DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
NARDIPUR VILLAGE

Gandhinagar District

PREPARED BY

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
Mistry Prerak N.	Civil Engineering	181153106019
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Swaminarayan College of Engineering And Technology

Nodal Officers Name
Prof. Greeshma Nair (Asst. Prof)

YEAR:2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad– 382424 Gujarat

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CERTIFICATE

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

Detail Project Report for,

NARDIPUR VILLAGE

GANDHINAGARDISTRICT

Under

VishwakarmaYojana: Phase-VIII

In partial fulfillment of the project offered by

GUJARATTECHNOLOGICALUNIVERSITY,CHANDKHEDA

During the academic year 2020-21.

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

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
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ABSTRACT

Absences of basic facilities like roads, public transports, street lights, schools, primary health centers etc. makes the life in rural areas more difficult. Importance of rural development arises at this point. For the overall development of Indian economy it is very important to implement developments from the grass root level. The main objectives of rural development are to improve the standard of living and economic well-being of people living in rural areas.

VISHWAKARMA YOJANA PROJECT is a very good initiative by GTU to find out and develop the backward villages in Gujarat, with the help of young talents. Through this project we aim at the study and development of POR VILLAGE located in Gandhinagar District. Nardipur is located around 14.9 kilometer away from its district head quarter Gandhinagar.Khodiyar railway station is the nearest railway station which is 6.6km away and Sardar Vallabhbhai Patel International Airport is the nearest air port located 10.5 km As per 2011 Census 68.84% of India's population lives in villages.

The backwardness of the rural areas would be a major cause to the overall progress of Indian economy. Major part of rural population depends on farming for their livelihood. Due to the unawareness about modern farming technologies and changing climate adversely affects the economical development of rural occupants away from the village. Literacy rate in Nardipur town area is 73%. 3707 out of total 5069 population is educated here. Among males the literacy rate is81% whereas female literacy rate is 63%. The number of occupied persons of Nardipur village area is 1874 however 3195 are un-employed. And out of 1874 occupied individual 146 individuals are completely dependent on cultivation.

As per the existing condition we aim at the infrastructural developments including roads, better water supply facilities, drainage facilities, public toilets etc. Since a larger part of villagers depends up on farming, we also aim to put some initiatives which helps to improve the agricultural field and there by improve the standard ofliving.

Key words: rural development, infrastructural development, agriculture, standard of living, economy.

ACKNOWLEDGEMENT

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

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

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ABBREVIATIONS

Short name	Full name
GSRTC	Gujarat State Road Transport Corporation
IAAP	Intensive Agricultural Area Programme
IADP	Intensive Agricultural District Programme
HYVP	High Yielding Varieties Programme
RIP	Rural Industries Projects
RAP	Rural Artisans Programmes
IRDP	Integrated Rural Development Programme
TRYSEM	Training Rural Youths for Self-Employment
FWP	Food for Work Programme
NREP	National Rural Employment Programme
RLEGP	Rural Landless Employment Guarantee Programme
JRY	Jawahar Rozgar Yojana
MNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
PMRGSY	Pradhan Mantri Adarsh Gram Sadak Yojana
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
RAY	Rajiv Awas Yojana
UGVCL	Uttar Gujarat Vij Company LTD.
PHC	Primary Health Center
SEZ	Special Economic Zone
GIFT	Gujarat International Finance Tech City
KV	Kilowatt
GIS	Gas Insulted Switch gas
GEB	Gujarat Electricity Board
BBCC	Brick Bat Cement Concrete
PCC	Plain Cement Concrete
RCC	Reinforced Cement Concrete

Chapter: 1 Ideal Village Visit Paliyad

Inthischapter,weincludeoverallstudyofidealvillage,visitofidealvillageforthebasicapproach todevelopideasforourselectedvillage,casestudy,literaturereviewofidealvillage,andallother information's.

1.1 Background & Study Area Location:-

Vishwakarma Yojana is one of the approaches towards Urbanization to solve issues of Urbanization. VishwakarmaYojanaisgovernmentprojectfordevelopingv ariousvillages.Inthisproject various details of villages like demographical details,geographical details, occupational details, physical infrastructure facilities, social infrastructure facility etc. various data are collected. And it try to develop facilities as possible as best. Its main purpose is making village as model or ideal village withmaximumfacilities

Figure .1 Location map of Paliyad

The basic need of rural development program has been alleviation of poverty and unemployment through creation of basic social and economic infrastructure, provision of training to rural unemployed youth and providing employment to marginal Farmers/Laborers to discourage seasonal and permanent migration to urbanareas.

Through various government departments are involved in various infrastructural development works, an ideal view and modern solutions etc. can be provided by this project.

❖ Study AreaLocation:-

- We have visited an ideal village Paliyad of Gandhinagar district for the purpose of understanding the basic concept of anidealvillage.
- Paliyad is located in Kalol taluka of Gandhinagar district ofGujarat.
- It is 10 km away from state capitalGandhinagar.
- The Sarpanch of Paliyad village and also a key person to make the village as an idealvillage.
- The total population of the village is 5442 and from this most of the villagers are doing their own business andfarming.
- Villagers depend on transportation facilities like G.S.R.T.C, auto rickshaw, private vehiclesetc.

- Village has educational facilities like primary, secondary and higher secondaryschools.
- Villagers depend on Government's water supply facilities as their major source for house hold and domestic waterrequirements.
- Bank facilities are also available invillage.

1.2 Concept: Ideal Village & NormalVillage:-

1.2.1 Objectives:-

- Toanalyseofthevillageonvarioussocio-economicparametersatamicroaswellasmacrolevel.
- To analyse the life of the structure like schools, houses, water tank,drainagesystem,etc.
- Toanalysetheservicesprovidedtovillagesuchaswatersupply,electricitydistribution,sanitation facilities and manymore.
- To study the existing growth, characteristics and developmentofvillages.
- To study the existing infrastructure facilities and its management issues phasing byvillages.
- To study strategic planning proposal in the form of Physical, Social and Renewable infrastructure facilities for the developmentofvillages.
- To study the future growth and future scenarioofvillage.
- To study how to improve a drainage facility of ruralareas.

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

1) **Punsari(Gujarat):**

Punsari, located in Gujarat, puts most metros toshame. Funded bythe Indian government andthevillage'sownfundingmodel,PunsariisnoNRI-blessedzone.Thevillagealsoboasts of a mini- bus commute system and various otherfacilities.

2) **Dharnai (Bihar) First fully solarpoweredvillage:**

Dharnai, a village in Bihar, beat 30 years of darkness by developing its own solar-powered system for electricity. With the aid of Greenpeace, Dharnai declared itself an energy- independent village in July. Students no long need to limit their studies to the day time, womennolongerlimitthemselvestosteppingoutinthedayinthisvillageof2400residents.

3) **Pothanikkad (Kerala) The village with 100% literacyrate:**

UnsurprisinglyinKerala,Pothanikkadvillagewasthefirstinthecountrytoachievea100% literacy rate. Not only does the village boast of city-standard high-schools, but it also has primary schools and private schools. Guess the number of people the village has educated? Well, per the 2001 census there are 17563 residents living inthevillage.

1.2.3 The Idea of a Model/SmartVillage:-

- India is a country of villages , where more the 68% of the Total population reside in over 5.97 lakhs ofvillages.
  - As said, India lives in its villages , Mhatma or India's , which is the backbone of Indianculture.
- The references of the village sabha is found in the time of Rig-Veda , which was the grass root level governingsystem.
- Aggriculture is practiced in the country from antiquity where, communities selected and civilized structure of villages evolved.
- The social, economic and scientific devlopments inthese communities helped in the villages and also has become the building block ofcivilization.
  - However, even after the collapse of such progress civilizati Village continued to exit and flourish throughrich heritage andtraditionalpracties.

Figure 2 smart village

1.3 Ancient History Civil About IndianVillage:-

India's history and culture is dynamic and spanning back to the beginning of human civilization. Indian culture begins with the Indus River and in farming communities in the southern lands of India. The history of India is filled by constant integration of migrating people with the diverse culture. Available evidence suggests that the use of iron, copper and other metals was widely prevalent in the Indian sub- continent at a fairly early period, which is indicative of the progress that this part of the world had made. By the end of the fourth millennium BC, India had emerged as a region of highly developed civilization.

1. The Indus ValleyCivilization

The History of India begins with the Indus Valley Civilization, also known as Harappan Civilization. It flourished around 2,500 BC, in the western part of South Asia, and now is in Pakistan and Western India. The Indus Valley is considered to be the largest of the four ancient urban civilizations of Egypt, Mesopotamia, India and China. Evidences of Indus Valley Civilization is found out in 1920s when Archaeological Department of India carried out excavations in the Indus valley wherein the ruins of the twooldcities,viz.MohenjodaroandHarappawereunearthed.Theruinsofbuildingsandotherthings

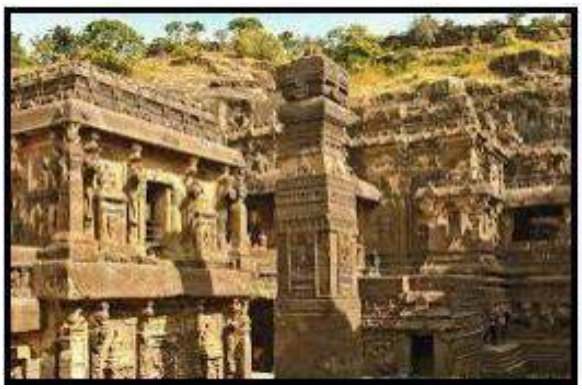
like household articles, weapons of war, gold and silver ornaments, seals, toys, pottery wares, etc., show that some four to five thousand years ago a highly developed Civilization flourished in this region.

The Indus valley civilization was basically an urban civilization in which people lived in well-planned and well-built towns, which were also the center for trade. The remains of Mohenjodaro and Harappa reveals the evidences of were magnificent merchant cities-well planned, scientifically laid, and well looked after. They had wide roads and a well-developed drainage system. The houses were made of baked bricks and had two or more storeys.

The highly civilized Harappans knew the art of growing cereals, and wheat and barley constituted their staple food. They consumed vegetables and fruits and ate mutton, pork and eggs as well. Evidences also show that they wore cotton as well as woollen garments. By 1500 BC, the Harappan culture came to an end. Among various causes ascribed to the decay of Indus Valley Civilization are the recurrent floods and other natural causes like earthquake, etc.

Figure. 3 Indus Valley Civilization

2. Ajanta &ElloraCaves



About 107 km from the city of Aurangabad in Maharashtra, are the rock-out caves of Ajanta nestled in a panoramic gorge, in the form of a gigantic horseshoe. A set of 29 caves, Ajanta is among the finest examples of some of the earliest Buddhist architecture, cave paintings and sculptures. These caves comprise Chaitya hallsor shrines, dedicated toLord

Figure. 4 Ajanta &ElloraCaves

Buddha and Viharas or monasteries, used by Buddhist monks for meditation and the study of Buddhist teachings. The paintings that adorn the walls and ceilings of the caves depict incidents from the life of lord Buddha and various Buddhist divinities. Among the most interesting paintings are the Jataka tales, illustrating diverse stories relating to the previous incarnations of the Buddha as Bodhisattava, a saintly being who is destined to become the Buddha. These elaborate sculptures and paintings stand in impressive grandeur in spite of withstanding the ravages of time. Amid the beautiful images and paintings are sculptures of Buddha, calm and serene in contemplation.

The cave temples and monasteries at Ellora, excavated out of the vertical face of an escarpment, are 26 km north of Aurangabad. Sculptors, inspired by Buddhism, Jainism and Hinduism, created elaborate rock carvings. Extending in a linear arrangement, the 34 caves contain Buddhist Chaityas or halls of worship, Viharas or monasteries and Hindu and Jain temples.

3. VastuShastra

Vastu Shastra has been a part of the Indian culture for thousands of years. Even today people consult Vastu experts before buying a new property. Vastu Shastra has its origin in Sthapatya Veda which is a part of Atharva Veda.The early principles were drafted according to the sun rays and their differing positions at different times of the day. In ancient times,this science was only confined to the architects,knownas Sthapathis, and was passed on either verbally or through hand-written monographs. The significance of Vastu Shastra is established by the fact that in earlier days, the architecture of temples and palaces was completely based on it.

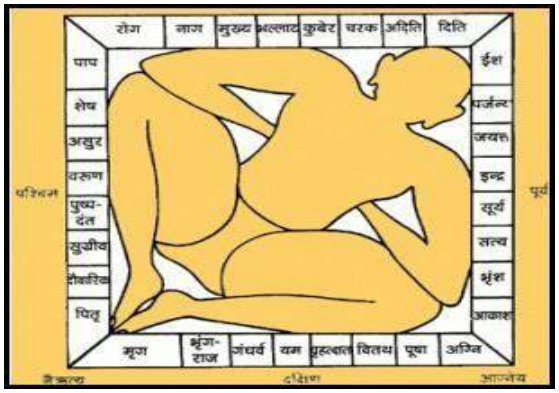


Figure. 5 VastuShastra

1.4 Detail Study of Ideal Village(Socio Economic, Physical, DemographicAnd InfrastructureDetails):-

Social Scenario:-

Paliyad is the village which is having higher literacy rate compared to Gujarat. In 2011, literacy rate of Paliyad village was 79.76 % compared to 78.03 % of Gujarat. In Paliyad Male literacy stands at 89.41% while female literacy rate was 69.86 %.

Demographical Details:-

Paliyad is a large village located in Botad Taluka of Bhavnagar district, Gujarat with total 2255 families residing. The Paliyad village has population of 11977 of which 6086 are males while 5891 are females as per Population Census 2011. In Paliyad village population of children with age 0-6 is 1825 which makes up 15.24 % of total population of village. Average Sex Ratio of Paliyad village is 968 which is higher than Gujarat state average of 919. Child Sex Ratio for the Paliyad as per census is 921, higher than Gujarat average of 890.Paliyad village has lower literacy rate compared to Gujarat. In 2011, literacy rate of Paliyad village was 67.88 % compared to 78.03 % of Gujarat. In Paliyad Male literacy stands at 77.43 % while female literacy rate was58.09

Economic Profile: -

The total Population of Paliyad village is 5442 . The total graphical area of village 1429.96 hactares. Ther are basically depends up on farming for their livelihood. About 65% of total population is involved in agricultural activities. 20% of total population are engaged in business. About 10% of total population depends on other jobs including government and private sector.The village don't have any batter facilitiesregarding Infrastructure But has good electrification system. Village don't have agood drainage system because there is open drainage etc. Dairy and milk product is also the prime sourse of Income.

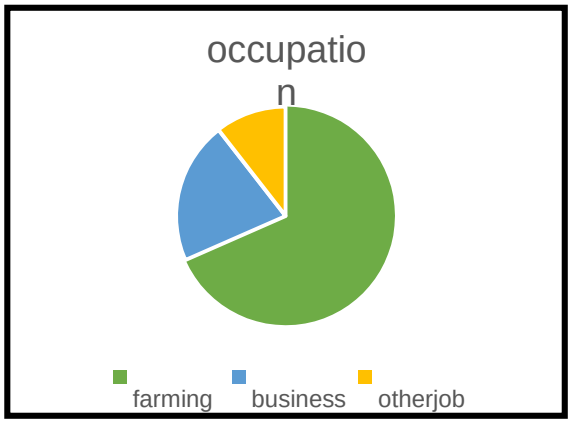


Figure: 6 Occupation Profile

Physical Details: -

The details of physical facilities available are:-

Table 1 Physical Growth of Paliyad Village

Main source of drinking Water	1. Tapwater 2. TubeWell 3. WaterTank 1OverheadTank : - 1.Capacity: -50,000lit 2.Capacity: - 50,000 lit Underground Sump: - 1.Capacity: - 1,20,000 lit

Drainage System	Closed drainages are provided in the village (Pucca)
Road Network	1. All roads are in goodconditions. 2. Main approach road is black toppedroad. 3. Internal streets roads are C.Croads.
Transportation Facility	1. Nearest railway station 4.6km(Dabhoda). 2. Nearest bus station in village(MainRoad). 3. Local transportation is available in village.
Sanitation Facility	1. Public toiletisprovided. 2. Tractors are available forwastedisposal.
Electricity Distribution	1. UGVCL 24 hrs. Powersupply. 2. Road/ streets are provided with LEDlighting. 3. All government buildings are fully facilitated with goodlighting.
Housing conditions	1. 94% of the housesarePucca. 2. All houses are consist of lighting, good ventilation and good sanitation withtoilets.

Infrastructure facilities:-

Some Infrastructures available in village like Water supply facilities Water tanks, Underground sump, C.C roads, Education facilities (Aanganwadi, Primary school, Secondary school) , Health facilities (Primary sub-center, Private clinics) , Bus stop etc.

Water supply facilities:-

The main water supply for the drinking is through the Narmada canal and the bore well is provided. Treated tap water supply all around the year and summer also available. Uncovered well , hand pump, and Tube wells/ boreholes, are other drinking water sources

Figure. 7. Drinking waterFacility

Figure 8 Water Tank

Road Network & Transportation Facilities:-

An approach road is black topped road and internal streets areC.Croads and private vehicles and auto rickshaw are used for transpotation

Figure 9 Road & Transportation Facility

Electricity Distribution:-

At all required road side solar street light is installed as a renewable resource of energy. This village has power supply with 24hour power supply in summer and 24 power supply in winter.

Education facilities:-

In Paliyad Village the education facilities is very nice and 3 Aanganwadi are for the children one school is in development and the college is also there.Govt Primary andGovt Secondary Schoolare available in this village.Nearest Govt DisabledSchool, Govt collage, Govt polytechnic collages are in Bhavngar.Govt arts and science degree collage andGovt.

Figure 1.9: Education Facility

Recreational Facilities:-

Recreational space includes parks and forest, supports and recreational facilities. Playgrounds as well as facilities or areas where cultural, Entertainment and social activities take place.

Figure 10 : Temple of Paliyad

Health center & Sub-center of Paliyad Village:

Health center overcomegeographic, cultural, comprehensive Primary and privantive services. Mosthealth center receive helth care progrms finding to improve the health of underserved and vulnerable populationPaliyad post officeis located at paliyad botad.It is sub office a post office / Dak ghar is a facility in charge of sorting, procecing and delivering mail torecipients.

Figure 11 Sub Center

POS are usually regulated and funded bythe government of India.Facility are genrally provideat branch post office for the main items of postal work like delivery and dispatch of mails, booking and registration. The rural healthcare designed to integrate health and family welfare related interventions and address health from a holistics preventive, and curative ,pramotive viewpoint take a more significant view of panchayatThe village level, who will work with the villagelevel resource team in providing preventive and pramotive health care.

Gram Panchayat :- The panchayat is chaired by the president of village, known as a sarpanch.The term of the elected reprentatives is five years. The secreatly of the Panchayat is non- elected representive, appropriated by the state government, to oversee panchayat activities. Overhead tank in Pliyad village via a pump and a supply line, the water flows from there two any tap or outlet by gravity.The overhead tank can be eliminated by the use ofpump that the pump of water directly from the underground tank to all outlets. Paliyad village Gram

Figure 12 Gram Panchayat

panchayat name is paliyad. Town is bot Paliyad is 15 km distance from sub District Headquarter Botad and is 105km Distance from District tan Bhavnagar.Nearest statutory town is Botad is 15km distance.Treated tap water supply all around the year and summer also available, uncovered well, Hand pump, and Tube wells, Boreholes are and other drinking water sources.Open drainage system Availible in this village.

1.5 SWOT Analysis of an Ideal Village:-

SWOT (strengths, weaknesses, opportunities ,and threats) analysis is a Framework used to evaluate a Company's competitive position and to develop strategic planning. SWOT analysis assesses internal and external factors, as well as current and future potential.

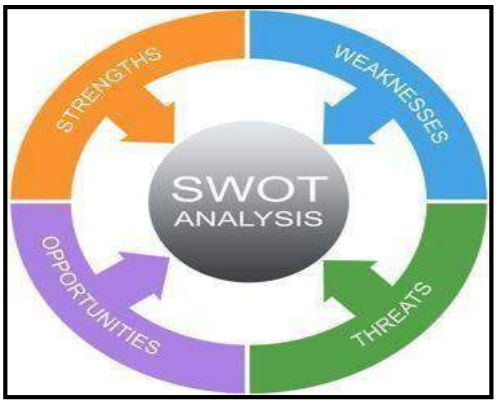


Figure 13 SWOT Analysis

What is a SWOT Analysis

SWOT analysis using SWOT diagrams or matrices is a key part of any business planning or analysis. SWOT stands for strengths, weaknesses, opportunities, and threats. Strengths and weaknesses are internal factors and opportunities and threats are external factors. A SWOT diagram analyzes a project or business venture by focusing on each of these factors. It typically consists of four boxes, one for each area, but the exact shape may vary depending on the design.SWOT diagrams can beespecially useful when trying to decide whether or not to embark on a certain ventureorstrategybyvisualizing the pros and cons. By clearly outlining allpositives and negatives of a project, SWOT analysis makes it easier to decide whether or not to move forward.

Strength:-

Strengths describe what an organization excels at and what separates it from the competitiona strong brand, loyal customer base, a strong balance sheet, unique technology, and so on. For example, a hedge fund may have developed a

proprietary trading strategy that returns market-beating results. It must then decide how to use those results to attract new investors.

- Costeffectiveness
- Competitive Agriculture andforestry
- LandAvailibility
- Culture heritage, ProtectedBuildings.
- Recriational value and turismPotential.

Weakness:-

Weaknesses stop an organization from performing at its optimum level. They are areas where the business needs to improve to remain competitive: a weak brand, higher-than-average turnover, high levels of debt, an inadequate supply chain, or lack of capital.

- Economical structure below average.
- Empty Flats andBuildings.
- Bad CommunicationNetworks.

Opportunities:-

Opportunities refer to favourable external factors that could give an organization a competitive advantage. For example, if a country cuts tariffs, a car manufacturer can export its cars into a new market, increasing sales and market share.

- Potential for added value in agriculture, Foresty , Biomss, Turisum,Biotechnology.
- Attractive place for secondryresidence.
- Internet base communication ofPublic.

Threats:-

Threats refer to factors that have the potential to harm an organization. For example, a drought is a threat to a wheat-producing company, as it may destroy or reduce the crop yield. Other common threats include things like rising costs for materials, increasing competition, tight labor supply and so on.

- Maintanence of existingFacility
- Political Disruption indevelopment
- Migration and commuting hinders resonal Economicdevlopment.
- Population decress and depreciation makes provotionaldifficult.

Advantages of SWOT Analysis

- It is a source of information for strategicplanning.
- Builds organization’sstrength

- Overcome organization's threats.
- It helps in identifying core competencies of thefirm.
- It helps in setting of objectives for strategicplanning.
- It helps in knowing past, present and future so that by using past and current data, future plans can be chalkedout.

Limitations of SWOT

SWOT Analysis does stress upon the significance of these four aspects, but it does not tell how an organization can identify these aspects for itself. There are certain limitations of SWOT Analysis which are not in control of management.

These Include:

- doesn't prioritiseissues
- doesn't provide solutions or offer alternativedecisions
- can generate too many ideas but not help you choose which one isbest
- Can produce a lot of information, but not all of it isuseful.

1.6 Future Prospects ofVillage:-

- New technology and new things to improve village growth anddevelopment.
- To fulfill the requirements of the villagers, to provide rain water harvesting system to Collect the rain water and use it in to agricultural purpose and domesticpurpose.
- To make the village as new modernvillage.
- To fulfill the requirements byproviding sufficient power supply for the agriculture & domestic purposes.
- People are aware for cleanliness and built pollution freeatmosphere

1.7 Benefits of the visits of Ideal village / SmartVillage:-

- To know the strength and weakness ofvillage
- We see some different type of little requirements ofvillage.
- We discussed the good and bad thing about village from village people. We saw all type of basic and primary amenitiesavailable.
- Sanitation facilities like public toilets, latrine blocks Proper drainage facilities, Solid wastmanagement.

Chapter: 2 Literature Review

2.1 Introduction: Urban &Rural:-

❖ Rural Area:-

- The word 'Rural' means an area which is marked by non-urban style of life, occupational structure, social organization and settlementpattern.
- Rural is noticeably agricultural, its settlement systemconsistsofvillagesorhomesteadsSocially it signifies greater inter dependence among people, more deeply rooted community life and a slow- moving rhythm of life built around nature and natural phenomenon and occupationally itis highly dependent on crop farming, animal enterprises, tree crops andrelatedactivities.

Figure 14 Rural Areas in Gujarat

- PopulationofGujaratstateruralpartis14%,amongthem52%areboysand48%aregirls. There areabout 67.7 lakh households in the state and an average 5 persons live in everyfamily.
- Rural population density of Gujarat state rural part is 184 persons perkm^2.

❖ UrbanArea:-

An urban area or urban agglomeration is a humansettlement with high population. Density andinfrastructure of built environment.Minimum population is 5000.Population density is 400 persons per squareKilometer higher.Minimum 75% of population is working with non- Agriculture activity. Village has no PopulationofGujaratstateruralpartis14%,amongthem 52%areboysand48%aregirls. There are about 67.7 lakh households in the state and an average 5 persons live in every family.

Figure 15 Urban Areas in Gujarat

2.2 Different Definition of: Rural UrbanVillages:-

- An urban area includes the city itself, as well as the surrounding areas. Many urban areas are called metropolitan areas, when two or more metropolitan areas grow until they combine, the result may be knownn as amegalopolis.
- By the Numbers in the United States, the Census Bureau classifies a rural area as a town withlesser

than 1,000 people per 2.6 square kilometers (square mile), and surrounding areas with lesser than 500 people per 2. Square kilometers (square mile).Inaruralarea,therearefewpeople,andtheirhomesandbusinessesarelocatedfaraway

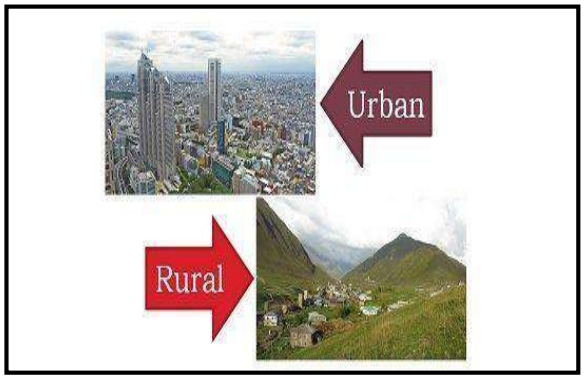


Figure 16 Urban & Rural

- A village can be defined as a small community or clustered human settlement which is largerthanhamletbutsmallerthantownwithsmallpopulationinwhich75%maleworker population is engaged with agriculturalactivity.
- Rural areas are the opposite of urban areas. Rural areas, often called "the country," have low population density and large amounts of undeveloped land. Usually, the difference between a rural area and an urban area isclear.
- Agriculture is the primary industry in most rural areas. Most people live or work on farms or ranches. Hamlets, villages, towns, and other small settlements are in or surrounded by ruralareas.

2.3 Scenario: Rural / Urban India & Gujarat as per Census 2011 and latest population

- As per Official Census, Population of India has reached 1.21 Billion (121 Crore) in 2019 which is an increase of 17% from the earlier figure of 103 Crore of 2001. Although population growth r continue to rise ate has decreased but actual population. As per estimates, it is expected that India would be most populous country by 2025overtaking chinaGujarat Population Census.

- Literacy rate in Gujarat has seen upwardn trend and is 79.31% as per 2011 Population census. Of that, male literacy stands at 87.23% while feamale literay is at 70.73%.
- According to census 2019 the population per percentage in urban area of Gujrat is 42.60% and in rural area of Gujrat is57.4

2.4 Scenario: Rural/Urban Village Of India PopulationGrowth

India's population is 17.5% of the world population, while the area of India is just 2.4% of the total area of the world.Most of the population in India lives in rural areas i.e. 69%. So as democratic socialist govt. Is necessary to provide ruraldevelopment but there are some issue. The current Popultion Of indiais 1,389,530,904 as of 2021based on worldometer elaboration of the latest United Nations Data. Indian Population is equivalent to 17.7% of the total world Population. India Rank number 2in the list of countries by Population. The Population density in india is 464 per km . The total land Area is (1,147,955 sq.miles).The median age in india is28.4years

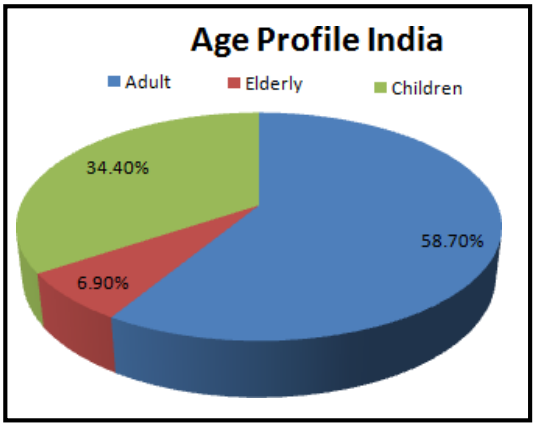


Figure 17 Age ProfileIndia

Table 2 Total Population of Gujarat Census2011

Approximate Population	**6.04 Crore**	**5.07 Crore**
Actual Population	**60,439,692**	**50,671,017**
Male	**31,491,260**	**26,385,577**
Female	**28,948,432**	**24,285,440**
Population Growth	**19.28%**	**22.48%**
Percentage of total Population	**4.99%**	**4.93%**
Sex Ratio	**919**	**920**
Child Sex Ratio	**890**	**883**

2.5 Scenario: Rural / Urban Village Of Gujarat As Per Census 2011And Latest

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 decadeit

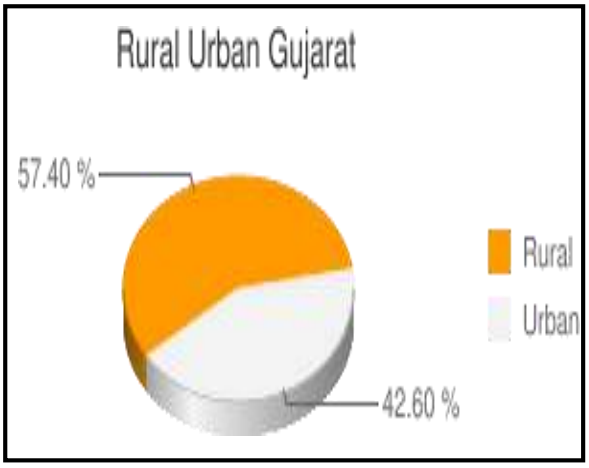


Figure 18 Population Growth rate

was 22.48 percent. The population of Gujarat forms 4.99 percent of India in 2011. In 2001, the figure was 4.93 percent.

2.6 Rural Development Issues - Concerns -Measures

The major problems that have been identified are, poverty, illiteracy, unemployment, homelessness and crime and violence. Poverty is the condition, when the individuals experience scarcity of resources that are necessary to sustain their living conditionsappropriatel

People related problems: -Traditional way of thinking, Poor understanding, Low level of education to understand development effort and new technology, Lack of confidence.

Agricultural related problems: -Lack of expected awareness, Knowledge, skill and attitude, Unavailability of inputs, Poor marketing facility, Insufficient water supply

Infrastructure related problems: - Water related, Electricity related, Transport related, Communication related, EducationInstitute.

Economic problems: -Unfavorable economic condition to adopthigh costtechnology, Financial relatedproblem.

Administrative problems: - PoliticalInterference, Lack of motivation andinterest, Improper utilization of budget**.**

2.7 Various infrastructure guidelines with the norms for villages forthe provisions of different infrastructurefacilities

- Rural development is necessary not only for an over-whelming majority of the population living in villages but the development of rural activities is essential to accelerate the pace of overall economic development of thecountry.

- Rural development has assumed greater importance in India today than in the earlier period in the process of the development of thecountry.

- It is a strategy package seeking to achieve enhanced rural production and productivity, greater socio- economic equity, and aspiration, balance in social and economicdevelopment.

- The primary task is to mitigate the hunger of about 70 percent of the rural population, providing adequate and nutritiousfood.

- Then follow an adequate Provision of clothing and footwear, a clean house in a clean environment, medical care, recreational facility, education, transport andcommunication.

- The need of the hour is that rural development shouldaimat:

- Removal ofunemployment;
- Reduction inunder-employment;
- Improve the standard of living;
- Adequate income for nutritiousfood;
- Sufficientclothes;
- Availability of soft drinkingwater;
- Hygienic livingconditions;
- Satisfactory educational facilities forlearning;
- Suitable medical facilities fortreatment;
- Proper house to livein;
- Appropriate socio-cultural activities to enrichoneself;
- Adequate all-weather roads for bettercommunication

2.8 Other projects/schemes of Gujarat/Indiangovernment

Table 3 Gujarat/ Indian schemes

Sr.no	Govt. Schemes	Description
1.	**Pradhan Mantri Adarsh Gram Sadak Yojana (PMAGSY)**	Itfocuseson integrateddevelopment of 100 villages with a 50 per cent cpopulation of SCs.
2.	**Bharat Nirman Yojana**	It was launched in 2005 for building ities in rural areas.It comprises of components—rural housing, irrigation, drinking water, rural roads, electrification and rural telephony.
3.	**Indira Awas Yojana**	It is one of the six components of Bharat Nirman Yojana. It was introduced in 1985-86. It aims to help built or upgrade the households of people living underBPL.
4.	**Jawaharlal Nehru National Urban Renewal Mission (JNNURM)**	It was launched on 3rd December, 2005. The main objective of this scheme was fast track development of cities across the country.
5.	**Rajiv Awas Yojana (RAY)**	This programme was announced une 2009 with an objective to make thecountry slum-free.
6.	**National Rural Health Mission**	It was launched to make basic health care facilities accessible to the rural people.
7.	**National Rural Livelihood Mission**	It is meant to eradicatepoverty by 2014-15.

Chapter:3 Smart Village Concept Koteshwer Village Visit Dist., Gandhinagar

3.1 Concepts, Definitions andPractices:-

❖ Concept &Definition:-

The driving motivation behind the concept on " Smart Village " is that the technology should acts as a catalyst for development, enabling education and local business opportunities, improving health and welfare, enhancing democratic engagement and overall enhancement of rural villagedwellers.

❖ Need of SmartVillage:-

A Village communities which will capable and empower enhanced involvement in local governance processes, encourage entrepreneurship and build more lively communities. At the same time, a “Smart Village” will ensure good education, better infrastructure, proper sanitation facility, health facilities, waste management, renewable energy, environment protection, clean drinking water, ResourceEfficiency.

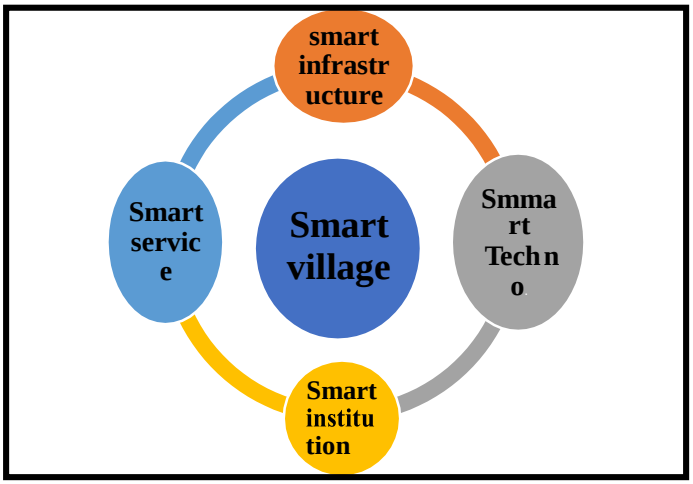


Figure 19 Smart VillageConcept

- Smart Buildings – security cameras,fisafety, electricitymanagements
- Smart Farming- Satellite data for farmactivities.
- Smart agriculture- Smart agricultural equipment for crop production forecast water levels indams
- Smart health care –Smart beds and equipment’s to monitorpatient
- Smart Education – Interactive learning throughvideo.

