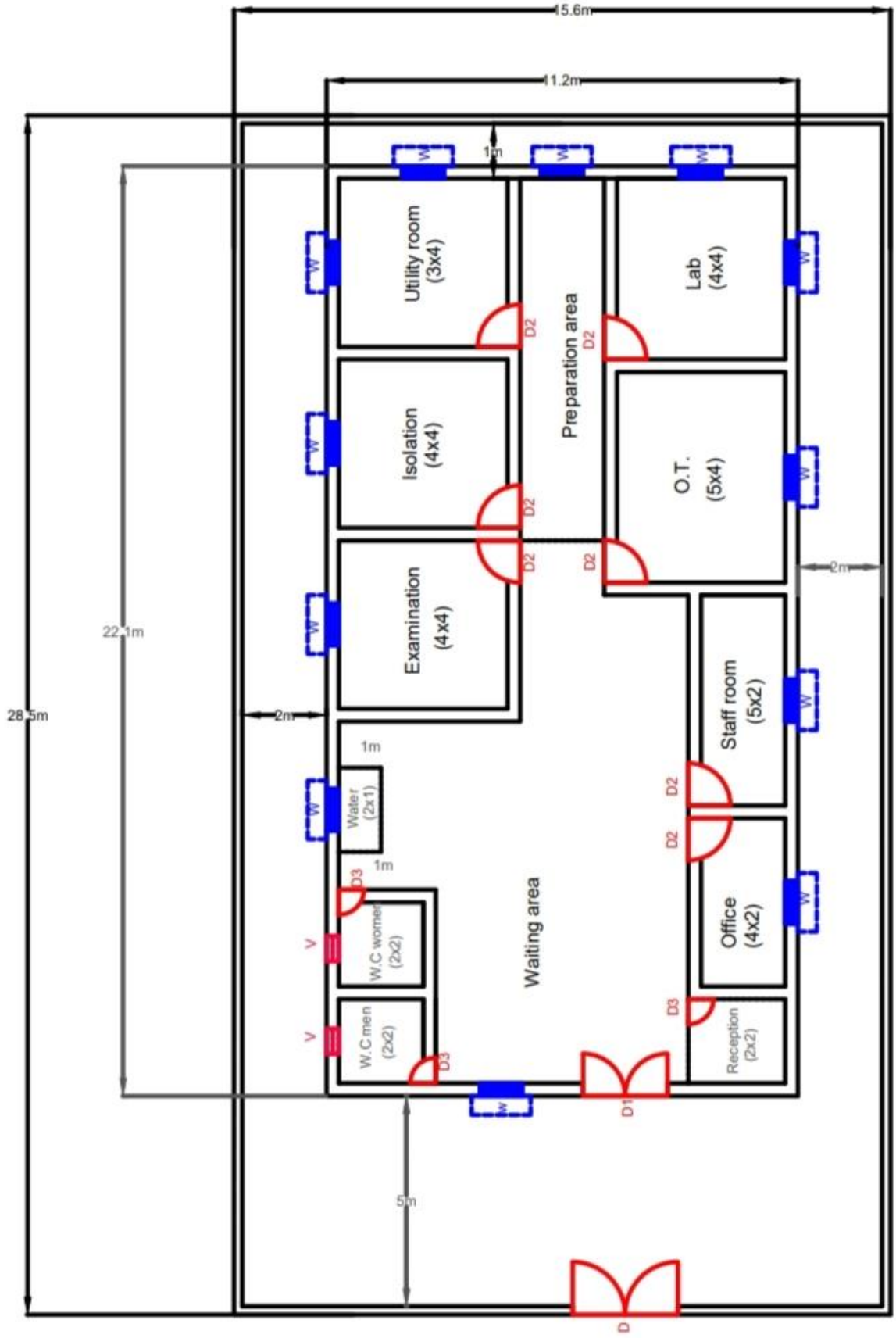


Figure 59: Hospital Layout plan

Type	Dimensions
D	2.5x1.5
D_1	2x2.10
D_2	1x1.20
D_3	0.6x1
W	1x1.20
V	0.6x0.6

Table 25: Measurement Sheet

Sr no.	Description	No.	Length (m)	Breath (m)	Height (m)	Quantity
1.	**Excavation**					
	C.L.=131.8-(28x1/2x0.9)					
	= 119.2m	1	119.2	0.9	0.9	96.55
	For boundary					
	C.L.=87.4m	1	87.4	0.4	0.6	20.98
						=117.5m^3
2.	**Foundation concrete C.C (1:4:8)**					
	C.L.=119.2m	1	119.2	0.9	0.3	32.18m^3
3.	**2nd class brick masonry for foundation in and plinth**					
	1st footing					
	C.L.=126.4m	1	119.2	0.6	0.3	21.46
	2nd footing					
	C.L.=127.3m	1	119.2	0.5	0.3	17.88
	3rd footing					
	C.L.=128.2m	1	119.2	0.4	0.6	28.61
						=67.95m^3
4.	**Damp proof course DPC (1:1.5:3)**	1	119.2	0.4	-	47.68m^2
	C.L.=119.2m					
5.	**1st class brick masonry for super structure**					
	For building					
	C.L.=131.8-(1x1/2x0.3)					
	=130.15m	1	130.15	0.3	3	117.14
	For boundary wall					
	C.L.=87.4m	1	87.4	0.2	1.5	26.22
	Deduction					=143.4
	D	1	2.5	0.2	1.5	0.75
	D_1	1	2	0.3	2.1	1.26
	D_2	7	1	0.3	2.1	4.41
	D_3	3	0.6	0.3	2.1	1.134
	W	12	1	0.3	1.2	4.32
	V	2	0.6	0.3	0.6	0.216
	Lintel	1x12	1.4	0.3	0.15	0.756
	Beam	1	130.15	03	0.3	11.71

						=24.56 =118.8m^3
6.	**C.C (1:2:4) for**					
	Lintel	1x12	1.4	0.3	0.15	0.756
	Beam	1	130.15	0.3	0.3	11.71
	Chajjas	1x12	1.4	0.45	0.15	1.134
	Slab	1	11.2	22.1	0.1	24.75 =38.35m^3
7.	**Steel reinforcement work including binding, placing in position= 1% of concrete volume**					
	=1/100x38.35x78.54x100=3012.0	-	-	-	-	3012kg
8.	**Woodwork for**					
	D_1	1x1	2	-	2.10	4.2
	D_2	1x7	1	-	2.10	14.7
	D_3	1x3	0.6	-	2.10	3.78
	W	1x12	1	-	1.2	14.4
	V	1x2	0.6	-	0.6	0.72 =37.8m^2
9.	**12mm thick cement plastering in CM (1:4)**					
	Internal plaster					
	Room (4x4)	3x4	4	-	3	36
	Room (5x4)	1x2	5	-	3	30
		1x2	4	-	3	24
	Room (3x4)	1x2	3	-	3	18
		1x2	4	-	3	24
	Room (5x2)	1x2	5	-	3	30
		1x2	2	-	3	12
	Room (4x2)	1x2	4	-	3	24
		1x2	2	-	3	12
	W.C (2x2)	2x2	2	-	3	24
		2x2	2	-	3	24
	Reception	1x3	2	-	3	18
	Other walls	1x1	21.5	-	3	64.5
		1x1	19.5	-	3	58.5
		1x1	4.3	-	3	12.9
		1x1	2.3	-	3	6.9
	Ceiling	1x1	21.5	10.6	-	227.9
	External plaster					=646.7
	Wall upto parapet	1x2	11.2	-	4	89.6
		1x2	22.1	-	4	176.8
	Parapet inside	1x2	10.8	-	0.9	19.44
		1x2	21.7	-	0.9	39.06
	Boundary wall					
	Inside	1x2	15.2	-	1.5	45.6
		1x2	28.1	-	1.5	84.3
	Outside	1x2	15.6	-	1.5	46.8
		1x2	28.5	-	1.5	85.5

	Chajjas	12x2	1.4	0.45	-	15.12
		12x1	1.4	-	0.1	1.68
	Deduction					=1250.6
	D	1x2	2.5	-	1.5	7.5
	D_1	1x2	2	-	2.1	8.4
	D_2	7x2	1	-	2.1	29.4
	D_3	3x2	0.6	-	2.1	7.56
	W	12x1	1	-	1.2	14.4
	V	2	0.6	-	0.6	0.72
						=67.98
						=1183m^2
10.	**5cm thick marble mosaic tiled flooring**					
	Floor area	1	22.1	11.2	-	247.52
	Deduction					
	C.L. of wall	1	130.15	0.3	-	39.04
						=208.5m^2
11.	**BBLC (1:2:4)**					
	Floor area	1	22.1	11.2	0.1	24.75
	Deduction					
	C.L. of wall	1	130.15	0.3	0.1	3.90
						=28.65m^3
12.	**Murrum/Sand filling in plinth**					
	Floor area	1	22.1	11.2	0.45	111.38
	Deduction	1	130.15	0.3	0.45	17.57
						=93.81m^2
13.	**Skirting of mosaic**					
	Room (4x4)	3x4	4	-	-	48
	Room (5x4)	1x2	5	-	-	10
		1x2	4	-	-	8
	Room (3x4)	1x2	3	-	-	6
		1x2	4	-	-	8
	Room (5x2)	1x2	5	-	-	10
		1x2	2	-	-	4
	Room (4x2)	1x2	4	-	-	8
		1x2	2	-	-	4
	W.C. (2x2)	2x2	2	-	-	8
		2x2	2	-	-	8
	Reception	1x3	2	-	-	6
						=128rm
14.	**White washing**	-	-	-	-	1182.6m^2

Table 26: Abstract Sheet

No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	117.50	100	m^3	11750
2.	2^{nd}class brick masonry for				

	foundation and plinth (1:6)	67.95	2700	m^3	64,360
3.	D.P.C (1:1$^{1/2}$:3) 2.5cm thick	47.68	70	m^2	3338
4.	Foundation	32.18	2000	m^3	64,360
5.	1st class brick masonry for superstructure (1:6)	118.8	3000	m^2	356,400
6.	C.C for slab, beam, lintel, etc (1:2:4)	38.35	5500	m^2	210,925
7.	Steel reinforcement	3012	60	Kg	180,720
8.	12mm thick cement plastering (1:4)	1183	250	m^2	295,750
9.	5cm thick marble mosaic tile flooring	208.5	700	m^2	145,950
10.	BBLC for floor base (1:2:4)	28.65	1500	m^3	42,975
11.	Sand / Murrum filling in plinth	93.81	450	m^3	42,215
12.	Wood work or Glass work for window, door & ventilator	37.8	4500	m^2	170,100
13.	Skirting of mosaic	128	70	rm	8960
14.	White Washing	1182.6	10	m^2	11826
				Rs.	**1,609,629**
				Contractor's Profit (10%)	**160,963**
				Add 5% contingencies	**80,481.45**
				Total	**1,851,074**

13.1.5 Design 5-Bus Stand

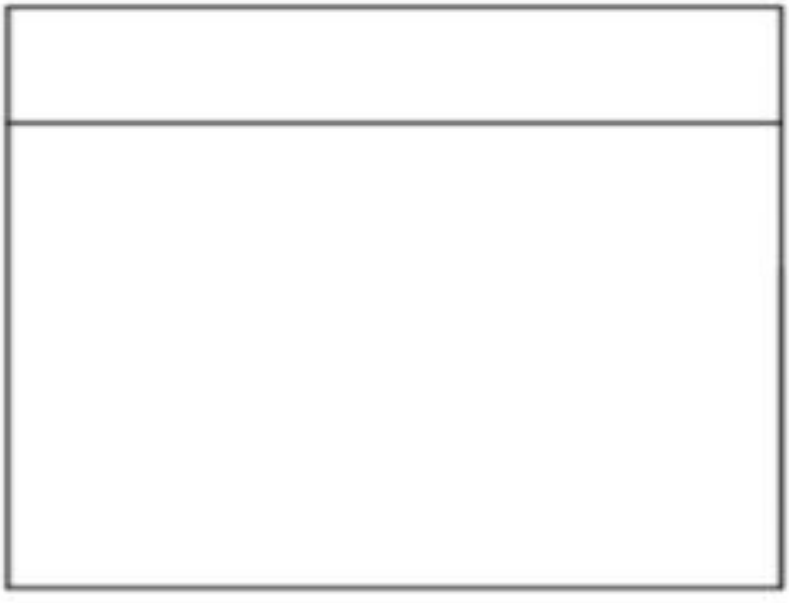


Figure 60: Front Elevation of Bus Stand

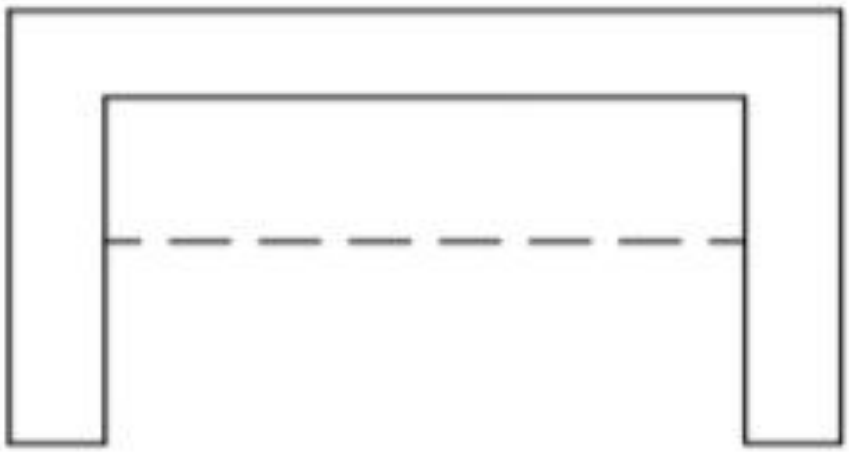


Figure 61: Bus Stand Layout Plan

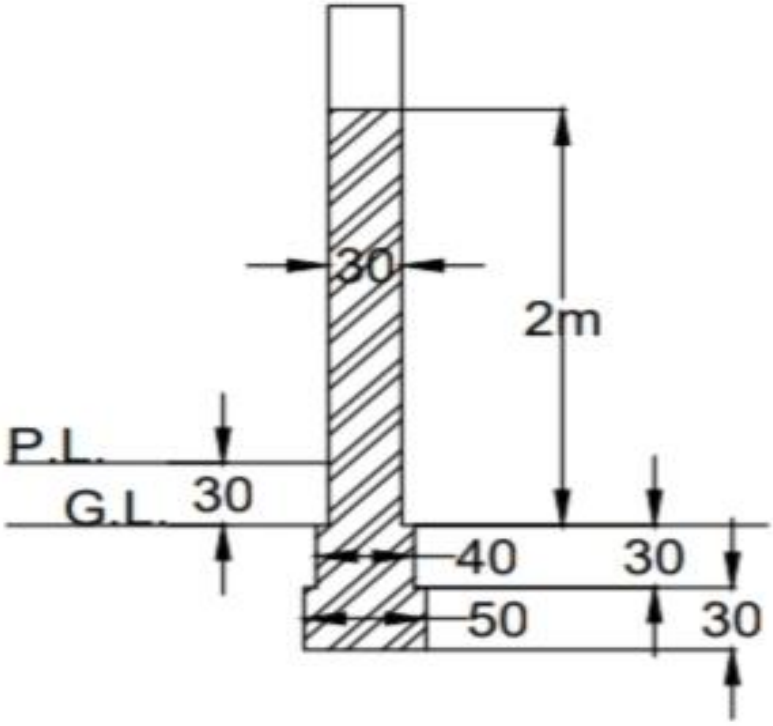


Figure 62: Section of Bus Stand

Table 27: Measurement Sheet

Sr no.	Description	No.	Length (m)	Breath (m)	Height (m)	Quantity
1.	**Excavation** C.L.=4.4m	1	4.4	0.5	0.6	1.32m^3
2.	**2nd class brick masonry for foundation in CM (1:6) and plinth** 1st footing C.L.=4.4m	1	4.4	0.5	0.3	0.66

	2nd footing C.L.=4.4m	1	4.4	0.4	0.3	0.53 =1.20m^3
3.	**Damp proof course DPC (1:1.5:3)** C.L.=4.4m	1	4.4	0.4	-	1.76m^2
4.	**1st class brick masonry for super structure** C.L.=4.4m	1	4.4	0.3	2.3	3.03m^3
5.	**C.C (1:2:4) for RCC slab including formwork and excluding steel reinforcement** Slab	1	2	1.2	0.1	0.24m^3
6.	**Steel reinforcement work including binding, placing in position= 1% of concrete volume** 1/100x0.24x78.54x100=61.89	-	-	-	-	18.85kg
7.	**Sand filling in plinth 10cm thick**	1	1.4	0.9	0.15	0.126m^3
8.	**BBLC (1:2:4)**	1	1.4	0.9	0.1	0.126m^3
9.	**5cm thick marble**	1	1.4	0.9	-	1.26m^3
10.	**12mm thick cement plastering CM (1:4)** Internal plaster Walls Ceiling External plaster	 1x2 1x1 1 1x2 1x1	 0.9 1.4 1.4 1.2 2	 - - 0.9 - -	 2.3 2.3 - 2.4 2.4	 4.14 3.22 1.26 5.76 4.8 =19.18m^2
11.	**White washing as per plaster**	-	-	-	-	19.18m^2

Table 28: Abstract Sheet

No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	1.32	100	m^3	132
2.	2ndclass brick masonry for foundation and plinth (1:6)	1.20	2700	m^3	3240
3.	D.P.C (1:$1^{1/2}$:3) 2.5cm thick	1.76	70	m^2	123.2
4.	1st class brick masonry for superstructure (1:6)	3.03	3000	m^2	9090
5.	C.C for slab, beam, lintel, etc (1:2:4)	0.24	5500	m^2	1320
6.	Steel reinforcement	18.85	60	Kg	1131
7.	12mm thick cement plastering (1:4)	19.18	250	m^2	4795
8.	5cm thick marble mosaic tile flooring	1.26	700	m^2	882
9.	BBLC for floor base (1:2:4)	0.126	1500	m^3	189

10.	Sand / Murrum filling in plinth	0.126	450	m^3	56.7
11.	White Washing	19.18	10	m^2	192
				Rs.	**21,150.9**
				Contractor's Profit (10%)	**2,115.09**
				Add 5% contingencies	**1,057.545**
				Total	**24,323.535**

