DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
KRUSHNAPUR VILLAGE
NAVSARI DISTRICT

PREPARED BY

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MAHATMA GANDHI INSTITUTE
OF TECHNICAL EDUCATION
AND RESERCH CENTER,
NAVSARI (396450)

PROF. TRUPTI PANDYA

NODAL OFFICER

Year: 2020-21

Gujarat Technological University,
Chandkheda, Ahmedabad – 382424 Gujarat

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ON

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CERTIFICATE

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

Detail Project Report for

VILLAGE: KRUSHNAPUR

DISTRICT: NAVSARI

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.

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College Name:	**MAHATMA GANDHI INSTITUTE OF TECHNICAL EDUCATION AND RESERCH CENTER, NAVSARI (396450)**
College Stamp:	

ABSTRACT

The Government of Gujarat has launched Vishwakarma Yojana: An Approach towards Rurbanisation‖ for development of villages which is implemented by Gujarat technological University. Vishwakarma Yojana would provide Design to Delivery‖ solution for development of villages in City areas. In this Project, we describe the ecosystem for a village and then map out an integrated design procedure for building an Ideal Village. We define an Ideal Village as a bundle of services which are delivered to its residents and businesses in an effective and efficient manner. Computing, communication and information technologies play a major role in design, delivery and monitoring of the services. The selected village is surveyed, data has been analyzed for the village and an Infrastructure facility has been found out by this Yojana with the help of UDPFI guidelines.

Krushnapur is a Village in Jalalpore Taluka in Navsari District of Gujarat State, India. Amalsad and Bilimora are the nearby Cities to Krushnapur. Krushnapur is one of the villages of the Navsari District; it is located 24 km from Navsari. Total Area of Krushnapur Village is 252.93 hectors. It has Population of 2011 is 5310. No. of Male is 2688 and No. of Female is 2622. The village has scattered growth and the scenario is similar to any typical village of the south Gujarat region. It is essential to develop the village under the district for the growth of state and also for the country. As per constitution of India and Panchyati Raaj Act, Krushnapur village is administrated by Sarpanch (Head of Village) who is elected representative of village. The villagers lead a simple life.

A pre-school is the basic necessity for a child to grow up village consists of Anganwadi. To increasing the literacy rate of their village the villagers able to read and write. For this villages consists of one Primary school one high school and seven Anganwadi. Gujarat is the state where the villages are connected with 24 hours of electricity and Krushnapur is one of that villages. Krushnapur is having the good water system which is most important and necessary thing to live a healthy life. In Krushnapur villagers mostly people dong fishery for living. House without toilet is not good for the health of people but here in this village it is not having. The public toilets also which is dangerous from the hygiene purpose. In case of medical emergencies people of this village are abide to go to some nearest hospital or public health unit because there is no public health unit in this village. Old water tank is in bad condition. So it must need maintenance to increasing its life duration. Road network near gram panchayat was little bit damaged. And inside the village road network is very bed condition so it should need the proper maintenance. It should need to proper maintenance of leakage in water supply pipes.

The design is to be provided in the village. There are some design to be provided in village. Design of Secondary School, Design of Panchayat Building, Repair and Maintenance of Internal Road Network. The selected village is surveyed, data has been analyses for the village and an Infrastructure facility has been found out by this Yojana with the help of UDPFI guidelines

Key Words: Rural Development, Krushnapur village, Urbanization, Rurbanisation, Sustainable development

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
UDPFI	Urban Development Plans Formulation and Implementation
MFNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
PMAY-G	Pradhan Mantri Awaas Yojana- Gramin
PMGSY	Pradhan Mantri Gram Sadak Yojna
WBM	Water Bound Macadam
PCC	Plain Cement Concrete
RCC	Reinforced Cement Concrete
PHC	Primary Health Centre
SOR	Schedule Of Rates
₹ / INR	Indian Rupee
KM	Kilometer
WSS	Water Supply and Sanitation
NSSO	National Sample Survey Organization

CHAPTER-1 Ideal Village Visit from District of Gujarat State

The ideal village is one type of that village where provided good infrastructure facility nestled town. In the ideal village provided physical facility, social facility, sociocultural facility, sustainable facility.

Fig. 1.1 ENA IDEAL VILLAGE

1.1 Background & Study Area Location

Established in 1985, Enawalas National Association, as a grass roots organization for the sole purpose of creating a better standard of living for everyone in village. In 2007, the association decided to change its name to Ena for Seva, USA. Ena for Seva is trying to maintain the heritage and culture for second generation. Ena is a well-developed village. In this village, almost all basic needs are available. Ena village is located at palsanatensil of Surat district in Gujarat. By organizing the tour of India and holding educational, social and spiritual seminars and camps by inviting experts and dignitaries from India.

According to census 2011 information the location code or village code of Ena village is 524244. Ena is spread over 621.93 hectares. According to census 2011 population of 3777. There are about 888 houses in Ena village.

Study Area Location:-

Ena village is located at palsanatensil of Surat district in Gujarat. It is situated 6 km away from sub district headquarter palsana and 25 km away from district headquarter Surat. It‘s nearer to Arabian Sea. There is a chance of humidity in the weather. Ena‘s nearest town/city/important place Bardoli located at the distance of 8.1km. Surrounding town/city from Ena are as follows.

- Bardoli 8.1km
- Chalthan 10.3km
- Vadodara 10.9km
- Mahuva 14.2km
- Mahuvar 18.1km

Fig. 1.2 GOOGLE MAP OF ENA VILLAGE

1.2 Concept: Ideal Village, Normal Village

1.2.1 Objectives

- Prevent distress migration from rural to urban areas, which is a common phenomenon in India's villages due to lack of opportunities and facilities that guarantee a decent standard of living.
- Make the model village a "hub" that could attract resources for the development of other villages in its vicinity.
- Provide easier, faster and cheaper access to urban markets for agricultural produce or other marketable
- Commodities produced in such villages.
- Contribute towards social empowerment by engaging all sections of the community in the task of village development.
- Create and sustain a culture of cooperative living for inclusive and rapid development.
- To build the local capacity and strengthen the institutional development and sustainability of small enterprises and local institutions in the areas include water management, sustainable land use, information and technology, agricultural and rural development, women's development, teaching advocacy skills, engaging in decision-making process and strengthen civil society.

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

- There are many ideal villages are there in India and Gujarat also. Some of them are have higher facilities than urban area also.
- Some of the examples of ideal villages are as below.

❖ **INDIA :-**

(1) Mawlynnong - Asia's cleanest village.

Mawlynnong, a small village in Meghalaya, is called "God's own Garden"nand has enoughreasonsfor that. It was awarded the prestigious tag of 'Cleanest Village in Asia' in 2003 by Discover India Magazine. Located at about 90 kms from Shillong, the village offers a sky walk for you to take in the beauty as you explore it. According to visitors, you cannot find a single cigarette butt/plastic bag lying around there. The people residing in the community are Khasi people.

(2) Punsari - The village with Wi-Fi, CCTVs, AC classrooms and more

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

Fig. 1.3 MAWLNNONG VILLAGE

Fig. 1.4 PUNSARI VILLAGE

(3) Hiware Bazar - The village of 60 millionaires

Hiware Bazar, located in the Ahmednagar district of Maharashtra, has transformed from being a place fraught with issues to being possibly the richest village in India. The sole reason for this fairy-tale change is one man called Popatrao Pawar. He banned all addictive substances to minimize expense and encouraged the villagers to invest in rain-water harvesting, milch cattle, etc. There are a record 60 millionaires in the village and barely any poor. From 168 Below Poverty Line families in 1995, Hiware Bazar now has just three. The villagers continue to strive to see a day when not one person is poor.

Fig. 1.5 HIWARE BAZAR VILLAGE

Fig. 1.6 DHARNAI VILLAGE

(4)Dharnai - First Fully Solar-Powered Village

Dharnai, A village in Bihar, beat 30 years of darkness by developing its own solar-powered system for electricity. With the aid of Greenpeace, Dharnai declared itself an enery-independent village in July. Students no long need to limit their studies to the day time, women

no longer limit themselves to stepping out in the day in this village of 2400 residents. Now if only cities could do the same, right.

- **GUJARAT**

The name of some of the ideal villages of Gujarat are as below.

(1) Punsari (Sabarkatha)
(2) Thamna (Anand),
(3) Aena (Surat),
(4) Baben (Surat),
(5) Pipariya (Surat),
(6) Dharmaj (Anand),
(7) Moviya(Rajkot),
(8) Anandpura (Mehsana),
(9) Laxmanpura (Palanpur)

1.2.3 The Idea of a model / Smart Village

- Exposure visits are a very important training methodology as it enables the participants from a different setting to interact with and learn from each other, allowing them to view practical/real life situations of successful integration of sustainable practices in the said filed.
- During this meeting broader information exchanges took place between the two groups, beyond the core topic. It was observed that all the participants were enthusiastic for learning and implementing their learning's in their own village.
- This visit was a step forward in the project as it was a real time experience for the participants on the struggle and hard work that goes into building a remarkable ideal village.

1.2.4 Ancient History Civil

PUNSARI VILLAGE:-

Punsari village is situated in sabarkantha Gujrat, Punsari is India's smartest village. The village is located 18km away from the GandhinagarPunsari village has followed Panchayati raj system. The villagers used new and advanced technology in education. The panchayat provided Wi-Fi system for all people of the village. Punsari panchayat provided the facilities of local mineral water supply, sewer and drainage project, Health care center, Banking facilities, toll free complaint reception service. The village received award being the best gram panchayat of gujrat. The village model has been appreciated by delegates from Nairobi and they are coming to replicant in the village of Kenya.

1.3 Detail study of Ideal village

Ena village is located at Palsana tensile of Surat district in Gujarat. It is situated 6 km away from sub district headquarter Palsana and 25 km away from district headquarter Surat. It's nearer to Arabian Sea. There is a chance of humidity in the weather. Ena's nearest town/city/important place Bardoli located at the distance of 8.1km.

1.3.1 Social scenario

The Native language of Ena is Gujarat and most of the village people speak Gujarati. Ena people use Guajarati language for communication. The main occupation of this village is farming. In this village, someone from each household is settled in the United States, the United Kingdom or Canada. So, it is also known as NRI village. The school of Ena Sardar Patel

Vidyalay, and his school staff able to improve the school to one of the best school in Gujarat. Highlighted by a superior teaching faculty, a top-notch educational program preparing the students for higher education, safe and reliable school bus system and the pride of having one of the best cricket fields in Gujarat. In 1988, Ena Walas national association and its members started a groundbreaking method to raise funds to enhance the efforts of the school and launch a program to increase the water quality and effective sewer system for the entire village.

1.3.2 Economic profile

The count of employed individual of ena village 1940 yet 1837 is unemployed. In addition, out of 1940 occupied people 242 individuals are very dependent on cultivation. The main occupation is agriculture and Ena village has all the facilities for providing irrigation. The main crops of the village are sugar cane and ladyfinger.

1.3.3 Physical and demographical growth

According to census 2011 population of 3777.It has male population of 1895 and female population of 1882.In males the literacy rate is 68% as 1294 males out of total 1895 are literate while female literacy rate is 65% as 1236 out of total 1882 females are educated in this village.

Table-1 Demographical growth

Particulars	Total	Male	Female
Total no. of houses	888	-	-
Population	3777	1895	1882
Child (0-6)	378	202	176
Literacy	74.43%	76.43%	72.45%
Total workers	1940	1191	749
Main worker	1777	0	0
Marginal worker	163	73	19

1.3.4 Infrastructural facilities

1.3.4.1 Water tank

This water tank was constructed in year 1995 named G K PATEL Water works in the memory of LATE G K PATEL. It has large capacity 1,65,000 litter. It distributes the water among whole the town.

1.3.4.2 Pouring (Drinking Water)

There is facility for drinking pure water. The public water tap is made in. memory of Zavarben Durlabh bhai Patel. The people use this pure water for drinking purpose on regular basis.

1.3.4.3 Road & Street Light

Ena village has well developed bituminous roads and streetlights. Due to well-developed road, no water logging was found. In addition, all the internal roads and street are bituminous roads and pavement blocks are provided on the side of road.

1.3.4.4 Solid waste & road cleaning

There is facility for solid waste collection of village. The cleaning machine is provided by the ena gram panchayat, to clean the roads. They clean the roads during evening at 6 pm.

1.3.4.5 Education Facility

Ena has different school such as Sardar Patel Vidhyalay, Sardar Patel English Medium School for education. The education trust called EnaKelavaniSamitee, which operates the Sardar Patel Vidhyalay. Ena primary school runs in a government school building. The school has total 8 classrooms. The lowest class is 1 and the highest class in the school is 8. The library facility available in this school and the total number of books available is about 1965. Sardar Patel English Medium School has well developed cricket stadium.

1.3.4.6 Health care & Panchayat Ghar

Ena village has health care center and panchayat ghar together. Health care center has all facility for blood and urine testing. Medicine is provided at nominal cost.

1.3.4.7 Banking

The village has Baroda Gujarat gamin bank with easy facility of transition and deposition of money. Also another bank is state bank of India for providing the banking services for Ena village with 24*7 ATM

Fig. 1.7 ENA VILLAGE WATER TANK

Fig. 1.8 POURING

Fig. 1.9 STREET LIGHT

Fig. 1.10 Road

Fig. 1.11 EDUCATION FACILITY

Fig. 1.12 HEALTH CARE & PANCHAYAT GHAR

Fig. 1.13 ATM & BANKING

1.4 SWOT analysis of Ideal village

❖ **Strength:**
a) Most of the people included in agricultural activities.
b) Accessibility to nearest railway system.
c) Well-developed bituminous road.
d) Centralized water supply system.
e) Electricity supply network.

❖ **Weakness:**
a) There is no storage facility for agricultural crops like ladyfinger and sugar cane
b) In primary health center, only primary treatment is possible no cure higher treatment
c) Lack of a sewage system
d) No bio-gas plant

❖ **Opportunities:**
a) Legislation with regard to finances.
b) Rehabilitation of infrastructure facilities.
c) Equipping urban development.
d) Maintain the heritage and culture for second generation.

❖ **Threats:**
a) Acts of God and global climate change could generate unpredictable crop hazards.
b) Price increases in telecommunications and transportation.
c) Transport infrastructure, lack of adaptation to existing demand

1.5 Future prospects of Development of the Ideal village

- Ena village is gone a connected by National Highway very soon. So transportation is easily done by villager. In addition, Village will get the connectivity to the other village or cities.
- Ena will get the grant for the Wi-Fi connection as well as the CCTV cameras (which are covered by all village) from the Government of Gujarat.

1.6 Benefits of the visits of Ideal village

- Visit of ENA (Surat) is very beneficial for us because it is very helpful for Vishwakarma Yojana as well as future planning and development of the village.
- We are encouraged to work for rural development. We got a clear idea to which amenities and infrastructure are required for better life at rural area. We are also aware about different scheme of government for rural development.

CHAPTER-2 Literature Review

2.1 Introduction: Urban & Rural village concept

Urban:

An urban area may be defined as an area with a great number of people residing in it, an area that has been recently developed or an area where the distance between buildings is very small. Urban is used in contrast to rural, which generally indicates a low population, often agricultural-based-area

Fig. 2.1 URBAN AREAS OF INDIA

Rural:

Sparsely populated area beyond the limits of a city or town or a designated commercial and industrial center. Farms, vegetation, and open spaces characterize rural areas. Management by Sarpanch (Gram panchayat). Transportation is not easy to travel for railway station, airport, and highway.

Fig. 2.2 RURAL AREAS OF INDIA

2.2 Importance of the rural development

- Rural development is a dynamic process, which is mainly concerned with the rural areas.
- These include-
- Agriculture growth, putting up of economic and social infrastructure, fair wages as also housing and house sites for the landless, village planning, public health, education and functional literacy, communication etc.

- Rural development is a national necessity and has considerable importance in India.
- Religion- Faith in religion and universal power is found in the life of the village.
- Agriculture- Main occupation is agriculture which involve dependence on nature. Nature give the livelihood to them. Farmer worship forces of nature.
- Rural development is the process of improving the quality of life and economic well-being of people living in rural areas, often relatively isolated and sparsely populated areas like Education, entrepreneurship, physical and social infrastructure all play an important role in developing rural regions.
- The main objective of the rural development program is to raise the economic and social level of the rural people.

2.3 Ancient Villages / Different Definition of: Rural Urban Villages

A rural area or countryside is a geographic area that is located outside big towns and large cities. Rural area has a very low density of population. In rural areas, agriculture is the main source of livelihood along with fishing, cottage industries, pottery etc. Where people are engaged in primary industry in the sense that they produce things directly for the first time in cooperation with nature.

The National Sample Survey Organization (NSSO) defines 'Rural' as follows:

- An area with a population density of up to 400 per square kilometre,
- Villages with clear surveyed boundaries but no municipal board,
- A minimum of 75% of male working population involved in agriculture and allied activities.
- RBI defines rural areas as those areas which has a population of less than 49,000.

The Census of India 2001 defines Urban as:

All statutory places with municipality, corporation, cantonment board or notified town area committee. A place which satisfies following three Criteria's:

- Minimum population of 5,00
- Density of population of at least 400 per sq. km.
- At least 75% of male working population engaged in non-agricultural activities.

2.4 Scenario: Rural / Urban village of India population Growth Census of India 2011

Census 2011 is the 15th Census of India since 1872. Census 2011 was held in two phases:

- House listing & Housing Census (April to September 2010)
- Population Enumeration (9th to 28th February 2011)
- Reference Date: 0:00 Hours of 1st March 2011
- In Snow Bound areas the Population Enumeration was conducted from 11th to 30th September 2010
- Reference Date: 0:00 Hours of 1st October 2010

Table-2 Population (in Crore)

	2001	2011	Difference
India	102.91	121.0	18.1
Rural	74.3	83.3	9.0
Urban	28.6	37.7	9.1

For the first time since Independence, the increase in population is more in urban areas than that in rural areas

- Rural – Urban distribution: 68.84% and 31.16%
- Level of urbanization increased from 27.81% in 2001 Census to 31.16% in 2011 Census
- The proportion of rural population declined from 72.19% to 68.84%

Table-3 Growth rate of population (In %)

	1991-2001	2001-2011	Difference
India	21.5	17.6	-3.9
Rural	18.1	12.2	-5.9
Urban	31.5	31.8	+0.3

The slowing down of the overall growth rate of population is due to the sharp decline in the growth rate in rural areas, while the growth rate in urban areas remains almost the same.

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

As per details from Census 2011, Gujarat has population of 6.04 Crores, an increase from figure of 5.07 Crore in 2001 census. Total population of Gujarat as per 2011 census is 60,439,692 of which male and female are 31,491,260 and 28,948,432 respectively. In 2001, total population was 50,671,017 in which males were 26,385,577 while females were 24,285,440. The total population growth in this decade was 19.28 percent while in previous decade it was 22.48 percent. The population of Gujarat forms 4.99 percent of India in 2011. In 2001, the figure was 4.93 percent.

Recently as per Gujarat census data, 83.92% houses are owned while 13.54% were rented. In all, 65.95% couples in Gujarat lived in single family. In 2011, 57.87% of Uttar Pradesh population had access to Banking and Non-Banking Finance Corporation. Only 3.13% of Uttar Pradesh population had internet facility which is likely to improve in 2021 due to Jio. 6.10% of family in Uttar Pradesh owned car while 34.14% owned two wheeler. In few months we will also get details of election data for Gujarat.

Gujarat Population 2020
As per projection, population of Gujarat in 2020 is 7.04 Crore.

Table-4 Gujarat Population 2020

Description	2001	2011
Approximate Population	5.07 Crore	6.04 Crores
Actual Population	50,671,017	60,439,692
Male	26,385,577	31,491,260
Female	24,285,440	28,948,432
Population Growth	22.48%	19.28%
Percentage of Total Population	4.93%	4.99%

2.6 Rural Development Issues - Concerns – Measures

Rural issues are following:

- The problems concerning agriculture, the problem of cottage industries.
- The problems of rural health and education.
- The problem of child marriage.
- The problem of unemployment.
- The problem of land less labour.
- The problem of nutrition in village.

Various Measures for Rural Development

- The function of the Rural Development Division is primarily to provide overall policy guidance in formulation of plans and programmes for Rural Development. This is the nodal Division for matters relating to poverty eradication, employment generation in rural areas and Land Record Modernization Programme (NLRMP). The following specific activities are undertaken by Division;
- To assist in formulation of rural development programmes to be included in Five Year Plans and Annual Plans and to make periodic assessment of progress achieved.
- To maintain liaison with Ministry of Rural Development, National Institute of Rural Development (NIRD) and other allied organisations mainly and participating in the meetings.
- To collect information from various Divisions of the Planning Commission, State Governments and also from the Central Ministries which are implementing various schemes related to rural development.

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

Water supply:-

Delivery of safe drinking water is vital for protecting public health and of promoting more secure livelihoods. The traditional approach to water quality and safety management has relied on the testing of drinking water, as it leaves the treatment works or at selected points, either within the distribution system or at consumer taps. It is referred to as ‘end-product testing.

Various methods for water supply

- Gravity-fed water supply systems in hilly areas
- Dug well-based rural water supply systems
- Bore well-based rural water supply systems (hand pump operated)
- Pond-based rural water supply systems with appropriate treatment and rain water harvesting systems through surface storage
- Groundwater recharging systems
- Rooftop rainwater harvesting systems

Sanitation Facilities:-

Demand and supply of sanitation facilities and services should be addressed concurrently to ensure toilet adoption and sustained use and enable scale Adoption and sustained use of sanitation facilities requires construction of safe toilets and their sustained use. Access to a toilet does not mean it is used or used consistently by everyone at all times. Poorly constructed and managed facilities may lead to households reverting to open defecation.

Hospital:-

National Rural Health Mission (NHM) was launched in the year 2005 to strengthen the Rural Public Health System and has since met many hopes and expectations. The Indian Public Health Standards (IPHS) for Sub-centers, Primary Health Centers (PHCs), Community Health Cen-tres (CHCs), Sub-District and District Hospitals were published in January/ February, 2007 and have been used as the reference point for public health care infrastructure planning and up-gradation in the States and UTs. These IPHS guidelines will act as the main driver for continuous improvement in quality and serve as the bench mark for assessing the functional status of health facilities. States and UTs should adopt these IPHS guidelines for strengthening the Public Health Care Institutions and put in their best efforts to achieve high quality of health care across the country.

Roads:-

The Union ministry of rural development has recently issued fresh guidelines under the 'Pradhan Mantri Gram Sadak Yojana' (PMGSY) to prevent construction of poor- quality roads and streamline the bidding process throughout India. PMGSY is the largest rural road connectivity program in the world. The new rules stipulate a standard procedure for road construction. They envisage a three-tier quality control system, with executive engineers at the lowest rung and national quality monitors at the top level. The contractor has to give a five-year guarantee for the work done. The state governments, too, have been made responsible for the maintenance of roads in rural areas for a period of five years.

Schools:-

Many small towns lack basic educational infrastructure. Most schools don't have proper toilets, electricity, and proper buildings with roofs. There is also lack of drinking water. The condition of government schools is also not satisfactory, according to many reports. There have been several cases of poisoning due to poor quality mid-day meals in government schools. Therefore, provide among the all facilities in rural schools like proper toilets, electricity and proper building and also provide good furniture which required in schools.

Importance in rural context:-

The rural society is considered as the backbone of Indian society. Rural society is the fundamental basis of human civilization and culture. People who are living in urban areas they are mainly the migrants from the rural areas. So rural area or village is the well-spring of our culture and civilization. Thus, to know about the life of urban community it is essential to know their original place of living, that is rural community. 60% population of India still lives in rural area.

2.8 Sustainable Village Development concept

The concept of the village development is to provide better life Quality, in which all the necessary conditions to live in community respecting the environment, transition, education, respecting the people and its value where every person really involved in the local improvement of social aspect

In developed village the people share their ideas and solve the basic problems in community basis, because all the people are focused in doing their base to the sustainability and of their community and village. Concept of sustainable village development is simply defined as to enabling the provision of good education, health care, clean water access, sanitation, and nutrition, the growth of incomes, and enhanced gender quality and democratic engagement.

Fig. 2.3 SUSTAINABLE DEVELOPMENT GOALS

2.9 Other Projects / Schemes of Gujarat / Indian Government

Projects / Schemes by Government sector:

- ✓ IRDP(Integrated Rural Development Program)
- ✓ SGSY(Swaranjayanti Gram Swarozgar Yojana)
- ✓ NRUM(National Rurban Mission)
- ✓ Pradhan Mantri Gram Sadak Yojana
- ✓ Indira Aawas Yojana
- ✓ Mahatma Gandhi National Rural Employment Guarantee Act-2005 DRDA(District Rural Development Agency)
- ✓ PURA(Provision of Urban Amenities in Rural Areas)
- ✓ PMGSY(Pradhan Mantri Gram Sadak Yojana)
- ✓ NRDWP(National Rural Drinking Water Programme)
- ✓ JNNURM(Jawaharlal Nehru National Urban Renewal Mission)
- ✓ IWDP (Integrated Wasteland Development Programme

Projects / Schemes by Private sectors:

- ✓ Intensive Agricultural Area Programme
- ✓ Intensive Agricultural District Programme
- ✓ High Yielding Varieties Programme
- ✓ Rural Industries Project

CHAPTER-3 Smart Village Concept Idea and its Visit

3.1 Introduction: Concepts, Definitions and Practices

Smart Cities Mission is an urban renewal and retrofitting program by the Government of India with a mission to develop 100 cities all over the country making them citizen friendly and sustainable. The Union Ministry of Urban Development is responsible for implementing the mission in collaboration with the state governments of the respective cities.

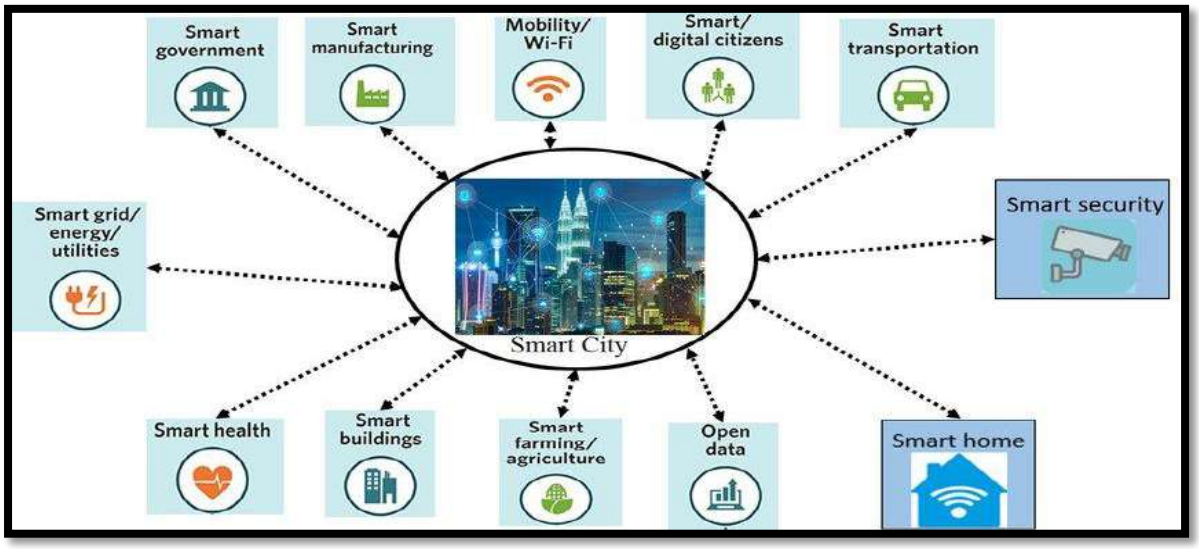


Fig. 3.1 SMART CITY CONCEPT

- A smart is the integration of technology in to a strategic approach to sustainability.21st century has brought with it a new global trend of ”sustainable urban development” and this concept adds new dimensions to urbanization which require a quick need to upgrade existing cities.
- The concept of a smart city is a relatively new one.
- Through the years, with the significant contribution from various technologies like computer science, information technology, remote sensing, advance multimedia world etc.

Defination

“The use of Smart Computing technologies to make the critical infrastructure components and services of a city—which include city administration, education, healthcare, public safety, real estate, transportation, and utilities—more intelligent, interconnected, and efficient”

3.2 Vision - Goals, Standards and Performance Measurement Indicators:

The vision of smart cities is the urban center of future, made safe, secure environmentally green, and efficient because all structure – whether for power, water, transportation etc. Smart cities Standards into 3 main levels, Strategic, Process and Technical-

- ✓ **Level 1: Strategic:** These are smart city standards that aim to provide guidance to city leadership and other bodies on the “process of developing a clear and effective overall

smart city strategy". They include guidance in identifying priorities, how to develop a roadmap for implementation and how to effectively monitor and evaluate progress along the roadmap.

- ✓ **Level 2 Process:** Standards in this category are focused on procuring and managing smart city projects – in particular those that cross both organizations and sectors. These essentially offer best practices and associated guidelines.

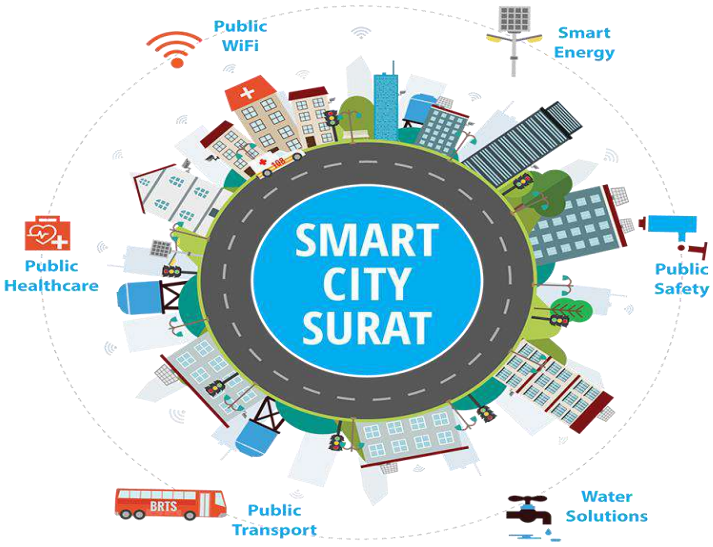


Fig. 3.2 SMART CITY VISION

- ✓ **Level 3 Technical:** This level covers the myriad technical specifications that are needed to actually implement Smart City products and services so that they meet the overall objectives.

3.3 Technological Options

People are increasingly migrating from rural to urban areas. By 2050, about 86 percent of people in developed countries and 64 percent of people in developing countries are expected to live in cities. Because cities will absorb future population growth, it is crucial to use resources more efficiently.

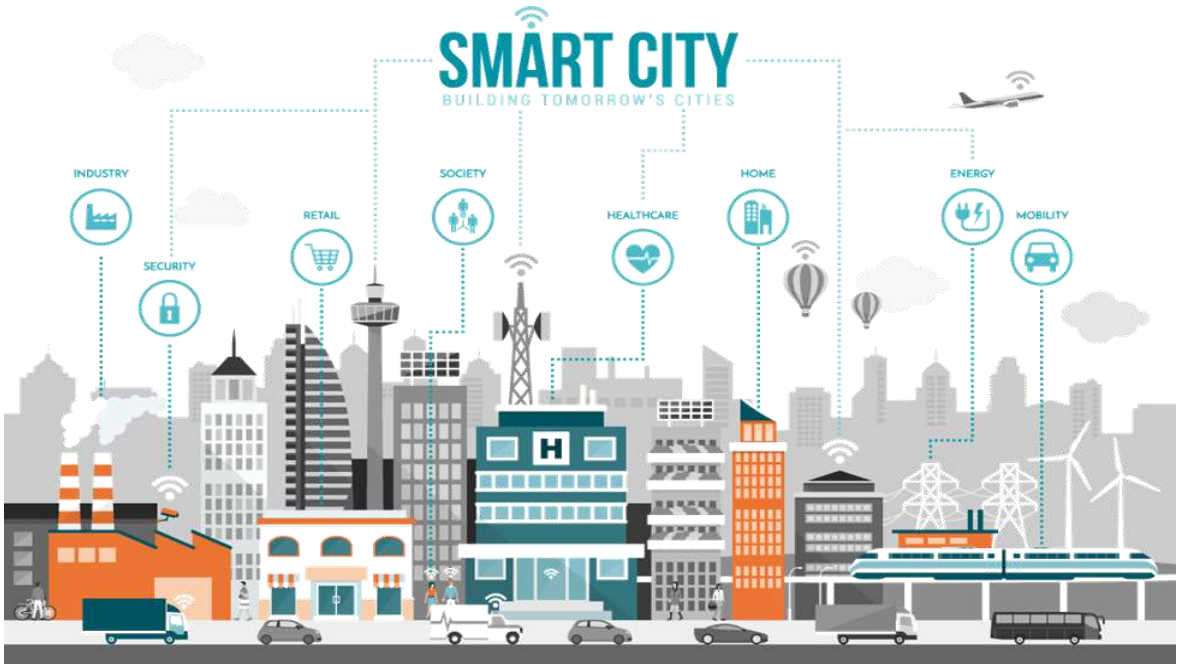


Fig. 3.3 TECHNOLOGY REQUIRES FOR SMART CITY

Key points of smart technology:

a) Smart energy:

By using renewable energy sources, manage water supply and have a waste management system, cities can reduce pollution and use less energy.

b) Smart mobility:

Smart mobility strives to find more sustainable transport options. Walking, cycling and combined mobility are a few of the solutions that partially could solve the problem.

c) Smart public services:

By connecting city residents and authorities using innovative communication technology, cities can become safer, cleaner and the general city standard will improve.

d) Smart care:

To adapt to changes in population demographics, the development of smarter healthcare services will provide quality services also in the future. Smarter care will reduce costs and connect users within the healthcare industry to provide necessary patient information.

3.4 Road Map and Safe Guards

Roadmap Design Principles:

- Build a vision of where the public safety community wants to go, determine what technologies are needed to get there, and provide a route for achieving the vision.
- Make R&D decisions based on capability requirements and priorities set by the public safety community.
- Assume that public safety may have to adjust operations to fully realize the benefits of new technologies.
- Leverage ongoing efforts by other partners to develop and implement the roadmap. This approach will allow PSCR to focus resources to complement and not duplicate ongoing efforts.
- Enable public safety to meet generational and public expectations.
- Identify R&D project opportunities in light of the evolution of technology capabilities and gaps forecasted by working group participants.

The ATIS Technology Roadmap is focused on the key technological developments that will enhance the long-term planning for Smart Cities. It is targeted to the Smart Cities' planners, technology advisors, and key decision-makers who are faced with developing comprehensive long-term visions for their municipalities and citizens.

Safeguard for smart cities:

Safeguarding our upcoming Smart Cities in India against cyber threats is essential if we want to fully exploit the benefits of a smart city. IT infrastructure will form the backbone of Smart Cities' infrastructure. Reliance on IT infrastructure makes it vulnerable to Cyber Threats if safeguards are not put in place in the planning stage itself. India is a country of villages. Any product or solution that has to succeed and be popular in the country has to be of direct relevance to village life of this country. As per Census of India 2011, the country has a 69% rural population spread across more than 600,000 villages. Now, that being the case, no marketer worth his salt can ever dream of ignoring rural India.

A smart city environment will have networked utilities such as power supply, water supply, e-governance for its citizens, intelligent traffic management system, networked emergency services etc. Majority of the Smart City implementation will have a networked ICT backbone requiring network security. Technology will play a key role in the development of smart cities which lends itself open to cyber threats if safeguards are not incorporated in the planning stage. The smart cities will have to be built with concurrent cyber threat safeguards. "Privacy by design" is an equally necessary means to ensure that smart cities do not devolve into smart cities technologies. It is not enough to bolt privacy safeguards onto completed tools at the last minute into surveillance programs. Privacy by design means that technology manufacturers and municipal purchasers must work together at all stages of product development to build privacy safeguards.

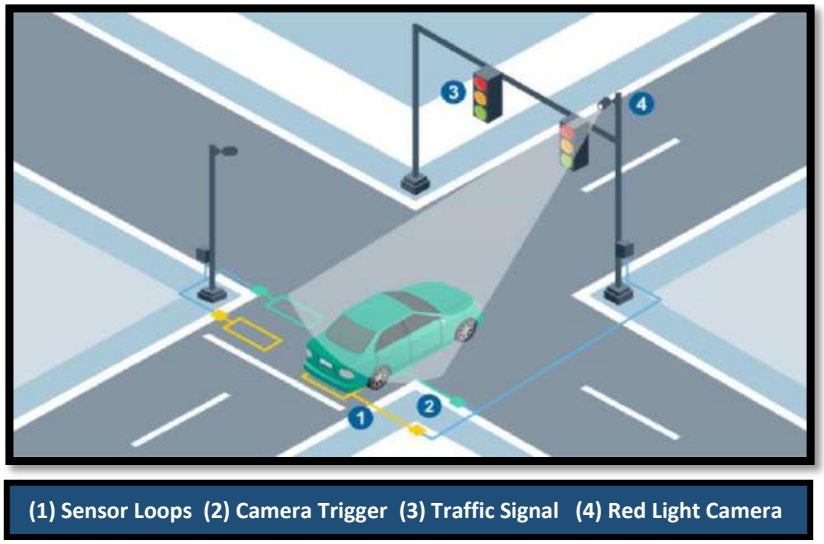


Fig. 3.4 SAFEGUARDS FOR SMART CITIES

3.5 Issues & Challenges

Fig. 3.5 FIVE CHALLENGES FOR SMART CITIES

- The High Power Expert Committee on Investment Estimates in Urban Infrastructure has assessed a Per Capita Investment Cost (PCIC) of $685 for a 20 yr. period.
- The total estimate of investment requirements for the smart city comes to $113 billion over 20 years (with an annual escalation of 10 percent from 2009-10 to 2014-15) Land acquisition, foreign direct investment and other questions still remain unresolved.
- Successful implementation of smart city solutions needs effective horizontal and vertical coordination between various institutions involving institutions providing

various municipal amenities as well as effective coordination between central government (MOUD), state government as well as local government agencies on various issues related to financing, sharing of best practices and sharing of service delivery.

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

3.6 Smart Infrastructure - Intelligent Traffic Management

Smart Infrastructure:-

Utilization of Surat city's potential for enhancing quality of life for the citizens by providing equal access to best quality physical infrastructure, social infrastructure and mobility through leveraging state of the art technology: thus making Surat a futuristic global city with focus on enhancing economy, protecting the ecology and preserving the identity and culture of the citry.

Intelligent Traffic Management:-

Utilization of Surat city's potential for enhancing quality of life for the citizens by providing equal access to best quality physical infrastructure, social infrastructure and mobility through leveraging state of the art technology: thus making Surat a futuristic global city with focus on enhancing economy, protecting the ecology and preserving the identity and culture of the citry.

Intelligent Traffic Management:-

Surat is implementing a city wide integrated system – "Intelligent Transit Management System" (ITMS), to manage diverse set of transportation needs for the city – this includes: (a) public transport and (b) vehicles related to civic services like Solid Waste Management, Drainage, Heavy Engineering, Emergency Services etc. ITMS is planned to bring in best-in-class operational effciency and automation to the operational capability of city in respect to transport.

Fig. 3.6 SMART INFRASTRUCTURE of BRTS

Surat is the first city in Gujarat, and the second in India, to launch real time transit information with Google Maps. The new Google Transit feature will enable people in Surat to get real-time updated information on Surat Sitilink's transit routes. Commuters in Surat can simply type in

their location and destination in Google Maps to get information about which bus to take and – more importantly – they will be able to see when the next bus is arriving at the closest stop. Also, commuters will be able to get an estimation of how long the trip is going to take and if the bus they are planning to take is delayed. The new feature is available on both Android and iOS apps of Google Maps, and users can also find the information by searching a bus stop on Google.

3.7 Redevelopment:

Surat Metro Rail Project:-

As directed by Govt. of Gujarat, Detailed Project Report (DPR) for Surat Metro Rail project-Phase-I was prepared by Surat Municipal Corporation through DMRC (Delhi Metro Rail Corporation). Accordingly, DPR with Estimated Amount of **₹ 12020/-** Crores is approved by Govt. of India in March 2019. The proposed Network of Surat Metro (Phase-I) is shown in below:

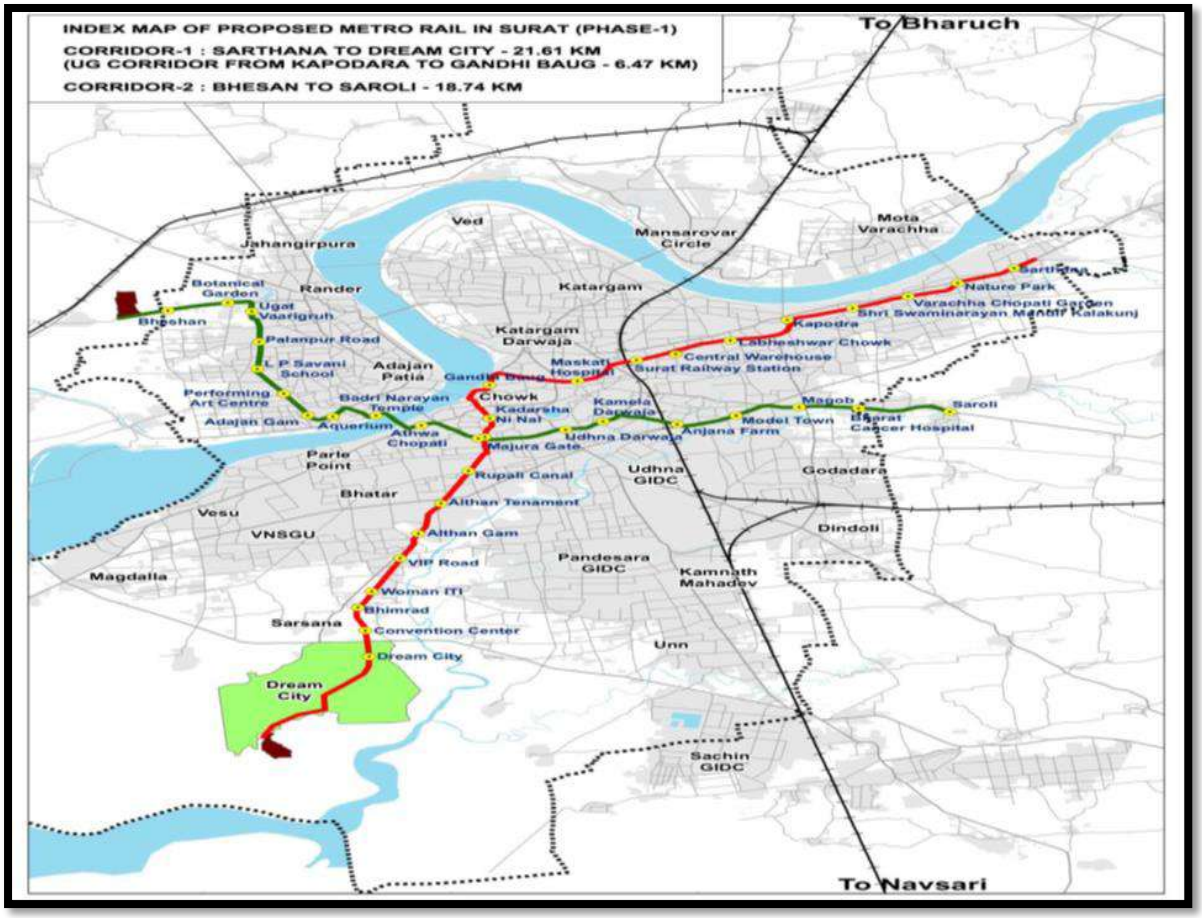


Fig. 3.7 SMART INFRASTRUCTURE RAIL PROJECT METRO

As per approved DPR, total 38 metro stations are planned in 2 metro corridors with total length of 40.35 Kms including underground metro route for 6.47 Kms. Corridor-1: Sarthana to DREAM city (Khajod) and Corridor-2: Bhesan to Saroli. Total implementation period for the project is 5 years starting from year 2019-20. As per approval of State Govt., implementation of metro project shall be carried out by GMRC (Gujarat Metro Rail Corporation, formerly known as MEGA) which is a 50:50 joint SPV of Govt. of Gujarat & Govt. of India.

3.8 Smart Initiatives by District Municipal Corporation:

1) Smart Street Lightning and monitoring system:-

Project Brief

- Total 90,000 fittings across city
- Conservation – 1.5 Cr units/year
- Conversion so far – 55,000 fittings
- Electricity Bill Savings: ₹. 9 Cr./year
- Longer life than conventional light
- Low Ultra Violet and Infrared Radiation

Fig. 3.8 LED STREET LIGHTS IN SURAT

2) Biogas Plant for Organic Waste:-

- Treatment of 50 TPD of organic waste.
- Decentralized Model.
- Location: APMC market, Surat.
- Reduction of transportation cost & revenue generation in form of energy.
- Compost: 5 TPD Biogas: 7200 m^3 /day
- Liquid Fertilizer: 2.1 TPD
- Captive Power Plant: 140 KWA

Fig. 3.9 BIO GAS PLANT

3.9 Strategic Options for Fast Development

Smart Infrastructure involves applying this to economic infrastructure for the benefit of all stakeholders. It will allow owners and operators to get more out of what they already have, increasing capacity, efficiency and resilience and improving services. It brings better performance at lower cost. Gaining more from existing assets is the key to enhancing service provision despite constrained finance and growing resource scarcity. It will often be more cost-effective to add to the overall value of mature infrastructure via digital enhancements than by physical enhancements – physical enhancements add `more of the same', whereas digital enhancements can transform the existing as well.

Smart Infrastructure will shape a better future. Greater understanding of the performance of our infrastructure will allow new infrastructure to be designed and delivered more efficiently and to provide better whole life value.

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

More than 90% of the urban population has access to drinking water, and more than 60% of the population has access to basic sanitation. However, access to reliable, sustainable, and affordable water supply and sanitation (WSS) service is lagging behind. Are the Services Reliable? No Indian city receives piped water 24 hours a day, 7 days a week. Piped water is never distributed for more than a few hours per day, regardless of the quantity available. Raw sewage often overflows into open drains. Are the Services Technically and Financially Sustainable? Less than 50% urban population has access to piped water. The Non-Revenue Water (NRW: due to leakages, unauthorized connections, billing and collection inefficiencies, etc.) is huge, estimated between 40-70% of the water distributed. Operations and maintenance cost recovery through user charges is hardly 30-40%. Most urban operations survive on large operating subsidies and capital grants.

3.11 Initiatives in village development by local self-government

Rural Local Governments

- Jjilla Panchayat
- Mandal or Taluka Panchayat
- Gram Panchayat

Initiation by Local People: -

- Organizing programme for increase literacy for peoples of village.
- Providing enough information regarding to using of various facilities.
- Peoples have to learn various things regarding how to keep facilities in good condition.

3.12 Smart Initiatives by District Municipal Corporation

- Solid waste management.
- Selvedge water disposal.
- Effective road transportation.
- Maintained street light facilities.
- Agriculture awakening centre.

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

The panchayat raj system is a three-tier system with elected bodies at the village, taluka and district levels. The modern system is based in part on traditional panchayat governance, in part on the vision of Mahatma Gandhi and in part by the work of various committees to harmonize the highly centralized Indian governmental administration with a degree of local autonomy. The result was intended to create greater participation in local government by people and more

effective implementation of rural development programs. Although, as of 2015, implementation in all of India is not complete the intention is for there to be a gram panchayat for each village or group of villages, a tehsil level council, and a zilla panchayat at the district level.

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

Each village should have following 5 basic amenities in 5 year:

1) Roads
2) Electricity
3) Water
4) Hospitals
5) Schools

Some basic amenities of for smart village from other countries are:

a) Schooling: smart class rooms can improve the quality of education by providing access to a large amount of educational resources.
b) Health Care: improving information available on the availability, location and cost of various types of health care.
c) Agriculture: provide information to farmers on the types of crop that can fetch them returns, by ensuring that there is no guilt of one product and shortage of another.

CHAPTER-4 About Krushnapur Village

4.1 Introduction

4.1.1 Introduction about Krushnapur village details

Krushnapur is a Village in Jalalpore Taluka in Navsari District of Gujarat State, India. It is located 22km towards South from District Headquarters Navsari. 317km from state capital Gandhinagar. Krushnapur Pin code is 396460 and postal head office is Panar. Onjal (3km), Mendhar (5km), Masa (5km), Chijgam (5km), Panar (6km) are the nearby villages to Krushnapur. Krushnpur is surroundd bt Jalalpore Taluk towards North, Navsari Taluka towards North, Valsad Taluk towards South, Chikhli Taluka towards East. It is near to Arebian Sea. Thre is chance of humidity in the weather.

4.1.2 Need of the study

The study will focus the development trend, intensity of growth of the village and find out the problems related to the physical development of the area and infrastructure services of the village. The project proposal and sustainability aspect is not considered in micro level, it is only guiding way. From the gap analysis, development strategies for village development will be proposed and planning proposals for Physical infrastructure, Social Infrastructure and Renewable energy Source will be suggested for the village. The study will focus the development trend, growth of the village, and find out the problems related to the physical development of the area and infrastructure services of the village.

4.1.3 Study Area

Total Area of Krushnapur Village is 252.93 hectors. The total population of Krushnapur village is 5310 in the year of 2011. No of males are 2688 and No of Females are 2622. In has current population nearly 10, 032. Total households in this village is nearly 1468. Village is nearly to the sea approximately 2.5 km and nearby villages are Onjal, Chijgam, Kharsad etc. In this village there is no agricultural field is available for crops. So, Villagers are earn money from the fishing business. In a roughly survey we get there is residential area around 99630.67 m², Fish market area around 21737.43m² and marshy land is nearly 253907.77m² in the village.

Population:

Table- 5 Population of Krushnapur Village

Census Parameter	Census Data
Total Population	5310
Total No of Houses	1068
Female Population %	49.4 % (2622)
Total Literacy rate %	87.8 % (4661)
Female Literacy rate	42.7 % (2267)
Scheduled Tribes Population %	0.3 % (15)
Scheduled Caste Population %	0.1 % (4)
Working Population %	31.2 %
Child(0 -6) Population by 2011	479
Girl Child(0 -6) Population % by 2011	45.9 % (220)

4.1.4 Objectives of the study

A suggestion or proposal for village to enhance living standard through constructing. Infrastructural facilities in Krushnapur village under Vishwakarma Yojna are as follows:

- Provider of public amenities like public toilet blocks, Community Hall, drainage facilities and drinking water.
- To improve education ratio. Because only 10% villager are educated.
- Constructing Water tank or increase the depth of the pond to fulfill the water requirement of villagers in summer season and also proper cleanliness in pond.
- There is no recreational facilities like Garden or Children parks.
- Road network has very less paved roads mostly unpaved roads in the village. And also they are damaged. So it should need the rebuild the roads and drainage line.
- To reduce of Urbanization migration.
- There is no drainage line and solid waste management.
- Proposal for dumping site Because, No dumping site for domestic waste disposal.

4.1.5 Scope of the Study

- Many people migrate from village to nearest city for job, business, employment etc. From guideline by Vishwakarma Yojana we will study about village and will carry out various surveys from village.
- In village, we carried out techno economic survey and collected all information from village like Socio-economic infrastructure, sustainable infrastructure etc.
- According to survey we know about their problems, existing condition, requirement of other facilities etc.
- From all the information, we try to provide best work for village development as per guideline of smart village development.
- We provide many design report and maintenance work for village to better efficiency usage.

4.1.6 Methodology Frame Work for development of your village

- First of all we studied what are the various goals and different objectives and aspect of Vishwakarma Yojana.
- We studied various basic definitions related to the project like rural area, urban area, urbanization etc.
- After this we contacted our village sarpanch, talati mantri and different grampanchyat members.
- Then after we frequently visited the Keushnapur village for the purpose of collecting various data related to various facilities and amenities and survey of different aspects related to physical, infrastructural, social facilities.
- The whole work is done after proper study & appropriate guidance by Nodal Officer and Krushnapur village's Sarpanch and Talati mantra and different grampanchayat members. To understand the work for project.
- In Krushnapur village, Gap analysis is done based on data collected through survey of village. And various suggestions are made by us on development of village.
- Based on this suggestions we will design proposed facilities in the village according to the need and population of that village.

4.1.7 Available Methodology for development of related to Civil

- Aanganwadi
- Panchayat Office
- Overhead Water Tank
- Primary School
- Underground Water Tank
- General Store
- Lake

4.2 Krushnapur Village Study Area Profile

4.2.1 Study Area Location with brief History land use details

Krushnapur village approach road is bituminous road but after the entrance at some place in village the road conditions are in worst conditions. There is some place where no drainage facility in village. Education facility is good in village. It consists of 7 anganwadi, 1 primary, secondary, higher secondary school and college. The information on all various transport facilities whether public/private transport like Bus, Taxi, Van, Tractors etc. available in the village.