- Smart surveillance system – CC cameras and sensors to detect robbery.The individuals and community will be empowered to take smart decisions using smarttechnologies, communication and innovativeideas.

❖ Physical & Demographic Growth:-

Table 4 Physical Growth of Koteshwer Village

Main Source of Drinking Water	1. Tapwater 2. TubeWell 3. WaterTank OverheadTank: - 1. Capacity: -50,000lit Capacity: - 50,000 lit Underground Sump: - 1. Capacity: - 1,20,000lit
Drainage System	Closed drainages are provided in the village (Pucca)
Road Network	All roads are in goodconditions. Main approach road is black toppedroad. Internal streets roads are C.Croads.
Transportation Facility	Nearest railway station 10km. Nearest bus station in village (MainRoad). Local transportation is available invillage.
Sanitation Facility	Public toilet isprovided. Tractors are available for wastedisposal.
Electricity Distribution	UGVCL 24 hrs. Powersupply. Road/ streets are provided with LEDlighting. All government buildings are fully facilitated withgood lighting.

Table 5 Demographic Growth of Koteshwer Village

Sr. No	Census	Population	Male	Female	Total Households
1.	2001	5635	2886	2749	1107
2.	2011	6750	3452	3298	1275

3.2 Vision - Goals, Standards And Performance MeasurementIndicators

The Vision & Gol become a smart village on all fronts of Human Development. Every single person in the village irrespective of gender, caste or creed would, Be literate and healthy, Have shelter and clean environment, Have drinking waterand sanitation, Be gainfully employed, Be able to live without fear, Have equal opportunities etc.

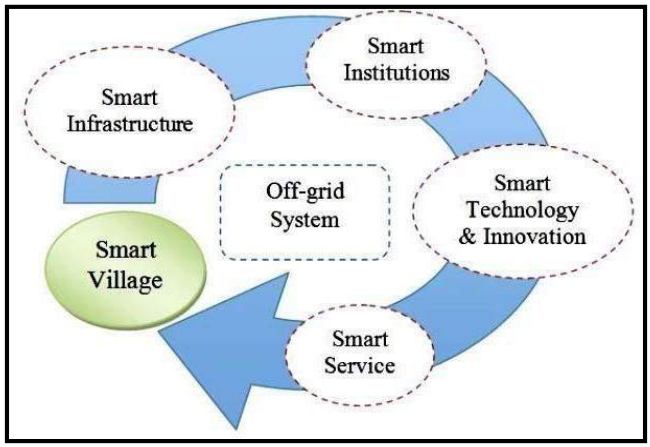


Figure 20 Off grid System

Standards And Performance Measurement Indicators:-

Standards and performance measurement indicators includes some important points like Road connectivity, Entertainment facilities, Pacca house, Recreational facilities, Utility services, Cloud based social networks, E-Health facilities, Smart Energy, E- governance , Water Recycling system, Develop thinking of people, New entrepreneur development, Smart E- learning system, New type industry development, Sports facilities & Training centres, Research and development centres, Smart security and Safety facilities, Village land scapping, Proper drainage system, Village Interiors, Proper networks, Free wireless network facilities etc.

3.3 Technological Option:-

Technological options are Including Smart Institutions, Smart Technology & Innovation, Smart Service, Smart Infrastructure, etc.

The core infrastructure elements in a Smart City would include:

- Adequate WaterSupply.
- Assured ElectricitySupply.
- Sanitation, including Solid WasteManagement.
- Efficient Urban Mobility and PublicTransport.

- Affordable housing, especially for thepoor.
- Robust IT connectivity anddigitalization.
- Good governance, especiallye-Governance

and citizenparticipation.

- Sustainable environment.

3.4 Road map to make a smartvillage:-

- Thefirststepinestablishingaroa mapforasmartcityistoknowwhythereisaneedfor smart city initiative.
- This can be done by studying the city's demographics, including the residents who are the principal stakeholders in thecity.
- GISisanessentialeconomicdevelopmenttoolthatmanycitiesuseforplanning,analyses, building lively communities that attract businessesandresidents
- The second step in establishing a smart city roadmap is by developing a policy that drives the wholeinitiatives.
- Thepolicyneedstodefinetheroles,responsibilities,strategies,andobjectivesofthesmartcities.
- The third element in developing a smart city roadmap is engaging the citizens through the use of e- government and effective governance, which leads to the increase of efficiency and enhancing delivery ofservices.
- One goal of engaging the citizens is to build trust and make them part of thesolution.

3.5 Issues andChallenges:-

- Smart Infrastructure has many component like a digital Management of Infrastructure, sensor networks Digital water and waste management, Insulation , Physical, Social, Economic Infrastructure.
- Physical Infrastructure refers to its stock of cost efficiencies And Intelligence Physical Infrast

- The housing tock , the energy system, the water supply system, sewerage system, sanitation facilities, Solide waste management system, Drainagesystem,etc.
- Which are integrated through of use of technologySocial infrastructure Components that enable development of human and social capital, Performance Social capital, such as and Education, health care, entertainmentetc.
- It also includes performance and creativities art, sports, the open spacegardens.
- Economics Infrastructure IncludeDevelopment.

Technological issues:-

There are certain technologies that are a part of the project and it is expensive to use them. Because of the advancement, some technologies are borrowed from other countries which Makes it more expensive. This hinders the success of smart city project. Another challenge is in the discovery of technology and the need for a medium that can bring technology users and creators together to adopt faster platforms Maintenance, management, recovery of this instrument should be donecarefully.

Job opportunity:-

The future of a smart city is reliant on human talent and skills, making job creation one of the biggest benefits. These jobs will obviously be smart and focus on skills including data analytics, Programming, high-end consulting, and system and network integration. With IT infrastructure being the backbone of any smart city, IT professionals will certainly be in greater demand we are already seeing a shift towards the creation of technologically strong business.

Cyber security risks: -

Cyber security risk is the potential exposure to loss or harm stemming from an organisation's Information or communication system. Though this data help in providing efficiency at municipality functions, it presents serious security risks that can't be ignored. Data from parking lots, CCTV cameras, EV charging stations, and GPS systems contains confidential information of citizens.

Inconsistent network connectivity: -

For the smart management of a municipality, several sensors, cameras, and actuators are installed everywhere. These sensors gather and send large volumes of data in real time. Analysis and

processing of the collected data. Should happen almost instantaneously for efficient management of city operations. And for instant processing, high-speed Internet connectivity is mandatory

3.6 Smart Infrastructure – WasteManagement

- Smart infrastructure has many components like Digital management of infrastructure, sensor networks, digital water and waste management, institutional, physical, social, economic infrastructure.
- Physical Infrastructure refers to its stock of cost efficient and intelligent physical infrastructure such as the urban mobility system, high speed broadband infrastructure, the housing stock, the energy system, the water supply system, sewerage system, sanitation facilities, solid waste management system, drainage system, etc. which are integrated through use oftechnology.
- Social Infrastructure relates to components that enable development of human and social capital, such as the education, healthcare, entertainment,etc.
- It also includes performance and creative arts, sports, the open spaces, children's parksand

Gardens. Economic Infrastructure includes developing proper infrastructure thatgenerates employment opportunities and attractinvestments.

The seven most common types of garbage are:

- Liquid or Solid Household Waste. This can be called 'municipal waste' or 'black bag waste' and is the type of general household rubbish we all have....
- Hazardous Waste.
- Medical/ClinicalWaste
- Electrical Waste(E-Waste)
- RecyclableWaste
- Construction & DemolitionDebris
- GreenWaste.

This can be best used by Municipal Corporation for their betterment of management regarding collection of wastes. ϖ With the help of proper technology (GPS & SOFTWARE APPLICATIONS)

we can guide the trucks to choose the shortest path. ϖ It also favours the “SMART CITY” project and “DIGITALINDIA

3.7 CyberSecurity

Cyber security is the practice of defending computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks. It's also known as information technology security or electronic information security. The term applies in a variety of contexts, from business to mobile computing, and can be divided into a few common categories.

Figure 21 Cyber Security

Network security is the practice of securing a computer network from intruders, whether targeted attackers or opportunistic malware.

Application security focuses on keeping Software and devices free of threats. A compromised application could provide access to the data it’s designed to protect. Successful security begins in the design stage, well before a program or device is deployed.

Information security protects the integrity and privacy of data, both in storage and in transit.

Operational security includes the processes and decisions for handling and protecting data assets. The permissions users have when accessing a network and the procedures that determine how and where data may be stored or shared all fall under this umbrella.

Disaster recovery and business continuity define how an organization responds to a cyber-security incident or any other event that causes the loss of operations or data. Disaster recovery policies dictate how the organization restores its operations and information to return to the same operating capacity as before the event. Business continuity is the plan the organization falls back on while trying to operate

End-user education addresses the most unpredictable cyber-security factor: people. Anyone can accidentally introduce a virus to an otherwise secure system by failing to follow good security practices. Teaching users to delete suspicious email attachments, not plug in unidentified USB drives, and various other important lessons is vital for the security of any organization.

3.8 Green field development districtcooling:-

Green building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle from siting to design, construction, operation, maintenance, renovation and deconstruction. Green building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle from siting to design, construction, operation, maintenance, Renovation and deconstruction. Green building is also known as a sustainable or high- performance Building. Green buildings are designed to reduce the overall impact of the built environment on human health and the natural environmental. Efficiently using energy, water, and otherresources.

Figure 22 GreenFieldConcept

Figure 23 Elements of GreenBuilding

Commercial and Industrial Purpose:-

When developing Greenfield development, It has both Pros and cons for building. They are using untouched lands and that is in very good condition todevelops. This quickly makes it possible so that ittakespartinCost–effectivechangesindevelopment.Itcomestodenotespriceforthe

environmental that has lots of things suitable for building new land contributes and changes in deforestation with natural habitats. It is used to develop a few changes in the Greenfield Development in to the right Source ofDeveloping.

SustainableSites

Promotes land development and management practices with our future in mind. Sustainable SITES generates less waste, minimizes impact on the landscape, and uses less energy, water, and naturalresources.

Waterefficiency

Water efficiency is the smart use ofour water

resources through water-saving technologies and simple steps we can all take around the house. Using water efficiently will help ensure reliable water supplies today and for futuregenerations.

Energy management

A building energy management system (BEMS) is a sophisticated method to monitor and control the building's energy needs. Next to energy management, the system can control and monitor a large variety of other aspects of the building regardless of whether it is residential or commercial etc. Green Building is a building that in itsdesign, construction or Opration , redusce or elimiates negative impact andcan

Create positive impacts. On our climate and natural Enviroment.Green Building preserve precious natural resourse and Improve our qulity of Building.

3.9 Strategic options for fastdevelopment

Smart cities standard can be categorized into main three levels: -

- **Level1**:Strategic.Standardsthatprovideguidancetocityleadershipandotherbodies 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 theroadmap.
- **Level 2**: Process. Standards focused on procuring and managing smart city projects, and in particular those that cross both organizations and sectors. Theseessentially offer best practices and

associated guidelines.

➢ **Level 3**: Technical. Standards that cover the myriad technical specifications that are needed to actually implement smart city products and services so that they meet theoverallobjective.

➢ The strategic components of area-based development in smart cities mission are city improvement (retrofitting), city renewal (redevelopment) and city extension (green field development) initiative in which smart solution are applied covering larger parts of thecity.

➢ In smart development Technology, Institution, Resources, Services, Sustainability are key point' - do fast development of village. agro-tourism is often related to the economic growth, rising living standards and enhancement of socio-cultural assets of ruralareas.

➢ Thus, rural tourism might be understood as a platform for sustainable territorial development which by fostering productivity in rural zones enhances the employment rates, distribution of income, preservation of landscape and rural heritage.

➢ Noteworthy, in most scholarly work form the discipline, terms such as agro tourism (agro- tourism), farm tourism, farm-based tourism, and rural tourism are often used interchangeably, but some researchers still used it as distinct, yet similarconcepts.

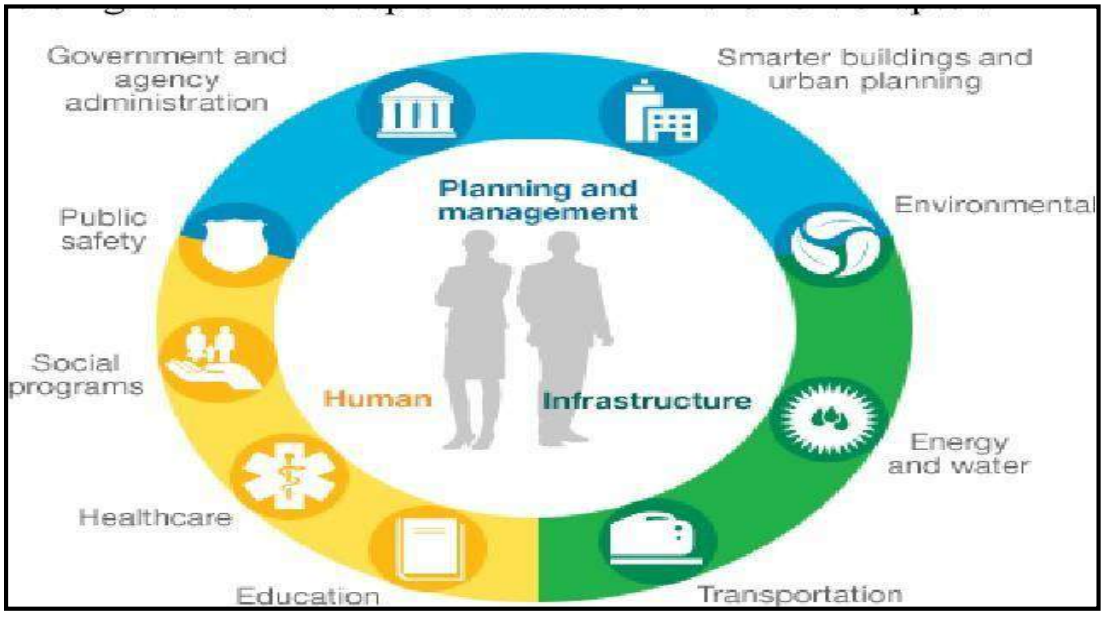


Figure 24 Fast development in to a smart village

3.10 India's urban water and sanitation challenges

- The problem of access to safe drinking water and sanitation facilities in urban areas of India is also a major concern.
- It is estimated that by 2050, half of India's population will be living in urban areas and will face acute water problems.
- At present, 163 million people do not have access to safe drinking-water and 210 million people lack access to improved basic sanitation inIndia.
- In urban areas, 96% have access to an improved water source and 54% to improved sanitation.
- Where asinruralareas,whichaccountsfor72%ofIndia'spopulationlives,only84%have access to safe water and only 21% for sanitation.
- In addition, there is a lack of wastewater treatment facilities to treat the wastewater of a growing population.
- Thereisaneedtoreusetreatedwastewaterinordertomeetthecurrentandfuturedemands for water.
- An Integrated Urban Water Management approach must be adopted which involves managing freshwater, wastewater, and storm water, using an urban area as the unit of management.
- Itmustalsorampupthewastetreatmentfacilitiessothatwaterbodiesarenotpollutedby effluent discharge.
- India needs to liberated itself from this unbecoming distinction and join the ranks of developed nations who have implemented urban planning and sanitation on an equal footing and reaped spectacular results in the form of highly evolved cities.
- That remotely clean resilient and environment friendly but theyalsoprovideahealthy habitat for the residents.

3.11 Initiatives In Village Development By LocalSelf-Government

- Local self-government in India refers to governmental jurisdictions below the level of the state.

India is a federal republic with three spheres of government: central (union), state and local. The

- and in addition each state has its own local government legislation.
- Since 1993, local government in India takes place in two very distinct forms. Urban localities, covered in the 74th amendment to the Constitution, have Nagar Palika but derive their powers from the individual state governments, while the powers of rural localities have been formalized under the Panchayat raj system, under the 73rd amendment to the Constitution.
- The Panchayat raj system is a three-tier system with elected bodies at the village, taluka and district levels.
- 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.

3.12 Smart Initiatives by District Municipal Corporation:-

- Publicize and propagate the scheme in the district.
- Encourage Gram Panchayat for taking part in the competition.
- Give in principle/administrative approval to works under Smart Village. Review the physical and financial achievements of the works every month. Co-ordinate with schemes of other Departments in the village.
- Guide the Gram Panchayat and help it achieve the goals of Smart Village. Submit progress report periodically to state level.Prepare smart village wise annual report and submit at the state level
- By District Municipal Corporation provide various initiatives invillage.
- The various initiatives like transportation, water availability, solid water management, Energy availability, housing, securityetc.
- Total road coverage of six lane roads has been increased from 36 km (2013) to 42 km(2017). Town has sufficient water at aggregate level -over 200 LPCD from average 135LPCD.
- Police station increased. CCTV cameras provided for city security 24*7. For security of city Installed public announcement system. Power availability increased. Power consumption

emagazines, other social media, channels also used for two way communication increasing health Centres, awareness programs about sanitation, health, cleanliness. in village.

3.13 Any Projects Contributed Working by Government / Ngo / OtherDigital Country Concept

Government of India schemes such as Baronet, Bharatmala, Startup India and Standup India, Make in India, Sagarmala, industrial corridors, UDAN-RCS, dedicated freight corridors, and E- Kranti are interconnected with the Digital India initiative. Digital India is a campaign launched by the Government of India in order to ensure that government services are made available to citizens electronically by improved online infrastructure and by increasing internet connectivity or making the country digitally improved in the field of technology.The Government of India is looking to install Wi -Fi hotspots at more than 1000 gram panchayat across India, under its ambitious project called Digital village, in order to provide internet connectivity for mass use, as well as to enable delivery of services like health and education in far areas.The Government of India has parliament's approval for an additional expenditure of Rs 59,978.29 crore, which will be used to support the government's rural jobs scheme, building rural infrastructure, urban development and farminsurance.

3.14 How To Implement Other Countries Smart Villages Projects InIndian Village

- Human society is developing with rapid momentum and achieved various successes for making its livelihood better. The civilization is witness for various changes related to it's the development through different catalysts like industrial development, green revaluation, science and technology

- The present era is augmented on Information and Communication Technology. This technology has proved its potential in various sectors of development in urban and rural landscapes. Review the physical and financial achievements of the workseverymonth.

- Urban areas are seems to more inclined to accept and adopt Information and Communication Technology due to advantages of literacy and better infrastructure as compared toruralareas. Guide the GramPanchayatan dhelpit achieve the goals of SmartVillage.

- Due to such suitable situations of urban landscapes good amount of success of this technology is visible in the form of smart cities and better livelihood of residing human beings.
- Butthe problems consequencesandopportunitiesinurbanareasaredifferentforeffective utilization of Information and Communication Technology for sustainable development ofruralmasses.
- The present research article discusses about rural development in developing world for the up- liftment of livelihood of the rural masses and to take a 'look ahead' at scientific developments and technologies that might be influential over the next10-20years.
- The driving motivation behind the concept on " Smart Village " is that the technology should acts as a catalyst for development, enabling education and local business opportunities, improving health and welfare, enhancing democratic engagement and overall enhancement of rural villagepeople.
- The “Smart Village " concept aims to realize its goal through providing policymakers with insightful, bottom–up analyses of the challenges of villagedevelopment.
- Thiswillfacilitatebetterlivingforabout30%ofthepopulation ,wholiveinurbanarea.
- But, more than half population will not be benefited from smart citydevelopment.

Koteshwer Village Visit Dist, Gandhinagar

We have visited an smart village Koteshwe of Gandhi agar district for understanding the basic conceptof an smart village. Koteshwer is a village situated in Gandhinagar District of Gujarat State, India. AsPer census 2011 Population of Koteshwer is 2074 of which 1071are males while 1003 are females.Koteshwer is very well developing village now a days and has all basic amenities which is required forpeople. Koteshwer is 10 km far from the capital of Gujarat stateGandhinagar. Koteshwer is 3.6 km Distance to the nearest railway station

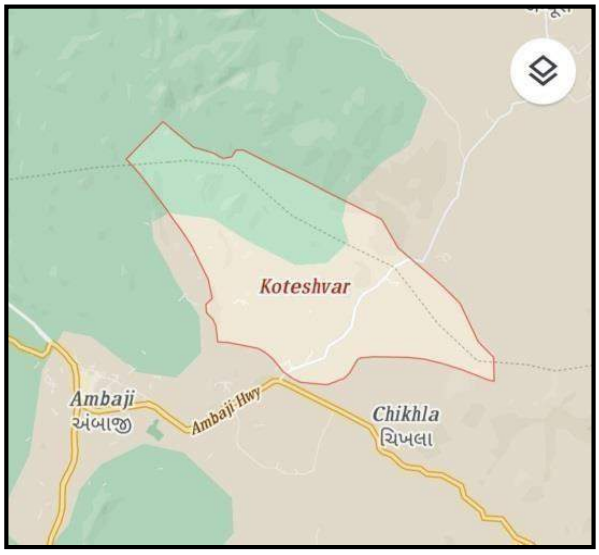


Figure 25 Location of Koteshwervillage

❖ Study AreaLocation:

Table 6 Details of koteshwer

Nameof Village	**Koteshwer**
NameofTaluka	**Gandhinagr**
Nameof District	**Gandhinagr**
State	**Gujarat**
Language	**Guajarati, Hindi, English**
Time zone	**IST(UTC+5:30)**
Elevation / Altitude	**52 meters, Above seal level**
Telephone Code / Std Code:	**079**
Pin Code	**382428**
Post Office Name	**Koteshwer Post office**

Infrastructural Facilities:-

Some Infrastructures available in village like Water supply facilities Water tanks, Underground sump), Transportation facilities, Education facilities Aanganwadi, Primary school, Secondary school , Health facilities ,Medical stores, Private clinics, Hospitals) , Bus stop, BRTS Bus, Amts, Gram panchayat etc

Water Supply Facilities:-

In Koteshwer village for a water supply facilities one overhead tank with capacity of 50,000 litter and two overhead tank with capacity of 1,00,000 litter a is available for drinking purposed do domestic usevillagers

Figure 26 water supply

Transportation Facilities or Road Network:

For a transportation purpose nearest railway station is Ahmedabad Sabarmati station from village. Bus station is in village. Local Transportation is available in village.

Figure 27 Road Transport of Koteshwer Village

Educational facilities:-

In Koteshwer Village the education facilities are very nice 6 Aanganwadi are for the children five schools is in the village

Figure 28 Educational of Koteshwer Village

Bank and Atm facilitits:-

In village for purposes like financial transaction, deposit and credit, cash withdrawals etc.

Figure 29 Bank & ATM Facility

Gram panchayat:-

Koteshwer Gram Panchayt is exist with Good ConditionAvailable of safe and secure water and sanitation facility fpr all.Panchayat is work village level, Block level and District level.

Figure 30 GramPanchayat

Health facilities:-

Koteshwer village health facilities like Dental clinice, Primary health care center, Medical stores, etc.

Figure 31 Health Facilitie of Koteshwer Village

Other facilities:- Other facilities like post office, General market. Shops, Milk co-operative society etc. in the Koteshwer village.

Drainage facilities:- Underground closed type drainage, Pump, is in Koteshwer village.

Sanitation facilities:- Public latrine blocks, Community toilets etc.

Electricity distribution:- In Koteshwer village GEB (Gujarat electricity board) 24 hours electricity is distributed. At all required road side solar street light and UGVCLpower supply is installed as a renewable resource.

Chapter: 4 Allocated Village: Nardipur Village

4.1 Introduction:-

4.1.1 Introduction about NardipurVillage:-

Nardipur is a village located in Kalol Taluka of Gandhinagar district.Sarpanchofthe village is Anal Prajapati Village is located 21 Km away from Gandhinagar. Total area of village is hectares. Total population of village is 7757 among them 3985 are male and 3772 are female as per census 2011. Total households in Nardipur village are 363as per census. Main occupation of the Nardipur village isFarming.

4.1.2 Need of thestudy:-

- For purpose of data collection. Data regarding the demographic, geographic, social, economic, educational etc.To know the current development going on in village.To know the various benefits to villagers though various government schemes in village. Ultimately after visit of ideal and smart village, this village gives the actual scenario of ruralarea.

4.1.3 Study Area:-

- Nardipur is a Village in Kalol Taluka in Gandhinagar District of Gujarat State,India. It is located 8.2 km towards from District headquartersGandhinagar.
- The nearest district headquarters is vidhusha situated at 21.9 km Distance from Nardipur.

4.1.4 Objectives Of TheStudy

- To study the existing growth, characteristics and development ofvillages.
- To study the existing infrastructure facilities and its management issues phasing byvillages.
- To study strategic planning development of villages. Proposal in the form of Physical, Social and Renewable infrastructurefacilities.
- To provide modern technologies of agriculture facilities for growing crops and takeproduction offarm.
- To provide Bank and ATM facilities for easier and fastertransaction.

- To provide other amenities like 24 hour powersupply
- To Provide basic facilities of villagers like water supply facilities, Drinking water facilities, Drainage facilities, Sanitation facilities, Education facilities, Health &Medicalfacilities.
- To prevent rate of migration of villagers to city.

4.1.5 Scope Of TheStudy:-

- To study the future growth and future scenario ofvillage.
- Todevelopmentofvillagecomparetothecityareainthebasicfacilitytoneededforpeople and their amenities and to studywholevillage.
- The study will focus the development trend intensity of growth of the village find out the problems related to the physical development of the area and infrastructure services ofthe village.
- The information of the village is collected based on different categories like, Education, water facilities, drainage facilities, transportation facilities, primary health center, bank facilities, public toilets, community hall and otheramenities.
- Based on these studies the requirement can be known and the further plan based on this requirement can be visualize for compacted development of the village To study how to improve facilityof ruralarea.

4.1.6 Methodology Frame Work for development of yourvillage:-

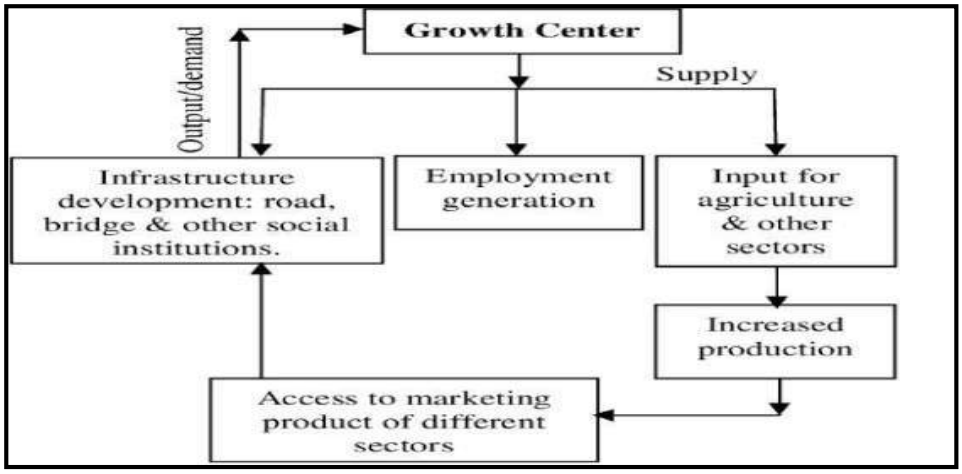


Figure 32 Methodology Framework for Village.

- Preparing draft master/ Development plane of the village based on study made and analysis carried out vision and prioritiesdefined.
- Problems identified needs and requirements of the village project interms.

- Identify people's need andpriorities.
  - Define activities that can mobilize the complete community. Use resources from running governmentschemes.
  - Repair and renovate existing Infrastructure Strength the Gram panchayat. Promotetransparency andaccountability.

4.1.7 Available Methodology For Development Of Related ToCivil:-

- Housingfacilities
- Roadnetworks
- Sanitationfacilitates
- Drainagefacilities
- ElectricityDistribution
- WaterSupply

4.2 Nardipur Village Study AreaProfile

4.2.1 Nardipur Study AreaLocation:-

Table 7 Details of Nardipur village

Nameof Village	**Nardipur**
NameofTaluka	**Kalol**
Nameof District	**Gandhinagr**
State	**Gujarat**
Language	**Guajarati, Hindi**
Time zone	**IST(UTC+5:30)**
Latitude	**23.3346015**
Longitude	**72.558932**
Pin Code	**382428**
Post Office Name	**Koteshwer Post office**

4.2.2 Base Location Map, LandMap

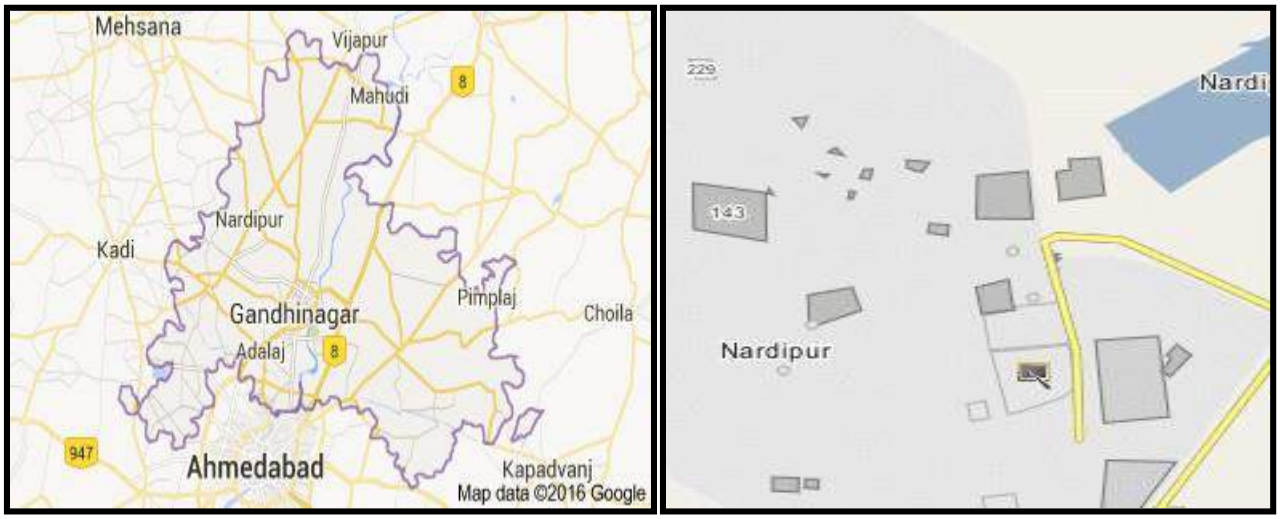


Figure 33 Nardipur Study Area Location.

4.2.3 Physical & DemographicalGrowth:-

Physical Growth :-

- In Nardipur village same Infrastructure Available like a Primary health center, Gram panchayt, Water Tank, Aanganwadi, Primary School for Boys, Primary School for Girls, Post office, Bus stand, there are three number of tube wells is provided invillage.
- Two bore well's , four water tank, Overhead tank with Capacity of 50,000 liters, uder ground sump with capacity 1,00,000 litters.
- For irrigation farmers use water from there are seven to eight number of hand pump exist in village.
- Generally villagers use water for irrigation from tube wells. One pond is exist in village. For education only one primary school is exist in village and school is not in good condition need maintenance from leakage in rainyseason.
- There is no availability of secondary ,higher school, collegesetc.
- One dudh mandali (small dairy) is available in village. Gram panchayat is available in village with goodcondition.
- There is no availability of community hall, Library, public garden. Post office, market, Bank and ATM facilities, Internet cafesetc.

Demographical Growth:-

Table 8 Demographical Growth of NardipurVillage

Sr. No	Census	Population	Male	Female	Total Households
1.	2011	7757	3985	3772	1643

As per census of India total population of Nardipur village in 2011 total population of Nardipur Village is 7757 out of this male population is 3985 and female population is 3772. Total no of Households in 2011 are 1643. Literacy rate in Nardipur village is 2001 out of total 5114population is Literate here. In males the literacy rate is 2557 males out of total 1536 are literate while female Literacy rate is 871 out of total 985 females are educated in NardipurVillage.

4.2.4 Economic profile / Banks:-

- The major population of Nardipur village is engaged with agricultural activities and other some people is doing businessandservices.
- The main crops are grown in Nardipurvillageis:
- Wheat, bajra/ pearlmillet and costar and agriculture commodities grow in thisvillage.

4.2.5 Socialscenario:-

Table 9 Social Scenario of Nardipur Village

Particulars	Total	Male	Female
Total No. of Houses	1643	-	-
Population	7757	3985	3772
Child (0-6)	843	459	384
Schedule Caste	263	134	129
Schedule Tribe	24	0	14
Literacy	80.25 %	90.78 %	73.88 %
Total Workers	2901	2183	718
Main Worker	2559	-	-
Marginal Worker	342	94	248

4.2.6 Actual Problem Faced By Villagers And SmartSolution

In village some basic amenities like Aanganwadi, Play grounds, Banks & ATM, Proper health facilities, High schools, post office, Road networks, Sanitation facilities, Drainage lines, proper Electricity are not available in village. In case of emergency Villagers have to travels and it consumes time in every small needs. So we interact with Villagers, Sarpanch, Talati, principals, Teachers, sub centers members & aimed to give them basic required facilities which they wants

4.2.7 Preservation of traditions, Festivals,Cuisine:-

- There is no any tradidtion, festival and cuisine are occur or held in thevillages.

4.2.8 Problems and potentials of migrants:-

- Immediate concerns faced by such migrant workers relate to food, shelter, health care ,fear of getting infected or spreading the infection, loss of wages, concerns about the family, anxiety and fear. Sometimes, they also face harassment and negative reactions of thelocalcommunity.

4.3 Data Collection of NardipurVillage:-

4.3.1 Methods for data collection:-

- Self-survey ofthevillage.
- Interaction withthevillagers.
- Technoeconomicsurvey.
- Physical survey ofthevillage.
- Census2011reportsandotherreportspublishedbydifferentMinistriesoftheGovernment. Journals, Magazinesandperiodicals.
- Statementofvillagers.
- Published reports of Central and State Governments and localbodies.

4.3.2 Primary surveydetails:-

- NardipurisavillagelocatedinGandhinagarTalukaofGandhinagardistrict.Sarpanchofthe village is Anal Prajapati Village is located 21 Km away from Gandhinagar. Total area of village is 446hectares.

- Total population of village is 7757 among them 3985 are male and 3772 are female as per census 2011.
- Total households in Nardipur village are 363 as per census. Main occupation of the Nardipur village peoples isFarming

4.3.3 No Of Human In One House:-

- The population of Nardipur village is 7757 among them 3985 males and 3772 females. Total number of households is 1643.As per details 4 to 6 humans are in one house

4.3.4 Geo-Tagging ofHouse:-

- Most of the houses in the Nardipur village is residential house and some of the are Kutchha house.
- 60% Puccahouse.
- 40% Kutchhahouse..

4.3.5 Which Material used locally:-

- For the house, they used mainly bricks, sands and wood. As brick manufacturing is available in village bricks are economical forthem.