13.1.6 Design 6- School

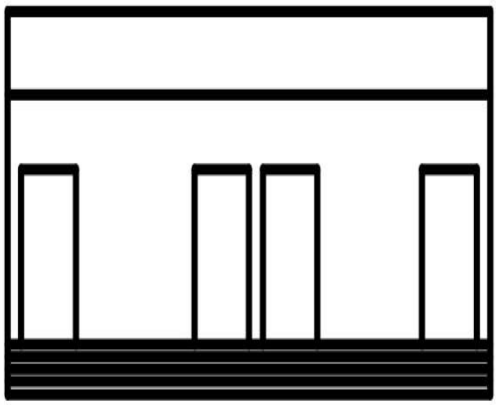


Figure 63: Front Elevation of School

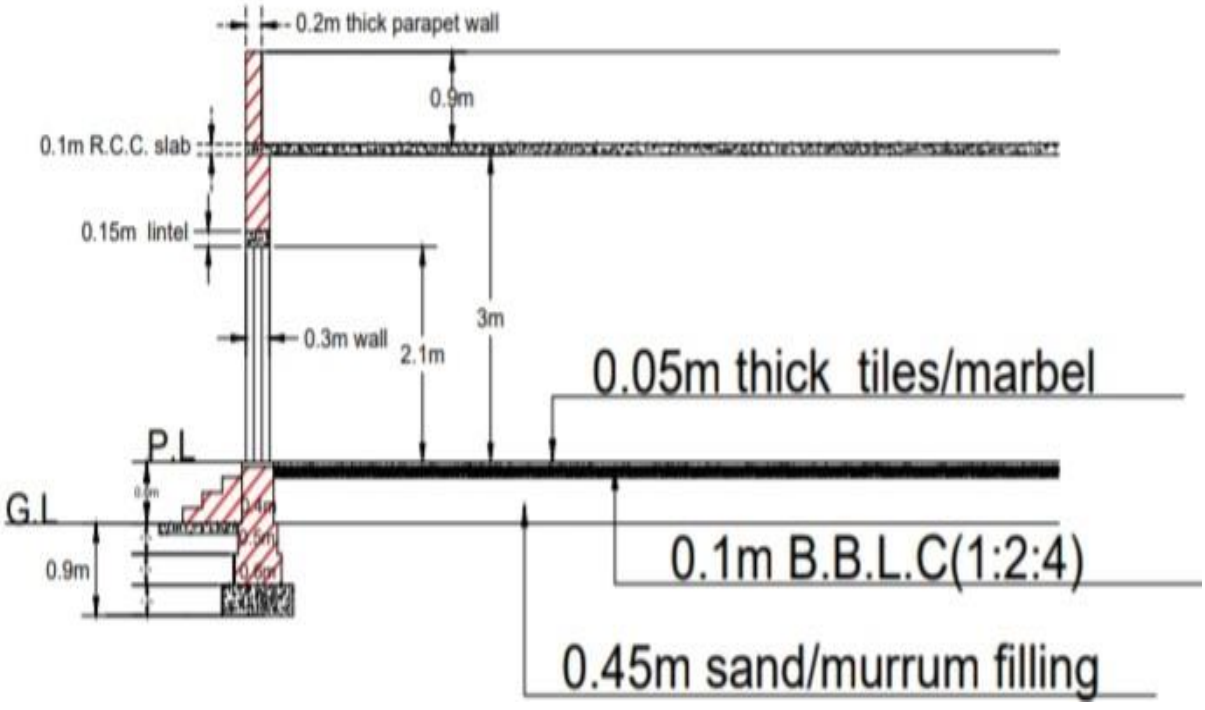


Figure 64: Section of School

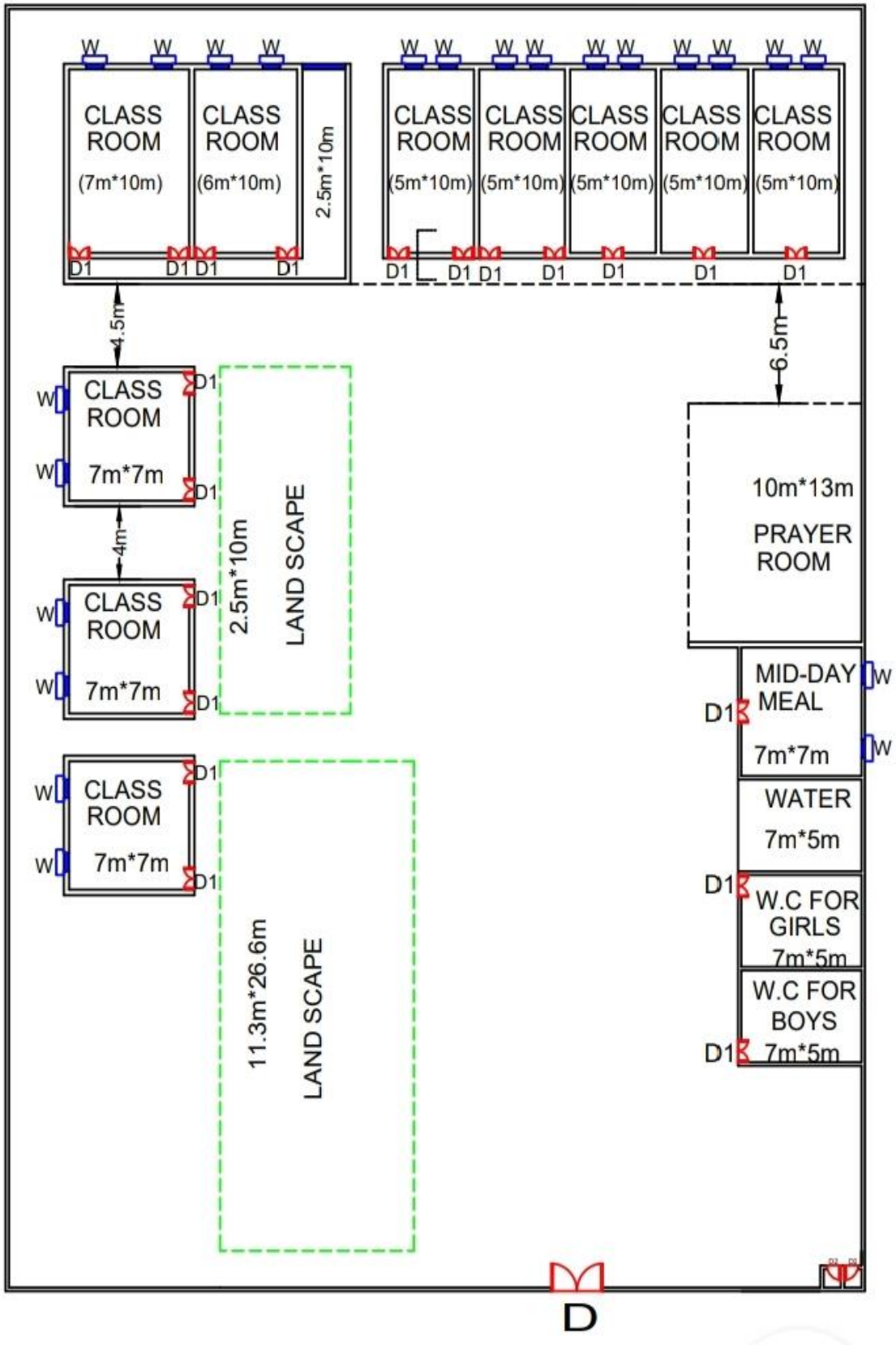


Figure 65: School layout plan

Table 29: Measurement Sheet

Sr no.	Description	No.	Length (m)	Breath (m)	Height (m)	Quantity
1.	**Earthwork in excavation for foundation in ordinary soil upto 1.5m depth** Net C.L. for building C.L.=52.1-(2x1/2x0.9) = 51.2m					
2.	**Foundation concrete C.C (1:4:8)** C.L.=51.2m	1	51.2	0.9	0.3	13.82m^3
3.	**2nd class brick masonry for foundation and plinth** 1st footing C.L.=52.1-(2x1/2x0.6)= 51.5m 2nd footing C.L.=52.1-(2x1.2x0.5)= 51.6m 3rd footing C.L.=52.1-(2x1/2x0.4)= 51.7m	 1 1 1	 51.5 51.6 51.7	 0.6 0.5 0.4	 0.3 0.3 0.6	 9.27 9.29 12.41 =30.97m^3
4.	**Damp proof course DPC (1:1.5:3) 2.5cm thick** C.L.=51.7m	1	51.7	0.4	-	20.68m^2
5.	**1st class brick masonry in CM (1:6) for super structure** For building C.L.=52.1-(1x1/2x0.3) =51.95m For parapet C.L.=(2x10.7)+(2x10.4)=42.2m Deduction D_1 Lintel Beam	 1 1 4 1x4 1	 51.95 42.2 1.2 1.4 51.95	 0.3 0.2 0.3 0.3 0.3	 3 0.9 2.1 0.15 0.3	 46.76 7.60 =54.36 3.024 0.252 4.68 =7.96 =46.40m^3
6.	**C.C (1:2:4) for RCC slab, beam, lintel, chajjas, etc include formwork but exclude steel reinforcement** Lintel Beam Chajjas Slab	 1x4 1 4 1	 1.4 51.95 1.4 10.6	 0.3 0.3 0.45 10.9	 0.15 0.3 0.15 0.1	 0.252 4.68 0.378 11.554 =16.86m^3

7.	**Steel reinforcement work including binding, placing in position= 1% of concrete volume** =1/100x16.87x78.59x100=1324.9	- -	- -	- -	- -	1325kg
8.	**Murrum/Sand filling in plinth** Class room	2	10	5	0.45	45m^2
9.	**BBLC (1:2:4) for floor base 10cm thick** Class room	2	10	5	0.1	10m^3
10.	**5cm thick marble mosaic tiled flooring**	2	10	5	-	100m^2
11.	**Skirting of mosaic** Class room	2x2 2x2	5 10	- -	- -	20 40 =60rm
12.	**Woodwork for doors, windows** **D_1**	4	1.2	-	2.1	10.08m^2
13.	**12 mm thick cement plastering in CM (1:4)** Class room Internal plaster Walls Ceiling External plaster Walls upto parapet top Parapet inside Parapet top Chajja Deduction D_1 W	 2x2 2x2 2x1 1x2 1x2 1x2 1x2 1 4x2 4x2 4x1	 5 10 10 10.6 10.9 10.5 10.2 42.2 1.4 1.2 1	 - - 5 - - - - 0.2 0.45 - -	 3 3 - 4 4 0.9 0.9 - - 2.1 1.2	 60 120 100 84.8 87.2 18.90 18.36 8.44 5.04 =502.74 20.16 4.8 =24.96 =477.8m^2
14.	**White washing/color washing-3 coats as per item of plastering**	-	-	-	-	478m^2

Table 30: Abstract Sheet

No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	41.47	100	m^3	4147
2.	Foundation	13.82	2000		27,640
3.	2^{nd}class brick masonry for foundation and plinth (1:6)	13.82	2700	m^3	83,619
4.	D.P.C (1:$1^{1/2}$:3) 2.5cm thick	20.68	70	m^2	1448

5.	1st class brick masonry for superstructure (1:6)	46.40	3000	m^2	139,200
6.	C.C for slab, beam, lintel, etc (1:2:4)	16.86	5500	m^2	92,730
7.	Steel reinforcement	1325	60	Kg	79,500
8.	12mm thick cement plastering (1:4)	477.8	250	m^2	119,450
9.	5cm thick marble mosaic tile flooring	100	700	m^2	70,000
10.	Skirting	60	70	rm	4200
11.	Woodwork	10.08	4500	m^2	45,360
10.	BBLC for floor base (1:2:4)	10	1500	m^3	15000
11.	Sand / Murrum filling in plinth	45	450	m^3	20,250
12.	White Washing	478	10	m^2	4780
				Rs.	**707,324**
				Contractor's Profit (10%)	**70,732.4**
				Add 5% contingencies	**35,366.2**
				Total	**813,422.6**

13.2 Reasons for Students Recommending this Design

(1) RO Plant:

- There are various village in Gujarat which are suffering from ground water pollution and the Chosar village is also one of them.
- Due to the GIDC is located few kilometers far from Chosar village and the industries dump their chemical waste in mini canal which pass near by the village.
- That canal is badly polluted the ground water of that area. The water having yellowish color and bad test.
- So if human being or animals drink that kind of water then definitely it's going to harm their health and they also sell the buffalo milk so which person drink that is also affected by that.

(2) Drainage System:

- The Chosar village is land lock area because of that they don't have direct source of water from river.
- So they depend on canal water but problem is that the canal water is very irregular so they can't fully depend on the canal water.
- So they need alternative source of water.
- On the other hand the ground water is also polluted due to industrial chemical which is passing near by the village.
- So rain water harvesting is the best solution for that.

(3) Concrete Roads:

- The concrete road is provides more comfort and safety to villagers.

- Because if road is sandy then the possibility of the accident will increase due to less friction and in the village we can easily find out the animals on the road , so it is necessary.

(4) Animal Hospital:

- During the village visit we found the animal hospital there but the condition of the hospital is not that good and may be due to the lack of doctors or bad infrastructure the hospital is closed.
- So we decided to modify/repair the existing animal hospital so that it can be reused again.
- And after reopening it will encourage villagers to do animal husbandry, it will enhance their life because they will get extra wages by that and simultaneously their economical growth will increase.

(5) Bus Stand:

- In India where everything id getting costlier day by day, travelling by bus is cheaper than owing a car.
- By traveling by bus it reduces pollution and road congestion, because the people who travel by bus are more and thus the lesser are cars.
- And travelling by bus does not need a place to park your own vehicle.

(6) School:

- School is the main key for the reduction of Poverty. Mainly in villages due to lack of access to education the poverty rate increases.
- So schools are very necessary in our day to day life, because the children can learn new things and can reach bigger heights in future.
- In our village Chosar there is only primary education but the facility of secondary education is not there.
- So students have to go to other places for their secondary education.
- So if we provide secondary education in the village, they don’t have to go far and atleast they will get secondary education in their own village.

13.3 About designs Suggestions/Benefit of the villagers

(1) RO Plant:

- Due to the RO Plant they can get drinkable water.
- Due to the polluted water they may have suffer from various kind of diseases so from that they can get relief.

(2) Drainage System:

- When they are getting water easily from the canal that time they can use that water for their agriculture purpose.
- But when there is shortage of water in canal that time they don’t need to worry because they have alternative of canal water that time they can use that rain water.
- And because of in Chosar village they have two lakes so, they can fulfill their requirements from that lake.

- On the other hand we know that the ground water is drastically decreasing and the ground water is also polluted there so by the rain water harvesting we can somehow reduce that problem in a long term.

(3) Concrete Road:

- Concrete road are bright in colors which provides better visibility at night.
- A concrete road has better performance at surface.
- These roads are more comfortable to drive.
- These roads have less durability.

(4) Animals Hospital:

- Hospital is must in this pandemic situation and in day to day life.
- Then the villagers don't have to go other places for treatment. They can get treated in their own village.
- Having a hospital in the village can save many more life.
- Hospital is a physical as well as mental support to all the people.

(5) Bus Stand:

- Having a bus stand in their own village the villagers don't have to go to other places to catch a bus. They can get one from their own village.
- So the wastage of time in travelling is minimum and they can reach to their destination easily.

(6) School:

- In villages the main reason of children not studying is that there is no facility of school. And their parents don't give them permission to go far and study.
- So making a school in the village gives them an opportunity to study and learn new things.
- And by making a school the poverty rate also gets decreased.

14. Technical Options with Case Studies

14.1 Civil Engineering

14.1.1 Advanced Earthquake Resistant

Aim - Earthquake-resistant or a seismic structure are designed to protect buildings to some or greater extent from earthquakes. While no structure can be entirely immune to damage from earthquakes, the goal of earthquake-resistant construction is to erect structures that fare better during Seismic activity than their conventional counterparts. According to the building codes, earthquake-resistant structures are intended to withstand the largest earthquake of a certain probability that is likely to occur at their location. This means the loss of life should be minimized by preventing collapse of the buildings for rare earthquakes while the loss of the functionality should be limited for more frequent ones.

Materials - Based on studies in New Zealand, relating to Christchurch earthquakes, precast concrete designed and installed in accordance with modern codes performed well. According to the Earthquake Engineering Research Institute, precast panel buildings had good durability during the earthquake in Armenia, compared to precast frame-panels.

Figure 66: Earthquake Resistant Building

►Techniques of Advanced Earthquake Resistant:

■ Concurrent shake-table testing:

Concurrent shake-table testing of two or more building models is a vivid, persuasive and effective way to validate earthquake engineering solutions experimentally.

Thus, two wooden houses built before adoption of the 1981 Japanese Building Code were moved to E-Defense for testing (see both pictures aside). The left house was reinforced to enhance its seismic resistance, while the other one was not. These two models were set on E-Defense platform and tested simultaneously.

■ Combined vibration control solution:

Close-up of abutment of seismically retrofitted Municipal Services Building in Glendale California.Seismically retrofitted Municipal Services Building in Glendale designed by architect Merrill W. Baird of Glendale, working in collaboration with A. C. Martin Architects of Los Angeles, the Municipal Services Building at 633 East Broadway, Glendale was

completed in 1966. Prominently sited at the corner of East Broadway and Glendale Avenue, this civic building serves as a heraldic element of Glendale's civic center.

In October 2004 Architectural Resources Group (ARG) was contracted by Nabih Youssef & Associates, Structural Engineers, to provide services regarding a historic resource assessment of the building due to a proposed seismic retrofit.

In 2008, the Municipal Services Building of the City of Glendale, California was seismically retrofitted using an innovative combined vibration control solution: the existing elevated building foundation of the building was put on high damping rubber bearings.

■ Steel plate walls system

Coupled steel plate shear walls, Seattle the Ritz-Carlton/JW Marriott hotel building engaging the advanced steel plate shear walls system, Los Angeles

A steel plate shear wall (SPSW) consists of steel infill plates bounded by a column-beam system. When such infill plates occupy each level within a framed bay of a structure, they constitute a SPSW system whereas most earthquake resistant construction methods are adapted from older systems, SPSW was invented entirely to withstand seismic activity.

SPSW behavior is analogous to a vertical plate girder cantilevered from its base. Similar to plate girders, the SPSW system optimizes component performance by taking advantage of the post-buckling behavior of the steel infill panels.

The Ritz-Carlton/JW Marriott hotel building, a part of the LA Live development in Los Angeles, California, is the first building in Los Angeles that uses an advanced steel plate shear wall system to resist the lateral loads of strong earthquakes and winds.

■ Seismic test of seven-story building

A destructive earthquake struck a lone, wooden condominium in Japan. The experiment was webcast live on July 14, 2009 to yield insight on how to make wooden structures stronger and better able to withstand major earthquakes.

The Miki shake at the Hyogo Earthquake Engineering Research Center is the capstone experiment of the four-year NEESWood project, which receives its primary support from the U.S. National Science Foundation Network for Earthquake Engineering Simulation (NEES) Program.

"NEESWood aims to develop a new seismic design philosophy that will provide the necessary mechanisms to safely increase the height of wood-frame structures in active

seismic zones of the United States, as well as mitigate earthquake damage to low-rise wood-frame structures," said Rosowsky, Department of Civil Engineering at Texas A&M University. This philosophy is based on the application of seismic damping systems for wooden buildings. The systems, which can be installed inside the walls of most wooden buildings, include strong metal frame, bracing and dampers filled with viscous fluid.

■ Superframe earthquake proof structure

The proposed system is composed of core walls, hat beams incorporated into the top-level, outer columns, and viscous dampers vertically installed between the tips of the hat beams and the outer columns. During an earthquake, the hat beams and outer columns act as outriggers and reduce the overturning moment in the core, and the installed dampers also reduce the moment and the lateral deflection of the structure. This innovative system can eliminate inner beams and inner columns on each floor, and thereby provide buildings with column-free floor space even in highly seismic regions.

14.1.2 Seismic Retrofitting of Buildings

Aim - 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.

► Objectives:

- Public safety only. The goal is to protect human life, ensuring that the structure will not collapse upon its occupants or passersby, and that the structure can be safely exited. Under severe seismic conditions the structure may be a total economic write-off, requiring tear-down and replacement.
- Structure survivability. The goal is that the structure, while remaining safe for exit, may require extensive repair (but not replacement) before it is generally useful or considered safe for occupation. This is typically the lowest level of retrofit applied to bridges.
- Structure functionality. Primary structure undamaged and the structure is undiminished in utility for its primary application. A high level of retrofit, this ensures that any required repairs are only "cosmetic" – for example, minor cracks in plaster, drywall and stucco. This is the minimum acceptable level of retrofit for hospitals.
- Structure unaffected. This level of retrofit is preferred for historic structures of high cultural significance.

► Techniques:

- **External post-tensioning** - The use of external post-tensioning for new structural systems have been developed in the past decade. Under the PRESS (Precast Seismic Structural Systems), a large-scale U.S./Japan joint research program, unbonded post-tensioning high strength steel tendons have been used to achieve a moment-resisting system that has self-centering capacity. An extension of the same idea for seismic retrofitting has been experimentally tested for seismic retrofit of California bridges under a Caltrans research project and for seismic retrofit of non-ductile reinforced concrete frames. Pre-stressing can increase the capacity of structural elements such as beam, column and beam-column joints. External pre-stressing has been used for structural upgrade for gravity/live loading since the 1970s.

- **Base isolators** – Base Isolation is a collection of structural elements of a building that should substantially decouple the building's structure from the shaking ground thus protecting the building's integrity and enhancing its seismic performance.
  This earthquake engineering technology, which is a kind of seismic vibration control, can be applied both to a newly designed building and to seismic upgrading of existing structures. Normally, excavations are made around the building and the building is separated from the foundations. Steel or reinforced concrete beams replace the connections to the foundations, while under these, the isolating pads, or base isolators, replace the material removed. While the base isolation tends to restrict transmission of the ground motion to the building, it also keeps the building positioned properly over the foundation. Careful attention to detail is required where the building interfaces with the ground, especially at entrances, stairways and ramps, to ensure sufficient relative motion of those structural elements.
- **Supplementary dampers** - Supplementary dampers absorb the energy of motion and convert it to heat, thus damping resonant effects in structures that are rigidly attached to the ground. In addition to adding energy dissipation capacity to the structure, supplementary damping can reduce the displacement and acceleration demand within the structures. In some cases, the threat of damage does not come from the initial shock itself, but rather from the periodic resonant motion of the structure that repeated ground motion induces. In the practical sense, supplementary dampers act similarly to Shock absorbers used in automotive suspensions.
- **Tuned mass dampers** - Tuned mass dampers (TMD) employ movable weights on some sort of springs. These are typically employed to reduce wind sway in very tall, light buildings. Similar designs may be employed to impart earthquake resistance in eight to ten story buildings that are prone to destructive earthquake induced resonances.
- **Slosh tank -** A slosh tank is a large container of low viscosity fluid (usually water) that may be placed at locations in a structure where lateral swaying motions are significant, such as the roof, and tuned to counter the local resonant dynamic motion. During a seismic (or wind) event the fluid in the tank will slosh back and forth with the fluid motion usually directed and controlled by internal baffles – partitions that prevent the tank itself becoming resonant with the structure, see Slosh dynamics. The net dynamic response of the overall structure is reduced due to boththe counteracting movement of mass, as well as energy dissipation or vibration damping which occurs when the fluid's kinetic energy is converted to heat by the baffles. Generally the temperature rise in the system will be minimal and is passively cooled by the surrounding air. One Rincon Hill in San Francisco is a skyscraper with a rooftop slosh tank which was designed primarily to reduce the magnitude of lateral swaying motion from wind. A slosh tank is a passive tuned mass damper. In order to be effective the mass of the liquid is usually on the order of 1% to 5% of the mass it is counteracting, and often this requires a significant volume of liquid. In some cases these systems are designed to double as emergency water cisterns for fire suppression.
- **Active control system** - Very tall buildings ("skyscrapers"), when built using modern lightweight materials, might sway uncomfortably (but not dangerously) in certain wind conditions. A solution to this problem is to include at some upper story a large mass, constrained, but free to move within a limited range, and moving on some sort of bearing system such as an air cushion or hydraulic film. Hydraulic pistons, powered by electric pumps and accumulators, are actively driven to counter the wind

forces and natural resonances. These may also, if properly designed, be effective in controlling excessive motion – with or without applied power – in an earthquake. In general, though, modern steel frame high rise buildings are not as subject to dangerous motion as are medium rise (eight to ten story) buildings, as the resonant period of a tall and massive building is longer than the approximately one second shocks applied by an earthquake.

- **Adhoc addition of structural support/reinforcement -** The most common form of seismic retrofit to lower buildings is adding strength to the existing structure to resist seismic forces. The strengthening may be limited to connections between existing building elements or it may involve adding primary resisting elements such as walls or frames, particularly in the lower stories. Common retrofit measures for unreinforced masonry buildings in the Western United States include the addition of steel frames, the addition of reinforced concrete walls, and in some cases, the addition of base isolation.