Fig. 4.1 MAP OF GUJARAT

4.2.2 Base Location Map

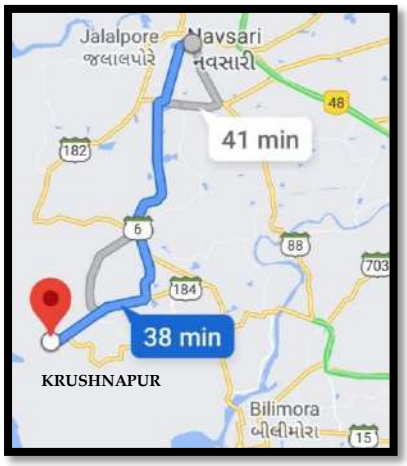


Fig. 4.2 TRAVELLING MAP

Fig. 4.3 MAP OF KRUSHNAPUR VILLAGE

4.2.3 Physical & Demographical Growth

- The facilities are essential for economic as well as social growth of any area. These facilities include proper road network, water supply, drainage, electricity etc. Any village which needs to be economically developed must contain the above-mentioned facilities
- As per constitution of India and Panchyati Raaj Act, krushnapur village is administrated by Sarpanch (Head of Village) who is elected representative of village.

Demographical details of Krushnapur Village are as follow:-

Name of village is Krushnapur
State : Gujarat
District : Navsari
Taluka : Jalalpore
Village code of Krushnapur 522934
Krushnapur Village Pin Code is 396475.
The Krushnapur Geographical area is 252.93 Hectares.
Latitude : 20.807000
Longitude : 72.864800
It has total 1068 Households with total population of 5310.
Male Population : 2688
Female Population : 2622

4.2.4 Economic generation profile

The people of this village are occupied with many different types of works like farming, own shops, animal husbandry, and working in school as teacher and also there are small and big stores of food in with village people works in complex stores and some people works as seller of vegetable and fruits. Some people go from village to city in search of livelihood and do some labor and officially work in city and earn money for their family.

4.2.5 Actual Problem faced by Villagers and smart solution

4.2.5.1 Problems

a) People related problem:-
- Traditional way of thinking
- Lack of education
- Lack of confidence
- Poor understanding

b)Agriculture related problem:-
- Lack of knowledge
- Skill & attitude
- Unavailability of input

c) Infrastructure related problem:-
- Lack of safe drinking water
- Street light
- Connectivity
- Education
- Health facilities

d)Administrative problems:-
- Political interference
- Lack of motivation & interest
- Better credit facilities
- No proper monetary of programs

4.2.5.2 Smart solution:-

- **Creation of job:** By developing infrastructure in frame in tandem with local, it is possible to create local work opportunities in the region.
- **Contribution to the global environment:** The system can reduce reliance on fossil fuel and contribute to the reduction of greenhouse gases such as CO^2.

4.2.6 Social scenario -Preservation of traditions, Festivals, Cuisine

- **Festivals:** The Village folk Culture is dance including garba, dandiya, raas, tipani, etc.
- **Traditional wear:** They wear traditional cloths like chaniyacholi, dhoti, kachhado, gujrati sadi etc.
- **Cuisine:** The regular food is Gujrati thali, Indian food, the villagers prefers the vegetables or non-veg to eat which is they grow in their farm and fishery

4.2.7 Migration Reasons / Trends

Nowadays, many people decide to migrate to have a better life. Employment opportunities are the most common reason due to which people migrate. Except this, lack of opportunities, better education, and globalization, natural disaster (flood and drought) and sometimes crop failure forced villagers to migrate to cities. In Krushnapur Village people are migrate because of better opportunity for jobs, Business, High living standard. People are migrate to Bilimora Valsad Surat because it is the biggest economic hub of Gujarat. People earn more in the city rather than village that's why people migrate from village to city. In Krushnapur the people mostly dependent on fishery and small shops and sell vegetables.

4.3. Data Collection

4.3.1 Describe Methods for data collection

The main methods include –

- By filling of survey forms
- By interaction with the villagers
- By interaction with the sarpanch/panchayat members
- By observing the current condition of the village
- Visiting different locations of the village

4.3.2 Primary details of survey details

Primary details of Krushnapur village attached with report in the form of Techno Economic Survey form. Primary survey details are collected by interacting with the village dwellers and questioning them about the facilities available and require. They were asked to give suggestions about the works required to be carried out for the development of the village and to promote Urbanization

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

The village has no specified size of house, but the Financially Capable villagers have good constructed House and poor villagers have small size or medium size house. The Average size of house is 100 var plot per house. Geo-tagging is the process of attaching location information in the form of geographical metadata to digital media like autographs. Geo-tags may also be applied to digital output and communications such as tweets or status updates on social media sites, videos and phone

4.3.4 No of Human being in One House

As per population and house hold number the average Human being in the one House is 4. Average 4-7 members live in one house.

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

a) Which material used locally

The most common building materials used in construction are:

- Wood
- Cement
- Bricks
- Blocks
- Concrete

b) Out sourced Material

The most common building materials used in construction are:

- Metal
- Glass
- Plastic
- Fly ash

c) labor work doing

- Labor works in the Farm

d) Any costing

- Costing is Low compared to city

4.3.6 Geographical Detail

Table- 6 Geographical Detail of the village

Sr. No.	Description	Information Details
1	Area of Village	252.93 hector
2	Forest area	-
3	Residential area	9.963067 hector
4	Other area	-
5	New area	-
6	Distance from Nearest railway station	12KM AMALSAD
7	Nearest town with distance	12KM AMALSAD

4.3.7 Demographical Detail - Cast Wise Population Details

In Krushnapur village, total population as per 2011was 5310, in their total male population was 2688 and total female population was 2622. There are more than 90% population are OBCs cast. ST, SC and Open Cast are very less.

4.3.8 Occupational Detail - Occupation wise Details

Table- 7 Occupational Details

Percentage of worker	Occupation
80%	Fishery
10%	Work in fishery as a Labor
5%	Job

4.3.9 Agricultural Details / Organic Farming / Fishery

Most of people Lived in Krushnapur village has doing fishery, very few amount of people doing farming approx. 2%.

4.3.10 Physical Infrastructure Facilities

Physical Infrastructure Available in Krushnapur village are as given below

- Main source of water
- Tap water
- Water tank facility
- Drainage facilities
- Road network
- Transportation facilities
- House scheme

4.3.11 Tourism development available in the village for attracting the tourist

No tourism site of village

4.4 Infrastructure Details

4.4.1 Drinking Water / Water Management Facilities

The main source of water is by Over Head tank and Small lake is available. The Over Head tank Capacity is 2,00,000 liters and the sump capacity is also 2,00,000 liters.

Fig. 4.4 OVER HEAD TANK AND SUMP

4.4.2 Drainage Network / Sanitation Facilities

No data about it

4.4.3 Transportation & Road Network

There is Availability of Mode of Transport Facility- State Transport Bus, Auto rickshaw, Chhakda, Private vehicles

Fig. 4.5 PUBLIC AND PRIVATE TRANSPORTATION

Fig. 4.6 BUS STATION OF KRUSHNAPUR VILLAGE

4.4.4 Housing condition

Village house hold has good Condition, almost villagers has Paccca and kuccha Makan (House).

Fig. 4.7 PAKKA HOUSE

Fig. 4.8 KATCHCHA HOUSE

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

The List of Social Infrastructure Facility Available in the Village-

- Primary Health centre
- Primary School
- High school
- Aangadwadi (Play Group)
- Multipurpose cyclone shelter

Fig. 4.9 SCHOOL

Fig. 4.10 AGANWADI

Fig. 4.11 MULTIPURPOSE CYCLONE SHELTER

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

In Village 25% Houses Condition is Very Poor, but 75% Houses Condition is Very good. There are total 5 public buildings at village. They are as- Panchayat building, Primary school, Aanganwadi, Public health centre, Cyclone shelter

4.4.7 Technology Mobile/ WIFI / Internet Usage Details

According to our service people are having mobiles and internet connection but the Wi-Fi that should be available in each village to make a smart will it is not available here.

4.4.8 Sports Activity as Gram Panchayat

No, there is no such kind of sports activity conducted in the gram panchayat and the condition of the ground is also very poor.

4.4.9 Socio-Cultural Facilities

- Pond is available in Krushnapur Village.
- Community hall is not available.
- In Krushnapur village has no public garden no parks and no playground.
- Village has undeveloped pond.

4.4.10 Other Facilities

No, other facilities like footpath develop smart toilets coin-operated entry and self-cleansing, waterless, public buildings are available in the village.

Fig. 4.12 GENERAL MARKET

Fig. 4.13 GROCERY STORE

4.4.11 Any other details

Other facilities in Village Like- Post office, General Market, Grocery store

4.5 Electrical Concept:

4.5.1 Renewable energy source planning particularly for villages

No, there are no such kind of renewable energy which is used by the village only some people are having the renewable energy sources like solar panels on their houses which are a private houses.

4.5.2 Irrigation Facilities

According to our data there is no land for irrigation. Only few people doing farming near home.

4.5.3 Electricity Facilities with Area

Yes, electricity facilities are available, power supply for domestic use is given 24 hours, power supply for commercial use is given 24 hours, rolled and streetlights are 8 hours, electrification government building is schools in hospitals is also than an LED facilities are also available.

4.6 Existing Institution

4.6.1 Bachat Mandali

According to our survey there is no any Bachat Mandali in Krushnapur Village.

4.6.2 Dudh Mandali

Dudh mandali is not available there.

4.6.3 Mahila forum

Mahila forum is also made but the members are not there to take the responsibility.

4.6.4 Plantation for the Air Pollution

Plantation in the villages is very common but the pollution in the villages very less so we don't have any such kind of need for plantation for air pollution because villagers plants are already there.

4.6.5 Rain Water Harvesting - Waste Water Recycling

No, rainwater harvesting is not available in the village.

4.6.6 Agricultural Development

Agricultural development is required because there is lot off land are unusable. Mostly people go out sides for purchasing vegetables and all necessary stuff.

4.6.7 Any Other

The other facilities like telecommunication networks and shop like public distribution system, Panchayat building, Bank, cyclone shelter and general market is also available in the village.

CHAPTER-5 Technical Options with Case Studies

5.1 Concept

5.1.1 Advance Sustainable construction techniques / Practices and Quantity Surveying:

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

Drivers for Sustainability:

While India is preparing to tackle these growth plans with enthusiasm, it is imperative that the country should analysis and take into account the price that the future populations of the world and here will have to pay and the world in turn will have to pay, should this unprecedented growth take place without adequate thought to sustainability. Should we consume all our energy, materials, and water resources without considering for the needs of our children and grandchildren, the future of the world and our nation is at peril. Obviously GHG emissions, climate change and sustainability are at stake. It is estimated that GHG emissions would increase from 2 billion tons to 6-7 billion tons of CO_2 in 2030.

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

Recommendations:

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

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

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

Fig. 5.1 CONCEPT OF SUSTAINABLE CONSTRUCTION

1. Planning, Design and Specifications :

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

2. Construction Practices :

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

3. Material Conservation and Selection :

Concrete is the largest synthesized material which has a per capita consumption of 1.5 tons per annum in India. Presence of concrete is all pervading simply because it has the capacity to

utilize locally available ingredients, develop adequate engineering properties for a variety of applications, easily adapt to any shape and size and has comparatively low initial and maintenance costs. While concrete not be as big of an energy consumer as structural steel, aluminum and glass; concrete and particularly cement still remains a major energy 'sink' due to its sheer volume of production and also environmentally unsustainable due to large quantities of CO_2 evolution associated with its manufacture. Raw materials for cement manufacture include non-renewable natural resources like lime stone, aggregates, manufactured sands (fine aggregates), and so on. Hence the Indian concrete Industry needs to take a fresh look at these challenges. Some of the problems faced by Indian concrete industry towards achieving sustainability in concrete utilization are as follows: Increase the use of fly ash and other cement substitutes; Use of manufactured sand**;** Use of lightweight aggregates

4. Demolition and Recycling :

In India, the use of recycled aggregates has not been adequately explored. Reportedly, the construction and demolition waste has substantially increased as new super structures are being built on land after tearing down the smaller structures that previously existed. It is estimated that the construction industry in India generates about 10-12 million tons of waste annually. Projections for building materials requirement of the housing sector indicate a shortage of aggregates of about 55,000 million cu. m. An additional 750 million cum. of aggregates would be required for achieving the targets of the road sector. Recycling of aggregate material from construction and demolition waste may reduce the demand-supply gap in both these sectors. There is also an increasing-acute shortage of dumping grounds and landfills particularly in metropolitan cities. SERC, Ghaziabad had taken up a pilot R&D project on Recycling and Reuse of Demolition and Construction Wastes in Concrete for Low Rise and Low Cost Buildings in mid-nineties with the aim of developing techniques/methodologies for use of recycled aggregate concrete in construction. The experimental investigations were carried out in Mat Science laboratory and Institutes around Delhi/GZB to evaluate the mechanical properties and durability parameters of recycled aggregate concrete made with recycled coarse aggregate collected from different sources.

5. Energy Conservation :

Since sources of good quality, aggregates are fast depleting, the concrete industry in India needs to prepare itself to use locally available 'marginal' aggregates. The use of local materials helps reduce the carbon footprint associated with transport. Thus, from sustainability angle, the emphasis should be placed on using locally-available aggregates, even if there are small deficiencies in their quality. It has been amply demonstrated that desired properties of concrete can be obtained by intelligent blending of available aggregates with crushed sand, inert fillers, supplementary cementations materials and chemical admixtures. Another important issue is that river sand and other construction materials are usually transported by road. India has a well-developed and efficient rail and water transport system that need to be leveraged by the construction industry.

5.1.2 Soil Liquefaction:

Soil liquefaction occurs when a saturated or partially saturated soil substantially loses strength and stiffness in response to an applied stress such as shaking during an earthquake or other sudden change in stress condition, in which material that is ordinarily a solid behaves like a liquid. In soil mechanics, the term "liquefied" was first used by Allen Hazen in reference to the 1918 failure of the Calaveras Dam in California. He described the mechanism of flow liquefaction of the embankment dam as: If the pressure of the water in the pores is great enough

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

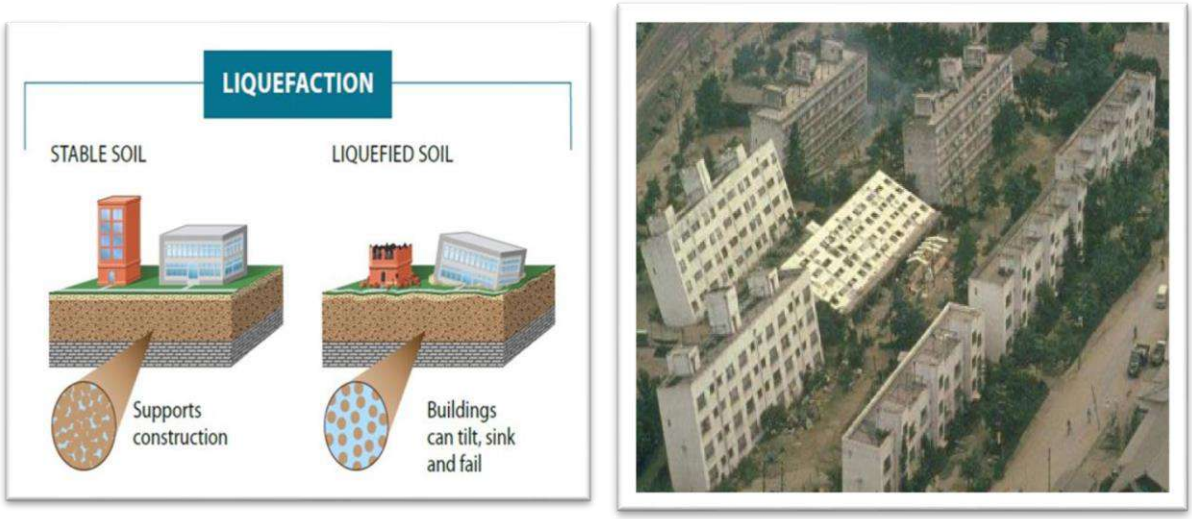


Fig. 5.2 SOIL LIQUEFACTION

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

5.1.3 Sustainable Sanitation

Sustainable Sanitation system is to protect and promote human health by providing a clean environment and breaking the cycle of disease. In order to be sustainable a sanitation system has to do this, and additionally be economically viable, socially acceptable, and technically and institutionally appropriate, and it should also protect the environment and the natural resources. This implies the following criteria:

- **Health and hygiene:** The sanitation system must put an effective barrier between its user and the environment, and must prevent exposure that could affect public health at all points of the sanitation system: from the toilet, via the collection and treatment system, to the point of reuse or disposal and downstream populations — hence it also includes hygiene behavior.
- **Environment and natural resources:** In order to be sustainable, the sanitation system must protect and respect the natural environment and resources. Wherever possible, the resources contained in excreta and wastewater (energy, nutrients, water) are recycled, thereby protecting other resources (e.g. by replacing fossil fuels through biogas). Should use little energy, water or other resources (e.g. for construction, operation and maintenance), and should produce as little harmful emissions to the environment as possible (both liquid, solid and gaseous).
- **Technology and operation:** A sustainable sanitation system utilizes a technology and a mode of operation that are well adapted to local circumstances. This includes the system's functionality and the ease with which the entire system including the collection, transport, treatment and reuse and/or final disposal can be constructed, operated and monitored by the local community and/or the technical teams of the local

utilities. Furthermore, the robustness of the system, its vulnerability towards power cuts, water shortages, floods, etc. And the flexibility and adaptability of its technical elements to the existing infrastructure and to demographic and socio-economic developments are important aspects to be evaluated.

- **Financial and economic issues:** The cost of a sanitation system must relate to the financial capacity of households, communities or institutions and includes not only the costs for construction, but also a rising costs for operation, maintenance and necessary reinvestments of the system. Besides the evaluation of these direct costs also direct benefits e.g. from recycled products (soil conditioner, fertilizer, energy and reclaimed water) and external costs and benefits have to be taken into account. Such external costs are e.g. environmental pollution and health hazards, while benefits include increased agricultural productivity and subsistence economy, employment creation, improved health and reduced environmental risks.
- **Socio-cultural and institutional aspects:** A sanitation system only lasts and can be sustainable if it is appropriate and accepted by the community. Again, this includes the whole sanitation system — i.e. Not only toilets, but also maintenance and operation and the recharge and reuse system adopted. A sustainable sanitation system must hence be socially acceptable, convenient, respect gender issues and impacts on human dignity, consider impacts on food security. In regards to institution aspects, it must be in compliance with the legal framework and must make for stable and efficient institutional settings.

Most sanitation systems have been designed with these aspects in mind, but in practice they are failing far too often because some of the criteria are not met. In fact, there is probably no system that is absolutely sustainable. The concept of sustainability is more of a direction rather than a stage to reach. Nevertheless, it is crucial, that sanitation systems are evaluated carefully with regard to all dimensions of sustainability. Since there is no one-for-all sanitation solution, which fulfils the sustainability criteria in different circumstances to the same extent, this system evaluation will depend on the local framework and has to take into consideration existing environmental, technical, socio-cultural and economic conditions.

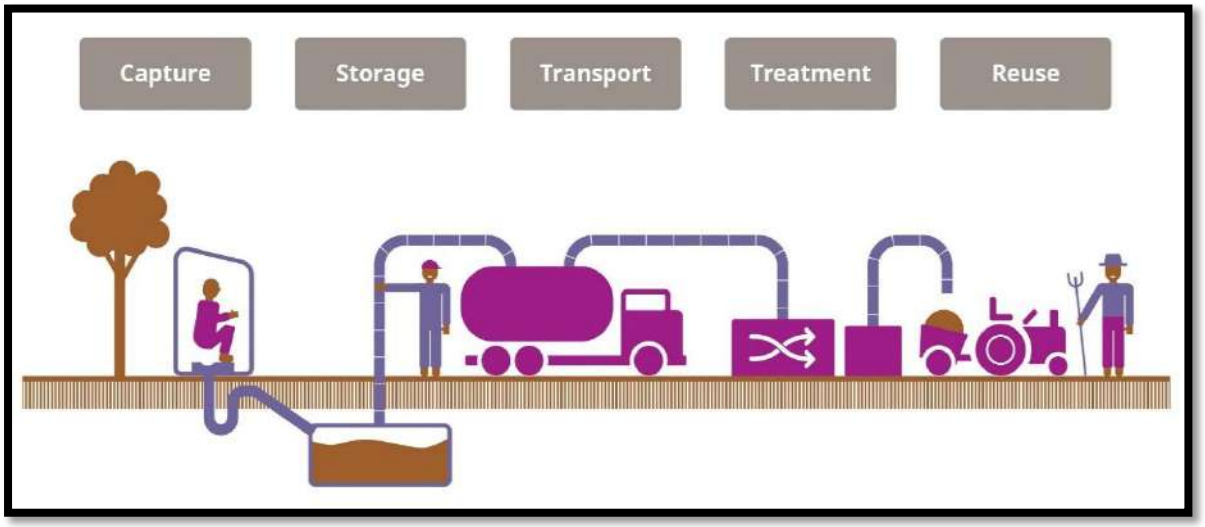


Fig. 5.3 SANITATION CHAIN

5.1.4 Transport Infrastructure / system:

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

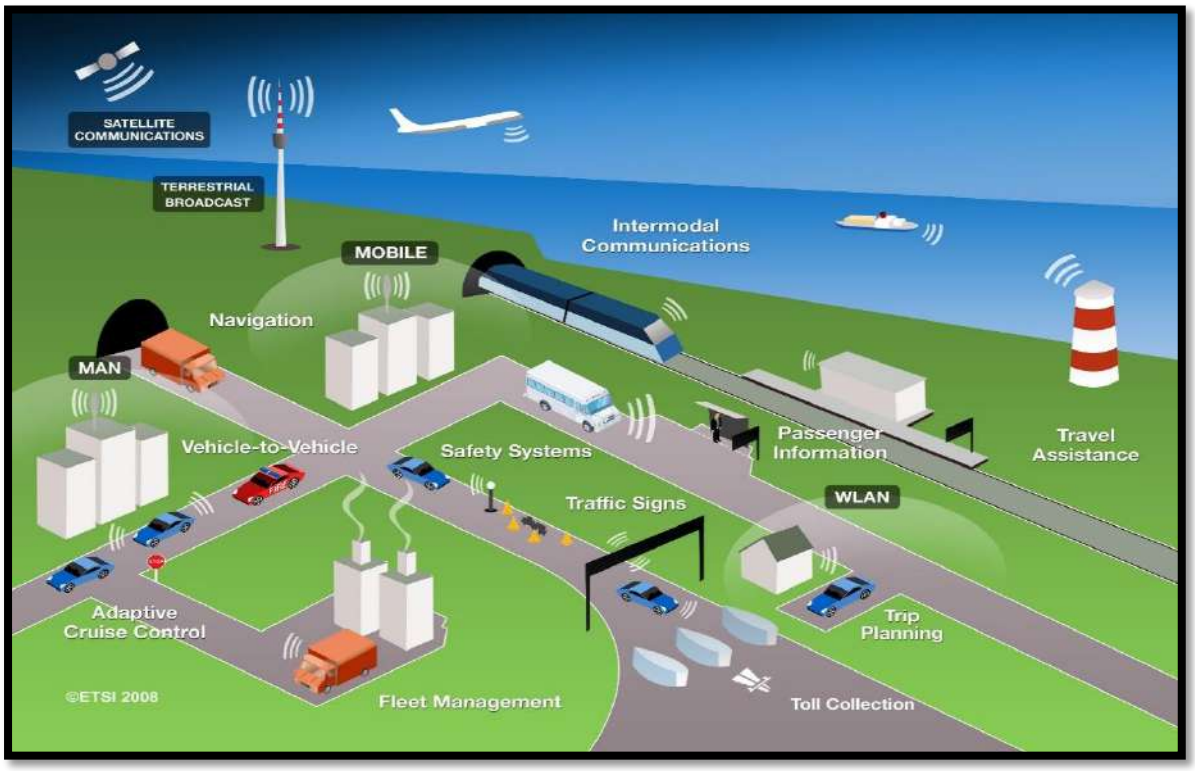


Fig. 5.4 FUTURE TRANSPORT SYSTEM CONCEPT

5.1.5 Vertical Farming:

Vertical farming is the practice of growing crops in vertically stacked layers. It often incorporates controlled-environment agriculture, which aims to optimize plant growth, and soilless farming techniques such as hydroponics, aquaponics, and aeroponics. Some common choices of structures to house vertical farming systems include buildings, shipping containers, tunnels, and abandoned mine shafts. As of 2020, there is the equivalent of about 30 ha (74 acres) of operational vertical farmland in the world. The modern concept of vertical farming was proposed in 1999 by Dickson Despommier, professor of Public and Environmental Health at Columbia University. Despommier and his students came up with a design of a skyscraper farm that could feed 50,000 people. Although the design has not yet been built, it successfully popularized the idea of vertical farming. Current applications of vertical farming coupled with other state-of-the-art technologies, such as specialized LED lights, have resulted in over 10 times the crop yield than would receive through traditional farming methods. The main advantage of utilizing vertical farming technologies is the increased crop yield that comes with

a smaller unit area of land requirement. The increased ability to cultivate a larger variety of crops at once because crops do not share the same plots of land while growing is another sought-after advantage. Additionally, crops are resistant to weather disruptions because of their placement indoors, meaning less crops lost to extreme or unexpected weather occurrences. Because of its limited land usage, vertical farming is less disruptive to the native plants and animals, leading to further conservation of the local flora and fauna. Vertical farming technologies face economic challenges with large start-up costs compared to traditional farms. In Victoria, Australia, a "hypothetical 10 level vertical farm" would cost over 850 times more per cubic meter of arable land than a traditional farm in rural Victoria. Vertical farms also face large energy demands due to the use of supplementary light like LEDs.

Fig. 5.5 VERTICAL FARMING

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

Corrosion Mechanism, Prevention & Repair Measures of RCC Structure Though concrete is quite strong mechanically, it is highly susceptible to chemical attack and thus structure gets damaged and even fail unless some preventive measures are adopted to counteract this and thereby increasing the durability of structure. In the case of Reinforced concrete structure, the ingress of moisture or air may lead to corrosion of steel, cracking and spilling of concrete cover thereby reducing durability of concrete structure. Repair has been suggested as the protective solution for damaged structure due to corrosion.

Overall, there is very little published empirical evidence that provides insight into the durability of saline treatments and their long-term residual protection (i.e. following at least 10 years of service). Such a gap in knowledge is undesirable given the scale of infrastructure treated with hydrophobic treatments such as silences.

5.1.7 Sewage treatment plant:

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

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

The term "sewage treatment plant" (or "sewage treatment works" in some countries) is nowadays often replaced with the term wastewater treatment plant or wastewater treatment station. Sewage can be treated close to where the sewage is created, which may be called a "decentralized" system or even an "on-site" system (in septic tanks, bio filters or aerobic treatment systems). Alternatively, sewage can be collected and transported by a network of pipes and pump stations to a municipal treatment plant. This is called a "centralized" system (see also sewerage and pipes and infrastructure)

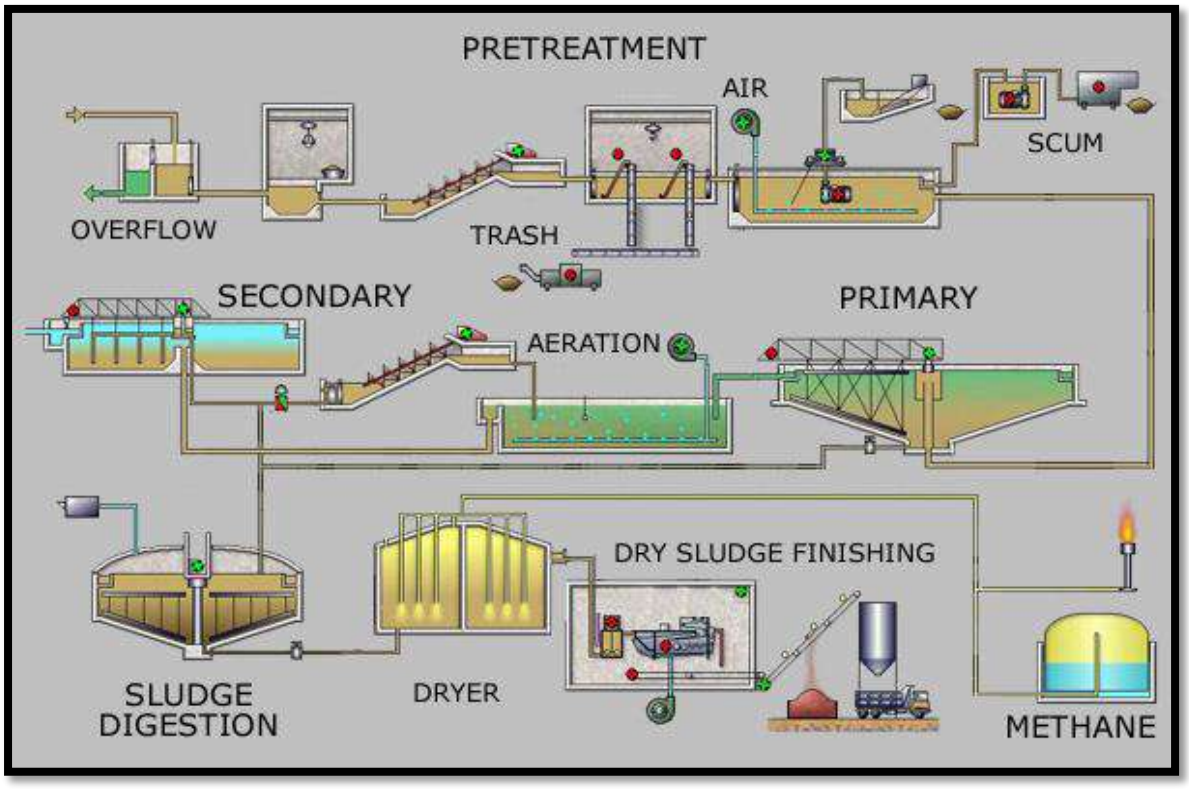


Fig. 5.6 SEWAGE TREATMENT PLANT

5.1.8 Case Study On "Hygienic Rural Toilet (Dry Sanitation System)" :

We have selected a Hygienic Rural Toilet -Dry Sanitation System as a technical case study. Case study area is located near Vihar Lake, Mumbai. In this case study taken 3-4 village. Which are Village Uttanpada, Labour Colony Toilet, IITB, Village Sai Bangoda and Indiranagar Village.

Overall cost of this toilet is around **₹ 30,000.** If taken as per year cost is around **₹ 1250** because of more than 20 years life of this toilet.

Reason Behind This Case Study :-

Where there are no latrines people resort to defecation in the open. 665 million Indians practice open defecation, more than half the global total. 1,000 children younger than 5 years die every day in India from diarrhea, hepatitis- causing pathogens and other sanitation-related diseases - the United Nations Children's Fund. **The crisis is especially acute for girls:** Many drop-out of school once they reach puberty because of inadequate lavatories, depriving the country of a generation of possible leaders. The toll on human health, due to unhygienic sanitation conditions is grim. Water (Flush) latrines and sewerage systems-

- Needs huge infrastructure
- Have high maintenance costs
- Cannot ensure a clean environment.
- Greater risk to public health and environment in case of failures.

Location :-

Fig. 5.7 CASE STUDY AREA MAP

The Goals For This Design :-

The primary goal to design hygienic dry sanitation system (which avoids direct discharge of excreta into the nearby water bodies or on to the open lands). To come up with a sanitation solution catering specifically to the needs of rural India with water shortages which is cost effective, manageable, modular, (i.e. portability, flexibility, ease of manufacturing, deployment and maintenance) and sustainable (derive economic benefit by making fertilizer for their fields)

Current scenario

Public toilets available in near rural & semi---urban areas are not maintained properly and thus unhygienic to use.

- Cracked toilet pans
- Broken tiles
- Broken doors
- Accumulation of dirt at corners, joinery
- Difficult to maintain for public use. Resulting in very short work life

Fig. 5.8 VILLAGE UTTANPADA

Fig. 5.9 LABOUR COLONY TOILET, IITB

Fig. 5.10 VILLAGE SAI BANGODA

Fig. 5.11 INDIRANAGAR VILLAGE

Rural areas do not have access to or affordance for ceramic tiles and ceramic WCs. Local material is used for shelters. Dry Toilet is therefore norm. These are in fact good aspects. But they lack the technology for disposal and decomposition. So the conditions are unhygienic.

The Design brief :-

The hygienic dry sanitation system with arrangement for separation of Solid Waste, Urine & Washing Water. For Comfortable, cleanable, unbreakable Squat type toilet pan with three exclusive ports for solids, urine and washing water. For decomposition & utilization as manure Arrangement of pits below it for collection of solids, urine and washing water. For privacy Shelter for housing the toilet pan

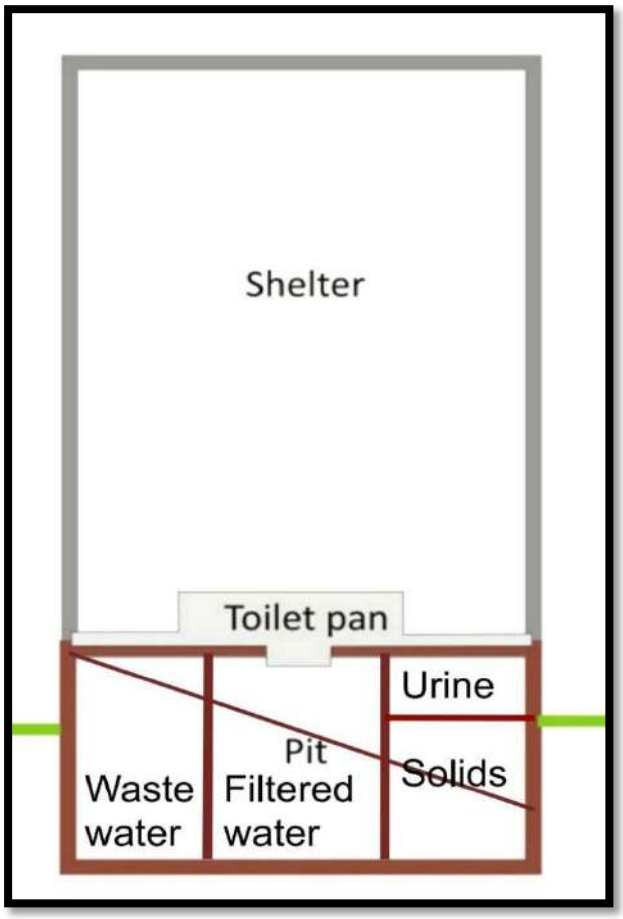


Fig. 5.12 BASIC DESIGN OF SHELTER

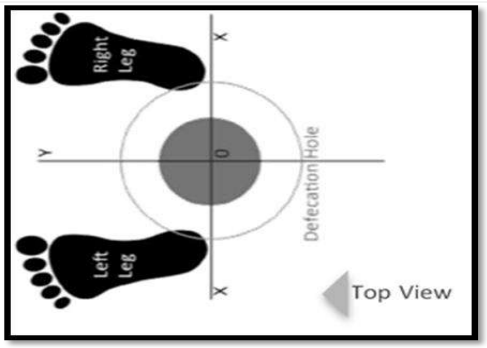


Fig. 5.13 TOP VIEW OF SQUATTING POSITION

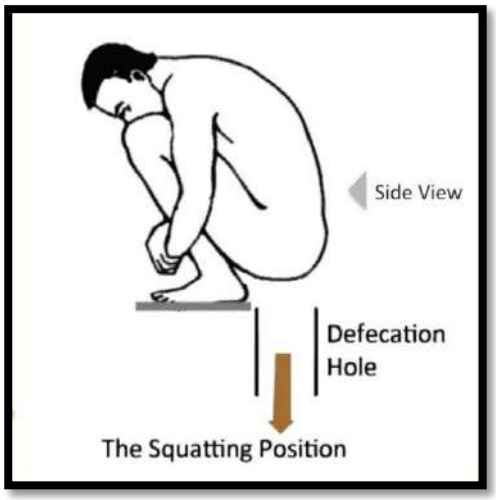


Fig. 5.14 SIDE VIEW OF SQUATTING POSITION

The figure shows the basic rig used for measurements for user position. The center of the pit for defection was taken as the center with X and Y axis defined as shown

Toilet Pan – Engineering

Uniquepan design with 3 ports

a) Front compartment for urine collection and drainage
b) Centre large hole for defecation
c) Washing water collection & Drainage

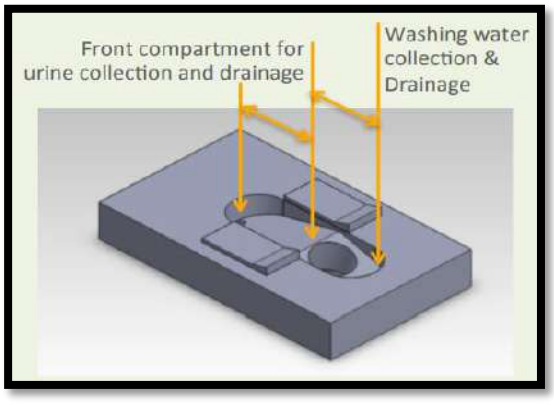


Fig. 5.15 DIGITAL MODEL OF TOILE PAN

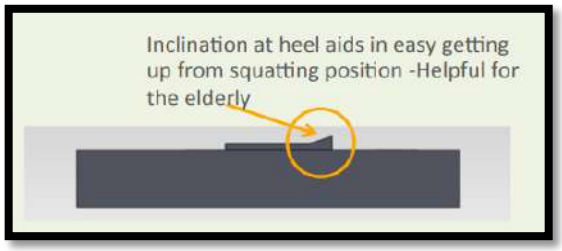


Fig. 5.16 SIDE VIEW

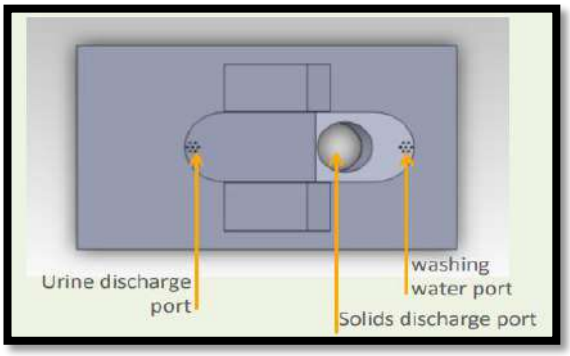


Fig. 5.17 TOP VIEW

Toilet Pan – Design

Separation of washing water at the source with exclusive port in the pan at the back. Separate urine collection port in the front. Unique heel support aids in getting up from squat position, especially for elderly. Stainless Steel pan is durable, unbreakable and can last more than 20 years – long useful life. Cleaning and maintaining the pan is easier as SS resists chemicals and removes accumulated dirt easily. Can be scrubbed if required.

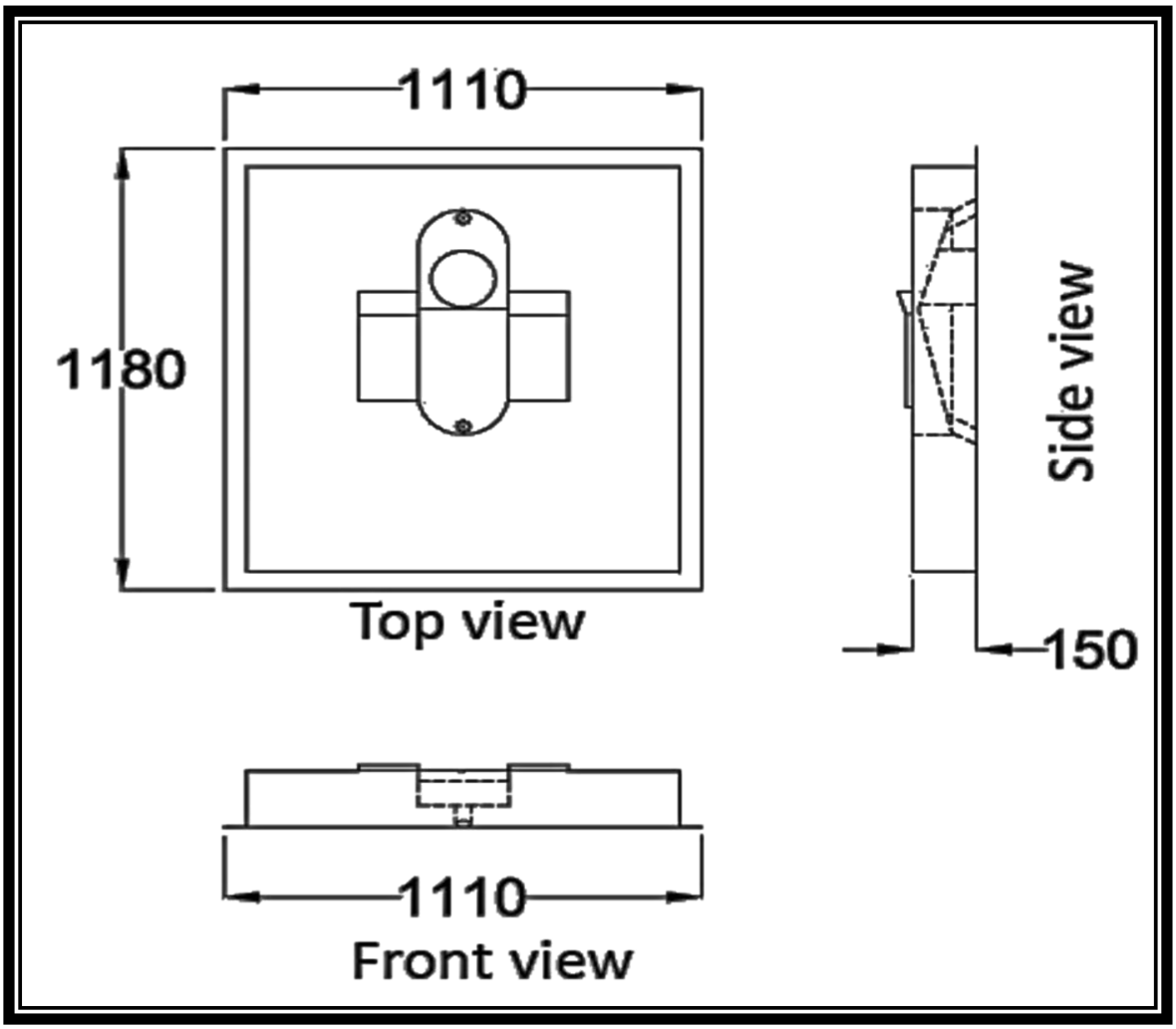


Fig. 5.18 OPTIMIZED DIMENSIONS

Dry Toilet - Pit Design

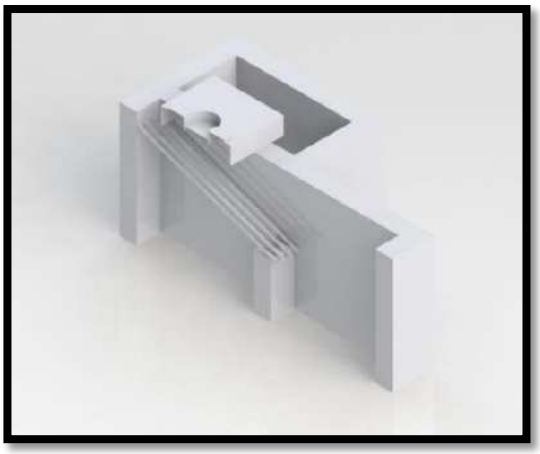
- The solid waste pit consists of a stepped depression in the ground lined with bricks / cement blocks.
- The bamboo mat is placed at an angle so as to ensure rolling of the solid waste to the far end.
- Bamboo mat is being used as a sieve to filter the washing water from solid waste.
- The washing water seeps through the mat and gets collected in the deeper part of the pit.
- Waste water will eventually drain into the ground amber getting filtered through sand, lime and gravel bed.
- Solid waste disintegrates through self-generated bacterial action and converts into manure.

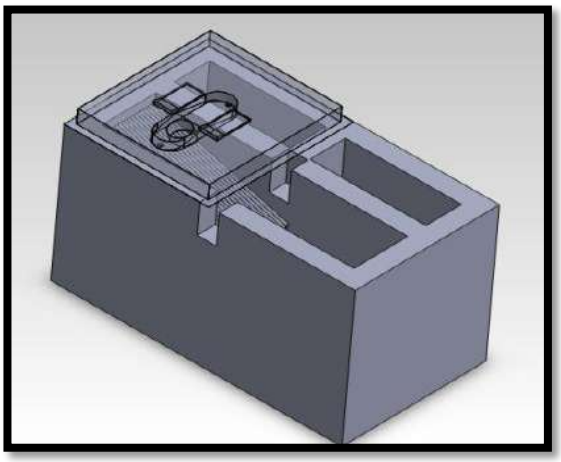
Challenges:

- Waterless – No flush system
- No use any chemicals, enzymes – No external additives Aid & accelerate natural process of decomposition`

Digital Models of Pit Design

- The design consisted of 3 chamber pits
- One chamber each for: waste water, solid waste and urine.
- There are 3 separate discharge point in the toilet pan.
- The front port is for urine.
- The middle port which is largest in size is for solid waste.
- The rear port is for waste water utilized in cleaning.





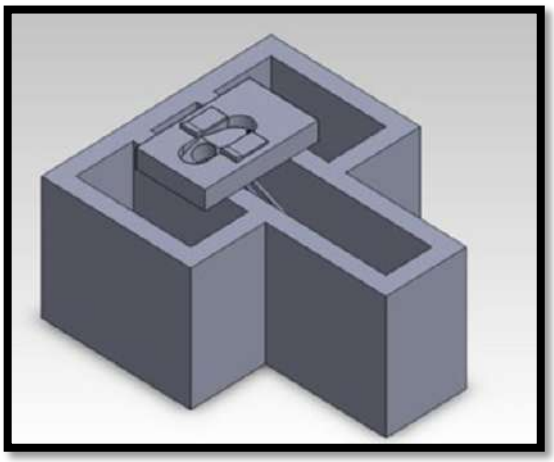


Fig. 5.19 DIGITAL MODELS OF PIT DESIGN

Prototype 1

Schematic section of solids pit, There is separate pit for urine collection

Fig. 5.20 SHELTER

Fig. 5.21 TOILET PIT

Prototype 1 – Observations

After next 8 months of usage (Jan 2018 – Sep 2018)

Fig. 5.22 SOLIDS PIT AND URINE PIT

The pit was not full after next 8 months of usage. Collected solids were found black in colour and dry. It was in advanced stage of decomposition. Urine pit was dry. Collected urine was soaked up in the soil. Toilet pan after a year of continuous usage by about 30 users daily, was in usable condition. Users were satisfied. The plywood panels of shelter needed replacement.

Prototype 2

SS Steel Pan & FRP Enclosure

Fig. 5.23 SS SHELTER

The toilet is used by 20-25 users daily.

Fig. 5.24 PIT UNDER CONSTRUCTION

Fig. 5.25 SIEVE PLACED IN INCLINED POSITION

Prototype 2 – Observations

After 9 months of usage (Dec 2017 – Sep 2018)

Fig. 5.26 SOLIDS PIT AND URINE PIT

Solids pit (885x550x1000mm^3) was not even quarter-full after 9 months of usage. Urine pit was dry. Collected urine was soaked up in the soil. The pit was less than 1/4th full with daily usage by 20-25 users in 9 months, it could be easily used for 4-5 years or even more without need for emptying. The solids get shrunk as they decompose. There is about 80-90 % volume reduction in the process. It could be said that the pit of this size could be utilized by a family of 6 for more than 10 years without emptying.

Final Pit Design

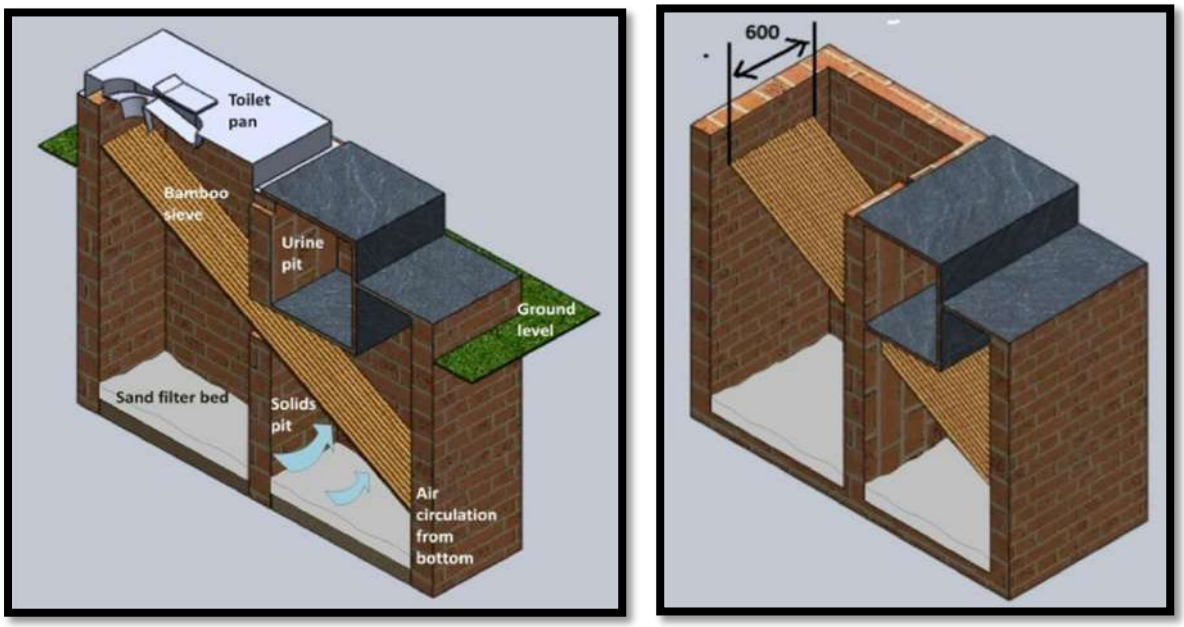


Fig. 5.27 FINAL PIT DESIGN MODEL

Shelter Design :-

Modular FRP panels

- Modular FRP panels are clipped together to make a shelter unit.
- Provision of built in overhead water tank (70-80 lit capacity).
- Life span more than 20 years.

Demonstration Unit :-

Fig. 5.28 DEMONSTRATION SHELTER

Costing :-

Description	Batch	Per Year
SS Toilet pan (20 year life)	10,000-12,000	250/-
Pit Construction (20 year life)	10,000 (Bricks) 7,000 (Labor)	750/-
Shelter-FRP (20 year life)	30,000-32,000	1250/-

Cost / Person / Day = Rs. 750 / 6 / 365 = Rs. 0.35 P
Cost / Person / Day = Rs. 750 / 30 / 365 = Rs. 0.07 P

CHAPTER-6 Swatchh Bharat Abhiyan

What is Swatch Bharat Abhiyan?

Swachh Bharat Mission, Swachh Bharat Abhiyan, or Clean India Mission is a countrywide campaign initiated by the Government of India in 2014 to eliminate open defecation and improve solid waste management. Phase 1 of the mission lasted till October 2019. Phase 2 will be implemented between 2020-21 and 2024-25.

6.1 Swatchhta needed in the village-Existing Situation

Yes is needed as there door to door collection collection of the waste but then also public does beans are also required so that people can keep the cleanliness on the roads also and we have make them aware about the Swachh Bharat Abhiyan and to keep the cleanliness around them self also here we have some photograph of the photograph that we have clicked.

Fig. 6.1 REAL SCENARIO OF VILLAGE ON BEACH AND NEAR ROAD

Fig. 6.2 REAL SCENARIO OF VILLAGE ON ROAD AND OUTSIDE OF BUILDING

6.2 Guidelines - Implementation in the village

- Swachh Bharat Mission (Gramin), Gram Panchayats and Jilla Parishads will work on war footing to make sure that all households in all villages have functional water supply and toilet facilities. Productive use of night soil as bio-fertilizers is also on the cards.
- Implementation of SBM (G) is proposed with 'District's the base unit, with the goal of creating ODF GPs. The District Collectors/Magistrates/CEOs of Zilla Panchayat are expected to lead the Mission themselves, so as to facilitate district wide planning of the

Mission and optimum utilization of resources. The Baseline Survey data of 2013 collected by States and entered on the IMIS of MDWS by 31.1.2015 will be considered as the base for States where the survey is complete. For other States the data entered on completion of the Survey will be taken as the base data.

- A project proposal shall be prepared by the District, scrutinized and consolidated by the State Government into a State Plan. The State Plan with district wise details will be shared with the Government of India (Swachh Bharat Mission-Ministry of Drinking Water and Sanitation). This Plan will include a 5 year Plan along with 5 independent Annual Plans which merge into the 5 year Plan. These plans shall be approved by the Ministry each year. On the basis of formative research and consultation rounds, the State shall develop a tailor made Communication Strategy, a Communication Plan, and material and will train community mobilisers to use these tools.
- The provision of Incentives for individual household latrine units to the rural households is available to States that wish to provide the same. This may also be used to maximize coverage so as to attain community outcomes. States will have flexibility regarding the utilization of the Incentive. Incentives, if given, may be to the Individual households or where the community model is necessarily adopted to trigger the demand in GPs/Blocks/Districts, the community as a whole or as a combination of both.
- Since the Incentive for one IHHL is Rs. 11957, the State will be eligible to receive the entire amount (shared between the Central and State Governments).