4.3.6 Occupational Detail:-

- In Nardipur village most of the peoples are connected with farming and laborwork
- The average in income of one person per month is near about 9000 to 10000Rs.
- In Nardipur village out of total population, 675 were engaged in work activities. 75.11 % of workersdescribetheirworkasMainWork(EmploymentorEarningmorethan6Months)while24.89 % were involved in Marginal activity providing livelihood for less than 6 months.Of675workersengagedinMainWork,145werecultivators(ownerorco-owner) while 185 were Agricultural laborer

4.4.7 Agricultural Details:-

- In Nardipur village 346 hector agricultural land is available for farming and bore well and piped water is used for irrigationpurpose.
- Nardipur village people mostly depends on agriculture product like Cotton, Ground nut, Sugar can, Wheat, Vegetables,etc.

4.4.8 Geographical Detail:-

Table 10 Geographical Detail of Nardipur Village

Sr. No.	Description	Information/ Detail
1	Area of village (Approx.).	446 hectors.
2	Forest area.	0 hector.
3	Agricultural area.	100 hectors.
4	Residential area.	100 hectors.
5	Distance to the nearest railway station.	In Village
6	Name of the nearest town.	Dhamasna
7	Distance to the nearest bus station.	In Village

4.4.9 Agricultural Details:-

- In Nardipur village 346 hector agricultural land is available for farming and bore well and piped water is used for irrigationpurpose.
- Nardipur village people mostly depends on agriculture product like Cotton, Ground nut, Sugar can, Wheat, Vegetables,etc.
- Tribe (ST)population.

4.4.10 Physical Infrastructure Facilities:-

- CementconcreteRoadNetwork.
- Transportationfacility.
- Electricfacility.
- Undergrounddrainage.
- Watertank.
- Well.

4.4.11 Tourism development available in the village for attracting the tourist

There is no tourisum development in village

4.4 InfrastructureDetails:-

4.4.1 Drinking Facilities:-

- In Nardipur village there is two overhead tank of capacity 50,000 liter and 1,00,000 liter and one underground sump of the Narmada canal of capacity 1.2 lakh liter are the mainsource ofwater. For irrigation purpose Tube wells available invillage.

Figure 34 Drinking water Facilities

4.4.2 Drainage Network & Sanitation Facilities:-

Invillagethereisworkingefficientlycloseddrainagesystemisprovidedwithmaintenance repair.

The undergoing development of the public toilet in the Nardipur village and house to house toilets are there in the village.

Figure 35 Drainage Facilit

4.4.3 Transportation & RoadNetwork:-

good all-weather road is available in the village. Village is connected with SH68 and ring road which provide good transportation facilities with SH68 and ring road which provide good transportation facilities and internal streets road

Figure 36 Transportation Facilitie

4.4.4 Housing condition:-

The house condition in the village is very nice among this there is 60% Pucca house and 40% Kutchha house Nardipur is large village ofkalol.

Figure 37 Housing Condition

4.4.5 Social Infrastructure Facilities:- Health, Education, Communityhall

In Nardipur village there is private clinics and sub center for any other facility the peoples have totravel nearby area like Dhamasna. In Nardipur village there is 2 nos. of the primary school and 2 nos. of Aanganwadi and higher secondary school is also in the village. There is no library in the village but the design proposal is given by our team for the development the library in the village.

Figure 38PrimarySchool

Figure 39 Library ofNardipur

4.4.6 Existing Condition Of Public Buildings & Maintenance Of Existing PublicInfrastructures

Gram Panchayat is in good condition. Primary school need maintenance in monsoon leakage Problem occurs in school. Due to closed schools in pandemic situation we are not able to capture a existing condition of Primaryschool.some of the village building need to maintenance work

And repair works

Figure 40 Gram Panchayat of Nardipur

4.4.7 Technology Mobile in%:-

All most 80%peopleshavesmartphoneandtheyuseinternet,butthereisnoWi-Fifacility invillage.

4.4.8 Sports Activity as GramPanchayat:-

Currently there is no any activity is organized by gram Panchayat.

4.4.9 Socio-Cultural Facilities:-

Figure 41 TempleofNardipur

Figure 42 Sub center of Nardipur

4.4.10 Other Facility:-

Figure 43 Entry GateofNardipur

Figure 44 Pond ofNardipur

Figure45 Electricity

Figure 46 Busstation

Figure 47 Kirana StoreofNardipur

Figure 48 Playground ofNardipur

4.4.11 Any Other Details :- No Further Other Details Are Available in village

4.5 Exiting Institution Like – Village Administration

4.5.1 Bachat mandli :-

Public toilet is underdevelopment.Aanganwadi should be under repair & maintenance. Primary &Higher secondary school condition is very nice. Water tank should be under repair &maintenance. GramPanchayat building is also good Only one Dudhmandali (local dairy) exist invillage. a dairy cooperative business is owned, operatedand
controlled by the dairy farmers who benefitfromits

Figure 49 Dudh mandali ofNardipur

4.5.2 Dudh Mandali :-

Only one Dudh mandali (local dairy) exist in village. A dairy cooperative buisness is owened, operarted and controlled by the dairy farmers who benefit from its services. Members finance the cooperative and share in profits it earns in proportion to the volume of , milk they market torugh the coperative

4.5.3 Mahila Forum :-

No mahila mandali exist in village. If the mahila mandali exist in village, some objectives are full filled by mahila forum or mandal are following

- To work towards the elimination of discrimination, inequality, intolerance and violence - both, within and outside the home.
- To work towards the creation of a society based on equality, freedom, democracy, diversity and peace.
- In short, the Government has started these programs to improve the life of rural women who do not have education and are illiterate. If the women are educated

4.5.4 Plantation For Air Polution

In village there many tress grown by villagers which is daily maintained by villagers Trees can reduce air pollution they improve quality of air. They can also help for shading. Trees can clean the air and absorb harmful particles and gaseous pollutants from the air. Trees also soak up the harmful carbon dioxide in our atmosphere.

4.5.5 Rain Water Harvesting :-

There is no facilitie rain water harvesting and wastewater recycling in Village

Uses of Rainwater Harvesting

- Improves the quality and quantity of groundwater.
- Does not require a filtration system for landscape irrigation.
- This technology is relatively simple, easy to install and operate.
- It reduces soil erosion, storm water runoff, flooding, and pollution of surface water with fertilizers, pesticides, metals and other sediments.
- It is an excellent source of water for landscape irrigation with no chemicals and dissolved

4.5.6 Agricultural Devlopment :-

In village there are no seeds, fertilizer shops are available in village. If not Managed, Properly, Agriculture waste can pollute the Enviroment. The degradation of water Quality can impact adjacent waterway and Groundwater both onside and offside.

So we can use agriculturalwaste management

Figure 50 Agriculturalwaste

Advantage of waste management

- Irrigational technology. Application of synthetic fertilizers. Chemical pestcontrol.
- They increase the price and demand of theproducts.
- Better marketing and exposure to the price. Facilities in online trading and E-Commerce. Further, Improve the fertility of thesoil.
- Decrease the use of water, Fertilizers which keeps the pricesdown.
- Low run of chemicals and also waste materials into seas and water. Reduce impact ontheecosystem.

4.5.7 Any Other :-

No other initiatives taken in village

Chapter: 5 Sustainable Technical Options with Case Studies

5.1 Civil Concept: -

5.1.1 Advanced constructiontechniques: -

- Theconstructionindustryisrepeatedlycriticizedforbeinginefficientandslowtoinnovate.The basic methods of construction, techniques and technologies have changed little since Roman times. But the application of innovation in the construction industry is not straightforward.
- Theterm'advancedconstructiontechnology'coversawiderangeofmoderntechniquesand practices that encompass the latest developments in materials technology, design procedures, quantity surveying, facilities management, services, structural analysis and design, and managemen tstudies.
- The adoption of advanced construction technology requires an appropriate design, commitment from the whole project team, suitable procurement strategies, good quality control, appropriate training and carefu lcommissioning.
- Advanced construction technologies are commonly described as including (amongst many others) advanced form.

1.Modular construction

Modular construction is a sustainable technique that builders are using to design structures faster, at a more competitive cost, and with maximum resource efficiency. Modular structures can be built within a controlled environment where wastage of resources is minimized and pollution is controlled Modular Construction Techniques to Eliminate wastage of resources is minimized and pollution is controlled.

2. Use of Green Building Material

Perhaps the most popular sustainable construction technique is the use of green building materials. These are materials sourced from renewable sources and are also recyclable when the building has reached its lifespan.Green building materials are typically sourced from sustainable forests. They can also be produced from innovative manufacturing processes that reduce harmful

emissions to the atmosphere. Concrete and steel are two examples of materials that are now being produced via eco-friendly manufacturing processes.

3. Zero Energy Construction

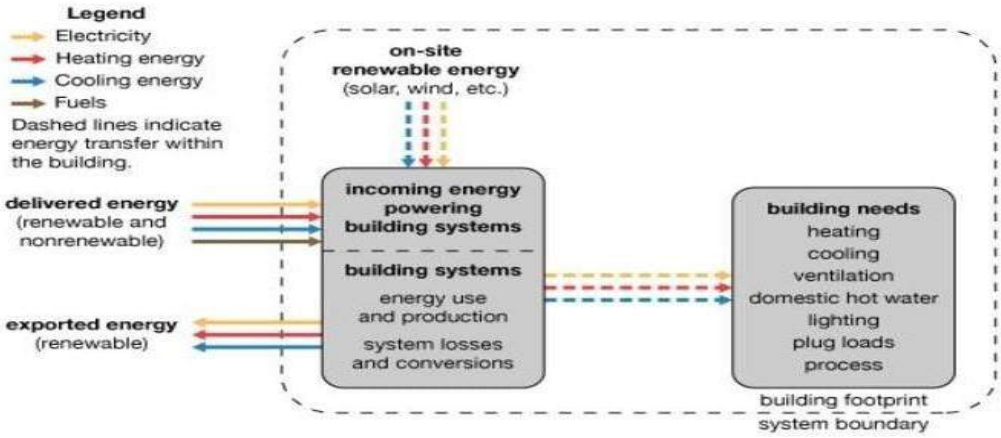


Figure 51 Zero Energy construction

Zero net site energy use :-In this type of ZNE, the amount of energy provided by on-site renewable energy sources is equal to the amount of energy used by the building. In the United States, "zero net energy building" generally refers to this type of building.

Zero net source energy use :-This ZNE generates the same amount of energy as is used, including the energy used to transport the energy to the building. This type accounts for energy losses during electricity generation and transmission. These ZNEs must generate more electricity than zero net site energy buildings.

Net zero energy emissions :-Outside the United States and Canada, a ZEB is generally defined as one with zero net energy emissions, also known as a zero carbon building(ZCB) or zero emissions building(ZEB). Under this definition the carbon emissions generated from on-site or off-site fossil fuel use are balanced by the amount of on-site renewable energy production. Other definitions include not only the carbon emissions generated by the building in use, but also those generated in the construction of the building and the embodied energy of the structure. Others debate whether the carbon emissions of commuting to and from the building should also be included in the calculation. Recent work in New Zealand has initiated an approach to include building user transport energy within zero energy building frameworks.

Net zero cost :-In this type of building, the cost of purchasing energy is balanced by income from sales of electricity to the grid of electricity generated on-site. Such a status depends on how a utility credits net electricity generation and the utility rate structure the building uses.

Net off-site zero energy use:-A building may be considered a ZEB if 100% of the energy it purchases comes from renewable energy sources, even if the energy is generated off the site.

Off-the-grid :-Off-the-grid buildings are stand-alone ZEBs that are not connected to an off-site energy utility facility. They require distributed renewable energy generation and energy storage capability (for when the sun is not shining, wind is not blowing, etc.). An energy autarkic house is a building concept where the balance of the own energy consumption and production can be made on an hourly or even smaller basis. Energy autarkic houses can be taken off-the-grid.

Net Zero Energy Building :-Based on scientific analysis within the joint research program "Towards Net Zero Energy Solar Buildings" a methodological framework was set up which allows different definitions, in accordance with country's political targets, specific (climate) conditions and respectively formulated requirements for indoor conditions: The overall conceptual understanding of a Net ZEB is an energy efficient, grid-connected building enabled to generate energy from renewable sources to compensate its own energy demandZero energy construction is an emergent trend in many different homes/buildings. The goal of a 'zero energy' structure is to produce as much energy as it consumes, having a zero net impact on the environment. Builders are incorporating zero energy techniques to design more efficient, durable and sustainable structures at a competitive cost.

4. Flexible Space Design to Improve Functionality

Flexible and dynamic construction is another sustainable design technique, which involves making a space functional for more than one purpose. This dynamic design trend first started with reception areas being designed to also act as a lounge for both guests and employees. The technique is also expanding into hallways, classrooms, stairways and dining locations. Builders are trending towards designing offices to also become liveable apartments, hotels to become condos, and retail spaces to double up as community centres

5. Resilience and Durability

Sustainable construction also involves improving the durability and resiliency of buildings. Climate change has heightened concerns of more inclement weather events (such as flooding, bushfires and cyclones), with structures needing to be designed with resiliency at the fore. More builders are trending towards incorporating risk mitigation steps such as insurance plans, construction technology and renewable building materials. In this way, structures can recover quickly after disaster strikes. The eco-friendly builders to save costs, increase quality and improve the efficiency of their construction processes.

5.1.2 Soil Liquefaction

Soil liquefaction, also called earthquake liquefaction, ground failure or loss of strength that causes otherwise solid soil to behave temporarily as a viscous liquid. The phenomenon occurs in water-saturated, unconsolidataffect *S* waves (secondarywaves), which causegroundvibrations shock is the best known cause of liquefactioncertain

Figure 52 Soil liquefaction

construction practices, including blasting and soil compaction and vibroflotation (which uses a vibrating probe to change the grain structure of the surrounding soil), produce this phenomenon intentionally. Poorly drained fine-grained soils such as sandy, silty, and gravelly soils are the most susceptible to liquefactionGranular soils are made up of a mix of soil and pore spaces. When earthquake shock occurs in waterlogged soils, the water-filled pore spaces collapse, which decreases the overall volume of the soil. This process increases the water pressure between individual soil grains, and the grains can then move freely in the watery matrix. This substantially lowers the soil's resistance to shear stress and causes the mass of soil to take on the characteristics of a liquid. In its liquefied state, soil deforms easily, and heavy objects such as structures can be damaged from the sudden loss of support from below Buildings

on loose soil pitch and tilt easily when liquefaction occurs, since the soil no longer supports the structures' foundations. In contrast, structures anchored to bedrock or stiff soils in earthquake-prone

areas suffer less damage, because less vibration is transmitted through the foundation to the structure above. In addition, buildings anchored to bedrock have a reduced risk of pitching and tilting

5.1.3 Sustainable Sanitation

Sustainable sanitation is a sanitation system designed to meet certain criteria and to work well over the long-term. Sustainable sanitation systems consider the entire "sanitation value chain", from the experience of the user, excreta and wastewater collection methods, transportation or conveyance of waste, treatment, and reuse or disposal.The Sustainable Sanitation Alliance includes five features in its definition of "sustainable sanitation": Systems need to be economically and socially acceptable, technically and institutionally appropriate and protect the environment and natural resources.

The purpose of sustainable sanitation is the same as sanitation in general: to protect human health. However, "sustainable sanitation" attends to all processes of the system: This includes methods of collecting, transporting, treating and the disposal (or reuse) of waste.

Sustainability criteria

The main objective of a sanitation system is to protect and promote human health by providing a clean environment and breaking the cycle of disease. In order to be sustainable a sanitation system has to be not only economically viable, socially acceptable, and technically and institutionally appropriate, but it should also protect the environment and the natural resources. According to the Sustainable Sanitation Alliance, when improving an existing and/or designing a new sanitation system, sustainability criteria related to the following aspects should be considered

Technology and operation

Technology and operation aspects incorporate the functionality and the ease with which the system can be constructed, operated and monitored using the available human resources (e.g. the local community, technical team of the local utility etc.). It also concerns the suitability to achieve an efficient substance flow management from a technical point of view. Furthermore, it evaluates the robustness of the system, its vulnerability towards disasters, and the flexibility and adaptability of its technical elements to the existing infrastructure, to demographic and socio-economic developments and climate change

Planning for sustainable sanitation

Most sanitation systems have been designed with the five aspects in mind, but in practice they are failing far too often because some of the criteria are not met. Since there is no one-for-all sanitation solution which fulfils the sustainability criteria, evaluation will depend on the local framework and will have to take into consideration the existing environmental, technical, socio-cultural and economic

conditions.

Some basic principles to be observed when planning and implementing a sustainable sanitation system were endorsed by the members of the Water Supply and Sanitation Collaborative Council during its 5th Global Forum in November 2000:

Human dignity, quality of life and environmental security at household level should be at the centre of any sanitation approach.

In line with good governance principles, decision-making should involve participation of all stakeholders, especially the consumers and providers of services.

Waste should be considered a resource, and its management should be holistic and form part of integrated water resource, nutrient flow and waste management processes.

The domain in which environmental sanitation problems are resolved should be kept to the minimum practicable size (household, community, town, district, catchment, city).

These planning guidelines have been revised further and are now used in various training courses for urban planners

Example

Some examples for improving present sanitation practices in the short-term, purely from a technology perspective, are listed below

- Pit latrines could be modified to be soil-composting latrines thus requiring some wall reinforcement, made shallow (max 1-1.5 m) and maintained using daily soil additions: the pits would be periodically closed and covered with soil in order to allow for sanitization and composting prior to emptying and reuse in agriculture.
- Simple urinals with separate collector systems could be installed instead of using toilets and pit latrines for urination
- Flush toilets could be modified to use less water or reuse greywater. Greywater could be source-separated from the Blackwater from toilets thus simplifying its treatment and providing opportunities for reuse.
- Blackwater from toilets could be held in conservancy tanks instead of open septic tanks and pits and then emptied and transported to biogas reactors; alternatively, the toilets could be connected to biogas reactors.
- Drainage pits e.g. from pour-flush toilets could be equipped with a safety zone of additional filter material to prevent contamination of ground water.
- Above ground dry toilets with urine diversion could be installed in dry areas lacking water, rocky

areas where pits are expensive to dig and areas with high water tables and flooding.

- With respect to the other sustainability factors, key areas of attention the creation of an enabling environment, market development and capacity development.

Figure 53 Sustainable sanitation

5.1.4 Transport Infrastructure / system

Mode of transport is a term used to distinguish between different ways of transportation or transporting people or goods. The different modes of transport are air, water, and land transport, which includes Rails or railways, road and off-road transport. Other modes also exist, including pipelines, cable transport, and space transport. Human-powered transport and animal-powered transport are sometimes regarded as their own mode, but never fall into the other categories. In general, transportation is used for moving of people, animals, and other goods from one place to another. The means of transport, on the other hand, refers to the vehicles necessary for transport according to the chosen mode (airplane, ship, truck and rail)

The textbook definition of a transportation system or mode is a system for moving persons or goods consisting of three components

(a) The vehicle (equipment) is what moves objects or traffic (people, goods). The vehicle consists of a container and some type of motive power, either onboard or elsewhere.

(b) The guideway is what the vehicles move along. The guideway consists of links and nodes that together form a network. A sequence of links is called a route. A terminal is a node where traffic is transferred from one vehicle to another.

(c) The operations plan is the set of procedures by which traffic and vehicles are moved over the guideway, including schedules or timetables, crew assignments, and control

Roles and Effects of Transportation Systems

- As documented in the ten articles in this topic,transportationsystems have pervasive and extensive effects on the economic and social systems that they serve.
- initial effect of the introduction of a new transportation mode or service is generally to

reduce travel or shipment times and costs, whether the mode or service is an existing

- technology or a new technological development. But this is only the first step in the "two-step dance" (see also Historical Transportation Development). expand Finally opportunities for economic and social integration may occur.
- history of technology development in transportation is replete with examples of the effects of such innovations, many of which are described in this topic and in Historical
- compared with the system's capacity or the supply of services available. Congestion is effectively the wasted time and expense of using an inadequately supplied transportation service. However, congestion also serves to bring the system's use into balance with its

5.1.5 Vertical Farming

The world population is constantly on the rise, and recent estimates expect the population to hit the 10 billion mark as early as 2050. The current state of the agriculture industry does not allow it to sustain this level of growth. Food shortage is already on the rise, and we can expect the dearth to continue to rise exponentially as well.

In order to combat the growing requirement of sustainable forms of agriculture, vertical farming has begun to emerge as a potential method to match this necessity. We look at the specifics of vertical farming, along with its numerous advantages, disadvantages, limitations, and challenges in this article.

What Is Vertical Farming?

Vertical farming is a specific method developed to produce fruits and vegetables in vertically inclined surfaces. While most farming methods focus on producing foods at a ground level, vertical farming takes this practice to the skies.

The vertically stacked layers of produce can be easily set up in confined locations such as skyscrapers

and shipping containers. This reduces the dependency on farmlands and allows agriculture to take place at virtually any location.

In order to allow fruits and vegetables to be grown in such a manner, vertical farmers rely on the use of controlled environment agriculture technology, aka CEA technology.

This new-age form of agriculture relies on the use of various indoor farming methods to provide nourishment to crops around the year. This includes various forms of technology related to controlling light, humidity, temperature, and moisture levels. The idea behind this form of environmental control is to mimic the conditions of a greenhouse that utilize various artificial lighting methods and metal reflectors in order to redirect the flow of sunlight in a given space. The intention is to maximize the yield of a given space and improve the efficiency of water and light usage.

Figure54 Vertical Farming

Process Of Vertical farming

Physical layout

Lighting

Growing medium

Sustainability

- Physical Layout:- The physical layout of a vertical farm is one of the most important factors related to this concept. The name itself suggests that these farms take a vertical direction when it comes to establishing a layout. To do this, the crops that are required to be grown on such farms are stacked vertically in order to create a tower-like structure.This allows for the maximum utility of space, sometimes tripling or quadrupling the output of farmland.

- Lighting :-As most vertical farms are established indoors, it's crucial to examine and fine tune the amount of light that's penetrating the space. A combination of natural and artificial lights are utilized for this purpose so as to get the levels perfectly right.

  The artificial lights also play a major role in maintaining the level of lighting over time and can accommodate for various external threats such as cloudy conditions or low sunlight.

- Growing Medium:-There are various options available to vertical farmers when it comes to selecting the growing medium related to this practice. Currently, geoponics is being practiced by

a region.This method has numerous limitations associated with it, which is why new-age methods such as hydroponics, aeroponics, and aquaponics are being sought after to fill the gaps in the existing systems.Other unconventional, but organic materials being utilized to aid with vertical farming include peat moss and coconut husk

- Sustainability :- Thanks to the efficiency of the various alternatives described above, vertical farms can require as little as 5% of water in comparison to traditional agricultural practices. In additional to making the most of existing resources, these farms also allow for maximization of agricultural spaces, and this is crucial considering the growing requirements of the planet.

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

Corrosion is the result of a chemical reaction on metals causing the metal to oxidize. Most people are familiar with water (wet) corrosion, however, there are multiple factors that influence corrosion. Some of these factors are:

- Type of metal – composition, grain boundary, surface condition, microstructure
- Environmental – where is the metal located on the asset, is it subject to temperature variations, conductivity, heat transfer rates, humidity, wet and dry cycles
- Stress – how the asset is being used, what comes in contact with the metal (other objects, chemicals), engineering stress load
- Physical – reactivity to chemicals, surface coating, frequency of contact with other surfaces chemicals orresidue(dirt/dust/fuels)
- The most common forms of corrosion include:
- General or uniform corrosion – the least damaging of corrosion forms and occurs over awide area.
- Pitting – can be the result of an impurity or penetration of the metal surface.
- Galvanic – the interaction of two or more dissimilar metals, very common HVAC issue when brass and steel or copper and steel meet.
- Microbiologically Influenced Corrosion (MIC) – the most severe and threatening form of corrosion caused by microbiological agents.
- Corrosion due to wear and tear – a gradual deterioration of the metals surface. found at joints, elbows or other abrasions.

The management of corrosion can be handled in many ways. However, approaches proposed for the corrosion protection of reinforcing steel bars in concrete do not replace the significance of high-

quality concrete as the primary source of barrier protection against corrosive species.

Steel in concrete can be protected from corrosion in three main ways:

(1) seal the surface of the concrete to minimize the ingress of chloride ions, carbon dioxides, and water,

(2) modify the concrete to reduce its permeability, and

(3) protect the reinforcing bars to reduce the effectsof chlorides and carbon dioxide when they do reach the steel. This chapter briefly discusses the last method of protection.

5.1.7 Sewage treatment plant

PRELIMINARY TREATMENT: Preliminary treatment consists solely in separating the floating materials like tree branches, papers, pieces of rags, wood etc, and heavy settable inorganic solids. It helps in removal of oils and greases and reduces the BOD by 15% to 30%. The processes under this are: - Screening - to remove floating papers, rags, clothes. > Grit chamber - to remove grit and sand. Skimming tank - to remove oils and greases.

PRIMARY TREATMENT: Primary treatment consists in removing large suspended organic solids. It is usually accomplished by sedimentation in settling basins. The liquid effluent from the primary treatment often contains a large amount of suspended organic material and has a high BOD (about 60% of original).

SECONDARY TREATMENT: Here the effluent from primary treatment is treated through biological decomposition of organic matter carried out either aerobic or anaerobie conditions. Aerobic Biological Units: I) Filters (intermittent sand filters, trickling filters) II) Activated Sludge Plant (feed of active sludge, secondary settling tank and aeration tank) III) Oxidation ponds and Aerated lagoons. Anaerobic Biological Units: I) Anaerobic lagoons II) Septic tanks III) Imhoff tanks The effluent from the secondary treatment contains a little BOD (5% to 10% original) and may contain several milligrams per litre ofs DO.

TERTIARY TREATMENT: The purpose of tertiary treatment is to provide a final treatment stage raise the effluent quality before it is discharged to the receiving environment(sea, river, lake, ground, etc.). More than one tertiary treatment process may be used at any treatment plant. If disinfection is practiced, it is always the final process. It is also known as "effluent polishing". DESIGN PERIOD: A sewerage scheme involves the laying of underground sewer pipes and construction of costly treatment units, which cannot be replaced or increased in their capacities easily or conveniently at a later date. In order avoid such

be forecasted to serve the community satisfactorily for a reasonable year. The future period for which the provision is made in designing the capacities of various components of the sewerage is known as design period. This sewage treatment plant is designed for 30 years. - Raw sewage characteristics, tested in Environmental laboratory with Technical division, Vellore Corporation. - Expected effluent characteristics according the design.

POPULATION FORECAST: Forecasting method: Incremental increase method

YEAR	POPULATIONS	INCREMENTAL	INCREASE
1951	106024		
		7718	
1961	113742		17622
		25430	
1971	139082		9825
		35165	
1981	174247		-34351
		814	
1991	175061		1538
		2352	
2001	177413		
		Avg= 71389	Avg= -5366

X= 71.3895 = 14,278

.Y= -53664 = -1342.

Pn = PO + nx +n n+12 X y

Base period as 2010

P2010 = 1,77,413 +0.9 x 14278 +0.9 0.9+12 x (-1342)

= 1,89,116.

Intermediate period as 2025,

P2025 = 1,77,413+2.4 x 14278 + 2.4 2.4+12 x (-1342)

= 2,10,343

Ultimate design period as 2040,

P2040 = 1,77,413+3.9 x 14278 + 3.9 3.9+12 x (-1342)

= 2,45,920

At design period of 30 years the forecasted population of the Vellore city is 2,45,920.

CALCULATION OF SEWAGE GENERATION:-

Ultimate design period = 30 years

Forecasted population at 2040 = 24.920

Avg. water supply per day = 24920 x 135= 33199200 =33200000 = 33.2 MLD

Avg. sewage generation per day = 80% of supplied water = 0.8 x 33 = 26.56 MLD In cumec.

Avg. sewage generation per day = 26.56 X 1061000 X 24 X 60 X 60

Avg. discharge = 0.308 cumec

Max. discharge =3 x avg. discharge = 3 x 0.3 = 0.924 cumec

POINT CONSIDERED IN DESIGN :-

Following points are considered during the design of sewage treatment unit: The design period should be taken between 25 to 30 years. The design should not be done on the hourly sewage flow basis, but the average domestic flow plus the maximum industrial flow on the yearly record basis. Instead of providing one big unit for each treatment more than two numbers small units should provided, which will provide in operation as well as no stoppage during maintenance and repair of the plant. Overflow weirs and the bypasses should be provided to cut the particular operation if desired. Self cleaning velocity should develop at every place and stage. The design of the treatment units should be economical; casy in maintenance should offer flexibility in operation.

Receiving Chamber :-

Receiving chamber is the structure to receive the raw sewage collected through Under Ground Sewage System from the city. It is a rectangular shape tank constructed at the entrance of the sewage treatment plant. The main sewer pipe is directly connected with this tank

DESIGN:

Design flow = 0.924 cumec

Detention time = 60 sec

Volume required flow X detention tim

e= 0,924 x 60 Vrqd= 55.44 m

Provide, depth = 3m

Area = 55.443

= 18.48 m^2

Length : Breadth = 2:1

L x B = 2B x B = 2B^2 =18.48

L = 6.2m

B = 3m

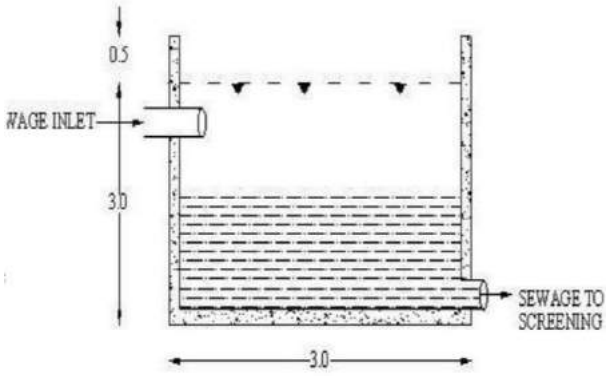


Figure 55Receiving Chamber

CHECK

Volume designed = 6.2 x 3 x 3

Vdes=55.8m

Vrqd = 55.44 m

Vdes > Vrqd

Receiving chamber is designed for the size 6.2m X 3m X 3m (SWD) + 0.5 (FB)

SCREENING :- (General)

Screening is the very first operation carried out at a sewage treatment plant and consists of passing the raw sewage through different types of screens so to trap and remove the floating matter such as tree leaves, paper, gravel, timber pieces, rags, fibre, tampons, cans, and kitchen refuse etc.

PURPOSE OF SCREENING :-

Screening essential in sewage treatment for removal of materials which would otherwise damage the plant, interfere with the satisfactory operation of treatment unit or equipment. To protect the pumps and other equipments from the possible damages due to floating matter. To remove the major floating matters from the raw sewage in a simple manner before it reaches into the complex high energy required process. Coarse Screens The coarse screens essentially consist of steel bars or flat placed 30° to 60° inclination to the horizontal. The opening between bars are 50mm or above. These racks are placed in the screen chamber provided in the way of sewer line. The width of the rack channel should be sufficient so that self cleaning velocity should be available and a bypass channel should be provided to prevent the overtopping. The bypass channel is provided bar screen. A well drained trough is provided to store the impurities while cleaning the rack. These racks are cleaned mechanically**.**

Design Of Coarse Screen:

Peak discharge of sewage 0.924 m/s

Assume the velocity at average flow is not allowed to exceed 0.8 m/s

The net area screen opening required = 0.9240,8

= 1.16 m

Clear opening between bars = 30 mm = .03 m&size of the bars = 75 mm x 10 mm

Assume width of the channel = 1m The screen bars are placed at 60° to the horizontal.

Velocity through screen at peak flow = 1.6 m/s

Clear area = 1.161.6sin60 = 0.837 m

No of clear openings = 0.83 70.03 =28 Nos

Width of channel = (28 x 30) + (29 x 10) = 1130 mm = 1.13 m

Provide width of the channel = 1.2 m

Coarse screen channel is designed for the size of 1.2 m X 0.7m (SWD) + 0.5 m (FB)

Grit Chamber :-

Grit removal basins are the sedimentation basins placed in front of the fine screen to remove the inorganic particles having specific gravity of 2.65 such as sand, gravel, grit, egg shells and other non-putrescible materials that may clog channels or damage pumps due to abrasion and to prevent their accumulation in sludge digesters. The grit chamber is designed to scour the lighter organic particles while the heavier grit particles remain settled. Here the horizontal flow type grit chamber is designed to give a horizontal straight line flow velocity, which is kept constant over varying discharge.

DESIGN:

Peak flow of sewage = 0,924 m'/s

Assume average detention period = 180 s

Aerated volume = 0.924 x 180 = 168 m^3

In drain the channel periodically for routine cleaning and maintenance two chambers are used.

Therefore volume of one aerated chamber =1682 m = 84 m

Assume depth of 3m and Width to depth ratio 2:1

Width of the channel = 2 x 3 = 6

Length of the channel = 843 x 6 =4.7 m

Increase the length by about 20% to account for inlet and outlet

Provide length 4.7 x 1.2m = 5.7m

Grit chamber is designed for the size of 5.7mm X 6m X 3m

Fine Screen :-Fine screens are the structures built between the grit chambers and primary sedimentation tank in order to remove some amount of suspended solids from sewage. The fine screens often get clogged need frequent cleaning. The brass metal is used as it has higher resistant towards rust and corrosion. Here the disc type fine screen is designed and the wire mesh of the screen is made up of brass metal. The fine

DESIGN:

Design flow = 0,924 cumec

At avg. flow design velocity = 0.8 m/s

Arearequre=0.9240.8 =1.16 m^2

SWD provided = 0.7 m

At peak design velocity = 1.6 m/s

Assuming the screen bars are placed at 40° to the horizontal.

Clear area = 9241,6sin40 1.13 m

Clear opening = 8 mm = 0.008 m

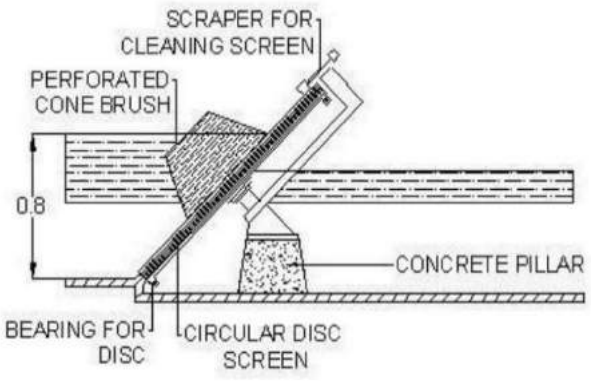


Figure 56Fine Screen

Net clear width of channel = 1.41 m No. of clear openings = 178No. of bars 178

Skimming Tank:-

Skimming tanks are the tanks removing oils and grease from the sewage constructed before the sedimentation tanks. Municipal raw sewage contains oils, fats, waxes, soaps, fatty acids ete. The greasy and oily matter may form unsightly and odorous scum on the surface of settling tanks or may interfere with the activated sludge process. In skimming tank air is blown along with chlorine gas by air diffuser placed at the bottom of the tank. The rising air tends to coagulate and solidify the grease and cause it to rise to the top of the tank whereas chlorine destroys the protective colloidal effect of protein, which holds the grease in emulsified The greasy materials are collected from the top of the tank and the collected are skimmed of specially designed mechanical equipments.