Figure 67: Seismic Retrofitting of Buildings

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

► Materials:

- Durable Concrete. Concrete Design and Construction Practices today are strength driven.
- High Performance Concrete.
- Self–compacting Concrete (SCC)
- The Use of Mineral Admixtures.
- Fly Ash.
- High Volume Fly Ash Concrete (HVFA)
- Ground Granulated Blast Furnace Slag (GGBFS)
- Condensed Silica Fume (CSF)

► Techniques:

- **3D Volumetric Construction** - Using this modular construction technology, 3D units are produced in controlled factory settings using needful construction and building materials.Finished units are transported to site in various modules, basic structural blocks or final touched up units with all amenities installed, for assembly. Blocks can be erected rapidly at site and properties of concrete like fire retardant, sound resistivity, thermal mass etc. are retained.
- **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.Also called cross-wall construction, the technology has gained momentum due to seamless adherence to specifications and ease as well as swiftness of construction.
- **Tunnel Formwork System** - With this tunnel technique, construction is paced up for cellular structures of repetitive patterns through the building of monolithic walls or units in a single operation per day.Expeditious work is achieved by deploying formwork and readily mixed concrete with the convenience and agility of factory conditions. Formworks in tunnel form are stacked and used at the site with cranes.
- **Flat Slabing Technology** - This technique utilizes the simplicity of contemporary formwork for quickly building flat slabs to facilitate easy and swift placing of horizontal amenities and for partitioning.Maximization of pre-fabricated services occurs as services can be carried out in an uninterrupted manner in zones underneath the floor slabs.Every top-notch building companyis using the same as internal layouts can be conveniently modified for accommodating alterations at a later date. Further, reinforcement needed is lesser which cuts down labor costs significantly.
- **Pre-cast Foundation Technique** - Foundations can be built swiftly with precast concrete units which are produced in a factory and are high on quality quotient. Strength is imparted to foundation related building construction materials through interconnected concrete piles.This technique allows construction work to progress even in inclement weather and minimizes excavation activity**.**
- **Hybrid Concrete Building Technique** - This technique expedites construction turnaround time by blending the advantages of concrete pre-casting with the in-situ building. Quality improves, whereas the cost of construction plummets. Hybrid concrete structures are easy to build, competitive in nature and perform consistently.
- **Thin Joint Masonry Technique** - Utilization of this technique leads to the reduction of the quantum of mortar applied by slashing it depth from 10mm to lesser than 3mm. Consequently, mortar can be laid swiftly with enhanced productivity on the longer wall panels.With large sized concrete blocks, higher construction efficiency along with significant cost reduction can be achieved. Within a single day, the number of mortar courses laid is higher as curing of mortar takes place quickly without compromising on bonding strength resulting in the elimination of floating problem.
- **Insulating Concrete Formwork (ICF) Technique** - ICF technique employs polystyrene blocks that feature twin walls and can be rapidly put together for creating building wall formwork. The formwork is then pumped in with high quality, ready mixed, factory-made concrete.The building construction process becomes fool-proof and the resultant structure has a high level of sound and thermal insulation.

► **Equipments:**

- Chain and Pulley Block
- Grouting Pumps
- Spray for Painting works
- Tile Cutters
- Earth Mover
- Concrete Mixture
- Crane

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

Figure 68: Advanced Practices in Construction Field

► **Various Techniques, Equipments and Advantage in Building Construction:**

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

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

14.4.4 Engineering Aspects of Soil Mechanics – Environmental Impact Assessment

- An Environmental Impact Assessment is a formal method of judging the impact that any new developmental project would have on the environment and its constituents. This can include changes that the project would create in the physical aspects of existing geography, chemical changes to the atmosphere including air and water, biological changes that affect plant, animal and human life, cultural impact of a project on the society in the area, and other socio-economic effects that the project can have.
- Such an assessment allows problems to be foreseen, so that the design and planning of the projects is modified to reduce any negative effects. It is now fashionable to build green buildings which have a positive effect on the environment.

► Components of Environmental Impact Assessment:

1. Air Environment
2. Noise Environment
3. Water Environment
4. Biological Environment
5. Soil Environment
6. Socio-economic and Health Environment
7. Risk Assessment
8. Environment Management Class

► Soil Environment:

- Studies on soil characteristics, existing land use and topography, landscape and drainage patterns within the impact zone.
- Estimation of impacts of project on land use, landscape, topography, drainage and hydrology.
- Identification of potential utility of treated effluent in land application and subsequent impacts.
- Estimation and Characterization of solid wastes and delineation of management options for minimization of waste and environmentally compatible disposal.

► Environment Management Class:

- Delineation of mitigation measures including prevention and control for each environmental component and rehabilitation and resettlement plan.
- Delineation of monitoring scheme for compliance of conditions.
- Delineation of implementation plan including scheduling and resource allocation

14.1.5 Water Supply – Sewerage System – Waste Water – Sustainable Development Techniques

► Water Supply

1. Surface Water:

Surface waters include streams, rivers, lakes, reservoirs, and wetlands. In this case the word stream represents all flowing surface water, think large rivers to small brooks and everything

in between. Surface waters, because they are easily accessed, provide around 78% of the fresh water we use. The number will vary based on variables like drought. Over 1.2 billion people rely primarily on surface water in big cities around the world. 90 million children in the United States play and swim in surface waters each year, and in the U. S. the majority of drinking water comes from surface water.

2. Ground Water:

Groundwater, which makes up around 22% of the water we use, is the water beneath the earth's surface filling cracks and other openings in beds of rock and sand. It exists in soils and sands that are able to retain water. The water table is the line between unsaturated soil and saturated soil. Below the water table is where rocks and soil are full of water. A study in 2008 showed private household wells constitute the large share of all well water in the United States, with over 13 million occupied households having their own well. Irrigation accounts for the largest use of groundwater in the United States.

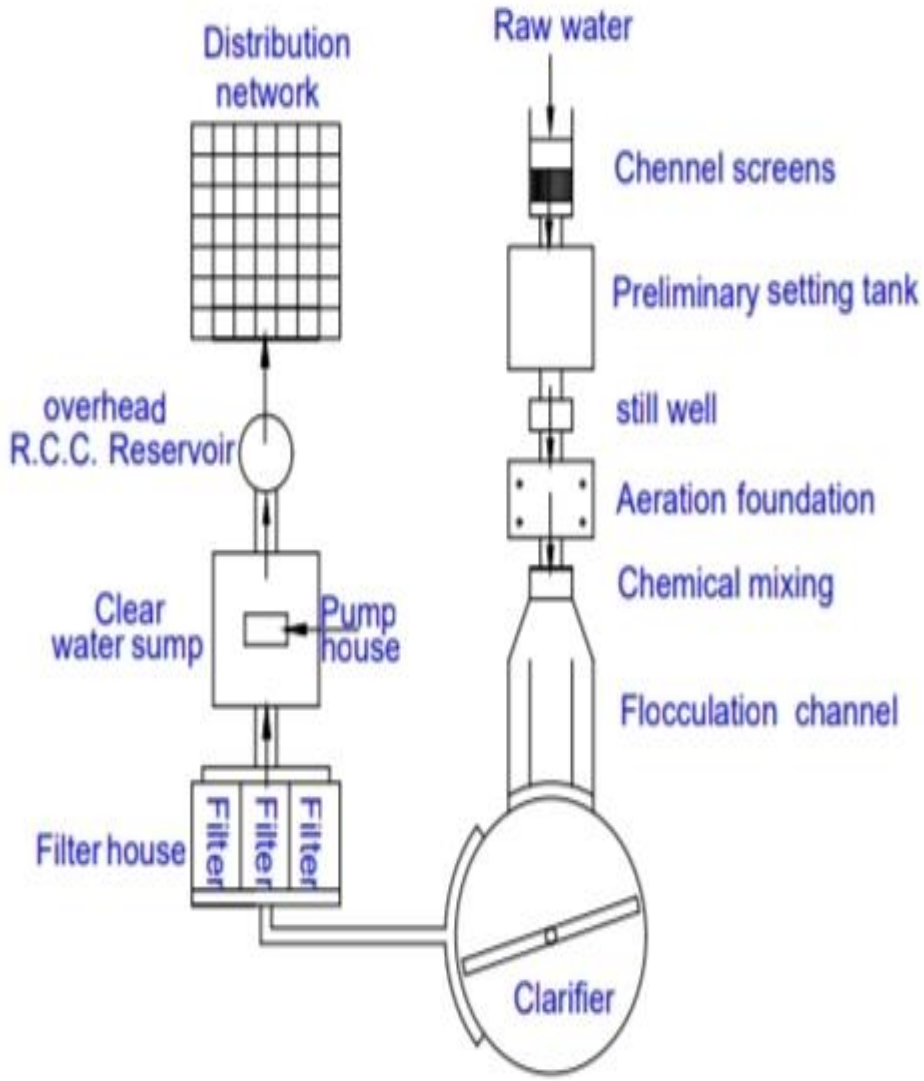
3. Waste water:

Wastewater is any water that has been affected in quality by human activities. Wastewater can develop from agricultural activities, urban water use, and sewer inflow and storm water runoff just to name a few. Wastewater from a municipality is also called sewage. Most of us don't want to think about it, but at times the water that swirls in the bowl ends up being treated and ends up in our taps. This is recycled water. Here is a great story of what happens to the wastewater in Las Vegas and how it returns to Lake Mead. Due to water demands increasing, this will become a much more common occurrence. Arizona has been using treated wastewater for agriculture for years.

4. Storm water:

Storm water is defined by U.S. EPA as the runoff generated when precipitation from rain and snowmelt events flows over land or impervious surfaces without percolating into the ground. This water runs over surfaces like asphalt containing pollutants like engine oil, fertilizer, and radiator fluid. Storm water not soaking into the ground ends up as surface runoff draining into rivers, lakes, streams and oceans. In the future capturing more storm water draining to the ocean is critical to meeting water demands in the United States. This covers four basic types of water that our critical to our survival. It is just the basics, but enough information to help us understand where we need to conserve and where we need to access more water in our battle for water conservation. We are not making any new water, and won't be for the foreseeable future. The key is to get more out of the water we already have, the water we have had forever.

■ **Design of Water Treatment Plant:**



Schematic layout of a water treatment plant

► **Sewerage System:**

- Sewerage is theinfrastructure that conveys sewage or surface runoff(storm water, melt water, rainwater) using sewers. It encompasses components such as receivingdrains,manholes, pumping stations, storm overflows, and screening chambers of the combine sewer or sanitary sewer. Sewerage ends at the entry to a sewage treatment plant or at the point of discharge into the environment. It is the system of pipes, chambers, manholes, etc. that conveys the sewage or storm water.

- A sewerage system, or wastewater collection system, is a network of pipes, pumping stations, and appurtenances that convey sewage from its points of origin to a point of treatment and disposal.

■ **Types of Sewerage Systems:**

i. **Separate System -** In this system two sets of sewers are provided-one for carrying domestic or sanitary sewage and industrial sewage, and the other for carrying storm water (or rain water). The sewage from the first set of sewers is carried to the treatment plant, and the storm water (or rain water) from the second set of sewers is directly discharged into a natural stream or river without any treatment.

⁎ **Advantages of Separate System:**

- The quantity of sewage to be treated being small the treatment works of smaller size would be needed and also the load on the treatment units will be less.
- The storm water (or rain water) is not unnecessarily polluted and hence it can be discharged into natural stream or river without any treatment.
- If pumping is required for lifting of sewage at the treatment works, the system will prove to be economical both from the point of view of capital costs as well as from the point of view of running costs.
- The sewers being of small size are economical. Further storm water (or rain water) may be carried through open or closed drains at or near the ground surface, consequently the cost of installation of the system would be low.
- Sewers of smaller section can be easily ventilated as compared to those of larger section.
- Sewage of more or less uniform characteristics flows through the sewers which will facilitate the treatment process.

⁎**Disadvantages of Separate System:**

- The sewers are likely to get choked.
- Unless laid at a steep gradient, self-cleansing velocity in the sewers cannot be assured and flushing shall have to be done. This may prove unsatisfactory and expensive.
- The sewers being of small size their cleaning is difficult.
- The system requires two sets of sewers and hence it may prove to be costly.
- Maintenance costs of two sets of sewers are greater than that for one.
- The sewers or drains provided for carrying storm water (or rain water) come in use only during the rainy season. During other part of the year these may become the dumping places for garbage and may thus get choked.
- Two sewers or drains in a street lead to greater obstruction to traffic while repairs of any one of them are being carried out.
- In sewers of small size there being lesser air contact foul smell may be produced due to the formation of sewage gases.

- Double house-plumbing would be required for making separate connections to two sets of sewers or drains. Moreover, there is a likelihood of wrong connections being made on account of which storm water (or rain water) may enter the sewer or drain meant for carrying sewage and thus cause overflow of sewage.

⁎ **Conditions favorable for Separate System:**

- **Uneven Rainfall -** When rainfall is uneven or it is concentrated for a short period during the year, it becomes economical to adopt separate system.
- **Separate Outlets for Sewage and Storm Water (or Rain Water) -** The separate system can be justified when domestic or sanitary sewage and industrial sewage is to be collected and conveyed to a particular point for treatment and there is a separate outlet in the form of a natural stream or river for the disposal of storm water (or rain water).
- **Pumping Requirement -** When it is necessary to pump domestic or sanitary sewage and industrial sewage, adoption of this system will reduce the load on pumps.
- **Limitations of Available Funds -** If sufficient funds are not available in the beginning, sewers may be constructed to carry only domestic or sanitary sewage and industrial sewage, and the storm water (or rain water) may be conveyed through open drains. These drains can be converted into regular sewers later when additional funds are available.
- **Flat Topography -** If the area is flat, the sewers will have to be laid at a certain depth below the ground surface in order to achieve the required gradient. In such cases separate sewers are more economical, because laying of a combined sewer of larger size at a greater depth below the ground surface will be costly.
- **Gradient of Sewers -** If it is not possible to lay sewers at suitable gradients, there is a danger of backing up of sewage into the houses. Under such circumstances, it is desirable to adopt separate system.
- **Subsoil Condition -** If the subsoil is hard, it would be difficult and costlier to lay combined sewer which is usually of large size. Thus in such cases separate system would be preferable.
- **Steep Topography -** If the area possesses steep slopes, it would be easier to convey storm water (or rain water) through open drains to the natural stream or river, and hence separate system may be adopted.
- **Time of Laying Sewers -** If sewers are to be laid before the area is developed, it is desirable to adopt separate system.
- **Conversion of Existing Sewer -** It is not desirable to convert the existing sewer for carrying domestic or sanitary sewage and industrial sewage into a combined sewer because it becomes costly and it is also inconvenient. In such a case it is better to lay a separate sewer for storm water (or rain water).

ii. **Combined System** - In this system only one set of sewers is provided for carrying domestic or sanitary sewage and industrial sewage as well as storm water (or rain water). Thus in this case sewage and storm water (or rain water) are carried to the sewage treatment plant before its final disposal.

⁎ **Advantages of Combined System:**

- Since this system requires only one set of sewers the maintenance costs are reduced and hence it may prove to be economical.

- The sewers being of larger size the chances of their choking are less and also it is easy to clean them.
- The strength of the sewage is reduced by dilution due to storm water (or rain water).This helps to make the treatment process easier and more economical.
- In this system automatic flushing is provided be the storm water (or rain water).
- This is a relatively simple system of collection of sewage and also in this system house plumbing is economical.

⁎Disadvantages of Combined System:

- The cost of construction will be high because of large size sewers to be constructed at sufficient depth below the ground surface involving large excavation.
- Because of large size of sewers their handling and transportation will be difficult.
- Due to inclusion of storm water (or rain water) treatment works of larger size will be required and also the treatment units will be heavily loaded.
- If pumping is required for lifting of sewage at the treatment works, the system will prove to be uneconomical both from the point of view of capital costs as well as from the point of view of running costs.
- Storm water (or rain water) is unnecessarily polluted.
- During heavy rains the sewers may overflow and may thus create unhygienic conditions and cause pollution problem.
- The large size sewers, if not properly designed, gets easily silted. Moreover, the dry weather flow being a small amount of the total flow, the large size sewer would often get silted up due to low velocity of flow during the dry part of the year.
- Large sewers are more difficult to be ventilated than the smaller ones.

⁎ Conditions favorable for Combined System:

- **Even Rainfall -** If rainfall is evenly spread throughout the year the combined system can be adopted.
- **Pumping Requirement -** When it is necessary to pump domestic or sanitary sewage and industrial sewage as well as storm water (or rain water), the combined system may be adopted.
- **Restriction of Space -** When space available for laying sewers is restricted, it is desirable to lay a combined sewer.
- **Conversion of Existing Storm Water Sewer -** If existing storm water sewer may be converted into a combined sewer, then combined system may be preferred. However, such a conversion will be possible only when the quantity of domestic or sanitary

sewage and industrial sewage is small as compared to that of storm water (or rain water).

iii. **Partially Separate System -** In this system domestic or sanitary sewage and industrial sewage, and the storm water (or rain water) which is drained from back yards and roofs of houses are carried in the same set of sewers, while the storm water (or rain water) drained from house fronts as well as from streets and roads is collected and conveyed in a separate set of open drains. The sewage and storm water (or rain water) carried by the sewers is usually delivered to a sewage treatment plant, and the storm water (or rain water) carried by the open drains is delivered to a natural stream or river for disposal.

⁎ Advantages of Partially Separate System:

- It combines the advantages of both separate system and combined system.
- The sewers to be provided are of reasonable size and hence their cleaning is not very difficult.
- The storm water (or rain water) eliminates the chances of their choking. Moreover, the sewers are completely cleaned during rainy season.
- The problem of drainage of storm water (or rain water) from houses is simplified.

⁎Disadvantages of Partially Separate System:

- The storm water (or rain water) admitted in sewers may increase the load on pumping and treatment units.
- During dry weather when there is no rain water, the velocity of flow will be low. Thus self-cleansing velocity may not be achieved.
- Storm water overflows may be required to be provided.

► Waste Water:

- Wastewater is any water that has been contaminated by human use. Wastewater is "used water from any combination of domestic, industrial, commercial or agricultural activities, surface runoff or stormwater, and any sewer inflow or sewer infiltration".Therefore, wastewater is a byproduct of domestic, industrial, commercial or agricultural activities. The characteristics of wastewater vary depending on the source. Types of wastewater include: domestic wastewater from households, municipal wastewater from communities (also called sewage) and industrial wastewater. Wastewater can contain physical, chemical and biological pollutants.
- Households may produce wastewater from flush toilets, sinks, dishwashers, washing machines, bath tubs, and showers. Households that use dry toilets produce less wastewater than those that use flush toilets.
- Wastewater may be conveyed in a sanitary sewer that conveys only sewage. Alternatively, wastewater can be transported in a combined sewer that conveys both storm water runoff and sewage, and possibly also industrial wastewater. After

treatment at a wastewater treatment plant, treated wastewater (also called effluent) is discharged to a receiving water body. The terms "wastewater reuse" and "water reclamation" apply if the treated waste is used for another purpose. Wastewater that is discharged to the environment without suitable treatment can cause water pollution.

- In developing countries and in rural areas with low population densities, wastewater is often treated by various on-site sanitation systems and not conveyed in sewers. These systems include septic tanks connected to drain fields, on-site sewage systems (OSS), vermin filter systems and many more.

⁎ Sources:

Sources of wastewater include the following domestic or household activities:

- Human excreta (feces, urine, blood and other bodily fluids) often mixed with used toilet paper or wet wipes; this is known as blackwater if it is collected from flush toilets.
- Washing water (personal hygiene, clothes, floors, dishes, cars, etc.), also known as grey water or sullage.
- Surplus manufactured liquids from domestic sources (drinks, cooking oil, pesticides, lubricating oil, paint, cleaning detergents, etc.)

Activities producing industrial wastewater include:

- Industrial site drainage (silt, sand, alkali, oil, chemical residues)
- Industrial cooling waters (biocides, heat, slimes, silt)
- Industrial processing waters
- Organic or biodegradable waste including waste from hospitals, abattoirs, creameries, and food factories.
- Organic or non bio-degradable waste that is difficult-to-treat from pharmaceutical or pesticide manufacturing
- Extreme pH waste from acid and alkali manufacturing
- Toxic waste from metal plating, cyanide production, pesticide manufacturing, etc.
- Solids and emulsions from paper mills, factories producing lubricants or hydraulic oils, foodstuffs, etc.
- Water used in hydraulic fracturing
- Produced water from oil & natural gas production

Other related activities or events:

- Urban runoff from highways, roads, railway tracks, car parks, roofs,pavements(contains oils, animal feces/manure, food waste, litter, petrol,diesel orrubber residues from tyres, soapscum, metals from vehicle exhausts, de-icing agents, herbicides and pesticides from gardens, etc.)
- Agricultural pollution, direct and diffuse

Wastewater can be diluted or mixed with other types of water through the following mechanisms:

- Seawater ingress (high volumes of salt and microbes)
- Direct ingress of river water
- Rainfall collected on roofs, yards, hard-standings, etc. (generally clean with traces of oils and fuel)
- Groundwater infiltrated into sewage
- Mixing with other types of wastewater or fecal sludge

⁎ Pollutants:

Chemical and Physical Pollutants:

- Heavy metals, including mercury, lead, and chromium
- Organic particles such as feces, hairs, food waste, vomit, paper fibers, plant material, humus, etc
- Soluble organic material such as urea, fruit sugars, soluble proteins, drugs, pharmaceuticals, etc
- Inorganic particles such as sand, grit, metal particles, rubber residues from tires, ceramics, etc
- Soluble inorganic material such as ammonia, road-salt, sea-salt, cyanide, hydrogen sulfide, thiocyanates, thiosulfates, etc
- Macro-solids such as sanitary napkins, nappies/diapers, condoms, needles, children's toys, dead animals or plants, etc
- Gases such as hydrogen sulfide, carbon dioxide, methane, etc
- Emulsions such as paints, adhesives, mayonnaise, hair colorants, emulsified oils, etc
- Toxins such as pesticides, poisons, herbicides, etc
- Pharmaceuticals, endocrine disrupting compounds, hormones, perfluorinated compounds, siloxanes, drugs of abuse and other hazardous substances
- Microplastics such as polyethylene and polypropylene beads, polyester and polyamide
- Thermal pollution from power stations and industrial manufacturers

Biological pollutants:

If the wastewater contains human feces, as is the case for sewage, then it may also contain pathogens of one of the four types:

- Bacteria (for example Salmonella, Shigella, Campylobacter, Vibrio cholerae),
- Viruses (for example hepatitis A, rotavirus, entero viruses, corona viruses),
- Protozoa (for example Entamoebahistolytica, Giardia lamblia, Cryptosporidium parvum) and
- Parasites such as helminths and their eggs (e.g. Ascaris (roundworm), Ancylostoma (hookworm) and Trichuris (whipworm));

- It can also contain non-pathogenic bacteria and animals such as insects, arthropods and small fish.

⁎Management:

Collection:

- Wastewater from factories, power plants and other industrial activities is extensively regulated in developed nations, and treatment is required before discharge to surface waters.
- In many cities, municipal wastewater is carried together with storm water, in a combined sewer system, to a sewage treatment plant. In some urban areas, municipal wastewater is carried separately in sanitary sewers and runoff from streets is carried in storm drains. Access to these systems, for maintenance purposes, is typically through a manhole.
- During high precipitation periods a combined sewer system may experience a combined sewer overflow event, which forces untreated sewage to flow directly to receiving waters. This can pose a serious threat to public health and the surrounding environment.
- In less-developed or rural regions, sewage may drain directly into major watersheds with minimal or no treatment. This usually has serious impacts on the quality of an environment and on human health. Pathogens can cause a variety of illnesses. Some chemicals pose risks even at very low concentrations and can remain a threat for long periods of time because of bioaccumulation in animal or human tissue.