6.3 Activities Done by Students for the village

There is no activity done by us (students). Because there is no any kind of facility (like- Door to Door Garbage collection, Dumping site, Cleaning tools and no labours.) provided by Govt. for the village.

CHAPTER-7 Village condition due to Covid-19

7.1 Taken steps in the village related to existing situation

With respect to COVID-19 pandemic, Ministry of Panchayati Raj, Government of India in close collaboration with State Governments has taken various initiatives. Close consultation and guidance of the State as well as District authorities is being maintained to ensure that lock down conditions are not violated and norms of social distancing are scrupulously followed to contain the spread of the disease.

Fig. 7.1 CLOSED THE ENTRANCE OF VILLAGE

Fig. 7.2 COVID WARRIORS AND DOCTORS WITH NURSES

The sarpanch also give an awareness to all people to wear mask and make social distance. Rural students in the PMKVY program created some hand-made artwork promoting safety and awareness for their communities.

7.2 Activities Done by Students for the village

No activity has been done by us because we live far away from the allocated village.

7.3 Any other steps taken by the villagers

- A group of science students taking seminar in Krushnapur village of the people to teach the impact of covid19. They also took explained the important symptoms of the virus and informing the doctors of the symptoms if seen.
- The Gram Panchayat appointed a special team of people that took the responsibility of daily need of villagers by door to door home service of Vegetables, Medicine, Groceries etc. to ease the risk of mass gathering people and preventing to flow virus from one person to another person.

Fig. 7.3 SELLING WITH PRECAUTIONS

Fig. 7.4 SOCIAL DISTANCING

CHAPTER-8 Sustainable Design Planning Proposal- Part- I

8.1 Design Proposals

8.1.1 Sustainable Design (CIVIL):- Roof Top Rain Water Harvesting

Scenario:

Roof-top rainwater harvesting systems can be installed in both new and existing buildings and the harvested rainwater can be used for different applications that do not require drinking water quality, such as toilet flushing, garden watering, irrigation, cleaning etc. So to control wastage of rain water and to make the unit independent for water consumption, we propose roof-top water harvesting for Krushnapur village existing school building.

Existing Situation of Krushnapur Village:

The annual average rainfall of Navsari district is 122 cm. So in terms of sustainability and cost effectiveness, a simple design of rainwater harvesting is proposed for school building which has a large terrace area. The same design could be implemented to other government buildings for water conservation in future.

Sustainability of design proposal:

Roof top rainwater harvesting presents an opportunity for the augmentation of water supplies allowing in the same time for self-reliance and sustainability. Conservation of water resource is the main aim to propose this system for government building (school building) of Krushnapur village. Rainwater harvesting systems are simple which can also be adopted by individuals.

Design summary:

The design criteria are as per IS: 15797 (2008) : Roof Top Rain water Harvesting - Guidelines.

Table-8 Design Criteria are as per IS:15797 (2008)

Design components	Material	Dimensions
Building Terrace (Catchment Area)		15m X 10 m
Gutters And Down Take Pipe	PVC pipes with wire mesh	150 mm diameter pipe with 20 mesh wire screen
Filter	gravel, sand	Sand of 1.5 to 2 mm size at the top, followed by gravel of 5 to 10 mm size and boulders of 5 to 20 cm at bottom. The thickness of each layer should be about 0.5 m.
Storage Tank	Masonry	
Manhole	Masonry	0.6m X 0.6 m
Drain Pipe	PVC pipes	100 mm diameter
Hand Pump	-----	-------

Monthly Rainfall

Total quantity of water to be collected (m^3.) = Roof Top Area (m^2) x Average Monsoon Rainfall (m) x 0.8

= (15x10) x 1.22 x 0.8

= **146.40 m^3**

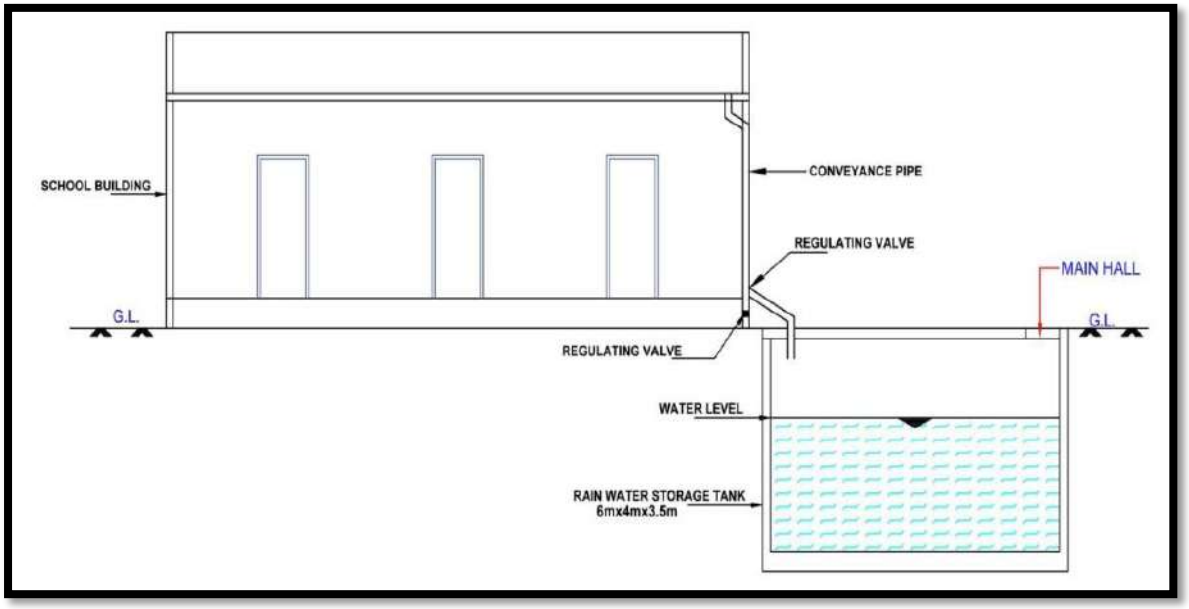


Fig. 8.1 FRONT VIEW

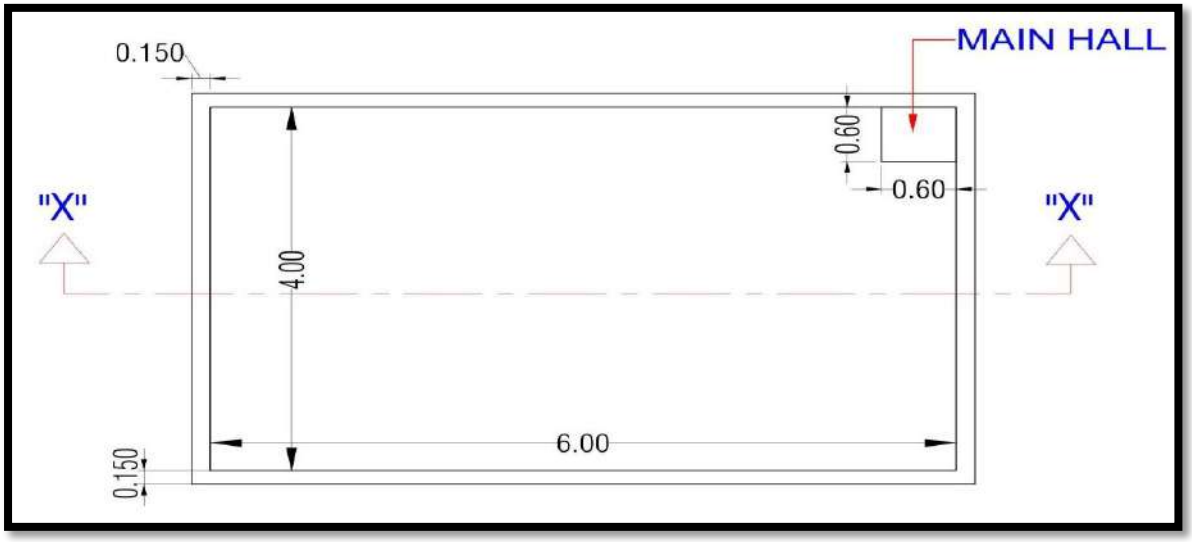


Fig. 8.2 PLAN OF STORAGE TANK

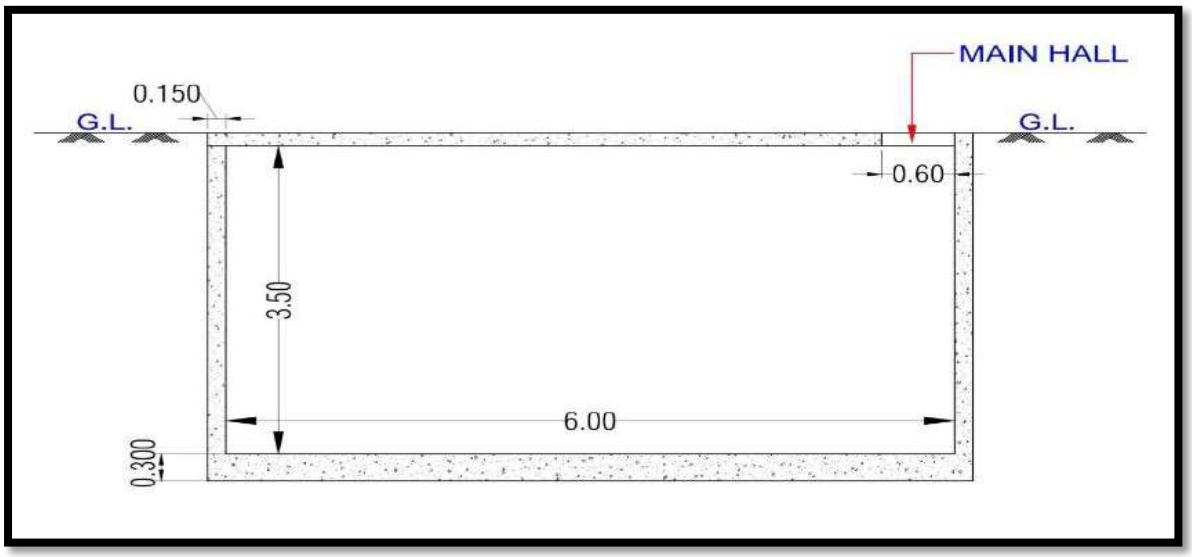


Fig. 8.3 SECTION "X"-"X"

Measurment Sheet

Table-9 Measurment Sheet of Storage Tank

Sr. no	Description	No	Length L (m)	Width B (m)	Height H (m)	Quantity
1	Excavation for foundation for depth up to 1.5m including sorting out and stacking of useful material and disposing of the excavated stuff up to 50 m lead	1	6	4	3.5	**84 m^3**
2	Providing and laying Cement Concrete 1:3:6 (Aggregate 40 mm nominal size)	1	6	4	0.30	**7.2 m^3**
3	Providing and laying controlled cement concrete M15 for curing complete excluding the cost of formwork & reinforcement including curing					
	Wall	2	6	3.5	0.15	6.3 m^3
	Wall	2	4	3.5	0.15	4.2 m^3
	Slab	1	6	4	0.15	3.6 m^3
						Total = 14.1 m^3
4	Deduction of manholes from the top slab	1	0.6	0.6	0.15	**0.054 m^3**

Abstract Sheet

Table-10 Abstract Sheet of Storage Tank

Sr. no	Description	Total Quantity	Rate	Per Unit	Total Amount
1	Excavation for foundation up to 1.5m depth including sorting out and stacking of useful Materials and disposing of the excavated stuff up to 50 Meter lead.	84 m^3	236	1 m^3	19,824
2	Providing and laying Cement Concrete M15 for the walls excluding cost of Reinforcement	7.2 m^3	4,077	1 m^3	29,355
3	Providing and laying concrete and finishing smooth curing complete including the cost of formwork but excluding the cost of reinforcement in R.C.C.	14.1 m^3	5927	1m^3	83,575
4	Reinforcement	2250 kg	45	Kg	1,01,250

5	PVC Pipe 160 mm	6 m	303	M	1,818
6	Gate valve 25 mm	2	600	Nos	1,200
				Total Cost	**2,37,022 ₹**
				Add 5 % Contingency Charges:	11,852 ₹
				Add 2 % Work Establishment Charges:	4,740 ₹
				Grand Total	**2,53,614 ₹**

TOTAL COST = ₹ 2,53,614/-

8.1.2 Physical Design:- Bus Stand

Scenario:

Buses are the predominant mode of transportation for the village people. Bus stop is an essential part of bus transportation system. As the population of Krushnapur village increases continuously, we propose construction of bus stop as a physical design.

Existing situation of Krushnapur village:

Currently there is no proper Bus stand in Krushnapur village. Require one more bus stand.

Sustainability of design proposal:

By providing a Bus stand, the village would acquire proper identification on the route. Bus stand with shelter would also provide better facility to the villagers.

Design summary:

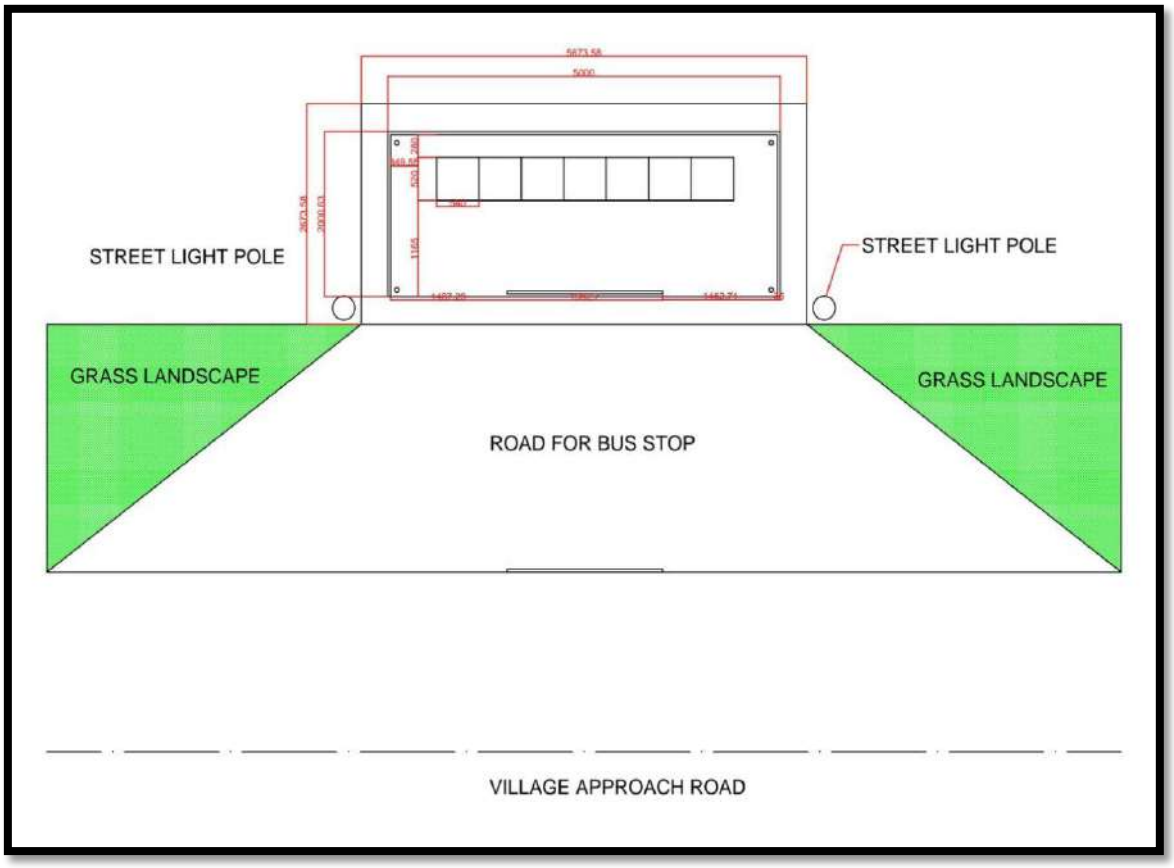


Fig. 8.4 PLAN OF BUS STAND

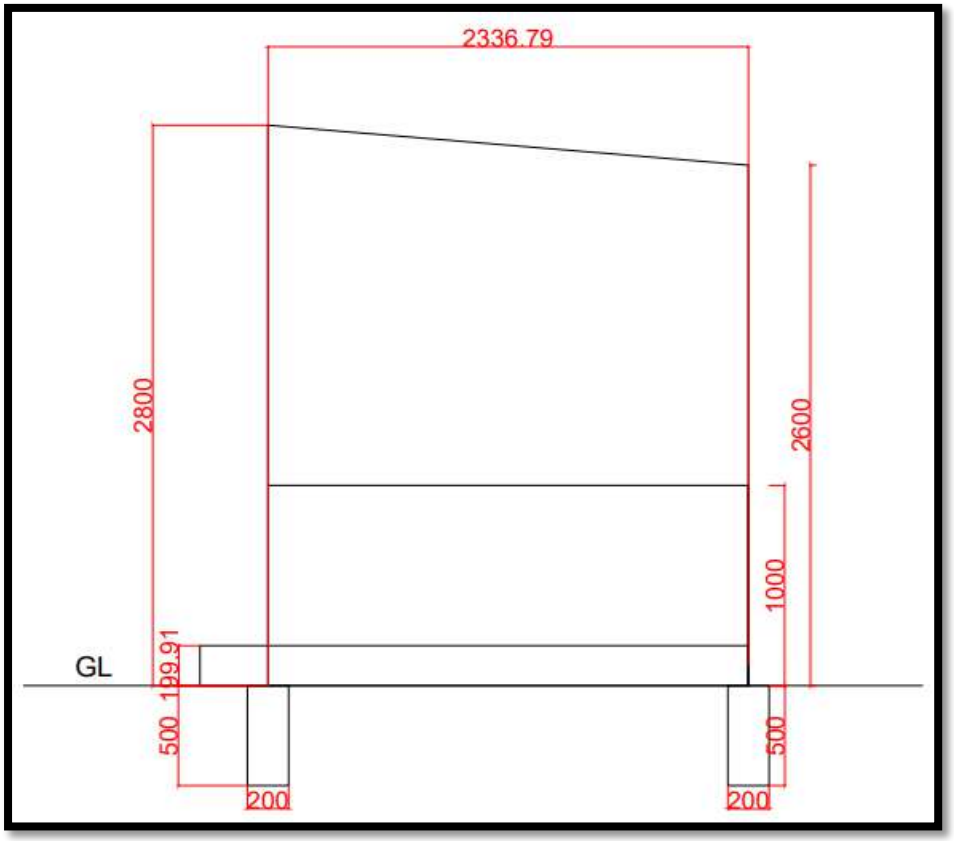


Fig. 8.5 SECTION

Measurement sheet

Table-11 Measurement sheet for Bus Stand

Sr. no	Description	No	Length L (m)	Width B (m)	Height H (m)	Quantity	Total Quantity
1	**Excavation for foundation**						
	Long Wall	1	5.6	0.4	0.7	1.568	
	Short Wall	2	1.8	0.4	0.7	1.008	**2.568 m^3**
2	**P.C.C. 1:4:8 in Foundation**						
	Long Wall	1	5.6	0.4	0.2	0.448	
	Short Wall	2	1.8	0.4	0.2	0.288	**0.736 m^3**
3	**Brick work in foundation up to plinth**						
	Long Wall	1	5.4	0.2	1	1.08	
	Short Wall	2	2	0.2	1	0.8	**1.88 m^3**
4	**Earth filling in Plinth**	1	10.2 m^2		0.2	2	**2 m^2**

5	**P.C.C. Flooring (1:4:8)**	1	10.2 m^2		0.2	2	**2 m^2**
6	**Wall up to 1 meter above plinth**						
	Long Wall	1	5.4	0.1	1	0.54	
	Short Wall	2	2	0.1	1	0.4	**0.94 m^2**
7	**Roof Covering**						
	A.C.C. Sheet	1	5.4	2.2	-	11.44	**11.44 m^2**
8	**Steel Pole ISJB 225**						
	Large Polls	3	12.8		2.8	107.52	**107.52 kg/m**
	Small Polls	3	12.8		2.6	99.84	**99.84 kg/m**
	Rafters ISJB 200	5	9.9		2	99	**99 kg/m**
9	**Plastering**						
	Long Wall	2	5.2	-	1	10.4	
	Short Wall	4	2.2	-	1	8.8	**19.2 m^2**

Abstract sheet

Table-12 Abstract Sheet of Bus Stand

Sr. no	Description	Total Quantity	Rate	Per Unit	Total Amount
1	Excavation for foundation	2.568	85.90	m^3	220.9
2	P.C.C. 1:4:8 in Foundation	0.736	2324	m^3	1710.40
3	Brick work in foundation up to plinth	1.88	1756	m^3	3301.28
4	Earth filling in Plinth	2	300	m^3	600
5	P.C.C. Flooring (1:4:8)	2	2324	m^2	4648
6	Wall up to 1 meter above plinth	0.94	1825	m^2	1715.5
7	Plastering	19.2	105	m^2	2016
8	Roof Covering	11.48	250	m^3	2870
9	Steel Poles ISJB 225	6	1500	Nos	9000
10	Chairs	7	500	Nos	3500
				Total Cost	**29,284.08 ₹**
				Add 5 % Contingency Charges:	1,464.20 ₹
				Add 2 % Work Establishment Charges:	586.00 ₹
				Grand Total:	**31,334.28 ₹**

TOTAL COAT = ₹ 31,334.28/-

8.1.3 Social Design (Civil) : Aganwadi

Scenario:

Anganwadi is a type of rural child-care center in India. A typical Anganwadi center provides basic health care in a village. It is a part of the Indian public health care system. Basic health care activities include contraceptive counseling and supply, nutrition education and supplementation, as well as pre-school activities.

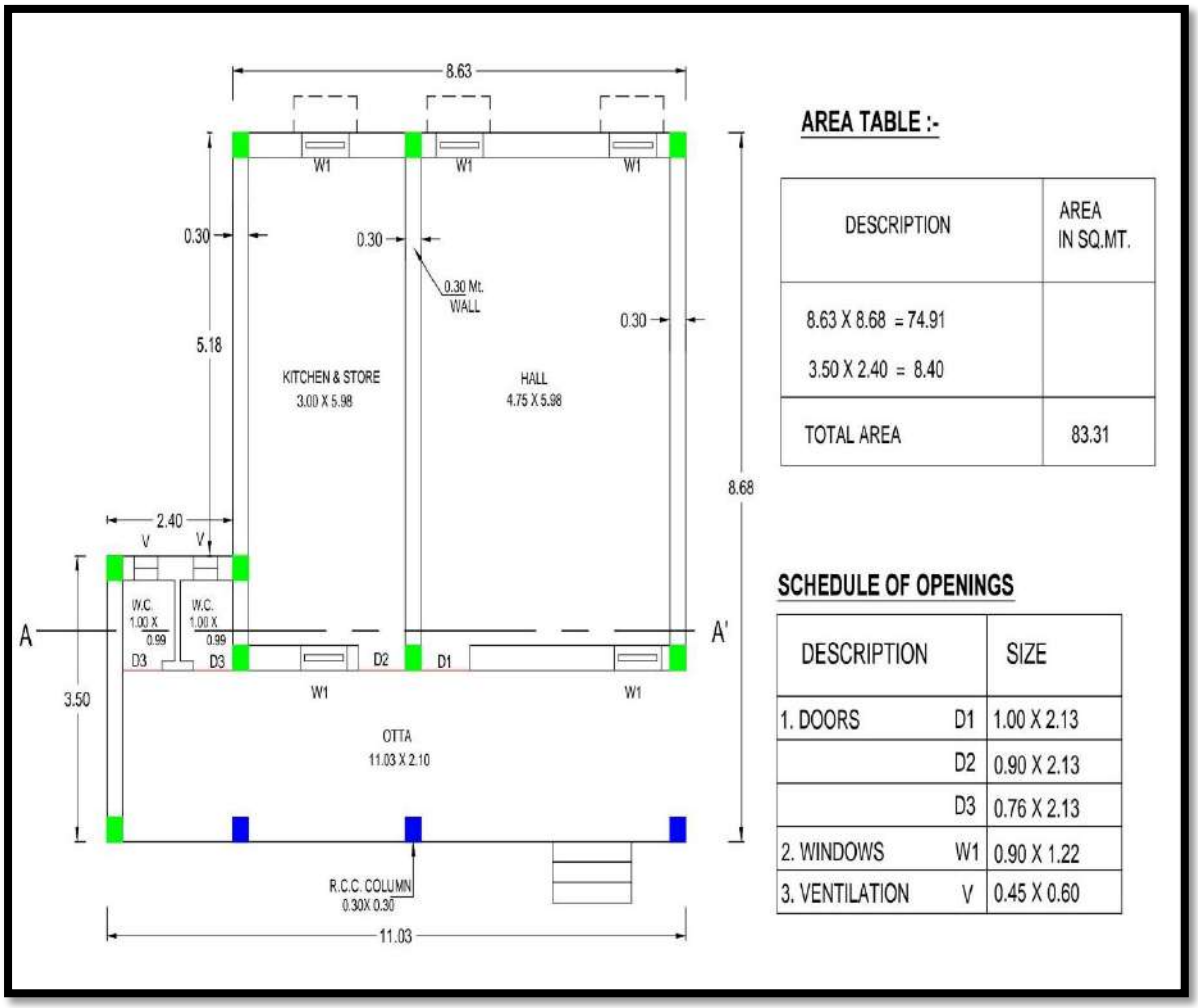
Existing situation of Krushnapur village:

As per Gap analysis, Krushnapur village requires a proper Anganwadi as the existing one number of Anganwadi is not sufficient given the population of the village.

Sustainability of design proposal:

As per Gap analysis, Krushnapur village requires Anganwadi for pre-school activity and for basic health care. Grampanchayat has the land for construction of Anganvadi building so there won't be any issues regarding availability of land for Anganwadi construction.

Design summary:



AREA TABLE :-

DESCRIPTION	AREA IN SQ.MT.
8.63 X 8.68 = 74.91 3.50 X 2.40 = 8.40	
TOTAL AREA	83.31

SCHEDULE OF OPENINGS

DESCRIPTION		SIZE
1. DOORS	D1	1.00 X 2.13
	D2	0.90 X 2.13
	D3	0.76 X 2.13
2. WINDOWS	W1	0.90 X 1.22
3. VENTILATION	V	0.45 X 0.60

Fig. 8.6 AGANWADI PLAN

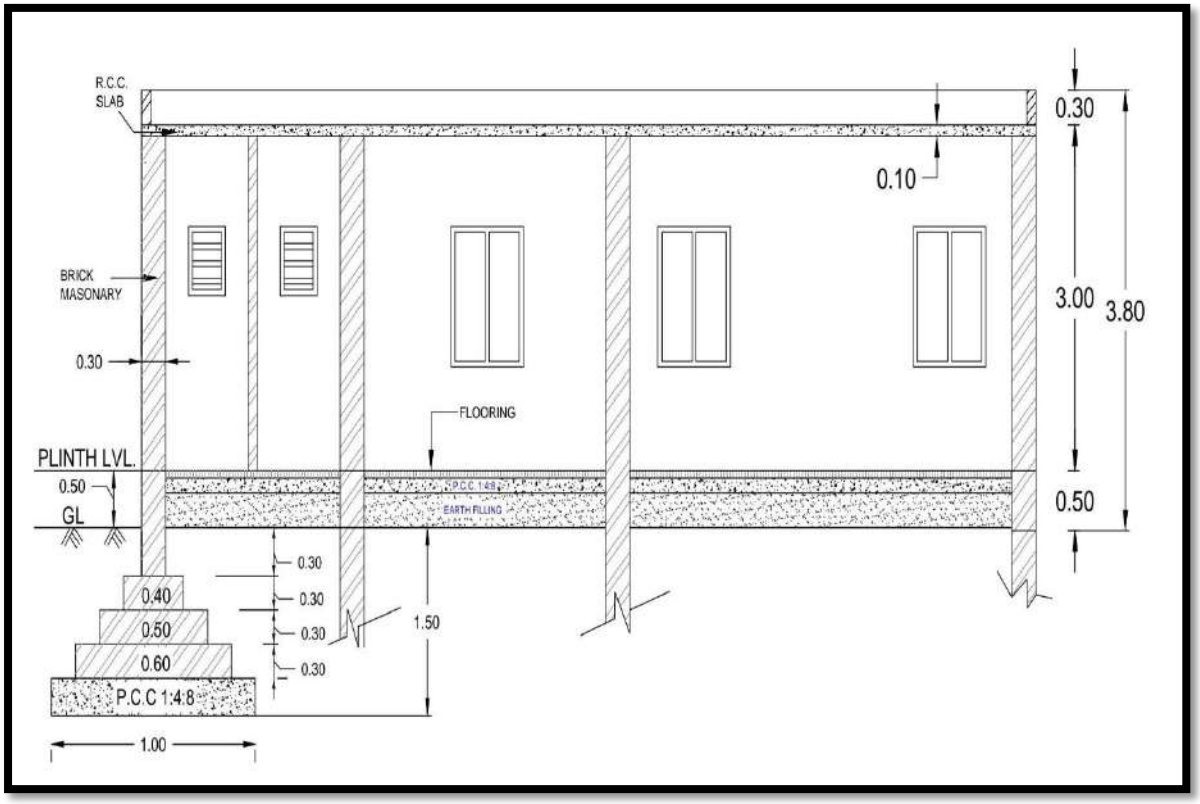


Fig. 8.7 SECTION A – A'

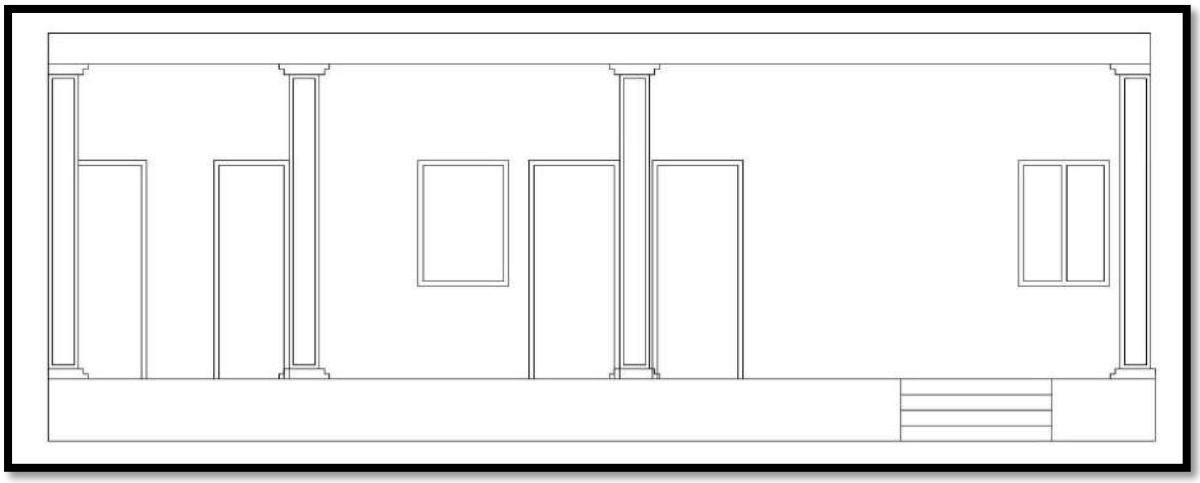


Fig. 8.8 FRONT VIEW

Measurement Sheet

Table- 13 Measurement Sheet of Aganwadi

Sr. no	Description	No	Length L (m)	Width B (m)	Height H (m)	Quantity	Total Quantity
1	**Excavation for foundation (by Center line method)**						
	Total length =56.03m L =56.03-(0.5x 1.0x4) =54.03m	1	54.03	1	1.50	81.05	**81.05 m^3**
2	**P.C.C. 1:4:8**	1	54.03	1	0.20	10.80	

	P.C.C. 1:4:8 for step	1	1.5	0.6	0.10	0.09	**10.90 m^3**
3	**Brick work**						
	Brick work up to plinth						
	For step 0.60 m	1	52.83	0.60	0.30	9.51	
	For step 0.50 m	1	51.83	0.50	0.30	7.77	
	For step 0.40 m	1	51.03	0.40	0.30	6.12	
	For step 0.30 m	1	50.43	0.30	0.80	12.10	
	Step for GL To PL						
	For 1^{st} step	1	1.5	0.6	0.2	0.18	
	For 2^{nd} step	1	1.5	0.3	0.2	0.09	**35.77 m^3**
4	**Brick work PL to SL**						
	Total length =42.90m L= 42.90 - (0.5x0.30x4) =42.3m	1	42.3	0.30	2.9	38.07	
	Partition wall for W.C. Total length= 3.2m L = 3.2-(0.5x0.2x1) =3.1m	1	3.1	0.20	2.9	1.86	39.93 m^3
	Deduction						
	D1	1	1.00	0.3	2.13	0.64	
	D2	1	0.90	0.30	2.13	0.57	
	D3	2	0.76	0.20	2.13	0.65	
	W1	5	0.90	0.30	1.22	1.65	
	V	2	0.45	0.20	0.60	0.11	-3.62 m^3
	Deduction for lintels above door and windows with 15 cm bearing at each end						
	D1	1	1.3	0.3	0.15	0.06	
	D2	1	1.2	0. 30	0.15	0.05	
	D3	2	1.06	0.20	0.15	0.06	
	W1	5	1.2	0.30	0.15	0.27	

	V	2	0.75	0.20	0.15	0.04	-0.48 m^3
	Net quantity = 39.93-3.62-0.48 =35.83						**35.83 m^3**
5	**Brick work for parapet wall**	1	40.37	0.30	0.30	36.33	**36.33 m^3**
6	**Earth filling in Plinth**						
	Hall	1	4.75	5.98	0.25	7.10	
	Kitchen and Store	1	3	5.98	0.25	4.48	
	Otta	1	11.03	2.10	0.25	23.16	
	W.C	1	2.1	1.4	0.25	0.74	**35.48 m^3**
7	**RCC work for Slab**						
		1	8.63	8.68	0.10	7.50	
		1	2.40	3.50	0.10	0.84	**8.34 m^3**
8	**Mosaic Tiles Flooring**						
	Hall	1	4.75	5.98		28.40	
	Kitchen and Store	1	3	5.98		17.94	
	Otta	1	11.03	2.10		23.16	
	D1	1	1.00	0.30		0.30	
	D2	1	0.90	0.30		0.27	
	D3	2	0.76	0.20		0.30	**70.38 m^2**
9	**Tiles for W.C**						
	Walls	4	1.0		2.9	11.66	
	Walls	4	099		2.9	11.48	
	Flooring	2	1.00	0.99		1.98	**25.12 m^2**
	Deduction						
	D3	2	0.76		2.13	3.23	**-3.23 m^2**
	Net quantity =25.12 -3.23=21.89						**21.89 m^2**
10	**Wood work for door and window**						
	D1	1	1.00		2.13	2.13	

	D2	1	0.90		2.13	1.92	
	D3	2	0.76		2.13	3.23	
	W1	5	0.90		1.22	5.50	
	V	2	0.45		0.60	0.54	**13.32 m^2**
11	**Smooth plaster 12cm thick inside the rooms and ceilings in C.M. 1:3**						
	Plaster for walls						
	Hall	2	4.75		2.9	27.55	
		2	5.98		2.9	34.68	
	Kitchen and store	2	3		2.9	17.4	
		2	5.98		2.9	34.68	
	Otta	1	11.03		2.9	31.98	
		1	2.10		2.9	8.19	
	Ceiling						
	Hall	1	4.75	5.98		28.40	
	Kitchen and Store	1	3	5.98		17.94	
	Otta	1	11.03	2.10		23.16	
	W.C.	2	1.00	0.99		1.98	**225.96 m^2**
	Deduction						
	D1	½	1.00		2.13	1.06	
	D2	½	0.90		2.13	0.96	
	D3	2/2	0.76		2.13	1.62	
	W1	5/2	0.90		1.22	2.74	**-6.41 m^2**
	Net quantity =225.96 -6.41= 219.55						**219.55 m^2**
12	**Rough plaster outside 15cm thick** Total length = 28.40	1	28.40		3.80	107.92	
	Otta plaster GL to PL L= 11.03	1	11.03		0.50	5.52	**113.44 m^2**
	Deduction						
	W1	5	0.90		1.22	5.49	**-5.50 m^2**

	Net quantity = 113.44-5.50= 107.94	**107.94 m^2**

Abstract Sheet

Table- 14 Abstract Sheet of Aganwadi

Sr. no	Description	Total Quantity	Rate	Per Unit	Total Amount
1	Excavation in foundation	81.05	85.90	m^3	6,962.20
2	P.C.C. 1:4:8	10.90 m^3	2324.00	m^3	25,331.60
3	Brick work up to plinth	35.77	3000	m^3	1,07,310.00
4	Brick work in Super Structure up to slab	35.83	3500	m^3	1,25,405.00
5	Brick work for parapet wall	36.33	3000	m^3	1,08,990.00
6	Earth filling in plinth	35.48	300	m^3	10,644.00
7	RCC work in Slab, Chhajja and lintel	9.70	8800	m^3	87,472.00
8	Mosaic Tiles Flooring	70.38	636	m^2	44,761.00
9	Tiles for W.C	21.89	450	m^2	9,850.50
10	Wood work	13.32	7660	m^2	1,02,031.20
11	Smooth plaster 12cm thick	219.55	300	m^2	65,865.00
12	Rough plaster 15cm thick	107.94	450	m^2	48,573.00
13	Painting	327.50	250	m^2	81,750.00
				Total :	**8,24,320.00 ₹**
				Add 5 % Contingency Charges:	41,216.00 ₹
				Add 2 % Work Establishment Charges:	16,484.40 ₹
				Add 3 % Electric Charges:	24,729.60 ₹
				Add 2.5 % Sanitary & Plumbing Charge:	20,608.00 ₹
				Grand Total :	**9,27,358.00 ₹**

TOTAL COST = ₹ 9,27,358.00/-

8.1.4 Socio-Cultural Design (Civil) :- Public Garden

Scenario:

Public gardens are resources for recreation, as well as education and research opportunities. Public gardens can play very significant roles in sustainable community development. They're a place where people can spend time and socialize in a relaxing natural environment. This is good for both physical and mental health.

Existing situation of Krushnapur village:

There is no Public Garden at present in Krushnapur village. The nearest public garden is approximately 10 km away.

Sustainability of design proposal:

We were surveying of Krushnapur village. Public garden is not available in this village. Consequently, we have made design of public Garden.

Design Summary

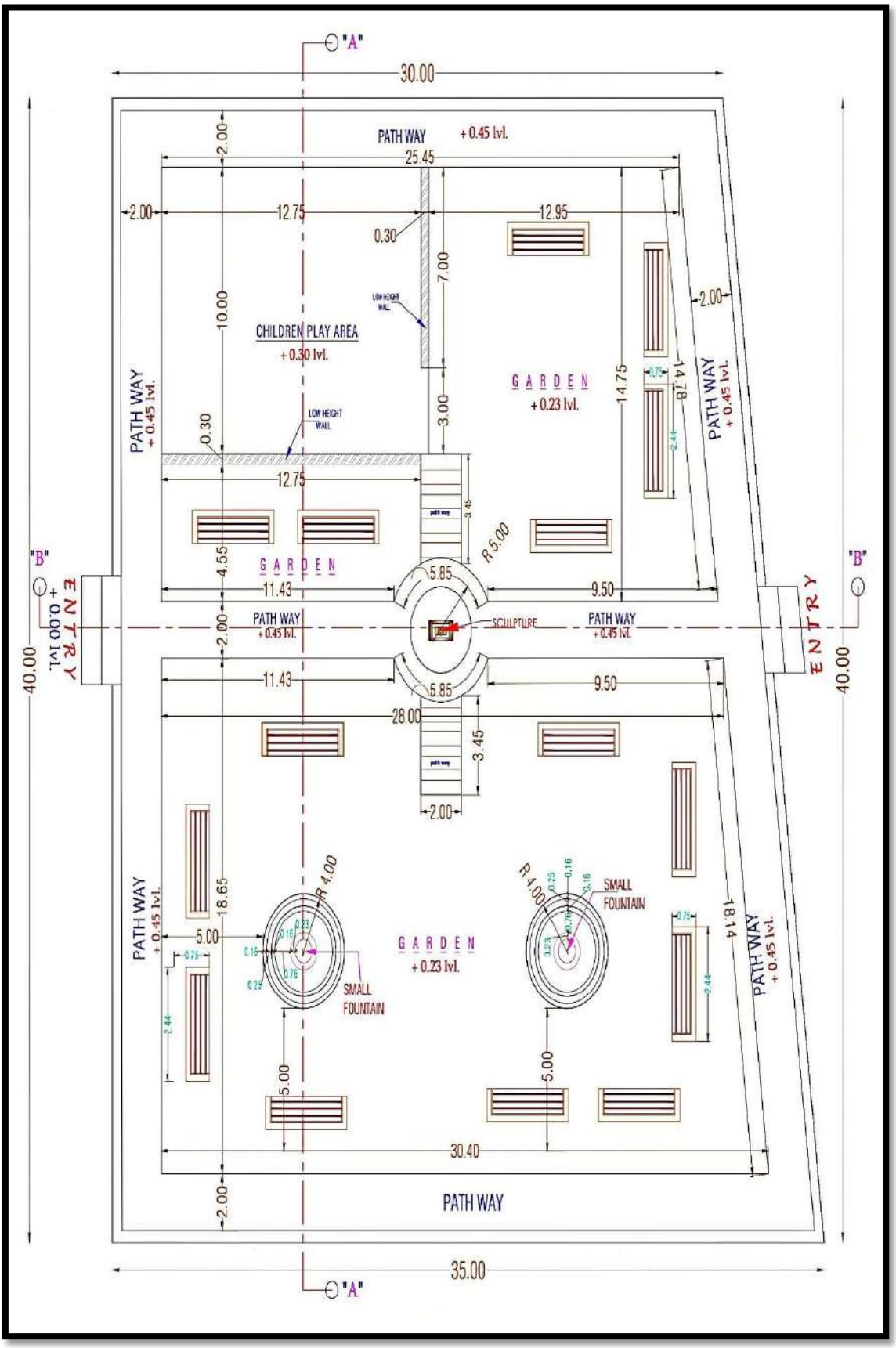


Fig. 8.9 PLAN OF PUBLIC GARDEN

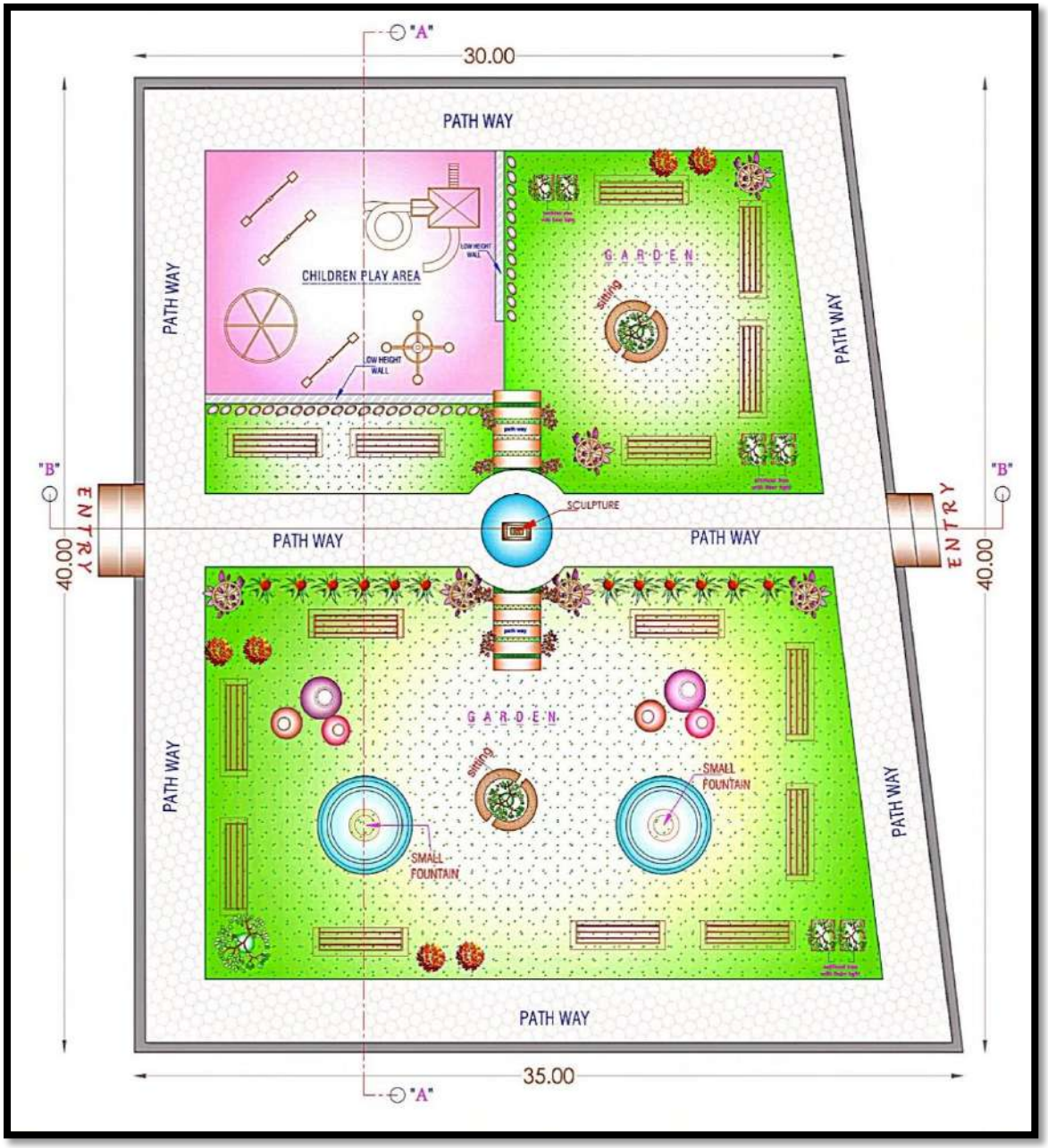


Fig. 8.10 TOP VIEW

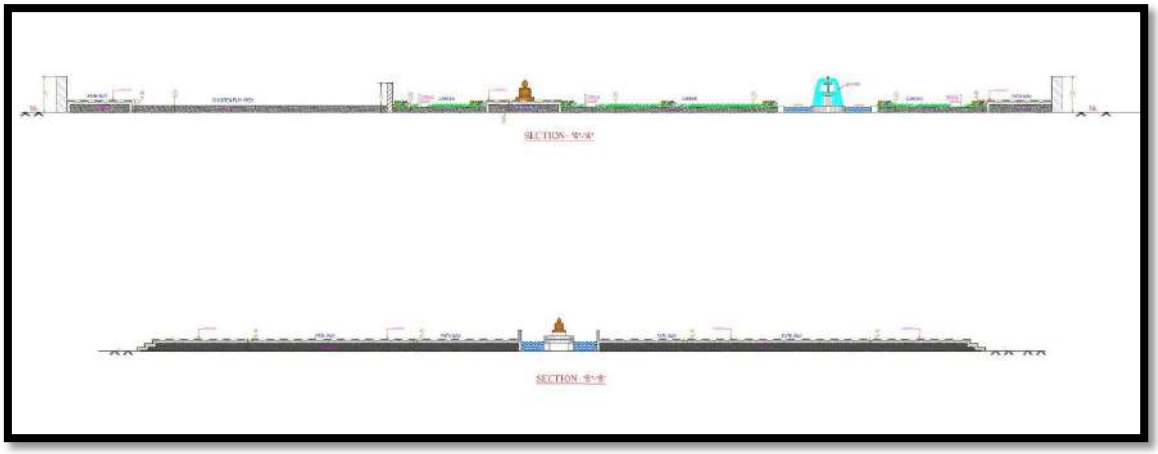


Fig. 8.11 SECTION

Recuperation Sheet

Total Cost of Civil Work (A):		**14,87,237.20 ₹**
1	Add 5 % Contingency Charges:	74,361.86 ₹
2	Add 2 % Work Establishment Charges:	29,744.74 ₹
3	Add 1.5 % Water Charges:	22,308.55 ₹
4	Add 5 % Sanitary & Plumbing Charge:	74,361.86 ₹
Total (B):		**16,88,014.21 ₹**
5	Add 5 % of (B):	84,400.71 ₹
Grand Total:		**17,72,414.92 ₹**

Measurement sheet

Table-15 Measurement sheet of Public Garden

Sr. no	Description	No	Length L (m)	Width B (m)	Height H (m)	Quantity	Total Quantity
1	**Excavation for Compound wall**						
	Long wall -1	1	40	0.9	0.3	10.8	
	Long wall -2	1	40	0.9	0.3	10.8	
	Short wall -1	1	30	0.9	0.3	8.1	
	Short wall -1	1	35	0.9	0.3	9.45	**39.15 m^3**
2	**P.C.C for Compound Wall**						
	Long wall -1	1	40	0.9	0.15	5.4	
	Long wall -2	1	40	0.9	0.15	5.4	
	Short wall -1	1	30	0.9	0.15	4.05	
	Short wall -1	1	35	0.9	0.15	4.725	**19.575 m^3**
3	**Brick Masonry for compound Wall**						
	Long wall -1	1	40	0.3	1.5	18	
	Long wall -2	1	40	0.3	1.5	18	
	Short wall -1	1	30	0.3	1.5	13.5	
	Short wall -1	1	35	0.3	1.5	15.75	**65.25 m^3**

4	**Soil Filling between compound wall**						
	Long wall -1	1	40	0.5	0.4	8	
	Long wall -2	1	40	0.5	0.4	8	
	Short wall -1	1	30	0.5	0.4	6	
	Short wall -1	1	35	0.5	0.4	7	**29 m^3**
5	**Paver Block Area**						
A	Excavation						
	Long wall -1&2	2	40	2	0.3	24	
	Long wall -2	1	35	2	0.3	21	
	Short wall -1	1	30	2	0.3	18	
	Short wall -1	1	18.65	2	0.3	11.19	
	Around Pond Area	1	43.98	-	0.3	13.194	**87.38 m^3**
B	**P.C.C**						
	Long wall -1&2	2	40	2	0.1	8	
	Short wall-1	1	35	2	0.1	7	
	Short wall-2	1	30	2	0.1	6	
	Central Area	1	18.65	2	0.1	3.73	
	Around Pond Area	1	43.98	-	0.1	4.398	**29.12 m^3**
C	**Yellow Soil Filling**						
	Long wall -1&2	2	40	2	0.05	4	
	Short wall-1	1	35	2	0.05	3.5	
	Short wall-2	1	30	2	0.05	3	
	Central Area	1	18.65	2	0.05	1.865	
	Around Pond Area	1	43.98	-	0.05	2.199	**14.56 m^3**
D	**Paved Block**						
	Long wall -1&2	2	40	2	-	160	

	Short wall-1	1	35	2	-	70	
	Short wall-2	1	30	2	-	60	
	Central Area	1	18.65	2	-	37.3	
	Around Pond Area	1	43.98	-	-	43.98	**371.28 m^3**
6	**Yellow Soil in Children Area**						
	Excavation	1	12.75	10	0.3	38.25	**38.25 m^3**
	Yellow soil Filling	1	12.75	10	0.3	38.25	**38.25 m^3**
7	**Lawn in Children Area**						
	Excavation	1	8.82	15.6	0.3	40.955	**40.955 m^3**
	Soil Filling	1	8.82	15.6	0.3	40.955	**40.955 m^3**
	Lawn Spreading	1	8.82	15.6	-	136.51	**136.51 m^3**
8	**Lawn in Common Area**						
	Excavation	1	28.84	18.65	0.3	149.38	**149.38 m^3**
	Soil Filling	1	28.84	18.65	0.3	149.38	**149.38 m^3**
	Land Spreading	1	28.84	18.65	-	497.95	**497.95 m^3**
9	**Lawn in Besides Children Area**						
	Excavation	1	12.25	4.25	0.3	15.62	**15.62 m^3**
	Soil Filling	1	12.25	4.25	0.3	15.62	**15.62 m^3**
	Land Spreading	1	12.25	4.25	-	52.06	**52.06 m^3**
10	**Central Pond Area**						
	Excavation	1	19.63	-	2	39.26	**39.26 m^3**
11	**Fountain Area**						
	Excavation	2	12.57	-	0.5	12.57	**12.57 m^3**
	P.C.C	2	12.57	-	0.1	2.514	**2.514 m^3**
	Brickwork	2	12.57	0.3	0.5	1.88	**1.88 m^3**

	Tiles at outside wall	2	12.57	-	0.5	12.57	
	Tiles at inside wall	2	12.57	-	1.0	25.14	
	Tiles at Flooring	2	12.57	-	-	25.14	
12	**Flowers in Lawn Area**						
	Plumeria Alba	22	-	-	-	22	**22**
	Pisonia Alba	20	-	-	-	20	**20**
	Royal Palm	22	-	-	-	22	**22**
	Fan Palm	25	-	-	-	25	**25**
	Lalbhaji around Chidren Play Area	1800	-	-	-	1800	**1800**
13	**Benches**	31	-	-	-	31	**31**
14	**Electric Pole with lamp**	35	-	-	-	35	**35**
15	**Fountain**	2	-	-	-	2	**2**

Abstract Sheet

Table-16 Abstract sheet of Public Garden

Sr. no	Description	Total Quantity	Rate	Per Unit	Total Amount
1	Excavation For Foundation depth From 1.5 to 3.0 m including sorting out and stacking of useful material and disposing off the excavated stuff up to 50, meter lead. (B) Dense or Hard soil. (Navsari District S.O.R. year: 2015-16, Item Code: 04001B, Item No. As per NBO: 0, page No. 35)	383.305	85.90	m^3	32,959.9
2	Excavation for foundation for depth from 1.5 to 3.0 m including sorting out and stacking of useful material and disposing off the excavated stuff up to 50 ,meter lead. (B) Dense or Hard soil. (Navsari District S.O.R. year: 2015-16, Item Code: 04002B, Item No. As per NBO: 0, page No. 35)	39.26	93.20	m^3	3,659.03
3	Providing and laying cement concrete 1:4:8 (1-cement: 4-coarse sand: 8-	51.209	2324.00	m^3	1,19,009.72

	hand broken stone aggregates 40 mm normal size and curing complete excluding cost of formwork in (A) Foundation and Plinth (up to 10 ton). (Navsari District S.O.R. year: 2015-16, Item Code: 5004, Item No. As per NBO: 5.3.3, page No. 41)				
4	Brick work using common burnt clay building bricks having crushing strength not less than 35 kg./Sq.Cm. in foundation and plinth in cement mortar 1:6 (1-cement : 6-fine sand)(B) Conventional (up to 10 ton). (Navsari District S.O.R. year: 2015-16, Item Code: 06002B, Item No. As per NBO: 6.13, page No. 63) & (Navsari District S.O.R. year: 2015-16, Item Code: 06006B, Item No. As per NBO: 6.19, page No. 65)	67.13	2926 + 165 = 3091.00	m^3	2,07,498.83
5	Filling soil under for plantation around paved block and for lawn area (up to 10 ton). (Navsari District S.O.R. year: 2015-16, Item Code: 4008, Item No. As per NBO: 0, page No. 37)	234.95	482.00	m^3	1,13,245.90
6	Providing and fixing pre-cast Rubber Dye inter locking concrete block 60mm thick with grade of concrete M250 pneumatic compressed by mechanically pressed and as per approved design including 75mm Sand layer for levelling and filling the joint with sand in proper line and level etc. complete. (Navsari District S.O.R. year: 2015-16, Item Code: 14034, Item No. As per NBO: 0, page No. 143)	371.28	674.00	m^3	25,0242.72
7	Filling yellow soil in selected soil in layers of 20cm. thickness including watering, ramming and consolidating etc. complete. For paved block area & children play area (up to 10 ton) (Navsari District S.O.R. year: 2015-16, Item Code: 4008, Item No. As per NBO: 0, page No. 37)	52.8	314.00	m^3	16,579.20
8	Providing & Laying Lawn in garden area with fixing it on soil.	686.52	15.00	m^2	10,297.80
9	Providing and laying white glazed tiles 6mm thick in flooring treads of steps and landing laid on a bed of	50.28	636.00	m^2	31,978.08

	12mm thick cement mortar 1:3 (1-cement : 3-coarse sand) finishing with flush pointing in white cement. (up to 10 ton) (Navsari District S.O.R. year: 2015-16, Item Code: 14008A, Item No. As per NBO: 14.29, page No. 136)				
10	Providing and Fixing Plumeria Alba plant in garden area	22	750	Nos.	16,800
11	Providing and Fixing Pisonia Alba plant in garden area	20	600	Nos.	12,000
12	Providing and Fixing Royal Alba plant in garden area	22	450	Nos.	9,900
13	Providing and Fixing Fan Alba plant in garden area	25	200	Nos.	5,000
14	Providing and Fixing Lal Bhaji Around Children Play	1800	5	Nos.	9,000
15	Providing 2 m length, 50 mm in height & 60 mm width Benches with M20 grade with china mosaic finishing	31	2,400	Nos.	74,400
16	Providing and fixing Electric Pole With Lamp at 5m interval at the jogging track	35	5,000	Nos.	1,75,000
17	Providing and fixing Fountain at the mid of fountain area with slotted nozzle double valve.	2	2,00,000	Nos.	4,00,000
				Total Cost	**14,87,237.20₹**

TOTAL COST = ₹ 17,72,414.92/-

8.1.5 Smart Village Design (Civil) : ATM

Scenario:
Apart from cash withdrawal and checking account balance, ATMs today offer multiple facilities for the convenience of bank customers. As India is turning digital, it is imperative that rural communities are also benefitted from this wave and not left behind.