DESIGN :

The surface area required for the tank A = 6.22 X 10-3 X qVr m^2

Where q= rate of flow sewage in m'/day

Vt= minimum rising velocity of the oily material to be removed in m/min

q=0.924 x 60 x 60 x24 = 79833.6 m/day

Vt = 0.25 m/min = 0,25 x 60 x 24 = 360 m/day

A = 622 X 10-3 X 79833,6360 A =1.37 m^2 = 1.5m^2

Provide the depth of the skimming tank is 3m

The length breadth ratio is 1.5: 1Therefore L = 1.5B LxB = 1.5B Therefore B= Im L = 1.5 m

Skimming tank is designed for the size of 1.5m X Im X 3m + 0.5m (FB)

Primary sedimentation tank :-

Primary sedimentation tank is the settling tank constructed next to skimming tank to remove the organic solids which are too heavy to be removed i.e. the particles having lesser size of 0.2 mm and specific gravity of 2.65. The designed tank is circular type which makes settling by allowing radial flow. These are fabricated using carbon steel with epoxy lining on the inside and epoxy coating on the outside. Built on the concept of inclined plate clarification, these clarifiers use gravity in conjunction with the projected settling to effect a fairly high percentage of removal of suspended solids as 60 to 65% of the suspended solids and 30 to 35% of the BOD from the sewage.

DESIGN:

Max. quantity sewage = 26.56 MLD

Surface loading = 40 m/m/day

Detention period 1 hrs

Volume of sewage = 26560 X 124 =1106.7 m = 1110 m

Provide effective depth = 2.5 m Surface area =11,102.5 = 444 m^2

Surface Area the tank =Total flow Surface loading

= 2656040 = 644m^2

Therefore area surface area of tank = 664 m^2

Diameter of tank =664x 4(3.14)

Primary sedimentation tank is designed for the dimensions of 29.2m (dia) x 2.5m (depth)+0.5(FB)

AERATION TANK:-

Aeration tank is the mixing and diffusing structure in the activated sludge plant. These are rectangular in shape having the dimensions ranging 3 to 4.5m deep, 4 to 6m wide and 20 to 200m length. Air is introduced continuously to the tank. Combined Aeration type aerators having the diffused air aeration as well as mechanical aeration together in a single unit are used in the project. The Dorroco designed as it gives higher efficiency and occupies less space. This results in higher efficiency and lesser detention period and lesser amount of compressed air.

DESIGN :

No. of Aeration tank = 2

Design flow = 26.56 MLD

Average flow of each tank = 265602 = 13280 m^3

BOD at inlet = 0.8 x 300 (20 % of BOD removed at Grit chamber)

Yo = 240 mg/l

BOD at outlet YE = 20 mg/1

BOD Removed in Activated Plant = 240-20 = 220 mg/1

Minimum efficiency required in the activated plant = 220240 Min.

efficiency = 91.7% Since the adopted extended aeration process remove 85-92 %

Hence it is OK MLSS (X.) 3000 mg/ F/M ratio = 0.4

Volume the tank required V Q FM X YOXI = 13280 X 2200.4 X 3000 = 2344.67 m^3 = 2345 m^3

Assume the liquid depth of the tank as 4.5 m

The Width to Depth ratio as 2.2 BD = 2.2 B =9.9 m= 10 m

L = 24354.5 XI0 = 54 m L = 54 m; B = 10 m; d=4.5 m

Volume provided = 54 x 10 x 4.5 = 2430 m^3

(i) CHECK FOR AERATION PERIOD / HRT:

Hydraulic Retention Time (HRT) = t =v x 24Q = 2430 X 2413280 = 4.39 hrs Since it lies between 3-6 hrs it is OK.

(ii) CHECK FOR VOLUMETRIC LOADING:

Volumetric loading = QX YoV - 13280 X 2402430 = 1171.6 g/m =1.171 kg/m' Since it lies between 1.0 - 1.2 it is OK

(iii) CHECK FOR RETURN SUDGE RATIO:

Return activated sludge = QrQ = X 106S.V.1-Xt

Where,

S.V.I = Sludge Volume Index

Qr =Sludge Recirculation Rate

Chapter: 6 Swatchh Bharat Abhiyan (Clean India)

6.1 Which type of swatchhta needed in your village explaining Existin Situation with photograph:-

Swatchh Bharat Abhiyan (SBA) or Clean India Mission was a nation-wide campaign from 2014to2019 to clean up the streets,roads and infrastructure of cities,towns,andruralareas. Its objectives included eliminating open defecation through the construction of household- owned and community- owned toilet sand establishing an accountable mechanism of monitoring toilet use. There is no Facility in the village for waste-disposal. For this wehave.

Figure 57 : Swatchhta Abhiyan Nardipur

6.2 Guidelines for the process of the implementation in your village withphotograph

Village administration processes the Clean India Mission guidelines for cleaning within the villages.

Guidelines with the process of Implementation:

Seven methods have been identified as an initiatives,

1. Motivation of the people for the clean India mission.
2. Slogans and Poster preparations and distribution within thevillages.
3. Door to door awareness program sand seminars by students to bedoneinthe7thsemester.
4. Persons from the NGO_s will be met and will be given some suggestions.

5. Village administrative officials will be givensome suggestions for the improvement of the Clean-India Mission.
6. Village is going through the policies of the Clean India Mission of Government of India andalso of theState Government.
7. Village female and girls will be motivated through programs organised bytheSarpanch.

Figure 58 Posters of Village

6.3 Actual Activity Done by Students for making your village Clean withPhotograph

Major Activities have been done by the students:

Preparation of themonitoring plan forcleaning.Studentshave carefully identified the policies and discussed it with the sarpanch and officials. Truck or Mobile vehicle for door to door pickup of the garbage from all the home of thevillage along with separate portion for collection wet and dry garbage. Separate dustbins can be placed in each and every street of the village for the collectionof domestic, plastic, glass, etc. waste from villageThe villagers should be made aware about the importance of the cleanliness in the village and its harmful causes to their health related awareness camp with the help of local government.

Figure 59 Dispocal TruckofGarbage

Figure 60 Clean VillageActivities

Chapter: 7 Village condition due to covid - 19

7.1 Actual Activity Done by Students for making your village Clean with photograph

- Maintain at least 1 meter (3 feet) distance beween yourself and other people, particularlythose who are coughing,sneezing and have afeaver.
- Stay home and self-isolate even with minor symptoms such as cough, headache, milfever,until yourecover.
- Everyday preventive action to help prevent the spread of respiratory viruses should be followed, these include**:**Wash your hands often with soap and water for at least 20 second. Use an alcohol-based hand sanitizer that contains at least 60% alcohol if soap and water are notavailable.
- Avoid touching your eyes, nose, and mouth with unwashed hands. Avoid close contact with people who are sick. Cover your cough or sneeze with a tissue,then throw the tissue inthetrash.

Figure 61 Sanitizerdistribution

- The hydraulics is maintained in such a manner that wastewater does not rise to the surface retaining a free board at the top of the filledmedia.
- We realized there people how use fullmask
- We distributed masks to the peoplethere.

When we visited the village, we gave the following insights to make the people aware of the corona epidemic.We gave sanitizers bottle to a few people and thereimprotant gave some advice to there people to avoid corona.

Figure 62 Food distribution

The reduction in the the treated effluent for the total suspended solid varied from 70% to 80, BOD from 78% to 84%, nitrogen from70%
varied from 70% to 80, BOD from 78% to 84%, nitrogen from 70%coliformfrom 90 % to 97%.The treated effluent is useful for municipal gardens, fountains and irrigation.

- The total area required for the systemis Approximately 35 sq. m. for 20 m.

Figure 63 Sarpanch Meet quarantine family

Nardipur village sarpanch has worked tirelessly to not only protect villagers from the virus but also arrangements to provide all essential services to the residents during the lockdown Preparing isolation facilities, arranging food, coordinating with the medical staff, ensuring social distancing and looking for symptomatic patients Worker of PHC of Nardipur village check for possibleCOVID symptoms and help keep families under quadrant.

7.2 Activities Done by Students for allocated village withPhotograph

Maintain at least 1 meter (3 feet) distance beween yourself and other people, particularly those who are coughing ,sneezing and have a feaver.

- Stay home and self-isolate even with minor symptoms

  such as cough, headache, milfever,until you recover.

- Everyday preventive action to help prevent the spread of respiratory viruses should be followed, these include**:** Wash your hands often with soap and water for at least 20 second. Use an alcohol-based hand sanitizer that contains at least 60% alcohol if soap and water are not available.

Figure 64 Poster at villege

7.3 Any other steps taken by the students /villagers

Avoid touching your eyes, nose, and mouth with unwashed hands. Avoid close contact with people who are sick. Cover your cough or sneeze with a tissue, then throw the tissue in the trash.

Figure 65 Sanitizer distribution

- The hydraulics is maintained in sucha manner that wastewater does not rise to the surface retaining a free board at the top of the filled media.
- We realized there people how use fullmask and how they take care of their selves against corona.
- We distributed masks to the people there.

When we visited the village, we gave the following insights to make the people aware of the corona epidemic. We gave sanitizers bottle to

a few people and there improtant gave some advice to there people to avoid corona.

- The reduction in the the treated effluent for the total suspended solid varied from 70% to 80, BOD from 78% to 84%, nitrogen from 70% varied from 70% to 80, BOD from 78% to 84%, nitrogen from 70%coliformfrom 90 % to 97%.The treated effluent is useful for municipal gardens, fountains and irrigation.
- The total area required for the system is Approximately 35 sq. m. for 20m.

Chapter: 8 Sustainable Design Planning Proposal

(Prototype Design) - Part- I

8.1 DesignProposals:-

➢ In the Vishwakarma Yojana Phase-VII Part – I we have given total six design according to the village need and useful for thevillagers.

The design proposals are: -

- **HealthCenter**
- **Public Toilet**
- **BusStand**
- **CommunityHall**
- **Library**
- **Public Park**

8.2 Recommendations of theDesign:-

Health Center:-

Nardipur village doesn't have any type of health or medical facility. In emergency case the villagers don't have option of medical treatment. Villagers go to Kalol for all type of medical treatment. So, we decide to give design proposal of public health center, for basic medical treatment.

Public Toilet:-

Inoural located village Nardipur hasapopulationof7757andthere is no single toilet block or larine block in the village, so when any function is celebrated in the village the public use open space for toilet and washing. In our village there is no latrine block, so we decided to give proposal of new latrine block in our village.

Bus Stand:-

The bus stop is not good condition so we proposed a design of New bus stop.

Community Hall: -

For Villagers, Sarpanch, Talati meeting no any place & structure so we provide a community center.

Bio Gas Plant: -

It can be used for cooking food and other domestic heating purposes. It can be used for street lighting. It can be used to run small engines like water pumping setsfor irrigation purposes.

Public Garden: -

In our village, there is no re-creational area. So, we decided togive design of public garden for where public spend their peaceful time with family.

8.3 Benefit of thevillagers:-

- By interaction with Villagers, Sarpanch, Talati, Sub center members, School Teachers, Principal
- we know which facilities required in village &it will be very useful to the villagers.
- Using a Bio gas contains methane and the biogas has higher thermal efficiency thanthe
- kerosene, wood,..etc. Since rural areas consist of farmers, bio gas plants provide useful manure.....As they reduce the dependence on the forests(wood for fuel), bio gas ishelpfulin preserving forests.
- Purposes. As an "away-from-home" toilet room, a public toilet can provide far more than access to the toilet for urination and defecation. People also wash their hands, use thebin.
- Primary health center is useful for minor surgeries related health because village do not have any private clinics, any hospital we aimed to provide health facility for villagers. The main role of primary health care is to provide continuous and comprehensive care to the patients.
- It also helps in making the patient available with the various social welfare and public health services initiated by the concerned governing bodies and other organizations. Community center is location where members of a community tend to gather for group activities, social supports, public information, and other purposes.

8.1.1 Social Designing (Public Health Centre.)

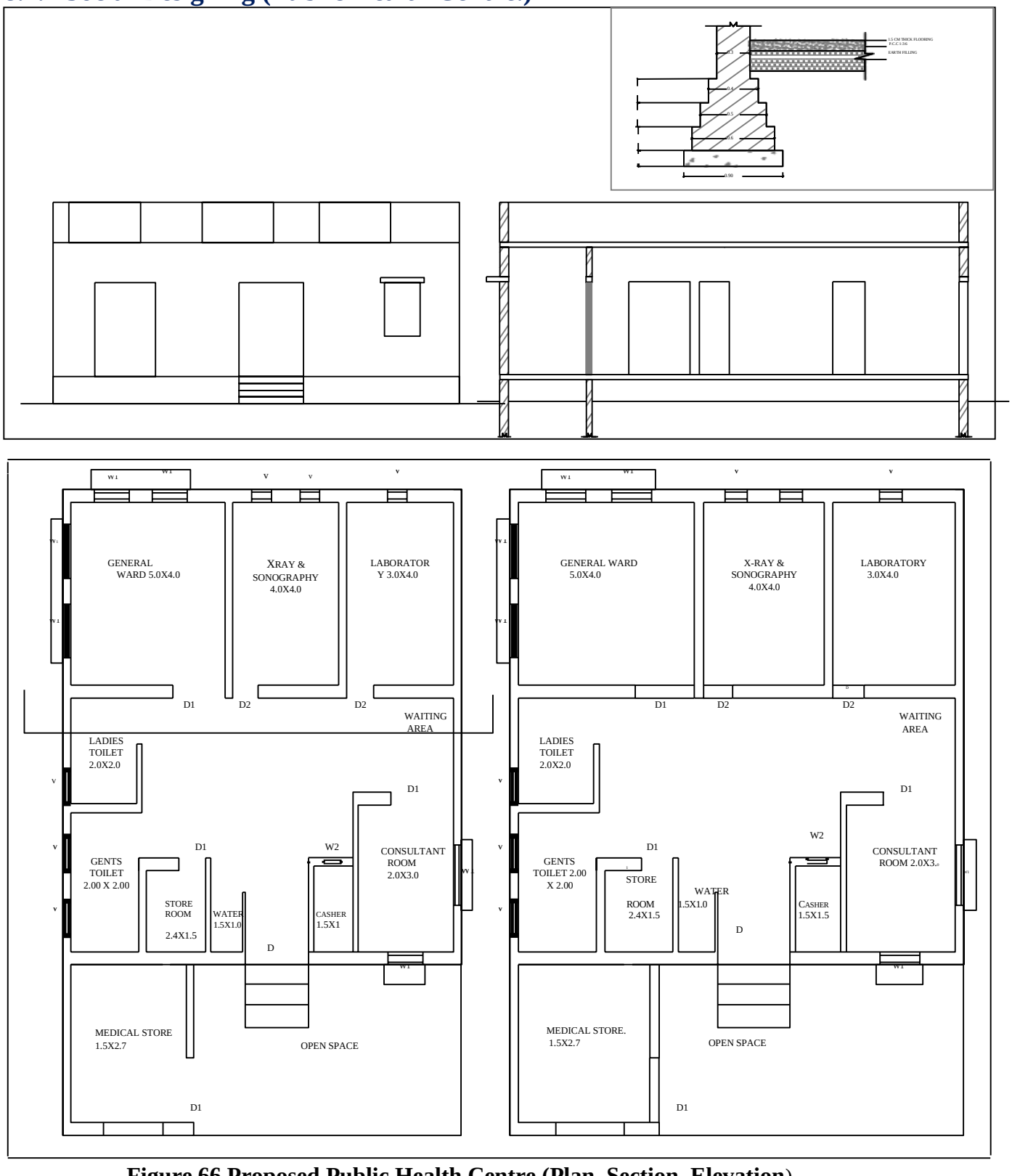


Figure 66 Proposed Public Health Centre (Plan, Section, Elevation)

MEASUREMENT SHEET OF **Public Health Centre**						
ITEM	DESCRIPTION	NO	L	B/W	H/D	QUANTITY	**UNITS**
ITEM NO.:- 1							
	Excavation for foundation						
	For 300 mm thick wall						
	L=66.70 m	1	66.70	0.9	2.7	162.08	**Cu.m.**
	For 200 mm thick wall						
	L=16.4m	1	16.4	0.7	2.7	30.99	**Cu.m**
	TOTAL					193.07	**Cu.m**
ITEM NO.:- 2							
	P.C.C. work in foundation						
	For 300 mm thick wall						
	L=66.70 m	1	66.70	0.9	0.9	54.02	**Cu.m.**
	For 200 mm thick wall						
	L=16.4 m	1	16.4	0.7	0.6	6.89	**Cu.m.**
ITEM NO.:- 3							
	Brick masonry work in Foundation						
	For 200 mm thick wall						
	1st step						
	L=18.5	1	18.5	0.4	0.4	2.96	**Cu.m**
	2nd step						
	L=19.2	1	19.2	0.3	0.4	2.30	**Cu.m**
	3rd step						
	L=19.9	1	19.9	0.2	0.45	1.79	**Cu.m.**
	For 300 mm thick wall						
	1st step						
	L=68.8	1	68.8	0.6	0.6	24.79	**Cu.m**
	2nd step L=69.50	1	69.5	0.5	0.6	20.85	**Cu.m**

	3rd step						
	L=70.2	1	70.2	0.4	0.6	16.85	**Cu.m.**
	4th step						
	L=72.93	1	72.93	0.3	0.45	9.84	
	Total Brick masonry					79.38	**Cu.m.**
	Up to P.L.						
ITEM NO.:- 4							
	Earth filling work						
			106.09-21.22-49.469			35.401	**Cu.m.**
ITEM NO.:- 5							
	Brick masonry work in super structure						
	For 200 mm thick wall						
	L=19.90	1	19.9	0.2	3.05	17.14	**Cu.m.**
	For 300 mm thick wall	1	70.9	0.3	3.05	64.87	**Cu.m.**
	L=70.90						
	Deduction for door & Window (for200mm wall)						
	D	1	2.7	0.2	2.1	1.134	**Cu.m.**
	D 1	4	1.2	0.2	2.1	2.016	**Cu.m.**
	D 2	1	1.5	0.2	2.1	0.63	**Cu.m.**
	D 3	2	0.9	0.2	2.1	0.756	**Cu.m.**
	W 1	**6**	**1.8**	**0.2**	**1.2**	**2.592**	**Cu.m.**
	W 2	**1**	**1.2**	**0.2**	**0.9**	**0.216**	**Cu.m.**
	V	6	0.6	0.2	0.6	0.432	**Cu.m.**

	SHUTTER	1	1	0.2	2.8	0.56	**Cu.m.**
			Total deduction			8.336	**Cu.m.**
	For 300 mm wall						
	D	1	2.7	0.3	2.1	17.01	**Cu.m.**
	D 1	4	1.2	0.3	2.1	3.02	**Cu.m.**
	D 2	1	1.5	0.3	2.1	0.945	**Cu.m.**
	D 3	2	0.9	0.3	2.1	1.134	**Cu.m.**
	W 1	6	1.8	0.3	1.2	3.89	**Cu.m.**
	W 2	1	1.2	0.3	0.9	0.324	**Cu.m.**
	V	6	0.6	0.3	0.6	0.648	**Cu.m.**
	SHUTTER	1	1	0.3	2.8	0.84	**Cu.m.**
	Total deduction(2)					27.81	**Cu.m.**
	Deduction for lintel (200 mm wall)						
	D	1	3.7	0.2	0.1	0.074	**Cu.m.**
	D 1	4	1.5	0.2	0.1	0.12	**Cu.m.**
	D 2	1	0.45	0.2	0.1	0.009	**Cu.m.**
	D 3	2	1.2	0.2	0.1	0.048	**Cu.m.**
	W 1	6	2.1	0.2	0.1	0.252	**Cu.m.**
	W 2	1	1.5	0.2	0.1	0.03	**Cu.m.**
	V	6	0.9	0.2	0.1	0.108	**Cu.m.**
	SHUTTER	1	1.3	0.2	0.1	0.026	**Cu.m.**
	Total deduction(3)					0.667	**Cu.m.**
	Deduction for lintel (300 mm wall)						

	D	1	3.7	0.3	0.1	0.111	**Cu.m.**
	D 1	4	1.5	0.3	0.1	0.18	**Cu.m.**
	D 2	1	0.45	0.3	0.1	0.0135	**Cu.m.**
	D 3	2	1.2	0.3	0.1	0.072	**Cu.m.**
	W1	6	2.1	0.3	0.1	0.378	**Cu.m.**
	W2	1	1.5	0.3	0.1	0.045	**Cu.m.**
	V	6	0.9	0.3	0.1	0.162	**Cu.m.**
	SHUTTER	**1**	**1.3**	**0.3**	**0.1**	**0.039**	**Cu.m.**
	Totaldeduction(4)					**1.0005**	**Cu.m.**
	Work						
	TOTAL (200)					3.137	**Cu.m**
	TOTAL(300)					36.06	**Cu.m**
	GRAND TOTAL					39.25	**Cu.m**
ITEM NO.:- 6							
	D.P.C. at plinth level						
	For 200 mm wall L = 16.4m	1	16.4	0.7	0.6	6.89	**Cu.m**
	For 300mmwall					54.02	**Cu.m**
	L =66.70 m	1	66.70	0.9	0.9		
	TOTAL					60.91	**Cu.m**
	ITEM NO.:- 7						
	Earth filling in plinth	1	5	0.6	0.6	12	Cu.m

		1	2	2	0.6	2.4	**Cu. m.**
		1	2	2	0.6	2.4	**Cu. m.**
		1	2.4	1.5	0.6	2.16	**Cu.m**
		1	1	1	0.6	0.6	**Cu.m**
		1	1.5	1.5	0.6	1.35	**Cu.m**
		1	2	3	0.6	3.6	**Cu.m**
				Total Earth Feeling		41.31	**Cu. m.**
ITEM NO.:- 8							
	5 cm thick flooring	1	5	4		20	**Sq.m.**
	between walls	1	4	4		16	**Sq.m.**
		1	2	2		4	**Sq.m.**
		1	2	2		4	**Sq.m.**
		1	2.4	1.5		3.6	**Sq.m.**
		1	**1**	**1**		**1**	**Sq.m**
		1	**1.5**	**1.5**		**3.25**	**Sq.m**
		1	3	4		12	**Sq.m**
		1	2.5	5.2		13	**Sq.m**
		1	2	3		6	**Sq.m**
		1	1.5	2.7		4.5	**Sq.m**
		1	2.7	1.5		4.05	**Sq.m**
	TOTAL					89.95	**Sq.m**
				Total Flooring Work		55.280	**Sq.m.**
ITEM NO.:- 9							
	15cm thick inside smooth plaster work	2	5		3.05	30.5	**Sq.m.**
		3	4		3.05	36.6	**Sq.m.**
		5	4		3.05	61	**Sq.m.**
		3	3		3.05	27.45	**Sq.m.**
		2	4		3.05	24.4	**Sq.m.**
		4	2		3.05	24.4	**Sq.m.**
		4	2		3.05	24.4	**Sq.m.**
		2	2.4		3.05	146.4	**Sq.m**

						.
		2	1.5	3.05	9.15	**Sq.m.**
		4	1	3.05	12.2	**Sq.m.**
		4	1.5	3.05	12.2	**Sq.m.**
		2	2	3.05	18.3	**Sq.m.**
		2	3	3.05	18.3	**Sq.m.**
		1	1.2	3.05	3.66	**Sq.m.**
		3	1.5	3.05	13.72	**Sq.m.**
		2	2.7	3.05	16.47	**Sq.m.**
		Total Plaster Work			347.39	**Sq.m.**
	Deduction					
	D	0.5x1	2.7	2.1	2.83	**Sq.m.**
	D1	0.5x1	1.2	2.1	15.12	**Sq.m.**
	D2	0.5x2	1.5	2.1	3.15	**Sq.m.**
	D3	**0.5x6**	**0.9**	**2.1**	**5.67**	**Sq.m.**
	W1	**0.5x4**	**1.8**	**1.2**	**4.32**	**Sq.m.**
	W2	0.5x1	1.2	0.9	0.54	**Sq.m.**
	V	0.5x6	6.0	0.6	1.08	**Sq.m.**
	S	0.5*1	1.0	2.8	1.4	
		Total Deduction			34.1	**Sq.m.**
		Net Outer Plaster			313.28	**Sq.m.**
ITEM NO.:- 10						
	White washing inside	As Per Internal Plaster			313.28	**Sq.m.**

ITEM NO.:- 11							
	Concreting work in	1	13.2	9.1	0.15	18.01	**Cu.m.**
	Slab	1	2.1	3.0	0.15	0.945	**Cu.m.**
	TOTAL					**18.955**	**Cu.m.**

ABSTRACT SHEET OF PUBLIC HEALTH CENTRE

Sr.	Item description	Quantity	Rate	Per	Amount
1.	Excavation work	193.07	150	Cu.m.	**28960**
2.	P C.C	61.02	3000	Cu.m.	**183060**
3.	Brickwork in foundation	79.38	3100	Cu.m.	**246078**
4.	Brickwork in superstructure	39.25	3500	Cu.m.	**137375**
5.	Plastering	313.28	140	Sq.m.	**43860**
6.	Flooring	89.95	850	Sq.m.	**76458**
7.	**R.C.C slab**	**18.955**	**4900**	**Cu.m.**	**92878**
	Total Rupees				**439454**
	Conti… ..... 05.00% Rupees				**21973**
	10% contractor charges				**43946**
	2% water charges				**8789**
	Total Amount Rupes				**514162**

8.1.2 Physical Design (Public Toilet)

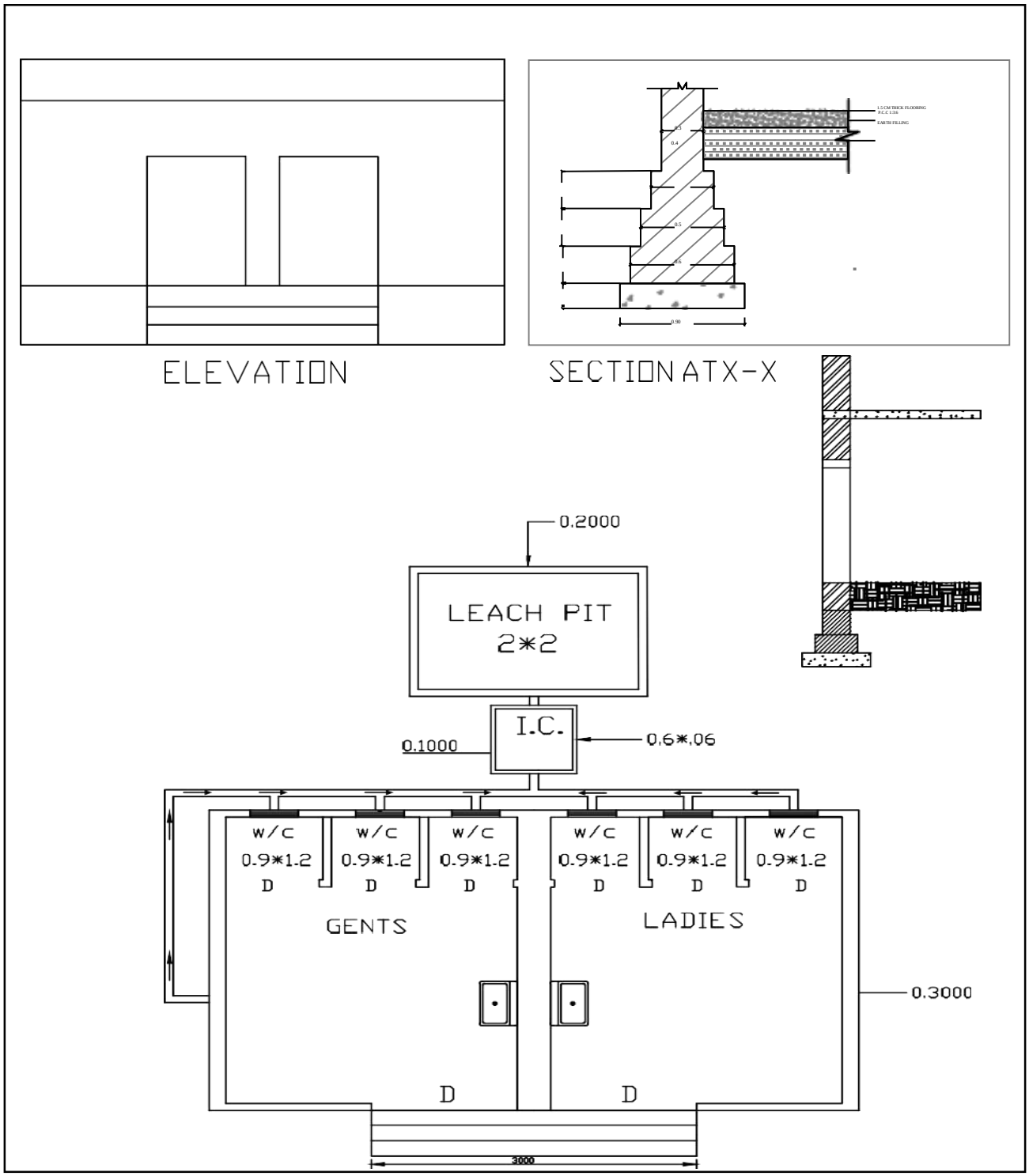


Figure 67 Proposed Design of Public Toilet

MEASUREMENT SHEET OF PUBLIC TOILET							
ITEM	DESCRIPTION	NO	L	B/W	H/D	QUANTITY	**UNITS**
ITEM NO.:- 1							
	Excavation for						
	Foundation						
	L= 37.1	1	37.1	0.7	0.9	23.37	**Cu.m.**
ITEM NO.:- 2							
	C.C. work in foundation						
	L=37.1 m	1	37.1	0.7	0.15	3.89	**Cu.m.**
ITEM NO.:- 3							
	Brick masonry work in						
	Foundation (L=37.10)						
	1st step						
	L=42 –14*(0.5/2)	1	38.5	0.5	0.30	5.77	**Cu.m**
	=38.5						
	2nd step						
	L=42 –14*(0.3/2)	1	39.9	0.3	0.95	11.37	**Cu.m**
	=39.9m						
	Total Brick masonry					17.14	**Cu.m.**
	work in foundation						
ITEM NO.:- 4							
	Earth filling work						
	For Toilet	6	0.9	1.2	0.45	2.916	**Cu.m.**
	For Open Space	2	3.3	3.0	0.45	8.190	
ITEM NO.:- 5							
	Brick masonry work in						
	super structure						
	L=39.90m	1	39.9	0.3	3.00	35.91	**Cu.m.**
	Deduction for door &						
	Window						
	Door 1	**2**	**1.2**	**0.3**	**2.1**	**1.512**	**Cu.m**

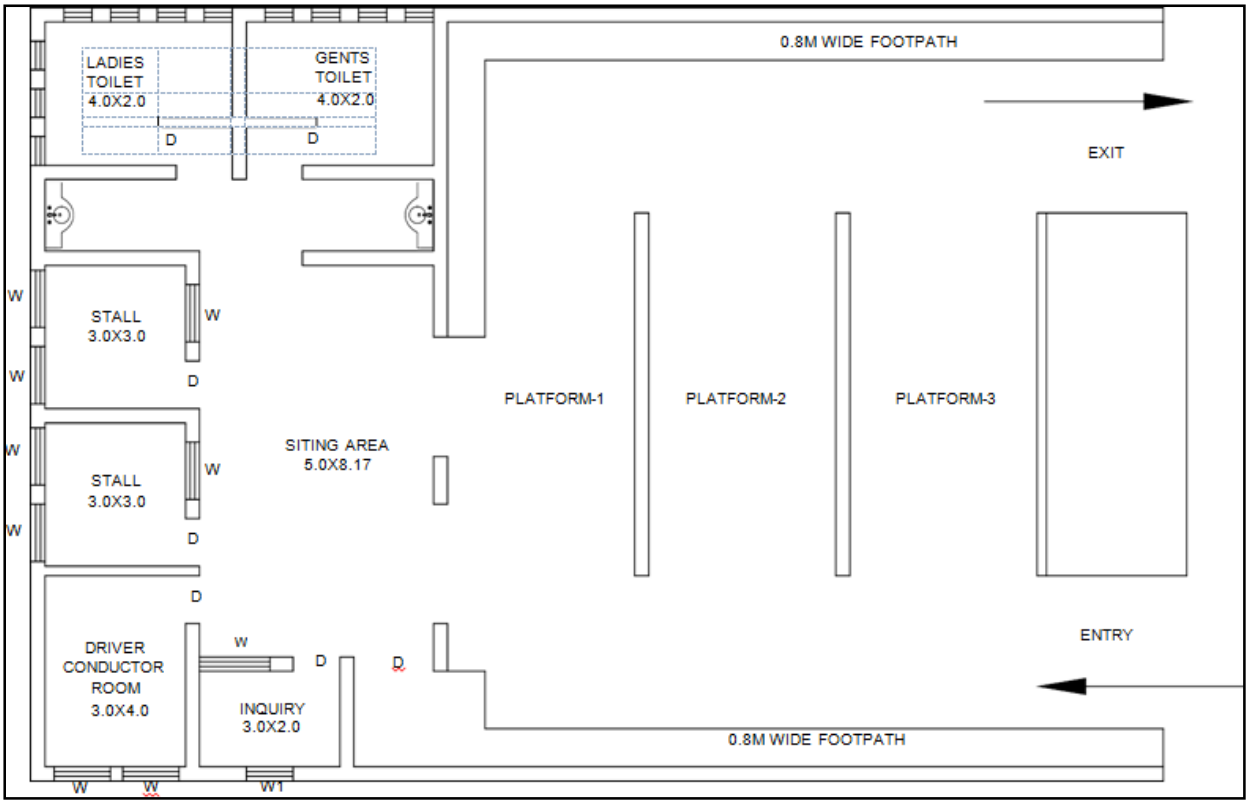
	Door 2	**6**	**0.9**	**0.3**	**2.1**	**3.40**	**Cu.m.**
	Ventilator – V	6	0.6	0.3	0.5	0.51	**Cu.m.**
	Deduction for lintel						
	Door 1	6	0.9	0.3	0.15	0.243	**Cu.m.**
	Door 2	2	1.5	0.3	0.15	0.135	**Cu.m.**
	Ventilator – V	6	1.2	0.3	0.15	0.320	**Cu.m.**
	Total Brick masonry Work						
	= 35.91 –6.148					29.762	**Cu.m.**
ITEM NO.:- 6							
	Brick masonry work in step						**Cu.m.**
	Step: 1	1	2.7	0.6	0.25	0.40	**Cu.m.**
	Step: 2	1	2.7	0.3	0.25	0.20	**Cu.m.**
					Total	0.60	**Cu.m.**
ITEM NO.:- 7							
	Internal plaster work						
	For open space	2	3.3		3.0	19.80	**Sq.m**
		2		3.0	3.0	18.00	**Sq.m**
	For Toilet	2x6	0.9		3.0	32.4	**Sq.m**
		2x6		1.2	3.0	43.2	**Sq.m**
					Total	113.4	**Sq.m**
	Deduction						
	Door 1	0.5x2	1.2		2.1	2.52	**Sq.m**
	Door 2	6	0.9		2.1	11.34	**Sq.m**
	Ventilation	0.5x6	0.6		0.50	0.9	**Sq.m**
					Total	14.76	**Sq.m**
	Total Internal Plaster					98.64	**Sq.m**
ITEM NO.:- 8							
	External plaster work						
	Side:1	2	7.5		4.5	67.54	**Sq.m.**