Treatment and disposal:

- At the global level, an estimated 52% of wastewater is treated.However, substantial differences in wastewater collection and treatment rates vary by level of economic development, with high-income, upper-middle, lower-middle and low income countries treating approximately 74%, 43%, 26% and 4.2% of their wastewater, respectively. Wastewater that is discharged into the environment without undergoing treatment threatens widespread water pollution.
- There are numerous processes that can be used to clean up wastewaters depending on the type and extent of contamination. Wastewater can be treated in wastewater treatment plants which include physical, chemical and biological treatment processes. Municipal wastewater is treated in sewage treatment plants (which may also be referred to as wastewater treatment plants). Agricultural wastewater may be treated in agricultural wastewater treatment processes, whereas industrial wastewater is treated in industrial wastewater treatment processes.
- For municipal wastewater the use of septic tanks and other On-Site Sewage Facilities (OSSF) is widespread in some rural areas, for example serving up to 20 percent of the homes in the U.S.
- One type of aerobic treatment system is the activated sludge process, based on the maintenance and recirculation of a complex biomass composed of micro-organisms able to absorb and adsorb the organic matter carried in the wastewater. Anaerobic wastewater treatment processes (UASB, EGSB) are also widely applied in the treatment of industrial wastewaters and biological sludge. Some wastewater may be

highly treated and reused as reclaimed water. Constructed wetlands are also being used.

- Some facilities such as oil and gas wells may be permitted to pump their wastewater underground through injection wells. Wastewater injection has been linked to induced seismicity.

Reuse

- Global treated wastewater reuse is estimated at 40.7 billion m^3 per year, representing approximately 11% of the total domestic and manufacturing wastewater produced. Wastewater reuse is particularly high in the Middle East and North Africa region, in countries such as the UAE, Qatar, Kuwait and Israel.
- Treated wastewater can be reused in industry (for example in cooling towers), in artificial recharge of aquifers, in agriculture and in the rehabilitation of natural ecosystems (for example in wetlands). In rare cases it is also used to augment drinking water supplies. There are several technologies used to treat wastewater for reuse. A combination of these technologies can meet strict treatment standards and make sure that the processed water is hygienically safe, meaning free from bacteria and viruses. The following are some of the typical technologies: Ozonation, ultrafiltration, aerobic treatment (membrane bioreactor), forward osmosis, reverse osmosis, advanced oxidation.
- Some water demanding activities do not require high grade water. In this case, wastewater can be reused with little or no treatment. One example of this scenario is in the domestic environment where toilets can be flushed using grey water from baths and showers with little or no treatment.
- Irrigation with recycled wastewater can also serve to fertilize plants if it contains nutrients, such as nitrogen, phosphorus and potassium. In developing countries, agriculture is using untreated wastewater for irrigation - often in an unsafe manner. There can be significant health hazards related to using untreated wastewater in agriculture. The World Health Organization developed guidelines for safe use of wastewater in 2006.

► Sustainable Development Techniques:

1. Modular Construction Techniques to Eliminate Waste:

- Modular construction is a sustainable technique that builders are using to design structures faster, at a more competitive cost, and with maximum resource efficiency. Modular structures can be built within a controlled environment where wastage of resources is minimized and pollution is controlled.
- For example, modular homes being built in large cities such as Sydney can be constructed offsite (in a controlled manufacturing plant) and the final product delivered to the actual location. This prevents environmental pollution and rubbish accumulation. The modular construction process is also carefully controlled for material usage, quality and reliability.
- Construction technologies can be used to make modular construction even more efficient. The use of construction software allows builders to prepare accurate material estimates, design 3D images of the construction site, and coordinate activities

with all stakeholders. The end result is a high-quality structure that is also environmentally friendly.

2. Use of Green Building Materials:

- Perhaps the most popular sustainable construction technique is the use of green building materials. These are materials sourced from renewable sources and are also recyclable when the building has reached its lifespan.
- Green building materials are typically sourced from sustainable forests (such as timber forests). They can also be produced from innovative manufacturing processes that reduce harmful emissions to the atmosphere. Concrete and steel are two examples of materials that are now being produced via eco-friendly manufacturing processes.
- Through the use of sustainable building materials, new structures will have a lower carbon footprint and better energy efficiency. The amount of waste that ends up in landfills is reduced if the building needs to be renovated/demolished in the future.

3. Zero Energy Construction:

- Zero energy construction is an emergent trend in many different homes/buildings. The goal of a 'zero energy' structure is to produce as much energy as it consumes, having a zero net impact on the environment.
- Builders are incorporating zero energy techniques to design more efficient, durable and sustainable structures at a competitive cost.
- Zero energy construction techniques involve a combination of the following steps:
  (1) Using renewable energy sources (such as solar and wind) to power the building.
  (2) Efficient air ventilation systems that eliminate pollutants from the surrounding air.
  (3) Better insulation materials that minimize leaking air and noise pollution.
  (4) Using energy efficient indoor appliances.
- Zero energy construction also allows buildings to put back as much energy into the grid as they use during the year.

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

Reasons for Students Recommending this Design

(1) RO Plant:

- Due to the GIDC is located few kilometers far from that village and the industries dump their chemical waste in mini canal which pass near by the village.
- That canal is badly polluted the ground water of that area. The water having yellowish color and bad test.
- So if human being or animals drink that kind of water then definitely it's going to harm their health and they also sell the buffalo milk so which person drink that is also affected by that.

(2) Drainage System:

- The Chosar village is land lock area because of that they don't have direct source of water from river.
- So they depend on canal water but problem is that the canal water is very unregular so they can't fully depend on the canal water.
- So they need alternative source of water.
- On the other hand the ground water is also polluted due to industrial chemical which is passing near by the village.
- So rain water harvesting is the best solution for that.

(3) Concrete Roads:

- The concrete road is provides more comfort and safety to villagers because if road is sandy then the possibility of the accident will increase due to less friction and in the village we can easily find out the animals on the road , so it is necessary.

(4) Animal Hospital:

- During the village visit we found the animal hospital there but the condition of the hospital is not that good and may be due to the lack of doctors or bad infrastructure the hospital is closed.

(5) Bus Stand:

- In India where everything id getting costlier day by day, travelling by bus is cheaper than owing a car.
- By traveling by bus it reduces pollution and road congestion, because the people who travel by bus are more and thus the lesser are cars.
- And travelling by bus does not need a place to park your own vehicle.

(6) School:

- School is the main key for the reduction of Poverty. Mainly in villages due to lack of access to education the poverty rate increases.

- So schools are very necessary in our day to day life, because the children can learn new things and can reach bigger heights in future.

About designs Suggestions/Benefit of the villagers

(1) RO Plant:

- Due to the RO Plant they can get drinkable water.
- Due to the polluted water they may have suffer from various kind of diseases so from that they can get relief.

(2) Drainage System:

- When they are getting water easily from the canal that time they can use that water for their agriculture purpose.
- But when there is shortage of water in canal that time they don't need to worry because they have alternative of canal water that time they can use that rain water.
- And because of in Chosar village they have two lakes so, they can fulfill their requirements from that lake.
- On the other hand we know that the ground water is drastically decreasing and the ground water is also polluted there so by the rain water harvesting we csn somehow reduce that problem in a long term.

(3) Concrete Road:

- Concrete road are bright in colors which provides better visibility at night.
- A concrete road has better performance at surface.
- These roads are more comfortable to drive.
- These roads have less durability.

(4) Animals Hospital:

- Hospital is must in this pandemic situation and in day to day life.
- Then the villagers don't have to go other places for treatment. They can get treated in their own village.
- Having a hospital in the village can save many more life.
- Hospital is a physical as well as mental support to all the people.

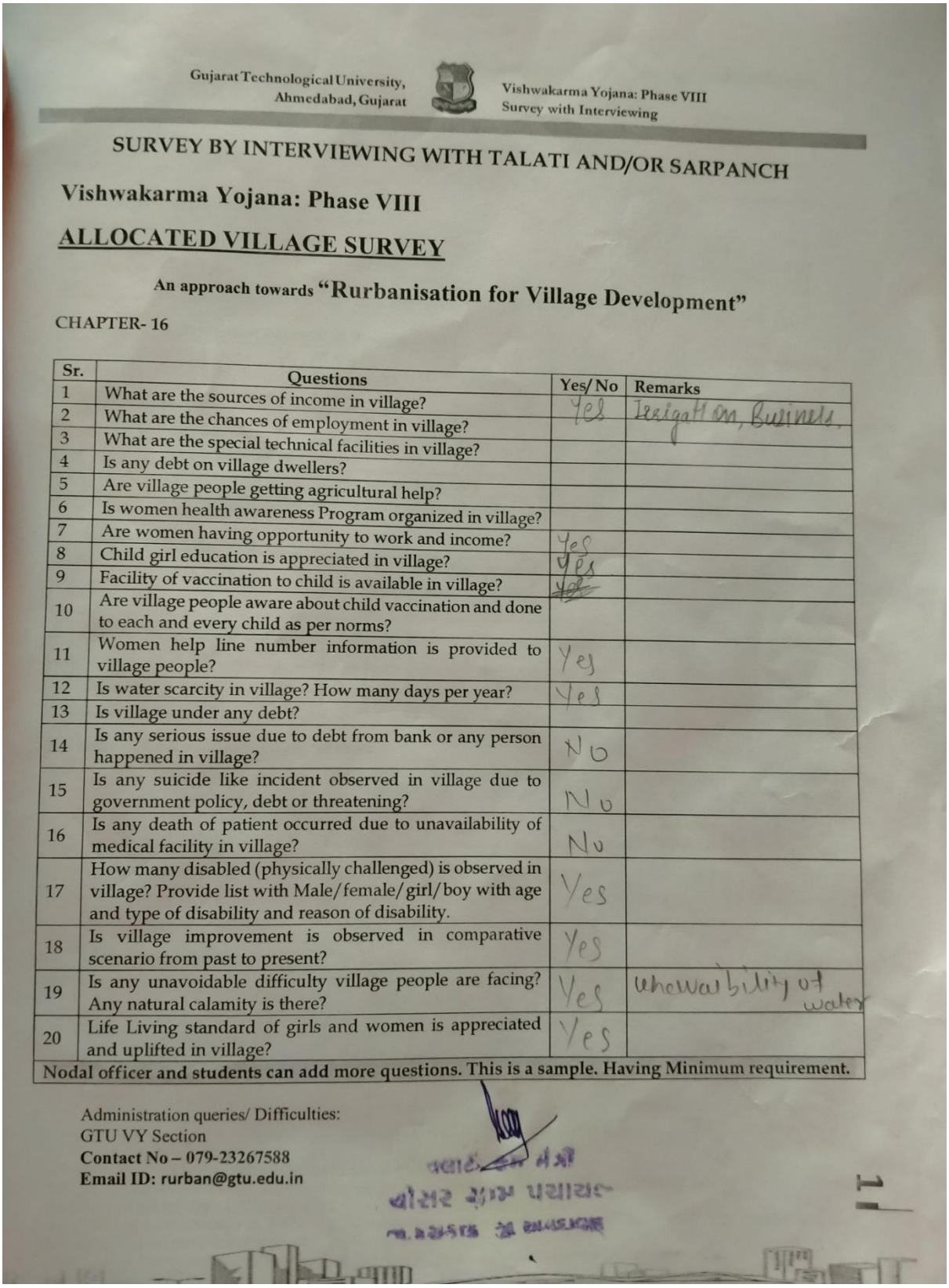
(5) Bus Stand:

- Having a bus stand in their own village the villagers don't have to go to other places to catch a bus. They can get one from their own village.
- So the wastage of time in travelling is minimum and they can reach to their destination easily.

(6) School:

- In villages the main reason of children not studying is that there is no facility of school. And their parents don't give them permission to go far and study.
- So making a school in the village gives them an opportunity to study and learn new things.And by making a school the poverty rate also gets decreased.

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

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

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

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

(1) Agriculture Activities:

Agricultural activities means agricultural uses and practices including, but not limited to: Producing, breeding, or increasing agricultural products; rotating and changing agricultural crops; allowing land used for agricultural activities to lie fallow in which it is plowed and tilled but left unseeded; allowing land used for agricultural activities to lie dormant as a result of adverse agricultural market conditions; allowing land used for agricultural activities to lie dormant because the land is enrolled in a local, state, or federal conservation program, or the land is subject to a conservation easement; conducting agricultural operations; maintaining, repairing, and replacing agricultural equipment; maintaining, repairing, and replacing agricultural facilities, provided that the replacement facility is no closer to the shoreline than the original facility; and maintaining agricultural lands under production or cultivation.

► Techniques:

- Rotating crops and embracing diversity.
- Planting cover crops.
- Reducing or eliminating tillage.
- Applying integrated pest management (IPM).
- Integrating livestock and crops.
- Adopting agroforestry practices.

► Solutions:

- Adopting Nutrient Management Techniques.
- Using Conservation Drainage Practices.
- Ensuring Year-Round Ground Cover.
- Planting Field Buffers.
- Implementing Conservation Tillage.
- Managing Livestock Access to Streams.
- Engaging in Watershed Efforts.

Figure 69: Agriculture Activities

(2) Agro Industry:

Industries that have agricultural produce as raw materials are known as Agro based industries. These are consumer based industries. Cotton, jute, silk, woolen textiles, sugar and edible oil, etc industry are based on agricultural raw materials.

► Techniques:

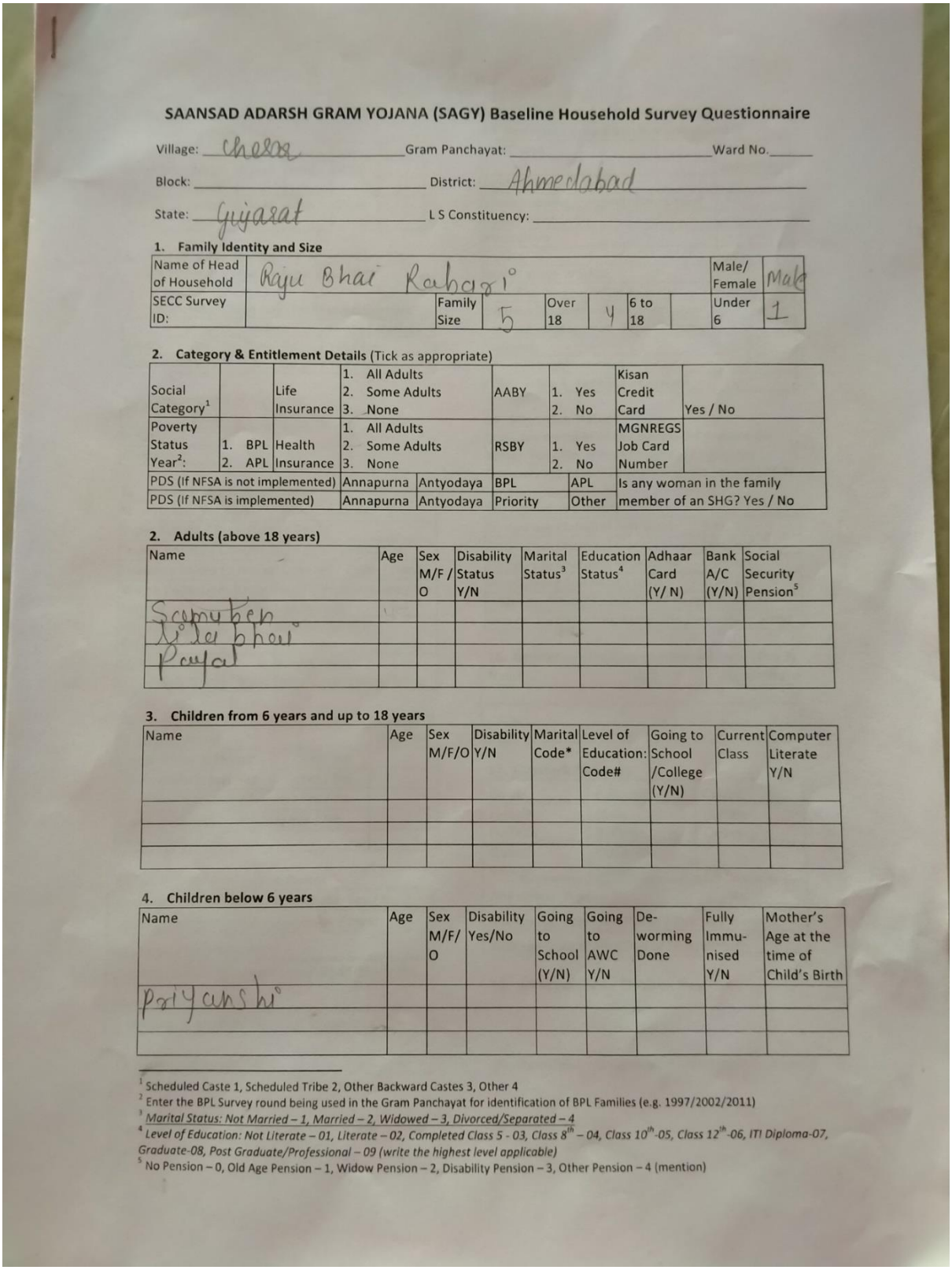
- Strategic Irrigation.
- High Quality seeds.
- Better Monitoring Technology.
- Green Methods of Pest Control.
- Cover Cropping.
- Organic Fertilizers.
- Intercropping/Polyculture.

►Solutions:

- AgriBot-Autonomous Tractor.
- One Water-Smart Irrigation.
- Saga Robotics-Autonomous Harvesting.
- Desamis-Livestock Monitoring.
- Plastomics-Genetic Editing.

Figure 70: Agro Industry

19. CHOSAR VILLAGE SAGY QUESTIONNAIRE SURVEY FORM WITH THE SARPANCH SIGNATURE



SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Chosar Gram Panchayat: _____ Ward No. _____

Block: _____ District: Ahmedabad

State: Gujarat L S Constituency: _____

1. Family Identity and Size

Name of Head of Household	Raju Bhai Rabari							Male/ Female	Mal
SECC Survey ID:		Family Size	5	Over 18	4	6 to 18		Under 6	1

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]
Somuben								
Vijaybhai								
Payal								

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
Priyanshi								

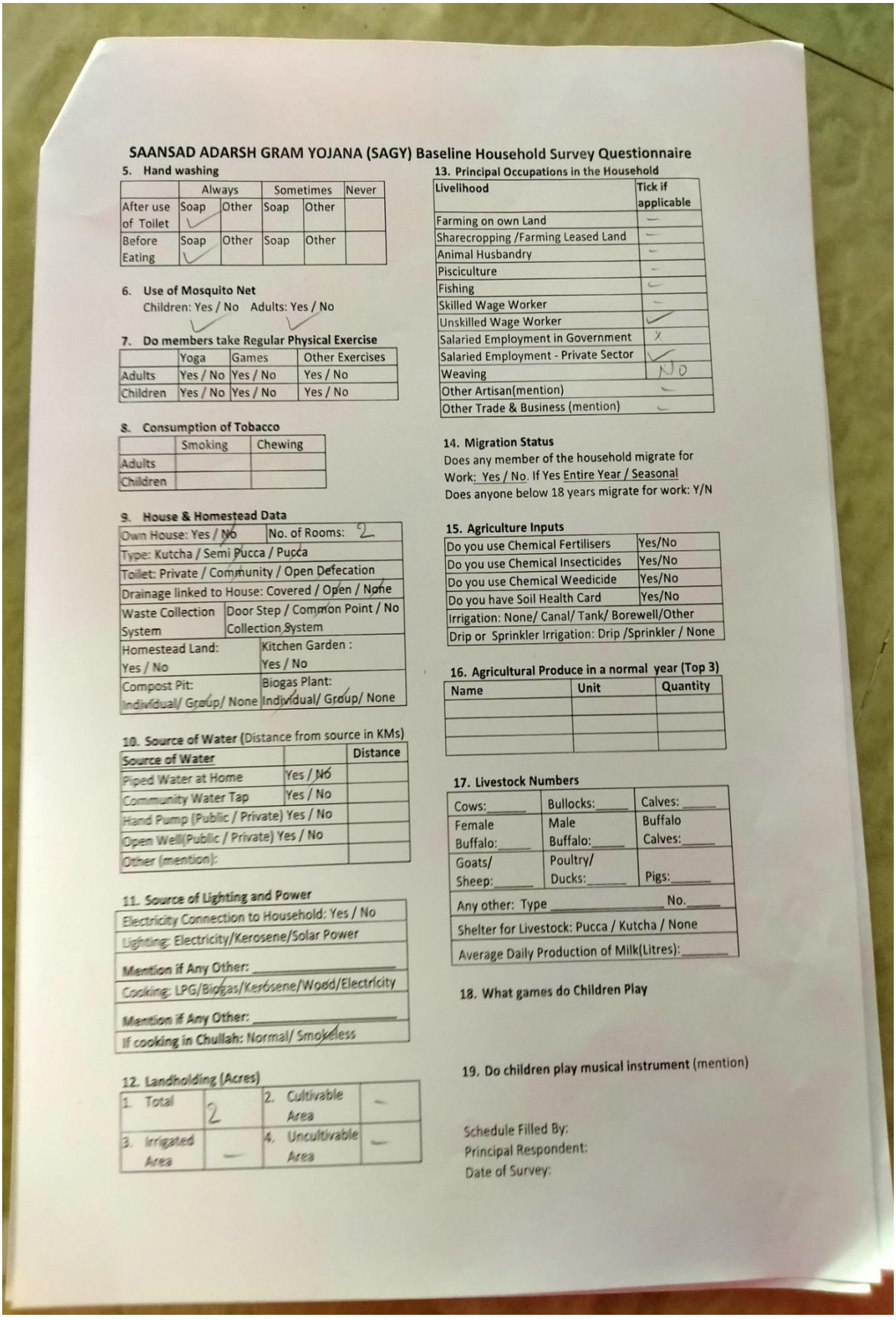
[1] Scheduled Caste 1, Scheduled Tribe 2, Other Backward Castes 3, Other 4

[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		
Children		

9. House & Homestead Data

Own House: Yes / No	No. of Rooms: 2
Type: Kutcha / Semi Pucca / Pucca	
Toilet: Private / Community / Open Defecation	
Drainage linked to House: Covered / Open / None	
Waste Collection System	Door Step / Common Point / No Collection System
Homestead Land: Yes / No	Kitchen Garden : Yes / No
Compost Pit: Individual/ Group/ None	Biogas Plant: Individual/ Group/ None

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

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

11. Source of Lighting and Power

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

12. Landholding (Acres)

1. Total	2	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	X
Salaried Employment - Private Sector	✓
Weaving	NO
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