Existing situation of Krushnapur village:
Currently, the nearest ATM is 11 km away from the village.

Sustainability of design proposal:
The population of Krushnapur village as per 2011 census is 5310. So ideally, at least one ATM machine should be provided in the village to serve the inhabitants.

Design summary:

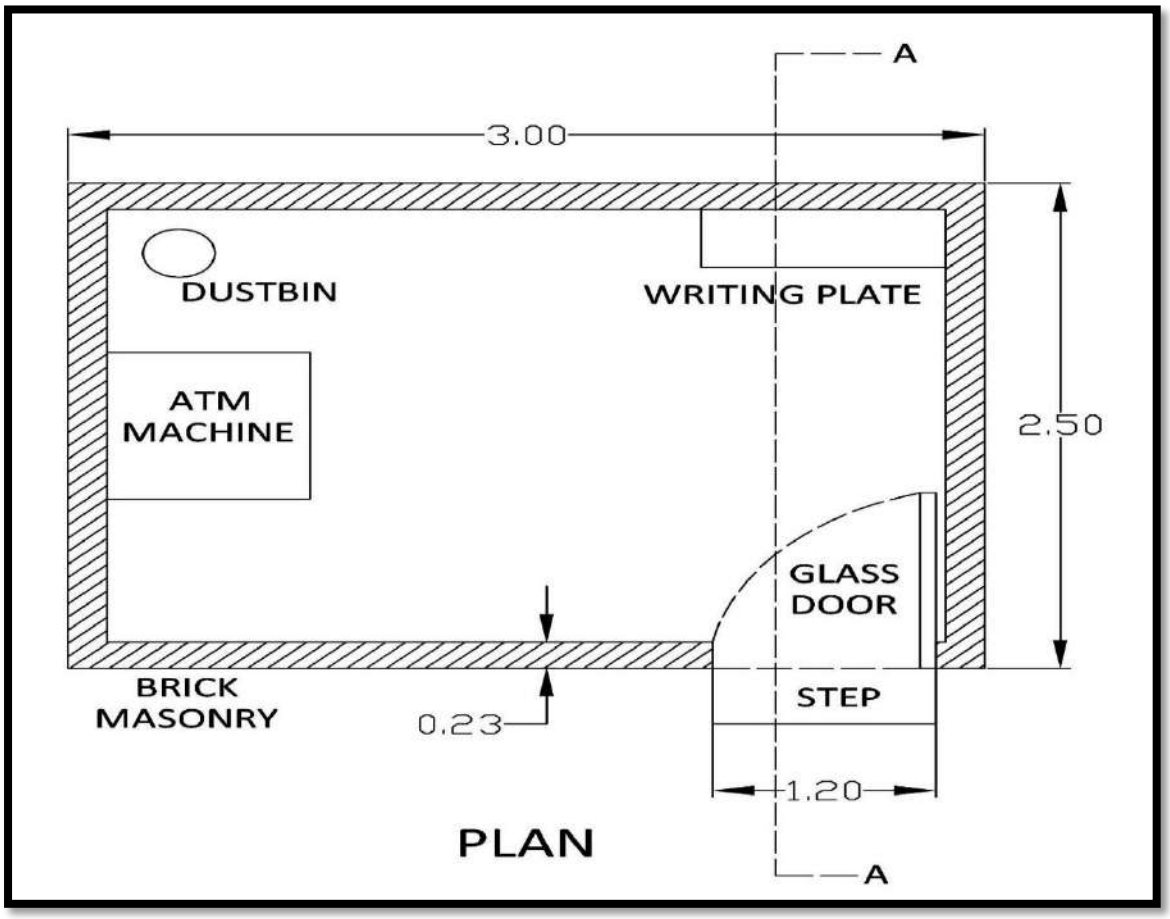


Fig. 8.12 ATM PLAN

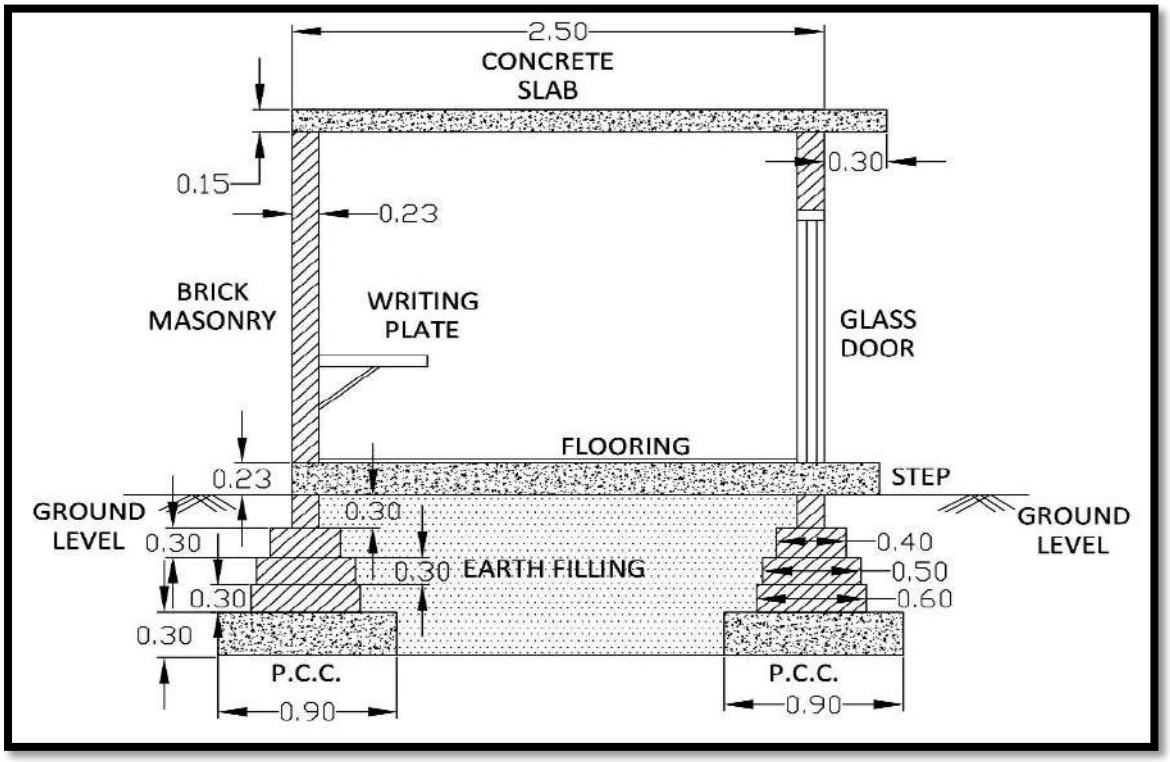


Fig. 8.13 SECTION A-A

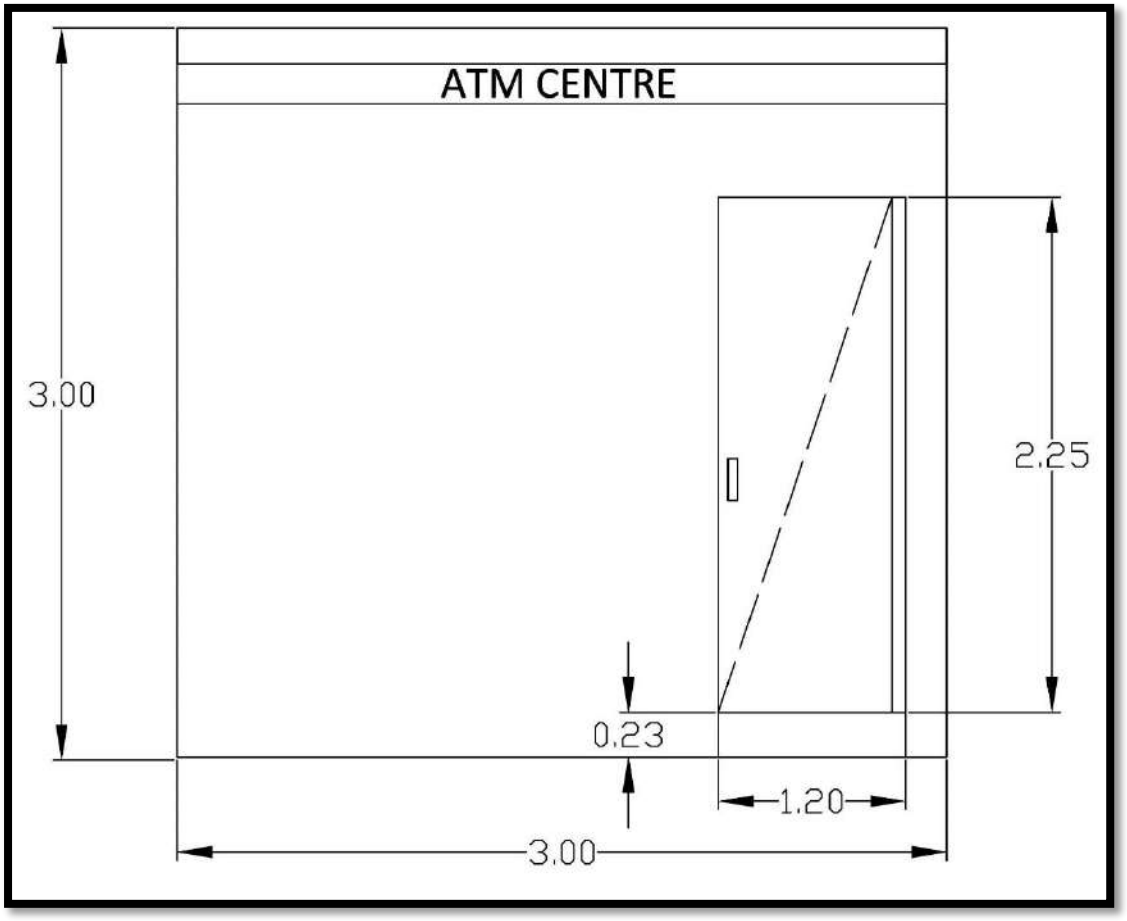


Fig. 8.14 ELEVATION

Measurement Sheet

Table-17 Measurement sheet of ATM

Sr. No	Description (by Center line Method)	No	Length L (m)	Width B (m)	Height H (m)	Quantity	Total Quantity
1	**Excavation**	1	11	0.90	1.5	14.85	**14.85 m^3**
2	**P.C.C. 1:4:8**	1	11	0.90	0.30	2.97	**2.97 m^3**
3	**Brick Work up to GL**						
	For step 0.60 m	1	10.7	0.60	0.30	1.92	
	For step 0.50 m	1	10.45	0.50	0.30	1.56	
	For step 0.40 m	1	10.25	0.40	0.30	1.23	
	For step 0.23 m	1	10.14	0.23	0.30	0.70	**5.41 m^3**
4	**Earth filling in GL**	1	2.5	2.0	1.5	7.5	**7.5 m^3**

5	**Cement concrete for flooring**	1	3.00	2.80	0.23	1.93	**1.93 m^3**
6	**Brick Work up to Slab**	1	10.14	0.23	2.62	**6.11**	
	Deduction for Door and frame	1	1.30	0.23	2.35	**-0.71**	**5.4 m^3**
7	**RCC work for Slab**	1	3.00	2.80	0.15	1.26	**1.26 m^3**
8	**Tiles Flooring**	1	2.54	2.34		5.94	
	Door	1	1.30	0.23		0.30	**6.24 m^2**
A	**Skirting**	3	3.0 m^2			9.0	
		2	2.5 m^2			5.0	
	Deduction for Door	1	1.30 m^2			-1.30	**12.7 m^2**
9	**Glass Door with Aluminum Frame**	1	1.30		2.35	3.05	**3.05 m^2**
10	**Smooth plaster 12cm thick inside and ceilings in C.M. 1:3**						
	Cabin	2	2.54			5.08	
		2	2.04			4.08	
	Ceiling	1	2.54	2.54		6.54	
	Deduction for door	1	1.30		2.35	-3.05	**12.65 m^2**
11	**Rough plaster outside 15cm thick**	2	3.00		3.0	18	
		2	2.50		3.0	15	
	Deduction for door	1	1.30		2.35	-3.05	**29.95 m^2**

Abstract Sheet

Table-18 Abstract sheet of ATM

Sr. no	Description	Total Quantity	Rate	Per Unit	Total Amount
1	Excavation in foundation	14.85	85.90	m^3	1,275.60
2	P.C.C. 1:4:8	2.97	2324.00	m^3	6,902.30
3	Brick Work up to GL	5.41	3000	m^3	16,230.00
4	Earth filling in GL	7.5	50	m^3	375.00

5	Cement concrete for flooring	1.93	4250	m^3	8,202.50
6	Brick Work up to Slab	5.4	3500	m^3	18,900.00
7	RCC work for Slab	1.26	7800	m^3	9,828.00
8	Tiles Flooring and skirting	18.94	636	m^2	12,054.80
9	Glass Door with Aluminum Frame	3.05	3000	m^2	9,150.00
10	Smooth plaster 12cm thick	12.65	230	m^2	2,910.00
11	Rough plaster 15cm thick	29.95	300	m^2	8,895.00
12	Painting	42.6	250	m^2	10,650.00
				Total :	**1,05,372.40 ₹**
				Add 5 % Contingency Charges:	5,268.60 ₹
				Add 2 % Work Establishment Charges:	2,107.50 ₹
				Add 3 % Electric Charges:	3,161.20 ₹
				Grand Total :	**1,15,909.70 ₹**

TOTAL COST = ₹ 1,15,909.70 /-

8.1.6 Heritage Village Design (Civil) : Entrance Gate

Scenario:

Entrance gates were traditionally built to provide a point of controlled access to and departure from a walled city or village for people, vehicles, goods and animals. Depending on their historical context they filled functions relating to defense, security, health, trade, taxation, and representation, and were correspondingly staffed by military or municipal authorities. These gates were also commonly used to display diverse kinds of public information such as announcements, tax and toll schedules, standards of local measures, and legal texts. It could be heavily fortified, ornamented with heraldic shields, sculpture or inscriptions, or used as a location for warning or intimidation, for example by displaying the heads of beheaded criminals or public enemies. In modern times, these gates are helpful for the identification of a particular place by providing them a distinct identity.

Existing Situation of Krushnapur Village:

Currently, there is no Entrance Gate in the village.

Sustainability of Design Proposal:

The village Sarpanch has also insisted on constructing an Entrance Gate. So, by extension, villagers are also keen to have an Entrance Gate at Krushnapur.

Design Summary:

Fig. 8.15 PLAN OF ENTRANCE GATE

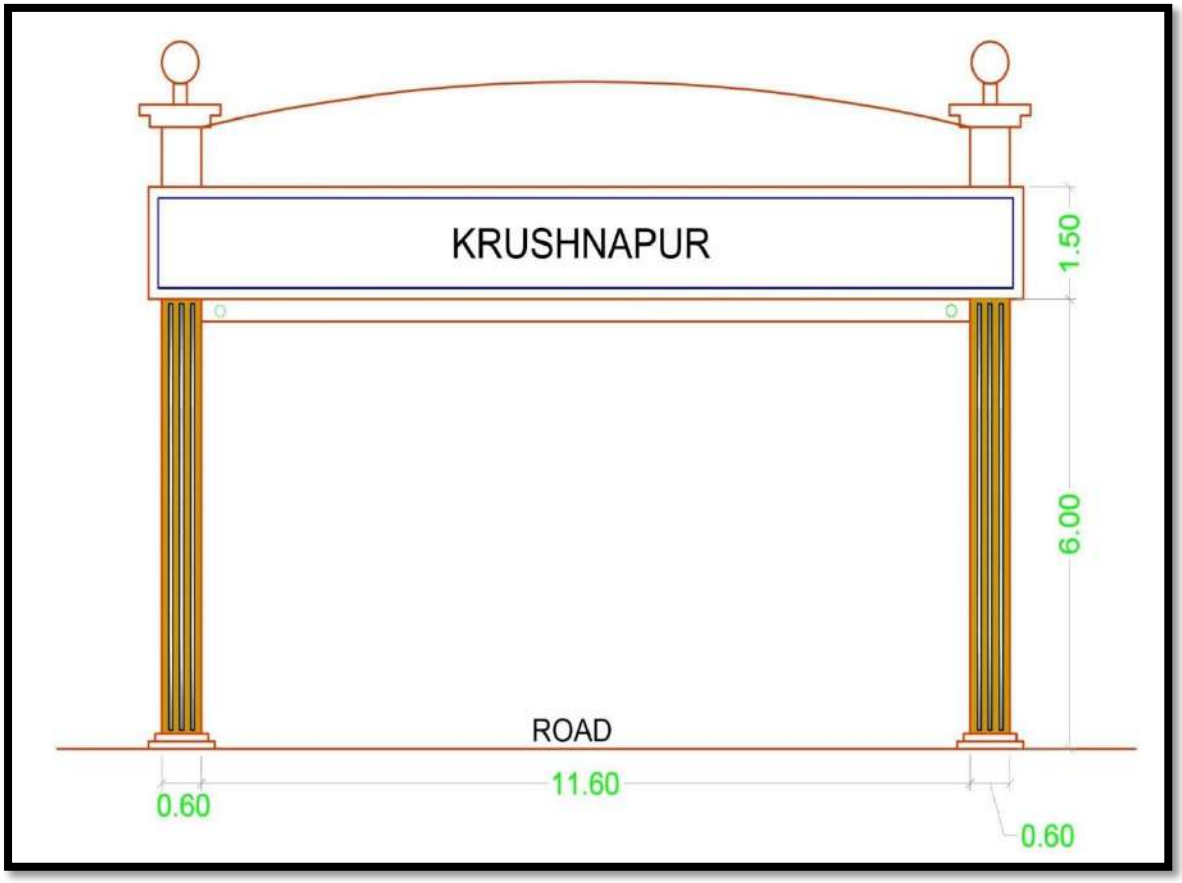


Fig. 8.16 ELEVATION

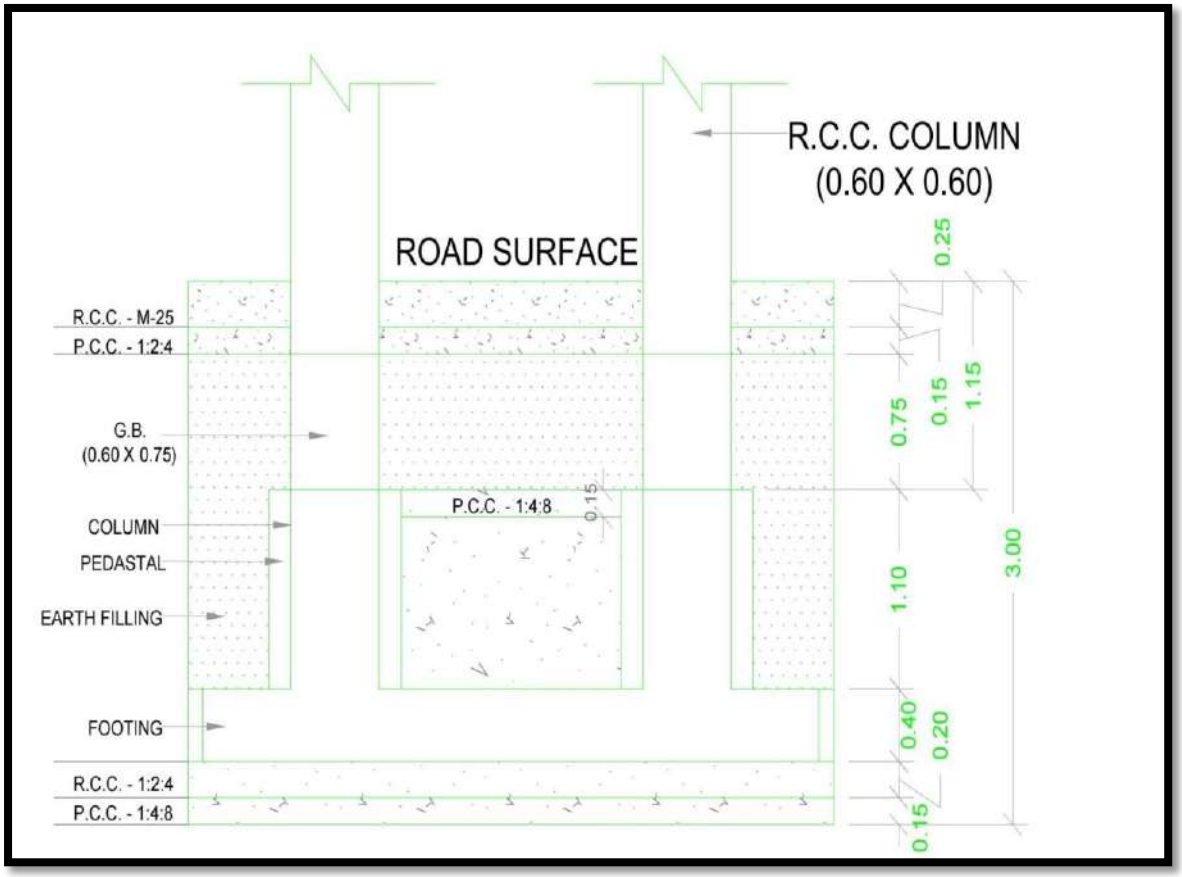


Fig. 8.17 SECTION OF FOUNDATION

Measurement Sheet

Table-19 Measurement sheet of Entrance Gate

Sr. no	Description	No	Length L (m)	Width B (m)	Height H (m)	Quantity	Total Quantity
1	**Excavation**						
	For Columns Foundation	2	4.40	2.00	1.50	26.40	**26.40 m^3**
2	**P.C.C. 1:4:8**						
	For Columns Foundation	2	4.40	2.00	0.15	2.64	**2.64 m^3**
3	**Cement Concrete**						
A	**For Footings**	2	4.20	1.80	0.40	**6.04**	**6.04 m^3**
B	**For Column up to plinth**	2x2	1.10	0.90	0.90	3.56	
	W=0.75 + 0.15 + 0.25 = 1.15	2x2	1.15	0.60	0.60	1.65	**5.21 m^3**
C	**For Ground Beams**						
	GB	2x2	10.00	0.60	0.75	18.00	**18.00 m^3**
D	**For Column**	2x2	2.00	0.90	0.90	**6.48**	**6.48 m^3**
E	**For Beams on Top of the gate** 25.00 + 0.20 + 0.20 = 25.40	1	25.40	0.60	1.00	15.24	**15.24 m^3**
F	**For Slab Joining Beam**	1	22.70	1.20	0.20	**5.45**	**5.45 m^3**
G	**For Top Projections**	1	1.20	0.50	0.20	0.12	
	Average = 0.60 M	2	10.00	0.50	0.20	2	
		2	10.00	0.60	0.20	2.4	**4.52 m^3**
H	**For Bottom Projections**	2	10.00	0.30	0.20	1.20	**1.20 m^3**
I	**For Column On Top**	2	1.00	0.60	0.60	0.72	**0.72 m^3**
4	**Providing Bar FE 415 Reinforcement for R.C.C. work**						
	(a) For Footings	6.04 cm x 30 kg/cm				181.20	
	(b) For Columns up to plinth	5.21 cm x 250 kg/cm				1302.50	
	(c) For Ground Beams	18.0 cm x 120 kg/cm				2160.00	
	(d) For Square Columns in superstructure	6.48 cm x 250 kg/cm				1620.00	

	(e) For Beams on top	15.24 cm x 160 kg/cm				2438.40	
	(f) For slab	5.45 cm x 70 kg/cm				381.50	
	(g) For Top Projection	4.52 cm x 50 kg/cm				226.00	
	(h) For Bottom Projection	1.20 cm x 50 kg/cm				60.00	
	(i) For Pillars on Top	0.72 cm x 100 kg/cm				72.00	**8441.60 kg**
5	**Providing cement plaster**						
A	**Column**	2x2x4	2.00	0.90		28.8	**28.8 m^2**
B	**Beam on top of the gate**	1x2	23.10	1.00		46.2	
		1x2	1.20	1.00		2.4	**48.6 m^2**
C	**Slab joining Beam**	1x2	22.70	1.20		54.48	**54.48 m^2**
D	**Top projection side**	1x2	1.20	0.50		1.2	
	Top	1	1.20	0.20		0.24	
	Side	2x2	10.00	0.50		20	
	Top	1x2	10.00	0.20		4	**25.44 m^2**
E	**Bottom Projections**	2x2	10.00	0.30		12	**12 m^2**
F	**Column pillar on top**	2x2x4	0.50	0.60		4.8	
		2x2	0.60	0.60		1.44	**6.91 m^2**
					Total Quantity=		**176.23 m^2**
6	**Providing and laying tiles 8 to 10 mm thick in skrting**						
	Square Column	2x2x4	2.00	0.90		28.8	**28.8 m^2**

Abstract Sheet

Table-20 Abstract Sheet of Entrance Gate

Sr. no	Description	Total Quantity	Rate	Per Unit	Total Amount
1	**Excavation**	26.40	85.90	m^3	2,244.00
2	**P.C.C. 1:4:8**	2.64	2324	m^3	6,135.36
3	**Cement concrete at below-**				
A	For Footings	6.04	4039.22	m^3	24,396.90
B	For Column up to plinth	5.21	4910.88	m^3	25,585.60
C	For Ground Beams	18.00	4436.71	m^3	79,860.60
D	For Column	6.48	4910.87	m^3	3,18,224.44
F	For Slab joining Beam	5.45	4875.75	m^3	26,572.84

G	For Top Projections	4.52	6473.90	m^3	29,262.00
H	For Bottom projections	1.20	7242.00	m^3	8,690.40
I	For column on top	0.72	9618.00	m^3	6,924.96
4	**Providing Bar FE 415 reinforcement for R.C.C. work**	8441.60	44.30	Kg	3,73,962.88
5	**Providing cement plaster**	176.23	150	m^2	26,434.50
6	**Providing and laying tiles 8 to 10 mm thick in skrting**	28.8	90	m^2	2,592.00
7	**Painting**	176.23	120	m^2	21,147.60
				Total=	**9,52,034.00 ₹**
				Add 5 % Contingency Charges:	47,602.00 ₹
				Add 2 % Work Establishment Charges:	19,040.60 ₹
				Add 1.5 % Electric Charges:	14,280.50 ₹
				Grand Total :	**10,33,496.70 ₹**

TOTAL COST = ₹ 10,33,496.70/-

8.2 Reason for Students Recommending this Design

Fig. 8.18 SCENARIO OF OPEN SPACE FOR GARDEN

1) **Roof Top Rain Water Harvesting :** Main aim to propose this system for government building (school building) of Krushnapur village.

2) **Bus Stand:** Provides better facilities to travelers and also helps in the identification of the village to outsiders.

3) **Anganwadi:** It provides basic health-care activities which include contraceptive counseling and supply, nutrition education and supplementation, as well as pre-school activities.

4) **Public Garden:** They're a place where people can spend time and socialize in a relaxing environment.

5) **ATM:** They provide round-the-clock service to the villagers, so they can address any emergencies that require monetary exchange.

6) **Entrance Gate:** Provides a distinct identity to the village and also the villagers are quite keen on having an Entrance Gate in the village.

8.3 ABOUT DESIGN SUGGESTIONS/ BENEFIT OF THE VILLAGERS:

1) **Roof Top Rain Water Harvesting:** Conservation of water resource is the main aim to propose this system for government building (school building) of Krushnapur village.

2) **Bus Stand:** Provides better facilities to travelers and also helps in the identification of the village to outsiders.

3) **Anganwadi:** It provides basic health-care activities which include contraceptive counseling and supply, nutrition education and supplementation, as well as pre-school activities.

4) **Public Garden:** They're a place where people can spend time and socialize in a relaxing environment.

5) **ATM:** The population of Krushnapur village as per 2011 census is 5310. So ideally, at least one ATM machine should be provided in the village to serve the inhabitants.

6) **Entrance Gate:** The village Sarpanch has also insisted on constructing an Entrance Gate. So, by extension, villagers are also keen to have an Entrance Gate at Krushnapur.

8.4 About Maintenance:

Common Maintenance Include:

1) The various components must be regularly cleaned, water use should be properly managed.
2) Any structures should be maintained by keeping them free of water leakage, cracks, peeling of paints, etc.
3) Plants in the Garden should be watered and trimmed regularly.
4) All the places and structures should be swept regularly and kept clean.
5) Entrance Gate should be white washed and painted frequently for aesthetic purpose.

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

For Future scope of Krushnpur would be study over other different urban amenities that would be sustainable in rural areas. We are proposing the designs for Part II design in which following points should be considered

➢ CIVIL DESIGN 1 (CIVIL): FISH MARKET

A Fish Market is a market place for selling fish and fish products. It can be dedicated to wholesale trade between fisherman and fish merchant. So it is benefits to provide Fish market to make easier way for Fisherman and fish merchants. Because more than 80% villager doing fishery work.

➢ CIVIL DESIGN 2 (CIVIL) : POST OFFICE

A Post office that provides mail services and many more. People living in villages will now be able to get the same Post Office Savings Bank Facilities which people in urban areas have been availing.

➢ CIVIL DESIGN 3 (CIVIL): COMMUNITY HALL

A community hall would provide a place for religious and social gathering for the villagers. The sarpanch of the village is keen to provide a community hall to the village in the nearby future.

➢ CIVIL DESIGN 4 (CIVIL): LIBRARY

At present, there is no library in the village. Addition of one would provide a much required place of study as well as bookish leisure for the students and the older villagers alike.

➢ CIVIL DESIGN 5 (CIVIL): OVER HEAD RESEVOIR

Water storage capacity is not enough to household for commerce daily needs, water can't be bored due to salinity of ground water. As the population of Krushnapur village increases continuously, we propose construction of Over Head Reservoir.

➢ CIVIL DESIGN 6 (CIVIL): PRIMARY SCHOOL TOILET

The primary school toilet was of very bad condition which was not good for the teaching staff as well the student

CHAPTER-10 Conclusion

The project work started with the visit of Ideal village. In south Gujarat, Ena village is an example of the best Ideal village by having all infrastructure facilities which might not be available in many small towns of Gujarat. Then by referring the case study of Smart village. We came to know what type of minimum facilities are required for Rurbanisation of village.

Next we visited Krusnapur village by keeping in mind the Ideal village concept of Ena. After having discussion with Surpanch, village Visit and data collection, we came to the decision that many facilities and basic utilities were not available in Krushanpur village.

By performing SWOT analysis, Gap analysis, discussion with Surpanch and villagers we decided to propose some structures like Garden, Water harvesting system, Bus stand, Anganwadi, ATM booth and Entrance Gate in 7^{th} semester. We are going to propose and design other structures in 8^{th} semester.

While doing design of structures, we have visited the site where the structure is to be built. We have used reference books for structural design, IS codes for standard checks. We have used SOR (Schedule of Rates of Navsari District) for estimation and costing, and we have used Auto Cad software for Drawing.

All this design work is done under Vishwakarma Project in keeping in mind that, people of Krushnapur village get basic amenities, thereby improving their life style. ATM and bus stand may reduce their day to day hardships, Anganwadi gives them basic healthcare facility, and pre-schooling facility; Garden gives happiness to the children. Overall all age group of people would be benefited by this project and ultimately we can help in developing Krushnapur village.

By providing required amenities to village, development of village can be possible. So ultimately migration to the city from village will be reduced and livelihood of villagers will increase. This can cause reduce the load on urban areas. And this amenities designed by us is helpful for better development of village as physically as well as socially, which improves the overall lifestyle of people.

CHAPTER-11 References

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7) Water on Tap Improves Rural Quality of Life. (2009 September). Retrieved December 24, 2011

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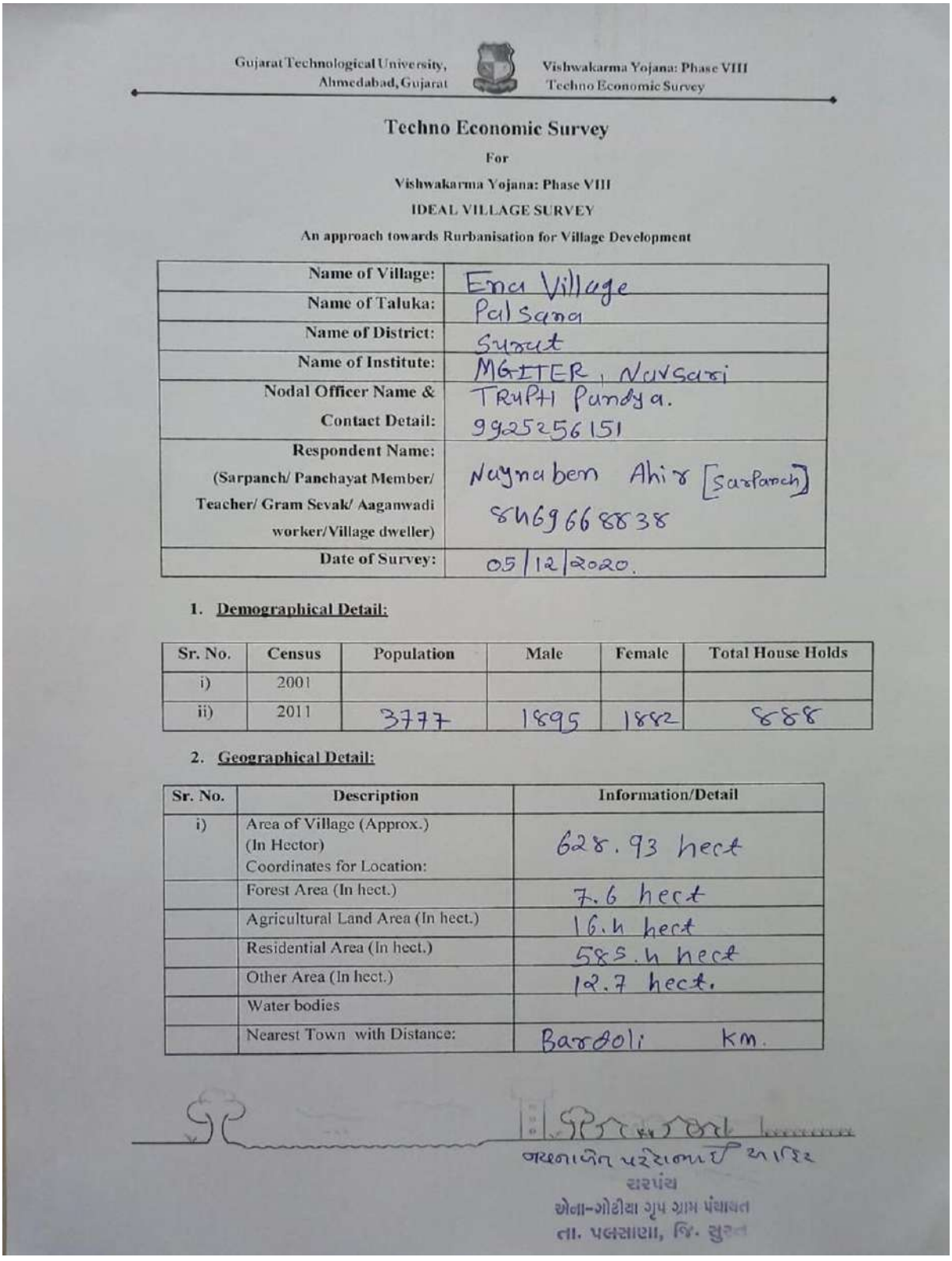
CHAPTER-12 Annexure Attachment

12.1 Survey form of Ideal Village Scanned copy for Part-I



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Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	Ena Village
Name of Taluka:	Palsana
Name of District:	Surat
Name of Institute:	MGITER, Navsari
Nodal Officer Name & Contact Detail:	Trupti Pandya. 9925256151
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Nayna ben Ahir [Sarpanch] 8469668838
Date of Survey:	05/12/2020.

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001				
ii)	2011	3777	1895	1882	888

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	628.93 hect
	Forest Area (In hect.)	7.6 hect
	Agricultural Land Area (In hect.)	16.h hect
	Residential Area (In hect.)	585.h hect
	Other Area (In hect.)	12.7 hect.
	Water bodies	
	Nearest Town with Distance:	Bardoli km.

નયનાબેન પરેશભાઈ અહિર
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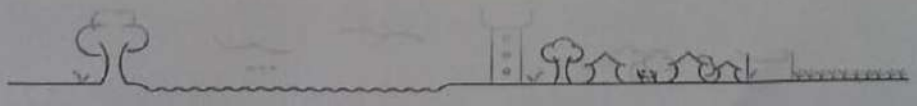
3. **Occupational Details:**

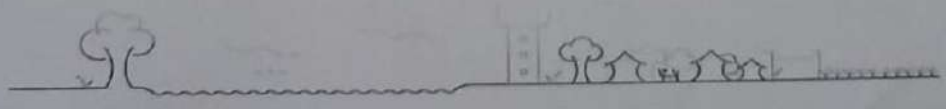
Name of Three Major Occupation groups in Village	1. Farming 2. Job 3. Auto Rix Business

4. **Physical Infrastructure Facilities:**

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated)	yes	✓		
	• RO Water	yes	✓		
	• Well (Covered/ Uncovered)				
	• Hand pumps	yes	✓		
	• Tube well/ Borehole	yes	✓		
	• River/ Canal/ Spring/ Lake/ Pond	yes	✓		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 1,65,000	✓		
	Underground Sump	Capacity: No	✓		
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	yes	✓		
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	close	✓		
	If Open than Pucca / Kutchcha	Pucca	✓		
	Whether drain water is discharged directly in to Water bodies/ Sewer plants				
Suggestions if any:					



E.	**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.	NH = 53. 500 m. SH = 20 m. 187			
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No 5 km.	✓		
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes good	✓		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes	✓		
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Govt. Lessthen 6 km.	✓		
	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:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	yes 2	✓		
	Location Condition	Ena good			
	Community Toilet (With bath/ without bath facilities)	yes without bath	✓ ✓		
	Solid & liquid waste Disposal system available	yes door to door	✓		
	Any facility for Waste collection from road	Gram Panchayat	✓		
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Canal, Well, Tube well.	✓		
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Kutchha-20 Pucca-80%	✓		

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

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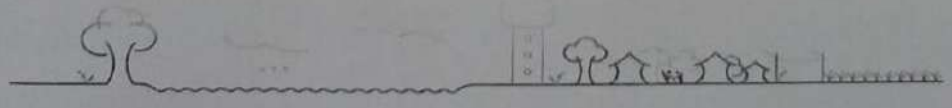
K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	543 Centers NO No NO good.	✓		
	Private Clinic/Private Hospital/ Nursing Home	clinic-3	✓		
	If any of the above Facility is not available in village than approx. distance from village: 08...kms.				
Suggestions if any:					
L.	**Education Facilities:**				
	Aaganwadi/ Play group	3 | 1	✓		
	Primary School	Yes 2	✓		
	Secondary school	Yes 1	✓		
	Higher sec. School	Yes 1			
	ITI college/ vocational Training Center	No	✓		
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	No	✓		
	If any of the above Facility is not available in village than approx. distance from village: 08...kms.				
Suggestions if any:					
M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	Yes [without TV] Eng.	✓		



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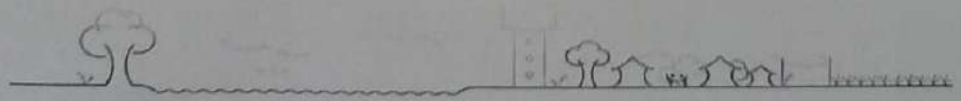
	Condition:				
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	Yes/ with out News Papers Eng. good	✓		
	Public Garden Location: Condition:	Yes Eng good	✓		
	Village Pond Location: Condition:	Yes Eng good	✓		
	Recreation Center Location: Condition:	No	✓		
	Cinema/ Video Hall Location: Condition:	No	✓		
	Assembly Polling Station Location: Condition:	Yes Eng good	✓		
	Birth & Death Registration Office Location: Condition:	Yes Eng good.	✓		
If any of the above Facility is not available in village than approx. distance from village: ..08...kms.					
Suggestions if any:					
N.	**Other Facilities**				
	Post-office	Yes			
	Telecommunication Network/ STD booth	No		✓	No need all have mobile.



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

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

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
O.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	yes but yet not working.	✓		
P.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	No yes No	✓ ✓ ✓		
Q.	Any Other				

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	There is no map available. Not available Hard/soft copy

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Recent Projects going on for Development of Village	Recently working block, sewage
Any NGO working for village development	Hope Foundation. [USA Mineshbhai]

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)	Health center need. All Process done by gram Panchayat	
2.	Additional Information/ Requirement		

9. Smart Village Proposal Design

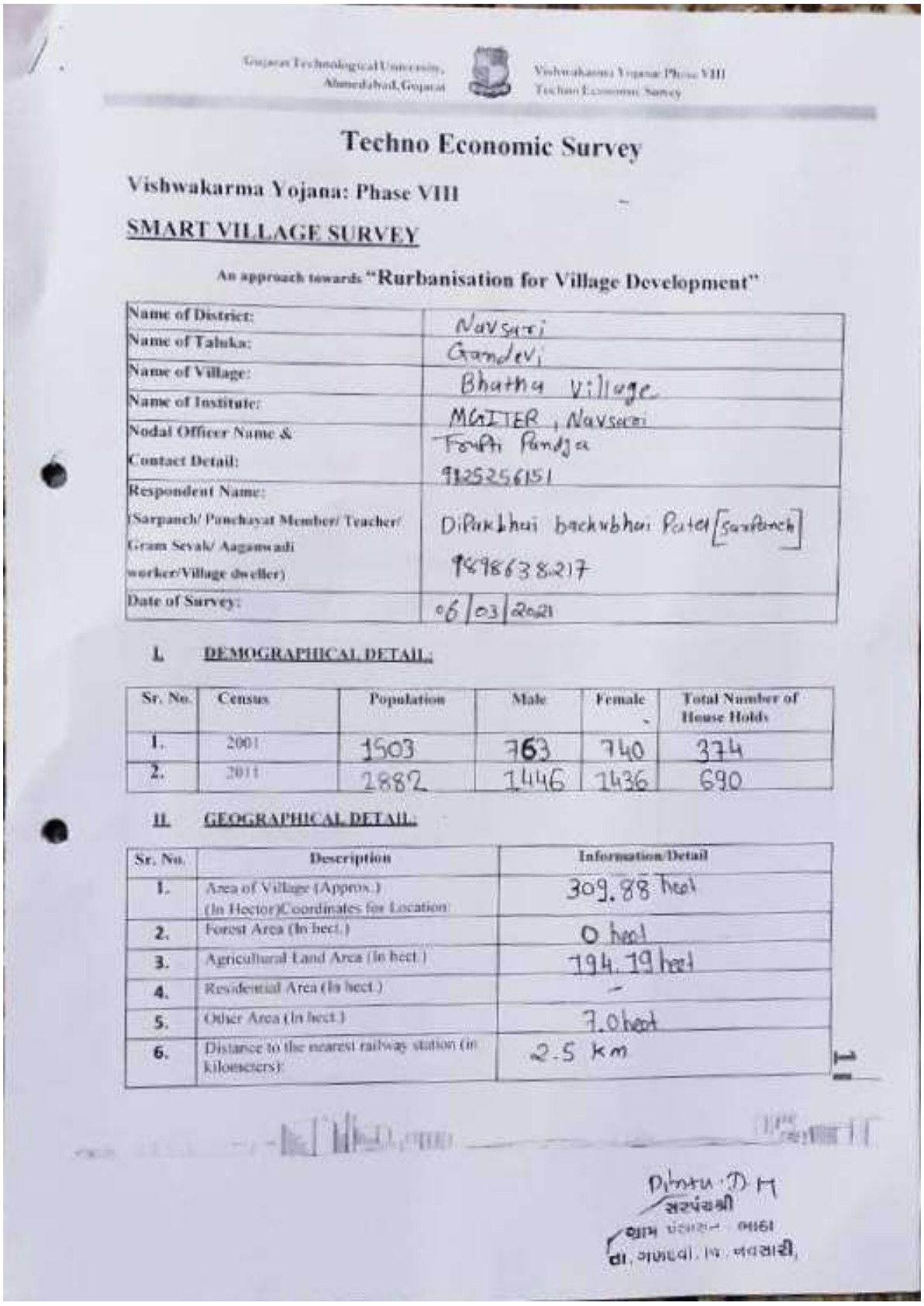
Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

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

વાસુદેવ પટેલ ૨૧/૧૨
સરપંચ
એના-ગોદીયા ગૃપ ગ્રામ પંચાયત
તા. પલસાણા, જિ. સુરત

12.2 Survey form of Smart Village Scanned copy for Part-I



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Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	Navsari
Name of Taluka:	Gandevi
Name of Village:	Bhatha Village
Name of Institute:	MGITER, Navsari
Nodal Officer Name & Contact Detail:	Forum Pandya 9825256151
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Dipakbhai bachubhai Patel [Sarpanch] 9898638217
Date of Survey:	06/03/2021

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	1503	763	740	374
2.	2011	2882	1446	1436	690

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location	309.88 hect
2.	Forest Area (In hect.)	0 hect
3.	Agricultural Land Area (In hect.)	194.79 hect
4.	Residential Area (In hect.)	-
5.	Other Area (In hect.)	7.0 hect
6.	Distance to the nearest railway station (in kilometers)	2.5 km

Dipakbhai D Patel
સરપંચશ્રી
ગ્રામ પંચાયત ભાઠા
તા. ગણદેવી, જિ. નવસારી.