	Side:2	2	5.1		4.5	45.9	**Sq.m.**
					Total	113.5	**Sq.m.**
	Deduction						
	Door 1	**½ x 2**	**1.2**		**2.1**	**2.52**	**Sq.m.**
	Door 2	½ x 6	0.6		0.5	0.9	**Sq.m.**
					Total	3.42	**Sq.m.**
	Total External plaster work						
	=113.5 – 3.42					109.98	**Sq.m.**
ITEM NO.:- 9							
	Dedo work					179.94	**Sq.m.**
	For Toilet						
	Side:1	2x6	0.9		1.0	10.8	**Sq.m.**
	Side:2	2x6	1.2		1.0	14.4	**Sq.m.**
	For Urinal	2	2.8		1.0	5.6	**Sq.m.**
					Total	30.8	**Sq.m.**
	Deduction						
	Door 2	6	0.9		1.0	5.4	**Sq.m.**
	Total Dedo work	(30.8-5.4)				25.4	**Sq.m.**
ITEM NO.:- 10							
	Flooring work						
	For Open Space	2	3.3	3.0		19.8	**Sq.m.**
	For Toilet	6	0.9	1.2		6.48	**Sq.m.**
	For Door Sill						
	Door 1	2	1.2	0.3		0.72	**Sq.m.**
	Door 2	6	0.9	0.3		1.62	**Sq.m.**
	Total Flooring Work					28.62	**Sq.m.**
ITEM NO.:- 10							
	For R.C.C. slab	1	7.5	5.1	0.125	4.781	**Cu.m.**
ITEM NO.:- 11							
	For Lintel Work						

	(1)Ventilator	6	0.9	0.3	0.15	0.243	**Cu.m.**
	(2)Door:1	2	1.5	0.3	0.15	0.135	**Cu.m.**
	(3)Door:2	6	1.2	0.3	0.15	0.320	**Cu.m.**
					Total	**0.698**	**Cu.m.**
ITEM NO.:- 13							
	Internal White wash						
	=(internal P.L.-Dedo work)						
	=(98.64-30.8)					67.84	**Sq.m.**
ITEM NO.:- 14							
	External white wash (as per external plaster work)					109.98	**Sq.m.**
ITEM NO.:- 15							
	Excavation work for leach pit	1	2.4	2.4	2.5	14.1	**Cu.m.**
ITEM NO.:- 16							
	Brick work in leach pit						
	L=4(0.20+2.0+0.20)	1	8.8	0.20	2.5	4.4	**Cu.m.**
	=8.8m						
ITEM NO.:- 17							
	Internal plaster work in leach pit						
	Side: 1	2	2.0		2.5	10	**Sq.m.**
	Side: 2	2	2.0		2.5	10	**Sq.m.**
ITEM NO.:- 18							
	Celling of leach pit(precast cover)	1	2.4	2.4	0.15	0.864	**Cu.m.**
ITEM NO.:- 19							
	Excavation workin inspectionchamber	1	0.8	0.8	0.7	0.448	**Cu.m.**

ABSTRACT SHEET OF PUBLIC TOILET					
Sr.	**Item description**	**Quantity**	**Rate**	**Per**	Amount
1.	Excavation work	23.37	155	Cu.m.	**3622.35**
2.	P C.C	3.89	3000	Cu.m.	**11670**
3.	Brickwork in foundation	17.14	3200	Cu.m.	**54848**
4.	Brickwork in Superstructure	28.36	3500	Cu.m.	**99260**
5.	Plastering	208.62	150	Sq.m.	**31293**
6.	Flooring	28.62	855	Sq.m.	**24470.1**
7.	R.C.C slab	4.781	4900	Cu.m.	**23426.9**
8.	Painting	208.62	25	Sq.m.	**5215.5**
9.	Dedo Work	25.4	1000	Sq.m.	**25400**
10.	**P.V.C. Pipe**	**15.5**	**350**	**Rmt**	**5425**
11.	**Gullytrap (150mmx100mm size)**	**6**	**64.00**	**NOS**	**384**
12.	Urinal flatback	3	437	NOS	**1311**
13.	W/C pan	6	320	NOS	**1920**
14.	Washbasin	2	1114	NOS	**2228**
15.	Elbow	3	20.00	NOS	**60.00**
16.	T-Pipe	7	24	NOS	**168.00**
	Total Rupees				**290701.85**
	Conti 05.00%Rupees				**14535.09**
	10% contractor charges				**29070.18**
	2% water charges				**5814.03**
	Total Amount Rupees				**340121.16**
	Say Rupees				**341000.00**

8.1.3 Design Of Bus Stand



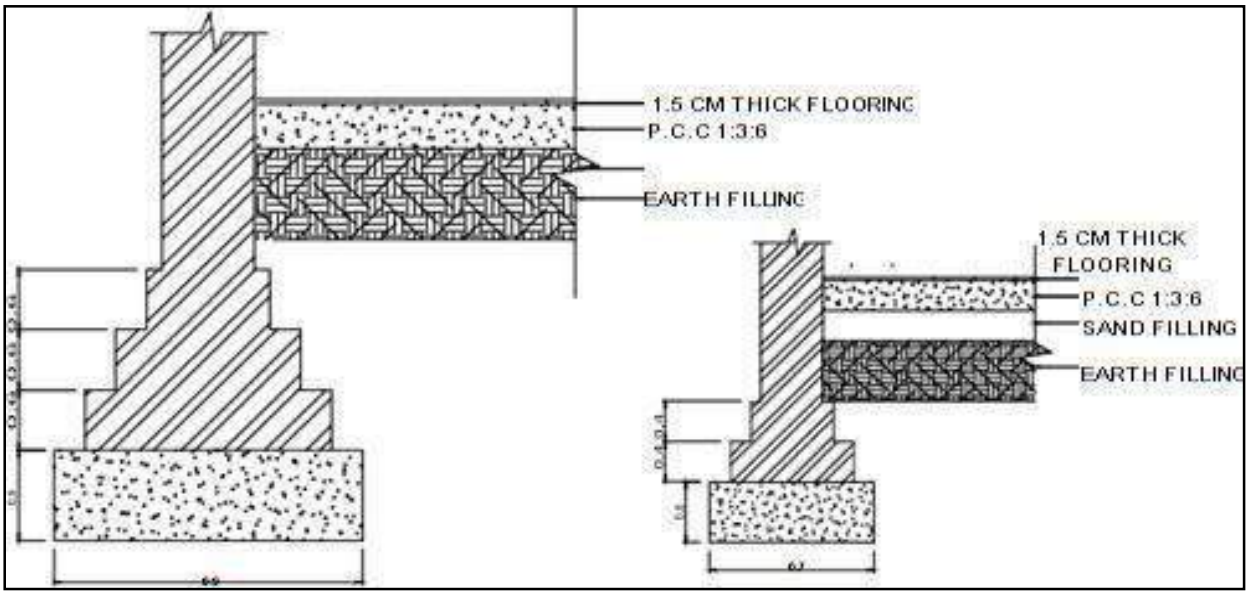


Figure 68 Plan, Section & Elevation: Bus Stand

MEASUREMENT SHEET OF BUSSTOP

ITEM	DESCRIPTION	NO	L	B/W	H/D	QUANTITY	UNITS
ITEM NO.:- 1							
	Excavation for						
	Foundation						
	L= 86.4 m	1	86.4	0.9	0.9	69.984	**Cu.m.**
	TOTAL QTY					69.984	**Cu.m.**
ITEM NO.:- 2							
	C.C. work in foundation						
	L=86.4 m	1	86.4	0.9	0.8	23.33	**Cu.m.**
	TOTAL QTY					23.33	**Cu.m**
ITEM NO.:- 3							
	Brick masonry work in						
	Foundation						
	1st step						
	L=88.8 m	1	88.8	0.6	0.3	15.98	**Cu.m.**
	2nd step						
	L= 89.6 m	1	89.6	0.5	0.3	13.44	**Cu.m.**
	3rd step	1	90.4	0.4	0.6	21.70	**Cu.m.**
	L= 90.4 m						
	Total Brick masonry					51.12	**Cu.m.**
	work in foundation						
ITEM NO.:- 4							
	Earth filling work	1	4	2	0.45	3.6	**Cu.m**
			4	**2**	**0.45**	**3.6**	**Cu.m**
		1	**3**	**3**	**0.45**	**4.05**	**Cu.m**

	1	3	3	0.45	4.05	**Cu.m**
	1	3	4	0.45	5.4	**Cu.m**
	1	3	2	0.45	2.7	**Cu.m**
	2	5	8.17	0.45	18.38	**Cu.m**
	2	1.5	4	0.45	0.154	**Cu.m**
	1	1	4	0.45	3.6	**Cu.m**
	1	1.2	2	0.45	1.08	**Cu.m**
TOTAL					51.86	**Cu.m**
ITEM NO.:- 5						
Brick masonry workin						
super structure						
L=93.9 m	1	93.9	0.3	3.0	84.51	**Cu.m.**
Deduction for door &						
Window						
Door – D	7	1.2	0.3	2.1	5.202	**Cu.m.**
Window – W	9	1.2	0.3	1.8	5.832	**Cu.m.**
Window – W 1	1	0.9		1.8	0.456	**Cu.m.**
Ventilator – V	11	0.6	0.3	0..6	1.188	**Cu.m.**
Deduction for lintel	1	93.9	0.3	0.6	4.225	
Total Brickmasonry						
Work						
					71.692	**Cu.m.**
ITEM NO.:- 6						
Lintel work as per						
Above					4.225	**Cu.m.**
ITEM NO.:- 7						
Internal plaster work	4	4			48	**Sq.m.**
	2	2			12	**Sq.m.**
	4	4			48	**Sq.m.**
	2	2			12	**Sq.m**

	3	3		3	27	Sq.m
	2	3		3	18	Sq.m
	3	3		3	27	Sq.m
	2	**3**		**3**	**18**	**Sq.m**
	2	3		3	18	**Sq.m**
	2	4		3	24	**Sq.m**
	3	2		3	18	**Sq.m**
	2	3		3	18	**Sq.m**
	2	15		3	9	**Sq.m**
TOTAL					297	**Sq.m**
ITEM NO.:- 8						
White wash as per					297	**Sq.m.**
Above						
ITEM NO.:- 9						
Flooring work	1	4		2	8	**Sq.m**
	1	4		2	8	**Sq.m**
	1	3		3	9	**Sq.m**
	1	3		3	9	**Sq.m**
	1	3		4	12	**Sq.m**
	1	3		2	6	**Sq.m**
	1	5		8.17	40.85	**Sq.m**
	2	1.5		4	12	**Sq.m**
	2	1		4	8	**Sq.m**
	1	1.2		2	2.4	**Sq.m**
Total Flooring work					115.85	**Sq.m**
ITEM NO.:- 10						
Skirting work	2	9.6			19.2	**Sq.m.**
	2	6			12	**Sq.m.**
Total Skirting work					31.2	**Sq.m.**
ITEM NO.:- 11						
R.C.C Work for slab						

	L=16.4 m	1	16.4	8.9	0.15	**25.45**	**Cu.m.**
	B= 8.9 m						
	H= 0.15 m						

ABSTRACT SHEET OF BUS STOP					
Sr.	Item description	Quantity	Rate	Per	**Amount**
1.	Excavation work	69.984	155	Cu.m.	**10847**
2.	P C.C	23.33	3000	Cu.m.	**69990**
3.	Brickwork in Foundation	51.12	3200	Cu.m.	**163584**
4.	Brickwork in Superstructure	71.692	3500	Cu.m.	**250922**
5.	Plastering	297	150	Sq.m.	**44550**
6.	Flooring	115.85	855	Sq.m.	**99051**
7.	R.C.C slab	25.45	4900	Cu.m.	**124705**
8.	Painting	297	25	Sq.m.	**7425**
				Total Rupees	**771074**
				Conti .....05.00% Rupees	**38553**
				10% contractor charges	**77107**
				2% water charges	**15421**
				Total Amount Rupees	**902155**
				Say Rupees	**9,00,000**

8.1.4 Socio Culture Design (Community Hall)

Figure 69 Plane, Elevation And Section Of Community Hall

MEASUREMENT SHEET OF COMMUNITY HALL							
ITEM	DESCRIPTION	NO	L	B/W	H/D	QUANTITY	**UNITS**
ITEM NO.:- 1							
	Excavation for						
	Foundation						
	L=188	1	188	0.9	1.2	203.04	**Cu.m.**
ITEM NO.:- 2							
	C.C. work in foundation						
	L=188	1	188	0.9	0.2	33.84	**Cu.m.**
ITEM NO.:- 3							
	Brick masonry work in						
	Foundation						
	1st step						
	L=197–20*(0.6/2)	1	191	0.6	0.1	11.46	**Cu.m**
	=191						
	2nd step						
	L=197–20*(0.5/2)	1	192	0.5	0.1	9.6	**Cu.m**
	=192						
	3rd step						
	L=197–20*(0.4/2)	1	193	0.4	0.1	7.72	**Cu.m**
	=193						
	4th step	1	194	0.3	0.7	40.74	**Cu.m**
	L=197 –20*(0.3/2)						
	=194						
	Total Brick masonry					69.52	**Cu.m.**
	work in foundation						
ITEM NO.:- 4							

	Brick masonry work in						
	super structure						
	L=197	1	197	0.3	4	236.4	**Cu. m.**
	Deduction for door &						
	Window						
	Door	**14**	**1.2**	**0.3**	**2.1**	**10.58**	**Cu.m.**
	Door 1	9	0.9	0.3	2.1	5.103	**Cu.m.**
	Ventilator – V	9	0.6	0.3	0.6	0.972	**Cu.m.**
	Door 2	1	4	0.3	2	2.4	**Cu. m**
	Deduction for lintel						
	Door	14	1.2	0.3	0.1	0.504	**Cu.m.**
	Door 1	9	0.9	0.3	0.1	0.243	**Cu.m.**
	Ventilator – V	9	1.2	0.3	0.1	0.324	**Cu.m.**
	Door 2	1	4	0.3	0.1	0.12	**Cu. m**
	Total Brick masonry						
	Work						
	= 236.4 –20.25					216.15	**Cu.m.**
ITEM NO.:- 6							
	Brick masonry work in step						**Cu.m.**
	Step: 1	1	4	0.6	0.25	0.6	**Cu.m.**
	Step: 2	1	4	0.3	0.25	0.3	**Cu.m.**
					Total	0.9	**Cu.m.**
ITEM NO.:- 7							
	D.P.C at plinth level						
	For 200mm thick wall	1	8	0.7	0.6	3.36	**cu.m**
	For 300mm thick wall	1	197	0.9	0.9	159.57	**cum**
	Total					162.93	**Cu. m**
ITEMNO :-8							
	EARTH FILLING	2	4	5	0.6	24	**Cu.m**

		1	16	14	0.6	134.4	**Cu.m**
		1	16	5.30	0.6	50.88	**Cu.m**
		1	4	4.58	0.6	11	**Cu.m**
		1	4	3	0.6	7.2	**Cu.m**
		1	4	3.98	0.6	9.55	**Cu.m**
		1	4	8	0.6	19.2	**Cu.m**
		1	4	7	0.6	16.8	**Cu.m**
	TOTAL					273.03	**Cu.m**
	INTERNAL PLASTER	14	4			84	
		5	5			25	
		3	**3**		**4**	**36**	
		16	6		4	384	
		5	5		4	100	
		5	5		4	100	
	TOTAL					754	SQ.M
ITEM NO.:- 9							
WHITE WASH PER ABOVE						754	**SQ.M**
ITEM NO 10							
	RCC WORK FOR SLAB	1	25.2	24.18	0.15	91.4	**CU.M**
	L=25.2						
	B=24.18						
	H=0.15						

ABSTRACT SHEET OF COMMUNITY HALL

Sr.	**Item description**	**Quantity**	**Rate**	**Per**	Amount
1.	Excavation work	203.04	155	Cu.m.	**31472**
2.	P C.C	33.84	3000	Cu.m.	**101520**
3.	Brickwork in Foundation	69.52	3200	Cu.m.	**222464**

4.	Brickwork in Superstructure	216.15	3500	Cu.m.	**756525**
5.	Plastering	75 4	150	Sq.m.	**113100**
6.	R.C.C slab	91 .4	4900	Cu.m.	**447860**
7.	**Painting**	**75 4**	**25**	**Sq.m.**	**18850**
8	**Painting**	**313.28**	**25**	**Sq.m.**	**7832**
				Total Rupees	**8165 01**
				Conti..... 05.00%Rupees	**40825**
				10% contractor charges	**81650**
				2% water charges	**16330**
				Total Amount Rupees	**9553 06**

8.1.5 Design of Park

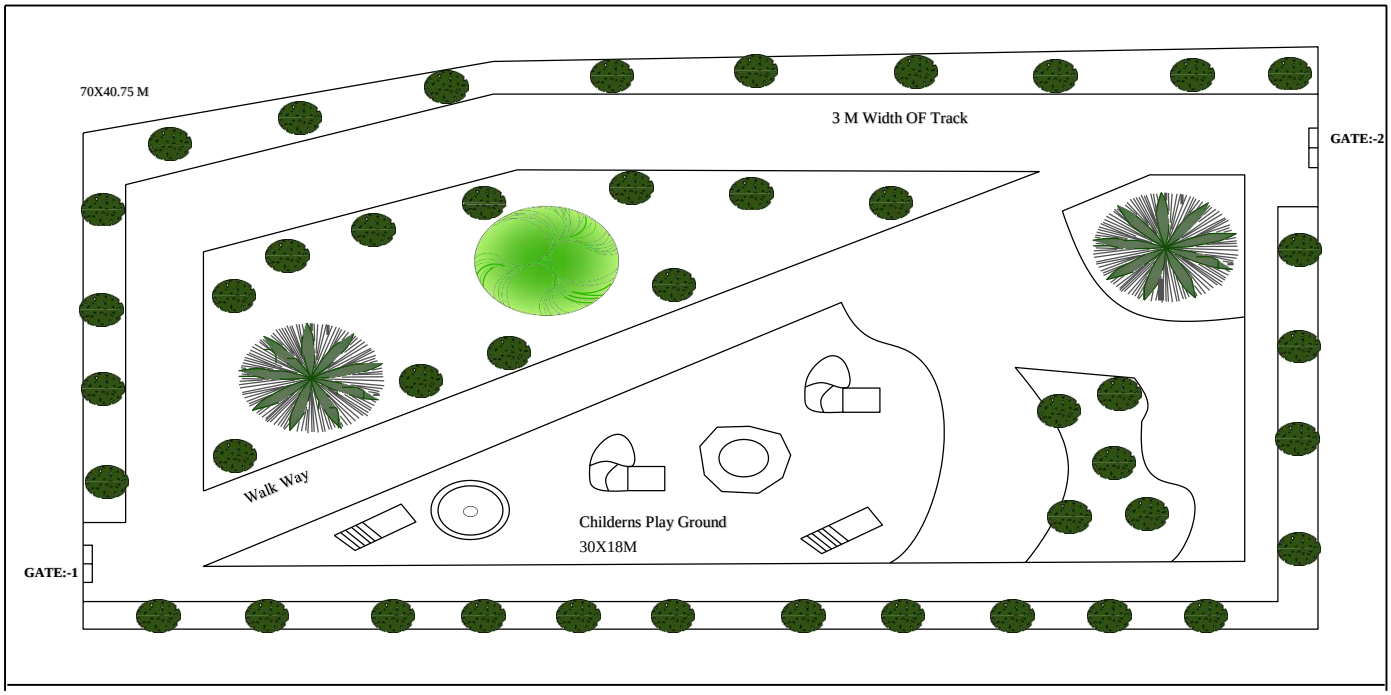


Figure 70 Proposed Park (Plan)

MEASUREMENT SHEET OF PUBLIC GARDEN							
ITEM	DESCRIPTION	NO	L	B / W	H/D	QUANTITY	**UNITS**
ITEM NO.:- 1							
	Excavation for Foundation						
	L=221.2m	1	221.2	0.7	1.8	278.712	**Cu.m.**
ITEM NO.:- 2							
	P. C.C. work in foundation						
	L=221.2m	1	221.2	0.7	0.6	92.904	**Cu.m.**
ITEM NO.:- 3							
	Brick masonry work in super structure						
	L=221.2m	1	221.2	0.3	2.00	132.72	**Cu.m.**
	Deduction for door						
	Door	2	3.0	0.3	3.0	5.40	**Cu.m.**
	= 132.72 – 5.40					127.32	**Cu.m**

ABSTRACT SHEET OF PUBLIC GARDEN					
Sr.	**Item description**	**Quantity**	**Rate**	**Per**	Amount
1.	Excavationwork	278.712	155	Cu.m.	**43200**
2.	P C.C	92.904	3000	Cu.m.	**60720**
4.	Brickwork in superstructure	127.32	3500	Cu.m.	**445620**
5.	Plastering	875.80	150	Sq.m.	**131370**
6.	Extra kids facilities				**50000**
				Total Rupees	**730910**
				Conti.....05.00%Rupees	**36545**
				10% contractor charges	**73091**
				2% water charges	**14620**
				TotalAmount Rupees	**855166**

8.1.6 Design of Library

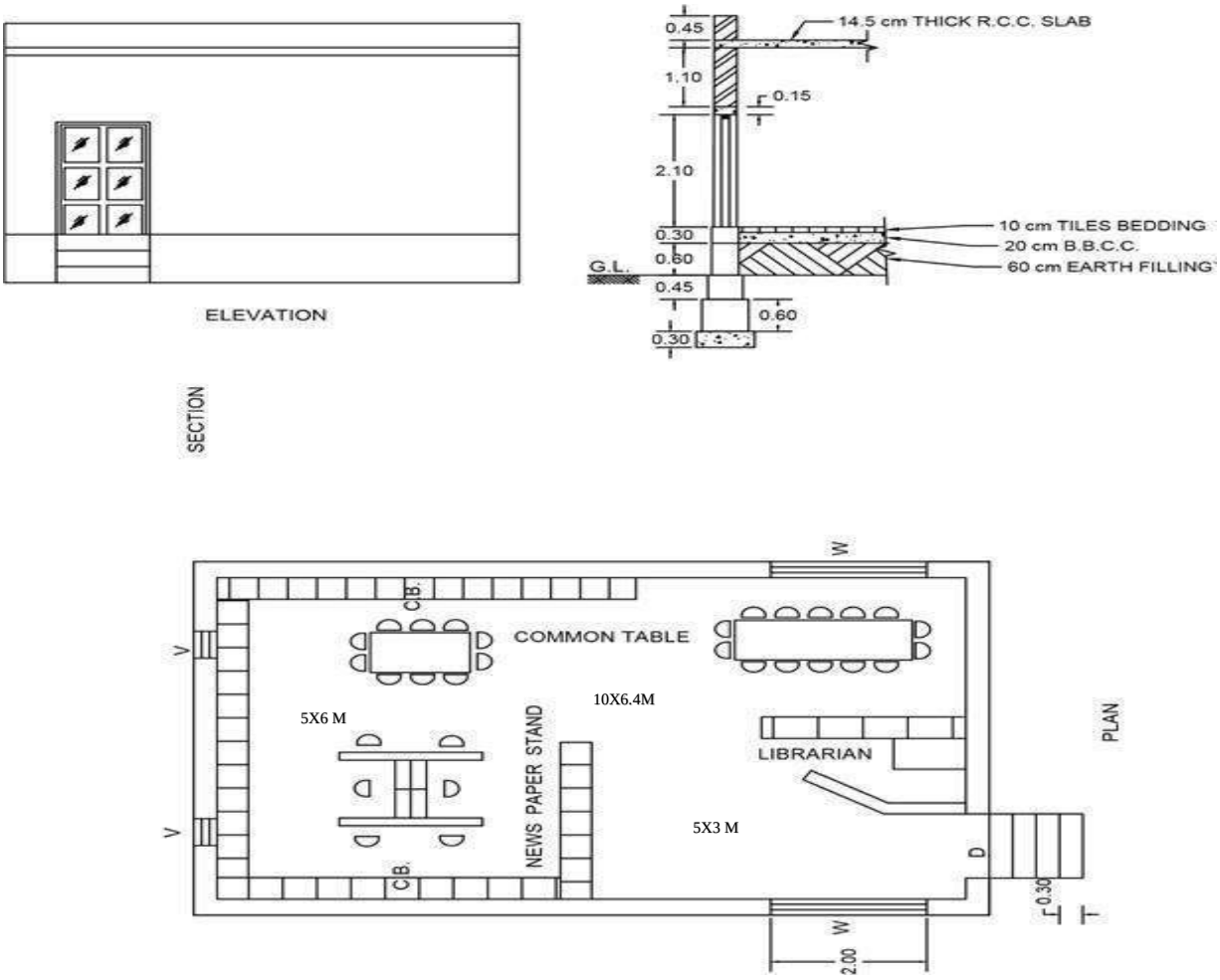


Figure 71 Design of Library

MEASUREMENT SHEET OF LIBRARY							
ITEM	DESCRIPTION	NO	L	B/W	H/D	QUANTITY	**UNITS**
ITEM NO.:- 1							
	Excavation for						
	Foundation						
	L= 32.4 m	1	32.4	0.75	1.35	32.805	**Cu.m.**
	TOTAL QTY					32.805	**Cu.m.**

ITEM NO.:- 2							
	C.C. work in foundation						
	L=32.4 m	1	32.4	0.75	0.3	7.29	**Cu.m.**
	TOTAL QTY					7.29	**Cu.m**
ITEM NO.:- 3							
	Brick masonry work in						
	Foundation						
	1st step						
	L=32.4 m	1	32.4	0.6	0.6	11.664	**Cu.m.**
	2nd step						
	L= 32.4 m	1	32.4	0.45	0.45	6.56	**Cu.m.**
	Total Brick masonry					28.43	**Cu.m.**
	work in foundation						
	Brick masonry work						
	for step						
	1st step	1	1.2	0.9	0.3	0.324	**Sq.m.**
	2st step	1	1.2	0.6	0.3	0.216	**Sq.m.**
	3st step	1	1.2	0.3	0.3	0.108	**Sq.m.**
	Total Brick masonry					0.648	**Sq.m.**
	work for step						
ITEM NO.:- 4							
	Earth filling work		9.6	6	0.45	25.92	
ITEM NO.:- 5							
	D.P.C work						
	L=32.4 m	1	32.4	0.3		9.72	**Rmt**
ITEM NO.:- 6							
	Brick masonry work in						
	super structure						
	L=32.4 m	1	32.4	0.3	3.35	3.35	**Cu.m.**

	Deduction for door &						
	Window						
	Door – D	1	1.2	0.3	2.1	0.756	**Cu.m.**
	Window – W	2	2	0.3	1.2	1.44	**Cu.m.**
	Ventilator – V	2	0.5	0.3	0..5	0.5	**Cu.m.**
	Deduction for lintel						
	Door – D	1	1.5	0.3	0.15	0.0675	**Cu.m.**
	Window – W	2	2.3	0.3	0.15	0.207	**Cu.m.**
	Ventilator – V	2	0.8	0.3	0.15	0.072	**Cu.m.**
	Total Brick masonry						
	Work						
	= 32.56 – 5.038					27.552	**Cu.m.**
ITEM NO.:- 7							
	Lintel work as per						
	Above					2.692	**Cu.m.**
ITEM NO.:- 8							
	Internal plaster work	2	9.6		3.35	64.32	**Sq.m.**
		2	6.0		3.35	40.2	**Sq.m.**
	Celling	1	9.6	6		57.6	**Sq.m.**
	Deduction for door &						
	window						
	Window – W	½ x 2	2		1.2	2.4	**Sq.m.**
	Door – D	½ x 1	1.2		2.1	1.26	**Sq.m.**
	Ventilation – V	½ x 2	0.5		0.5	0.22	**Sq.m.**
	Total internal Plaster						
	work						
	=162.12 – 3.91					**158.21**	**Sq.m.**

ITEM NO.:- 9						
White wash as per					158.21	**Sq.m.**
above						
ITEM NO.:- 10						
Brick masonry work	1	32.4	0.20	0.45	2.916	**Cu.m.**
For parapet wall						
ITEM NO.:- 11						
External plaster work						
For long wall	2	10.2		4.845	98.80	**Sq.m.**
For short wall	2	6.6		4.845	63.95	**Sq.m.**
Inner side of parapetwall	1	32.4		0.45	14.58	**Sq.m.**
Top of parapetwall	1	32.4	0.2		6.48	**Sq.m.**
TOTAL					183.85	**Sq.m.**
Deduction for door &						
window						
Door – D	½ x 1	1.2		2.1	1.26	**Sq.m.**
Window – W	½ x 2	2		1.2	2.4	**Sq.m.**
Ventilation – V	½ x 2	0.5		0.5	0.25	**Sq.m.**
TOTAL DEDUCTION					3.91	**Sq.m.**
Total External plaster work						
=183.85 – 3.91					179.94	**Sq.m.**
ITEM NO.:- 12						
External white wash as per above					179.94	**Sq.m.**
ITEM NO.:- 13						
Flooring work	1	9.6	6		57.6	**Sq.m.**
Door seal	1	1.2	0.3		0.36	**Sq.m.**
Flooring for stair	3	1.2	0.3		1.058	**Sq.m**

							.
	Total Flooring work					59.04	**Sq.m.**
ITEM NO.:- 14							
	Skirting work	**2**	**9.6**			**19.2**	**Sq.m.**
		2	**6**			**12**	**Sq.m.**
	Total Skirting work					31.2	**Sq.m.**

ABSTRACT SHEET OF LIBRARY

Sr.	Item description	Quantity	Rate	Per	Amount
1.	Excavation work	4967.75	4967.75	4967.75	**4967.75**
2.	P C.C	21870	21870	21870	**21870**
3.	Brickwork in Foundation	101773	101773	101773	**101773**
4.	Brickwork in superstructure	106638	106638	106638	**106638**
5.	Plastering	50722.5	50722.5	50722.5	**50722.5**
6.	Flooring	53136	53136	53136	**53136**
7.	R.C.C slab	47824	47824	47824	**47824**
8.	Beams	57420	57420	57420	**57420**
9.	Painting	8453.75	8453.75	8453.75	**8453.75**
				Total Rupees	**452805**
				Conti..... 05.00%Rupees	**22640.3**
				10% contractor charges	**45280.5**
				2% water charges	**9056.1**
				Total Amount Rupees	**529782**
				Say Rupees	**530000.00**

Chapter: 9 Future Development of the Village

- The study is aimed to know the basic scenario of village through techno economic survey and gap analysisdone.
- Through our study we will try to make a master development plan of thevillage.
- Our master development plan mightbe including provisions of all the facilities suggestby us,thenwefocusontheimprovementintheexistingfacilities.Ouraimistoworkaccording to new upcoming T.P. scheme in NardipurVillage.
- In next part we will design bus stand, bio gas plant, Lake Beautification and some maintenance work.
- This study frame work can enable to local bodies of Nardipur village to approach the various Govt. schemes.
- As major facilities are already available in village, few facilities are required which wesuggest.
- One this all basic facilities is available in Nardipur Village, then we should focus on making the village smarter by adopting various technology.
- In new designs proposed by as, we should focus on regular maintenance of these facilities. Becauseduetolackofmaintenancepeopleswillavoidtouseandhenceitbecomeobsolete. Formaintenance purpose we should provide a maintenance plan which is economical and effective. It can be done by villagers themself.
- InthiswaywithcoordinationbetweenvariousGovernmentagencies,wecandevelopNardipur village in better way as other smart or modelvillages.

Chapter: 10 Conclusion

From the above study and the visits conduct the villages it is concluded that the villages needs advancement and up gradation like smart village with all the basic and advanced facilities.

In this process of ideal village the attempt has been made by giving design proposals of the Bank and ATM, Aanganwadi, Public garden and playground, public library, Medical Store, Internet café. All the Civil Engineering concepts are effectively used and described in the above study by providing Rain Water Harvesting system, Submersible Pump, and Waste water treatment plant. To complete the design process properly the data collection is also an important part which was done by considering Census-2011 reports and Journals and Magazines, Techno economic survey, Self-survey of the village, Interaction with villagers. All the design prototypes and Measurement sheets are included in the report for the better understanding of the design concepts. Socio Economic Survey has been done for the study area in detail. All the types of theneeds, facilities has been studied in detail. Gap analysis have been done and interviews of the local peoples has been done in detail. The existing structures and infrastructures have been studied and reviewed in detail. Suggestions have been proposed for the repair and renovation of existing structures and design proposals for its development The preliminary survey and socio-economic study shows that the village has insufficient infrastructure requirement. If the planning and proposals will be proposed based on the requirement of the people the life of the people can be made prosperous. Following designs have been carried out: Public Health Centre, Public Park, Library, Public toilet, Social Community Hall, public gardenetc.

Chapter: 11 References

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Chapter: 12 Annexure

12.1 Ideal Village Survey Form ScannedCopy

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	PALIYAD.
Name of Taluka:	TA:- KALOL.
Name of District:	DIST:- GANDHINAGAR.
Name of Institute:	Swaminarayan, Gurukul, Kalol
Nodal Officer Name & Contact Detail:	Proff. Greeshma Nair.
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	PATEL. BHUMIKABEN. NITESHBHAI.
Date of Survey:	08/09/2020.

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	-	-	-	-
ii)	2011	5442	2790	2652	1144

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	1368 - 69.21
	Forest Area (In hect.)	0
	Agricultural Land Area (In hect.)	1281.0.0.
	Residential Area (In hect.)	20.12.13
	Other Area (In hect.)	-
	Water bodies	
	Nearest Town with Distance:	18 Km (Kalol).

3. Occupational Details:

Name of Three Major Occupation groups in Village	1.	Agriculture.
	2.	Pasturage.
	3.	Labour work.