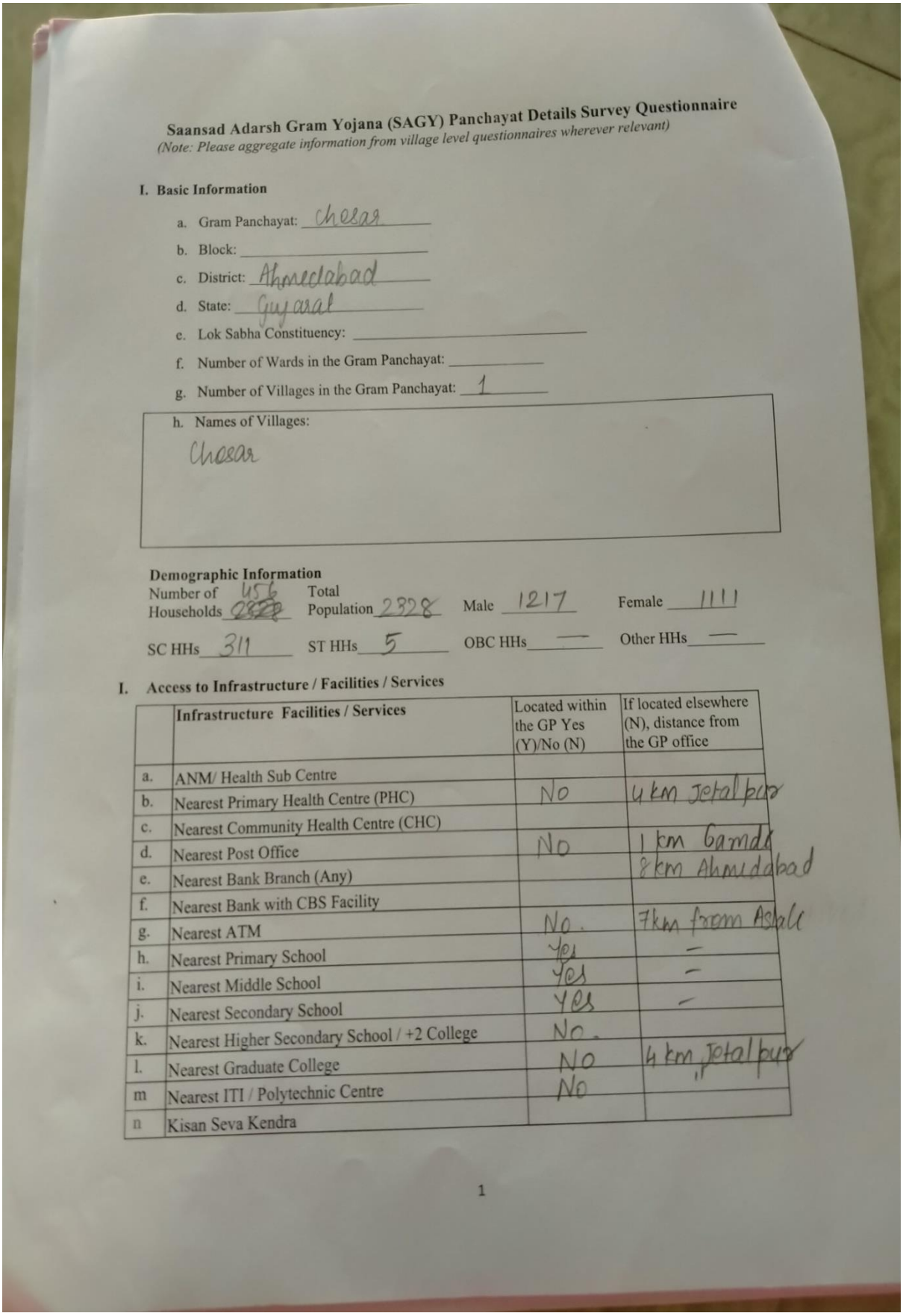
17. Livestock Numbers

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

18. What games do Children Play

19. Do children play musical instrument (mention)

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: Chosar

b. Block: _____

c. District: Ahmedabad

d. State: Gujarat

e. Lok Sabha Constituency: _____

f. Number of Wards in the Gram Panchayat: _____

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages:

Chosar

Demographic Information

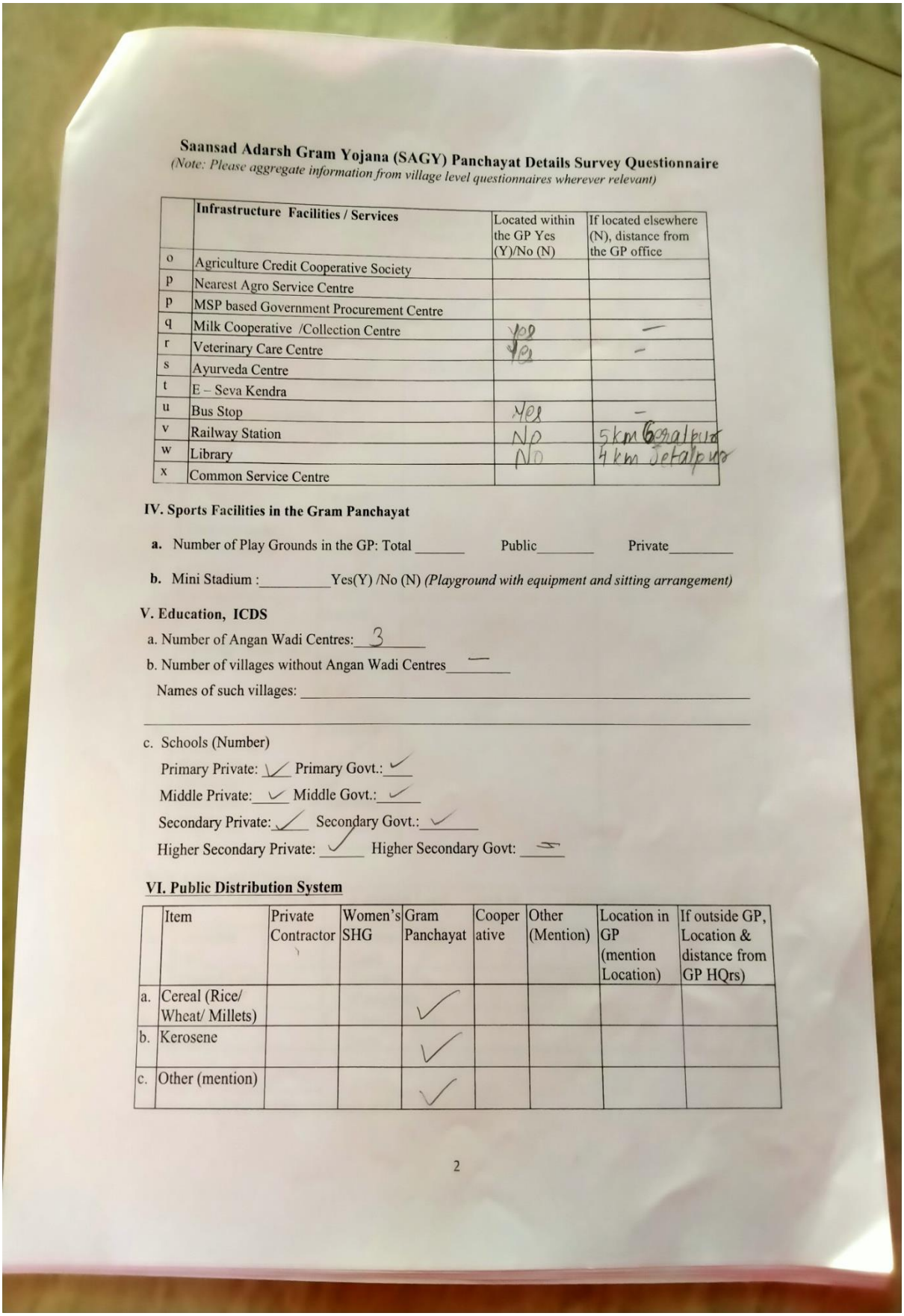
Number of Households 456 Total Population 2328 Male 1217 Female 1111

SC HHs 311 ST HHs 5 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		
b.	Nearest Primary Health Centre (PHC)	No	4 km Jetalpur
c.	Nearest Community Health Centre (CHC)		
d.	Nearest Post Office	No	1 km Gamdi
e.	Nearest Bank Branch (Any)		8 km Ahmedabad
f.	Nearest Bank with CBS Facility		
g.	Nearest ATM	No.	7km from Asalli
h.	Nearest Primary School	Yes	–
i.	Nearest Middle School	Yes	–
j.	Nearest Secondary School	Yes	–
k.	Nearest Higher Secondary School / +2 College	No.	
l.	Nearest Graduate College	No	4 km, Jetalpur
m	Nearest ITI / Polytechnic Centre	No	
n	Kisan Seva Kendra		

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		
p	Nearest Agro Service Centre		
p	MSP based Government Procurement Centre		
q	Milk Cooperative /Collection Centre	Yes	—
r	Veterinary Care Centre	Yes	—
s	Ayurveda Centre		
t	E – Seva Kendra		
u	Bus Stop	Yes	—
v	Railway Station	No	5km Bagalpur
w	Library	No	4km Jetalpur
x	Common Service Centre		

IV. Sports Facilities in the Gram Panchayat

a. Number of Play Grounds in the GP: Total _____ Public_____ Private_____

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 3

b. Number of villages without Angan Wadi Centres —

Names of such villages: _____

c. Schools (Number)

Primary Private: ✓ Primary Govt.: ✓

Middle Private: ✓ Middle Govt.: ✓

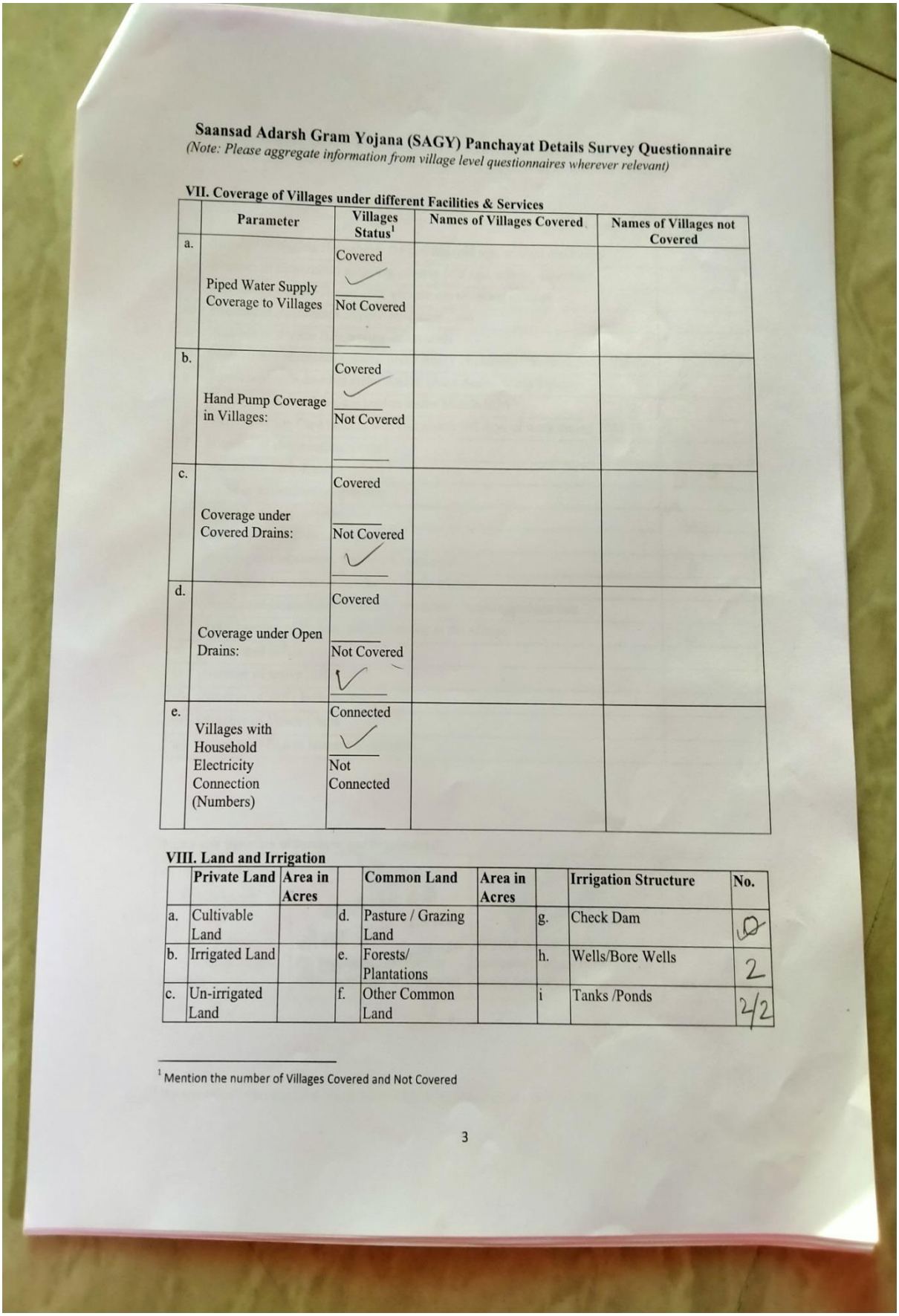
Secondary Private: ✓ Secondary Govt.: ✓

Higher Secondary Private: ✓ Higher Secondary Govt: —

VI. Public Distribution System

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

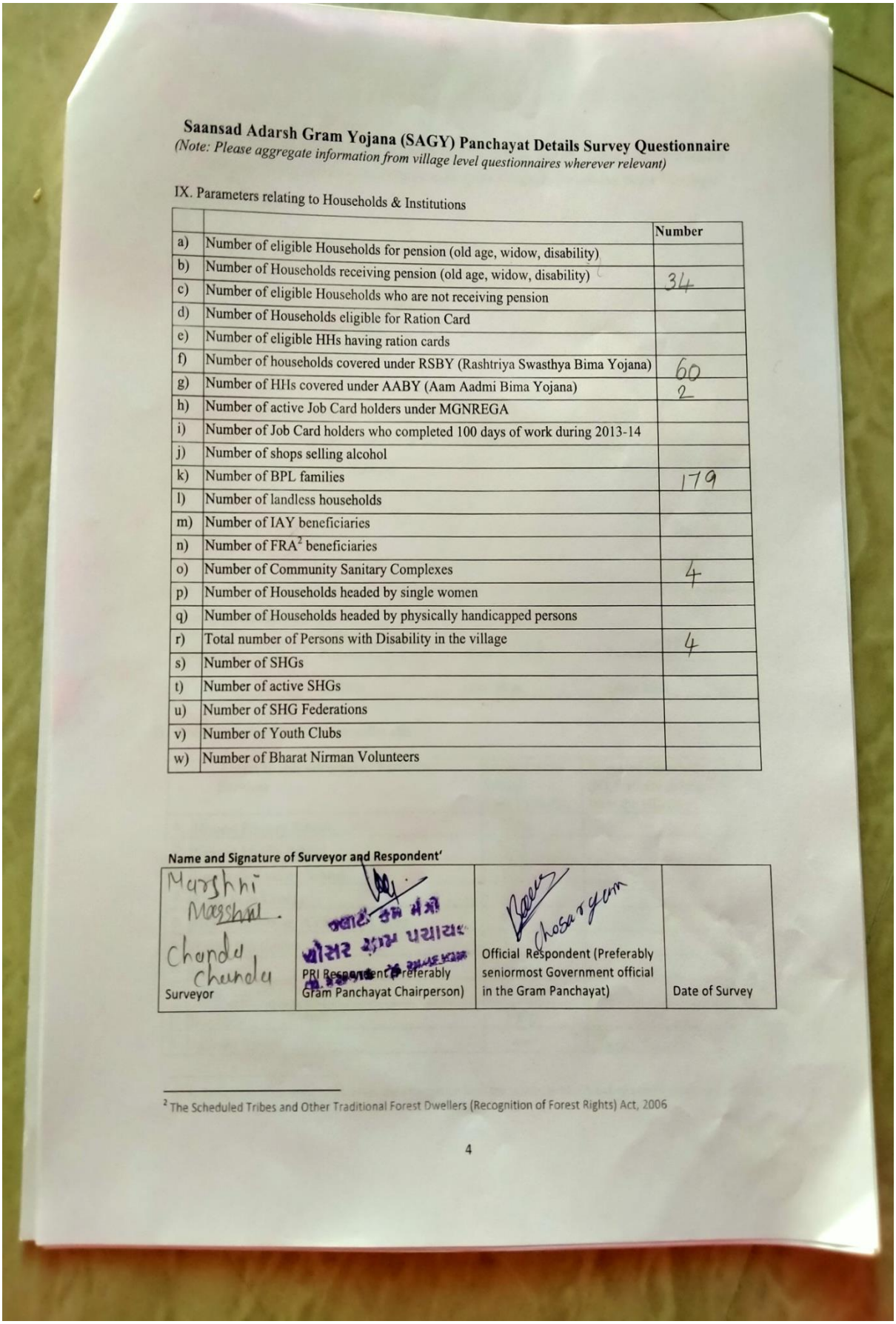
	Parameter	Villages Status[1]	Names of Villages Covered	Names of Villages not Covered
a.	Piped Water Supply Coverage to Villages	Covered ✓ / Not Covered		
b.	Hand Pump Coverage in Villages:	Covered ✓ / Not Covered		
c.	Coverage under Covered Drains:	Covered / Not Covered ✓		
d.	Coverage under Open Drains: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

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land		d.	Pasture / Grazing Land		g.	Check Dam	0
b.	Irrigated Land		e.	Forests/ Plantations		h.	Wells/Bore Wells	2
c.	Un-irrigated Land		f.	Other Common Land		i	Tanks /Ponds	2/2

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

3



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)	34
c)	Number of eligible Households who are not receiving pension	
d)	Number of Households eligible for Ration Card	
e)	Number of eligible HHs having ration cards	
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	60
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	2
h)	Number of active Job Card holders under MGNREGA	
i)	Number of Job Card holders who completed 100 days of work during 2013-14	
j)	Number of shops selling alcohol	
k)	Number of BPL families	179
l)	Number of landless households	
m)	Number of IAY beneficiaries	
n)	Number of FRA[2] beneficiaries	
o)	Number of Community Sanitary Complexes	4
p)	Number of Households headed by single women	
q)	Number of Households headed by physically handicapped persons	
r)	Total number of Persons with Disability in the village	4
s)	Number of SHGs	
t)	Number of active SHGs	
u)	Number of SHG Federations	
v)	Number of Youth Clubs	
w)	Number of Bharat Nirman Volunteers	

Name and Signature of Surveyor and Respondent'

Marshhi Maqshal. Chanda Chanda 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) Panchayat Details Survey Questionnaire

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

I. Basic Information

a. Gram Panchayat: chosar

b. Block: _____

c. District: Ahmedabad

d. State: Gujarat

e. Lok Sabha Constituency: _____

f. Number of Wards in the Gram Panchayat: _____

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages:

Chosar

Demographic Information

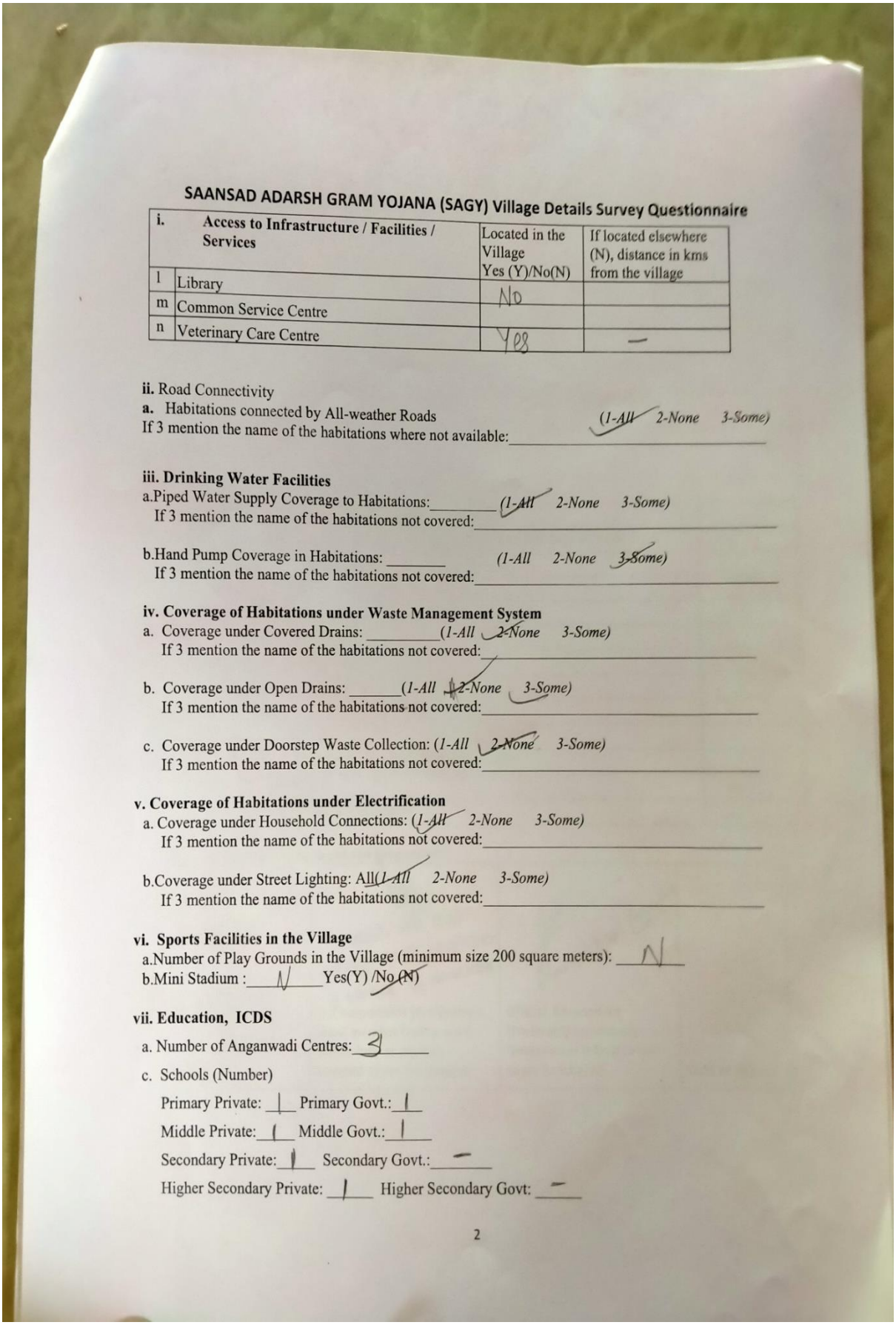
Number of Households 456 Total Population 2328 Male 1217 Female 1111