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7.	Name of Nearest Town with Distance:	Bilimora 2km
8.	Distance to the nearest bus station (in kilometers):	2.6 km
9.	Whether village is connected to all road for the any facility or town or City?	yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Business
	2.	Job
	3.	Labour

Major crops grown in the village:	1.	Chikoo
	2.	Mango
	3.	Vegetables

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 Rainwater Tanker Truck Cart With Small Tank	No	✓		
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water Hand Pump Other(Specify)**Lake/ Pond**	yes yes good condition	✓		

2

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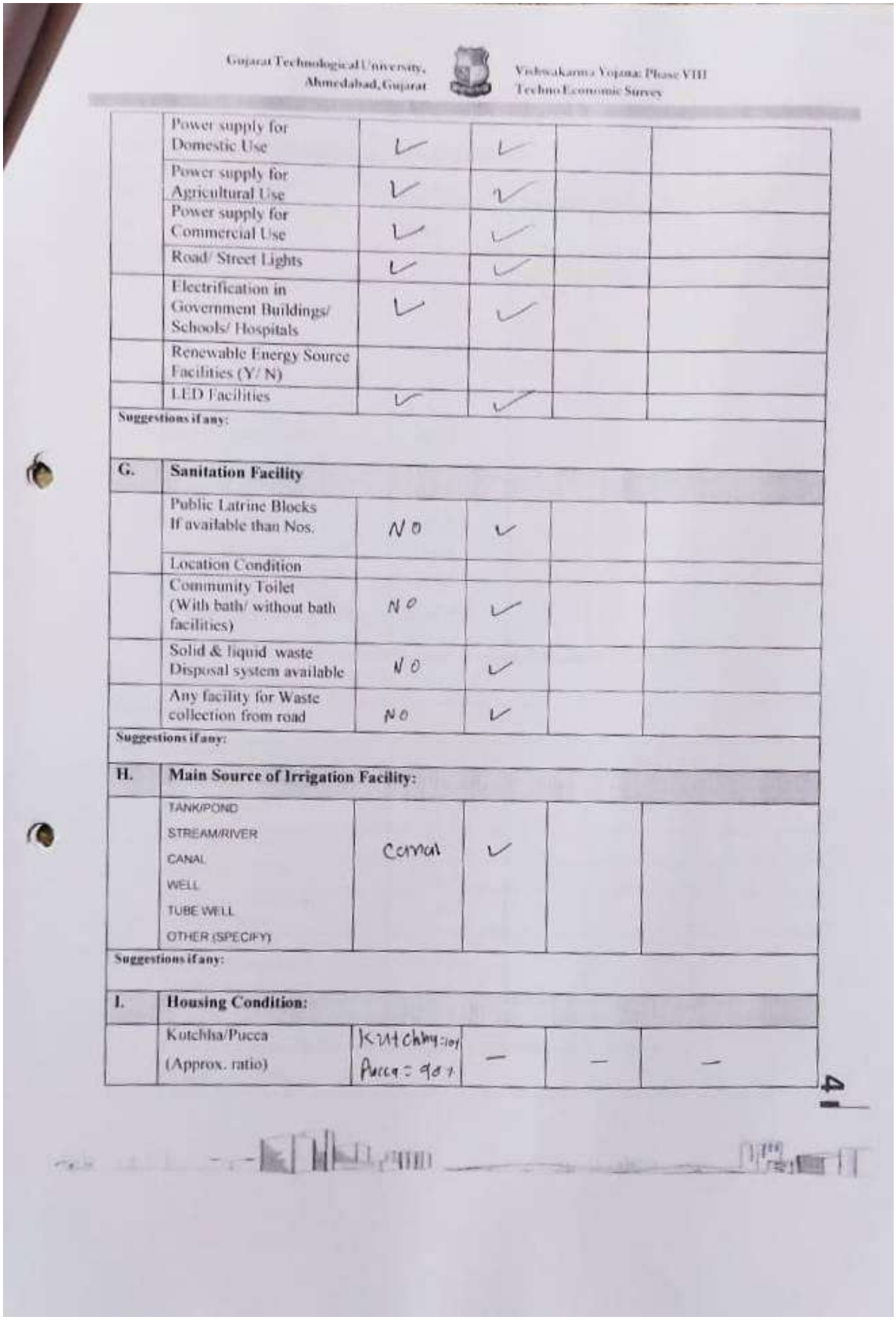
Suggestions if any:						
B.	**Water Tank Facility**					
	Overhead Tank	Capacity:	1,25 lakh			
	Underground Sump	Capacity:	1 lakh			
Suggestions if any:						
C.	**The Type of Drainage Facility**					
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	yes	✓			
Suggestions if any:						
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**					
	Village approach road	✓	✓			
	Main road	✓	✓			
	Internal streets	✓	✓			
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH 70n	✓			
Suggestions if any:						
E.	**Transport Facility**					
	Railway Station (Y/N) (If No than Nearest Rly Station—Kms)	No bilimora 23	✓			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station—Kms)	No very good 2.6 km	✓			
	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 then 6 hour	✓			



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	Power supply for Domestic Use	✓	✓		
	Power supply for Agricultural Use	✓	✓		
	Power supply for Commercial Use	✓	✓		
	Road/ Street Lights	✓	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	✓	✓		
	Renewable Energy Source Facilities (Y/ N)				
	LED Facilities	✓	✓		
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	NO	✓		
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	NO	✓		
	Solid & liquid waste Disposal system available	NO	✓		
	Any facility for Waste collection from road	NO	✓		
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	Canal	✓		
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Kutchha: 10% Pucca: 90%	—	—	—

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	Yes	✓		
	Sub-Centre	Yes	✓		
	PHC	Yes	✓		
	BLOCK PHC				
	CHC/RH				
	District/ Govt. Hospital	Yes	✓		
	Govt. Dispensary	No	✓		
	Private Clinic	No	✓		
	Private Hospital/	No	✓		
	Nursing Home	No	✓		
	AYUSH Health Facility	Yes	✓		
	sonography /ultrasound facility	No	✓		
	If any of the above Facility is not available in village than approx. distance from village: 3 kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	Yes	✓		
	Primary School	Yes	✓		
	Secondary school	No	✓		
	Higher sec. School	No	✓		
	ITI college/ vocational Training Center	No	✓		
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	No	✓		
	If any of the above Facility is not available in village than approx. distance from village: 5 kms.				

5

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Suggestions if any:

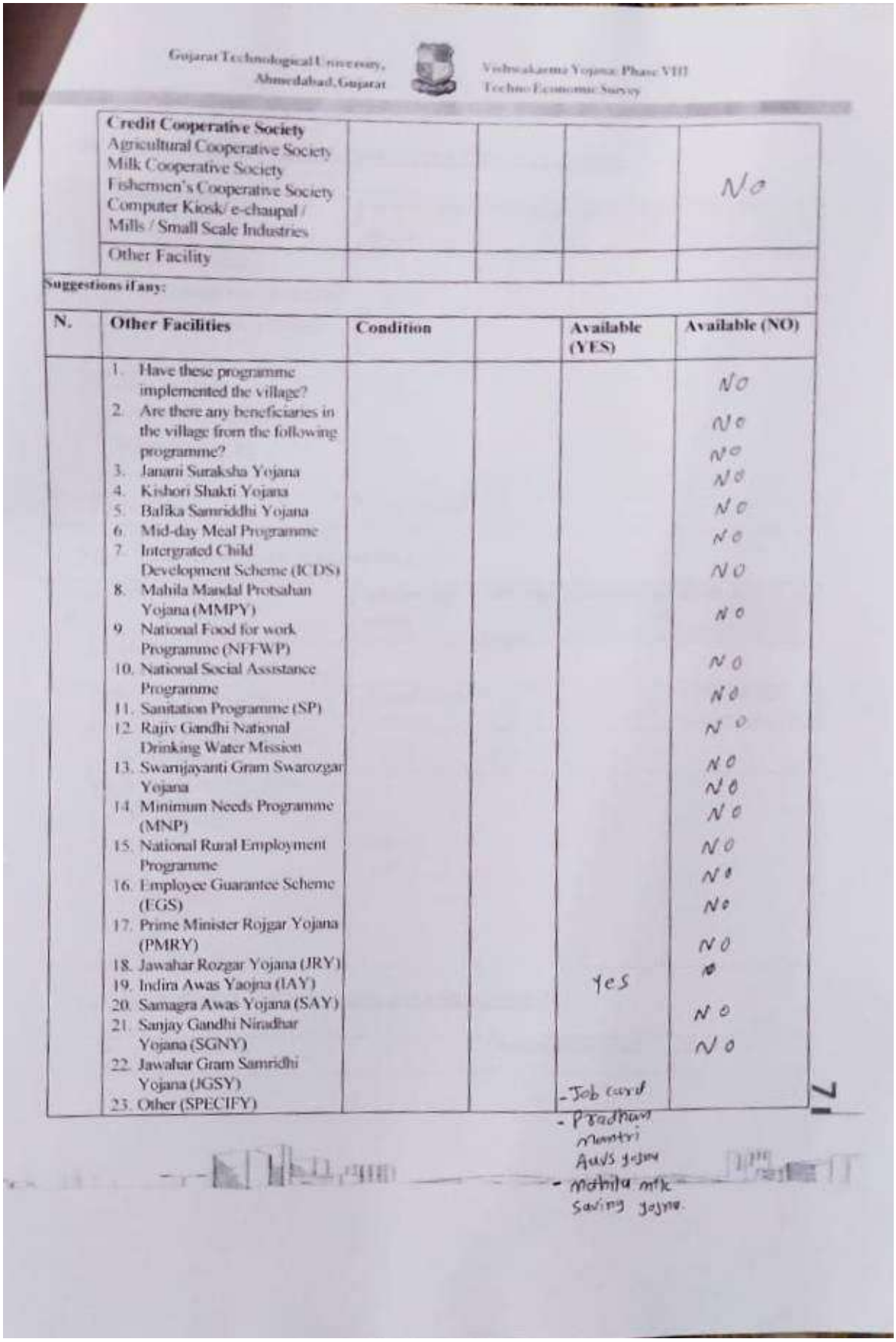
L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)				NO
	Public Library (With daily newspaper supply: Y/N)				NO
	Public Garden				NO
	Village Pond	bad	Village	✓	
	Recreation Center				NO
	Cinema/ Video Hall				NO
	Assembly Polling Station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

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

Suggestions if any:

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

9



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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				No
	Other Facility				

Suggestions if any:

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

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

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	Road, block road	✓		All work under process
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)	Normal basis			

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

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1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	No	
2.	Additional Information/ Requirement	—	—
3.	During the last six months how many times CLEANING ……2…… FOGGING……3…… 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
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Email ID: rurban@gtu.edu.in

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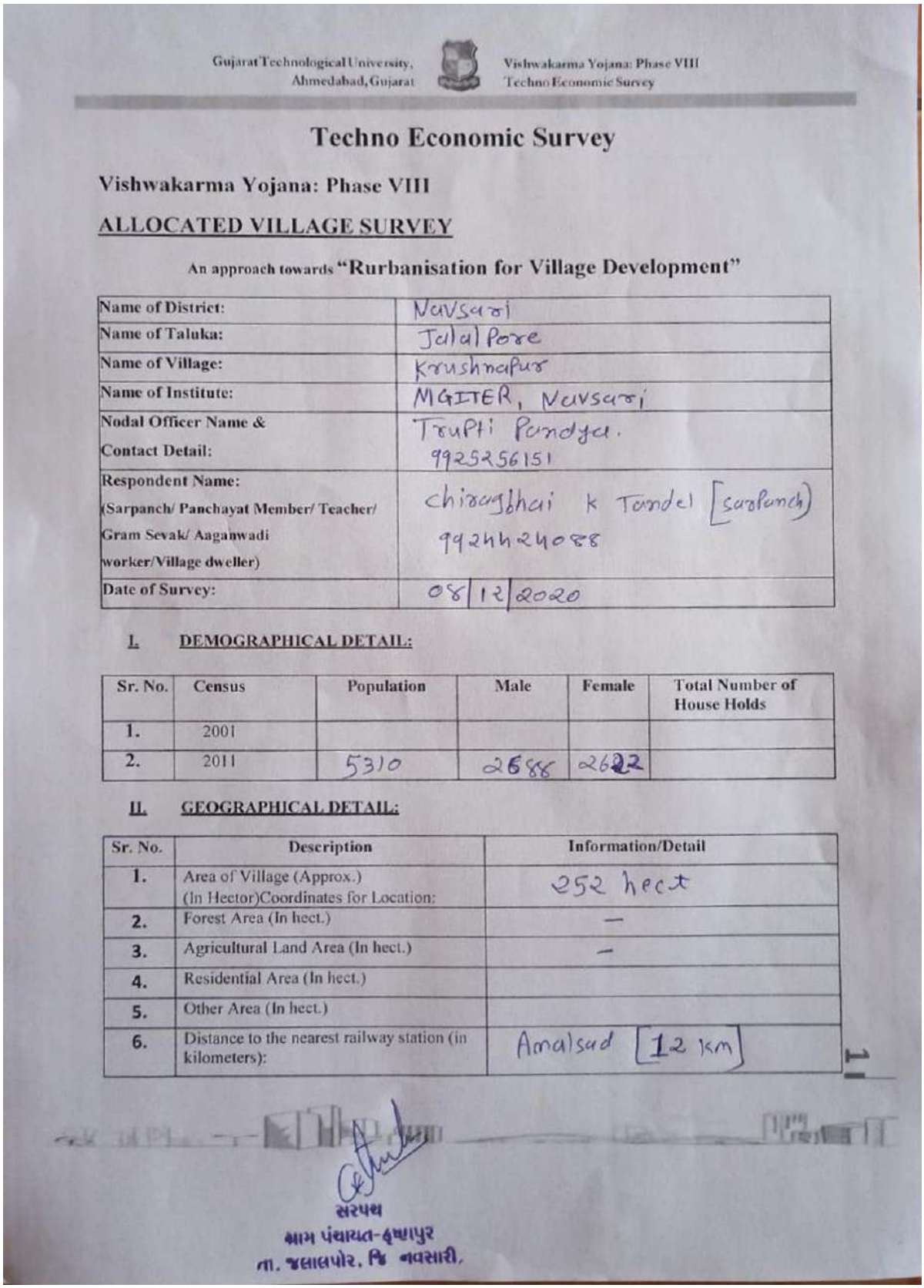
Pinakin D.M.
સરપંચશ્રી
ગ્રામ પંચાયત ભાઠા
તા. ગણદેવી. જિ. નવસારી

12.3 Survey form of Allocated Village Scanned copy for Part-I



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Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	Navsari
Name of Taluka:	Jalalpore
Name of Village:	Krushnapur
Name of Institute:	MGITER, Navsari
Nodal Officer Name & Contact Detail:	Trupti Pandya. 9925256151
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	chiraghbhai k Tandel [sarpanch] 9924424088
Date of Survey:	08/12/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	5310	2688	2622	

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	252 hect
2.	Forest Area (In hect.)	–
3.	Agricultural Land Area (In hect.)	–
4.	Residential Area (In hect.)	
5.	Other Area (In hect.)	
6.	Distance to the nearest railway station (in kilometers):	Amalsad [12 km]

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	Other(Specify)Lake/ Pond	5 lake Not in good condition	✓		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	2,00,000		
	Underground Sump	Capacity:	2,00,000		
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	✓	✓		
	Main road	✓	✓		
	Internal streets	Kutchha	✓		
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH 18h 1 km.	✓		
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No 13 km.	✓		
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes Moderate	✓		
	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 then 6 km.	✓		

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	Power supply for Domestic Use	✓	✓		
	Power supply for Agricultural Use	-	-		
	Power supply for Commercial Use	✓	✓		
	Road/ Street Lights	✓	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	✓	✓		
	Renewable Energy Source Facilities (Y/ N)	yes	✓		
	LED Facilities	No	✓		
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	No	✓		
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	No	✓		
	Solid & liquid waste Disposal system available	yes	✓		
	Any facility for Waste collection from road	collect by gram Panchayat	✓		
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	No	✓		
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Kutchha - 30%. Pucca - 70%	✓		

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7.	Name of Nearest Town with Distance:	Amalsad
8.	Distance to the nearest bus station (in kilometers):	Less then 1 km
9.	Whether village is connected to all road for the any facility or town or City?	Yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Fishery
	2.	Labour
	3.	Job

Major crops grown in the village:	1.	No
	2.	No
	3.	No

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 No	✓		
2.	**DUG WELL** Protected Well Un Protected Well	No	✓		
3.	**WATER FROM SPRING** Protected Spring Unprotected Spring Rainwater Tanker Truck Cart With Small Tank	No	✓		
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water Hand Pump	yes Not in good condition	✓		

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	Yes	✓		
	Sub-Centre	No	✓		
	PHC	yes	✓		
	BLOCK PHC				
	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				
	If any of the above Facility is not available in village than approx. distance from village: ..13....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	yes	✓		
	Primary School	✓	✓		
	Secondary school	✓	✓		
	Higher sec. School	✓	✓		
	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: 9.5 college ....kms.
Suggestions if any:	

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

If any of the above Facility is not available in village than approx. distance from village: ..13....kms.

Suggestions if any:

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

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	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries	fisherman sell on the road & market			No
	Other Facility				

Suggestions if any:

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

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

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	block, water good.	✓		All work in Under Process.
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)	Normal basis			

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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	No	
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING ……2…….. FOGGING……3…….. 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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12.4 Gap Analysis of the Allocated Village

VILLAGE GAP Analysis					
Village Facilities	**Planning Commission/UDPFI Norms**	**Village Name: Krushnapur**			
		Population: 10,032			
		Existing	**Required as per Norms**	**Smart Village / Heritage Future Projection Design**	**Gap**
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	**6**	**4**	**-**	**2**
Primary School	Each Per 2500 population	**1**	**4**	**-**	**-3**
Secondary School	Per 7,500 population	**1**	**1**	**-**	**0**
Higher Secondary School	Per 15,000 Population	**1**	**0**	**-**	**1**
College	Per 125,000 Population	-	-	-	-
Tech. Training Institute	Per 100000 Population	-	-	-	-
Agriculture Research Centre	Per 100000 Population	-	-	-	-
Skill Development Center	Per 100000 Population	-	-	-	-
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	**1**	**1**	**-**	**0**
Primary Health & Child Health Center	Per 20,000 population	-	-	-	-
Child Welfare and Maternity Home	Per 10,000 population	**0**	**1**	**-**	**-1**
Multispeciality Hospital	Per 100000 Population	-	-	-	-
Public Latrines	1 for 50 families (if toilet is not there in home, especially for	-	-	-	-

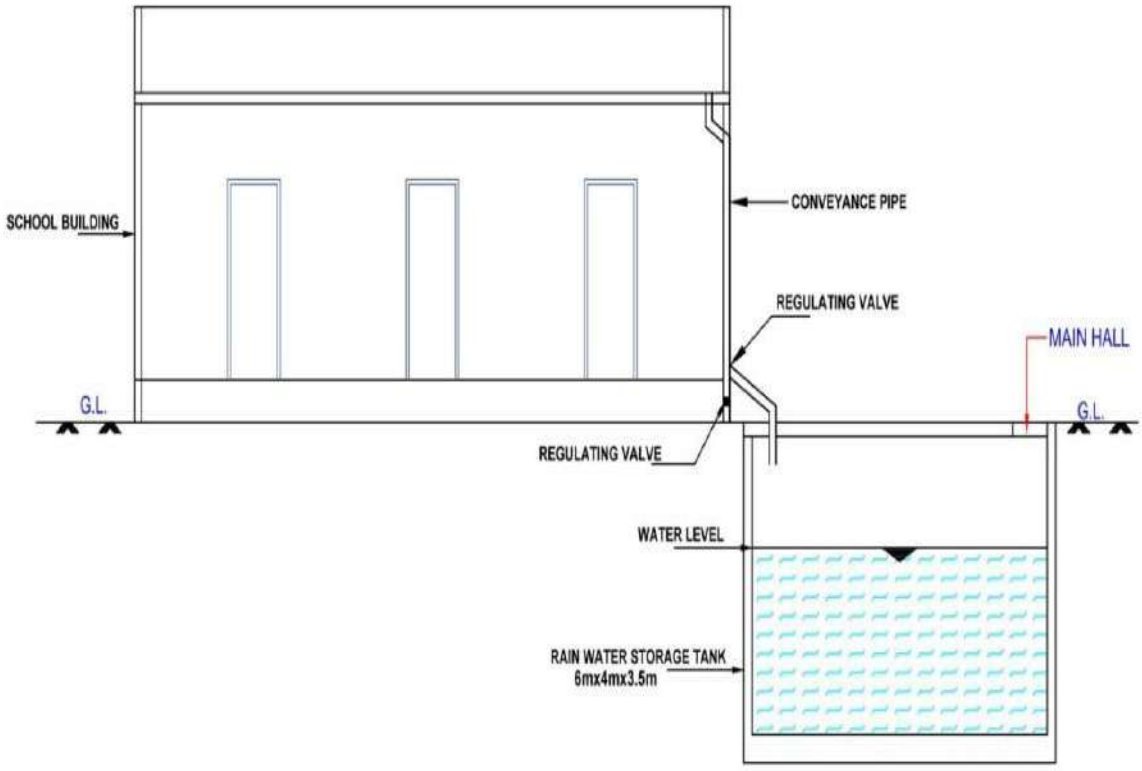
	slum pockets & kutccha house)				
Physical Infrastructure Facilities					
Transportation		**Adequate / Inadequate**			
Pucca Village Approach Road	Each village		Inadequate		
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	Adequate			
Drinking Water (Minimum 70 lpcd)		**Adequate / Inadequate**			
Over Head Tank	1 /3 of Total Demand	Adequate			
U/G Sump	2 /3 of Total Demand	Adequate			
Drainage Network - Open			Inadequate		
Drainage Network - Cover			Inadequate		
Waste Management System			Inadequate		
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population		Inadequate		
community hall and Public Library	Per 15000 Population	-	-		
Cremation Ground	Per 20,000 population	-	-		
Post Office	Per 10,000 population	Adequate			
Gram Panchayat Building	Each individual/group panchayat	Adequate			
APMC	Per 100000 Population	-	-		
Fire Station	Per 100000 Population	-	-		
Public Garden	Per village	-	Inadequate		
Police post	Per 40,000Population	-	-		
Shopping Mall					
Electrical Design					
Electricity Network		**Adequate / Inadequate**			
Any Smart Village Facility					
Technology					
		ESR cap	**2,00,000**		
		Sump cap	**2,00,000**		

12.5 Summary Details of All the Villages Designs

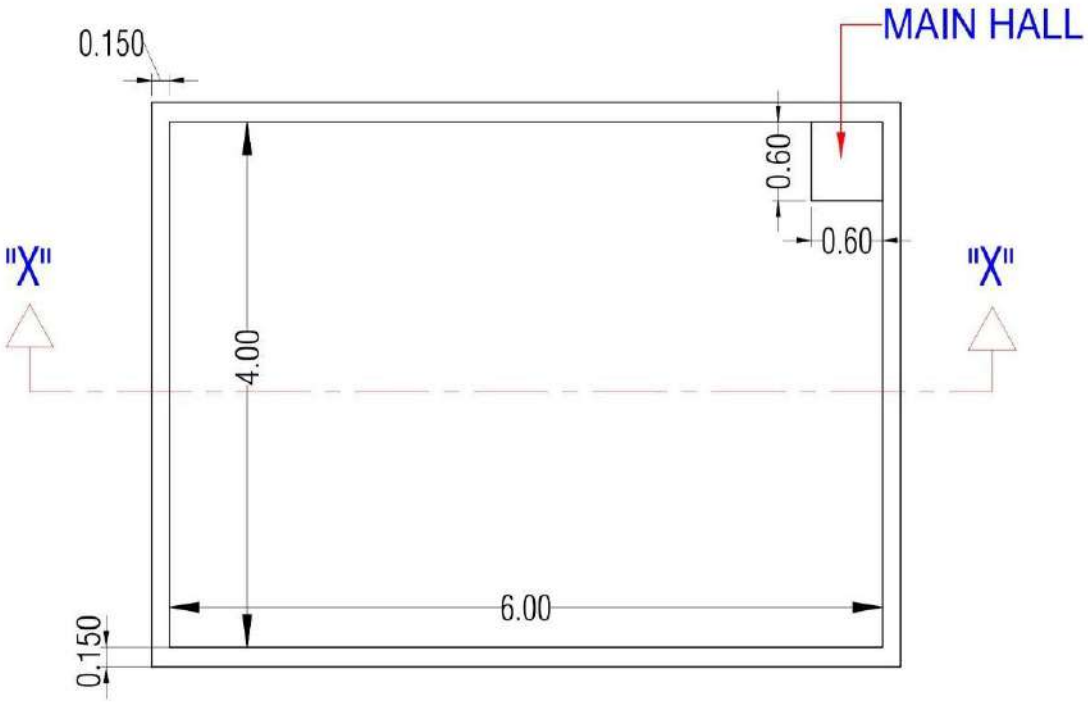
Sr. No	Village	Discipline	Part-1	Part-2
1	**KRUSHNAPUR**	**CIVIL**	Roof Top Rain Water Harvesting	Fish Market
			Bus Stand	Post office
			Aganwadi	Community Hall
			Public Garden	Library
			ATM	Over Head Reservoir
			Entrance Gate	Primary School Toilet

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

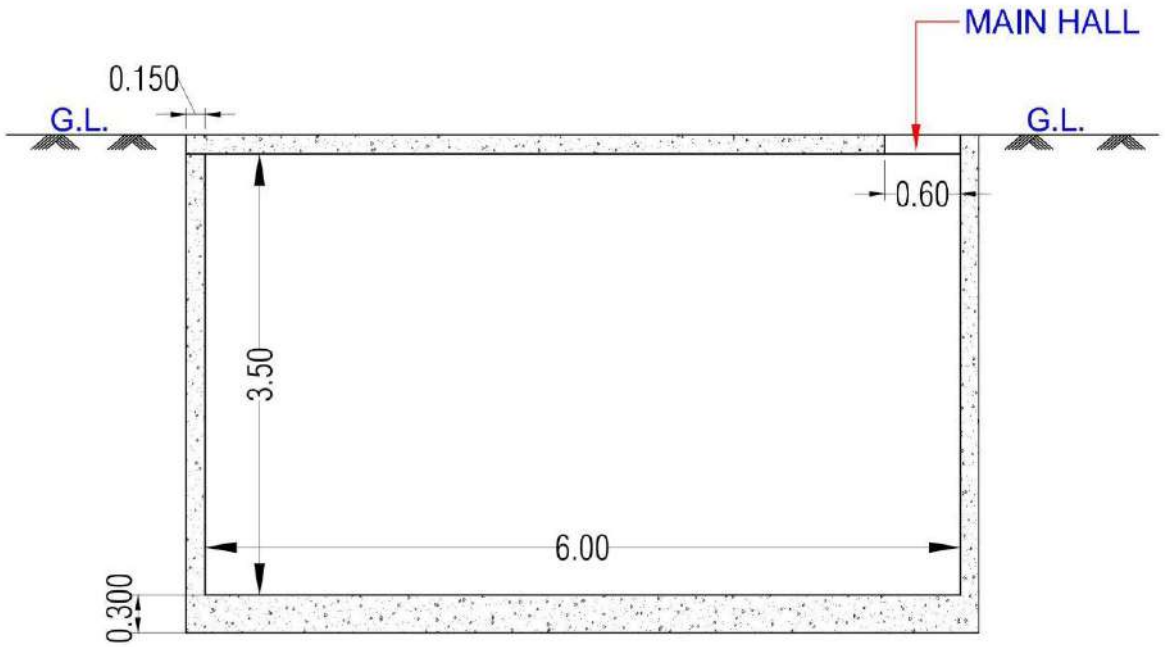
1) Sustainable Design (Civil)- Roof Top Rain Water Harvesting



FRONT VIEW

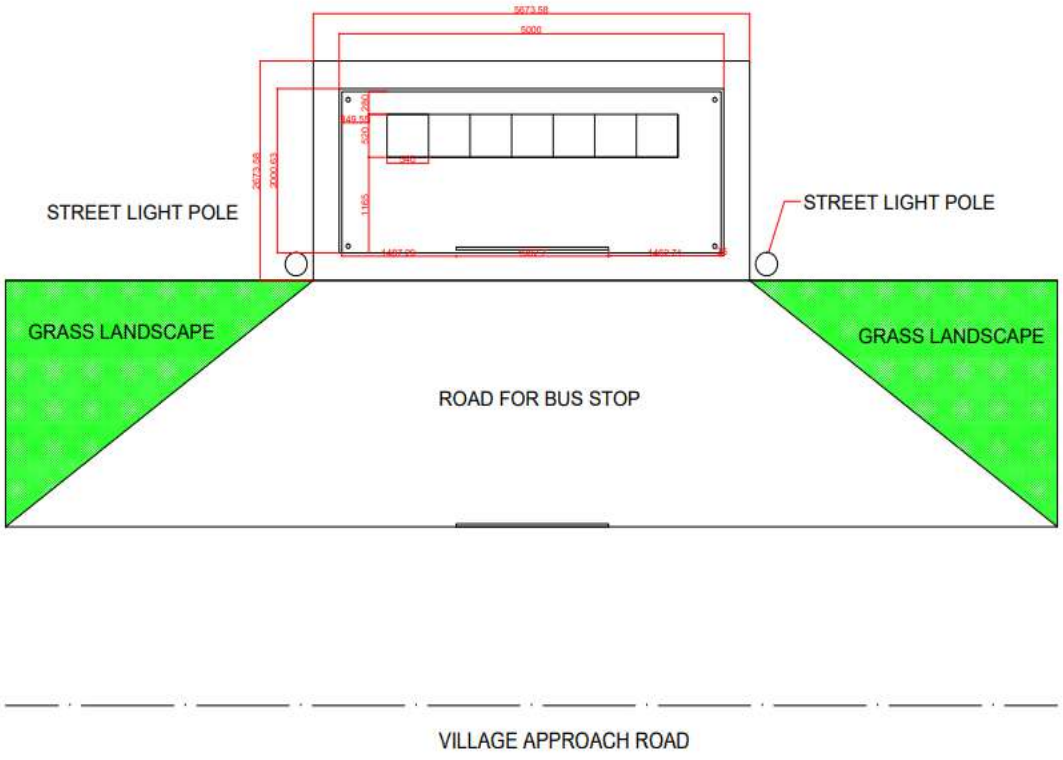


PLAN



SECTION

2) Physical design (Civil)- Bus Stand



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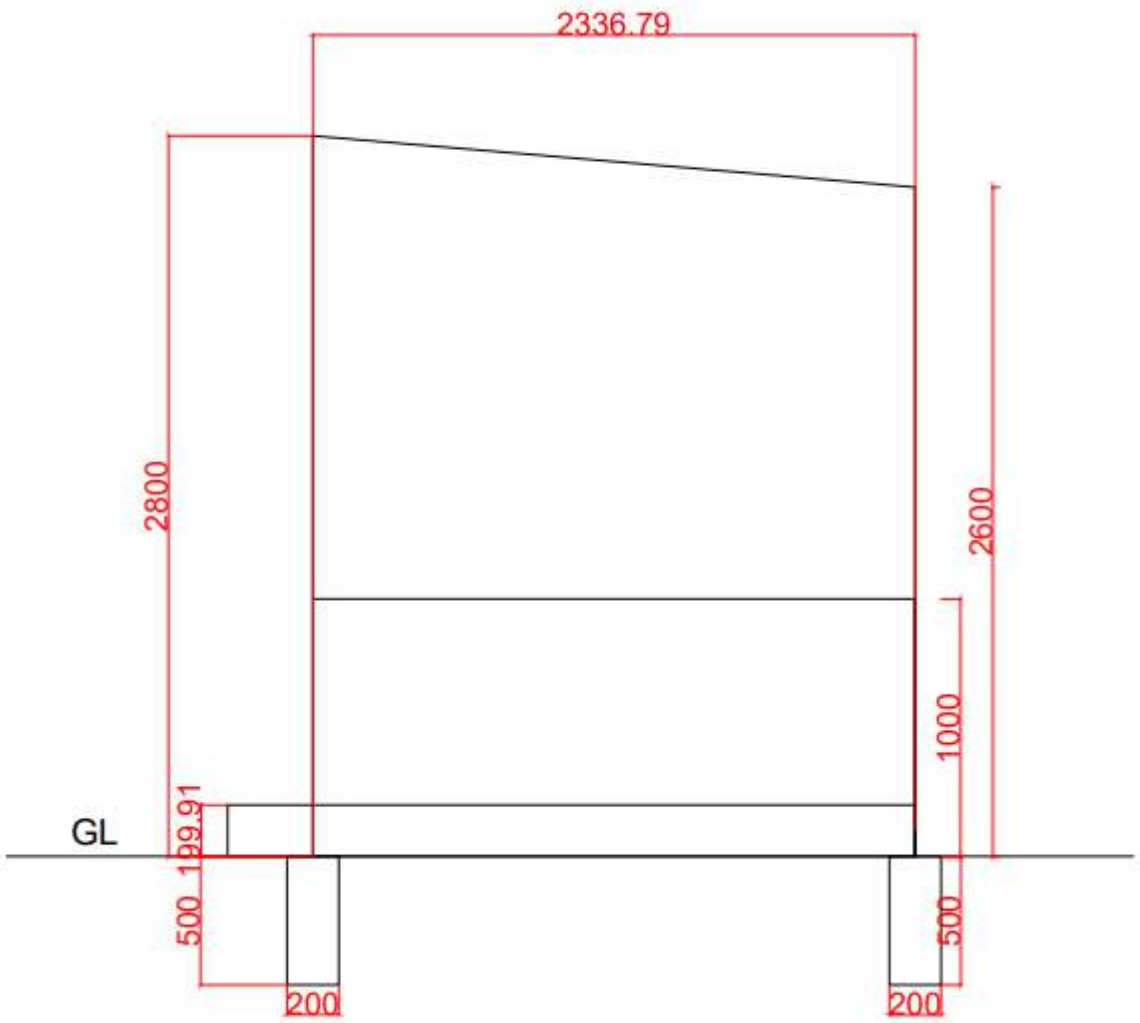
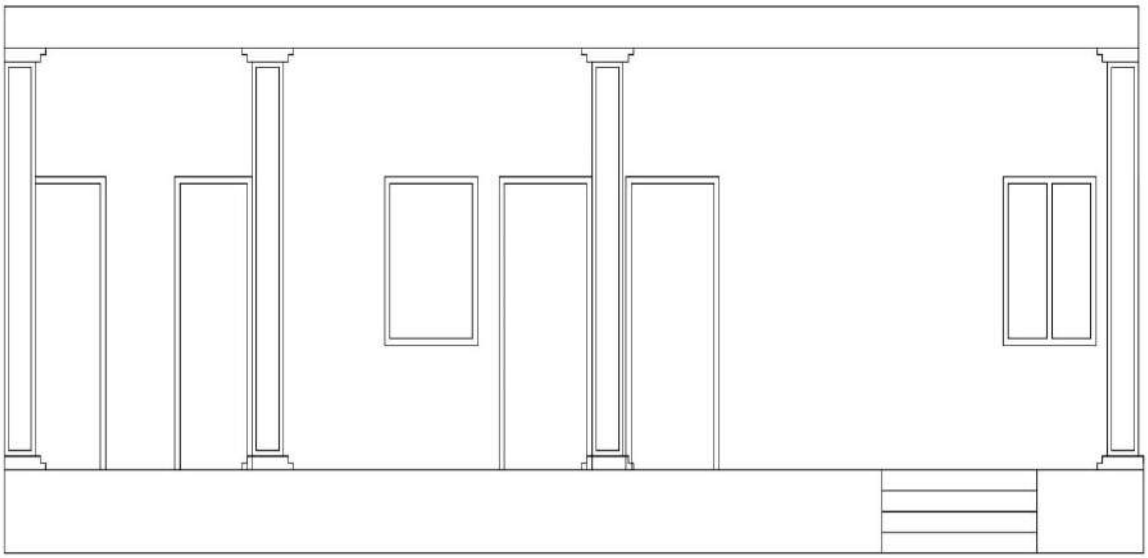
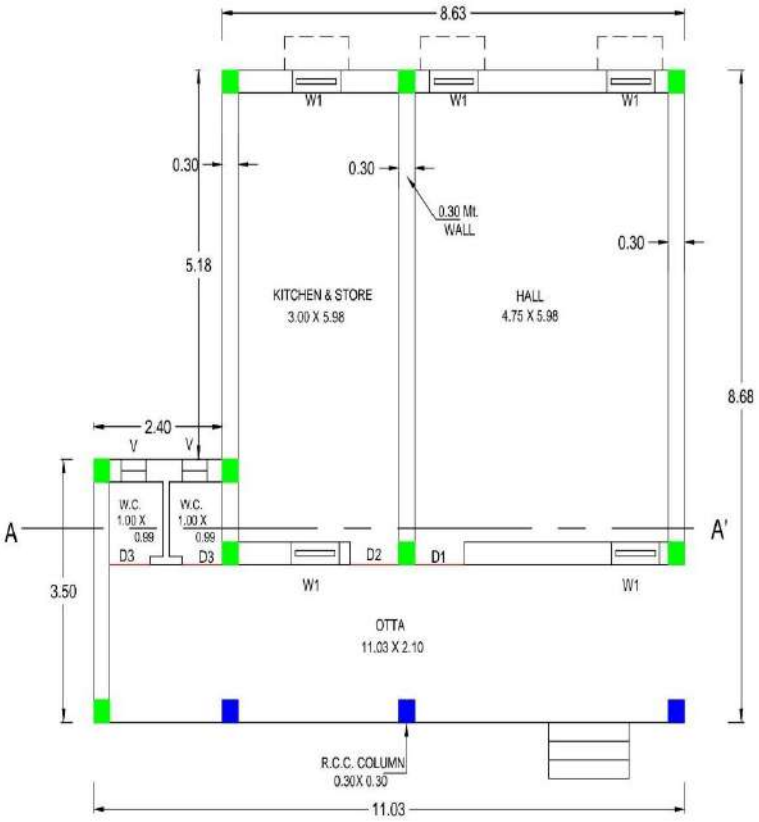


SECTION

3) Social design (Civil)- Aganwadi



FRONT VIEW



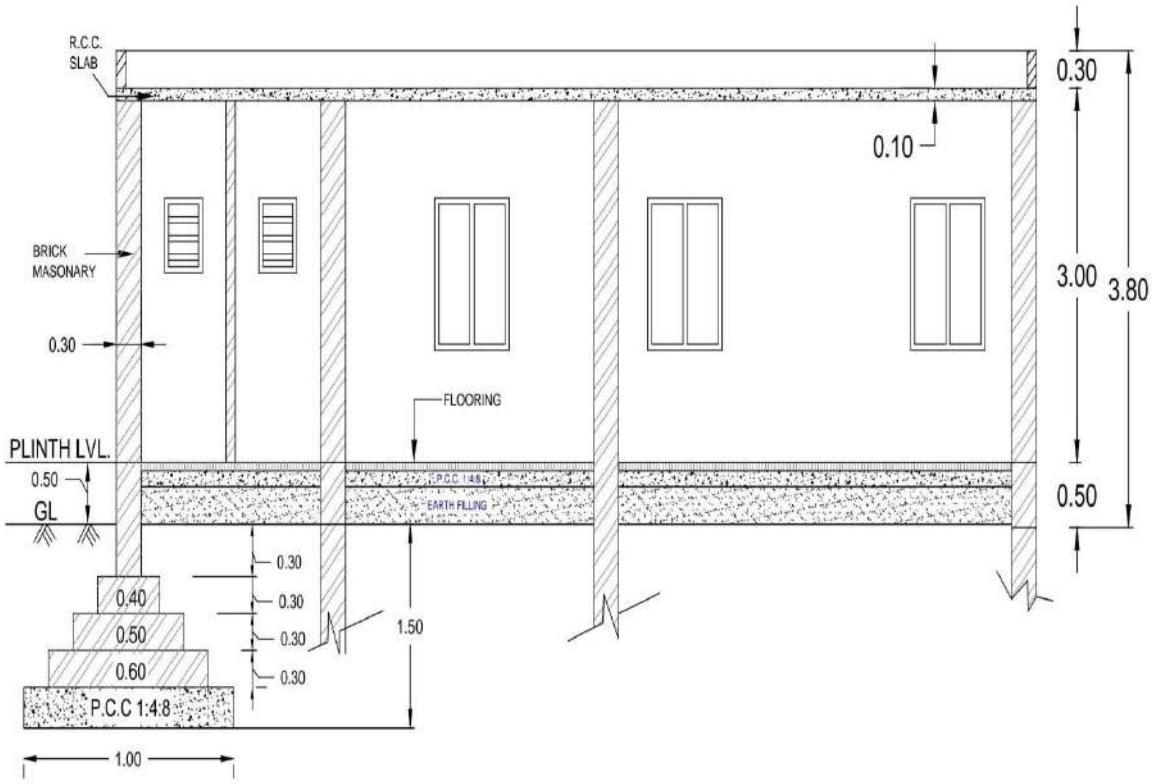
AREA TABLE :-

DESCRIPTION	AREA IN SQ.MT.
8.63 X 8.68 = 74.91 3.50 X 2.40 = 8.40	
TOTAL AREA	83.31

SCHEDULE OF OPENINGS

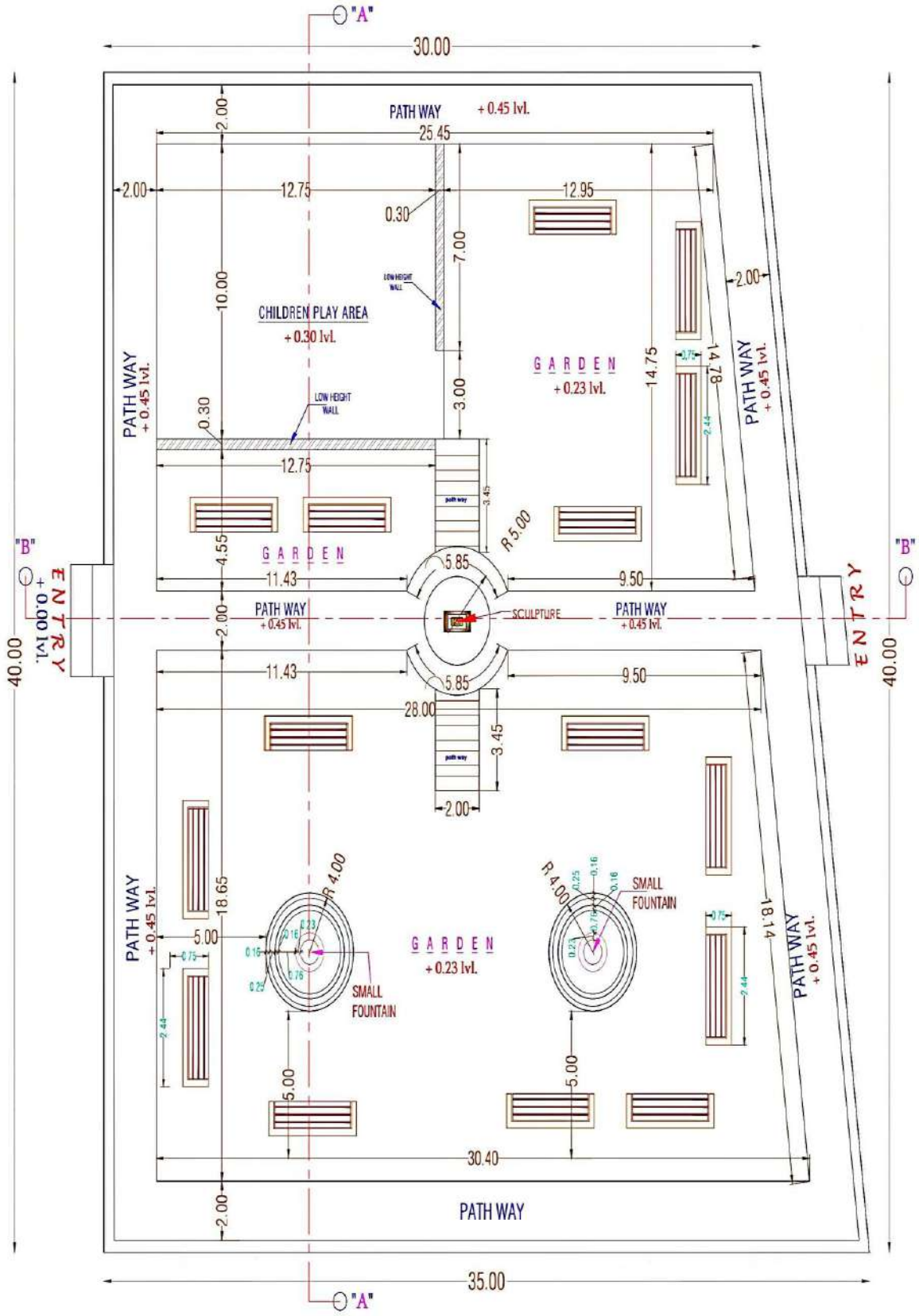
DESCRIPTION		SIZE
1. DOORS	D1	1.00 X 2.13
	D2	0.90 X 2.13
	D3	0.76 X 2.13
2. WINDOWS	W1	0.90 X 1.22
3. VENTILATION	V	0.45 X 0.60

PLAN

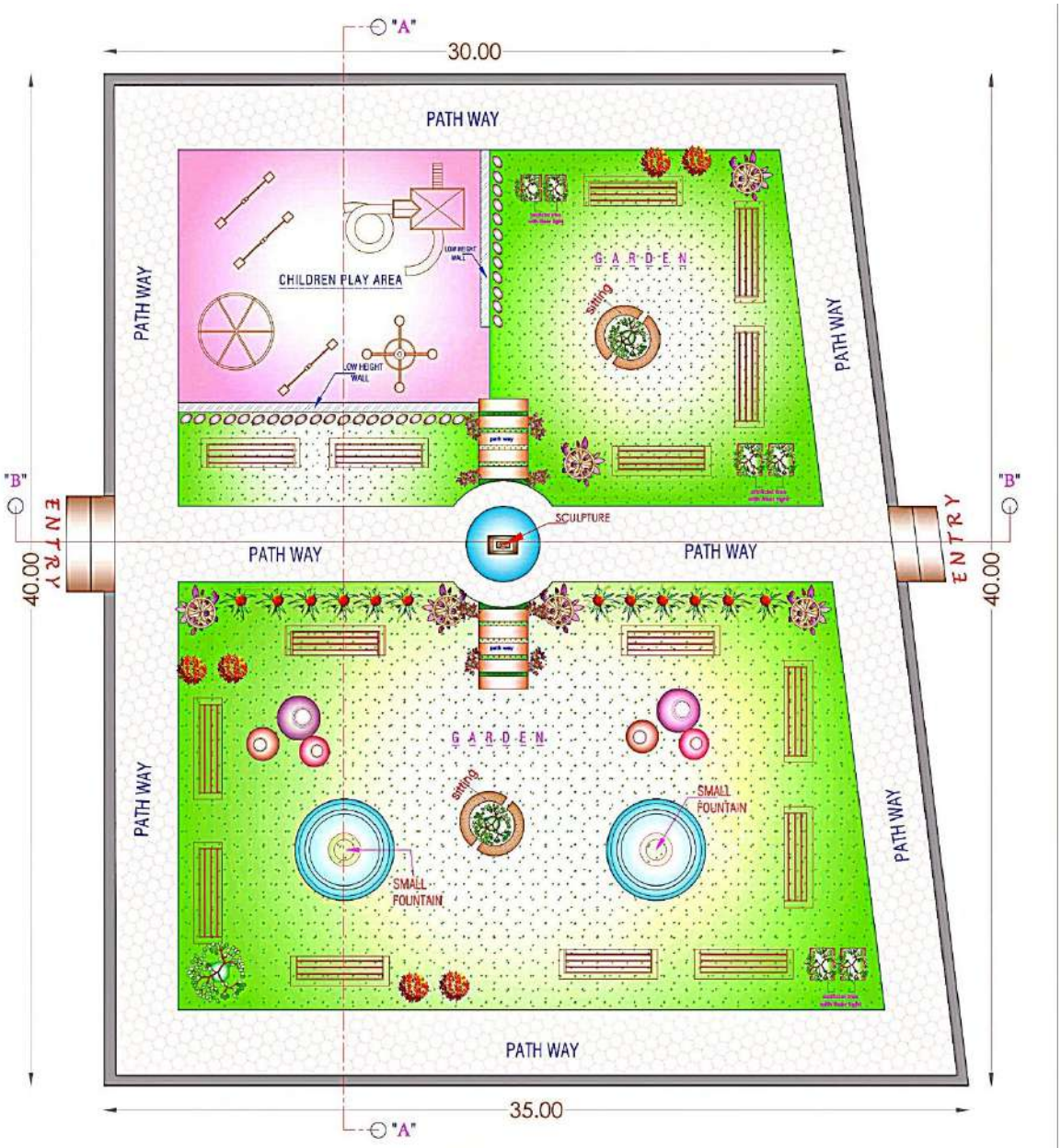


SECTION

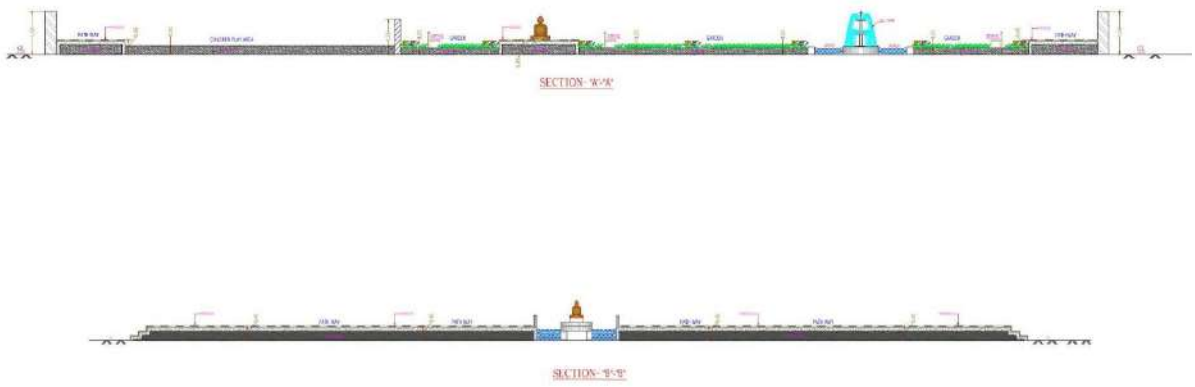
4) Socio-Cultural design (Civil)- Public Garden