4. Physical Infrastructure Facilities:

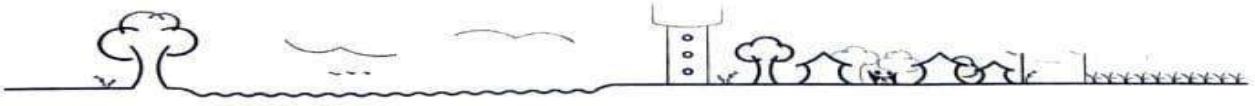
Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated) • RO Water • Well (Covered/ Uncovered) • Hand pumps • Tube well/ Borehole • River/ Canal/ Spring/ Lake/ Pond	1450 – – 02 –			
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank – 2	Capacity:	2.5 lakh	Litter	
	Underground Sump - 2	Capacity:	1.5 lakh	Liters.	
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	Yes.			
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	closed.			
	If Open than Pucca / Kutchcha	–			
	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	All weal!			
	Main road	Black Toped.			
	Internal streets	All weather.			
	Nearest NH/SH/MDR/ODR Dist. in kms.	27 km. Gandi nagar.			
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	N.A.	18 km Kalol.		
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes good.			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes Auto.			
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes govt. mor.than 6.			
	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)	NO			
	LED Facilities	NO			
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	NO			
	Location Condition	NO			
	Community Toilet (With bath/ without bath facilities)	NO			
	Solid & liquid waste Disposal system available	NO			
	Any facility for Waste collection from road	yes tractors			
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Tube well			
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Pucca			

5. Social Infrastructural Facilities:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

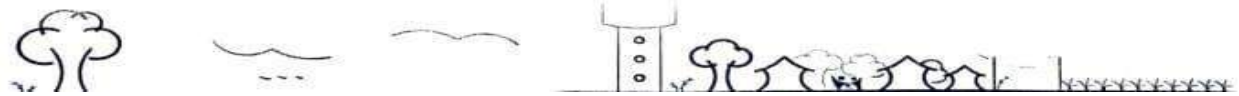


K.	Health Facilities:				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	Sub Center. maternity Homes. 20 bed good.			
	Private Clinic/Private Hospital/ Nursing Home	NO.			
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					

L.	Education Facilities:				
	Aaganwadi/ Play group	No of 6.			
	Primary School	Yes-1			
	Secondary school	Yes-1			
	Higher sec. School	Yes-1			
	ITI college/ vocational Training Center	NO.	18 KM Kalol.		
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	NO.	18KM Kalol.		
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					

M.	Socio- Culture Facilities				
	Community Hall (With or without TV) Location:	04 community hall.			

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



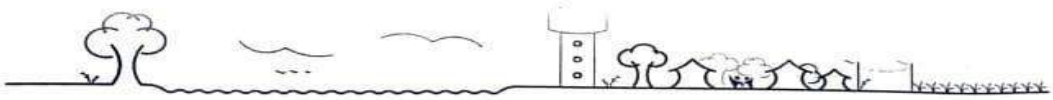
	General Market	Yes			
	Shops (Public Distribution System)	Yes			
	Panchayat Building	Yes			
	Pharmacy/Medical Shop	Yes			
	Bank & ATM Facility	Yes.			
	Agriculture Co-operative Society	Yes.			
	Milk Co-operative Soc.	Yes.			
	Small Scale Industries	No			
	Internet Cafes/ Common Service Center/Wi Fi	No.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

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

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

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	



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

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)	Panchayat Building & Public Toilets	
2.	Additional Information/ Requirement	–	

9. **Smart Village Proposal Design**

Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

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

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

12.2 Survey from of Smart Village Scannedcopy

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

Name of District:	Gandhinagar
Name of Taluka:	Gandhinagar.
Name of Village:	Koteshwer .
Name of Institute:	S.C.E.T. Kalol .
Nodal Officer Name & Contact Detail:	Proff. Greeshma Nair .
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Bhupendra Bhai Thakor .
Date of Survey:	7/09/2020 .

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	2074	1071	1003	420 .
2.	2011				

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	296 .
2.	Forest Area (In hect.)	5
3.	Agricultural Land Area (In hect.)	170
4.	Residential Area (In hect.)	-
5.	Other Area (In hect.)	-
6.	Distance to the nearest railway station (in kilometers):	3.6 (KM) Sabarmati

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7.	Name of Nearest Town with Distance:	chandkheda, motera.
8.	Distance to the nearest bus station (in kilometers):	1.8 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.	Agricultural.
	2.	Farm laboer.
	3.	Anusut.
Major crops grown in the village:	1.	wheeat
	2.	Rice.
	3.	milled.

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	Tap water Plot + Public.	L		
2.	**DUG WELL** Protected Well Un Protected Well				
3.	**WATER FROM SPRING** Protected Spring Unprotected Spring				
	Rainwater Tanker Truck Cart With Small Tank	Tanker Truck. Rain water.			
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water Hand Pump Other(Specify)**Lake/ Pond**	Other.	L		

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Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	1.5 lakh	Yes	good.
	Underground Sump	Capacity:	2.5 lacs.		
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	Yes. 1. Open without outlet.	Yes	-	good.
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Black Topped	L		
	Main road	C.C Road.	L		
	Internal streets	C.C Road	L		
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH / SH. 10 km.	L		
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Yes. 10 km.	L		
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes. 4 km.	L		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto, Jeep others	L		
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Private. Mor. 6 hrs.	L		

3

	Power supply for Domestic Use	Yes.	✓		
	Power supply for Agricultural Use	Yes.	✓		
	Power supply for Commercial Use	Yes	✓		
	Road/ Street Lights	Yes	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	NO	–	–	–
	LED Facilities	Yes.	✓		
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	4 Nos.	✓		good.
	Location Condition	clean.	✓		
	Community Toilet (With bath/ without bath facilities)	without bath.	✓		
	Solid & liquid waste Disposal system available	Yes	✓		
	Any facility for Waste collection from road	Yes.	✓		
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	canal well Tube well	✓		
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Both	✓		

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	L			
	Sub-Centre	L	L		
	PHC				
	BLOCK PHC	L			
	CHC/RH				
	District/ Govt. Hospital	Privat			
	Govt. Dispensary	clinic,	L		
	Private Clinic	AYUSH			
	Private Hospital/ Nursing Home	health facility	L		
	AYUSH Health Facility	sonograph			
	sonography /ultrasound facility				
	If any of the above Facility is not available in village than approx. distance from village: ..10...kms. chandkheda				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	Yes.	L		
	Primary School	Yes.	L		
	Secondary school	Yes	L		
	Higher sec. School	Yes.	L		
	ITI college/ vocational Training Center	No	X		
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	Yes.	L		
	If any of the above Facility is not available in village than approx. distance from village: ..12...kms.				

Suggestions if any:

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

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

Suggestions if any:

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

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

Suggestions if any:

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

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

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 .Daily..... FOGGING..... Drive was undertaken in the village?		

IX. Smart Village / Heritage Details

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

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

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

12.3 Survey from of Allocated Village Scanned copy

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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:	Gandhinagar.
Name of Taluka:	KaLoL.
Name of Village:	Nardipur Village.
Name of Institute:	Swaminarayan, Gurukul Kalol.
Nodal Officer Name & Contact Detail:	Proff. Greeshma Nair.
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Amal Prajapati
Date of Survey:	7/9/2020.

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	5114	2557	1536	800
2.	2011	7757	3985	3772	1643.

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1703.25 hectors.
2.	Forest Area (In hect.)	0.0065
3.	Agricultural Land Area (In hect.)	371.30
4.	Residential Area (In hect.)	–
5.	Other Area (In hect.)	1000:00
6.	Distance to the nearest railway station (in kilometers):	13 K.m.

7.	Name of Nearest Town with Distance:	Kalol.
8.	Distance to the nearest bus station (in kilometers):	3 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.	Agriculture.
	2.	Farm labour.
	3.	Artiser

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

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	Tap water base valve.			
2.	**DUG WELL** Protected Well Un Protected Well				
3.	**WATER FROM SPRING** Protected Spring Unprotected Spring Rainwater Tanker Truck Cart With Small Tank	River water.			
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water Hand Pump				

	Other(Specify)**Lake/ Pond**	Yes	–	–	good.
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	1.5 lacks	–	good.
	Underground Sump	Capacity:	1.5 lacks	–	good.
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1	Yes	–	–	good
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Black Topped	L		good
	Main road	C.C Road	L		good
	Internal streets	C.C Road	L		good
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH/SH.			good.
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No	–	–	–
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	L	–	good
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto Stand	L	–	good.
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	No	–	–	–

	Power supply for Domestic Use	No	L	-	-
	Power supply for Agricultural Use	Yes	L		good.
	Power supply for Commercial Use	No	-	-	-
	Road/ Street Lights	Yes	L	L	L
	Electrification in Government Buildings/ Schools/ Hospitals	Yes.	L	L	good.
	Renewable Energy Source Facilities (Y/ N)	No	-	-	-
	LED Facilities	No	-	-	-
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	2 Nos.	L		
	Location Condition	good			
	Community Toilet (With bath/ without bath facilities)	NO	L	-	-
	Solid & liquid waste Disposal system available	No	-	-	-
	Any facility for Waste collection from road	Yes.	-	-	good.
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL. OTHER (SPECIFY)	POND. TUBE Well.	L	-	good
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Both	L	-	good

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	Angan wadi;	✓		good
	Sub-Centre				good
	PHC	Sub center	✓		
	BLOCK PHC				
	CHC/RH				
	District/ Govt. Hospital	–			
	Govt. Dispensary	–			
	Private Clinic	–			
	Private Hospital/ Nursing Home	–			
	AYUSH Health Facility	–			
	sonography /ultrasound facility	–			
	If any of the above Facility is not available in village than approx. distance from village: ..13....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	–	–		
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	–	–		

If any of the above Facility is not available in village than approx. distance from village: ...13..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	good	—	Yes	—
	Village Pond	good	—	Yes	—
	Recreation Center	—	—	—	NO
	Cinema/ Video Hall	—	—	—	—
	Assembly Polling Station	—	—	—	—
	Birth & Death Registration Office	good	—	Yes	—

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

Suggestions if any:

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

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

Suggestions if any:

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

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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	—	—	Yes	—
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	Street light	Yes	—	—
3.	Any Other	CCTV	Yes	—	—

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

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	Public Infrastreture. Health center.	—
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING .....Regular..... FOGGING..... Drive was undertaken in the village?		

IX. Smart Village / Heritage Details

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

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

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

Amal Prajapati

12.4 Gap Analysis of the AllocatedVillage

VILLAGE GAP Analysis					
Village Facilities	**Planning Commission/UDPF I Norms**	**Village Name:**	NARDIPUR		
		Population:			7757
		Existing	**Required as per Norms**		**Gap**
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	2	0	-	0
Primary School	Each Per 2500 population	2	1	-	-1
Secondary School	Per 7,500 population	1	2	-	-1
Higher Secondary School	Per 15,000 Population	0	1	-	-1
College	Per 125,000 Population	0	1	-	-1
Tech. Training Institute	Per 100000 Population	0	1	-	-1
Agriculture Research Centre	Per 100000 Population	0	0	-	0
Skill Development Center	Per 100000 Population	0	0	-	0
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	0	1	-	-1
Primary Health & Child Health Center	Per 20,000 population	0	0	-	0
Child Welfare and Maternity Home	Per 10,000 population	0	1	-	-1
Multispeciality Hospital	Per 100000 Population	0	1	-	-1
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutchha house)	0	1	-	-1
Physical Infrastructure Facilities					
Transportation		**Adequate**			

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

12.5 Summary of Village PrototypeDesign:

SR.NO	VILLAGE NAME	DISCIPLINE	PART 1	PART 2
1	**Nardipur**	**Civil**	Public library	Bio gas plant
			Bus stand	Internet cafe
			Public garden	Post office
			Public toilet	Road design
			Primary health center	Drink facility for animal
			Community center	Lake Beautifications
2	**Dhamasna**	**Civil**	Aaganwadi	Public health center
			Bus stop	Park
			WBM road	Solar waste distribution system
			Rain water harvesting model	Library
			Bio gas plant	Public toilet
			Grocery shop	Community hall
3	**Paliyad**	**Civil**	Grampanchayt	Public garden
			Recharge well	**CCTV**
			Public toilet	Vocational training center
			Re construction of bus stand	ATM
			ATM	Police station
			Post office	Public garden

Table 11 Summary of all village Prototype Design

12.6 Drawings

All the drawings are visible in A4 not need to Attach A3 , A4 sheet drawings

12.7 Summary of GoodPhotographs:-

Figure 72 HospitalFigure

Figure 73 Library

Figure 74 GrampanchayatofNardipur

Figure 75 Primary School (Boys)Nardipur

Figure 76Primary School(Girls)

Figure 77 Temple of Nardipurvillage.

12.8 Village Intraction Report With the photograph as a report Format:-

We have a visite Nardipur Village and intrect with various authorities of village like Sarpanch, Talati mantra as well as people of village. We have explain what is Vishwakarma Yojana and main aim of Vishwakarma project. We conduct techo-econimic survey of village to identify various existing facilities.

We have also visited various places like gram-panchayat, bus-stands, temple, Primary school and other amenities. Existing condition of various amenities as well as various infrastructure was examined by us like, Road condition, drainage system,etc.

We explain various design of our project under different infrastructure such as bank,& library, medical shop, Aanganwadi &,public garden, internet cafe.

The intrection with Sarpnch , Talati mantra and village people was very much helpful to understand various amenties to be design at village level and how to increase overall development of the Nardipur Village.

Figure 78 Intrection Images of Nardipur Village.

12.9 Sarpanch Latter of Nardipur Village Proposal Design Shown to the Sarpanch &Talati :-

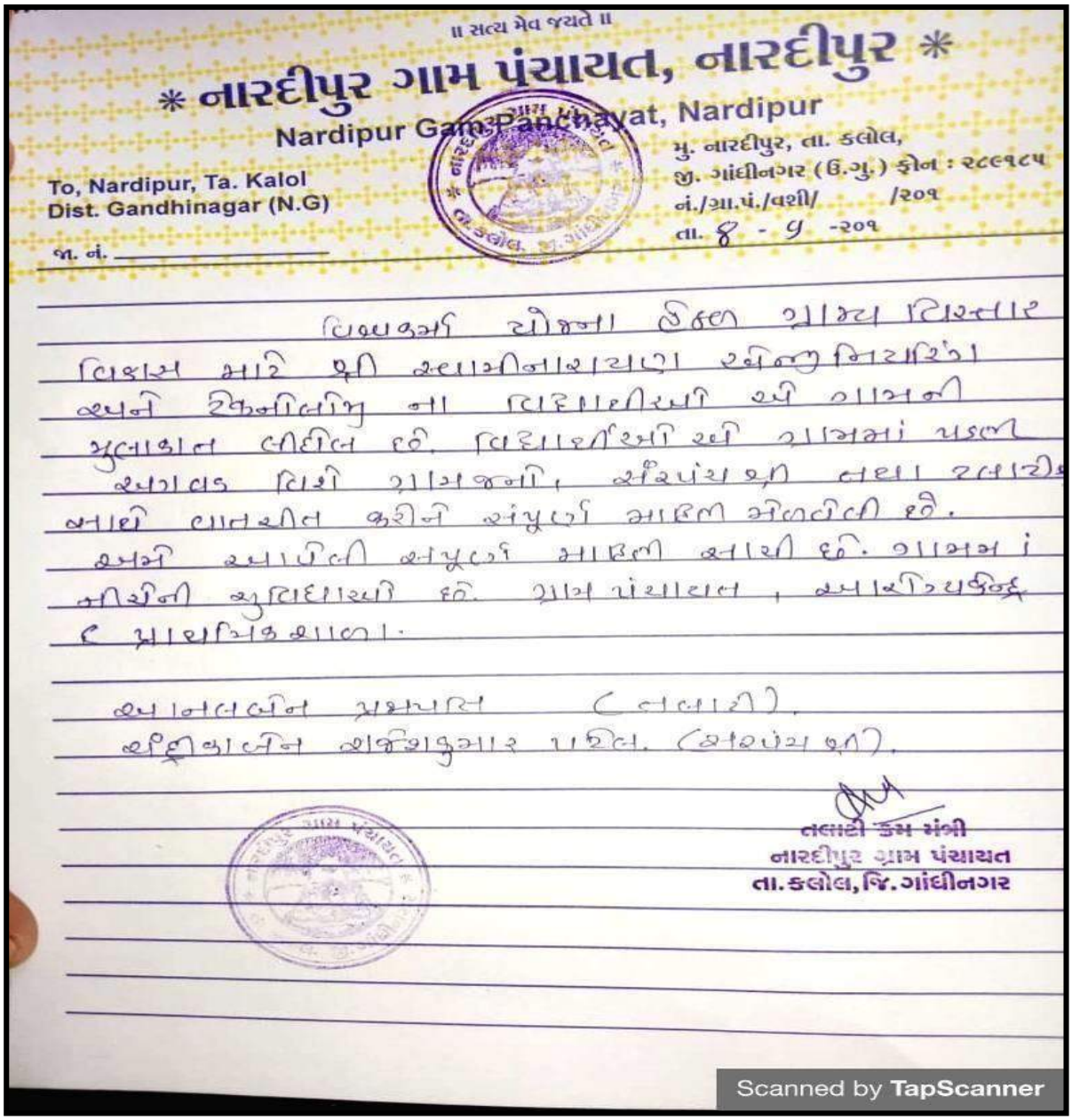


Figure 79 Intraction Latter (Design Submission Latter of Sarpanch)

Chapter.13 Design proposal

13.1 Future Development of the Village (from the PART-I chapter-8) detail implementation of the future scope of work Sustainable Design Planning Proposal (Prototype Design)- Part- II

13.1.1 Design of Co-Operative Bank (Socio-Cultural Design):

There is not any financial institution in village.
To provide finance facilities to farmers
To provide banking facilities to villagers For the economic development of village
To guide villagers about new monetary policies and governmental schemes

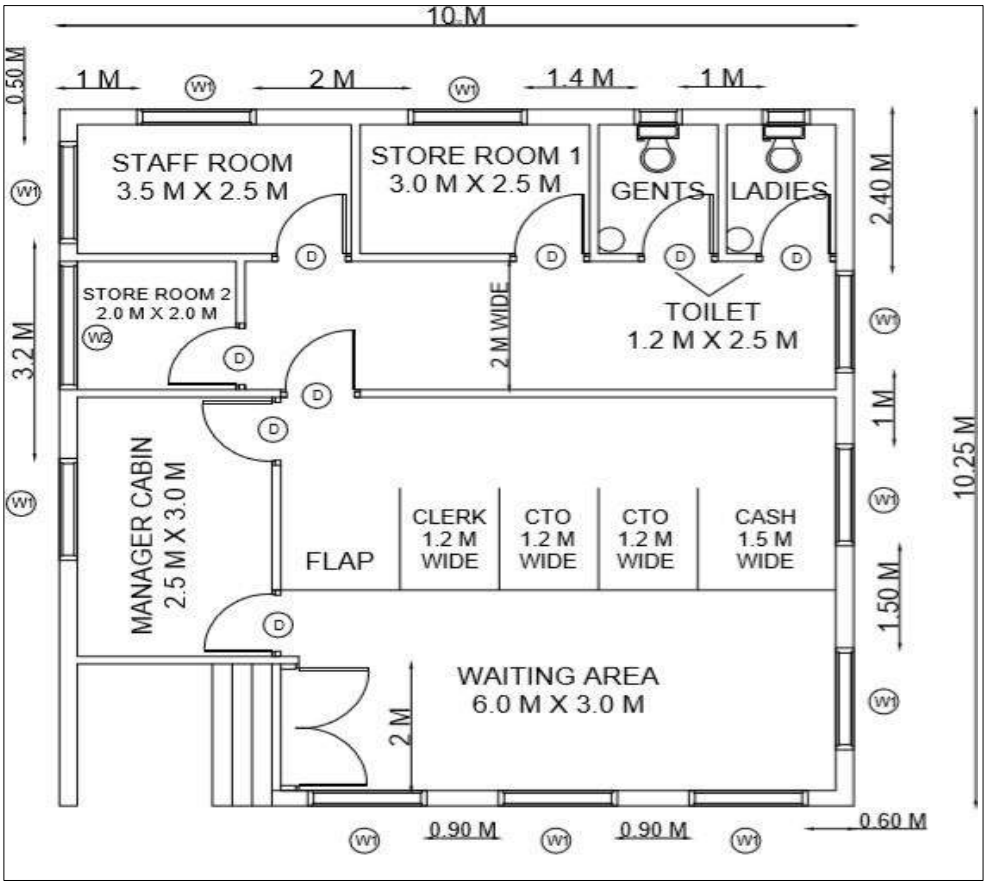


Figure 80 Plan of Co-Oprative Bank

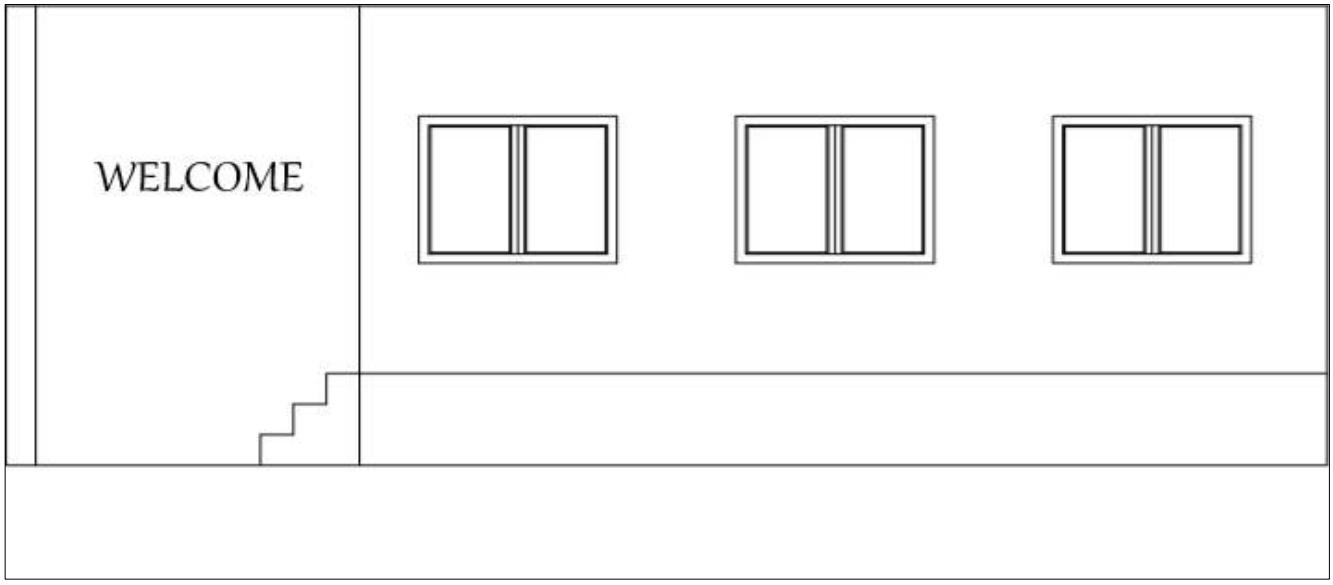
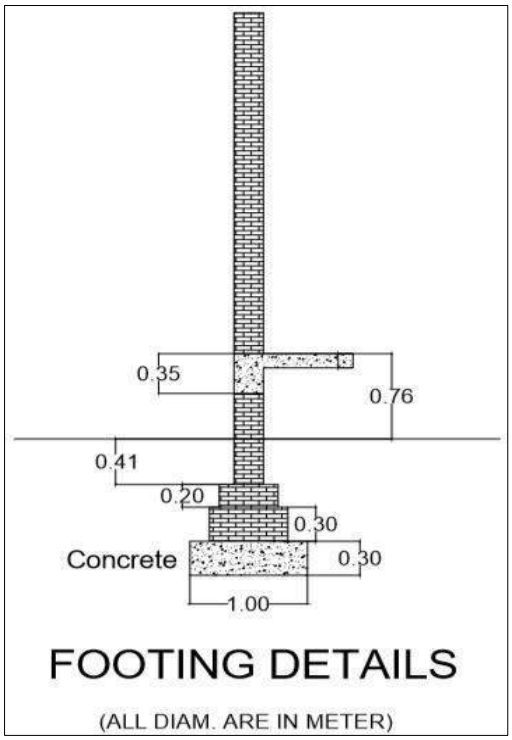


Figure 81 Elevation of Bank



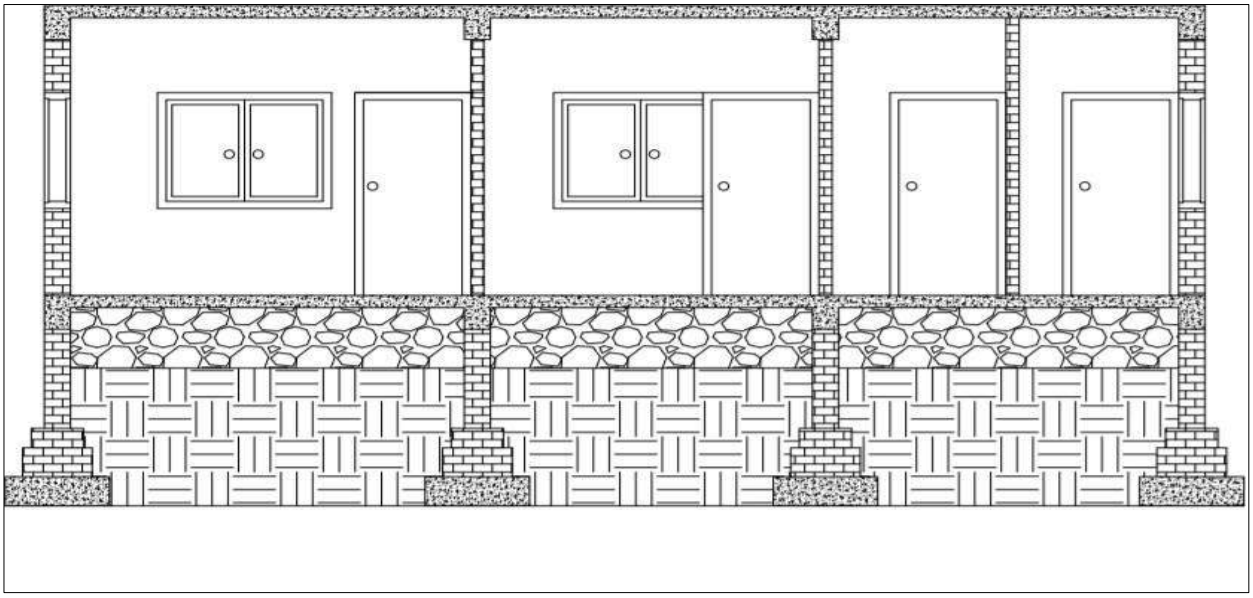


Figure 82 Section of Bank

MESUREMENT SHEET

SR. NO.	DESCRIPTION	NO.	LENG-TH (M)	BRED-TH (M)	HEIGTH (M)	QUANTITY
1	**Excavation in Foundation**					
	Total C.L=58 m					
	Actual Length=54.4 m	1	54.4	0.9	1.2	**58.75 m^3**
	Total					**58.75 m^3**
2	**Plain cement concrete(P.C.C)in Foundation(1:4:8)**					
	PCC	1	54.4	0.9	0.3	**14.68 m^3**
	Total					**14.68 m^3**
3	**Brickwork in Foundation upto Plinth level**					
	First step	1	55.6	0.6	0.3	**10 m^3**
	Second step	1	56.8	0.3	0.2	**3.4 m^3**
	Third step	1	57	0.228	0.8	**10.39 m^3**

	Total					**23.79 m^3**
4	**Brickwork in superstructurein cement mortar 1:6**					
	For Ground Floor					
	External Wall	1	57	0.228	3	**38.98 m^3**
						38.98 m^3
	Deduction for Door/Ventilation :					
	D1	1	1.2	0228	2.1	**0.57 m^3**
	D2	5	1.0	0.228	2.1	**2.394 m^3**
	D3	2	0.8	0.228	2.1	**0.766 m^3**
	W1	3	0.8	0.228	1.2	**0.656 m^3**
	W2	3	0.6	0.228	1.2	**0.49 m^3**
	V	4	0.6	0.228	0.6	**0.32 m^3**
						(-) 5.196 m^3

ABSTRACT SHEET

SR. NO.	PARTICULARS	QUANTIY	UNiT	RATE	PER	AMOUNT
1	**Excavation in Foundation**	58.75	m^3	85	m^3	**4994**
2	**Plain cement concrete(P.C.C) in Foundation(1:4:8)**	14.68	m^3	3000	m^3	**44040**

3	**Brickwork in Foundation up to Plinth level**	23.79	m^3	3200	m^3	**76128**
4	**Brickwork in superstructure in cement mortar 1:6**	33.11	m^3	3500	m^3	**136430**
5	**RCC Work**	25.275	m^3	8800	m^3	**222420**
6	**2 cm thick marble flooring**	98.5	m^2	500	m^2	**49250**
7	**Smooth plaster on inside walls and ceiling in cm.(1:3)**	262	m^2	150	m^2	**39300**
8	**Earth filling in Excavation**	20.28	m^2	50	m^2	**1014**
	Total					**5,73,576 Rs.**
	Add 5% contingencies					**28,679 RS.**
	Grand Total					**6,02,254 Rs.**
					say	**6,10,000 Rs.**

13.1.2Smart Village Design (Waste Water treatment plant by activated Charcoal treatment)

Introduction

Water scarcity has become a major issue in today's world. The present scenario demands the need of conserving water resources. In addition, there is lot of advanced technologies developed in purifying and recycling wastewater produced. The recycled water is stored in the tank and used whenever the need arises.

The underground water table is low and reducing because of poor rainfall. The rate of natural recharging in the aquifer has become slow due to the low amount of rainfall. In addition, the water in the borehole is diminishing very fast and need for boreholes are increasing. Hence, the process of Purifying and recycling water is the need of the present. Activated charcoal is increasingly used for purifying water. The recycled water can be used for multi purposes.

Objective

The main objective of this Activated charcoal filtering tank is to meet the water needs of the Nardipur village people. Charcoal is used to remove contaminants and impurities, using chemicaladsorption active. Charcoal carbon filters are most effective at removing chlorine, sediment, volatile organic compounds (VOCs), taste and odor from water. The purified water is stored in underground tank. The water is pumped and stored in overhead tanks. The recycled water is usedto meet the water needs of the Nardipur village people. The wastewater generated from the villageincluding water from the bathrooms, kitchen sinks and the laundry is recycled and used for cleaning and other purposes.

Data Collection

Capacity of tank = 70000 liters
Size of filtration tank = 5.5 m X 2.6 m X 4 mSize of storage tank = 7.6 m X 4.5 m X 2 m

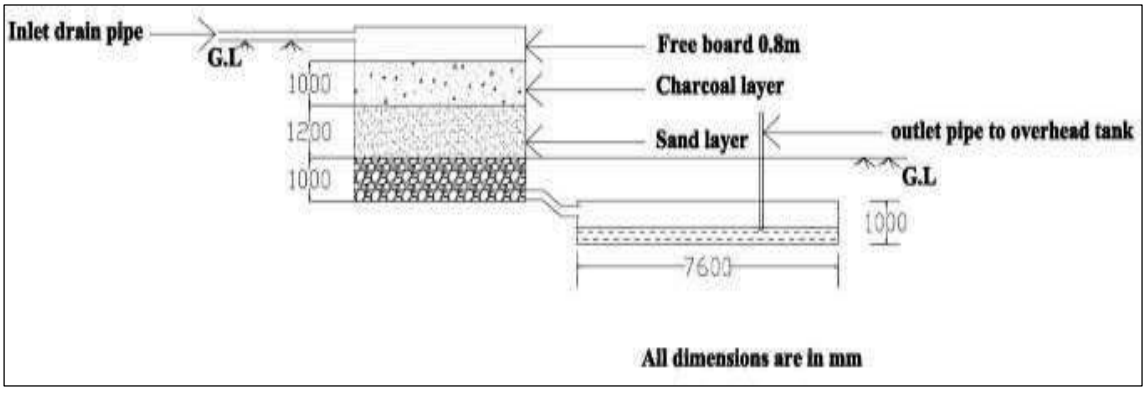


Figure 83 Waste water filtration unit

Analysis of waste water outflow

Average waste water outflow = 15000 X 1.5 lit/day (assume)
Factor of safety = 1.5

Total amount of waste water flow outflow = 15000 X 1.5 **= 22500 lit/day**

FILTRATION UNIT DETAILS

Materials: Activated charcoal, coarse aggregate, Fine aggregate.

Top Layer. Activated Charcoal,
Middle Layer.Fine Aggregate
Bottom Layer. Coarse Aggregate

PROCESS OF MODEL FILTRATION UNIT

Collection of Materials

- Sand
- Aggregate
- Charcoal

Cleaning of Materials - Clean sand and aggregate

Filing the Materials in Model Filtration Unit

- Top Layer: Activated Charcoal,
- Middle Layer: Fine Aggregate,
- Bottom Layer: Coarse

Ph Value – 6.5 to 7.5

Costing

Material	Quantity	Rate per unit	Rate
Sand	2 Tonne	1500 Rs. per Tonne	3000 Rs.
Aggregate	1.5 Tonne	700 Rs. Per Tonne	1100 Rs.
Activated Charcoal	215 kg	60 Rs. /kg	12900 Rs.
Pipe (40 mm Dia.)	100 m	410/- per m.	41000 Rs.
Other construction and labour cost	-	-	15000 Rs.
Total Cost	-	-	73000 Rs.

13.1.3 Design of R.C.C Road

Overview

A large proportion of India's villages has been connected with all-weather roads and has low volume of traffic. The main composition of such roads is granular layer with or without thin bituminous surfacing. The common problem to rural roads is that their maintenance is neglected because of paucity of funds and poor institutional set up, and the road asset created at a great costis lost. Cement concrete pavement offer an alternate to the flexible pavements especially when the soil strength is poor, the aggregates are costly and drainage conditions are bad. Concrete pavements have now been constructed for low volume of traffic because of their durability even under poor drainage conditions.

Description

The internal network system of village is seriously in worst condition. The slopes are not inproper manner. There is need to provided proper network and good condition road. Therefore,

R.C.C road is best, as there is low volume of traffic in internal streets.

Scenario

The streets of village are not sufficient in good condition to allow the vehicle move smoothly move, as the road got too much of sticky mud. In order to come out of all these p. The streets are totally damaged. During rainy season, the vehicle is not able to roblems, there is need of design ofproper road network.

Existing situation

The path which allows the villagers to reach sarpanch house, school, Anganvadi, their work even to leave the village is totally damaged. The villagers are tired of this poor condition of

Here is the design of R.C.C road:

Concrete pavements can be constructed using two different methods:

1 Alternate Bay method

2 Continuous bay method

In alternate bay method, concrete pavement slabs are laid on whole width of pavement in alternate bays.

In continuous bay method, concrete pavement slabs are laid continuously only on one bay and another bay is open for the traffic.