SC HHs 311 ST HHs 5 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		
b.	Nearest Primary Health Centre (PHC)	No	4 km Jotalpur
c.	Nearest Community Health Centre (CHC)		
d.	Nearest Post Office	No	1 km Gamdi
e.	Nearest Bank Branch (Any)		8 km Ahmedabad
f.	Nearest Bank with CBS Facility		
g.	Nearest ATM	No.	7km from Asbal
h.	Nearest Primary School	Yes	–
i.	Nearest Middle School	Yes	–
j.	Nearest Secondary School	Yes	–
k.	Nearest Higher Secondary School / +2 College	No.	
l.	Nearest Graduate College	No	4 km, Jotalpur
m	Nearest ITI / Polytechnic Centre	No	
n	Kisan Seva Kendra		

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	
m	Common Service Centre		
n	Veterinary Care Centre	Yes	–

ii. Road Connectivity

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

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

iii. Drinking Water Facilities

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

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

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

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

iv. Coverage of Habitations under Waste Management System

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

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

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

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

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

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

v. Coverage of Habitations under Electrification

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

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

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

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

vi. Sports Facilities in the Village

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

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 3

c. Schools (Number)

Primary Private: 1 Primary Govt.: 1

Middle Private: 1 Middle Govt.: 1

Secondary Private: 1 Secondary Govt.: –

Higher Secondary Private: 1 Higher Secondary Govt: –

2

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

viii. Land Category		Area in Acres		Land Category	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	462	d.	Pasture / Grazing Land	74	g.	Check Dam	N
b.	Irrigated Land	455	e.	Forests/ Plnatations	0	h.	Wells/Bore Wells	2
c.	Un-irrigated Land	33	f.	Other Common Land		I	Tanks /Ponds	2/2

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	No
4	Number of BPL families	219
5	Number of landless households	0
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	0
13	Number of Bharat Nirman Volunteers	0

Name and Signature of Surveyor and Respondent'

Marshni - Marshni Chanda - Chanda 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

3

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

Samir Gami <samir.gami@nsitgurukul.com>

Existing & Development scenario of "CHOSAR" village, DASKROI,AHMEDABAD

1 message

Samir Gami <samir.gami@nsitgurukul.com> Fri, Aug 6, 2021 at 7:26 PM
To: ravinravar21@gmail.com, collector-ahd@gujarat.gov.in, dish-ahd@gujarat.gov.in, ddo-ahd@gujarat.gov.in, tdo-ahm@gujarat.gov.in, colahmed@guj.nic.in, gpdaskroi-gj@gov.in, do-dish-ahd@gujarat.gov.in
Cc: rurban <rurban@gtu.edu.in>

Respected Sir/Madam

We are the students of Narnarayan Shastri Institute of Technology, Jetalpur, Ahmedabad affiliated to Gujarat Technological University-GTU. GTU has been assigned to Vishwakarma Yojana-VY in which students survey various villages and Design various Amenities to deliver it to them making them ideal for living a better life as per requirements and village problem statements.

As a part of Vishwakarma Yojana's guidelines. We have been asked to inform all the respected officers about our project in which we will shortly notify about "CHOSAR" village profile of issues for development and our design work for them which is as below.

Population: 2328 (as of census 2011)

Village :- CHOSAR	Population :- 2328 (as of census 2011) 4000+ (at present)

Key issue	Remarks	Given Design Proposal
Sustainable Infrastructure	There are two lakes in our village, but there is not any garden. There is large area beside the lake, so we decided to make a garden there.	Garden
Physical Infrastructure	There is no bank in Chosar village. Visitors face many problems in Chosar, therefore we design bank. For overall development of the village a bank is required.	Bank
Social Infrastructure	There is no library in our village. The students living there are having problems due to this. So a library should be constructed for studying in the village.	Library
Socio-economic Infrastructure	There is no PHC in Chosar village, so we made a design of it. Because there is no PHC villagers are facing difficulties in their day to day life. So it is necessary to built PHC.	PHC
Smart Village Infrastructure	In our village Chosar there is no facility of community hall. So we designed one, so it is the major step in	Community Hall

	taking forward the village ahead and make it a smart village.	
Heritage Infrastructure	There is no requirement of post office in our village. Post office is one of the main needs in day to day life. So we design one post office for our village.	Post Office

Sr no.	Design name	Periods (months)	Amount Expenditure (Rs)	Benefit
1	Garden	4-5	6,41,564.33	Recreational area
2	Bank	6-7	33,14,321.8	Security purpose
3	Library	5-6	9,51,817	For reading purpose
4	Community Hall	5-6	22,36,987	Arranging functions
5	PHC	8-9	35,62,646.7	To facilitate good health
6	Post Office	6-7	22,08,980.34	Good facilities
7	RO Plant	4-5	14,26,181.7	For clean drinkable water
8	School	8-9	8,13,422.6	Better education
9	Bus Stand	1	24,323.535	To get bus easily
10	Concrete Road	1	47,78,250	Better transportation
11	Drainage System	1	1,01,88,195	Proper water facilities
12	Animal Hospital	8-9	18,51,074	Saving lives of animals

--
SAMIR M. GAMI.
CIVIL ENGINEERING DEPARTMENT
NSIT, JETALPUR
AHMEDABAD

CHOSAR_VILLAGE_VISHVAKARMA YOJNA_8.pdf
16456K

21. Comprehensive Report for the entire village

ABSTRACT

“Developing village with a ‘rural soul’ but with all urban amenities that a city may have”

Our vision of this project is to provide urban amenities in rural areas while maintaining the rural soul. This will help in developing villages in sustainable manner, reduce migration from villages and prevent the cities from the urban pressure.

Vishwakarma Yojana has provided the platform for real world experience to engineering students and simultaneously applies their technical knowledge in the rural infrastructure development. And also the main motive of Vishwakarma Yojana is developing village with a rural but with all urban amenities that a city may have.

The approach like Vishwakarma Yojana is a step towards nation development. The main aim of this project is to provide urban amenities in rural areas while maintaining the rural soul. This will help in developing villages in sustainable manner, reduces migration from villages and prevent the cities from the urban pressure. In Vishwakarma Yojana phase VIII, our allocated village is Chosar. This village is Daskroi Taluka of Ahmedabad District of Gujarat State. The population of the village is approximately 2328. The area of village is approx 577.1 hectare with 456 households.

We conclude about the information of village, geographical data, demographical data, occupational data and current infrastructure facilities such as water, waste water management, transportation, road network, drainage line, water supply for agricultural activities, electricity for residential use, electricity for irrigation work, educational facilities, etc. And after analyzing all data we realize that there are some major amenities which should be constructed in Chosar village, to make the life of the villagers easy and more comfortable. We designed some infrastructural facilities for Chosar which are Bank, Post Office, Community Hall, Library, PHC and Garden for all the facilities to the villagers. And also our aim is to implement this designs and in future we aim to design and implement other important facilities for Chosar.

IDEAL VILLAGE VISIT (PUNSARI)

* Background:

- Punsari village is located in Sabarkantha District in the state of Gujarat, India. The village is located about 80 Km away from the state capital, Gandhinagar. The village follows the Panchayat system. The village is well developed under the panachayat system. They use many technologies in their village like in education, farming, etc. This village contains Wi-Fi system for all the villagers. They have been used many technologies like CCTV cameras for women security as well as for the villagers. They provided facilities like mineral water supply, health care centre, sewer and drainage project, banking facalities and toll-free complaint reception service.

- There is a facility of mobile library for villagers. The villagers have adopted the method of sprinkler irrigation for farming which is less water consuming method and has good efficiency.
- This village has been awarded as the best Gram Panchayat in Gujarat.

⁎Benefits of the visits of Ideal Village / Smart Village:

- For ideal village visit we visited Punsari village. The village is located in Sabarkantha district. We went their to understand that how the village has been transformed in all these years. The main aim behind the visit was to get insight how the Gram Panchayat Mrs. Sunandaben Patel has transformed and maintained it since many years and what are the next development she is looking for his village in the near future.
- The village has underground drainage system with three point outlet which dumps all the waste which gets absorbs into the soil in a landfill outside the village.
- For the garbage collection, a tractor travels from door to door and collects the waste twice a day from the village in order to collect most of the waste. The waste thus collected is 100% plastic only.
- There is proper sanitization containing toilets in all the houses of the village.
- Public Annoucement systems i.e PA system is installed at two places in the village. At this the announcements, bhajans and other news is been announced twice a day.
- There is 1 milk bank, 1 police station, 2 banks, 1 gram hat, 1 post office, 1 community hall and 24*7 primary health care centre, Talod railway station, block and CC road with internal GIS & GPS systems.
- There is also installation of Mineral RO plant for drinking of clean water. The RO plant is even installed in the schools.
- The Gram Panchayat has also started Internal Bus Service after analyzing one of the reasons of death of infants and pregnant women. This has helped in reductions of IMMR and IRMR rates.

- The Gram Panchayat has adopted 7P Model i.e. Punsari, Public, People, Panchayat, Private, Profit and Partnership.

CHOSAR VILLAGE LITERATURE REVIEW – (CIVIL CONCEPT)

Introduction: Urban & Rural Village Concept

* Urban Village Concept:

- Urban area typically would mean a well planned set-up with a village concept of being fairly self-sufficient and they should not have to travel long distance to fulfill their daily needs.
- Urban area contains a highly dense population with a good economic centre and plus diverse waterfall.
- In urban area at least 75% of the male working population is engaged in non-agricultural activities.
- The density of a population of at least 400 person per sq.km.
- Their minimum population is of 5000.

* Rural Village Concept:

- The rural village is a geographic area which is located outside town and cities.
- According to the planning commission, a town with a maximum population of 15,000 is considered rural in nature.
- In a rural area agriculture is the main source of livelihood along with fishing.
- Typical rural area have a low population density and small settlements.

Importance of the Rural Development

- In our country India majority of people near about 65% of population live in rural area, so India is primarily an agriculture based country.
- In India more than two-third (2/3) of the country's people is dependent on agriculture for their livelihood and 1/3 of rural India is still below the poverty line.
- For growth of India the development of rural area is become most important factor for Indian economy.
- Agriculture contribute nearly 1/5 of gross domestic product in India.
- Other things due to poor facilities like education, healthcare and quality of life the villagers are moving to urban areas. So by that many problems are happening like unemployment, increase in population and hazadious development of buildings.
- So if we provide the facilities to a rural area then they don't move to urban area which is good for both area.
- So majority of people live in rural area without developing that rural area can't become developed country because of the majority.
- To increase the quality of living of the under privileged population.

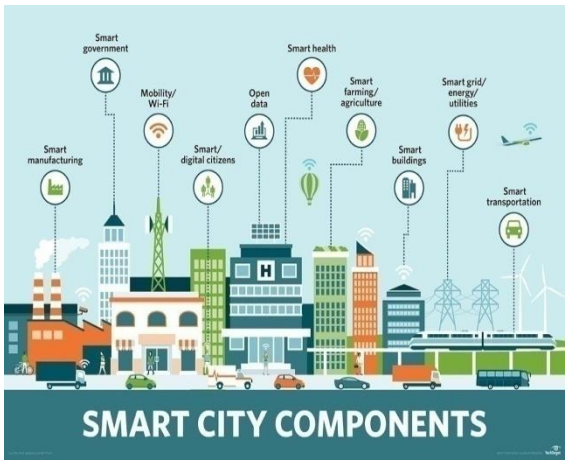
* Objectives:

- To provide the basic needs like education, healthcare, drinking water, connectivity of road, etc.
- To improve the productivity and as well as the wages of rural people.
- To provide the employment.

SMART (CITIES/VILLAGE) CONCEPT IDEA AND ITS VISIT

Introduction: Concepts, Definitions and Practices

- The first question that arises is what is meant by "Smart City". The answer is there is no universally accepted definition of a Smart City. It means different things to different people. The concept of Smart City, therefore, varies from city to city and country to country, depending upon the level of development, willingness to change and reform, resources and aspirations of the city's residents. A Smart City would have a different connotation in India than other countries. Even in India, there is no way of defining a Smart City.
- Some definition boundaries are required to guide cities in the Mission, in the imagination of any city dweller in India. A Smart City contains Infrastructure and services that describes his/her level of aspiration. To provide for the aspirations and needs of the citizens, urban planners aim at development of the entire urban eco-system. This can be long term goal and cities can work towards developing such comprehensive infrastructure incrementally, adding on layers of "Smartness".
- In the approach to the Smart Cities Mission, the main objective is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' solutions. The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a light house to other aspiring cities. The Smart Cities Mission of the Government is a bold, new initiative. It is meant to set examples that can be replicated both within and outside the Smart City, catalyzing the creation of similar Smart Cities in various regions of the country.



Vision – Goals, Standards and Performance Measurement Indicators

- Promoting mixed land use in area based developments like planning for unplanned areas containing a range of compatible activities and land uses close to one another in order to make land use more. The States will enable some flexibility in land use and building bye-laws to adapt the change.
- Housing and Inclusiveness – expand housing opportunities for all.

- Creating walk able localities - reduce congestion, boost local economy, air pollution and resource depletion, promote interactions and ensure security. The road network is formed or created not only for vehicles and public transport, but also for pedestrians and cyclists.
- Promoting a variety of transport options – Transit Oriented Development (TOD).
- Preserving and developing open spaces – Playgrounds, parks and recreational centers in order to enhance the quality of the citizens life, reduce the urban heat effects in areas and generally promote eco-balance.
- Giving an identity to the city – based on its main economic activity such as health, education, culture, furniture, local cuisine, arts and crafts, dairy, hosiery, textile, etc.
- Applying Smart solutions to Infrastructure and services in area-based development to make the better. For example, using fewer resources, proving cheaper services and making area less vulnerable to disasters.

■ Technological Options

Transportation

Energy

Building and Housing

Urban Manufacturing

Urban Farming

Water

ABOUT CHOSAR VILAGE

Introduction about CHOSAR VILLAGE details

- **Vishwakarma Yojana** is a initiative towards Rurbanization by the Government of Gujarat, which was allotted as a pilot project to GTU.
- In that yojana the students meet the State holders in a village and survey the existing facilities like what facilities already there and which one is needed.
- For me it is not about to convert a rural village to urban area. Its about to convert rural village to ideal village.
- Where all kind of need and requirement means all facilities is there what one person need. Facilities like physical infrastructure (water, drainage, road, electricity, storm water networks, solid waste management, etc). Social infrastructure (education, health, sanitation). Socio-cultural facilities (community hall, library, recreation facilities and others). Sustainable infrastructures (rain water harvesting, biogas plant, eco toilet, solar street lights and other).
- After the survey of my allocated village Chosar, we found out that there is already few facilities but not all, and some infrastructures needs modification. Like there is no bank & post-office which is needed. The community hall is open to sky, there is no any infrastructure so it can be made. The Government primary health care centre is also not there.

- To enhance the beauty of village the garden can be built because the land is already available only need to modified that place can give pleasant and lake & temple is also there.
- There is no facility for solid waste management, we found out that the village is unclean and unhygienic so the garbage management should be done properly for that we can provide the facility.
- As we know that the wealth of villages depend on agriculture so the irrigation method and water become necessity for them after the survey the result came out that they don't get the sufficient amount of water through canal. So they harvest the rain water they made a under drainage by that they collect all the rain water into lake and there is two lake in that village.
- We want to modify that drainage by using our civil engineering knowledge and went to make good drainage structure.

Justification / need of the study

- To improve the quality of livehood of villagers.
- To improve the facilities in village.
- To improve the educational facilities.
- To develop the infrastructure.
- To improve the irrigation system.
- To collect all the data regarding the village.
- To know which Government scheme is there and which one is needed there.

Study Area (Broadly define)

- Chosar village is in Daskroi Taluka of Ahmedabad District of Gujarat state.
- With approximately population = 2328
- Address: Chosar village, Daskroi Taluka, Ahmedabad, Gujarat.
- Area of village = 577.1 hectares
- Households = 456
- Nearest town with distance = Ahmedabad

Objective of the study

- Promote integrated development of rural areas with provision of quality housing employment opportunities, better connectivity supporting physical and social infrastructure.
- Migration from rural to urban area due to lack of basic requirement and insufficient economic activities in rural areas.
- Providing renewable sources like solar street light which is eco-friendly.
- Refurbishing of village wells, lakes, water tanks, construction of rain water harvesting structure for sustainable development.
- Development of socio-cultural facilities like public library, community hall, recreational activities and repairing of existing amenities.
- Repair and maintenance of existing public buildings like public library, school building, public toilet block, gram panchayat, etc.

Scope of the study

- It is very essential to develop village because India's development also depends upon the progress of the village because rural population in India was reported at 65.53% in 2019 according to the world bank collection of development indicators. That number is huge without developing village we can't became developed country from developing country.
- India is agricultural country and poverty can be removed through improvement in agricultural sector by giving a good infrastructure education related irrigation, market etc.
- The country and its society can be reconstructed through rural development.

Methodology Frame Work for development of our village

- We observed all presence facilities and their condition.
- We visited Ideal village and performed survey of that village and fill up the techno-economic survey form also for getting idea from that village.
- We visited our allocated Chosar village and done the survey and also techno-economic survey also.
- We observed that the condition of bus stand is not good.
- There is not any kind of bank, post office, primary health care, community hall, etc.
- There is no proper management of solid waste.

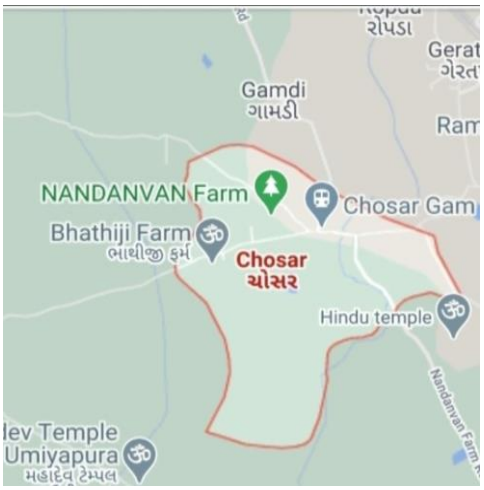
Study Area Location with brief History land use details

Chosar village location

Gram Panchayat: Chosar, Block / Tehsil: Daskroi , District: Ahmedabad , State : Gujarat , Pin code : 382435 , Area: 577.1 hectare , Population: 2328 , Households: 456 , Nearest town: Ahmedabad (16km) , Village code: 511674

History:

- According to census 2011 information the location code or village code of chosar is 511674.
- Chosar is located Daskroi Tehsil of Ahmedabad District in Gujarat, India. It is situated 16 km away from Ahmedabad.
- As per 2009 statement, Chosar village is also a Gram Panchayat.
- The total geographical area of village is 577.1 hectares. Chosar has a total population of 2328 peopless.
- There are about 456 houses in Chosar village. Ahmedabad is nearest town to Chosar which is 16 km away.**Base map of Chosar Village**



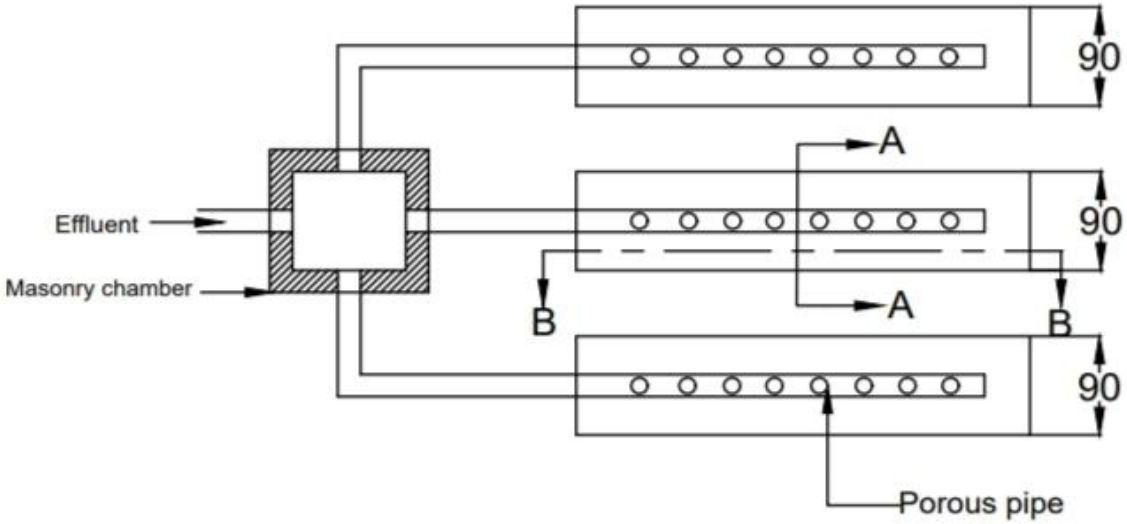
*** Physical Growth:**

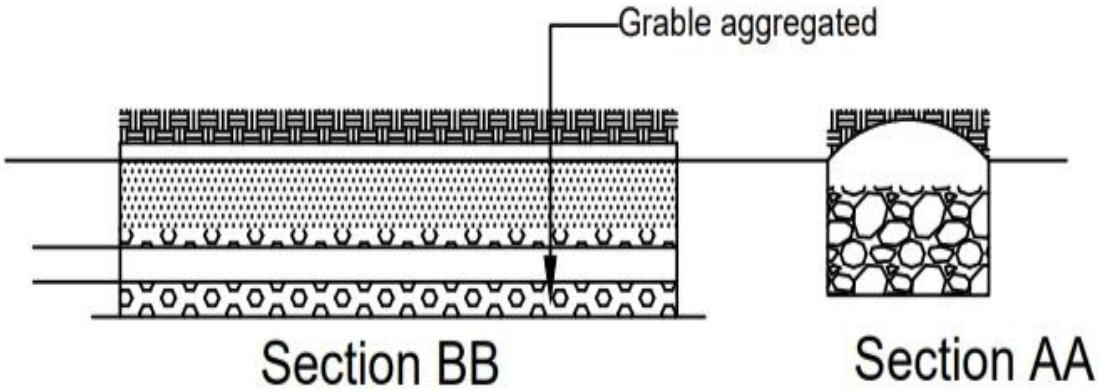
Sr. No	Description	Information/Detail
1	Area of village	577.1 hectare
2	Forest area	30%
3	Water bodies	Well, borewell, canal
4	Nearest town with distance	Ahmedabad (16km)