PLAN

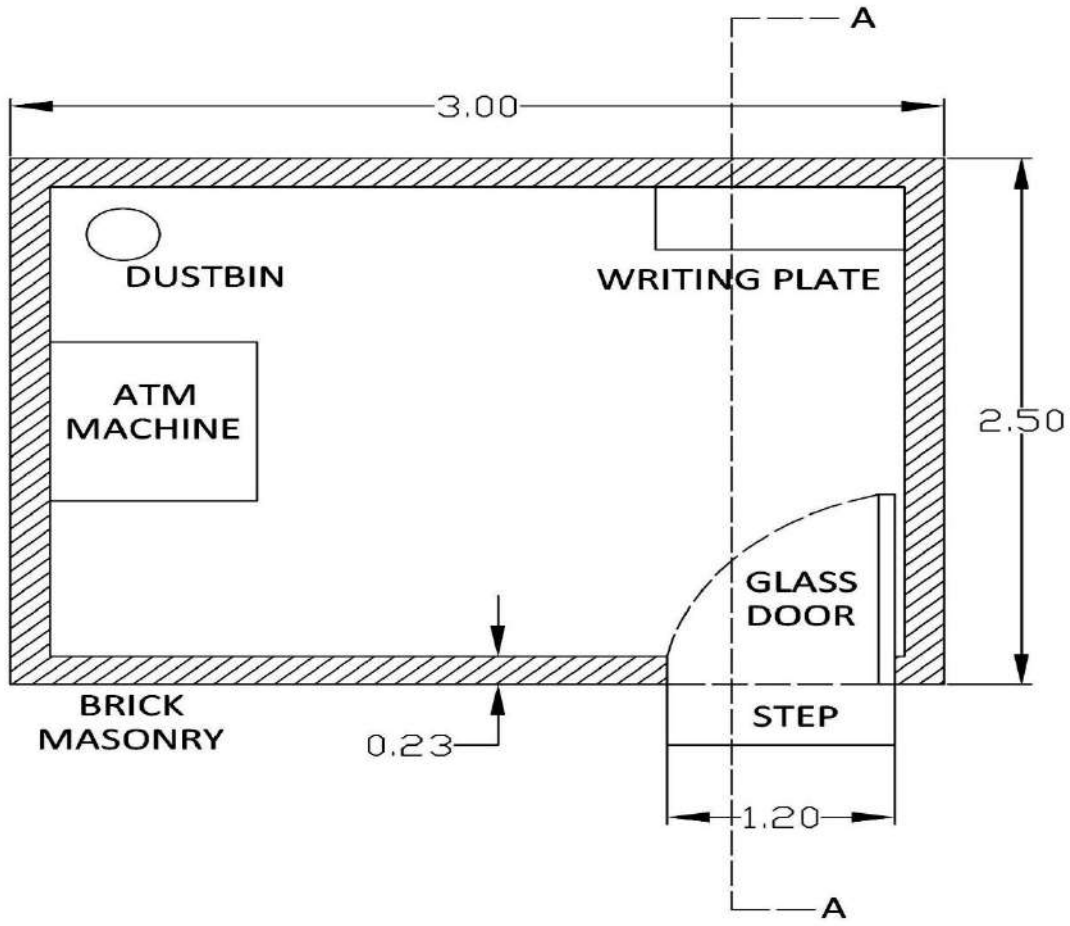


TOP VIEW

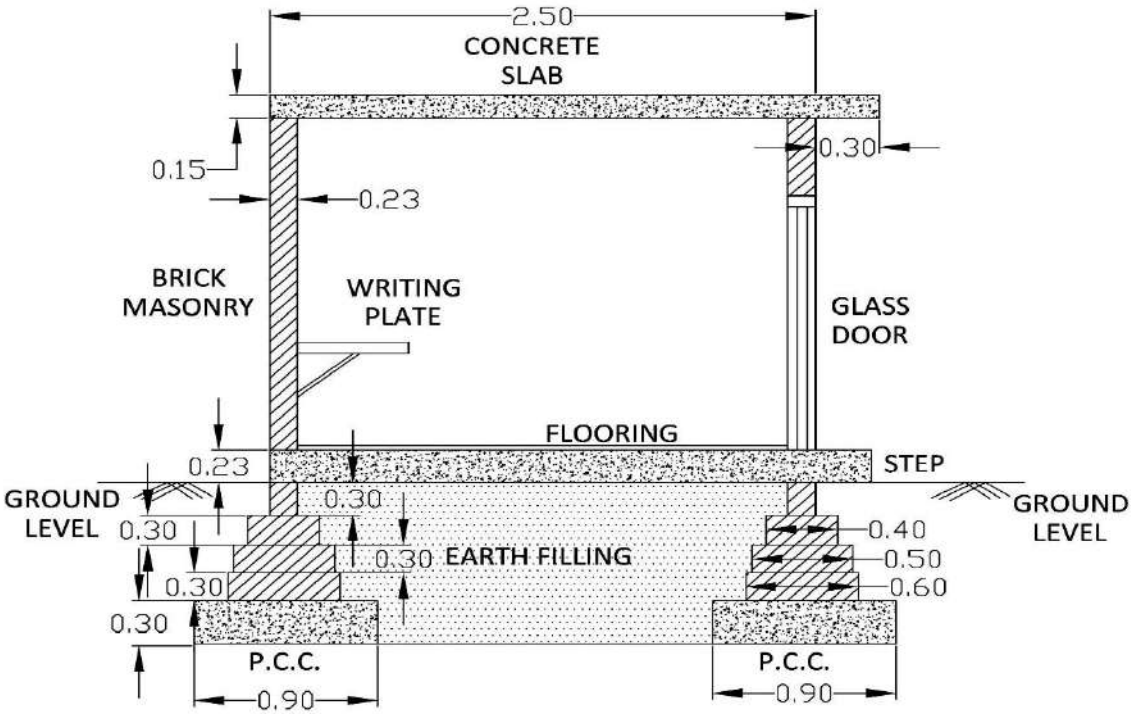


SECTION

5) Smart Village Design (Civil)- ATM



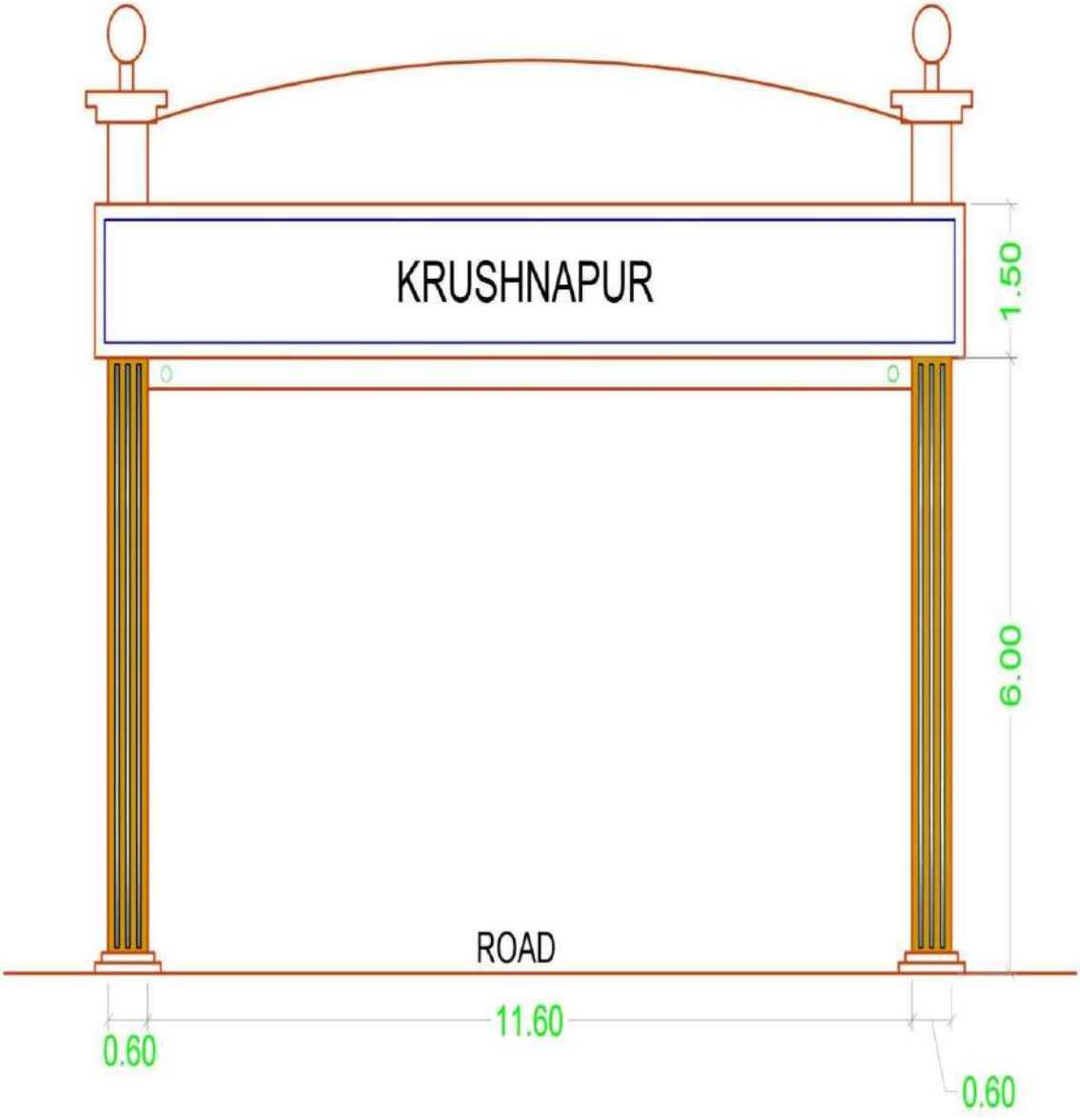
PLAN



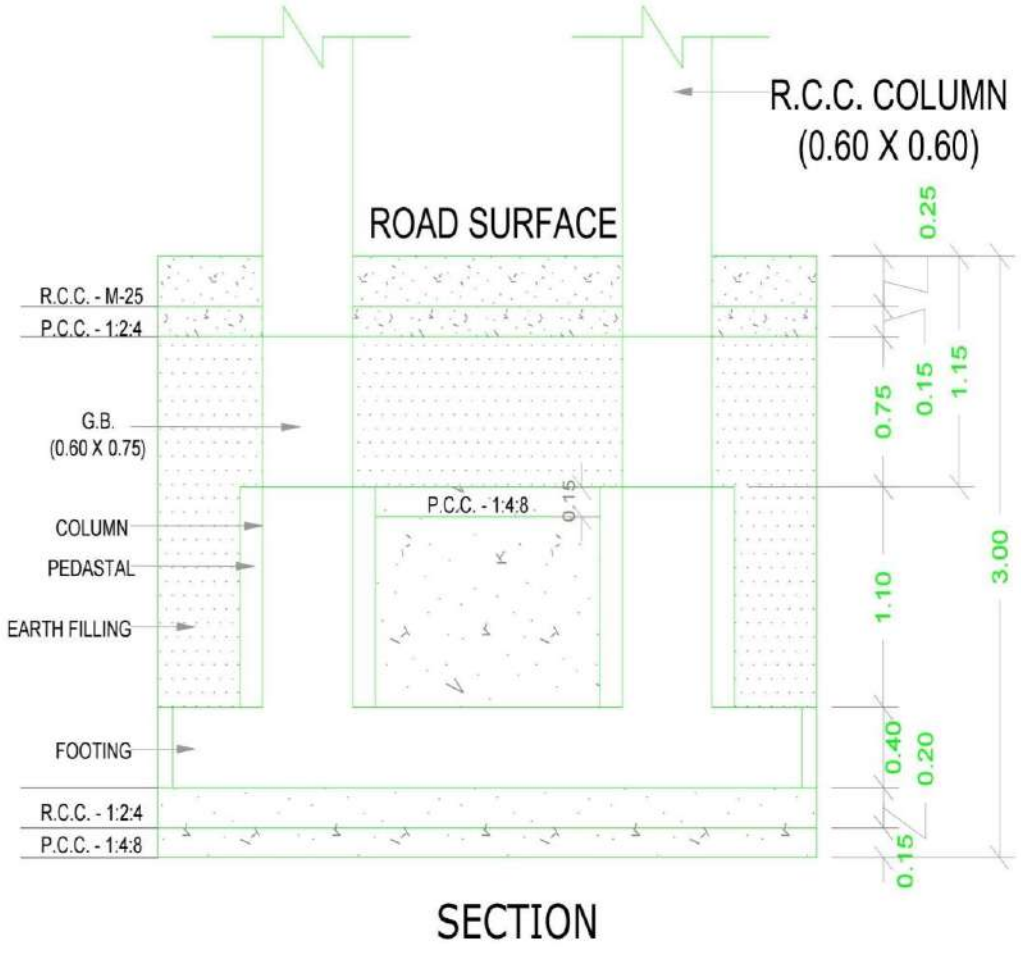
SECTION

6) Heritage Village Design (Civil)- Entrance Gate

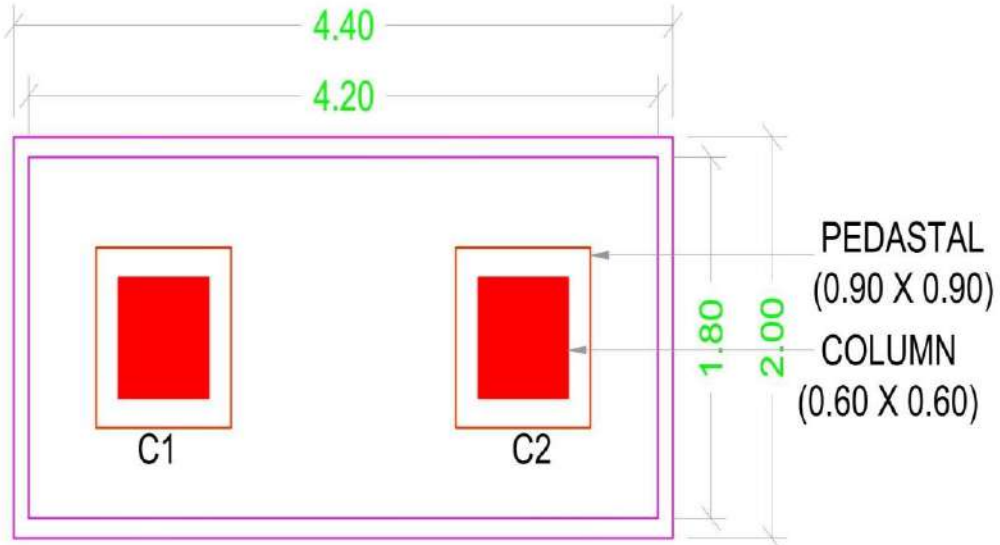
PLAN



ELEVATION



SECTION



PLAN

FOUNDATION DETAILS

12.7 Summary of Good Photographs

❖ Summary Of Photographs Of Krushnpur – Allocated Village :

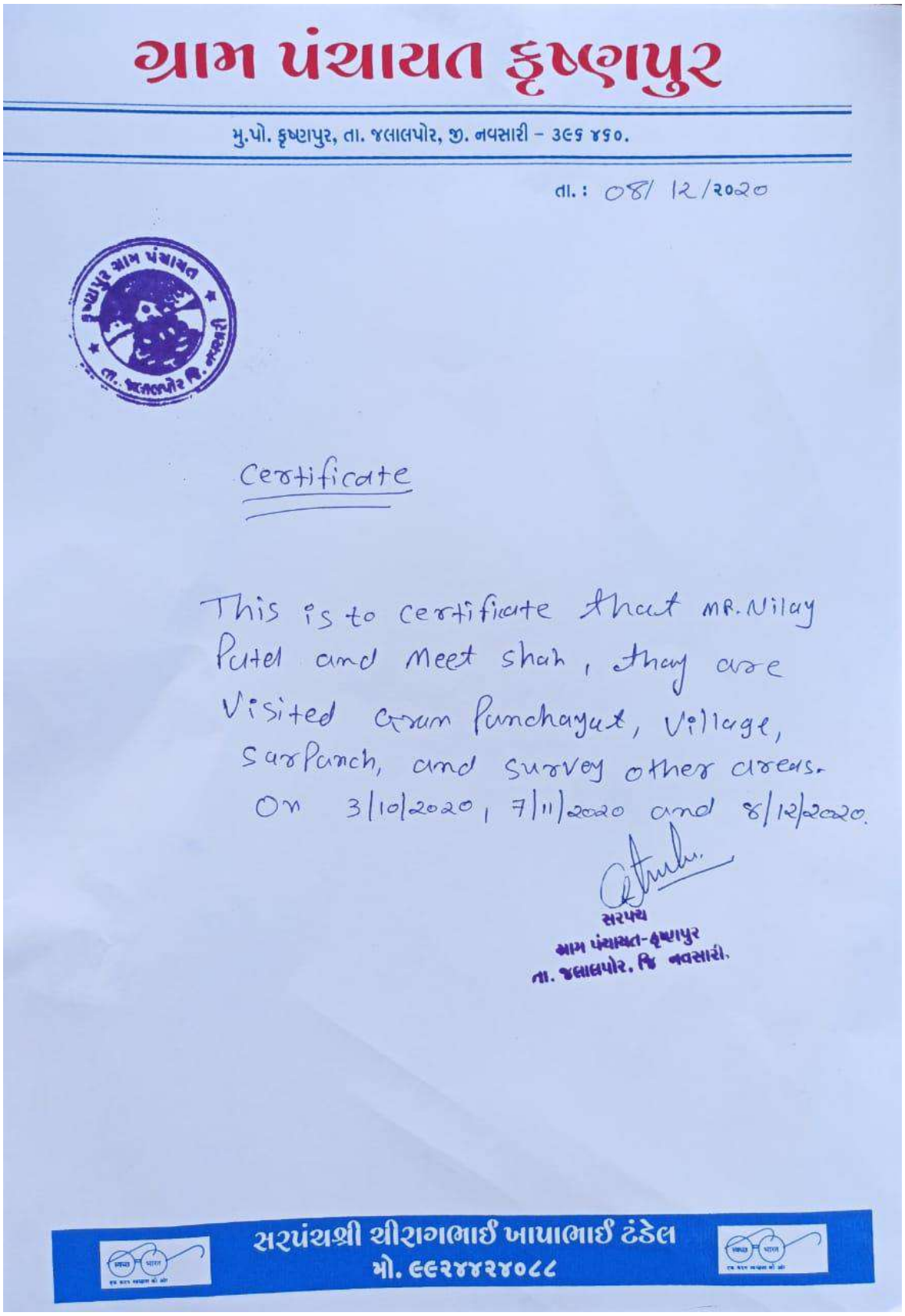
❖ Summary Of Photographs Of Ena – Ideal Village :


ATM 24X7
RuPay
The Surat District Co. Op. Bank Ltd.
ATM 24X7
RuPay
The Surat District Co-Op. Bank Ltd.


SBI
SBI

12.8 Village Interaction with Sarpanch

12.9 Sarpanch Letter giving information about the village development



ગ્રામ પંચાયત કૃષ્ણપુર

મુ.પો. કૃષ્ણપુર, તા. જલાલપોર, જી. નવસારી – ૩૯૬ ૪૬૦.

તા. : 08/ 12/2020

Certificate

This is to certificate that MR. Nilay Patel and Meet shah, they are Visited Gram Panchayat, Village, Sarpanch, and survey other areas. On 3/10/2020, 7/11/2020 and 8/12/2020.

સરપચ
ગામ પંચાયત-કૃષ્ણપુર
તા. જલાલપોર. જિ નવસારી.

સરપંચશ્રી શીરાગભાઈ ખાપાભાઈ ટંડેલ
મો. ૯૯૨૪૪૨૪૦૮૮

CHAPTER-13 Future Designs of the Aspects

13.1 Design Proposals

13.1.1 Civil Design 1 – Fish Market

Scenario:
A Fish Market is a market place for selling fish and fish products. It can be dedicated to wholesale trade between fisherman and fish merchant. So it is benefits to provide Fish market to make easier way for Fisherman and fish merchants. Because more than 80% villager doing fishery work. So it necessary to build Fish Market for Krushnapur village.

Existing situation of Krushnapur village:
Currently there is no proper Fish Market in Krushnapur village. Require fish market for selling and storage purpose.

Sustainability of design proposal:
Design a Fish Market to make easier path for Fisherman and fish merchants to export fish and fish products and easy to Manage the Fish and Fishery products.

Design summary:

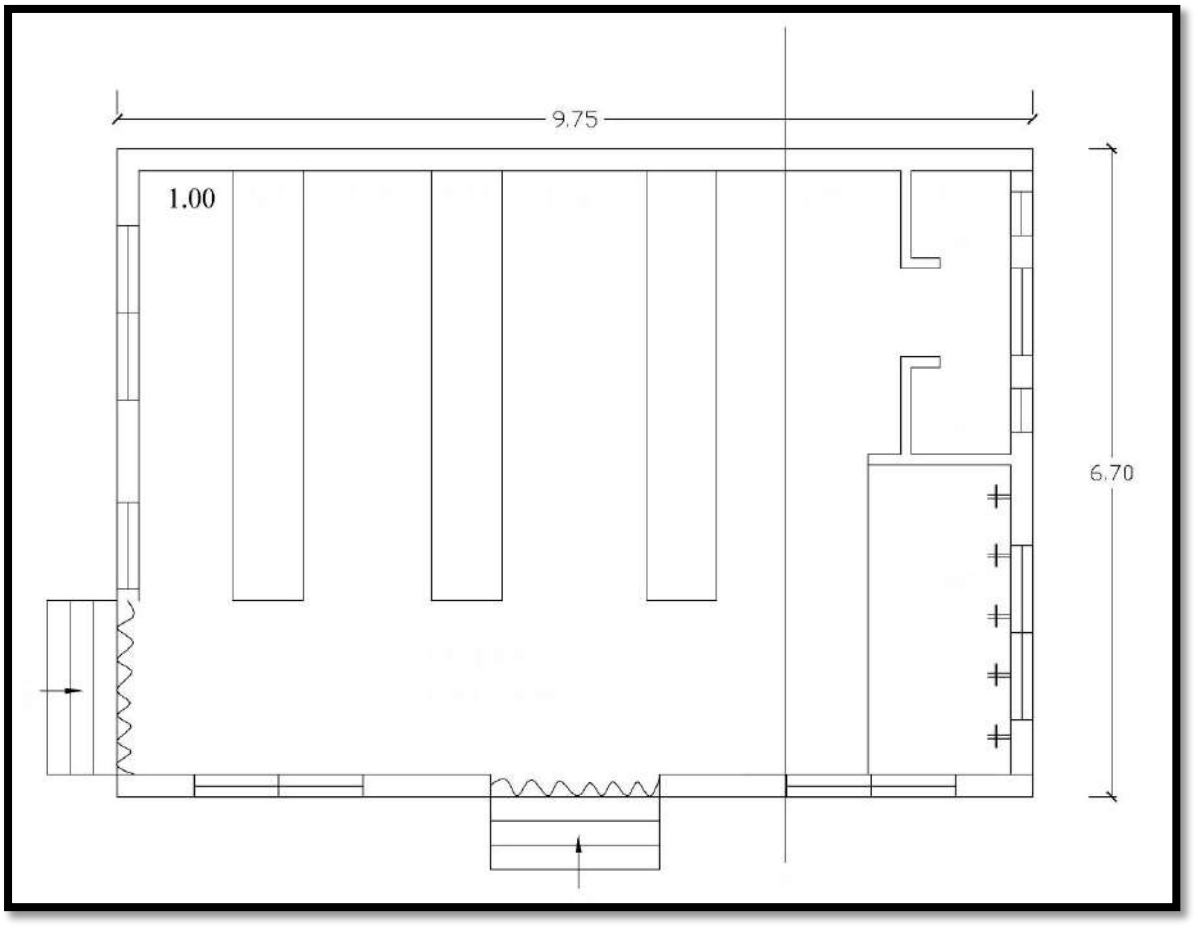


Fig. 13.1 PLAN OF FISH MARKET

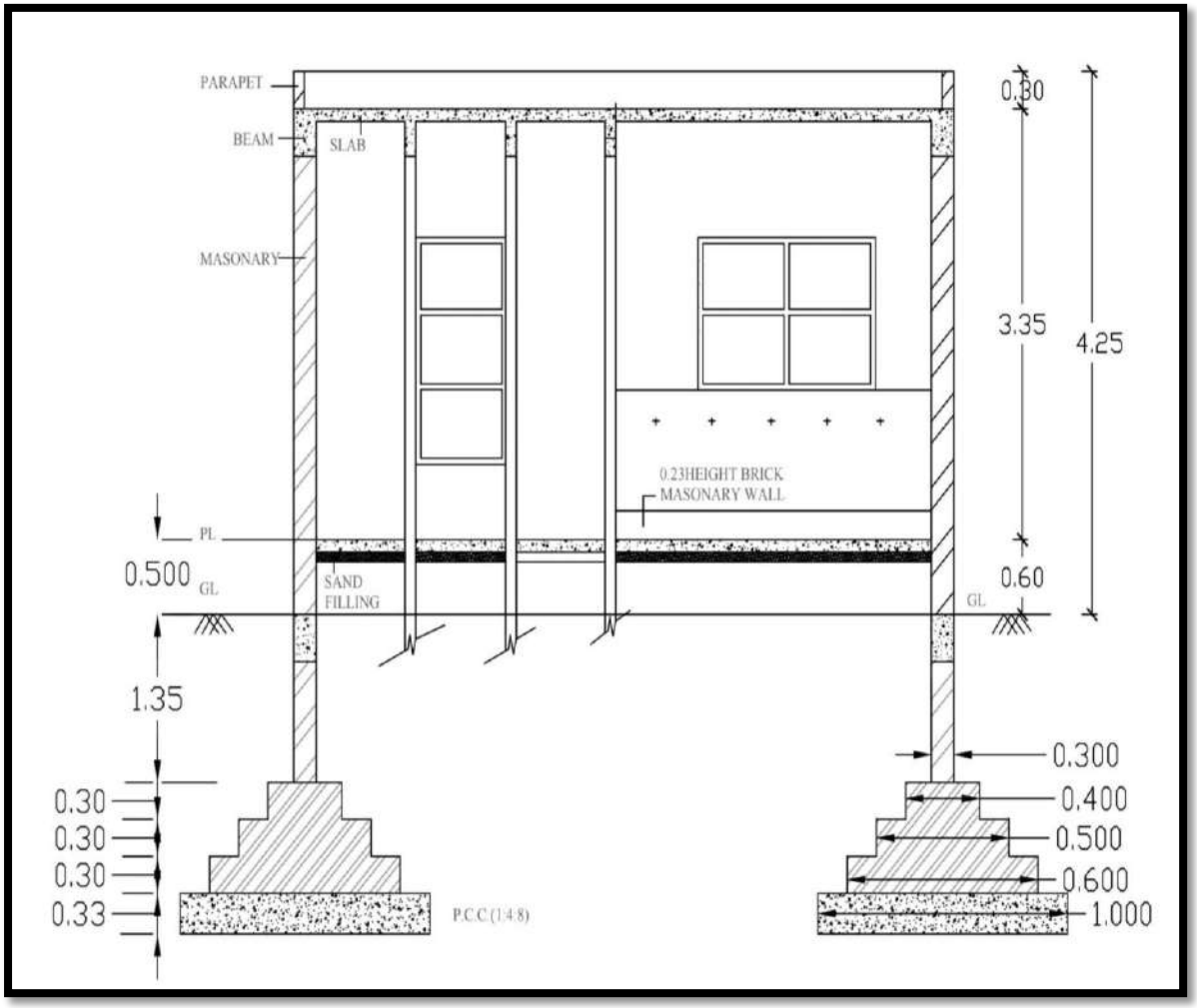


Fig. 13.2 SECTION A – A'

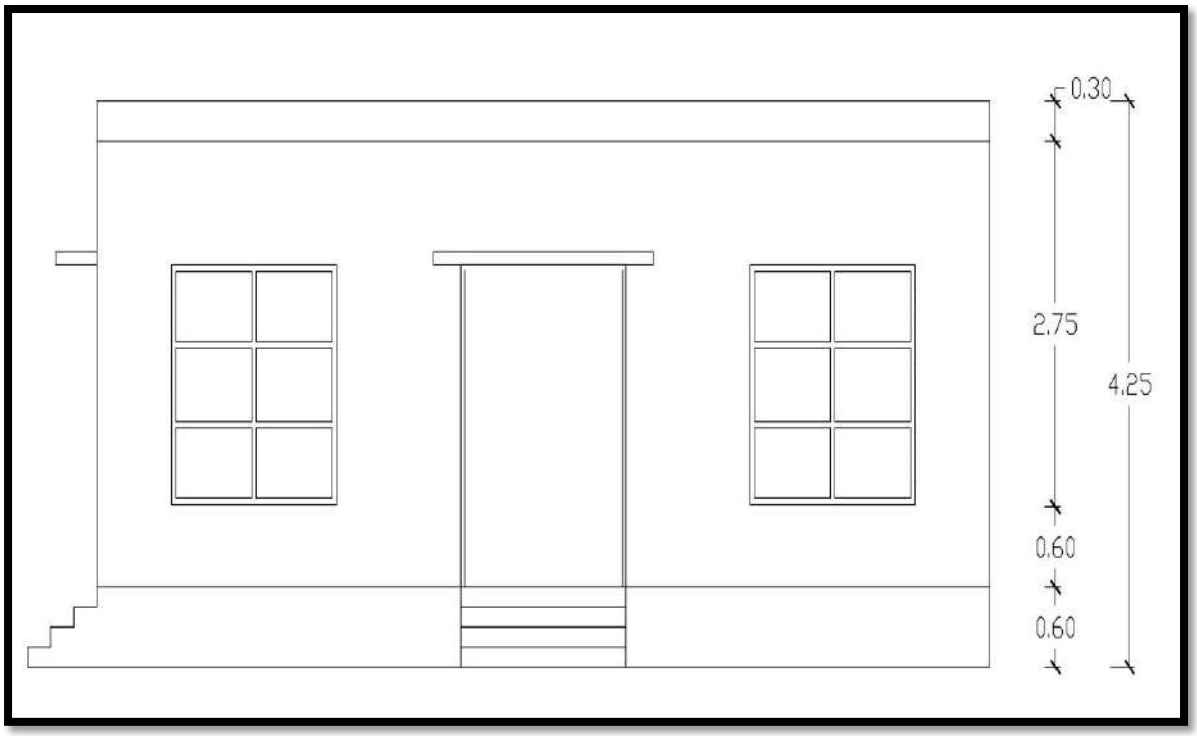


Fig. 13.3 ELEVATION

Measurement Sheet –

Table-21 Measurement Sheet of Fish Market

Sr. No	Description (by Center line Method)	No	Length L (m)	Width B (m)	Height H (m)	Quantity	Total Quantity
1	**Excavation** Total Length = 33m L= 33 – (0.5x1.0) = 32.5m	1	32.5	1	2.58	83.85	**83.85 m^3**
2	**P.C.C. 1:4:8**	1	32.5	1	0.33	10.72	
	P.C.C. 1:4:8 for step	2	1.5	1	0.2	0.6	**11.32 m^3**
3	**Brick work**						
	Brick work up to plinth						
	For step 0.60 m	1	32.2	0.6	0.3	5.80	
	For step 0.50 m	1	31.93	0.5	0.3	4.80	
	For step 0.40 m	1	31.75	0.4	0.3	3.80	
	For step 0.30 m	1	31.6	0.3	1.85	17.54	
	Step for GL To PL						
	For 1st step	2	1.5	0.6	0.2	0.36	
	For 2nd step	2	1.5	0.3	0.2	0.18	**32.48 m^3**
4	**Brick work PL to SL**						
	Total length =31.6	1	31.6	0.3	3.35	31.75	
	Partition wall for W.C. Total length= 4.38m L = 4.38-(0.5x0.2x1) =4.28m	1	4.28	0.2	3.35	2.86	**34.61 m^3**
	Deduction						
	D1	1	1.50	0.3	2.1	0.95	
	D2	2	0.90	0.2	2.1	0.75	
	W1	2	1.80	0.3	1.40	1.50	
	W2	2	1.20	0.3	1.40	1.00	
	V	2	0.6	0.3	0.6	0.20	**4.4 m^3**
	Net Quantity =34.61 – 4.4 = 30.21						**30.21 m^3**

5	**Brick work for parapet wall**	1	33	0.30	0.30	2.97	**2.97 m^3**
6	**Earth filling in Plinth**	1	9.45	6.40	0.5	30.24	**30.24 m^3**
7	**RCC work for Slab**	1	9.75	6.70	0.10	6.53	**6.53 m^3**
8	**Tiles Flooring**						
	Market	1	8.70	6.25		54.38	
	Chokdi	1	1.52	3.20		9.58	**63.96 m^2**
9	**Marbles**						
	D1	2	1.50	0.3		0.9	
		2	2.1	0.3		1.26	
	D2	4	0.90	0.2		0.72	
		4	2.1	0.2		1.68	
	W1	4	1.80	0.3		2.16	
		8	1.40	0.3		3.36	
	W2	4	1.20	0.3		1.44	
	V	8	0.6	0.3		1.44	**12.96 m^2**
10	**Tiles for WC**						
	Walls	4	1.06		3.35	14.20	
	Walls	4	0.90		3.35	12.06	
	Flooring	2	1.06	0.90		1.90	**28.16 m^2**
	Deduction						
	D2	2	0.90		2.1		**- 3.78 m^2**
	Net Quantity = 28.16 – 3.78 = 24.38						**24.38 m^2**
11	**Tiles for Chokdi**						
	Walls	1	3.20		3.35	10.72	

	Deduction						
	W1	1	1.80		1.40	2.52	
					Net Quantity = 10.72 – 2.52 = 8.20		**8.20 m^2**
11	**ALUMINIUM work for door and window**						
	D1	1	1.50		2.1	3.15	
	D2	2	0.90		2.1	3.78	
	W1	2	1.80		1.40	5.04	
	W2	2	1.20		1.40	3.36	
	V	2	0.6		0.6	0.72	**16.05 m^2**
12	**Smooth plaster 12cm thick inside the rooms and ceilings in C.M. 1:3**						
	Plaster for walls	2	9.15		3.35	61.30	
		1	6.10		3.35	20.44	
		1	3.5		3.35	11.72	
	Plaster for ceiling	1	9.15	6.10		55.82	**149.28 m^2**
	Deduction						
	D1	½	1.50		2.1	1.58	
	D2	2/2	0.90		2.1	1.90	
	W1	2/2	1.80		1.40	2.52	
	W2	2/2	1.20		1.40	1.68	**- 7.68 m^2**
					Net Quantity = 149.28 – 7.68 = 141.60		**141.60 m^2**
13	**Rough plaster outside 15 cm thick**	2	9.75		4.25	82.88	
		2	6.70		4.25	56.95	**139.84 m^2**
	Deduction						
	D1	½	1.50		2.1	1.58	
	D2	2/2	0.90		2.1	1.90	
	W1	2/2	1.80		1.40	2.52	

	W2	2/2	1.20		1.40	1.68	**- 7.68 m^2**
	Net Quantity = 139.83 – 7.68 = 132.15						**132.15 m^2**

Abstract Sheet –

Table-22 Abstract Sheet of Fish Market

Sr. no	Description	Total Quantity	Rate	Per Unit	Total Amount
1	Excavation in foundation	83.85	85.90	m^3	7,202.70
2	P.C.C. 1:4:8	11.32	2324	m^3	26,307.70
3	Brick work up to plinth	32.48	3000	m^3	97,440.00
4	Brick work in Super Structure up to slab	30.21	3500	m^3	1,05,735.00
5	Brick work for parapet wall	2.97	3000	m^3	8,910.00
6	Earth filling in plinth	30.24	50	m^3	1,512.00
7	RCC work in Slab, Chhajja	9.70	8800	m^3	85,360.00
8	Tiles Flooring	63.96	450	m^2	28,782.00
9	Marble	12.96	80	m^2	1,036.80
9	Tiles for W.C	32.58	360	m^2	11,728.00
10	Aluminum Frame work	16.05	250	m^2	4,012.50
11	Smooth plaster 12cm thick	141.60	230	m^2	32,568.00
12	Rough plaster 15cm thick	132.15	300	m^2	39,645.00
13	Painting	273.75	250	m^2	68,437.00
				Total :	**5,18,676.70 ₹**
				Add 5 % Contingency Charges:	25,933.80 ₹
				Add 2 % Work Establishment Charges:	10,373.50 ₹
				Add 3 % Electric Charges:	15,560.00 ₹
				Add 2.5 % Sanitary & Plumbing Charge:	12,966.90 ₹
				Grand Total :	**5,83,510.90 ₹**

Total cost of Project = ₹ 5,83,510.90 /-

13.1.2 Civil Design 2 – Post Office

Scenario:
As we have surveyed we have seen a requirement of post office, because current scenario of Post Office is very bad condition. So according to the requirement we have given design for 7.6 x 6.6 m

Existing situation of Krushnapur village:
Currently there is Post office is in Bad Condition in Krushnapur village. It can't be repair. Require new construction of Post Office.

Sustainability of design proposal:
By providing a Post office that provides mail services and many more. People living in villages will now be able to get the same Post Office Savings Bank Facilities which people in urban areas have been availing.

Design summary:

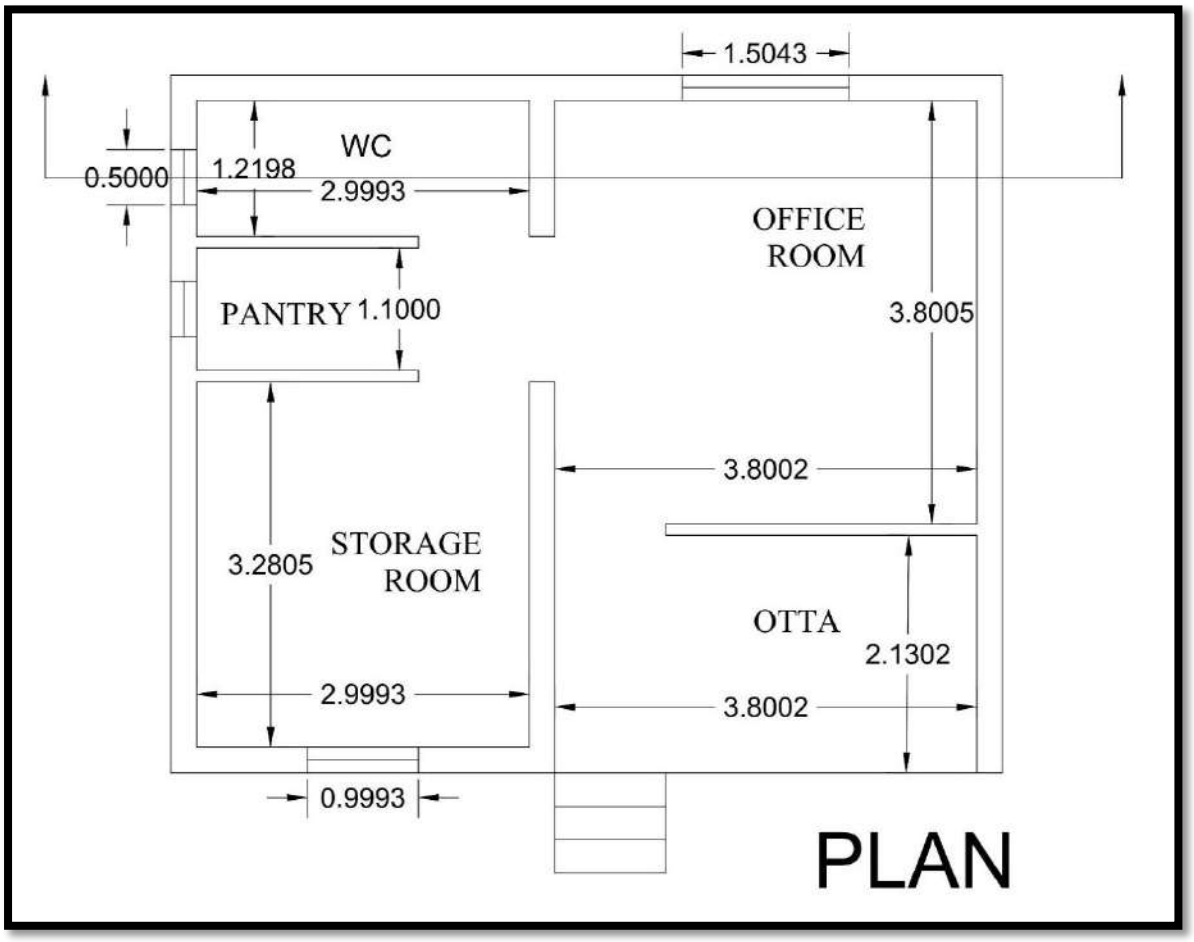


Fig. 13.4 PLAN OF POST OFFICE

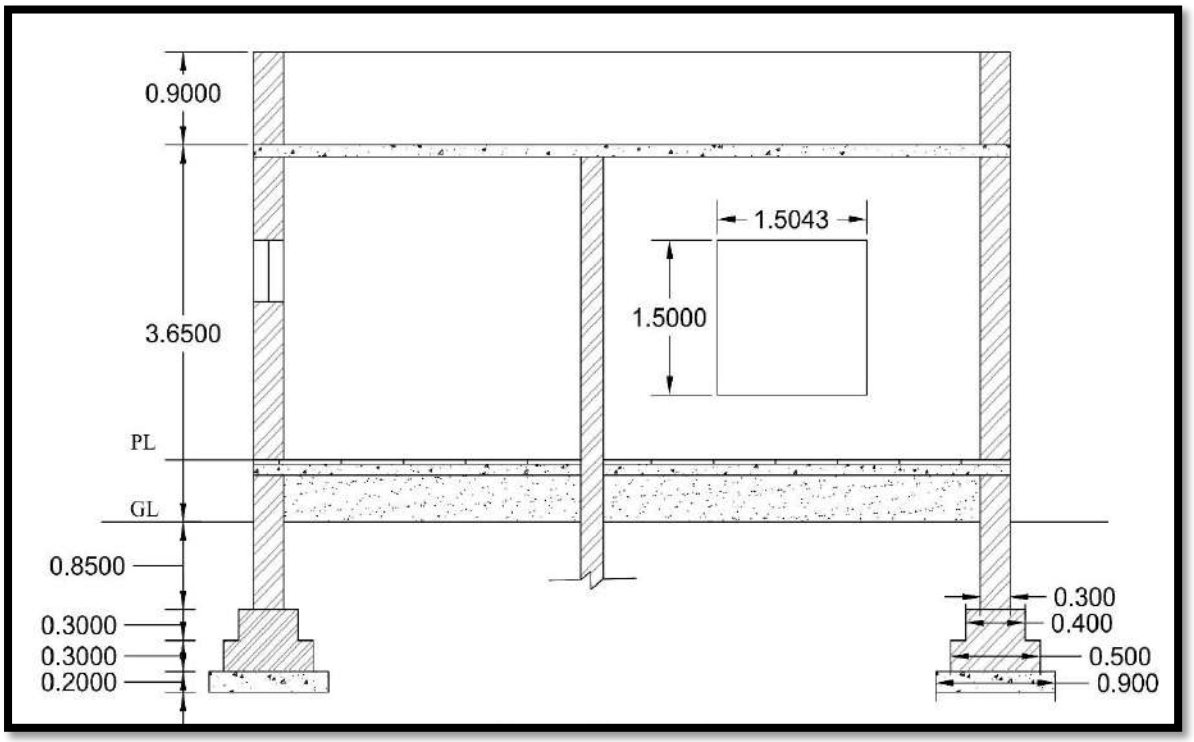


Fig. 13.5 SECTION

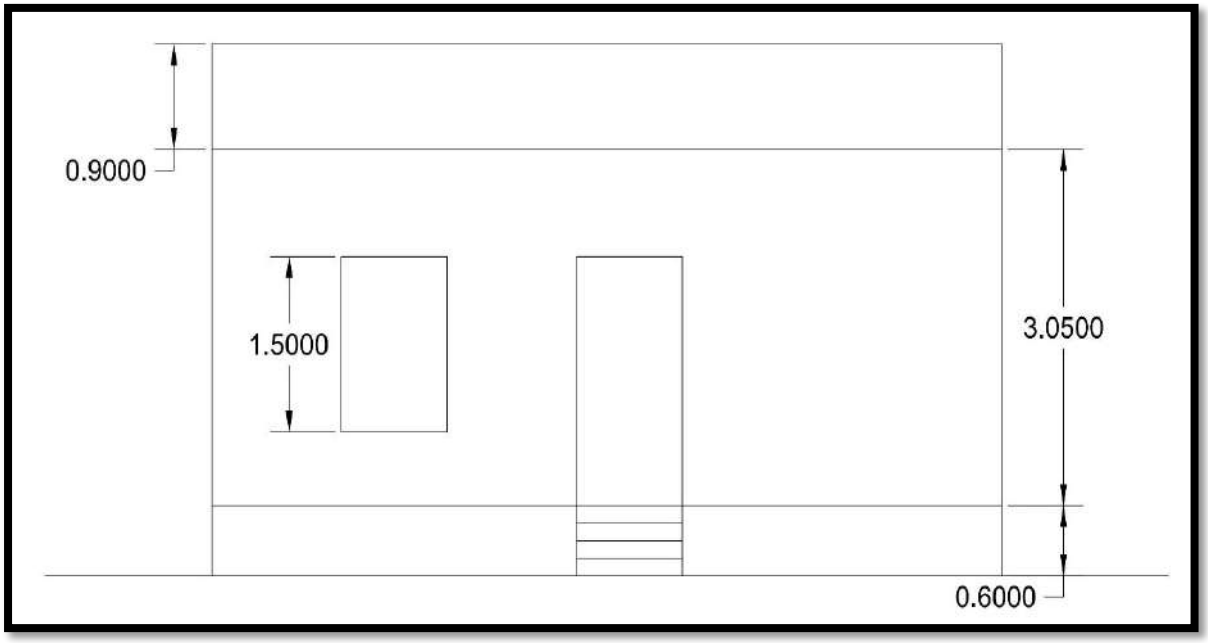


Fig. 13.6 ELEVATION

Measurement Sheet –

Table-23 Measurement Sheet of Post Office

Sr. No	Description	No	Length L (m)	Width B (m)	Height H (m)	Quantity	Total Quantity
1	**Earthwork in excavation**						
	Long Wall L= 3.8+.3+2.3+0.3+0.9=7.5 H = 0.2+.3+.3+.3=1.1	3	7.5	0.9	1.1	22.27	
	Short Wall Type 1 L= 3.8+0.3-0.9 =3.2	3	3.2	0.9	1.1	9.50	
	Short Wall Type 2 L= 3+0.3-0.9 =2.4	4	2.4	0.9	1.1	9.50	**41.27 m^3**
2	**Brick Bat Cement Concrete**						
	Long Wall	3	7.5	0.9	0.2	4.05	
	Short Wall Type 1	3	3.2	0.9	0.2	1.72	
	Short Wall Type 2	4	2.4	0.9	0.2	1.72	**7.506 m^3**
3	**Brick Masonry Up to Plinth In C.M. 1:6**						
	Long Wall						
	First Step 7.5-2x0.2=7.1	3	7.1	0.5	0.3	3.19	
	Second Step 7.1-2x0.05=7	3	7	0.4	0.3	2.52	
	Third Step 7.2x2x0.05=6.9	3	6.9	0.3	0.85	5.27	

	Short Wall Type 1						
	First Step 3.2+2x0.2=3.6	3	3.6	0.5	0.3	1.62	
	Second Step 3.6+2x0.05=3.7	3	3.7	0.4	0.3	1.33	
	Third Step 3.7+2x0.05=3.8	3	3.8	0.3	0.3	2.90	
	Short Wall Type 2						
	First Step 2.4+2x0.2=2.8	4	2.8	0.5	0.3	1.68	
	Second Step 2.8+2x0.05=2.9	4	2.9	0.4	0.3	1.39	
	Third Step 2.9+2x0.05=3	4	3	003	0.85	3.06	**22.95 m^3**
	Stairs Step						
	First Step	1	1	0.9	0.20	0.18	
	Second Step	1	1	0.6	0.20	0.12	
	Third Step	1	1	0.3	0.20	0.06	**0.36 m^3**
4	**Brick Masonry Up to Slab Level in CM 1:6**						
	Long Wall	3	6.9	0.3	3	18.83	
	Short Wall Type 1	3	3.8	0.3	3	10.26	
	Short Wall Type 2	4	3	0.3	3	10.8	**39.69 m^3**
A	**Deduction For Door & Window**						
	D1	5	1	0.3	2.5	3.75	
	W1	1	1.5	0.3	1.5	0.67	
	W2	2	0.5	0.3	0.5	0.15	
	V	1	1	0.3	1.5	0.45	**- 5.02 m^3**
B	**Deduction For Door & Window Lintels**						
	D1	5	1.3	0.3	0.15	0.29	
	W1	1	1.8	0.3	0.15	0.08	
	W2	2	0.8	0.3	0.15	0.07	
	V	1	1.3	0.3	0.15	0.05	**- 0.50 m^3**

	Net Quantity = 36.69 – 5.02 – 0.50 =						**31.17 m^3**
5	**Smooth Plaster**						
	Plaster For Wall						
	Office Room	4	3.8		3	45.6	
	Storage Room	2	3		3	18.0	
		2	3.2		3	19.2	
	Pantry	2	2		3	12.0	
		1	1.1		3	3.3	
	WC	2	3		3	18.0	
		2	1.2		3	7.2	
	Celling Plaster						
	Office Room	1	3.8	3.8		14.44	
	Storage Room	1	3.2	3		9.6	
	WC	1	3	1.2		3.6	
	Pantry	1	1.1	2		2.2	**156.74 m^2**
	Deduction for Plaster						
	D	5/2		1	2.5	6.25	
	W1	2/2		1.5	1.5	2.25	
	W2	1/2		1	1.5	0.75	
	V	1/2		0.5	0.5	0.125	**- 9.375 m^2**
	Net Quantity = 156.74 – 9.375 =						**147.10 m^2**

Abstract Sheet –

Table-24 Abstract Sheet of Post Office

Sr. no	Description	Total Quantity	Rate	Per Unit	Total Amount
1	Excavation of foundation up to 1.1m depth sorting out and stacking of useful materials and disposing of excavated stuff up to 50M lead	41.27	67.2	m^3	2,773.00
2	Providing and laying cement concrete 1:3:6 (1cement: 3coase sand: 6 graded stone aggregate	7.506	2486	m^3	18,645.00

	20mm. Nominal size) and curing complete excluding cost of formwork in foundation				
3	Brick masonry work in common brunt clay building bricks having crushing strength not less than 35 kg/sq.cm in cement mortar 1:6(1 cement: 6 coarse sand) in foundation	22.95	3147	m^3	72,223.00
4	Brick masonry in common brunt clay building bricks having crushing strength not less than 35 kg/sq.cm in cement mortar 1:6(1 cement: 6 coarse sand) in plinth	0.36	3650	m^3	1,314.00
5	Brick Masonry Up to Slab Level in CM 1:6	31.17	3147	m^3	98,092.00
6	Providing 20mm thick cement plaster in single coat on rough side of single or half brick walls for interior plastering up to two level and finished even and smooth in even mortar 1:4 (1cement: 4 sand)	35.28	134	m^2	4,728.00
7	20mm thick outside double coat sand faced cement plaster on walls up to height 3 m above ground level consisting of 12mm thick backing coat of CM 1:3(1 cement: 3 coarse sand) and 8mm thick finishing coat of CM 1:1(1 cement:1 coarse sand) etc. complete	104.14	174	m^2	18,120.36
8	Providing and laying tiles 6mm thick in flooring, treads of steps laid on a bed of 12mm thick cement mortar 1:3 (1-cement : 3coarse sand) finishing with flush pointing in white cement. A) white Glazed tiles	29	906	m^2	26,274.00
9	Providing and laying tiles 6mm thick in dado and jointed with white cement slurry A) white Glazed tiles.	19.32	650	m^2	12,558.00
				Total :	**2,54,727.36 ₹**
				Add 5 % contingency charge :	12,736.36 ₹
				Add 2 % work charge establishment :	5,094.54 ₹
				Add 1.5 % electric charge :	3,820.92 ₹
				Grand Total :	**2,76,380.00 ₹**

Total Cost of Project = ₹ 2,76,380.00 /-

13.1.3 Civil Design 3 – Community Hall

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

Existing situation of Krushnapur village:
In the Krushapur village there is no any community hall so that according to the village population there should be requires one community hall in village.

Sustainability of design proposal:
All the people living in the village of even outsiders from nearby villages and relatives of the villagers can use or utilize a community hall for their different uses with the permission of Sarpanch, Talati and some authorized people of the village.