Generally, the second method of continuous bay, is preferred over alternate bay method because, traffic movement is allowed while it is restricted in the first. In addition, the alternate empty spaces invite the rainwater collection and create inconvenience to the construction work

Various steps for the construction of concrete pavements:

1. Preparation of Sub-grade and Sub-base
2. Placing of forms
3. Batching of material and Mixing
4. Transporting and Placing of Concrete
5. Compaction and Finishing
6. Floating and Straight Edging
7. Belting, Brooming and Edging
8. Curing of Cement concrete

Component Of R.C.C Road

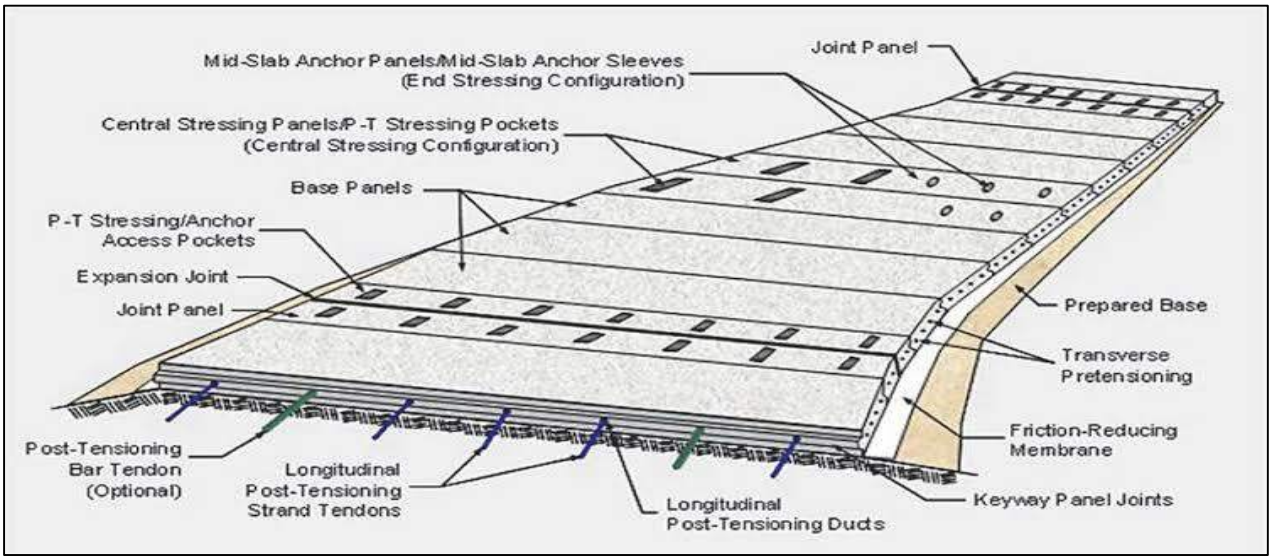


Figure 84 Components of R.C.C road

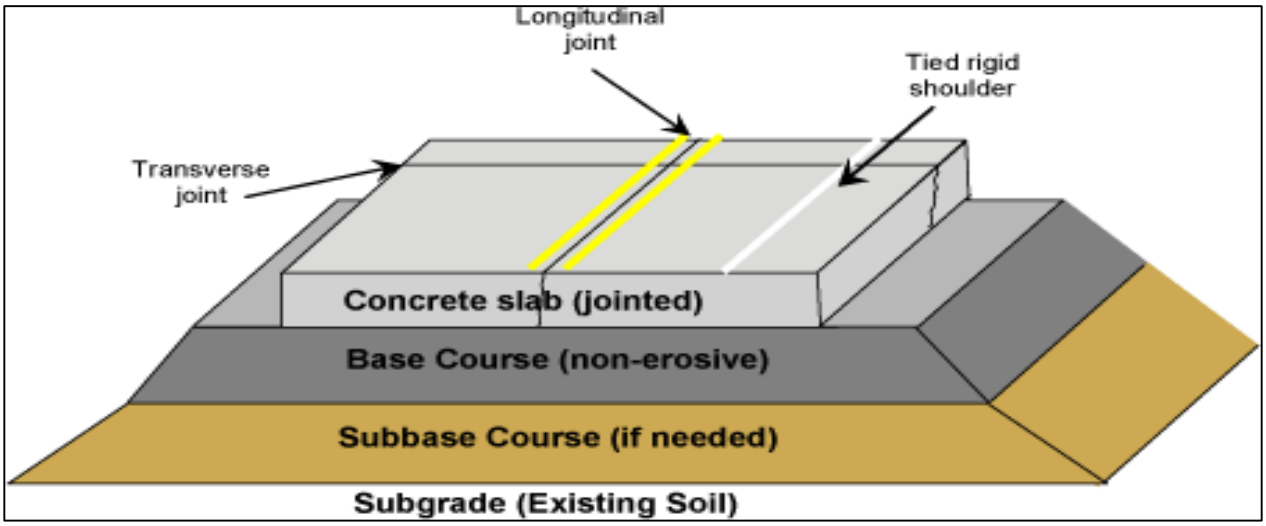
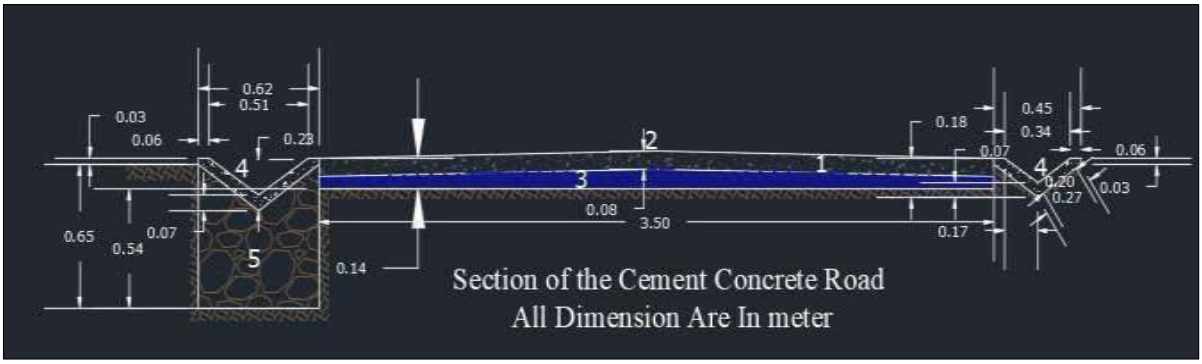


Figure 85 componet of road



R.C.C. Road												
CONSIDER 100M LENGTH												
CONSIDER 3.5M WIDTH												
MEASUREMENT SHEET												
1	**: Earthwork in cutting for roadwork**		**100*3.5 m**									
	In all sorts of soil, soft Murrum										**262.50**	**M 3**
	Considering 100 % of total qty.	=	262.50	X	100%					=	**262.50**	
											263.00	**M 3**

2	**: Carting & disposing the surplus excavated stuff receivedfrom roadway cutting**											
		=	Considering 90 % of Item No. 1									
		=	262.50	X	90%				=		236.25	
											237.00	**M 3**
3	**: Loosening, watering androlling to G.L.**											
	Length of Proposed IL Road											
	Area of Road	=	350.00						=		350.00	
											350.00	**M 2**
4	**: Providing & supplying of coarse sand (Zone-I) at site @ of 6.00 M3 per 100 M2 area**											
		=	350.00	X	6.00		100 . 00		=		21.00	
											21.00	**M 3**
5	**: Earthwork for filling by hardmurrum of approved quality**											
		=	350.00	X	0.75				=		262.50	
											262.50	**M 3**
6	**: Providing, spreading, mixing by mix in place,dressing & compacting Granual Sub-Base withCoarse Graded Material (Grading I)**											
	(Table: 400-2) having soakedCBR value not less than 30% brought from approved quarry											
	(A) 1st Layer of 150 MMcompacted thickness	=	350.00			x	0.15			=	52.50	
											52.50	**M 3**
7	: Construction ofW.B.M.											
	Layer of 150 MM compactedthickness											

		=	350.00			x	0.15		=		52.50	
											52.50	**M3**
8	**: Construction of dry lean cement concrete Sub- base**											
	Layer of 100 MM compactedthickness											
		=	350.00			x	0.10		=		35.00	
											35.00	**M3**
9	**: Constructing RCC Pavementslab of 230 MM thick in M40**											
		=	**350.00**		**M2**							

RCC ROAD

CONSIDER 100M LENGTH

CONSIDER 3.5M WIDTH

ABSTRACT Sheet

I. No.	SOR REF .R & B, S.nagar Dist., 2015-16	DESCRIPTION OF ITEM	QTY.	UNIT	RATE	AMOUNT
1	2	3	4	5	6	9
1	26008	Box cutting the road surface to proper slope and camber as per " L " section & detailed drawing and MoRTH Specifications Clause No. 301 with suitable mechanical means or manually as approved for making a base for road work including removing	263.00	M3	65.50	17,226.50

2	**R.A.**	**Carting & disposing the surplus excavated stuff received from roadway cutting etc. from site of work to outside at suitable location with suitable means incl. loading, unloading, transporting and disposal the surplus excavated stuff withallrequiredlead&liftetc.complete as directed.**	**237.00**	**M3**	**75.70**	**17,940.90**
3	**R.A.**	**Loosening, leveling, compacting and stabilisation of the excavated road way supporting sub-grade and preparing the ground by loosening of the ground up to a level of 150 mm below the sub-grade level and including spreading, mixing & pulverized coarse sand (with excavated stuff) in place @ of 6.00 M3 per 100 M2area by using a motor grader or suitable means as approved for soil stabilisation, watering, grading and compacted in layers to meet requirement of table300-2 for sub-grade construction. as per sitecondition as directed by the Engineer incl. leveling the ground to the required line, grade & profile by suitable means, watering and compacting with vibratory power roller to achieve the desired compacted density etc. complete as directed. (Supply of sand will bepaid separately)**	**350.00**	**M2**	**11.40**	**3,990.00**
4	R.A.	**Providing & supplying of coarse sand (Zone-I)** at work site brought from approved quarry including all required leads & lifts and all incidental charges, taxes, royalty etc. complete as directed for sand stabilisation for improving subgrade.	21.00	M3	302.50	**6,352.50**

5	26004EA	Earthwork for filling by hardmurrumof approved quality **including breaking clods, dressing with all lead & lift and including watering, rolling and consolidation of subgrade in layersat**	**262.50**	**M3**	**187.00**	**49,087.50**
6		**Providing, spreading, mixing by mix inplace, dressing & compacting GranualSub-Base with CoarseGradedMaterial (Grading I) using B.T.M.C.metal 75 mm to 26.5 mm at 35 %, crushed stone aggregate 26.5 mm to 4.75mm at 45% and coarse sand at 20%(MoRTH Table: 400-2) having soakedCBR value not less than 30% broughtfrom approved quarry located outsideincluding all required leads & lifts, in arequired compacted layers (each layersnot exceeding 150 mm thickness) as per the drawings or as directed forconstruction of sub-base & side shoulder(As Per MoRTH Specifications ClauseNo. 401) including spreading in uniform layer in such loose quantities that the thicknessofeachcompactedlayershou ld not be less than required compactedthickness of layers shown on thedrawing onwellpreparedsurfacebyusingamot or grader, dressing, watering, mixing bymix in place method with rotavator atOMC, compacting with vibratory rollerof minimum 80 to 100 KN static weightwith plain drum or heavy pneumatic tyredrollertoachievethedesireddensi ty atO.M.C.includingfillingthedepressi on which occur during the process, all lead& lift, all taxes, royalty etc. completeas Directed**				
A	**R.A.**	**1st Layer of 150.00 MM compacted thickness**	**52.50**	**M3**	**855.00**	**44,887.50**

7	**R.A.**	**Construction of** ContinuouslyReinforced Cement concrete PavementinM-40**Mixasperapproved mix design over a prepared sub-base,with cement content as per approvedmixdesign, course and fine aggregates conforming to IS:383, maximum size ofcourse aggregates not exceeding 25 mm,mixed in a batching and mixing plant asper approved mix design, transported tosite, laid with a fixed form or slip form paver,spread,compactedandfinishingto lines and grades in a continuous operation as per drawing, surfacetexturing as per IRC -15 & as approvedincluding provision of contraction, expansion, construction and longitudinaljoints, joint filler, separation membraneof impermeable plastic sheeting 125 micronthickasapproved,sealantprimer, joint sealant, deboning strip, dowel bar,tie rod, Super plasticizer admixture ISmarkedasper9103-1999@0.50percent byweight of cement as approved, finishingto lines and grades as per drawing & MoRTH Specifications including curingof concrete for 14-days, maintenance ofDiversion, all required lead and lift, alltaxes, royalty incl. cost of all materials & labours but excluding cost of reinforcement (TMT bars) required forpavement, joints of dowel & tie bars etccomplete as directed.**230.00 MM thick (compacted) RCCPavement	**3,895.00**	**M3**	**4,332.00**	**16,873,140.00**

8	05014C	Providing and laying Continuous Reinforcement of **Thermo Mechanically Treated bars (TMT bars) FE - 500/500D** in both direction and for expansion joint by providing at mid depth of 200 mm thick pavement slab as per drawing and design includingstraightening, cutting to required length, bending, binding with 16 gauge anneled wire providing and fixing concretecover	38,950.00	Kg.	45.00	**1,752,750.00**
9	26089AA	Supplying & fixing **RCC heavy duty non-pressure pipe of I.S. class NP3** with collars for SERVICE PIPE carryingheavy traffic as per I.S. 458 - 1991 specifications incl. setting & jointing thepipes in CM 1:2 including watering&laying(tolevel&slope)ofI.S .classNP3 of 300 mm internal dia asdirected.	335.00	Rmt.	390.00	**130,650.00**
10	R.A.	Constructing:**ServiceChambers** having insidecleardimensionof0.60x0.60x 0.90 M depth as per given detailed drawing including 100 mm thk. P.C.C. 1:4:8 mix (1-Cement:4 coarse sand, 8 M/c stone aggregate 20MM nominal size) - 330 MM thick brick masonary walls with heavy duty Precast R.C.C100 MM thick Top slab of size 0.75 x 0.75M inC.C.M-200(C.C.1:1.5:3-1-Cement :1.5 coarse sand, 3 M/c stone aggregate20MM nominal size) with handles,inside plastering 10 MM thick inCementMortar 1:4 finished with a floating coat of neatCement slurry andmaking bottom channelsin40mmthk.CementConcrete 1:2:4 mix curing, testing, excavation etc. complete as directed.	52.00	No.	4,998.00	**259,896.00**
					Total Rs.:	19,284,650.90
					Say Rs.:	19,284,651.00

13.1.4 Sustainable design

About existing Biogas plant:

In village no any existing biogas plant is available.

Biogas is a renewable, as well as a clean, source of energy. Gas generated through bio digestion is non-polluting; it actually reduces greenhouse emissions. No combustion takes place in the process, meaning there is zero emission of greenhouse gasses to the atmosphere;therefore, using gas from waste as a form of energy is actually a great way to combat global warming.

Design of bio gas plant:

- In Lakhapar There are approx 25 cattle's
- A healthy cow can produced about 10 kg of dung per day.

Total produced dung/day = 25 x 10 = 250 kg/day

Design of Digester:

retention period ® = 60 days

Assume mixing proportion of solid and water = 1:1

Now total amount of slurry per day (S) = Total dung per day + water amount

= 250 + 250= 500 lit/day= 0.50 m^3/day

Digester Volume = S x R = 0.50x 60 = 30 m^3

Total digester volume (Vd) = $\pi r^2 h$ So, 30 =$\pi r^2 h$ assume h = 2.0m r = 2.18mSo, dimensions are h = 2.0m, r = 2.20m

Design of Gas Holder:

Assume digester temperature = 26-28^oC

Now,Specific Gas Production (Gd) = 37 liter/day

Daily Gas Production G = Gd x Feed Volume = 35 x 500 = 17500 lit = 17.50 m^3

Now,

Assume Gas Holder capacity = 60%

Gas Holder Volume = Daily Gas Production X Capacity of Holder

$= 17.50 \times 0.60 = 10.50\ m^3$

So, take gas holder volume = 11 m^3

Now, provide volume of holder each unit = 11 m^3 Provide cylinder shaped holder,

Therefore, Volume = $\pi r^2 h$

$11 = \pi r^2 h$ assume h = 0.8m, r = 2.09 m

So, dimension of the gas holder are h = 0.8m, r = 2.10m

Design of Inlet and Outlet:

Total Volume of slurry mix deposit = 0.5m^3/ day Assume single-time filling operation in plant.

So, take total volume of slurry = 0.5m^3/ day Provide Rectangular tank.

So, Total volume for one time mixing of slurry = L x B x H

Assume rectangle chamber with proportion width to length = 1: 1.5Assume depth of chamber is 0.50m

0.50 = 1.5B X B X 0.5

B = 0.81m, L = 0.81 X 1.5 = 1.21

So, Dimensions of inlet: L = 1.20m B = 0.9m H = 0.50m

Here, 0.50 m^3 / day required < 0.54 m^3 / day provided. ..... Hence OK.

Provide same size of outlet also.

Total Construction Cost including Labour Cost = **93,866 Rupees**

Contractor's Profit = **14079.9 Rupees (15%).**

Water charges = **1407.9 Rupees (1.5%).**

Total Cost without considering wastage: 93,866 + 14080 + 1408 = **Rs. 1, 09,354/-**

Measurement sheet of Biogas plant

Sr. No.	Item Particular	Nos.	L (m)	B (m)	H (m)	Quantity	Total Quantity
1	Excavation for Foundation for depth more than 3.3m including sorting out and stacking of useful material off the excavated stuff up to 50 m lead	1	4.10	3.90	2.85	45.57 m^3	**45.57 m^3**
2	Providing and laying Cement Concrete 1:3:6 (1 cement: 3coarse sand: 6 stone aggregate 40 mm nominal size) and curing complete excluding cost of formwork in foundation	1	4.10	3.90	0.15	2.39 m^3	**2.39 m^3**
3	Providing and laying controlled cement concrete M15 for curing complete excluding the cost of formwork & reinforcement including curing Walls Slabs	44	4.10 4.28	3.80 0.15	0.15 0.50	9.34 m^3 1.28 m^3	**10.62 m^3**
4	Deduction of Manholes from the top Slab	2	0.60	0.60	0.10	0.072 m^3	**1.28-0.072 = 1.208m^3**
5	Providing H.Y.S.D bar reinforcement for R.C.C work including bending binding and placing in position	10.62	@	70 kg/ m^3		750 kg	**750 kg**
6	**RCC heavy duty pipe**	**1**	**3.00**				**3.00m**

Abstract Sheet

Sr. No.	Particular or Item	Quantity	Rate (In Rs.)	Per	Amount(in Rs.)
1.	For Excavation of foundation	45.57	124.00	Cum	**5650.68**
2.	Providing and laying P.C.C (1:3:6)excluding cost of formwork	2.39	2932.00	Cum	**7007.48**
3.	Providing and laying controlled cement concrete M15 for the walls excluding cost of reinforcement	10.62	4077.00	Cum	**43297.74**
4.	Providing and laying concrete andfinishing smooth curing includingthe cost of formwork but excludingthe cost of reinforcement in R.C.C slab	1.208	5927.00	Cum	**7159.81**
5.	Reinforcement	750	40.00	Kg	**30000**
6.	**RCC heavy duty pipe**	**3.00**	**250**	**Rmt.**	**750**

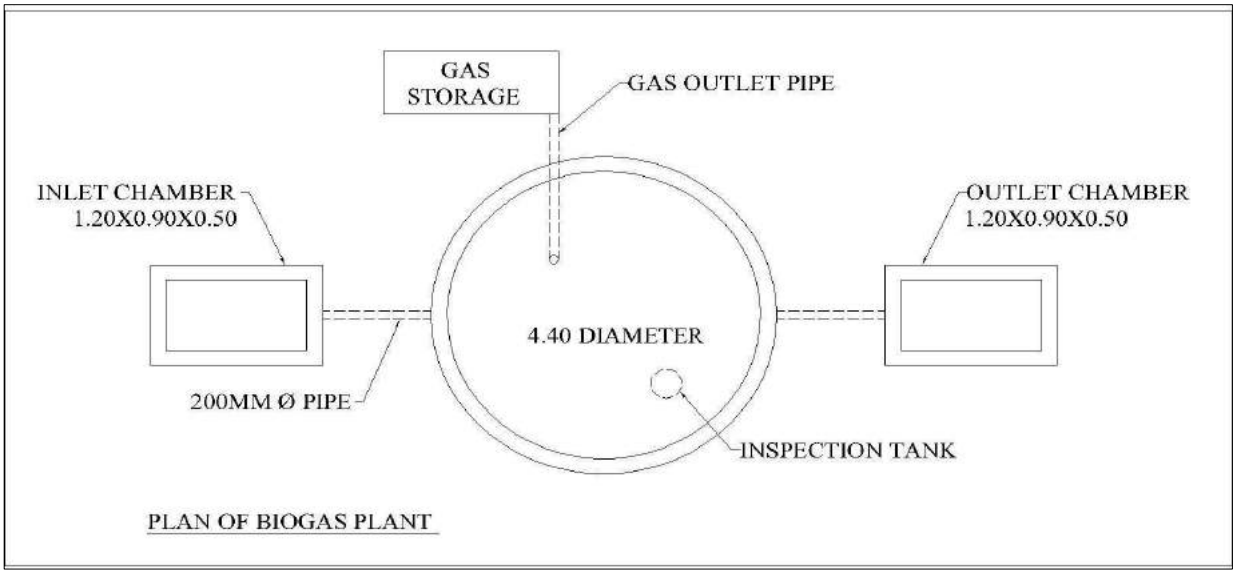


Figure 86 Plan of Bio gas plant

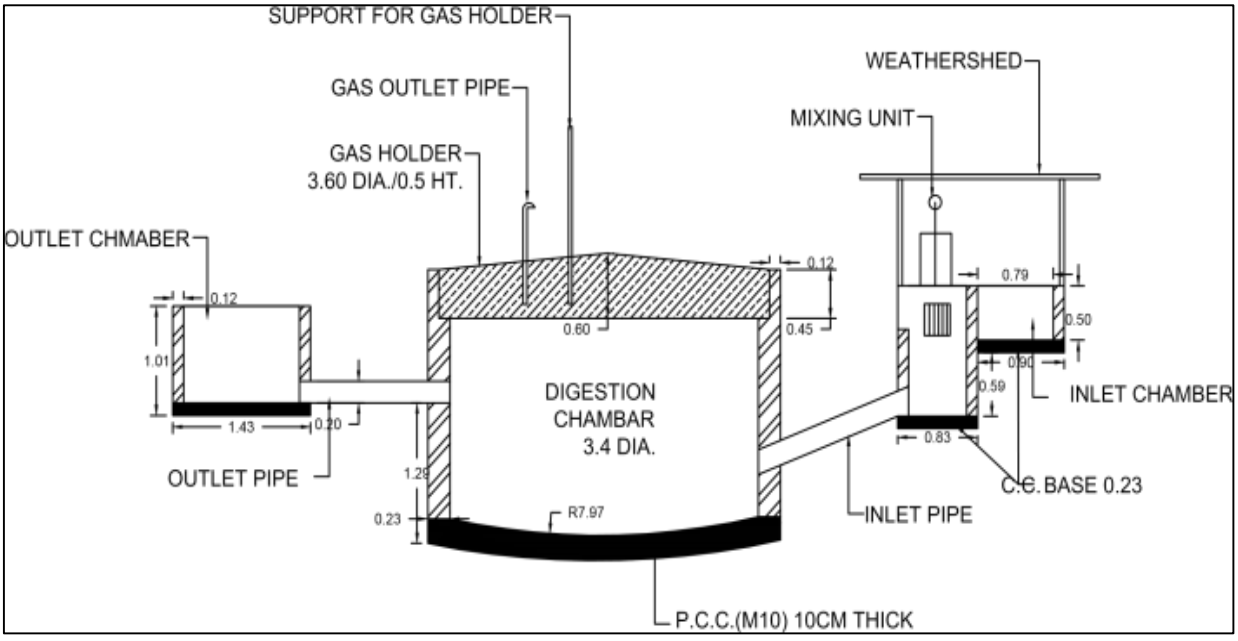


Figure 87 Section of Bio gas plant

13.1.5.Ground Water Recharge by Vertical Shaft (EconomicDesign):Socio-

Introduction

- Main source of water in village is ground water. Due to excessive use and population expansion ground water level is depleting. To maintain round water level and conserve it for future generation Ground water recharge is necessary.
- In an Artificial groundwater recharge we will use vertical recharge shaft method. Inthis shaft the top portion we use PVC ball & Rubber lip which is help in wheneverriver water level gone up & rubble lip will automatically open fill with water.
- The diameter of shaft is 0.45 M .depth of PVC pipe is 15 M. It should end in morepermeable strata below the top impermeable strata. It may not touch water table.
- To begin with in PVC pipe on top portion provide rubber valve. Below it 0.20 Inches diameter screen is placed to remove rags, paper and plastic to prevent damage.
- In PVC pipe 10 M deep filtration bucket is connected with bolt. In which there arethree layer of fine, gravel and coarse material placed.
- At bottom there is one extra screen provided which is prevent filter material to the ground. In PVC pipe provide hole to spread water in to confined aquifer.

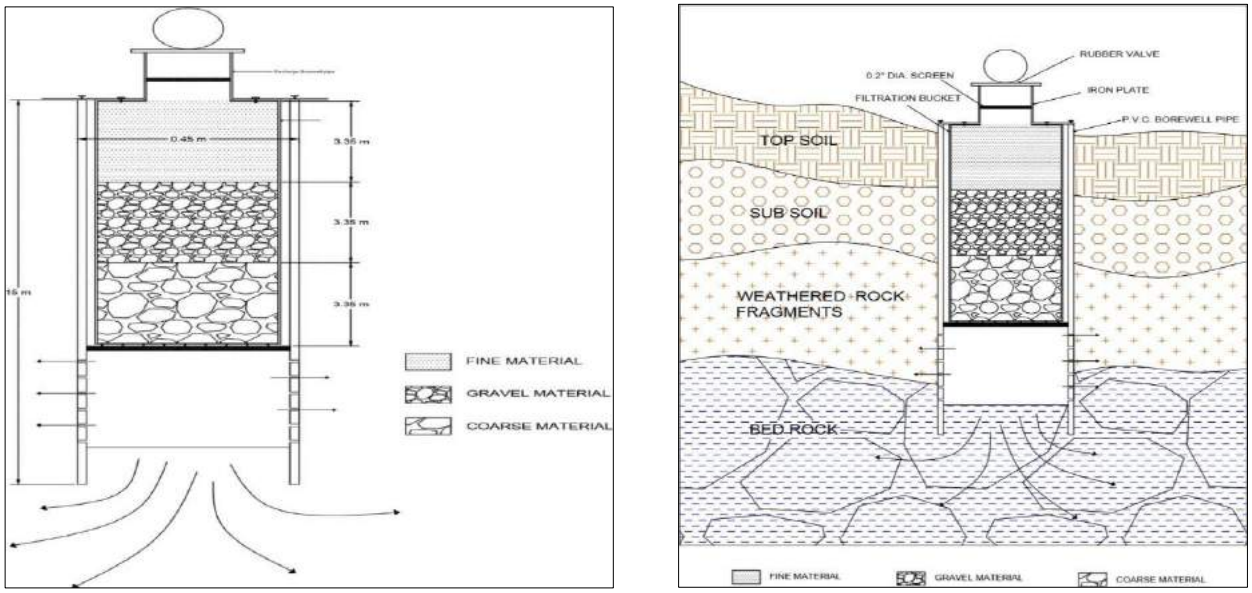


Figure 88 (Vertical recharge shaft Section)

ABSTRACT SHEET Vertical Recharge

SR. No.	Particulas	Amount (Rs.)
1	PVC Pipe	**230**
2	Geo Net (Screen)	**1500**
3	Rubber Valve	**3000**
4	Bolt	**100**
5	Iron Plate	**10000**
6	Bucket	**11000**
7	Sand	**50**
8	Gravel	**40**
9	Coarse Aggregate	**80**
10	Labour	**15000**
11	Excavation Equipment rent (Per Month)	**3000**
	Sub Total	44000/-

13.1.6 .Samajseva mandal:

Objectives of samajseva mandal:

- To utilize youth strength by for undertaking development activities byorganising them.
- To work in development fields of education, health, cultural, and to undertakeresearch in economic activities.
- To undertake development projects for rural and agricultural development.
- To run ration shops and cheap cloth stores.
- To guide rural people in all development fields.
- To provide sports facilities and services to rural youth.
- To help rural people in undertaking development and running a library.
- To take efforts for rural and social development.

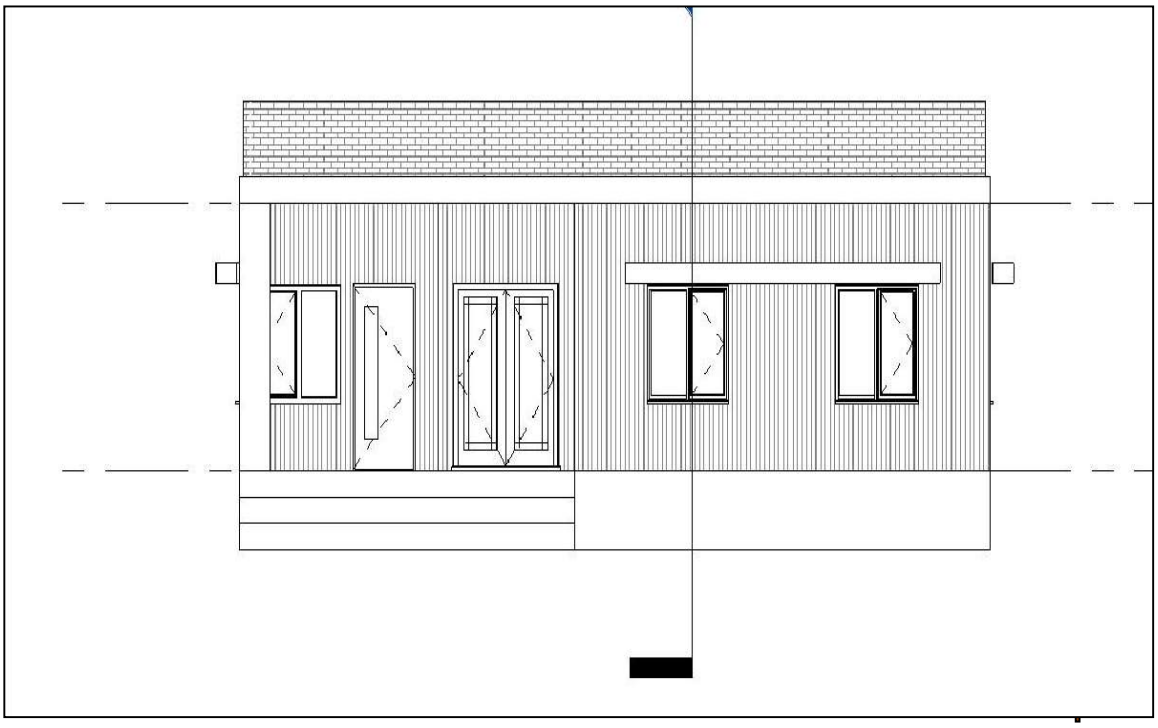


Figure 89 Elivation of Samajseva Mandal

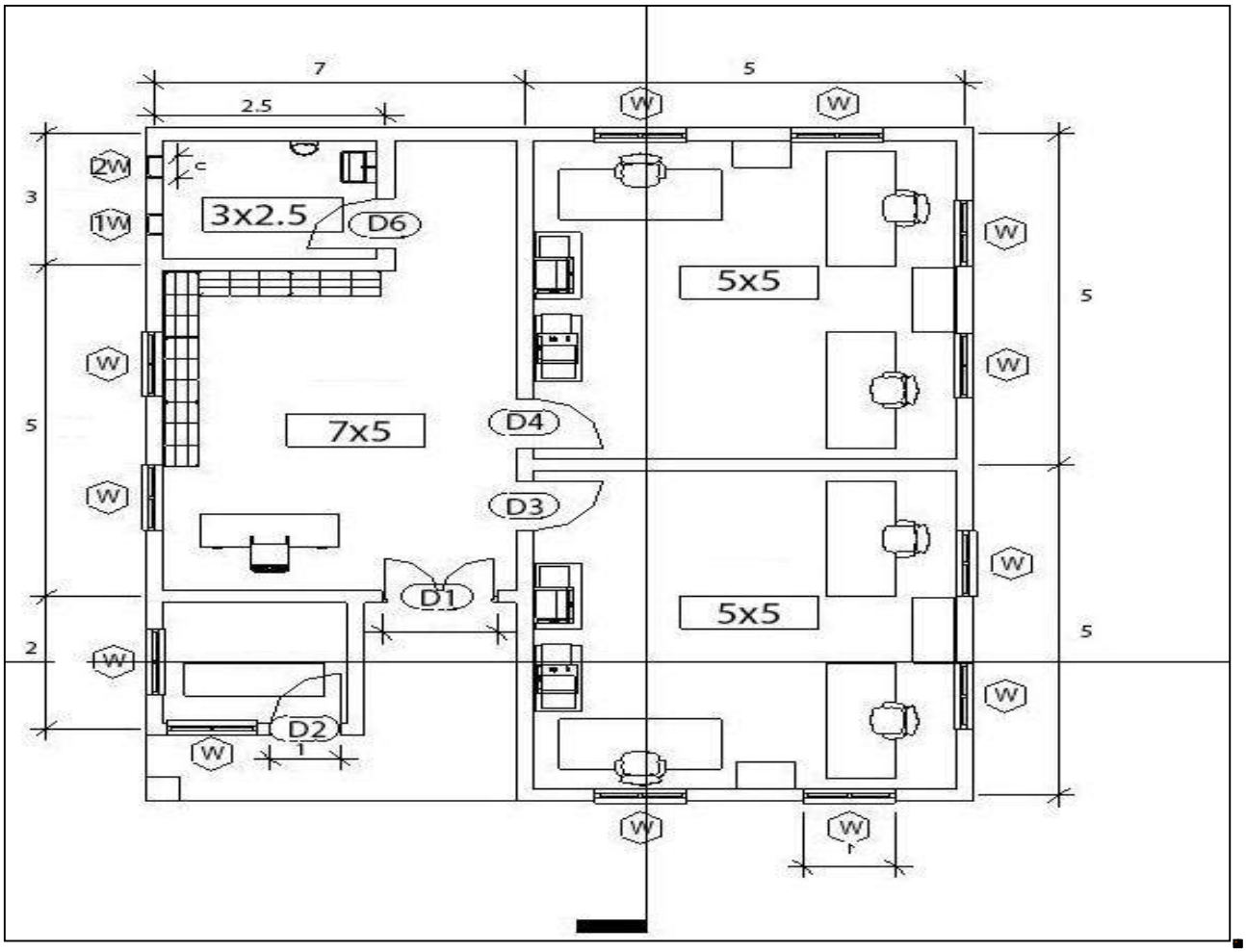


Figure 90 Plan of Samajseav mandal

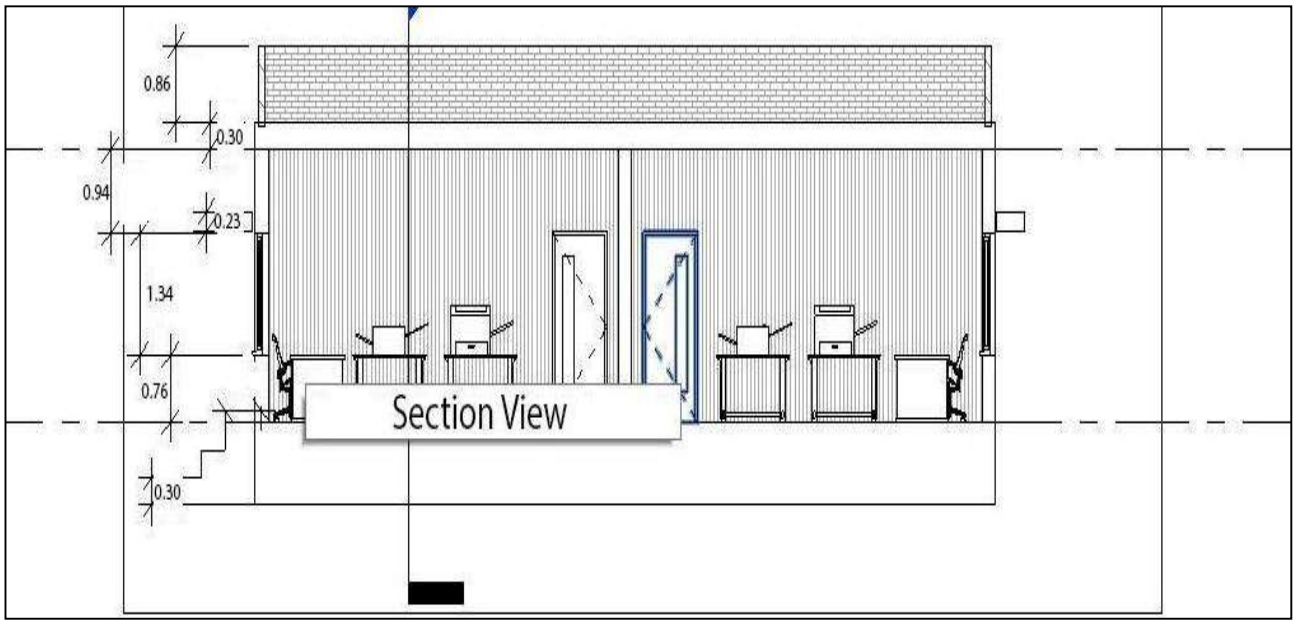


Figure 91 Section of samajseva mandal

Measurement sheet:

Item no.	Item description	No.	L(m)	B(m)	H(m)	Qnty.(m3)
1.	**Excavation in foundation:** **L=68.8-{(0.90/2)*8} =65.2 m**	1	65.2	0.90	1.1	**64.58**
2.	**p.c.c in foundation:** **L=68.8-{(0.9/2)*8} =65.2 m**	1	65.2	0.90	0.20	**11.736**
3.	**Brick masonry work in foundation:** **1st step: L=68.8-{(0.5/2)*8} 66.8 m** **2nd step: L=68.8-{(0.4/2)*8} =67.2 m** **3rd step: L=68.8-{(0.3/2)*8} =67.6 m**	**1** **1** **1**	**66.8** **67.2** **67.6**	**0.5** **0.4** **0.3**	**0.3** **0.3** **0.9**	**10.02** **8.064** **18.25**

4.	Earth filling in plinth level: Room 1: (5*5) Room 2: (5*5) Room3: (3*2.5) Room4: (3*2.5) Hall: (7*5)	 1 1 1 1 1	 5 5 3 3 7	 5 5 2.5 2.5 5	 0.6 0.6 0.6 0.6 0.6	 15 15 4.5 4.5 21 TOTAL QNTY:60 m^3
5.	Brick masonryin superstructure:					
	L=68.8- {(0.2/2)*8} =68.0 m	1	68	0.2	2.70	36.72
6.	Deduction fordoor and windows: D1: D2: D3: D4: D6: W:	 1 1 1 1 1 12	 1.10 0.90 0.90 0.90 0.90 1.80	 0.30 0.30 0.30 0.30 0.30 0.30	 2.10 2.10 2.10 2.10 2.10 1.40	 0.693 0.567 0.567 0.567 0.567 9.072 DEDUCTION: 11.17 m^3 ACTUAL QNTY: 36.72-11.17=25.55 m^3 480
7.	Plastering	4	12	-	10	m^2 480m^2

Abstract sheet

Item no.	Particulars of item	Quantity	Per	Rate	Amount Rs.
1.	Excavation in foundation	65.58 m3	m^3	86	5553 Rs.
2.	Earth filling in foundation	60 m3	m^3	950	57000 Rs.
3.	Brick wok	25.55 m3	m^3	3530	90,191 Rs.
4.	p.c.c. in foundation	11.74 m3	m^3	3022	35,478 Rs.
5.	Brick masonry work in foundation	45.174 m3	m^3	3162	1,42,840 Rs.
6.	Plastering	480 m2	m^2	132	63,360 Rs.
					TOTAL RS:3,94,422 + 3%CONTIGENCIES:11,832 + 2%WORK CHARGED ESTABLISHED:7888 GRAND TOTAL: 4,14,142 Rs.