***Demographical growth:**

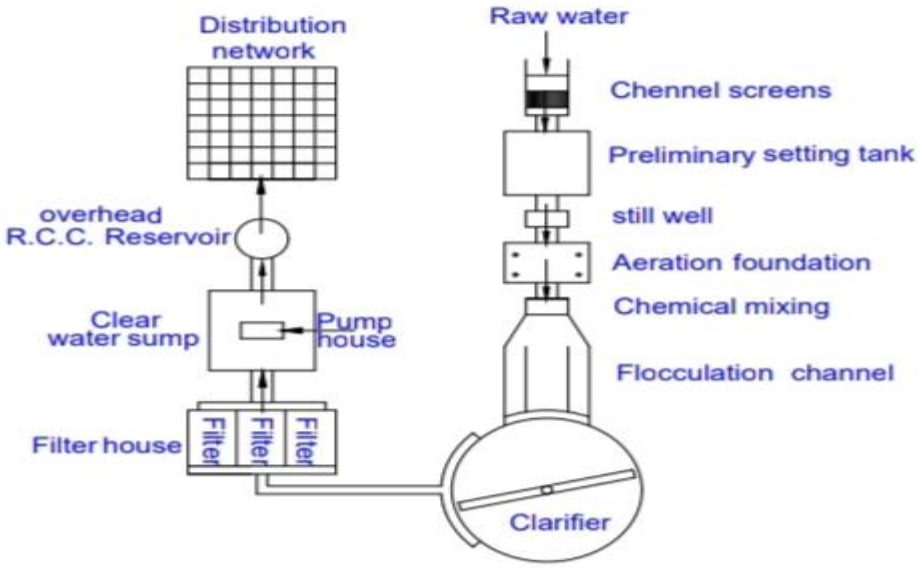
Sr. No	Census	Population	Male	Female	Total Households
1	2001	-	-	-	-
2	2011	2328	1217	1111	456

■ Design of Sustainable Sanitation:





■ **Design of Water Treatment Plant:**



Schematic layout of a water treatment plant

Gap Analysis of the Allocated Village

VILLAGE GAP Analysis					
Village Facilities	**Planning Commission/ U DPFI Norms**	**Village Name:**	Chosar		
		Population:		2328	
		Existing	**Required as per Norms**	**Smart Vilage / Cities / Heritage Future Projection Design**	**Gap**
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	1	1		Not required
Primary School	Each Per 2500 population	1	1		Not required
Secondary School	Per 7,500 population	0	1	1	Can be provided
Higher Secondary School	Per 15,000 Population	0	0	0	0
College	Per 125,000 Population	0	0	0	0

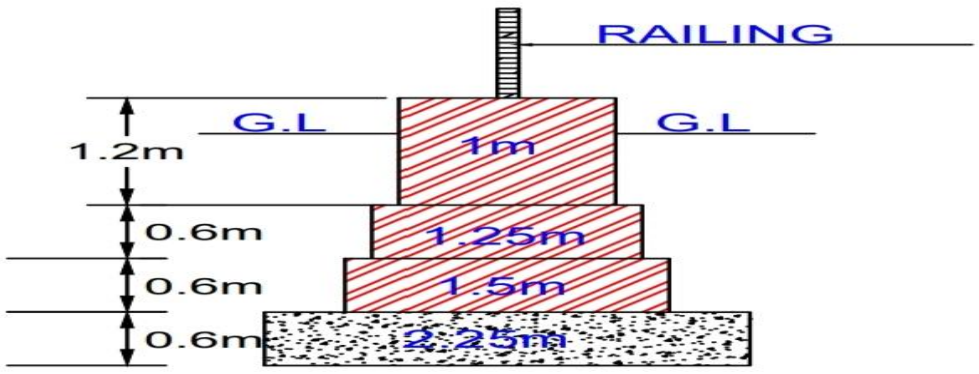
Tech. Training Institute	Per 100000 Population	0	0	0	0
Agriculture Research Centre	Per 100000 Population	0	0	0	0
Skill Development Center	Per 100000 Population	0	1	1	Can be provided
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	0	1	1	Can be provided
Primary Health & Child Health Center	Per 20,000 population	0	1	1	Can be provided
Child Welfare and Maternity Home	Per 10,000 population	0	0	0	0
Multi-speciality Hospital	Per 100000 Population	0	0	0	0
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutcha house)	2	0	0	Not required
PhysicalInfrastructure Facilities					
		Adequate	**Inadequate**		
Drinking Water (Minimum 70 lpcd)					
Over Head Tank	1/3 of Total Demand	yes	0		0
U/G Sump	2/3 of Total Demand	yes	0		0
Drainage Network - Open		-	-		-
Drainage Network - Cover		yes			Needs to be modify
Waste Management System			no		Needs to be provided
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	0	1	1	Can be provided
community hall and Public Library	Per 15000 Population	0	1	1	can be provided
Cremation Ground	Per 20,000 population	0	0	0	0
Post Office	Per 10,000 population	1	1	1	Re design required
Gram Panchayat Building	Each individual/group	1	0	0	Not required

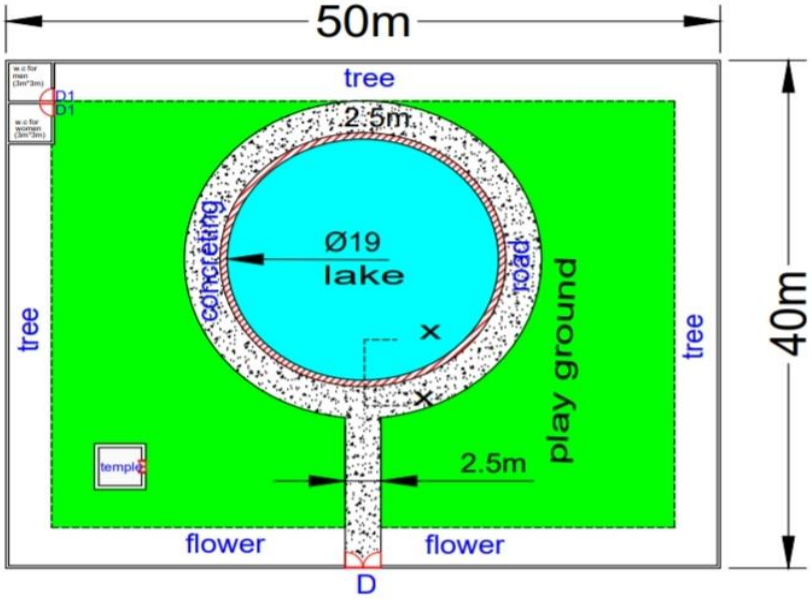
	panchayat				
APMC	Per 100000 Population				
Fire Station	Per 100000 Population				
Public Garden	Per village	0	1	1	Can be provided
Police post	Per 40,000Population				
Shopping Mall					
Electrical Design					
Electricity Network					
Any Smart Village Facility					
Technology					
Solar street lights	yes	-	-	-	-
Bio gas plant	-	no	-	-	Required
Wi-fi services	-	no	-	-	Required
Vehicles for waste collection	yes	-	-	-	Required
Training hub	-	no	-	-	Required

		Adequate	**Inadequate**		
Transportation		yes			Not required
Pucca Village Approach Road	Each village	yes			Not required
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)		no		Bus station needs to be modified

Designs for Chosar Village

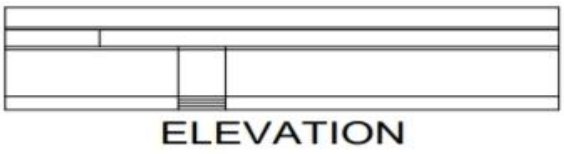
1. Garden

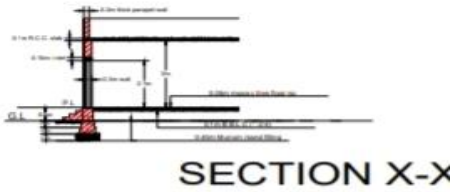


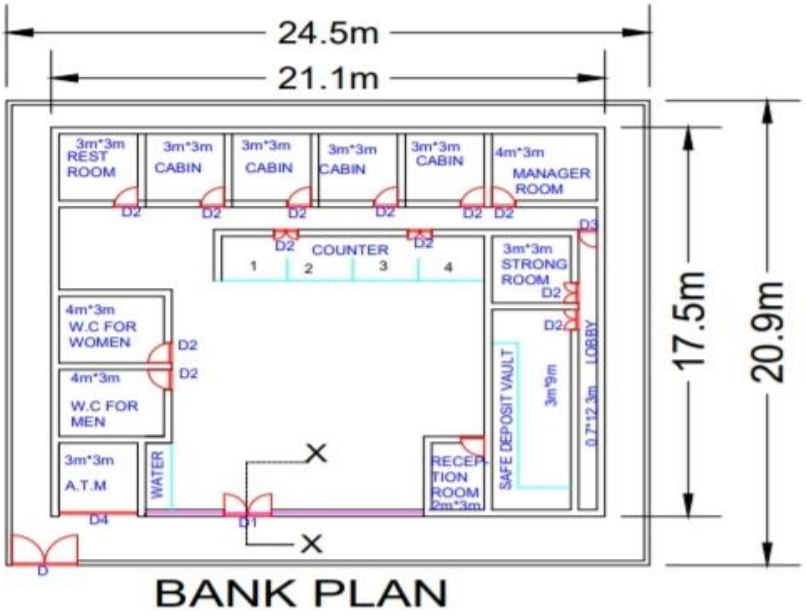


No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	68.832	100	m^3	6883
2.	Foundation concrete (1:4:8)	84.78	2000	m^3	169560
3.	2^{nd}class brick masonry for foundation and plinth (1:6)	247.812	2700	m^3	669.087
4.	D.P.C (1:$1^{1/2}$:3) 2.5cm thick	62.8	70	m^2	4396
5.	1^{st} class brick masonry for superstructure (1:6)	121.98	3000	m^2	365.940
6.	C.C for slab, beam, lintel, etc (1:2:4)	2.048	5500	m^2	11264
7.	Steel reinforcement	160.85	60	Kg	9651
8.	12mm thick cement plastering (1:4)	975.36	250	m^2	243840
9.	Surface concreting	20.25	2000	m^3	40500
10.	5cm thick marble mosaic tile flooring	18	700	m^2	12600
11.	BBLC for floor base (1:2:4)	18	1500	m^3	27000
12.	Sand / Murrum filling in plinth	8.1	450	m^3	3645
13.	Wood work or Glass work for window, door & ventilator	4	4500	m^2	18000
14.	Skirting of mosaic	24	70	rm	1680
15.	White Washing	782.8	10	m^2	7828
				Rs.	**557,882.027**
				Contractor's Profit (10%)	**557,88.2**
				Add 5% contingencies	**27,894.1**
				Total	**641,564.33**

2. Bank



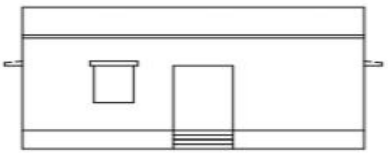




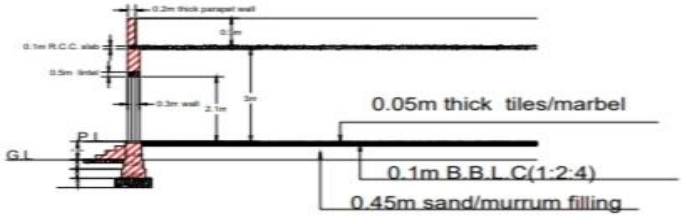
BANK PLAN

No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	174.659	100	m^3	17465
2.	Foundation concrete (1:4:8)	45.562	2000	m^3	91124
3.	2^{nd}class brick masonry for foundation and plinth (1:6)	135.157	2700	m^3	364924
4.	D.P.C (1:1$^{1/2}$:3) 2.5cm thick	68.30	70	m^2	4781
5.	1^{st} class brick masonry for superstructure (1:6)	219.411	3000	m^2	658233
6.	C.C for slab, beam, lintel, etc (1:2:4)	61.407	5500	m^2	337738
7.	Steel reinforcement	4822.905	60	Kg	289374
8.	12mm thick cement plastering (1:4)	1290.48	250	m^2	322620
9.	5cm thick marble mosaic tile flooring	319.495	700	m^2	223646
10.	BBLC for floor base (1:2:4)	319.495	1500	m^3	479242.5
11.	Sand / Murrum filling in plinth	141.517	450	m^3	63682
12.	Skirting of mosaic	232.65	70	rm	16285
13.	White washing	1290.43	10	m^2	12904
				Rs.	**2,882,019**
				Contractor's Profit (10%)	**288,201.9**
				Add 5% contingencies	**144,100.9**
				Total	**3,314,321.8**

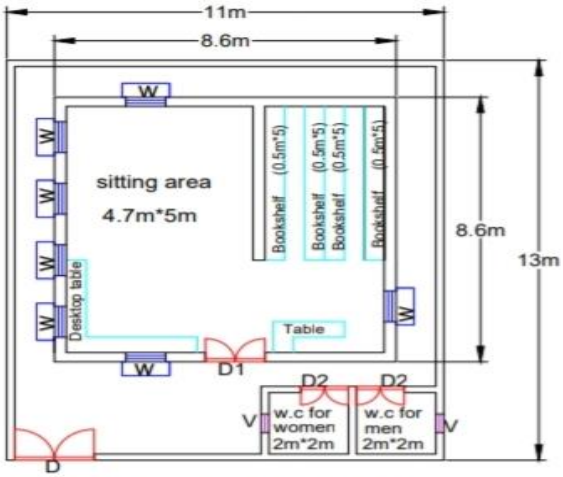
3. Library



ELEVATION



SECTION X-X

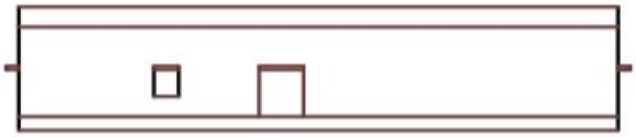


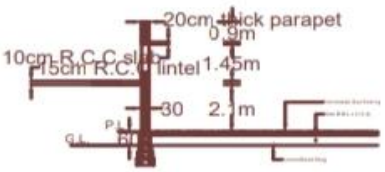
LIBRARY PLAN

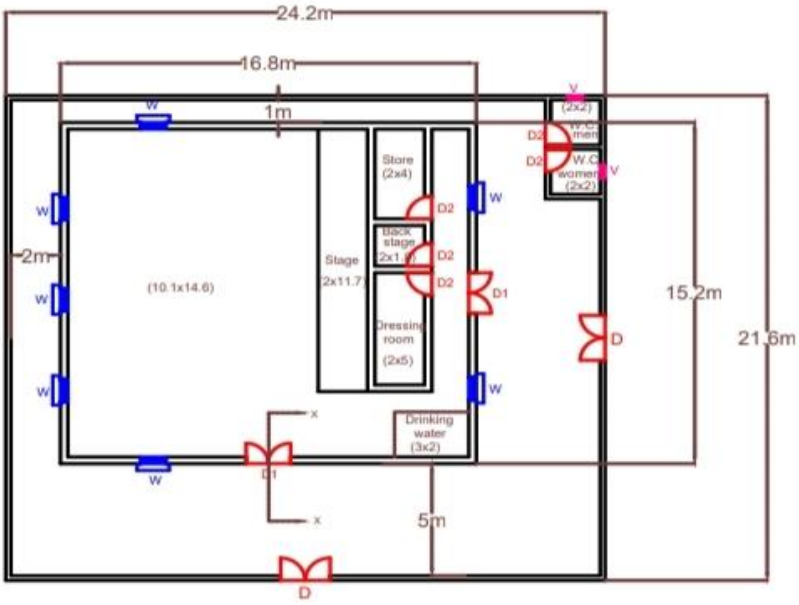
No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	30.699	100	m^3	3069
2.	Foundation concrete (1:4:8)	10.233	2000	m^3	20466
3.	2^{nd}class brick masonry for foundation and plinth (1:6)	41.592	2700	m^3	112298
4.	D.P.C (1:$1^{1/2}$:3) 2.5cm thick	15.86	70	m^2	1110.2
5.	1^{st} class brick masonry for superstructure (1:6)	46.354	3000	m^2	139062
6.	C.C for slab, beam, lintel, etc (1:2:4)	13.194	5500	m^2	72567
7.	Steel reinforcement	1036.256	60	Kg	62175.36
8.	12mm thick cement plastering (1:4)	553.11	250	m^2	138277.5
9.	5cm thick marble mosaic tile flooring	72	700	m^2	50400
10.	BBLC for floor base (1:2:4)	72	1500	m^3	108000
11.	Sand / Murrum filling in plinth	32.4	450	m^3	14580
12.	Wood work or Glass work for window, door & ventilator	18.09	4500	m^2	81405
13.	Skirting of mosaic	261.75	70	rm	18322
14.	White Washing	553.11	10	m^2	5531
15.	Filling	8.082	50	m^3	404
				Rs.	**827,667.06**

	Contractor's Profit (10%)	**82,766.7**
	Add 5% contingencies	**41,383.35**
	Total	**951,817**

5. Community Hall



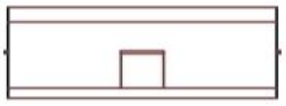


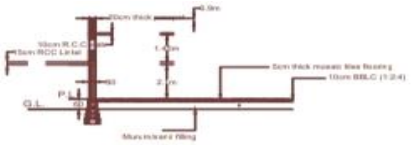


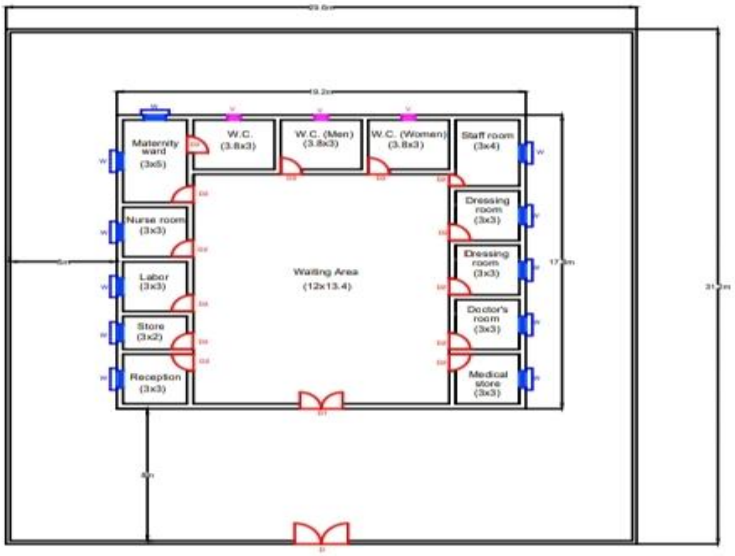
No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	110.088	100	m^3	11009
2.	Foundation concrete (1:4:8)	24.408	2000	m^3	48816
3.	2^{nd}class brick masonry for foundation and plinth (1:6)	52.23	2700	m^3	141021
4.	D.P.C (1:$1^{1/2}$:3) 2.5cm thick	41.00	70	m^2	2870
5.	1^{st} class brick masonry for superstructure (1:6)	107.344	3000	m^2	322032
6.	C.C for slab, beam, lintel, etc (1:2:4)	41.388	5500	m^2	227634
7.	Steel reinforcement	3238.611	60	Kg	194316.66
8.	Woodwork or glass work				

	for doors, windows & ventilator	28.92	4500	m^2	130140
9.	12mm thick cement plastering (1:4)	1198.529	250	m^2	299632.25
10.	5cm thick marble mosaic tile flooring	227.565	700	m^2	159295.5
11.	BBLC for floor base (1:2:4)	227.565	1500	m^3	341347.5
12.	Sand / Murrum filling in plinth	102.40425	450	m^3	46081.9125
13.	Skirting of mosaic	129	70	rm	9030
14.	White washing	1198	10	m^2	11980
				Rs.	**1,945,206**
				Contractor's Profit (10%)	**194,520.6**
				Add 5% contingencies	**97,260.3**
				Total	**2,236,987**

5. PHC



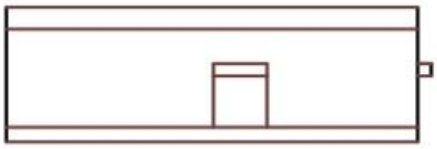


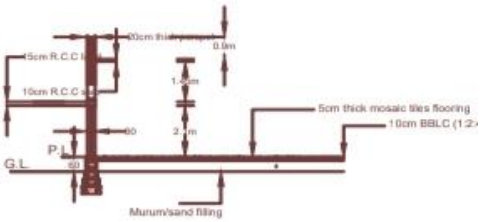


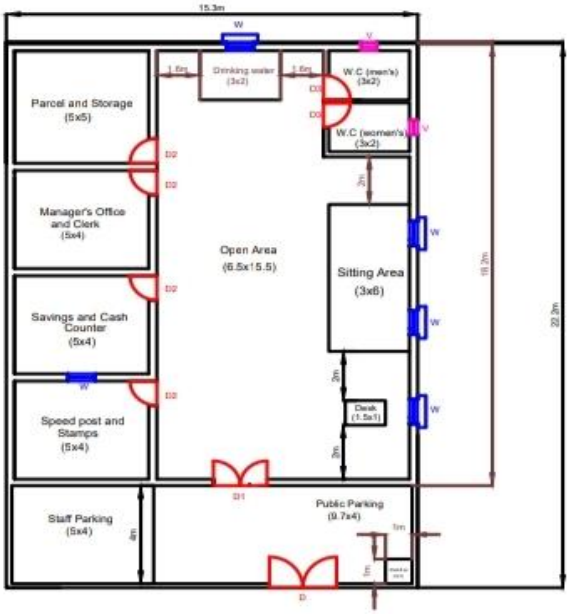
No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	131.292	100	m^3	13129.2
2.	Foundation concrete (1:4:8)	29.268	2000	m^3	58536
3.	2^{nd}class brick masonry for foundation and plinth (1:6)	108.310	2700	m^3	292437
4.	D.P.C (1:$1^{1/2}$:3) 2.5cm thick	39.96	70	m^2	2797