Design summary:

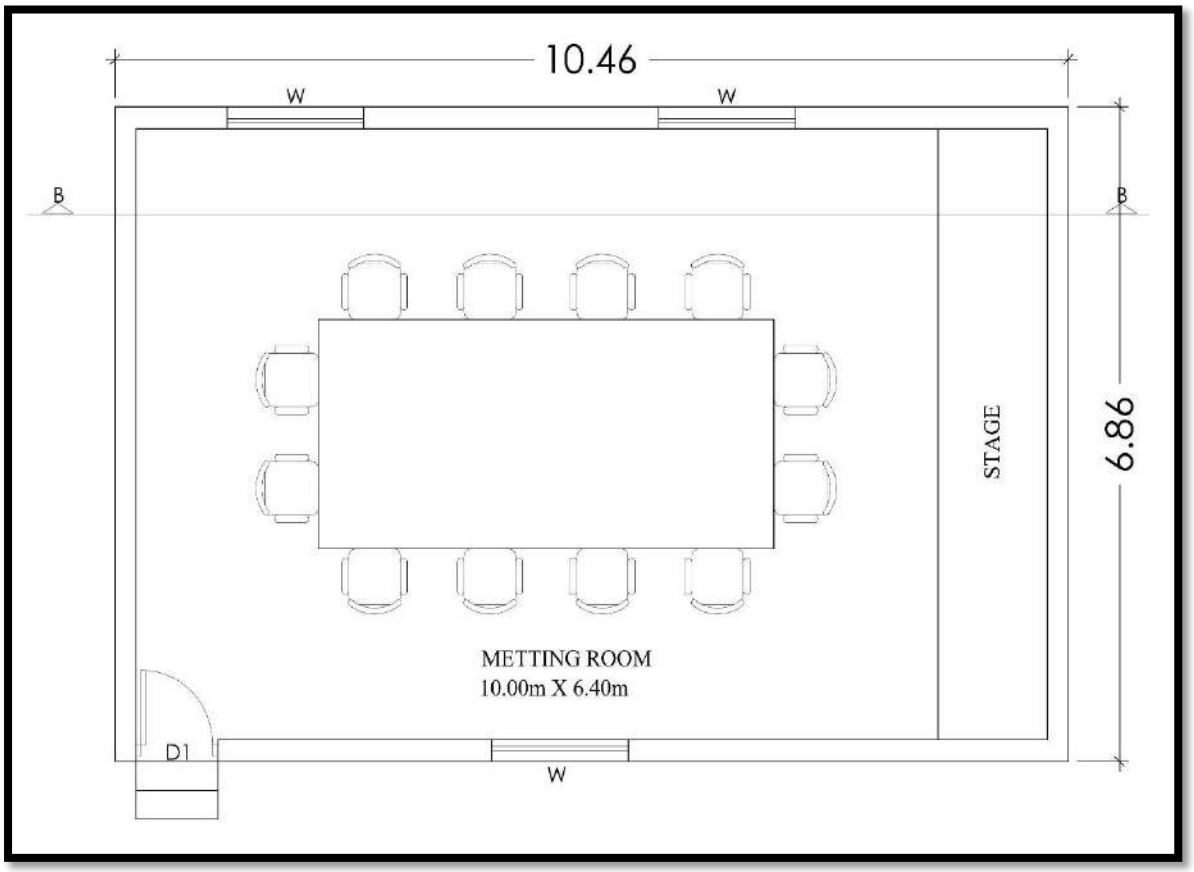


Fig. 13.7 PLAN OF COMMUNITY HALL

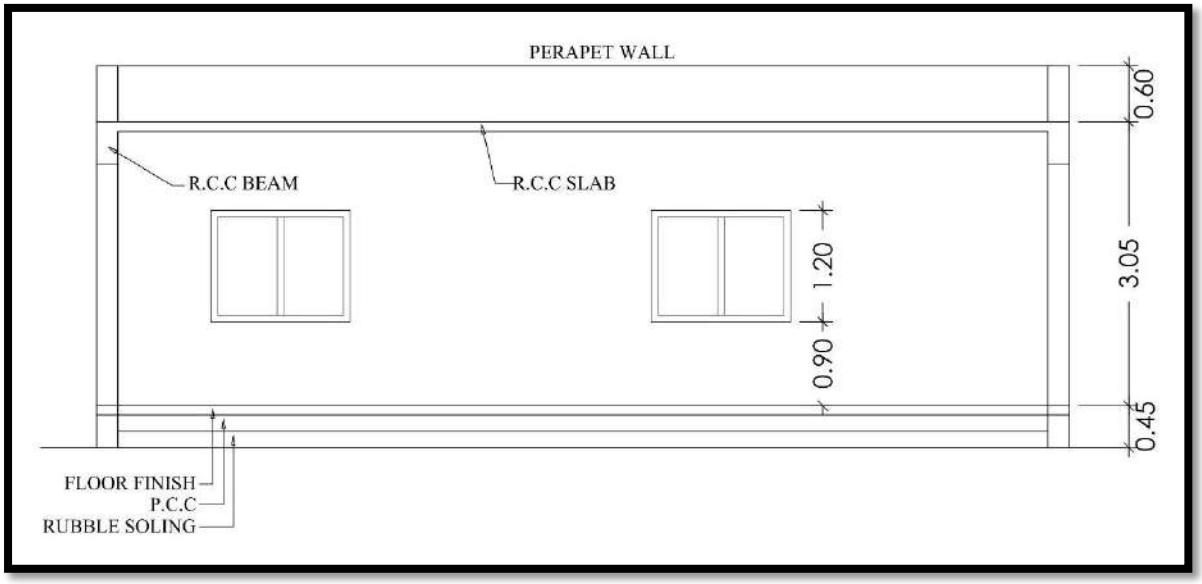


Fig. 13.8 SECTION B – B

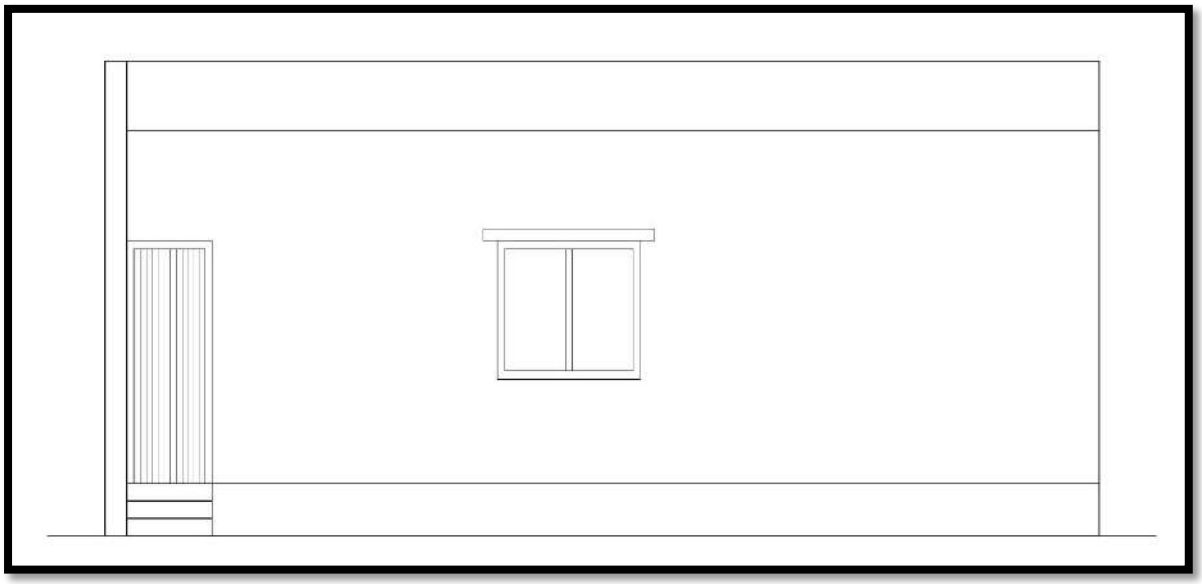


Fig. 13.9 ELEVATION

Measurement sheet –

Table-25 Measurement Sheet of Community Hall

Sr. no	Description	No	Length L (m)	Width B (m)	Height H (m)	Quantity	Total Quantity
1	**Excavation for foundation**						
	Long wall	2	11.73	1.73	1.5	60.87	
	Short wall	2	4.67	1.73	1.5	24.23	**85.11 m^3**
2	**Plain cement concrete (1:4:8) for foundation**	4	1.73	1.73	0.15	1.79	**1.79 m^3**
3	**Brick masonry up to plinth in C.M. 1:6**						
	First step	4	1.43	1.43	0.30	2.45	

	Second step	4	0.83	0.83	0.30	0.82	**3.28 m^3**
A	Footing pedestal	4	0.23	0.30	0.60	0.16	**0.16 m^3**
B	Footing wall	1	32.52	0.230	0.60	4.48	**4.48 m^3**
C	Ground beam	1	33.72	0.230	0.300	2.32	**2.32 m^3**
D	Murram filling	1	10.00	6.40	0.20	12.8	**12.8 m^3**
E	Rubble soling	1	3.54	2.04	0.20	1.44	**1.44 m^3**
F	Plain cement concrete slab	1	10.46	6.86	0.15	10.76	**10.76 m^3**
G	Floor finish	1	10.00	6.40	0.10	6.4	**6.4 m^3**
H	Column	4	0.23	0.30	2.9	0.80	**0.80 m^3**
4	**Brick masonry above plinth up to slab level in CM (1:6)**	1	33.72	0.230	2.9	22.49	
	Deduction						
	Door	1	1	2.10	0.23	0.48	
	Window	3	1.5	1.5	0.23	1.55	
	Lintel	1	33.72	0.23	0.10	0.77	**19.68 m^3**
5	**Slab beam**	1	33.72	0.230	0.45	3.49	**3.49 m^3**
6	**R.C.C. work for slab**	1	10.46	6.86	0.15	10.76	**10.76 m^3**
7	**Parapet wall**	1	33.72	0.230	0.60	4.65	**4.65 m^3**
8	**Smooth plaster 12 cm thick inside and celling in CM1:3** Cabin Celling Deduction for door	 2 2 1 1	 9.86 6.26 9.86 1.0	 9.86 	 0.23 	 19.72 12.52 97.22 	 **129.23 m^2**
9	**Rough plaster outside 15 cm thick** Cabin Deduction for door	 2 2 1	 10.46 6.86 1.0	 	 3.65 3.65 0.23	 76.35 50.07 0.23	 **126.20 m^2**

Abstract sheet –

Table-26 Abstract Sheet of Community Hall

Sr. no	Description	Total Quantity	Rate	Per Unit	Total Amount
1	Excavation For Foundation	86.77	85.90	m^3	7,454.05
2	P.C.C (1:4:8)	1.79	2324.00	m^3	4,173.20

3	Brick work In foundation and plinth in cement mortar 1:6	3.28	3000	m^3	9,841.20
A	Footing pedestal	0.16	2500	m^3	414.00
B	Footing wall	4.48	2350	m^3	10,544.45
C	Ground beam	2.32	4436.71	m^3	10,322.44
D	Earth filling	12.8	50	m^3	640.00
E	P.C.C. slab	10.76	4250	m^3	45,742.75
F	Floor finish	6.4	636	m^2	4,070.40
G	Column	0.80	4910.87	m^3	3,930.66
4	Brickwork up to slab	19.68	3500	m^3	68,880.00
5	Slab beam	3.49	4875.75	m^3	17,016.36
6	R.C.C. work for slab	10.76	7800	m^3	83,951.40
7	Parapet Wall	4.65	3000	m^3	13,959.00
8	Smooth Plaster 12 cm Thick	129.23	230	m^2	29,722.90
9	Rough Plaster 15cm Thick	126.20	300	m^2	37,861.80
10	Painting	255.43	250	m^2	63,859.00
				Total :	**4,12,383.62 ₹**
				Add 5 % Contingency Charge :	20,619.18 ₹
				Add 2 % Work Charge Establishment :	8,247.67 ₹
				Add 1.5 % Electric Charge :	6,185.75 ₹
				Grand Total :	**44,74,36.23 ₹**

Total Cost of project = ₹ 44,74,36.23 /-

13.1.4 Civil Design 4 – Library

Scenario:
The importance of library cannot be over emphasized. A library is an important source of knowledge to young minds. It develops the important habit of reading among the students. A library can be considered a store – house of knowledge. In dictionaries the word "library" has been defined as "a building or room containing a collection of books". A library renders a great service to the society.

Existing situation of Krushnapur village:
Currently there is no Library available in this village.

Sustainability of design proposal:
By providing a Library, its plays a very important role in promoting the progress of knowledge. There are many people who love reading. But they can't afford to buy books because the prices of books are very high. So when one becomes a member of a library, he can borrow valuable books. A member can borrow two books at a time and he can keep it with him for two weeks.

Design summary:

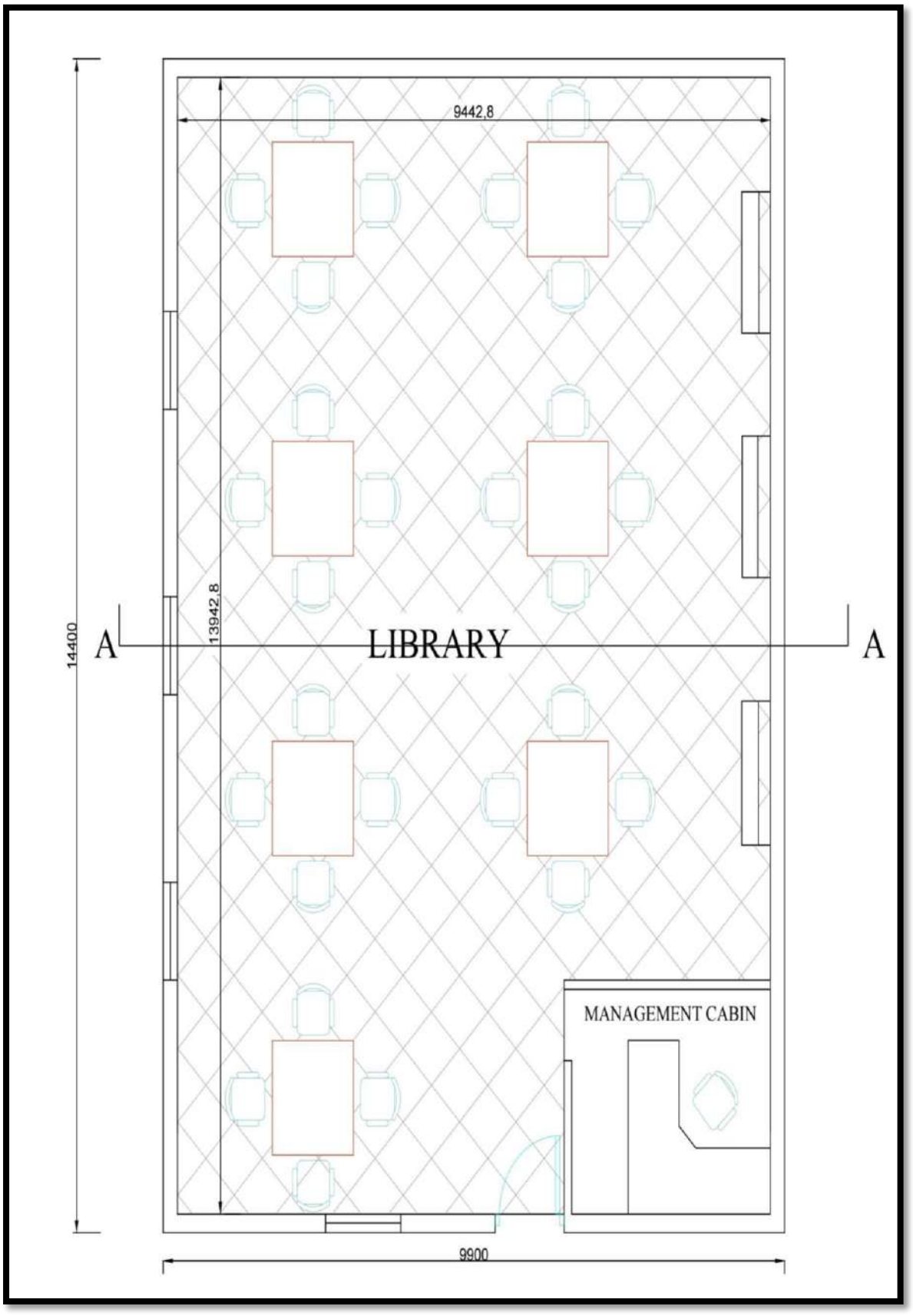


Fig. 13.10 PLAN OF LIBRARY

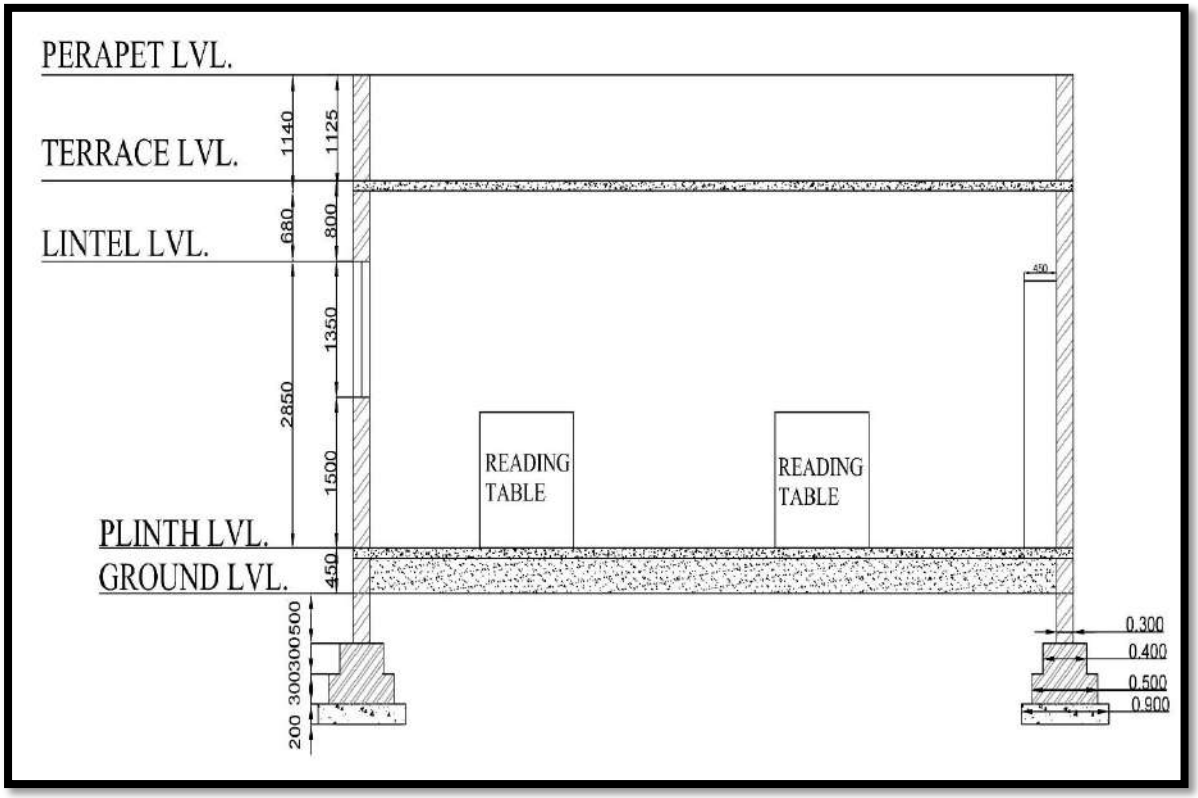


Fig. 13.11 SECTION A – A

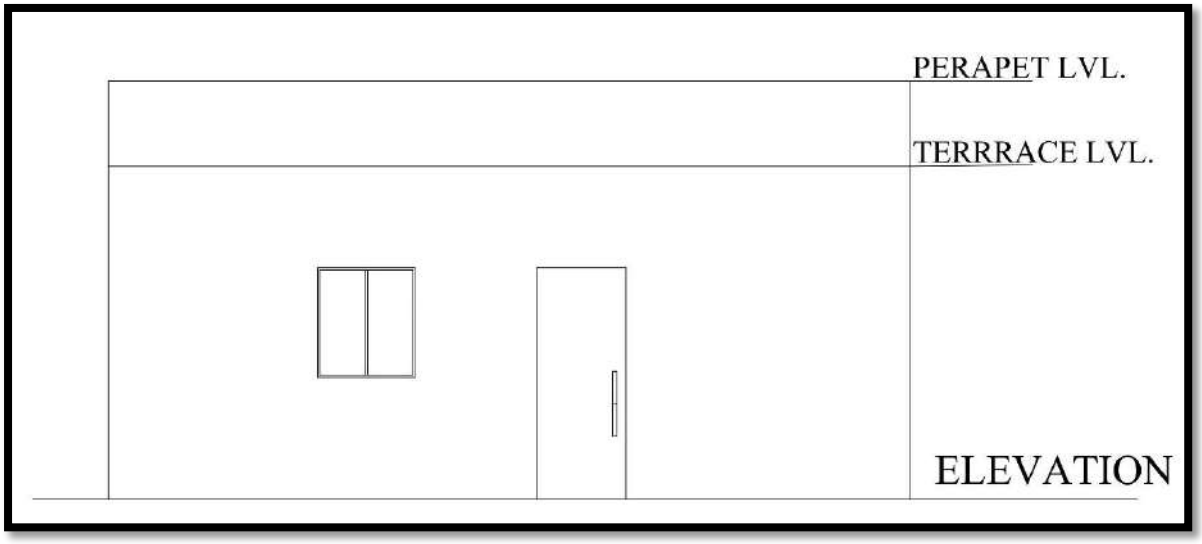


Fig. 13.12 ELEVATION

Measurement sheet

Table-27 Measurement Sheet of Library

Sr. no	Descriptions	No	Length (m)	Width (m)	Height (m)	Quantity	Total Quantity
1	**Earthwork in excavation in Foundation**						
`	L=14+0.2+(2x0.45)=15.1m	2	15.1	0.9	1.1	29.90	
	S=9.50+0.2-(2x0.45)=8.8m	2	8.8	0.9	1.1	17.42	**47.32 m^3**

2	**Brick Bat Cement Concrete (1:4:8) for foundation**						
	L = 15.1m	2	15.1	0.9	0.2	5.43	
	S = 8.8m	2	8.8	0.9	0.2	3.16	**8.60 m^3**
3	**Brick Masonry up to plinth in CM (1:6)**						
	L = 15.1-0.4 = 14.7m	2	14.7	0.5	0.3	4.41	
	L = 14.7-0.1 = 14.6m	2	14.6	0.4	0.3	3.50	
	L = 14.6-0.1 = 14.5m	2	14.5	0.3	0.85	7.395	
	S = 8.8+0.4 = 9.2m	2	9.2	0.5	0.3	2.76	
	S = 9.2+0.1 = 9.3m	2	9.3	0.4	0.3	2.23	
	S = 9.3+0.1 = 9.4m	2	9.4	0.3	0.85	4.79	
	Steps:						
	1^{st}	1	1.1	0.9	0.15	0.15	
	2^{nd}	1	1.1	0.6	0.15	0.10	
	3^{rd}	1	1.1	0.3	0.15	0.05	**25.39 m^3**
4	**Brick Masonry above plinth to slab in CM (1:6)**						
	L = 14.5-0.1 = 14.4m	2	14.4	0.2	3.0	17.28	
	S = 9.4+0.1 = 9.5m	2	9.5	0.2	3.0	11.4	**28.68 m^3**
	Deduction For Door/Window:						
	D1	1	1.1	0.2	2.1	0.46	
	W1	4	1.2	0.2	1.4	1.34	**1.80 m^3**
	Deduction for lintels above door & windows						
	D1	1	1.4	0.2	0.15	0.04	
	W1	4	1.5	0.2	0.15	0.18	**0.22 m^3**
					Net Quantity = 28.68 - 1.80 - 0.22 =		**26.65 m^3**
5	**Smooth plaster inside Rooms & Ceiling**						
	Plaster For Wall	2	14		3	84	

		2	9.50		3	57	
	Ceiling	1	14	9.50		133	**274 m^2**
	Deduction:						
	D1	1/2	1.1		2.1	1.15	
	W1	4/2	1.2		1.4	3.36	**4.51 m^2**
						Net Quantity = 274 - 4.515 =	**269.48 m^2**
6	**Smooth plaster on outer wall**	2	14.4		3	86.4	
		2	9.9		3	59.4	
	Deduction for door & windows:					4.51	
						Net quantity= 145.8 – 4.51 =	**141.28 m^2**
7	**White wash (inside)**						
	Walls	2	14		3	84	
		2		9.50	3	57	
	Ceiling	1	14	9.50		133	**274 m^2**
	Deduction						**4.51 m^2**
						Net quantity= 274 – 4.51=	**269.48 m^2**
8	**White wash (outside)**	2	14.4		3	86.4	
		2	9.9		3	59.4	**145.8 m^2**
	Deduction for door & windows:						**4.515 m^2**
						Net quantity= 145.8 – 4.515=	**141.28 m^2**
9	**Earth Filling in Plinth**	1	14	9.50	0.45	59.85	**59.85 m^3**
10	**Brick work for Parapet wall**						
	L = 23.9m	1	23.9	0.3	1.0	7.17	**7.17 m^3**

Abstract sheet

Table-28 Abstract Sheet of Library

Sr. no	Item Description	Quantity	Rate	Per	Amount
1	Earthwork in excavation in foundation	47.32	90	m^3	4259.16
2	Brick Bat Cement Concrete (1:4:8) for foundation	8.60	2700	m^3	23230.80
3	Earth Filling in plinth	59.85	50	m^3	2992.50
4	Brick Masonry up to plinth in CM (1:6)	25.39	3200	m^3	81248.00
5	Brick Masonry above plinth to slab in CM (1:6)	26.65	3500	m^3	93282.00
6	Smooth plaster inside Rooms & Ceiling	269.48	150	m^2	40422.75
7	Smooth plaster on outer wall	141.28	150	m^2	21193.00
8	White wash (inside)	269.48	5	m^2	1347.50
9	White wash (outside)	141.28	5	m^2	706.50
10	Brick work for Parapet wall	7.17	3500	m^3	25095.00
				Total :	**2,93,777.00 ₹**
				Add 1.5% Water Charge :	4,407.00 ₹
				Add 10% Contractor Profit :	29,378.00 ₹
				Grand Total :	**3,27,562.00 ₹**

Total Cost of project = ₹ 3,27,562.00 /-

13.1.5 Civil Design 5 – Over Head Reservoir

Scenario:
Water storage capacity is not enough to household for commerce daily needs, water can't be bored due to salinity of ground water. As the population of Krushnapur village increases continuously, we propose construction of Over Head Reservoir.

Existing situation of Krushnapur village:
Currently there is only one Over Head Reservoir in Krushnapur village. Require one more Over Head Reservoir.

Sustainability of design proposal:
By calculating water demand for Krushnapur Village. We conclude that the village requires 30,00,000 liters capacity of tank. Which full fill their water requirement of daily needs and other needs for more than 30+ years.

Design summary:

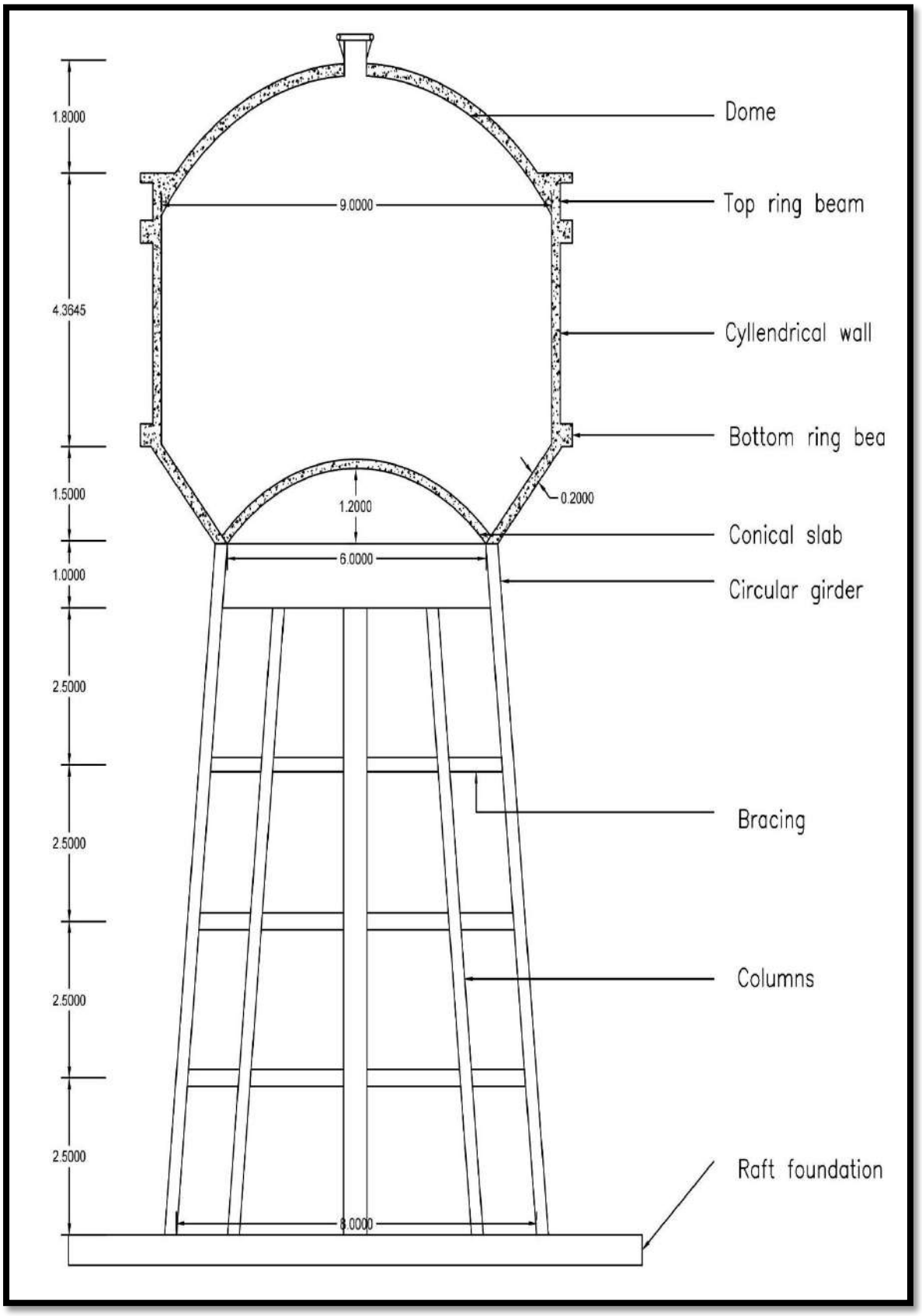


Fig. 13.13 ELEVATION OF OVER HEAD RESERVOIR

Measurement Sheet –

Table-29 Measurement Sheet of Over Head Reservoir

Sr. No	Description	No	Length L (m)	Width B (m)	Height H (m)	Quantity	Total Quantity
1	**Excavation**	1	73.89		1	73.89	**73.89 m^3**
2	**R.C.C work in foundation**	1	7.06		0.2	1.41	**1.41 m^3**
3	**Steel in foundation** 1) Longitudinal **2)** Transverse	 9 4	 π x 0.008^2 π x 0.008^2			 0.045 0.02	 **0.065 m**
4	**R.C.C work in columns** **Steel in columns**	8 8x6	0.3 x 0.3 π x 0.01^2		10 10	7.2 0.15	**7.2 m^3** **0.15 m**
5	**R.C.C. in bracing @ 2.5** **Steel in bracing @ 2.5m from G.L.**	8 8x8	0.63 0.63	0.3 π x 0.009^2	0.3	0.45 0.01	**0.45 m^3** **0.01 m**
6	**R.C.C. in bracing @ 5 from G.L**	8	0.57	0.3	0.3	0.414	**0.414 m^3**
7	**R.C.C. in bracing @ 7.5 from G.L**	8	0.45	π x 0.009^2		0.324	**0.324 m^3**
8	**Top ring RCC girder** A) RCC B) Steel Longitudinal Transvers	1 5 125	πD 6π 6π	0.4 x 0.6 π x 0.009^2		4.52 0.06 0.066	**4.52 m^3** **0.07 m**
9	**Bottom Dome** A) RCC in Dome B) Steel	 1	22.61 L= 6.62		0.2 0.667	 4.253 0.443	 **4.253 m^3** **0.443 m**
10	A) RCC conical Slab B) Steel Steel for B.M	1 14 3	23.56 23.56 23.56	0.2 x 2.12 π x 0.008^2		9.94 0.066 0.014	**9.94 m^3** **0.08 m**
11	**a) RCC ring Beam @ B** **b) Steel**	1 6	28.27	0.25 x 0.5 π x 0.008^2		3.53 0.034	**3.53 m^3** **0.034 m**

12	**Cylindrical Wall** Main Steel	1 20	 4.32	0.2 x 4 π x 0.006^2	22.61 0.098	**22.61 m^3** **0.098 m**
13	**RCC ring Beam @ A** a) Concrete b) Steel	 1 4	 9π 9π	 0.2 x 0.04 π x 0.006^2	 1.12 0.012	 **1.12 m^3** **0.012 m**
14	**Top Dome RCC** a) Concrete b) Steel	 1 100	 9.93	 50.89 x 0.19 π x 0.004^2	 7.63 0.05	 **7.63 m^3** **0.05 m**
15	**Total Plastering**	1			105.53	**105.53 m^2**

Abstract Sheet –

Table-30 Abstract Sheet of Over Head Reservoir

Sr. no	Description	Total Quantity	Rate	Per Unit	Total Amount
1	Excavation work in foundation	73.89	85.90	m^3	6,347.15
2	Total R.C.C work	63.80	7800	m^3	4,97,640.00
3	Total Plastering 1:6 1:2	105.53 65.44 40.09	 600 800	m^2	 39,264.00 32,072.00
4	Total Painting	105.53	250	m^2	26,382.50
5	Total Steel	19.88	63,266.74	Ton	12.58,094.00
				Total :	**18,59,799.65 ₹**
				Add 5 % Contingency Charges:	92,989.95 ₹
				Add 2 % Work Establishment Charges:	37,195.98 ₹
				Add 3 % Electric Charges:	55,793.98 ₹
				Add 2.5 % Sanitary & Plumbing Charge:	46,494.98 ₹
				Grand Total :	**20,92,274.45 ₹**

Total Cost of project = ₹ 20,92,274.45 /-

13.1.6 Civil Design 6 – Primary School Toilet

Scenario:
The primary school toilet was of very bad condition which was not good for the teaching staff as well the student

Existing situation of Krushnapur village:
Currently there is no proper Toilet in Krushnapur village's Govt. Primary School. Require proper Toilet.

Sustainability of design proposal:
This is a lavatory designs for Boys and Girls and also for staff.

Design summary:

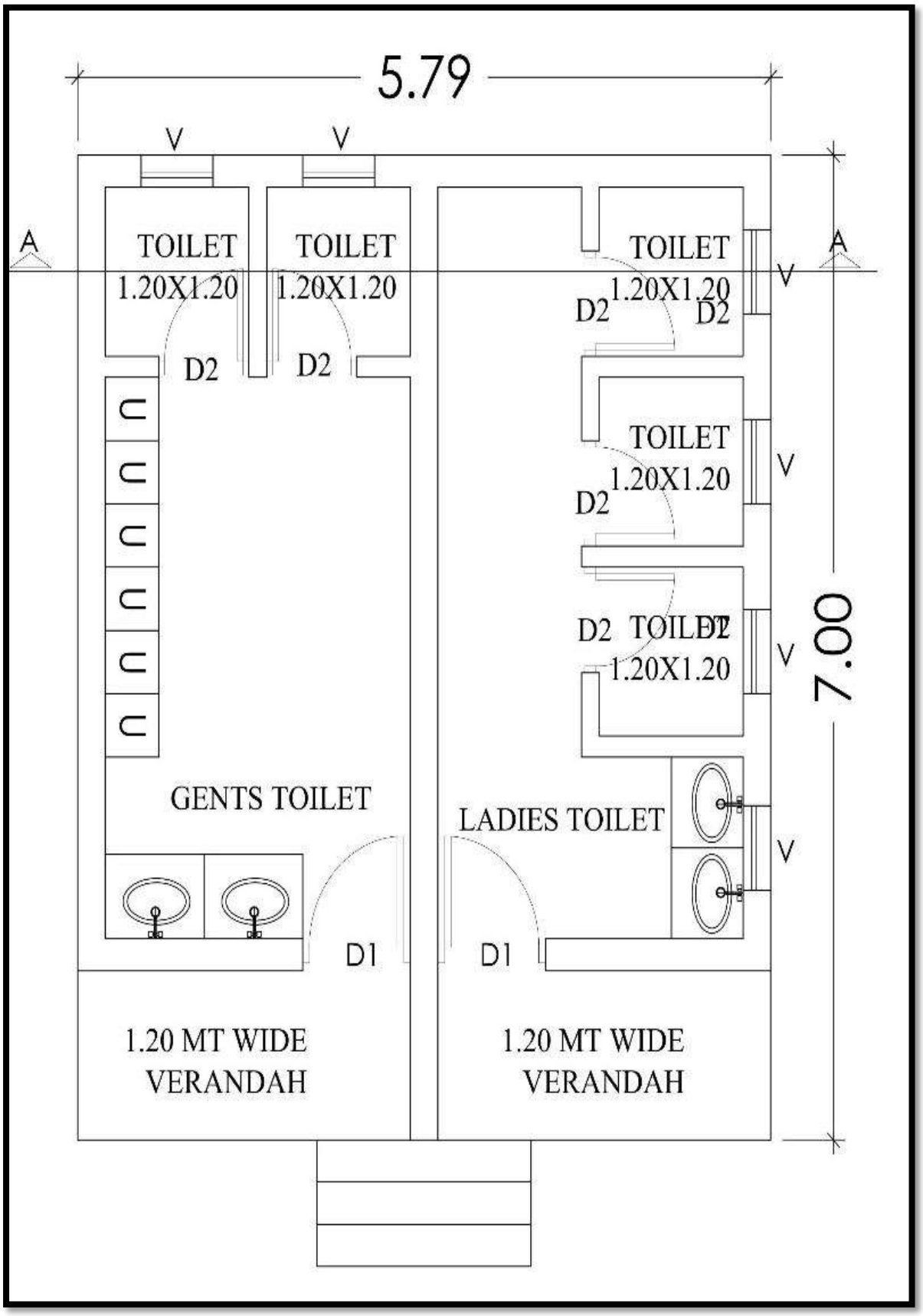


Fig. 13.14 PLAN OF PRIMARY SCHOOL TOILET

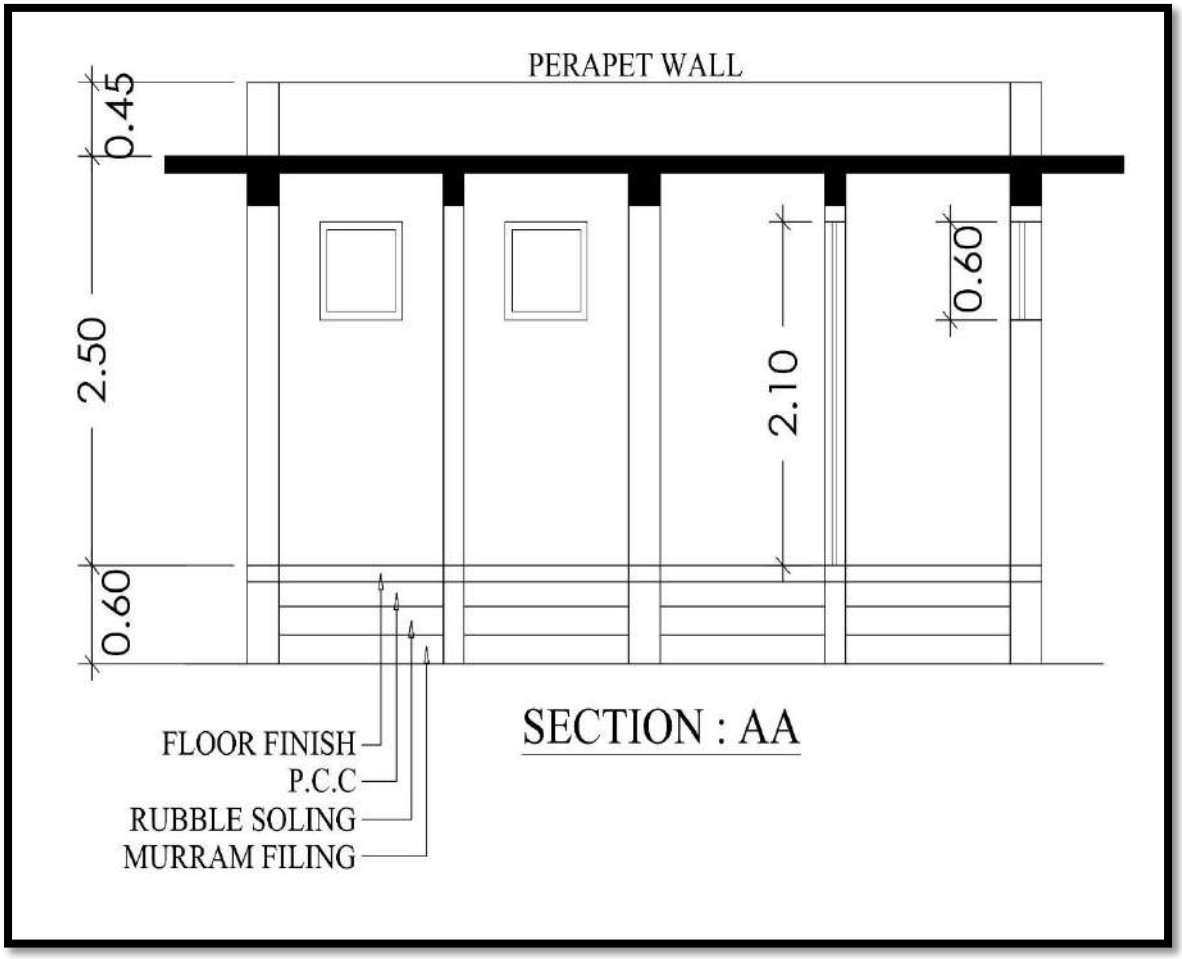


Fig. 13.15 SECTION A – A

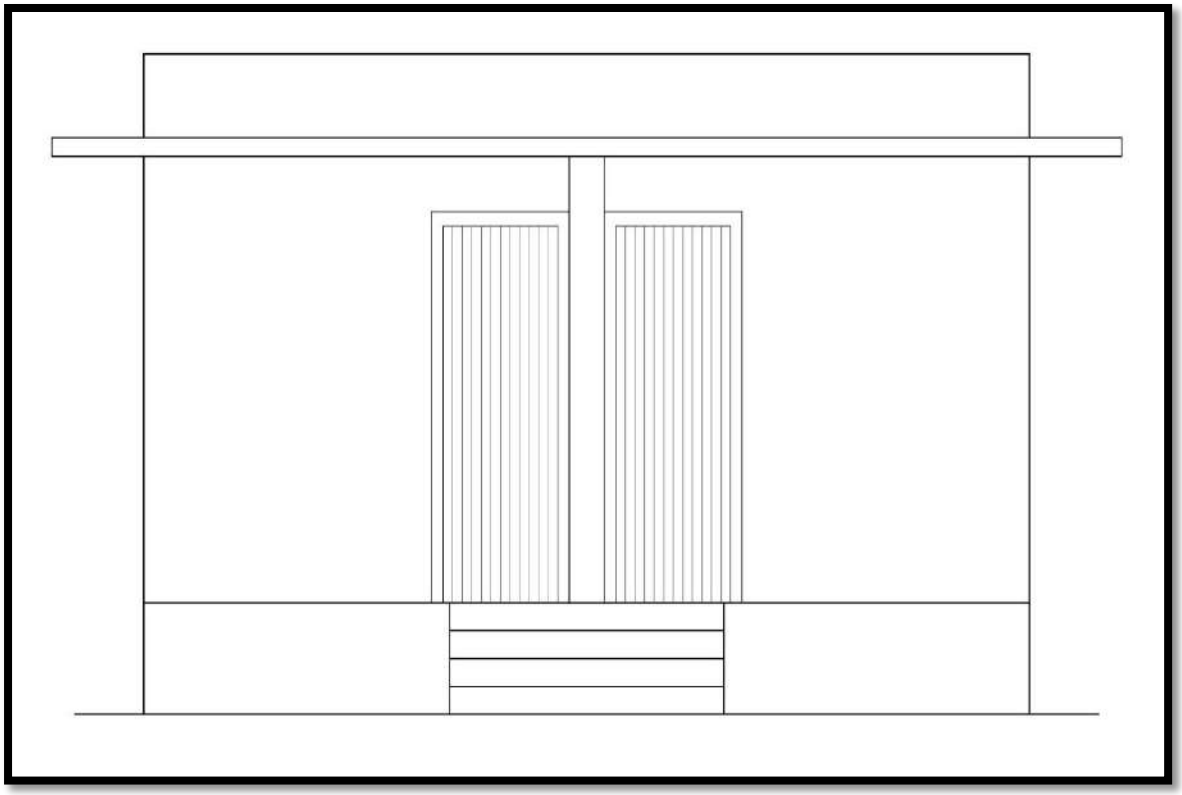


Fig. 13.16 ELEVATION

Measurement sheet –

Table-31 Measurement t Sheet of Primary School Toilet

Sr. No	Description	No	Length L (m)	Width B (m)	Height H (m)	Quantity	Total Quantity
1	**Excavation for foundation**						
	Long wall	3	8.34	1.8	1.5	67.55	
	Short wall	2	3.53	1.8	1.5	19.06	**86.61 m^3**
2	**Plain cement concrete (1:4:8)**	9	1.80	1.80	0.15	4.37	**4.37 m^3**
3	**Brick masonry up to plinth in C.M. 1:6**						
	First step	9	1.5	1.5	0.30	6.075	
	Second step	9	1.5	0.9	0.30	2.187	**8.26 m^3**
A	**Footing Pedestal**	9	0.30	0.23	0.60	0.37	**0.37 m^3**
B	**Footing Wall**	1	29.13	0.23	0.60	4.01	**4.01 m^3**
C	**Ground Beam**	1	29.13	0.23	0.30	2.01	**2.01 m^3**
D	**Murram Filling** **Deduction of Wall**	1 1	5.79 29.13	7.00 0.23	0.15 0.15	0.6795 1.0049	**0.67 m^3** **1.00 m^3**
E	**Rubble Soling** **Deduction Of Wall**	1 1	5.79 29.13	7.00 0.23	0.20 0.20	8.106 1.339	**8.10 m^3** **1.33 m^3**
F	**Plain Cement Concrete Slab**	1	5.79	7.0	0.15	6.0795	**6.07 m^3**
G	**GL to PL Wall**	1	29.13	0.23	0.35	2.344	**2.34 m^3**
H	**Floor Finish**	1	5.79	7.00	0.10	4.053	**4.05 m^3**
4	**Brick masonry above plinth up to slab level in CM (1:6)**	1	31.8	0.23	2.20	16.0908	
	Deduction						
	Door	2	0.90	2.10	0.230	0.8694	
	Window	5	0.75	2.10	0.15	1.18125	
	Ventilation	6	0.60	0.60	0.230	0.4968	
	Lintel	1	31.8	0.23	0.150	1.0971	**12.44 m^3**
6	**Slab Beam**						
	For 230mm	1	27	0.230	0.150	0.9315	

	For 150mm	1	4.8	0.150	0.150	0.108	**1.03 m^3**
7	**R.C.C. work for slab**	1	6.99	802	0.150	8.5977	**8.59 m^3**
8	**Parapet wall**	1	24.66	0.230	0.45	2.55231	**2.55 m^3**

Abstract sheet –

Table-32 Abstract Sheet of Primary School Toilet

Sr. no	Description	Total Quantity	Rate	Per Unit	Total Amount
1	Excavation For Foundation depth From 1.5 to 3.0 m including sorting out and stacking of useful material and disposing off the excavated stuff up to 50, meter lead. (B) Dense or Hard soil. (Navsari District S.O.R. year: 2015-16, Item Code: 04001B, Item No. As per NBO: 0, page No. 35)	86.616	85.90	m^3	7,440.31
2	Providing and laying cement concrete 1:4:8 (1-cement: 4-coarse sand: 8- hand broken Stone aggregates 40 mm normal size and curing complete excluding cost of formwork in (A) Foundation and Plinth (up to 10 ton). (Navsari District S.O.R. year: 2015-16, Item Code: 5004, Item No. As per NBO: 5.3.3, page No. 41)	4.374	2324.00	m^3	10,165.17
3	Brick work using common burnt clay building bricks having crushing strength not less than 35 kg./ m^2 in foundation and plinth in cement mortar 1:6 (1-cement : 6-fine sand)(B) Conventional (up to 10 ton).	8.262	3000	m^3	24,786.00
A	Footing pedestal	0.3726	2500	m^3	931.50
B	Footing wall	4.0199	2350	m^3	9,446.76
C	Ground beam	2.0099	4436.71	m^3	8,917.34
D	Earth filling	11.8416	50	m^3	592.08
E	P.C.C. slab	6.0795	4250	m^3	25,837.87
F	GL to PL wall	2.344	3000	m^3	7,032.00
G	Floor finish	4.053	636	m^2	2,577.70

4	Brickwork up to slab	12.4463	3500	m^3	43,562.05
5	Lintel	1.0971	8800	m^3	9,654.48
6	Slab beam	1.0395	4875.75	m^3	5,068.34
7	R.C.C. work for slab	8.5977	7800	m^3	67,062.06
8	Parapet wall	2.55231	3000	m^2	7,656.93
				Total :	**2,30,730.61 ₹**
				Add 5 % contingency charge :	11,536.53 ₹
				Add 2 % work charge establishment :	4,614.61 ₹
				Add 1.5 % electric charge :	3,460.95 ₹
				Grand Total :	**2,50,342.70 ₹**

Total Cost of project = ₹ 2,50,342.70 /-

CHAPTER-14 Technical Options with Case Studies

14.1 Civil Engineering

14.1.1 Advanced Earthquake Resistant :

An Earthquake is Earth's Shaking or in other words release of energy due to the movement of tectonic plates. This can be destructive enough to kill thousands of people and bring huge economic loss. This natural disaster has many adverse effects on earth like ground shaking, landslides, rock falls from cliffs, liquefaction, fire, tsunami etc. Buildings are highly affected by an earthquake, and in some cases they are shattered down to the ground level. When the ground shaking occurs beneath the building's foundations they vibrate in an analogous manner with that of the surrounding ground. The inertia force of a structure can develop shearing effect on it which in turn causes stress concentration on the connections in structure and on the fragile walls. This results in partial or full failure of structure. The excitement and prevalence of shaking depends on the orientation of the building. High rise structures have the tendency to magnify the magnitude of long time periodic motions when comparing to the smaller one. Every construction has a resonant prevalence which are the characteristics of structure. Taller buildings have a tendency for long time periods than shorter one which make them relatively more susceptible to damage. Hence, one has to be careful while performing the analysis of a tall structure. In order to analyze a tall structure many analysis procedures are valid like a) Equivalent static analysis, b) Response spectrum analysis, c) Linear dynamic analysis, d) Nonlinear static analysis or nonlinear pushover analysis and e) Nonlinear dynamic analysis. Soil structure interaction analysis is also essential to be considered. After identifying the soil type, analyzing procedure is selected to do the detailed analysis of the interaction between soil and structure. To reduce the seismic effects on tall buildings several equipment is used like dampers or base isolation process. In dampers viscous damper, friction damper, yielding damper, magneto rheological fluid dampers tuned mass damper or harmonic absorber can be used. In base isolator magneto rheological elastomer, elastomeric bearing system, sliding system can be used.

14.1.2 Seismic Retrofitting of Buildings:

In recent times, reinforced concrete buildings have become common in India, particularly in towns and cities. Reinforced concrete (or simply *RC*) consists of two primary materials, namely concrete with reinforcing steel bars. Concrete is made of sand, crushed stone (called aggregates) and cement, all mixed with pre-determined amount of water. Concrete can be moulded into any desired shape, and steel bars can be bent into many shapes. Thus, structures of complex shapes are possible with RC.A typical RC building is made of horizontal members (beams and slabs) and vertical members (columns and walls), and supported by foundations that rest on ground. The system comprising of RC columns and connecting beams is called a RC Frame. The RC frame participates in resisting the earthquake forces. Earthquake shaking generates inertia forces in the building, which are proportional to the building mass. Since most of the building mass is present at floor levels, earthquake-induced inertia forces primarily develop at the floor levels. These forces travel downwards – through slab and beams to columns and walls, and then to the foundations from where they are dispersed to the ground. As inertia forces accumulate downwards from the top of the building, the columns and walls at lower storeys experience higher earthquake-induced forces and are therefore designed to be stronger than those in storeys above.

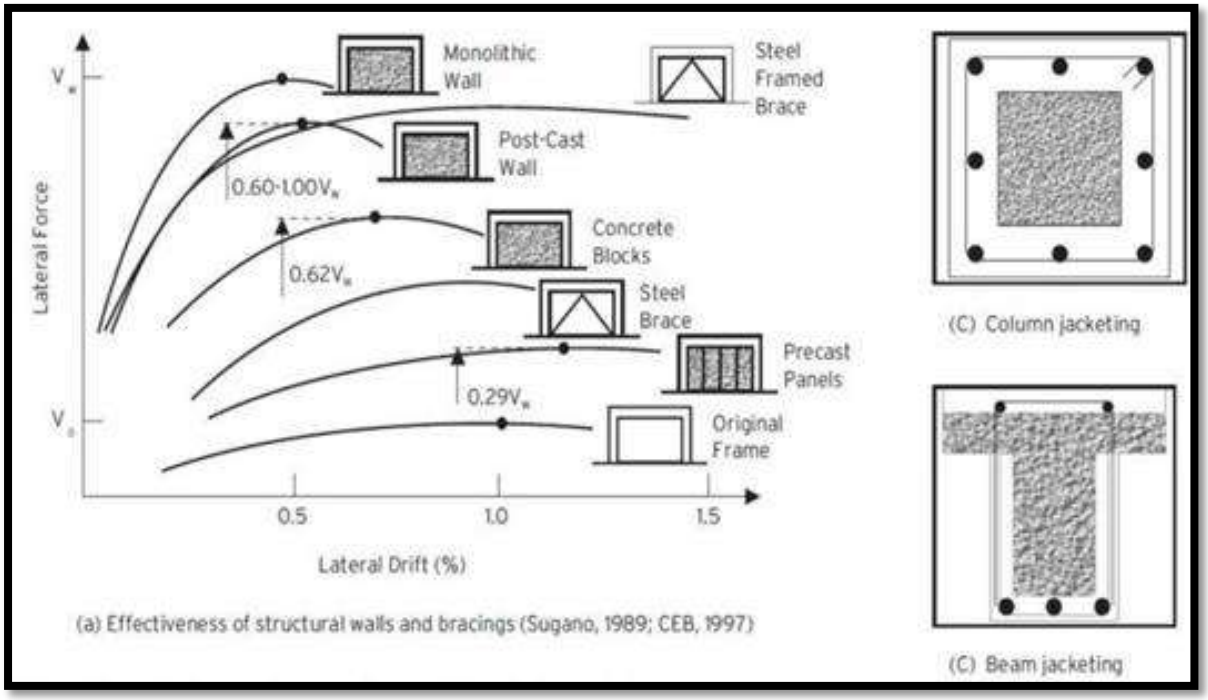


Fig. 14.1 CONVENTIONAL STRENGTHENING METHODS USED FOR SEISMIC RETROFITTING

Addition of shear walls and bracings shown in Fig. 14.1 (a) is the most popular strengthening method due to its effectiveness, relative ease, and lower overall project cost compared to column and beam jacketing shown in Fig. 14.1(b) and (c), respectively. Relative effectiveness of various wall and bracing configurations are compared in Fig. 14.1(a). From this figure, it is seen that post-cast shear walls and steel braced frames are the most effective strengthening techniques.

14.1.3 Advance Practices in Construction field in Modern Material, Techniques

To understand all how and about of super performing construction materials we must study materials according to their use from very root to tip. By that way we can easily conclude and infer about the application, implementation and feasibility of that particular construction material. Elements of construction where these smart materials and techniques shall be implemented are: Foundation, Plinth, Beam, Column, Wall, Sill, Window, Door, Roof, Parapet, Skylights and Finishing Works. Construction materials are said to be super performing when they –

- ✓ Save overall building energy
- ✓ Make building esthetically pleasing
- ✓ Cut cost of construction
- ✓ Easily available
- ✓ Increase life span of building
- ✓ Upgrade building quality
- ✓ Make the building safe for living

Some Super Performing Safe materials

a) Collapse preventing Structure
b) Bombproof fiber material
c) High pressure metal laminates
d) Stratified wood panels
e) Metafloor

Super Performing Materials

Advancements in Concrete

a) High Performance Concrete

Fig. 14.2 BRIDGE MADE OF HIGH PERFORMANCE CONCRETE

b) Light Transmitting Concrete

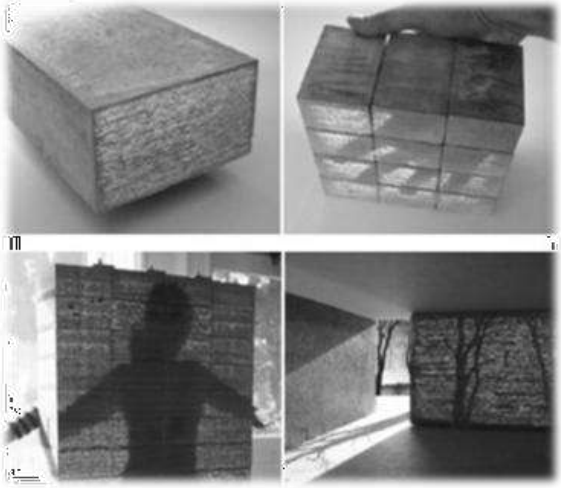


Fig. 14.3 TRANSLUCENT CONCRETE IN USE

c) Pervious Concrete

Fig. 14.4 USE OF WATER PERMEABLE CONCRETE

d) Aerated Concrete

Fig. 14.5 LIGHT WEIGHT CONCRETE

14.1.4 Engineering Aspects of Soil mechanics - Environmental Impact Assessment:

Our daily life environment in Nigeria relates to air, noise, sunlight, geological features, fauna, flora, landscape and etcetera. All these affect the economy of the country: if the environment is abused, daily life style (living and working conditions, etc.) will be affected; and this will in turn affect the economy. As there is need to protect the environment in every possible way, it must also be noted that the need for the existence of infrastructure as an indispensable part of any economy cannot be over emphasized. As those infrastructures come into existence, there are resulting positive effects as well as adverse effects, which in many cases tend to out-number the positive effects; and yet not usually noticed. The impact of these projects on the environment range from cumulative to long term and short term impacts; and include impacts on human beings and man-made features, agriculture, effects on flora,

fauna and geology, effects on land, effects on water, air and climate and, of course, the indirect and secondary impacts associated with the project. Environmental impact assessment may be said to be one of the vital steps required for careful planning and management of natural resources resulting from pressures placed on virtually all areas of the earth from the need to provide food, water, minerals, fuel, and other necessities for such increasing number of people. In other to properly assess environmental impact of civil engineering infrastructural development projects, it is necessary to perceive the environment from the point of the view of the entire physical setting, experiencing a complex array of interrelationships compassing life and development. Since the environment itself is multi-dimensional in nature, it means that the circumstances that create (adverse) impacts on it are multi-dimensional; and therefore require some sort of multidimensional or multidisciplinary handling. It is therefore very necessary to involve as many disciplines as should be interested or connected to the environment as possible. These professionals will carry out comprehensive investigations prior to the actual project execution. These investigations are usually geared towards the matching of ecological and technological requirements of land use with the qualities of land and the effect of the proposed use of such land on the environment.