5.	1st class brick masonry for superstructure (1:6)	124.613	3000	m^2	37384
6.	C.C for slab, beam, lintel, etc (1:2:4)	49.234	5500	m^2	270787
7.	Steel reinforcement	3866.838	60	Kg	232010
8.	Woodwork or Glass work for doors, windows & ventilators	46.98	4500	m^2	211410
9.	12mm thick cement plastering (1:4)	1624.73	250	m^2	406182
10.	5cm thick marble mosaic tile flooring	284.61	700	m^2	199227
11.	BBLC for floor base (1:2:4)	284.61	1500	m^3	426915
12.	Sand / Murrum filling in plinth	128.075	450	m^3	57633
13.	Skirting of mosaic	28	70	rm	1960
14.	White washing	1624.73	10	m^2	16247
				Rs.	**2,226,654.2**
				Contractor's Profit (10%)	**222,665.4**
				Add 5% contingencies	**1,113,327.1**
				Total	**3,562,646.7**

6. Post Office

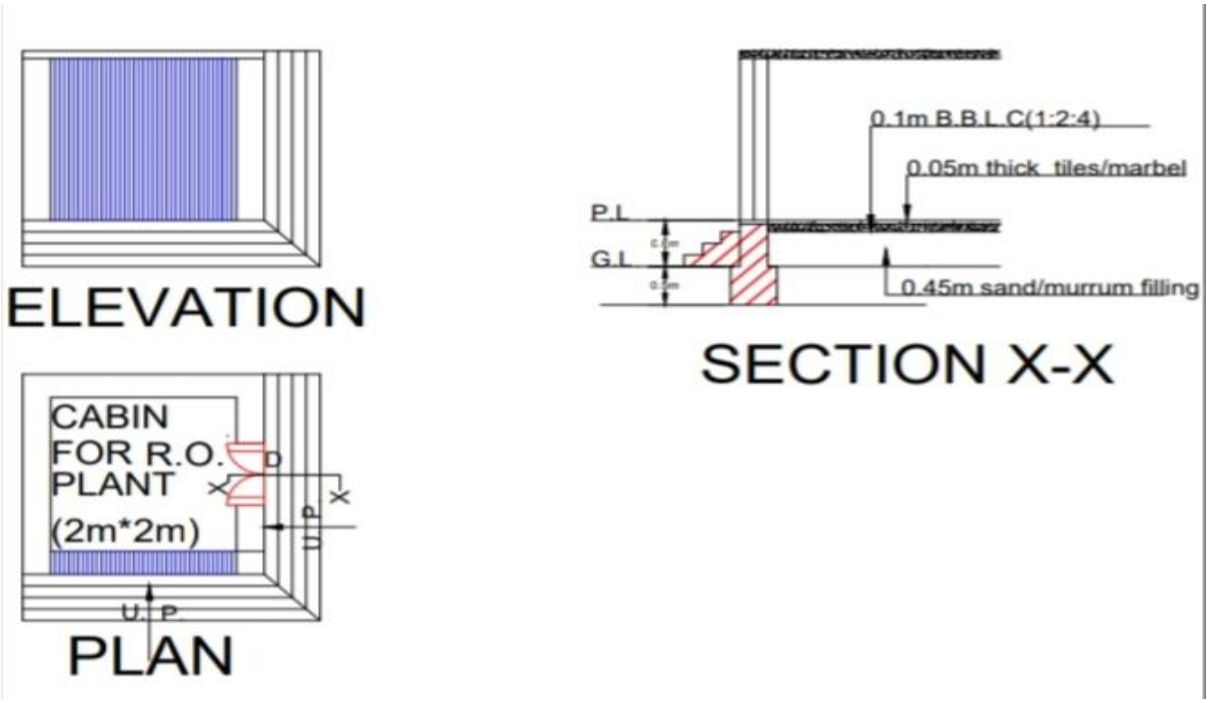






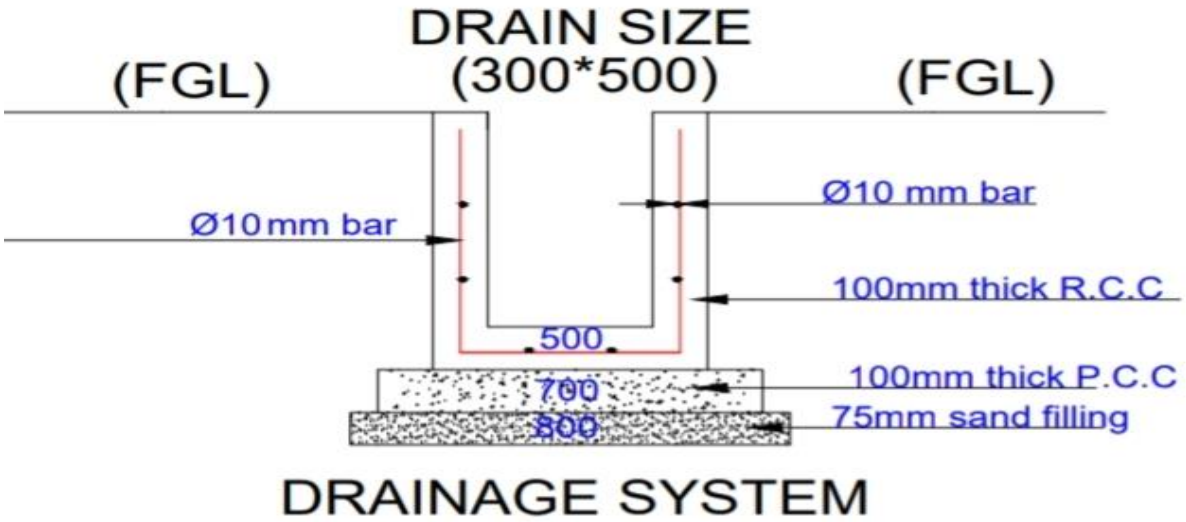
No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	80.644	100	m^3	8064.4
2.	Foundation concrete (1:4:8)	24.097	2000	m^3	48194
3.	3rd class brick masonry for foundation and plinth (1:6)	52.510	2700	m^3	141777
4.	D.P.C (1:1 1/2:3) 2.5cm thick	34.1	70	m^2	2387
5.	1st class brick masonry for superstructure (1:6)	95.007	3000	m^2	285021
6.	C.C for slab, beam, lintel, etc (1:2:4)	39.996	5500	m^2	219978
7.	Steel reinforcement	3141.28	60	Kg	188476.8
8.	Woodwork or glass work for doors, windows & ventilator	27.96	4500	m^2	125820
9.	12mm thick cement plastering (1:4)	1069.835	250	m^2	267458.75
10.	5cm thick marble mosaic tile flooring	254.835	700	m^2	178384.5
11.	BBLC for floor base (1:2:4)	254.835	1500	m^3	382252.5
12.	Sand / Murrum filling in plinth	114.675	450	m^3	51603.75
13.	Skirting of mosaic	134.6	70	rm	9422
14.	White Washing	1069.835	10	m^2	10698
15.	Earth filling	26.297	50	m^3	1315
				Rs.	**1,920,852.7**
				Contractor's Profit (10%)	**192,085**
				Add 5% contingencies	**96,042.64**
				Total	**2,208,980.34**

7. R.O. Plant



No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	1.544	100	m^3	154
2.	2^{nd}class brick masonry for foundation and plinth (1:6)	1.75	2700	m^3	4725
3.	D.P.C (1:$1^{1/2}$:3) 2.5cm thick	1.36	70	m^2	95.2
4.	BBLC	1.56	2000	m^3	2260
5.	1^{st} class brick masonry for superstructure (1:6)	1.13	3000	m^2	3390
6.	C.C for slab, beam, lintel, etc (1:2:4)	0.80	5500	m^2	4400
7.	Steel reinforcement	92	60	Kg	5520
8.	12mm thick cement plastering (1:4)	33.31	250	m^2	8327.5
9.	5cm thick marble mosaic tile flooring	4	700	m^2	2800
10.	BBLC for floor base (1:2:4)	0.4	1500	m^3	600
11.	Sand / Murrum filling in plinth	1.8	450	m^3	810
12.	Wood work or Glass work for window, door & ventilator	1.68	4500	m^2	7560
13.	Skirting of mosaic	6	70	rm	420
14.	White Washing	30.19	10	m^2	301.9
				Rs.	**41,363.6**
				Contractor's Profit (10%)	**4136.4**
				Add 5% contingencies	**2,068.18**
				Total	**47,568.18**

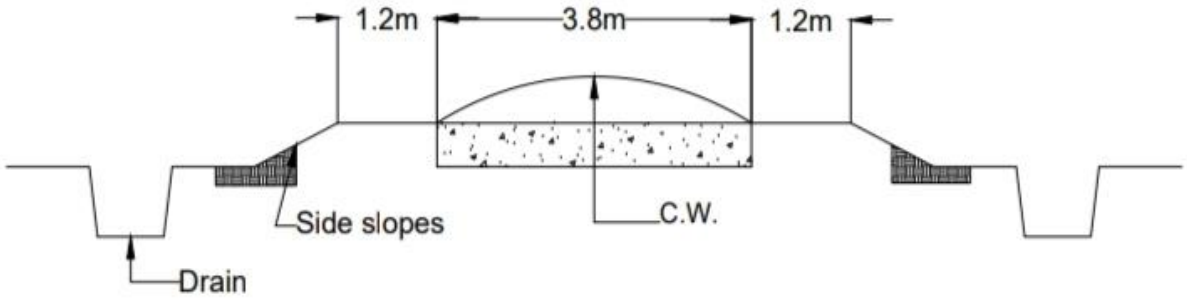
8. Drainage System



DRAINAGE SYSTEM

No.	Item Description	Qty.	Rate	Per	Amount
1.	Excavation	3200	100	m^3	320,000
2.	Sand Filling	400	450	m^3	180,000
3.	P.C.C	350	2000	m^3	700,000
4.	C.C. work	750	5500	m^2	4,125,000
5.	Steel Reinforcement	58905	60	kg	3,534,300
				Rs.	**8,859,300**
				Contractor's Profit (10%)	**885,930**
				Add 5% contingencies	**442,965**
				Total	**10,188,195**

9. Concrete Road

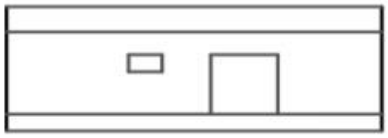


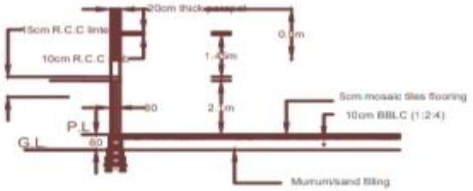
No.	Item Description	Qty.	Rate	Per	Amount
1.	Sand Filling	1900	450	m^3	355,000
2.	P.C.C.	1900	2000	m^3	3,800,000
				Rs.	**4,155,000**
				Contractor's Profit (10%)	**415,500**
				Add 5% contingencies	**207,750**
				Total	**4,778,250**

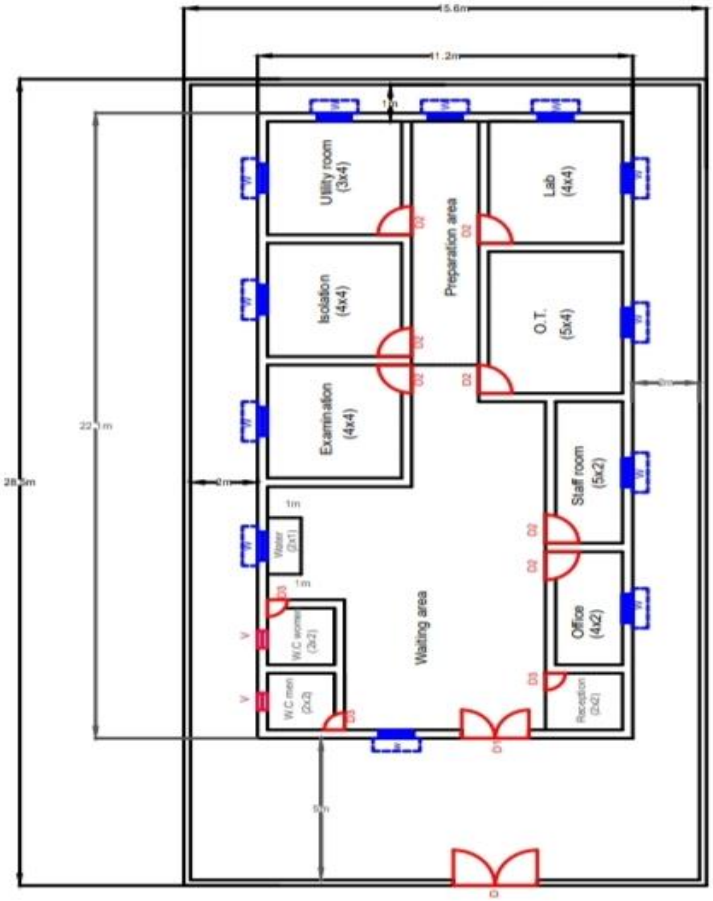
10. Animal Hospital

No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	117.50	100	m^3	11750
2.	2^{nd}class brick masonry for foundation and plinth (1:6)	67.95	2700	m^3	64,360
3.	D.P.C (1:$1^{1/2}$:3) 2.5cm thick	47.68	70	m^2	3338
4.	Foundation	32.18	2000	m^3	64,360
5.	1^{st} class brick masonry for superstructure (1:6)	118.8	3000	m^2	356,400
6.	C.C for slab, beam, lintel, etc (1:2:4)	38.35	5500	m^2	210,925
7.	Steel reinforcement	3012	60	Kg	180,720

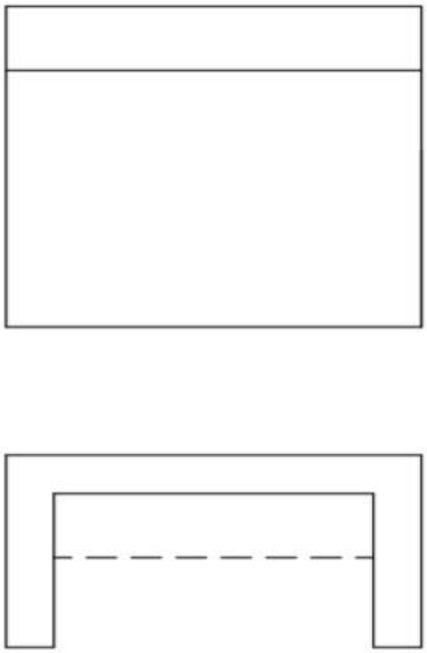
8.	12mm thick cement plastering (1:4)	1183	250	m^2	295,750
9.	5cm thick marble mosaic tile flooring	208.5	700	m^2	145,950
10.	BBLC for floor base (1:2:4)	28.65	1500	m^3	42,975
11.	Sand / Murrum filling in plinth	93.81	450	m^3	42,215
12.	Wood work or Glass work for window, door & ventilator	37.8	4500	m^2	170,100
13.	Skirting of mosaic	128	70	rm	8960
14.	White Washing	1182.6	10	m^2	11826
				Rs.	**1,609,629**
				Contractor's Profit (10%)	**160,963**
				Add 5% contingencies	**80,481.45**
				Total	**1,851,074**

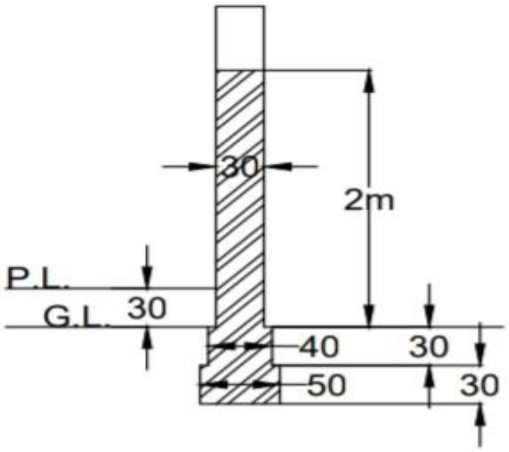






11. Bus Stand

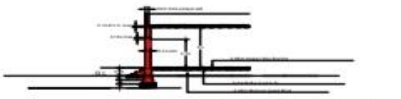




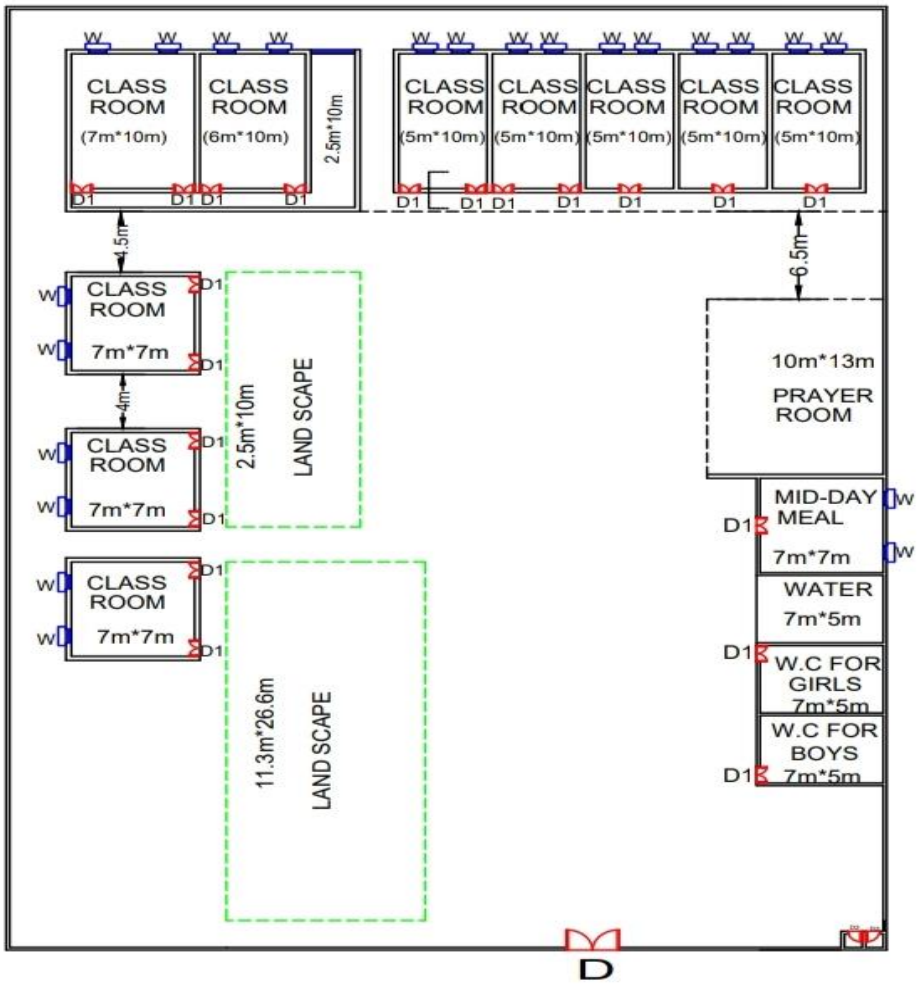
No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	1.32	100	m^3	132
2.	2nd class brick masonry for foundation and plinth (1:6)	1.20	2700	m^3	3240
3.	D.P.C (1:1 1/2:3) 2.5cm thick	1.76	70	m^2	123.2
4.	1st class brick masonry for superstructure (1:6)	3.03	3000	m^2	9090
5.	C.C for slab, beam, lintel, etc (1:2:4)	0.24	5500	m^2	1320
6.	Steel reinforcement	18.85	60	Kg	1131
7.	12mm thick cement plastering (1:4)	19.18	250	m^2	4795
8.	5cm thick marble mosaic tile flooring	1.26	700	m^2	882
9.	BBLC for floor base (1:2:4)	0.126	1500	m^3	189
10.	Sand / Murrum filling in plinth	0.126	450	m^3	56.7
11.	White Washing	19.18	10	m^2	192
				Rs.	**21,150.9**
				Contractor's Profit (10%)	**2,115.09**
				Add 5% contingencies	**1,057.545**
				Total	**24,323.535**

12. School

ELEVATION



SECTION X-X



SCHOOL PLAN

No.	Item Description	Qty.	Rate	Per	Amount
1.	Earthwork in excavation foundation	41.47	100	m^3	4147
2.	Foundation	13.82	2000		27,640
3.	2^{nd}class brick masonry for foundation and plinth (1:6)	13.82	2700	m^3	83,619
4.	D.P.C (1:$1^{1/2}$:3) 2.5cm thick	20.68	70	m^2	1448
5.	1^{st} class brick masonry for superstructure (1:6)	46.40	3000	m^2	139,200
6.	C.C for slab, beam, lintel, etc (1:2:4)	16.86	5500	m^2	92,730
7.	Steel reinforcement	1325	60	Kg	79,500

8.	12mm thick cement plastering (1:4)	477.8	250	m^2	119,450
9.	5cm thick marble mosaic tile flooring	100	700	m^2	70,000
10.	Skirting	60	70	rm	4200
11.	Woodwork	10.08	4500	m^2	45,360
10.	BBLC for floor base (1:2:4)	10	1500	m^3	15000
11.	Sand / Murrum filling in plinth	45	450	m^3	20,250
12.	White Washing	478	10	m^2	4780
				Rs.	**707,324**
				Contractor's Profit (10%)	**70,732.4**
				Add 5% contingencies	**35,366.2**
				Total	**813,422.6**

Conclusion:

- The main aim of the Vishwakarma Yojana is to provide the all amenities such as the urban amenities with rural soul to villages. So to provide that we discussed with the Sarpanch and the villagers of the Chosar and also conducted different types of survey and analyzed the village.
- We conclude about the introduction of village, geographical data, demographical data, occupational data, current infrastructure facilities such as water, waste water management, transportation, road network, drainage line, water supply for agricultural activities, electricity for residential use, electricity for irrigation water, educational facilities, etc.
- As per all our studies we tried to design all the primary facilities which are required or needs to be required in Chosar village.
- According to UDPFI norms, lacking in basic amenities and smart amenities can b provided as-
    1. Garden
    2. Bank
    3. Library
    4. Community hall
    5. PHC
    6. Post office
    7. R.O Plant
    8. Drainage System
    9. Concrete roads
    10. Bus Stand
    11. Animal Hospital
    12. School
- By providing these amenities in the village, the villagers can live their life easily. This amenities can help the villagers to increase their growth and for betterment of their life.