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

a) Water Supply Development Techniques :

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

Challenges – As of 2010, only two cities in India — Thiruvananthapuram and Kota — get continuous water supply. In 2005 none of the 35 Indian cities with a population of more than one million distributed water for more than a few hours per day, despite generally sufficient infrastructure. Owing to inadequate pressure people struggle to collect water even when it is available. According to the World Bank, none have performance indicators that compare with average international standards] A 2007 study by the Asian Development Bank showed that in 20 cities the average duration of supply was only 4.3 hours per day.

Achievements –Navi Mumbai, a planned city with more than 1m inhabitants, has achieved continuous supply for about half its population as of January 2009. Badlapur, another city in the Mumbai Conurbation with a population of 140,000, has achieved continuous supply in 3 out of 10 operating zones, covering 30% of its population. Trivandrum, the capital of Kerala state with a population of 1,645,000 in 2011, is the largest Indian city and the only Million agglomeration that enjoys uninterrupted hygienic water supply. Malkapur, a town in Satara District of Maharashtra, is the first Indian town to provide 24*7 water supply with 100 percent coverage. The program started in 2008 as a pilot project and soon covered the entire city. The connection is 100 percent metered with telescopic tariff.

Innovative approaches – A number of innovative approaches to improve water supply and sanitation have been tested in India, in particular in the early 2000s. These include community-led total sanitation, demand-driven approaches in rural water supply and a public-private partnerships to improve the continuity of urban water supply in Karnataka, and the use of microcredits in water supply and sanitation to women in order to improve access to water.

b) Sewerage System Development Techniques :

The United Nations has recognized 19 of the world's biggest megacities with a population of 10 million and above. From India, five of Delhi, Mumbai, Kolkata, Bangalore and Chennai are in the list. The historic city of Hyderabad is on the way to step into megacity family with a population of 9.5 million. The city is known for its rivers and lakes from the early 19th century. The prominent among them is the river Musi, a tributary to river Krishna, originating from Ananthagiri Hills. The river travels 70 km upstream before entering Hyderabad near Rajendranagar, flowing west to east, bifurcate the old and new city on south and north of river Musi. The river traverses about 28km within the city limits and flows downstream, about 158km before joining the river Krishna, near Wazeerabad, Nalgonda District.

Status of Sewerage System – The first sewerage system with Sewage Treatment Plant (STP) facility for Hyderabad city dates back to 1931, covering an area of 54 sq. km with a population of 4, 68, 000, under the technical guidance of Sir Mokshagundam Visvesvaraiah. The system was meant to serve an area of 54 Sq.kms with 53 MLD capacity STP having a primary treatment facility. At that time Secunderabad had a sewerage system which was originally a combined system. Both the systems of Hyderabad and Secunderabad were amalgamated in the year 1964. Later in a phased manner, the sewerage system was upgraded during 1984, 1994 and 2004 with major interventions, particularly by laying certain trunk sewer mains network and construction of Sewage Treatment Plants (STPs).After transfer to HMWSSB, subsequently many improvements to the sewerage network were carried out, keeping in pace with the population growth and expansion of the city. The existing sewerage system covers approximately 90% of the erstwhile core MCH area of 169.3 sq.km.

Proposed NRCD Project Phase-II – Under phase-II the NRCD covers an area 574.59 Sqkm; it is divided into 10 catchments for locating the STPs and it is proposed for 610 MLD capacity STP. The GoAP has forwarded the DPR proposals with the consent of 30% state share and requested the NRCD, MoEF, GoI to accord sanction to the project with 70% grant of GOI. The technical appraisal was completed. The final sanction was deferred stating that the adequate budget allocation was not available with NRCD, MoEF, GoI.

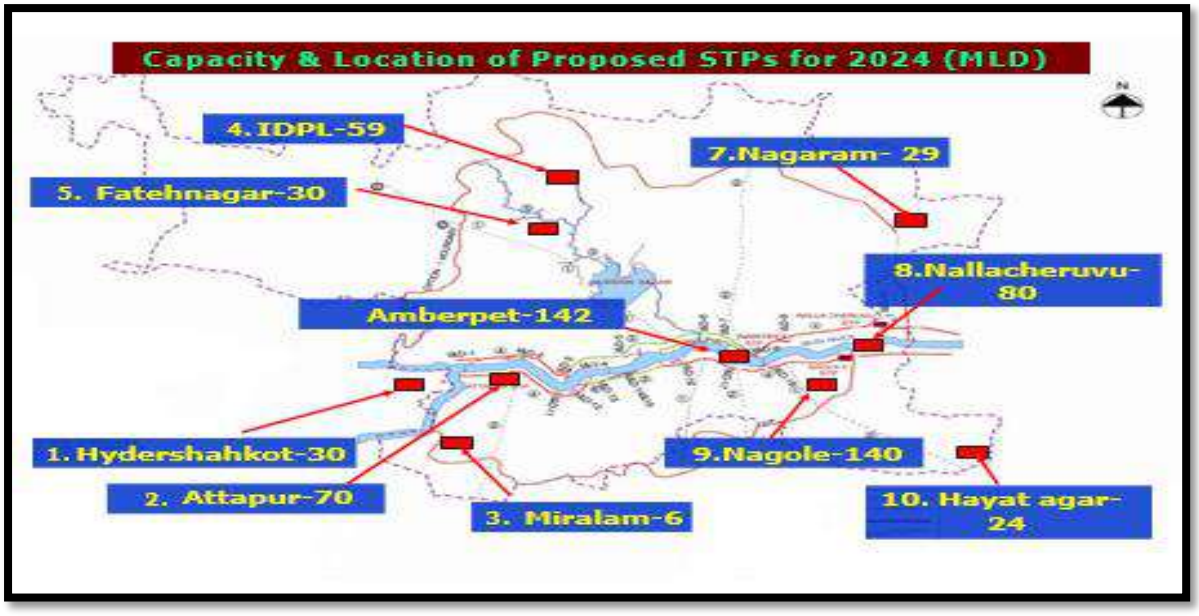


Fig. 14.6 PROPOSED SEWAGE TREATMENT PLANT (STP) UNDER NRCP PHASE-II

c) Waste Water Development Techniques :

Water is an essential resource that is required to sustain life. Its availability has to be adequate, safe and easily accessible. Current trends in climate change and rise in human population has compromised water adequacy, availability and safety. Wastewater managers around the world have the responsibility to ensure that the effluent that is eventually released into the environment does not degrade the quality of the recipient water bodies. Attaining sustainability in wastewater management is top in the of Sustainable Development Goals' Agenda. All in all, the realization of a more sustainable wastewater management will require a highly holistic and balanced approach in evaluating a particular management strategy's overall sustainability.

Wastewater Treatment Techniques – Treatment of wastewater can be undertaken in three stages: primary, secondary, and tertiary (or advanced). Primary or mechanical stage is designed to remove gross, suspended and floating solids from raw sewage that is direct from the source. It includes screening to trap solid objects and sedimentation by gravity to remove suspended solids that come from the catchment (Mannie and Bower 2014). Secondary stage is designed to remove the dissolved organic matter that escapes primary treatment. This stage comprises of microbes consuming the organic matter as food, and converting it to carbon dioxide, water, and energy for their own growth and reproduction (Tilley, 2014; Benammar et al., 2015; Dharmender et al., 2016). Generally, high-rate biological processes are normally characterized by relatively small reactor volumes and high concentrations of microorganisms compared with low rate processes (Mang and Li, 2010; Jeon et al., 2014; Sanjeev et al., 2014).

Advancement in Wastewater Treatment for Environmental Sustainability – To increase the efficiency of wastewater treatment, an additional stage has always been incorporated. The tertiary wastewater treatment stage can remove more than 99 percent of all the impurities from sewage, producing an effluent of almost drinking-water quality status (Vymazal, 2009; Francisca et al., 2016). An application of a typical tertiary treatment process is the modification of a conventional secondary treatment plant to remove additional nutrients such as phosphorus and nitrogen.

d) Sustainable Development Techniques :

Sustainable development is the organizing principle for meeting human development goals while simultaneously sustaining the ability of natural systems to provide the natural resources and ecosystem services on which the economy and society depend. The desired result is a state of society where living conditions and resources are used to continue to meet human needs without undermining the integrity and stability of the natural system. Sustainable development can be defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainability goals, such as the current UN-level Sustainable Development Goals, address the global challenges, including poverty, inequality, climate change, environmental degradation, peace, and justice.

Development of the concept – Under the principles of the United Nations Charter the Millennium Declaration identified principles and treaties on sustainable development, including economic development, social development and environmental protection. Broadly defined, sustainable development is a systems approach to growth and development and to manage natural, produced, and social capital for the welfare of their own and future

generations. The term sustainable development as used by the United Nations incorporates both issues associated with land development and broader issues of human development such as education, public health, and standard of living.

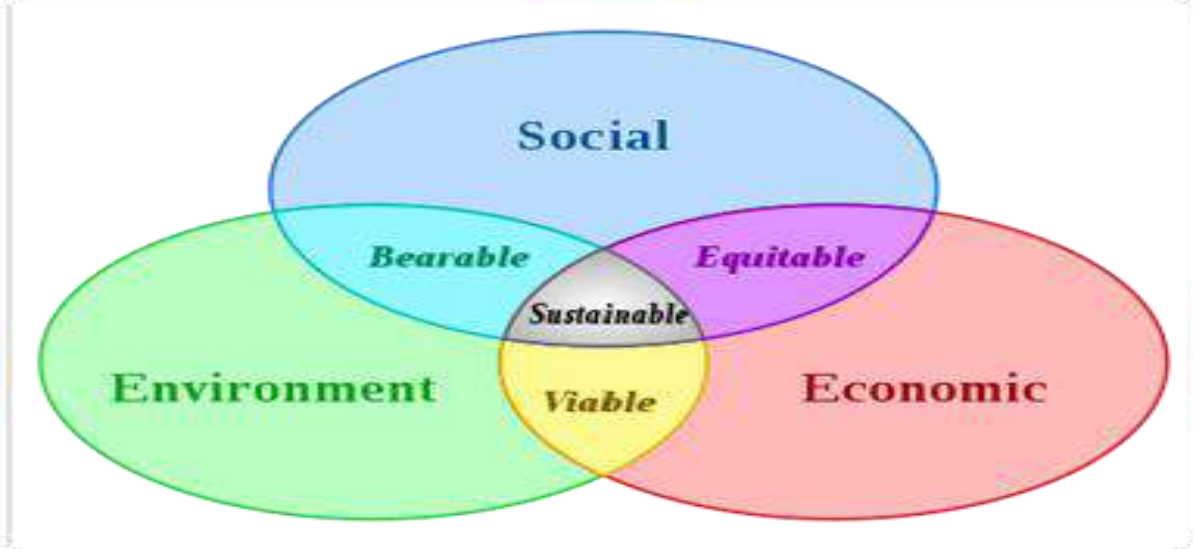


Fig. 14.7 SCHEME OF SUSTAINABLE DEVELOPMENT OF THREE CONSTITUENT PARTS

Environmental – Environmental sustainability concerns the natural environment and how it endures and remains diverse and productive. Since natural resources are derived from the environment, the state of air, water, and the climate is of particular concern. The IPCC Fifth Assessment Report outlines current knowledge about scientific, technical and socio-economic information concerning climate change, and lists options for adaptation and mitigation. Environmental sustainability requires society to design activities to meet human needs while preserving the life support systems of the planet. This, for example, entails using water sustainably, using renewable energy, and sustainable material supplies (e.g. harvesting wood from forests at a rate that maintains the biomass and biodiversity).

Economics – It has been suggested that because of rural poverty and overexploitation, environmental resources should be treated as important economic assets, called natural capital. Economic development has traditionally required a growth in the gross domestic product. This model of unlimited personal and GDP growth may be over. Sustainable development may involve improvements in the quality of life for many but may necessitate a decrease in resource consumption. According to ecological economist Malt Faber, ecological economics is defined by its focus on nature, justice, and time. Issues of intergenerational equity, irreversibility of environmental change, uncertainty of long-term outcomes, and sustainable development guide ecological economic analysis and valuation.

14.1.6 Case Study On "SEISMIC RETROFITTING ON A 4-STOREY EXISTING RC BUILDING" :

The current structure, which were plan and developed by early coral arrangements, don't fulfil necessities of current seismic code and configuration rehearses. It is perceived that the best strategy for diminishing the danger of harming structure is seismic retrofitting. Lately, there is a critical improvement of retrofitting methods. This examination features the standards of surveying and retrofitting of construction against seismic occasions. A three dimensional R.C.

outline planned with direct versatile unique examination utilizing reaction range technique. The PC programming bundle STAAD Pro is utilized for elements examination strategy is utilized to evaluate the presentation of a built up solid structure.

Reason Behind This Case Study :-

According to the Seismic Zoning Map of IS 1893:2002, India is divided into five seismic zones, in ascending order of a certain zone factor which is assigned to them on the basis of their seismic intensity. The 4-storey RC Structure being analyzed in this particular project is the main institute building of NIT Rourkela, which is located in the least susceptible zone i.e. zone II. However, considering that the primary structural system of the building is at least 50 years old, it was not designed according to the design provisions given in IS 1893:2002. Hence, it may fail in the event of any moderately strong tectonic activity in its vicinity. Studying the performance of the structure and suggesting suitable retrofit measures for the building would therefore be a necessity. Seismic retrofitting is the modification of existing structures to make them more resistant to seismic activity, ground motion, or soil failure due to earthquakes. This goal maybe achieved by adopting one of the following strategies-

a) By reducing the seismic demands on members and the structures as a whole
b) By increasing the member capacities

Problem Formulation –

For performing the seismic analysis, an existing four- storey building is been considered. The existing structures consist of eight bays (rooms) spanning 3.5 meters . A projected slab cantilevered for 1.2 meters is provided in the structure. Floor height of existing structure is considered as 3.3 meters (clear span). The structure is situated in Seismic Zone II, as specified in IS 1893:2002 Seismic zones classifications, which has the seismic intensity of 0.10. The structure is considered as Ordinary Moment Resisting Frame (OMRF). Also, the structure is built on medium soil. The structure is then analyzed under seismic loading and the failing members are then retrofit using FRP Jacketing.

FIRST STOREY

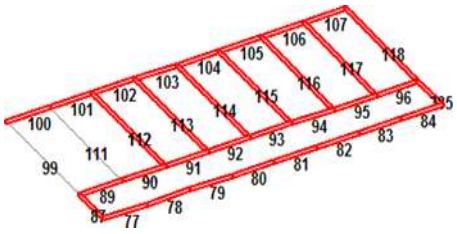


Fig. 14.8 FIRST STOREY BEAMS

SECOND STOREY

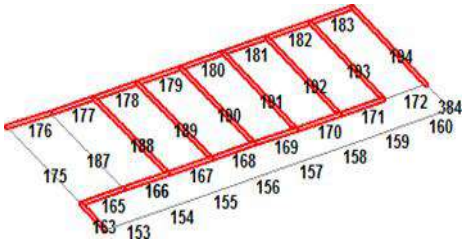


Fig. 14.9 SECOND STOREY BEAMS

THIRD STOREY

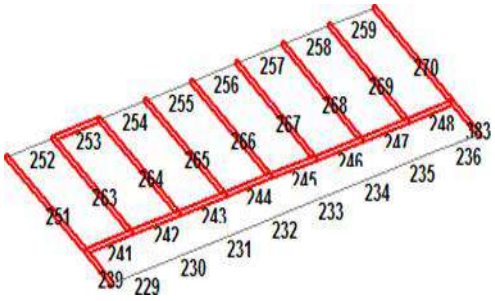


Fig. 14.10 THIRD STOREY BEAMS

FIRST STOREY

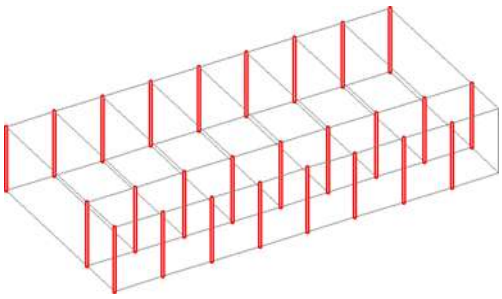


Fig. 14.11 FIRST STOREY COLUMNS

Second, Third and Fourth Storey Columns –

The objective of this study is the evaluation (seismic) of a four-storey RC framed structure, built about fifty years ago, on medium soil, in seismic zone-II, with seismic intensity 0.10 , using commercially used software STAADPRO V8i and retrofit the failing members using FRP jacketing. The existing structure is located in zone II and is not designed to resist earthquakes. The construction of the structure is not based according to the specifications mentioned in IS 1893:2002.

What They Did In This Project –

The existing structure is modeled in commercial software STAADPRO V8i and is subjected to seismic loading. The seismic performance of the structure is then analysed. Also, the Demand to capacity ration DCR is obtained for all the storey. The piles used for jacketing of failing members with FRP are then calculated. The failing members' efficiency is recalculated based on Demand-to-capacity ratio for maximum shear force generated under seismic loading. DCR= Demand/Capacity. The member is said to be passing if the demand to capacity ratio does not exceeds unity (one). Conversely, the member is said to be failed if the demand to capacity ratio exceeds unity (one). The demand to capacity ratio is proved to be an important and key feature in determining whether the structural element is passed or failed under given loading exposure. In this project, flexure and shear checks are performed for all the structural members for which demand to capacity ratio is exceeding unity (ONE).

Results and Conclusion –

The analysis of beams by Equivalent Static Method revealed that most of the beams failed in flexural capacity. The number of failing beams decreased with increasing storeys. However, the number of beams failing in shear capacity were very less i.e. beams 23, 36, 40 in 1st storey; 112, 116, 118 in 2nd storey; 188, 192 in 3rd storey. For columns too, the analysis revealed that most of them failed in flexural capacity but were safe in shear. Based on the above observations, the immediate need to counter deficiency in flexural capacity was identified and the FRP jacketing scheme was suggested only for beams, failing in flexure. Due to the high tensile strength and stiffness, stability under high temperatures and resistance to acidic/alkali/organic environments, carbon fiber was chosen as the FRP material to be used.

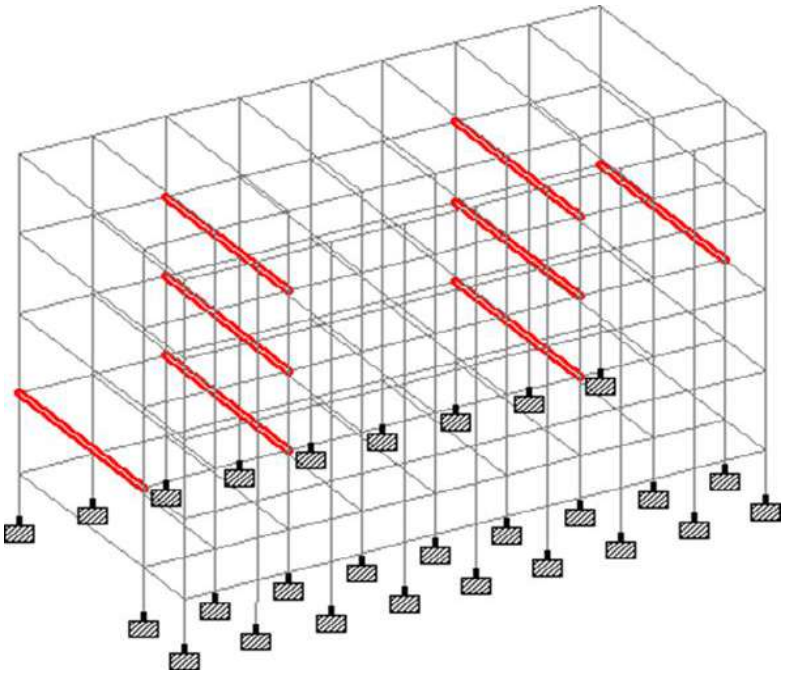


Fig. 14.12 BEAMS FAILING IN SHEAR CAPACITY

CHAPTER-15 Sustainable features of Chapter 8 & 13 designs, Impact on society.

Sr. No	Design Name	Estimated Cost	Duration (months)	Requirement	Benefits
1	Roof Top Rain Water Harvesting	2,53,614 ₹	1-2	Within 1 year	- Utility storage water
2	Bus Stand	31,334.28 ₹	1-2	Within 1 year	- For easier transportation
3	Aganwadi	9,27,358.00 ₹	3	Within 1 year	- Education and supplementation, as well as pre-school activities
4	Public Garden	17,72,414.92 ₹	3-4	Long term (3-5 years)	- Recreational facility
5	ATM	1,15,909.70 ₹	1	Immediately	- Emergencies that require monetary exchange
6	Entrance Gate	10,33,496.70 ₹	1-2	Long term (3-5 years)	- Aesthetic and heritage
7	Fish Market	5,83,510.90 ₹	2	Within 1 year	- To easier selling, storage & etc.
8	Post office	2,76,380.00 ₹	2-3	Within 1 year	- For parcel service
9	Community Hall	44,74,36.23 ₹	6-7	Long term (3-5 years)	- To organise events
10	Library	3,27,562.00 ₹	2-3	Within 1 year	- Education
11	Over Head Reservoir	20,92,274.45 ₹	12-14	Immediately	- Water storage utility
12	Primary School Toilet	2,50,342.70 ₹	2-3	Immediately	- Sanitation

CHAPTER-16 Survey by Interviewing With Talati and 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?	✓	fishary, job
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?	No	
5	Are village people getting agricultural help?	No	
6	Is women health awareness Program organized in village?	No	
7	Are women having opportunity to work and income?	yes	
8	Child girl education is appreciated in village?	yes	
9	Facility of vaccination to child is available in village?	No	
10	Are village people aware about child vaccination and done to each and every child as per norms?	No	
11	Women help line number information is provided to village people?	No	
12	Is water scarcity in village? How many days per year?	yes	365 days
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?	yes	
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	No	
18	Is village improvement is observed in comparative scenario from past to present?	yes	
19	Is any unavoidable difficulty village people are facing? Any natural calamity is there?	No	
20	Life Living standard of girls and women is appreciated and uplifted in village?	yes	

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

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

સરપંચ
ગ્રામ પંચાયત-કૃષ્ણપુર
તા.જલાલપોર, જી.નવસારી.

CHAPTER-17 Fishery Activities, Alternate Technics and Solution

The Absolute Beginner's Guide to Fishing

This guide specifically covers spin fishing, which uses a rod with a spinning reel and lures or live bait to attract fish. For new anglers, it's one of the easiest ways to get outside with minimal investment, but fly-fishing, saltwater fishing, ice fishing, and other types of gear fishing that utilize different reels are all options that may interest you down the road.

Where should you go?

It's always best to talk to a real person about where to fish, as they likely have the most current and comprehensive information about local water. In a pinch, a crowdsourced fishing app like Fish brain or the more data-heavy Fish Angler provides good information on local spots. In general, lakes are a great option when you're just starting out—they usually have a bank or dock to fish from and often have a larger volume of hungry fish than you would find in a river. Lake fishing mostly involves species like bass, pan fish, or rainbow trout, while rivers are almost exclusively fished for salmon or trout species, like rainbow, cutthroat, or brown trout, among others.

Fig. 17.1 CATCHING FISHES AT SEA SHORE

Etiquette

It's important to learn good fishing etiquette early be respectful of other anglers, the fish you catch, and the environment you're in. Don't crowd a spot that someone else is fishing: I like to give other anglers no less than 50 to 60 feet on the most crowded water and more than a couple hundred yards if there aren't many people around. Don't keep more fish than you can eat, and always adhere to leave-no-trace ethics. Be sure you know whether the section of the water you're on is catch and release, limited to artificial lures (no live bait), or fly-fishing only. You can't always count on a sign to tell you this information, so check a local regulation book or your state's forestry department's website for facts as well as updates on closures.

- **Useful Skills**

Knots

Below are a few basic knots you'll need to know to get started. As your fishing skills advance, a book of common fishing knots will be a good resource to have on hand.

The most important knot in fishing is the improved clinch knot. This knot attaches your hook or lure to your line. Once you've nailed this one, you'll be ready to go.

Reading Water

It's helpful to know where fish may be hiding so you can target them better—in other words, "reading the water." In lakes, fish usually hang out in or around weeds and downed trees close to shore. They might also congregate near drop-offs; for this reason, some lakes are easier to fish if you have access to a canoe or kayak. Similar tactics apply to rivers, where you'll want to look for places that may provide good cover—logjams or overhanging banks, for example—since a fish's main objective beyond finding food is hiding from predators

Small scale retail units

a) Eligibility criteria

- State fisheries corporations/ state fishermen federation, Fishermen Cooperative Societies, SHGs and private entrepreneurs should have proven track record and should be recommended by the respective state fisheries departments.

b) Requirements

The components for the financial assistance in the small scale retail units are as follows, where need-based financial support will be provided by the Board:

- Vending stalls with requisite equipments
- Insulated fish boxes
- Deep freezer for storage
- Display arrangement
- Electronic balance
- Equipments for fish dressing and packaging
- Any other suitable items

Casting

Casting with a spinning reel is as simple and intuitive as winding up and chucking your lure as far as you can, like throwing a baseball. Start with about six inches of line out the end of your rod, with the reel below your dominant hand. A spinning reel employs a bail (a thin wire arm) to keep your line from coming out of the spool. In order to cast, you'll need to flip this bail, hold the line with your finger, bring the rod tip up and slightly behind you (think of the motion you'd use to pick up a phone), and cast forward using your wrist and elbow. When your rod is vertical or just slightly forward from vertical, release the line to send your lure flying. Once your lure is in the water, flip the bail back over and begin reeling

Fig. 17.2 THROWOING FISHING NETS TO TRAP FISHES

Hooking

When hooking a fish, there are two things you want to prevent: the fish "spitting" out your lure, or your line breaking under the weight and power of the fish. To keep those two things from happening, you'll need to properly "set" the hook into the fish's mouth once it has bitten your lure or bait. This means setting it at the right time and with the right pressure: when you see your bobber sink or jerk, point your rod tip up and pull back with moderate pressure to keep the lure in the fish's mouth without ripping any part of its lip—good timing here will ensure the lure is firmly set in the lip rather than deeper in the mouth. Once you have a proper hookset, you'll need to focus on keeping your rod tip up while "playing" the fish—allowing the fish to tire itself out while you try to keep it on your line. Cranking the fish in immediately after hooking it will often result in it breaking off, as the fish's power and weight can often be greater than the strength of the line.

Fig. 17.3 TRAPPED FISHES

CHAPTER-18 Social Activities – Any Activates Planned By Students

Subject: Apology for not visiting the village due to this Covid – 19 pandemic.

Dear ma'am

I'm Meet Shah leader of the group writing on behalf of our team in order to apologize for not visiting the village for social activities. We could not able to visit village for social activities and awareness regarding the project work because of this pandemic. We also asked sarpanch of village to allow us for visiting the village but he refused and said that currently they would not let anyone come from the outside of village. We try many times to visit the village for Current Project work DPR Part – II. For awareness camp, social activities, Survey and For Techno Economic Survey form. But we can't able to visit the village. We done our work by Telephonic conversation

Hope you understand our situation. Thank you for your invaluable support.

CHAPTER-19 Krushnapur Village SAGY Questionnaire

SAGY Baseline Household Survey Questionnaire

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Krushnapur Gram Panchayat: Krushnapur Ward No. 174

Block: II District: Navsari

State: Gujarat L S Constituency: II

1. Family Identity and Size

Name of Head of Household	Mahesh bhai Bhikhubhai Tendel							Male/ Female	M
SECC Survey ID:		Family Size	6	Over 18	4	6 to 18	2	Under 6	0

2. Category & Entitlement Details (Tick as appropriate)

Social Category[1]		Life Insurance	1. All Adults 2. Some Adults 3. None	AABY	1. Yes 2. No	Kisan Credit Card	No 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]
Mahesh bhai Tendel	59	M	N	yes	S.S.C	Y	Y	N
Shailesh bhai Tendel	39	M	N	yes	H.S.C	Y	Y	N
Nayna Mahesh Tendel	55	f	N	yes	9th	Y	Y	N
Pamika Shailesh Tendel	37	f	N	yes	H.S.C	Y	Y	N

3. Children from 6 years and up to 18 years

Name	Age	Sex M/F/O	Disability Y/N	Marital Code*	Level of Education: Code#	Going to School /College (Y/N)	Current Class	Computer Literate Y/N
Kartik M Tendel	16	M	No	No	School	yes	10th	yes
Sweta M Tendel	12	F	No	No	School	yes		yes

4. Children below 6 years

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

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

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

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

[4] Level of Education: Not Literate – 01, Literate – 02, Completed Class 5 - 03, Class 8th – 04, Class 10th-05, Class 12th-06, ITI Diploma-07, Graduate-08, Post Graduate/Professional – 09 (write the highest level applicable)

[5] No Pension – 0, Old Age Pension – 1, Widow Pension – 2, Disability Pension – 3, Other Pension – 4 (mention)

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

5. Hand washing

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

6. Use of Mosquito Net

Children: Yes / No Adults: Yes / No

7. Do members take Regular Physical Exercise

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

8. Consumption of Tobacco

	Smoking	Chewing
Adults		yes
Children	No	No

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): Boring		

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	25293 hectare	2. Cultivable Area	
3. Irrigated Area		4. Uncultivable Area	

13. Principal Occupations in the Household

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

14. Migration Status

Does any member of the household migrate for Work: Yes / No. If Yes Entire Year / Seasonal

Does anyone below 18 years migrate for work: Y/N

15. Agriculture Inputs

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

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

Name	Unit	Quantity

17. Livestock Numbers

Cows: 0	Bullocks: 0	Calves: 0
Female Buffalo: 2	Male Buffalo: 1	Buffalo Calves: 1
Goats/ Sheep: 0	Poultry/ Ducks: 0	Pigs: 0
Any other: Type _____		No. _____
Shelter for Livestock: Pucca / Kutcha / None		
Average Daily Production of Milk(Litres): 7 ltr		

18. What games do Children Play

- Mobile games
- Volleyball
- Cricket

19. Do children play musical instrument (mention)

- Tabla
- Harmonium

Schedule Filled By:

Principal Responden*:

Date of Survey:

SAGY Panchayat Details Survey Questionnaire

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: Krushnapur

b. Block: _____

c. District: Navsari

d. State: Gujarat

e. Lok Sabha Constituency: _____

f. Number of Wards in the Gram Panchayat: 1

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages: Krushnapur

Demographic Information

Number of Households 1068 Total Population 5310 Male 2688 Female 2622

SC HHs - ST HHs - OBC HHs 90% Other HHs -

I. Access to Infrastructure / Facilities / Services

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
a.	ANM/ Health Sub Centre	No	10 Km
b.	Nearest Primary Health Centre (PHC)	yes	Less then 1 Km
c.	Nearest Community Health Centre (CHC)	No	10 km
d.	Nearest Post Office	yes	Less then 1 Km
e.	Nearest Bank Branch (Any)	yes	inside village
f.	Nearest Bank with CBS Facility	yes	insied village
g.	Nearest ATM	yes	less then 1 Km
h.	Nearest Primary School	yes	less then 1 Km
i.	Nearest Middle School	yes	less then 1 Km
j.	Nearest Secondary School	yes	less then 1 Km
k.	Nearest Higher Secondary School / +2 College	No	8.3 Km
l.	Nearest Graduate College	No	8.3 Km
m	Nearest ITI / Polytechnic Centre	No	20 Km
n	Kisan Seva Kendra	No	13 Km

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society	No	12 Km
p	Nearest Agro Service Centre	No	25 Km
p	MSP based Government Procurement Centre	No	25 Km
q	Milk Cooperative /Collection Centre	Temp No	12 Km
r	Veterinary Care Centre	No	12 Km
s	Ayurveda Centre	No	25 Km
t	E – Seva Kendra	No	25 Km
u	Bus Stop	yes	inside village
v	Railway Station	No	Amalsad 12 Km
w	Library	No	Amalsad 12 Km
x	Common Service Centre	yes	Cyclone Shelter

IV. Sports Facilities in the Gram Panchayat

a. Number of Play Grounds in the GP: Total 2 Public 2 Private _____

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

V. Education, ICDS

a. Number of Angan Wadi Centres: _____

b. Number of villages without Angan Wadi Centres _____

Names of such villages: No

c. Schools (Number)

Primary Private: ____ Primary Govt.: 1

Middle Private: ____ Middle Govt.: 1

Secondary Private: ____ Secondary Govt.: 1

Higher Secondary Private: _____ Higher Secondary Govt: 1 [half seni]

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)	Rice mega					1 km	
b.	Kerosene	No					0.5 km	
c.	Other (mention)	2 - mandvi						

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 _____	Krushnapur	
b.	Hand Pump Coverage in Villages:	Covered _____ Not Covered _____	Not Covered	
c.	Coverage under Covered Drains:	Covered _____ Not Covered _____	Not Covered	
d.	Coverage under Open Drains:	Covered _____ Not Covered _____	Not Covered	
e.	Villages with Household Electricity Connection (Numbers)	Connected _____ Not Connected _____	Connected Mostly house electricity supply DGVCL	

VIII. Land and Irrigation

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

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

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

IX. Parameters relating to Households & Institutions

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

Name and Signature of Surveyor and Respondent'

Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey
		સરપંચ ગ્રામ પંચાયત-કૃષ્ણપુર તા.જલાલપોર, જી.નવસારી.	19/06/21

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

4

SAGY Baseline Village Details Survey Questionnaire

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: Krushnapur
b. Ward Number: 174
c. Gram Panchayat: Krushnapur
d. Block: 11
e. District: Navsari
f. State: Gujarat
g. Lok Sabha Constituency: 11
h. Number of Habitations / Hamlets in the Gram Panchayat: 1068
i. Names of Habitations / Hamlets: Krushnapur

Demographic Information

Number of Households 1068 Total Population 5310 Male 2688 Female 2622

SC HHs - ST HHs - OBC HHs 90 % Other HHs -

II. Access to Infrastructure/Amenities etc.

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
a.	Nearest Primary School	yes	less then 1 Km
b.	Nearest Middle School	yes	less then 1 Km
c.	Nearest Secondary School	yes	less then 1 Km
d.	Kisan Seva Kendra	No	12 km
e.	Milk Cooperative /Collection Centre	No	12 km
g.	Health Sub Centre	yes	less then 1 Km
h.	Bank	yes	less then 1 Km
i.	ATM	yes	less then 1 Km
j.	Bus Stop	yes	less then 1 Km
k.	Railway Station	No	Amalsad 12km

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

1

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
l	Library	No	Amalsad 12 Km
m	Common Service Centre	No	12 Km
n	Veterinary Care Centre	No	12 Km

ii. Road Connectivity

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

If 3 mention the name of the habitations where not available: 1

iii. Drinking Water Facilities

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

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

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

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

b. Coverage under Open Drains: 2 *(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: 2

v. Coverage of Habitations under Electrification

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

If 3 mention the name of the habitations not covered: 1

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

If 3 mention the name of the habitations not covered: 1

vi. Sports Facilities in the Village

a.Number of Play Grounds in the Village (minimum size 200 square meters): 2

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 6

c. Schools (Number)

Primary Private: ___ Primary Govt.: 1

Middle Private: ___ Middle Govt.: 1

Secondary Private: ___ Secondary Govt.: 1

Higher Secondary Private: ___ Higher Secondary Govt: 1 [half seni]

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	No data	d.	Pasture / Grazing Land	No data	g.	Check Dam	0
b.	Irrigated Land	No data	e.	Forests/ Plnatations	No data	h.	Wells/Bore Wells	0
c.	Un-irrigated Land	No data	f.	Other Common Land	No data	I	Tanks /Ponds	4

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	0
4	Number of BPL families	
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	0
10	Number of active SHGs	0
11	Existence of SHG Federation in the Village (Yes / No)	No
12	Number of Youth Clubs	0
13	Number of Bharat Nirman Volunteers	0

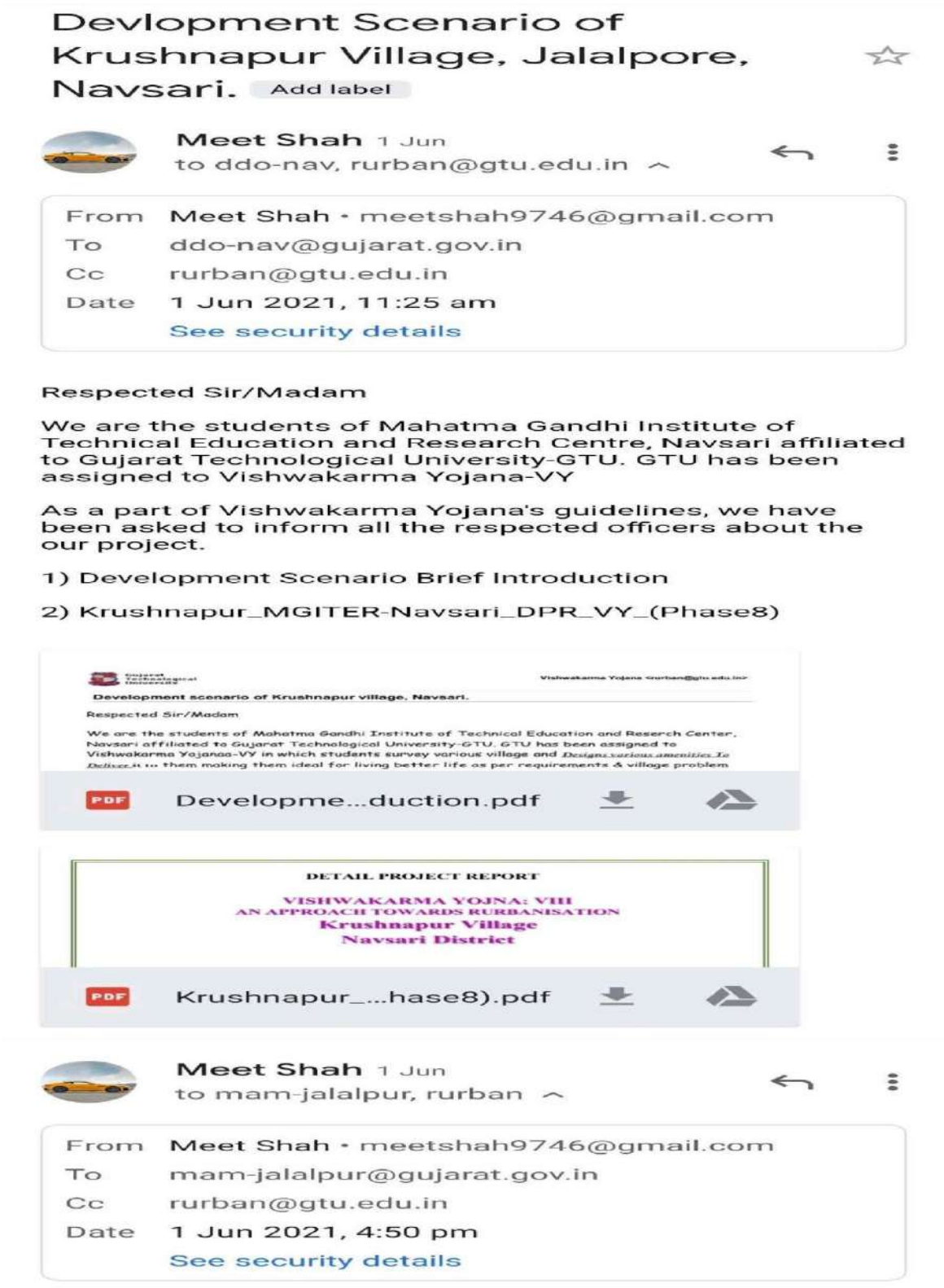
Name and Signature of Surveyor and Respondent'

Surveyor	PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	તલાટી ગ્રામ પંચાયત-કૃષ્ણાપુર તા.જલાલપોર, જી.નવસારી. Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	19/06/21 Date of Survey

3

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

Screenshot of Email



Devlopment Scenario of Krushnapur Village, Jalalpore, Navsari. Add label

Meet Shah 1 Jun
to ddo-nav, rurban@gtu.edu.in

From Meet Shah • meetshah9746@gmail.com
To ddo-nav@gujarat.gov.in
Cc rurban@gtu.edu.in
Date 1 Jun 2021, 11:25 am
See security details

Respected Sir/Madam

We are the students of Mahatma Gandhi Institute of Technical Education and Research Centre, Navsari affiliated to Gujarat Technological University-GTU. GTU has been assigned to Vishwakarma Yojana-VY

As a part of Vishwakarma Yojana's guidelines, we have been asked to inform all the respected officers about the our project.

1) Development Scenario Brief Introduction

2) Krushnapur_MGITER-Navsari_DPR_VY_(Phase8)

Development scenario of Krushnapur village, Navsari.

Respected Sir/Madam

We are the students of Mahatma Gandhi Institute of Technical Education and Reserch Center, Navsari affiliated to Gujarat Technological University-GTU. GTU has been assigned to Vishwakarma Yojanaa-VY in which students survey various village and Designs various amenities To Deliver it ... them making them ideal for living better life as per requirements & village problem

PDF Developme...duction.pdf

DETAIL PROJECT REPORT
VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
Krushnapur Village
Navsari District

PDF Krushnapur_...hase8).pdf

Meet Shah 1 Jun
to mam-jalalpur, rurban

From Meet Shah • meetshah9746@gmail.com
To mam-jalalpur@gujarat.gov.in
Cc rurban@gtu.edu.in
Date 1 Jun 2021, 4:50 pm
See security details

Gujarat Technological University

Vishwakarma Yojana
<rurban@gtu.edu.in>

Devlopment Scenario of Krushnapur Village, Jalalpore, Navsari.

Meet Shah <meetshah9746@gmail.com> Tue, 1 Jun, 2021 at 11:25 am
To: ddo-nav@gujarat.gov.in mam-jalalpur@gujarat.gov.in
Cc: Vishwakarma Yojana <rurban@gtu.edu.in>

Respected Sir/Madam

We are the students of Mahatma Gandhi Institute of Technical Education and Reserch Center, Navsari affiliated to Gujarat Technological University-GTU. GTU has been assigned to Vishwakarma Yojanaa-VY in which students survey various village and ***Designs various amenities To Deliver*** **it to** them making them ideal for living better life as per requirements & village problem statements.

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

Village – Krushnapur **Population: 5310 (As Of Census 2011)** **Population: 10032 (At Present)**		
Key Issue	**Remark**	**Design Given**
Water Scarcity	Water storage capacity is not enough to household for commerce daily needs, water can't be bored due to salinity of ground water.	- Roof Top Rain Water Harvesting System - Over Head Reservoir
Transportation	Currently there is no proper Bus stand in Krushnapur village. Require one more bus stand	- Bus Stand
Bank	Currently, the nearest ATM is 11 km away from the village.	- ATM
Education	As per Gap analysis, village requires a proper Anganwadi as the existing one number of Anganwadi is not sufficient given the population of the village. For General Knowledge purpose library is also not available in this village.	- Aganwadi - Library
Toilet	The primary school toilet was of very bad condition which was not good for the teaching staff as well the student	- Primary School Toilet
Recreational Area	There is no Public Garden at present in Krushnapur village. The nearest	- Public Garden

	public garden is approximately 10 km away.	
Community Place	Grampanchayat faces difficulties in conducting gramsabha, village does not have any place for gatherings or for celebration.	- Community Hall
Identification	Village comes within the premises of other village but it was seen that village direction holdings were not proper which can cause difficulty in finding	- Entrance Gate

Sr. no	Design name	Period (months)	Amount expenditure	Benefit
1	Roof Top Rain Water Harvesting	1-2	2,53,614 ₹	Utility storage water
2	Bus Stand	1-2	31,334.28 ₹	For easier transportation
3	Aganwadi	3	9,27,358.00 ₹	Education and supplementation, as well as pre-school activities
4	Public Garden	3-4	17,72,414.92 ₹	Recreational facility
5	ATM	1	1,15,909.70 ₹	emergencies that require monetary exchange
6	Entrance Gate	1-2	10,33,496.70 ₹	Aesthetic and heritage
7	Fish Market	2	5,83,510.90 ₹	To easier selling, storage & etc.
8	Post office	2-3	2,76,380.00 ₹	For parcel service
9	Community Hall	6-7	44,74,36.23 ₹	To organise events
10	Library	2-3	3,27,562.00 ₹	Education
11	Over Head Reservoir	12-14	20,92,274.45 ₹	Water storage utility
12	Primary School Toilet	2-3	2,50,342.70 ₹	Sanitation

· **Please find here with attached,**

1. Detailed Project Report of Krushnapur Village

Best Regards,
Meet Shah & Nilay Patel
U.G.,Civil Engineering
Mahatma Gandhi Institute of Technical Education and Research Centre, Navsari.
Gujarat Technological University
Mail: **meetshah9746@gmail.com**
Mail: **nilaykumar62.np@gmail.com**

CHAPTER-21 Comprehensive Report for the Entire Village

❖ Overview of Vishwakama Yojana

Vishwakarma yojana project is a unique project of the B.E /Diploma Students of the Civil & Electrical students. It is proposed to frame "Vishwakarma Yojana" to provide the benefit of real work experience to engineering students and simultaneously apply their technical knowledge in the development of infrastructure in rural development. Creation of infrastructure - connectivity, civic and social infrastructure along with provision of alternative livelihood generation are the key pillars. Vishwakarma Yojana provides an opportunity to the students of B.E in have a practical exposure of the engineering applications in the real world. It also develops the sense of helplessness in the students and become a part of development of Indian villages.

❖ Project work flow

The project work started with the help of Vishwakarma Yojana Project Guidelines. In guidelines VY provided scenario of work. Which data are requires! Where can be collect that data and etc. other information. Then We Visit Allocated village which is Krushnapur on the date of 03/10/2020. First meets with Sarpanch and talked about village population, area and etc. other information about village and visit Govt. Infrastructures. Data collection like photographs of existing infrastructures facilities, Govt. Yojanas and etc. and filled Techno Economic Survey form which is given by VY Yojana. We learned from literature reviews. Then we select Ena as Ideal Village and visit the village. We repeat same procedure from pervious Allocated Village visit. Then we collect some more information by online researching about Ena Village to understand about rural development. By performing SWOT analysis, Gap analysis, discussion with Surpanch and villagers we decided to propose some designs for the Krushnapur Village. We proposed designs are as follows- Garden, Water harvesting system, Bus stand, Anganwadi, ATM booth and Entrance Gate in 7th semester. Then we visit Bhatha Village as Smart village inspiration for Know about latest technology which help to develop rural area. We following same procedure from allocated village visit. This work is done in 7th Semester.

We planned some designs for Future scope to do in 8th sem. And we started next part of this project with the help of nodal officer. We suggest some designs are as follows- Fish Market, Post Office, Community Hall, Library, Overhead Reservoir and Primary School Toilet. We re visited Krushnapur Village for the data collection for SAGY form and Techno Economic Survey form. And some other activities which are mentioned in VY guidelines. We discuss with sarpanch and talati for the proposals what we are planning for the village. They gives some suggestion for the project. We visited Ena village and Bhatha village too.

❖ About Allocated Village

Krushnapur is one of the villages of the Navsari District; it is located at 23 km away from Navsari GSRTC Bus depot. Total Area of Krushnapur Village is 252.93 hectors. The total population of Krushnapur village is 5310 in the year of 2011. No of males are 2688 and No of Females are 2622. In has current population nearly 10, 032. Total households in this village is nearly 1468. Village is nearly to the sea approximately 2.5 km and nearby villages are Onjal,Chijgam, Kharsad etc. In this village there is no agricultural field is available for crops.

So, Villagers are earn money from the fishing business. In a roughly survey we get there is residential area around 99630.67 m², Fish market area around 21737.43m² and marshy land is nearly 253907.77m² in the village.

❖ Problems in Village

- Currently there is no proper Bus stand in Krushnapur village. Require one more bus stand.
- As per Gap analysis, Krushnapur village requires a proper Anganwadi as the existing one Number of Anganwadi is not sufficient given the population of the village.
- There is no Public Garden at present in Krushnapur village. The nearest public garden is approximately 10 km away.
- Currently, the nearest ATM is 11 km away from the village.
- There is no proper Fish Market in Krushnapur village. Require fish market for selling and storage purpose.
- There is Post office is in Bad Condition in Krushnapur village. It can't be repair. Require new construction of Post Office.
- In the Krushapur village there is no any community hall so that according to the village population there should be requires one community hall in village.
- Water storage capacity is not enough to household for commerce daily needs, water can't be bored due to salinity of ground water. As the population increase demand also increased.
- A Fish Market is a market place for selling fish and fish products. It can be dedicated to wholesale trade between fisherman and fish merchant. So it is benefits to provide Fish market
- Community hall is a public location where members of a community gather for group activities, events, festivals and social purpose. They may sometimes be open for whole community or for a specialized group example Mahila mandal hall.

❖ Design Proposal for the Village

Sr. No	Design Name	Estimated Cost	Benefits
1	Roof Top Rain Water Harvesting	2,53,614 ₹	- Reduces the cost of pumping groundwater. - Provides high-quality water that is soft and low in minerals - Improves the quality of groundwater through dilution when recharged to the ground - Reduces soil erosion in urban and rural areas
2	Bus Stand	31,334.28 ₹	- For easier transportation - A bus stand is usually employed to allow a bus to lay over at a bus terminus, without giving the appearance of being in service, or blocking the stop from use by other buses that are in service.
3	Aganwadi	9,27,358.00 ₹	- Education and supplementation, as well as pre-school activities
4	Public Garden	17,72,414.92 ₹	- Increase access to fresh foods.

			- Increase physical activity through garden maintenance activities. - Increase fruit and vegetable intake.
5	ATM	1,15,909.70 ₹	- Non-Financial Transactions enabling Balance Enquiry, PIN Change, and Mini Statement. - Value Added Services offering Aadhaar seeding, statement request, Card-to-Card fund transfer, cheque book request, and mobile banking registration.
6	Entrance Gate	10,33,496.70 ₹	- Aesthetic and heritage
7	Fish Market	5,83,510.90 ₹	- Fish farms turn out predictable harvests of fish at consistent sizes, making it easy for chefs, supermarkets, fishmongers and individual customers to plan their purchases.
8	Post office	2,76,380.00 ₹	- Aim is to ensure a minimum of 100 households are covered under postal products. - The Department of Posts has launched a campaign to promote all postal products and services available at village-level under 'Five Star Village' scheme
9	Community Hall	44,74,36.23 ₹	- They're multi-purpose hubs that offer different things for different people. - This will improve the overall health of the community, taking pressure off social services and other facilities.
10	Library	3,27,562.00 ₹	- They foster literacy of all kinds. - They create healthy communities. - They provide public spaces - They support culture and creativity.
11	Over Head Reservoir	20,92,274.45 ₹	- Tank containers are safe, reliable, and are a cost effective transport medium for moving bulk liquids around the world. -Tank containers are designed, tested, and approved for the safe, economical and efficient transportation of a broad range of liquid products.
12	Primary School Toilet	2,50,342.70 ₹	- Sanitation

All the designs work done by used reference books for structural design, IS codes for standard checks. We have used SOR (Schedule of Rates of Navsari District) for estimation and costing, and we have used Auto Cad software for Drawing. All this design work is done under Vishwakarma Project in keeping in mind that, people of Krushnapur village get basic amenities, thereby improving their life style. By providing required amenities to village, development of village can be possible. So ultimately migration to the city from village will be reduced and livelihood of villagers will increase. This can cause reduce the load on urban areas. And this amenities designed by us is helpful for better development of village as physically as well as socially, which improves the overall lifestyle of people.