13.2 .Reason for Students Recommending this Design:-

- The main recommendation for the proposal of is to enhance the recreational facilities of the village, due to labour oriented occupation of the villager‟s this type of amenities will decrease their tiredness and also the chillers in the village will enjoy their fun time.
- The recommendation for the design of Co operative bank is to increase the skill of villagers in different work field such as stiching , computer lab, mechanical job work, packaging of goods etc and it also improve the employability of the villager
- The recommendation for the design of Bio Gas plantis been taken by the study of ideal village , this will decrease the cost of electricity for the villagers and also excess energy can be transported tu the neighboring villages so as to increase income of village as a whole
- The recommendation for the design of Gewwn house Farming is because of every farmers are affected by excessive rain or lack of proper storage facilities for their grains and due to this they have to sell their grains at very low rate and have to bare a huge loss . Thus this facility will allow the farmer;s of not only Sokhada village but also the neighboring villagers to store their grains in a well-designed storage a

13.3 .About designs Suggestions / Benefit of the villagers:-

Villagers also need to be provided with best amenities and services for daily needs, and good life for living. Some Amenities needed by villagers:

- Banking facility in villages. Primary health care in each village.
- High school level education to each village.
- Scientific agriculture practices easily accessible to each village. Connectivity
- Cold storage and grain storage facility.
- Encourage villagers to open cooperative so that they can speak as one. Electricitysupply which of course is different from electrification. Skill development which might help them diversify. Water management practice

Chapter - 14. Technical Options with Case Studies

14.1 Civil Engineering

14.1.1 Advanced Earthquake Resistant

To make a building earthquake proof, it is important to put shear walls, a shear core and cross-bracing as they provide additional strength. The building is bolted to the foundation, providing support walls called shear walls, which help in reinforcing the building that in turn resist rocking movements.

- **Materials are used in earthquake proof building**

Wood and steel have more give than stucco, unreinforced concrete, or masonry, and they are favored materials for building in fault zones. Skyscrapers everywhere must be reinforced to withstand strong Semi-permanent structures – shelters usually roofed with CGI sheets, walls built out of mud and wattle (sometimes plastered) and floors made out of normal concrete or compacted ground either finished with vernacular binders-sand screed or covered with woven materials, etc. forces from high winds, but in quake zones, there are additional considerations

- **Techniques For Earthquake Resistant Design of Structures**

1 Floating Foundation: The levitating or floating foundation separates the substructure of a building from its superstructure.
2 Shock Absorption.
3 Rocking Core-Wall.
4 Pendulum Power .
5 Symmetry, Diaphragms And Cross-Bracing.
6 Finally.

Earthquake-resistant or aseismic structures are designed to protect buildings to some or greater extent from earthquakes. While no structure can be entirely immune to damage from earthquakes, the goal of earthquake-resistant construction is to erect structures that fare better during Seismic activity than their conventional counterparts. According to building codes, earthquake-resistant structures are intended to withstand the largest earthquake of a certain probability that is likely to occur at their location. This means

the loss of life should be minimized by preventing collapse of the buildings for rare earthquakes while the loss of the functionality should be limited for more frequent ones.

Earthquake-proofing a building is all about putting extra measures in place to ensure a building avoids as much damage as possible. Technically, 'proof' isn't the word to describe these measures, earthquake-resistant should be used instead as most buildings still come away from an earthquake or cyclone with minor damage. However, the difference in an earthquake-proof building and a building that is not protected lies in the potential damage to the core of the structure, which in turn can risk the safety of everyone in the building.

The 5 key features of any earthquake-proof building across the globe are:

- Stiffness
- Multiple safety strategies
- Foundations
- Cross braces
- Materials

Earthquake-proofing is a common part of designing buildings in countries, states and regions where they are regular occurrences, such as California, South East Asia and Chile. Because of this, the research on the subject is thorough and well tested over the past century. Some of the tallest buildings in the world are designed to withstand earthquakes of up to 8.0 on the Richter scale. Below we'll go through the five key features of earthquake-proof buildings.

1 The stiffness of the earthquake-proof buildings

While it may seem counterproductive to build a rigid building in an area where the ground moves, this is actually a very popular way of stabilising a building and keeping it together. The main thing that is missed during this process though it is ensuring lateral stiffness. It's easy enough to build a vertically stiff building, but ensuring the building moves equally side to side during an earthquake is harder. .put in place a building won't be secure without this.

2 The foundations of earthquake-proof building

Ensuring your foundations will support your building is key in designing an earthquake-proof building. It is the same as with any building, you need to ensure that where you are building has a secure foundation

to provide a stable building base. However, when you are building in earthquake or cyclone-prone areas you often need to reinforce the structure. Areas that are prone to these natural disasters also often have softer ground material which can move and cave during heavy rain or vibrations. There are a number of different ways the foundations of an earthquake-proof building can be secured to the earth. Piles are commonly used to drill down into the bedrock, securing the building beyond the soft topsoil. Beyond piles, other foundation techniques used to stabilise a building during an earthquake or cycloneincludedampingandtrusses.

Damping comes in a range of forms but essentially describes the action of removing as much energy as possible. In other terms, damping is used in foundations so that when an earthquake hits, instead of the vibrations hitting the building head-on, the dampers reduce vibrations as much as possible.

3 The use of cross braces in earthquake-proof building

Cross braces are used throughout earthquake-proof buildings across the world thanks to their simplistic design and ease of installation. Cross braces are similar to trusses except are built into the walls and floors to provide the necessary stiffness. The cross braces provide the necessary distribution of force to enable a building to safely move with vibrations. Cross braces also send vibrations back down the building, often softening the force of the movement. Without cross braces, buildings have a high chance of collapsing in on themselves or sustaining dangerous structural damage.

4 The materials used in earthquake-proof buildings

The materials used in an earthquake-proof building can make or break the structure's stability. Some materials, while creating a strong and stable building, are not built to handle the movement of earthquakes. Bricks, in particular, are extremely susceptible to the vibrations of an earthquake. Materials often used in earthquake-proof buildings are:

- Structural steel
- Wood
- Bamboo
- Reinforced concrete

Structural steel has been used for years in earthquake-proof buildings. This is because it is able to undergo massive amounts of stress and movement, which is necessary for a building to withstand an earthquake or cyclone. Structural steel is known for its ductility, the ability to undergo significant deformation before rupture, and so is extremely popular in skyscrapers and earthquake-proof buildings, allowing them to move with the vibrations. Wood and bamboo are also exceedingly ductile and commonly used in smaller, low-lying structures such as houses, sheds and small civic buildings. Reinforced concrete is concrete with reinforcing steel bars (rebar) included. This turns a low ductile material, concrete, into a higher ductile material. While it is common-place now for almost every concrete pour to include the use of rebar it wasn't always the way. Reinforced concrete is used in conjunction with structural steel to create earthquake and cyclone-proof buildings. Without steel reinforcement concrete is prone to cracking and structural failure in buildings that are put under stress from high winds or ground vibrations.

14.2 Seismic Retrofitting of Buildings

Defination:-

Retrofitting is the addition of new technology or features to older systems, for example, home energy retrofit, the improving of existing buildings with energy efficiency equipment. seismic retrofit, the process of strengthening older buildings in order to make them earthquake-resistant.

Seismic retrofitting importanc:-

Generally, the structural retrofit of concentrically braced frames improved the seismic resistance of the building and it can be considered in the retrofit of moment frame structures to prevent the risk of structural collapse under the design load with much more confidence.

Retrofitting is the process of addition of new features to older buildings, heritage structures, bridges etc. Retrofitting reduces the vulnerability of damage of an existing structure during a near future seismic activity. Retrofitting helps to increase the strength, resistivity and overall lifespan of the structure.

Shear Wall Seismic Resisting Systems

1 Wood Shear Walls

Wood is an economical choice building material compared to the higher priced steel and concrete structural components. The general range of the usage of wood structures to total structures is assumed to be between 80% and 90% in all regions of the US and the majority relies on wood shear walls which makes it the most common of the elements discussed here (Malik 1995). Therefore, their ability to adequately resist random and cyclic lateral forces is critical to the safety of the inhabitants and to the soundness of our residential infrastructure. When properly constructed, its performance in past earthquakes has typically been reliable.

Fasteners for shear wall construction may be staples, screws or nails. Sheathing connections resist shear forces, whereas anchors resist uplift forces. The choice of the anchorage method affects the shear wall stiffness, capacity, and failure mode as well as ductility and seismic resistance of the shear wall. The inertial forces generated by the ground movement of the earthquake concentrate lateral forces in the roof and floors where the mass of the building is greatest. The forces in the roof and floors must be adequately connected to the foundation shown in Figure **.**

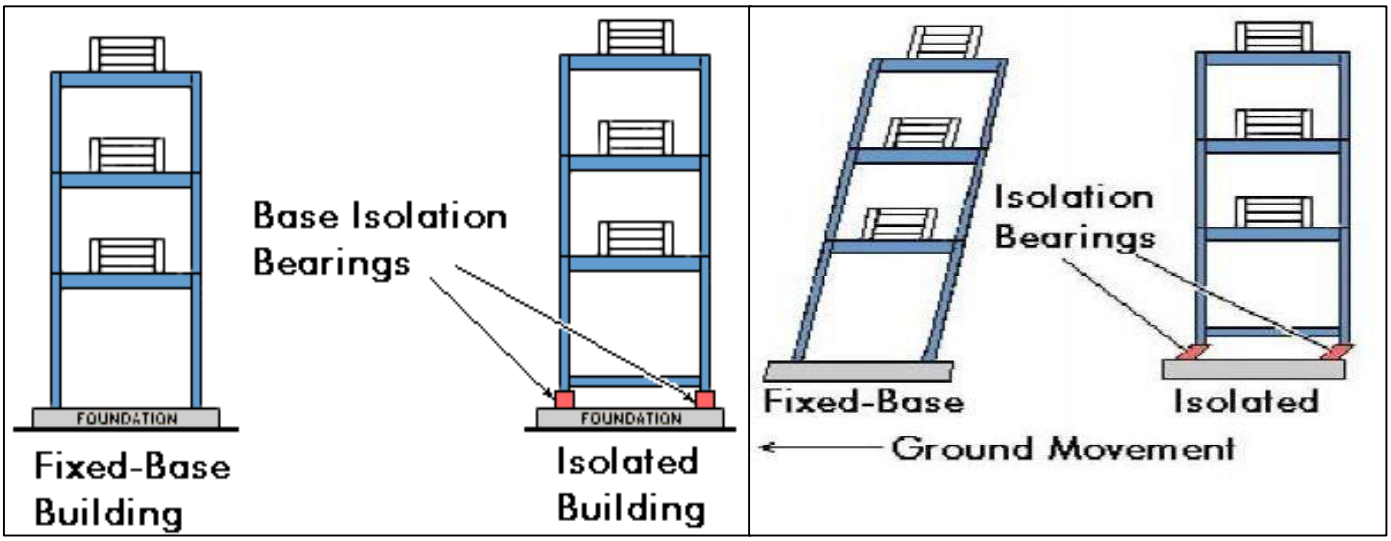


Figure 92 - Seismic forces on a building

2. Reinforced Concrete Shear Walls :-

The reinforced concrete shear walls generally start at foundation level and are continuous throughout the building height. Shear walls are usually provided along both length and width of buildings as shown in Figure . Shear walls are like vertically-oriented wide beams that carry earthquake loads downwards to the foundation. Most of the reinforced concrete buildings with shear walls also have columns and these columns primarily carry gravity loads.

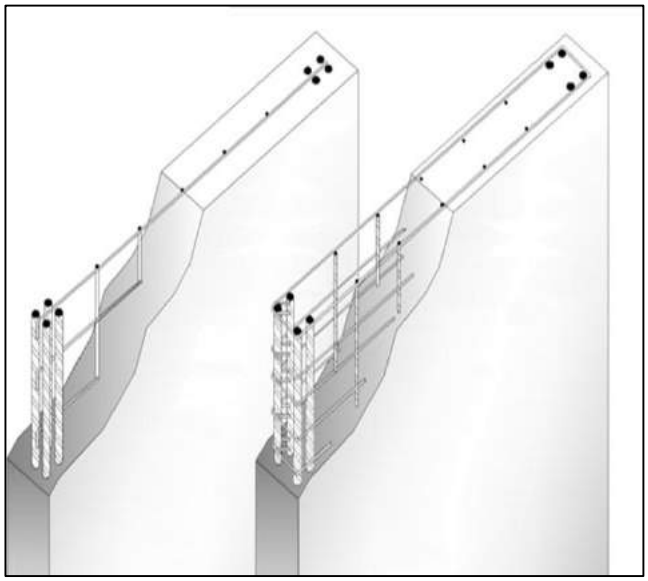


Figure -93 Reinforced Concrete Shear Wall

reduces lateral side-sway of the building. Due to shear walls carry large horizontal earthquake forces, the overturning effects on them are large. Thus, design of their foundations requires special attention. For higher overturning demands, pile foundations, possibly including tension tie-down capacity, can be used.

3 Reinforced Masonry Shear Walls

Masonry is one of the oldest construction materials and most of the buildings studied in architectural history are made of masonry: Egyptian and Greek temples, Roman coliseum, Persian palaces, Byzantine domes, Islamic minarets, Gothic cathedrals and the list goes on.

This is because;

(1) masonry was chosen for its high quality;

(2) it aesthetically complemented many different styles;

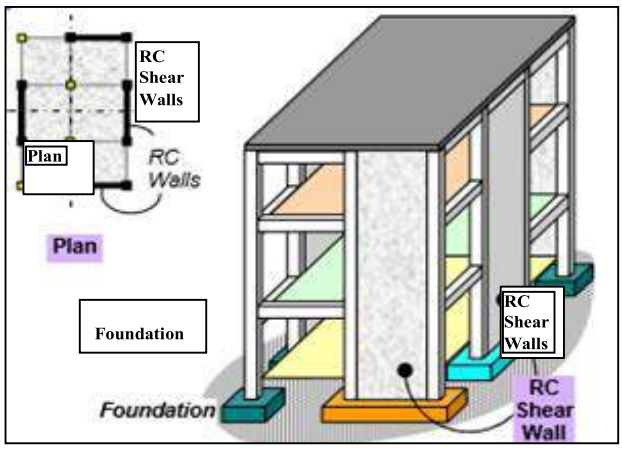


Figure -94 Reinforced Masonry Shear Walls

Although, in current practice most seismically designed masonry buildings in the USA in high seismic zones are made of concrete block (also called concrete masonry unit or CMU) is more common, clay masonry construction have been widely used in the past along with concrete masonry. Depending on the

distribution of vertical and horizontal reinforcement, the MSJC code (2005) classifies reinforced masonry into the following three categories: Ordinary, intermediate and special reinforced masonry shear walls. Besides the distribution of reinforcing steel, reinforced masonry walls can also be distinguished based on the grouting; partially grouted masonry walls typically only have grout placed where reinforcement is located whereas fully grouted masonry walls have grout placed in every cell. Although in terms of construction practice and economy, partially grouted masonry is widely used, fully grouted walls are superior in terms of structural behavior since the tensile and shear strength are better.

4 Steel Shear Walls

A tremendous lateral load capacity can result with a solid wall rather than frame from the

Strongest of the structural materials. Steel shear walls, which more common in ship design, are only rarely used in buildings and relatively new to structural engineering. This type of element offers the designer an option that can concentrate massive amounts of earthquake resistance into compact spaces where other types of elements would not be strong enough. As a result, steel shear walls can be very efficient and economical lateral load resisting systems and due to having high initial stiffness it is very effective in limiting the drift. In general, steel plate shear wall system consists of a steel plate wall, boundary columns and horizontal floor beams. Together, the steel plate wall and boundary columns act as a vertical plate girder. The columns act as flanges of the vertical plate girder and the steel plate wall acts as its web. The horizontal floor beams act, more or less, as transverse stiffeners in a plate girder

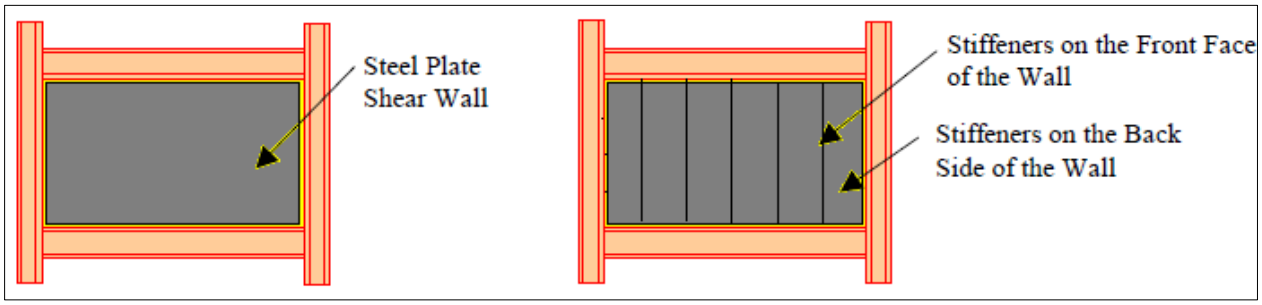


Figure- 95 Stiffened and un-stiffened shear wall

There are three different steel shear wall systems systems:

(1) Unstiffened, thin steel shear wall (2) stiffened steel shear wall, 3) composite concrete steel shear wall.

The most common application in North America is the un-stiffened thin, while In Japan, the stiffened steel shear wall system is more common as shown in Fig However, steel plate shear wall systems are usually more costly in comparison to concrete shear walls, primarily due to their flexural flexibility. Therefore, when using steel plate shear walls in tall buildings, the engineer must provide additional flexural stiffness. Another disadvantage is excessive initial compressive force in the steel plate panel may delay the development of the tension-field action. It is important that the construction sequence be designed to avoid excessive compression in the panel.

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

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

Every construction project is different, every site is a singular prototype, construction works are located in different places, and involve the constant movement of personnel and machinery. In addition, the weather and other factors can prevent the application of previous experience effectively.

The term 'advanced construction technology' covers a wide range of modern techniques and practices that encompass the latest developments in materials technology, design procedures, quantity surveying, facilities management, services, structural analysis and design, and management studies.

Incorporating advanceconstructiontechnology into practice canincrease levels of quality, efficiency, safe ty, sustainability and value for money. However, there is often a conflict between traditional industry methods and innovative new practices, and this is often blamed for the relatively slow rate of technology transfer within the industry.

The adoption of advanced construction technology requires an appropriate design, commitment from the whole project team, suitable procurement strategies, good quality control, appropriate training and careful commissioning.

Advanced construction technologies are commonly described as including (amongst many others) advanced forms of:

- 3D printing.
- Materials.
- Building information modeling (BIM).
- Cladding systems.
- Computer aided design and computer aided manufacturing (CAD/CAM).
- Computer numerical control.
- Construction Innovation Hub.
- Construction plant.
- Modern methods of construction.
- Modular construction.
- Offsite manufacturing.
- Prefabrication and preassembly.
- Research and development.
- Site investigations and surveying.
- Substructure works.
- Water engineering Temporary works.
- Robotics.
- GPS controlled equipment.

14.1.4 Engineering Aspects Of Soil mechanics - Environmental Impact Assessment

➢ **ENVIRONMENTAL ASSESSMENT PROCESS**

The main objective of the Environmental Impact Assessment (EIA) is to evaluate the Project likely i mpacts on the environment as described in section 4 of this ESIA. One of the key objective softheESIA is to assist in ensuring environmentally and socially sound management of the Project during its entire lifecycle. The description of the existing conditions of the local environment provides a comprehensive data collection and analysis of the baseline conditions at the Project site. The baseline data permits the identification of the main socioenvironmental factors that might be asso ciated with the Project activities. The interaction between the Project activities and the environmenta l and social baseline conditions of the ecosystem at the Project site is at the core of the ESIA. The E SIA is designed to forecast the positive and negative effects that may occur to the receiving environ ment. The early identification of impacts that may occur in the area leads to a reduction of the risk of future adverse environmental effects, and permits the proposal of mitigation guidelines /measures to avoid, reduce or remediate significant adverse effects.

The objectives of the new Environment impact assessment are as follows

- .Develop knowledge of soil, water, air, and noise pollution, their sources, and why they are regulated
- Predict the transport and transformation of pollutants in and across the environment
- Recommend and apply environmental engineering practices to reduce the impact of a potential activity on the environment
- Apply the National Environmental Policy Act (NEPA) and the New York State Environmental Quality Review Act (SEQRA) to determine the extent of assessment required of a particular project based on the project actions and its location
- Apply the New York City Environmental Quality Review (CEQR) policy to qualitatively assess the impact of a potential engineering activity on the environment
- Develop a repertoire of local examples of impact assessments on real engineering projects
- Learn to professionally communicate technical findings and develop ability to work effectively in a group

Assessment

Course The EIA course has been conducted twice thus far, in Fall of 2004 and Fall of 2005. Although both short term and long term assessment tools are in place, this discussion does not address long term assessments of the new course since the data are not yet available. Instead the discussion focuses on data collected using the formal anonymous end of course survey administered by the school, and the grades earned by students in the course.

Environment impact:-

Soil impact: - Properties (e.g., soil classifications and properties, soils in NYC)

- Transport of soil (e.g., soil loss by erosion using Universal soil loss equation)
- Transport and transformation of pollutants (e.g., infiltration of water and water pollutants into unsaturated soil using Horton and across saturated soils using Darcy)
- Pollutant mitigation (e.g., erosion minimization, well extraction) –
- EIA description of land attributes (e.g., soil stability, resistance to natural hazards, landuse patterns) and example of soil EIA using Belleayre Resort project

Water impact: - Properties (e.g., hydrologic cycle, aquatic environment, NYC watershed) –

- Pollutants (e.g., pollutants, sources of water pollutants nationally and in NY, water quality of surface and ground waters and rate of Fishkill in NY) –
- Transport and transformation of pollutants (e.g., pollutants in surface water using mass balances and Streeter Phelps equation, and in ground water using soil methods)
- Pollutant mitigation (e.g., overview of treatment of drinking water and waste water)
- EIA description of water attributes (e.g., aquifer safe yield, flow variations, aquatic life, various chemical components, fecal coliform) and example of water EIA using Bellaire Resort project

Air impact: - Properties (e.g., meteorology, stability and terrain effects, NYC airshed) –

- Pollutants (e.g., criteria and hazardous air pollutants, sources of air pollutants nationally and in New York, violations of NAAQS and releases of HAPs in NY)
- Pollutant transport and transformation (e.g., pollutant concentrations predicted using steady and unsteady box models and Gaussian plume model)
- Pollutant mitigation (e.g., overview of industrial and mobile removal of gases or PM)
- EIA description of air attributes (e.g., diffusion factor, various chemical components) and example of air EIA using Belleayre Resort project

Sound impact: - Properties (e.g., power and power level, rating systems)

- Pollutants (e.g., noise in NYC)
- Pollutant transport and transformation (e.g., near field and far field attenuation)
- Pollutant mitigation (e.g., reduction of vibration, use of physical barriers)
- EIA description of sound attributes (e.g., physical and psychological effects, communication and performance effects) and example of sound EIA using Belleayre Resort project

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

order to develop sustainable wastewater treatment it is needed to view the wastewater treatment systems in a broad sense. In addition to cost and treatment performance energy aspects, recycling and social issues are important when evaluating sustainability of a wastewater treatment system and selecting an appropriate system for a given condition. This requires a multidisciplinary approach where engineers cooperate social scientists, economists, biologists, health officials and the public. Wastewater contains organic matter and the three main nutrients for plant production: nitrogen, phosphorus and potassium. Theoretically speaking, the nutrients in domestic wastewater and organic household waste are nearly sufficient to produce enough food for the world population. Nitrogen fertilizer is energy consuming to produce and phosphorus is a limited mineral resource. Recycling and energy aspects are thus important factors of sustainable system design. Scandinavia is pioneering sustainable solutions to wastewater treatment. Energy efficient moving bed are developed for tertiary treatment in traditional "end of pipe" wastewater collection and treatment systems. A variety of watersaving and urine diverting toilets can nearly halve water consumption. Toilet waste (blackwater) or urin can be collected separately. Co treatment of blackwater and organic household waste yield both energy and hygienic fertilizer and handles all organic waste from the household in one waste stream. Water from showers, sinks and kitchen (greywater) can be treated in a variety of systems. Treated greywater is suitable for irrigation, groundwater recharge or as a source of potable water production. Utilizing the latter more than 90% water saving is possible. Source separation (blackwater/greywater) systems produce near zero and open up for exiting urban applications. The Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace and justice.

➢ SUSTAINABILITY ANALYSIS OF WASTEWATER TREATMENT SYSTEMS

In earlier times and even to day, engineers and politicians nearly always use a simple /benefit analysis when choosing a wastewater system. This means that, for instance, only the discharge of organic matter (BOD) or phosphorus and the cost is looked upon. However, the quest for sustainability is necessary because we see many problems are coming like global warming, acidification, diminishing ozone layer, micro-organic pollutants and other toxic chemical matters, eutrophication, diminishing important resources like phosphorus, potassium and oil and other threats to mankind, flora and fauna. This shows that many indicators must be used when deciding what type of wastewater systems we should implement. And we should choose the wastewater system that contributes most to an overall sustainable future. The notion sustainability shoul

The notion sustainability should include ecology, economy and sociological aspects and the sustainability must also perform on three different stages:

1. Local, where hygienic and health aspects are of concern in time scales of hours or days.
2. Regional, where classic environmental problems operate in time scales of months or years.
3. Global, where sustainability matters in a time scale of decades or centuries.

To compare two wastewater alternatives the following indicators may be considered as relevant for a sustainability analysis

➢ Discharge of pollution to local recipients and major recipients. For instance:

Phosphorus, nitrogen and organic matter (BOD).

The amount of micro-organic pollutants and heavy metals in the sludg going to agriculture.

- Amount of phosphorus, potassium and nitrogen recirculated for plant production.
- Discharge of climate gases like methane and CO2.
- Use of electric energy and fossil energy.
- Use of products with hazardous components.
- Use of finite or critical resources.
- Costs as present value of investments, operation and maintenance.
- The use of area, influence on the landscape, aesthetic- and recreational values.
- The service levels like clogging of sewers and flooding of basements.

- Noise, smell, insects and other disturbances in the operation and construction period.
- Safety for children.

Indicators that are approximately the same for both alternatives may be eliminated.
The system borders for the analysis of the sustainability of a wastewater system are

➢ What is the Sewerage System:-

Sewerage is the infrastructure that conveys sewerage, surface runoff using Sewer. It encompasses components such as receiving drains, manholes, pumping stations, stored overflows and screening chambers of the combined sewer or sanitary sewer.

Sewerage enters the entry sewerage treatment plant or at the point of discharge into the environment. It is the system of pipes, Chambers, manholes etc. that convey the sewerage and stormwater.

➢ Types of Sewerage System

- Combined System
- Separate System
- Partially Separate System

➢ Combined Sewerage System

In a combined system, the same sewer is intended to carry both the domestic sewage, industrial wastes as well as the surface and the stormwater flow.

1 Situation for Adoption

1. Rainfall is even throughout the year.
2. Both the sanitary sewage and the stormwater have to be pumped.
3. The area to be severed is heavily built-up and space for laying pipes is not enough.
4. Effective or quicker flows have to be provided.
5. If the sewers are laid along with the overall development of the area,combined system is preferred.

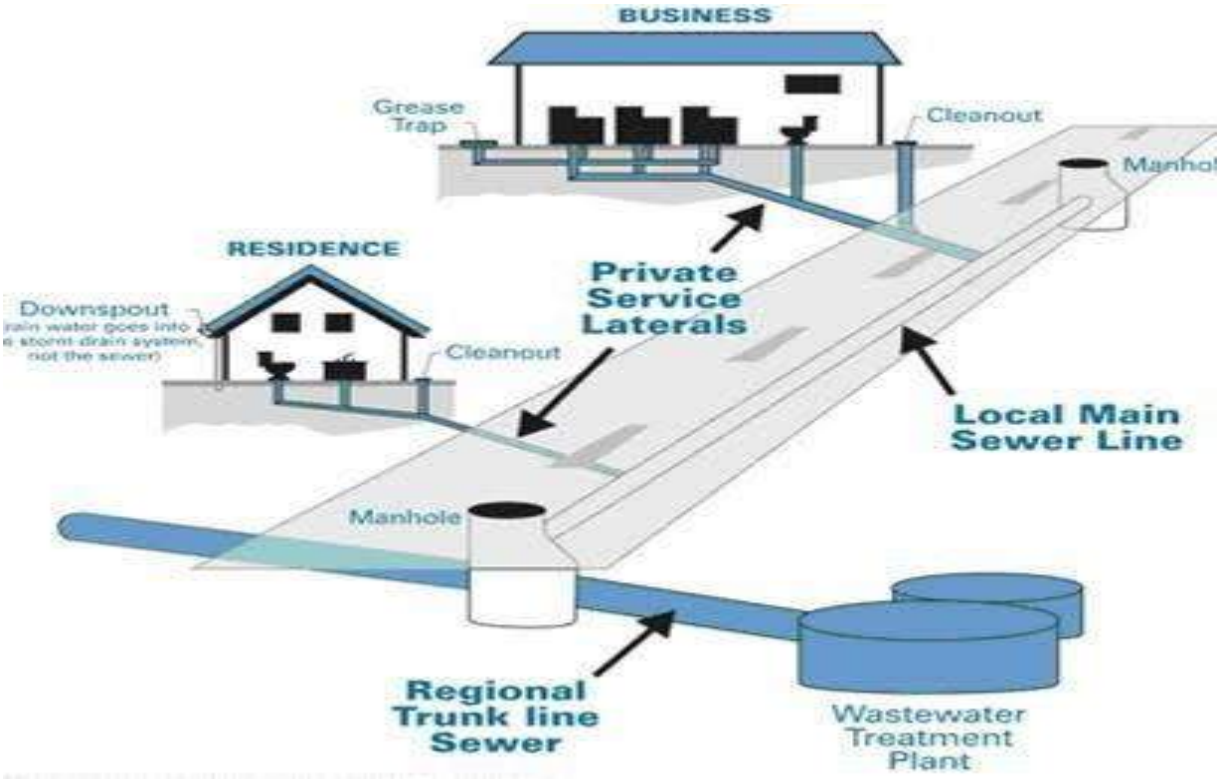


Figure:- 96 Dia of sanitary sewerage system

Advantages

1. Rainwater keeps sewage fresh making it easier and more economical for treatment purpose.
2 .Dilution also helps, this being in itself a method of treatment.
3. Automatic flushing is provided by water.
4 This is the simplest method of collection and house plumbing economies.

Disadvantages

1. The bigger size of the sewer would involve larger excavation.
2. Overflowing under worst conditions may endanger public health.
3. Cost of pumping and treatment would increase due to the large quantity of sewage to be handled.
4. The dry weather flow is a small amount of the total flow, the large size of the sewer would often result in causing silting up due to low velocity of flow during the dry period of the year.

2 Separate System

In a separate system, the domestic sewage and industrial wastes are carried in one set of sewers whereas the storm and surface water are carried in another set of the sewer.

Situation for Adoption

1 Where rainfall is uneven.
2 Sanitary sewage is to have one outlet and other outlets for store or surface water are available.
3 Sanitary sewage is to be pumped.
4 Separate sewer must be placed deeper and the stormwater drains nearer the surface to economies excavation.
5 If the ground has steep slopes, it is easier to convert stormwater through an open drain to the natural stream.
6 Finance available are small but sanitary drainage is imperative.
7 If the subsoil is hard, it is difficult and costlier to lay combined sewer of large size.
8 If the sewers are laid before the area is developed, it is preferable to adopt a separate system.

Advantages

1. Being smaller in size, the sewers are economical. The surface water may be taken in open or closed conduit or drains at or near the surface and discharged at suitable outlets, thus greatly simplifying the design of sewers of stormwater drains.
2. There is no risk of stream pollution as no storm overflows are to be provided.
3. The quantity of sewage to be treated is small, the disposal or the treatment works can be economically designed.
4. If the pumping of sewage at the treatment works is necessary, pumping cost would be much less as there is no need to pump the stormwater.

Disadvantages

1. Unless laid at a steep gradient, self-cleaning velocity in the sewer cannot be assured and flushing shall have to be done. This may prove unsatisfactory and expensive.

2. Risk of encroachment by unauthorized rainwater collection and consequent overflows of sewage may be there.

3 Double house plumbing is another disadvantage. Two sewers or drains in a street leading to greater obstruction of traffic which repairs to any one of them are being carried out.

4 . Maintenance costs of two systems are greater than that for one.

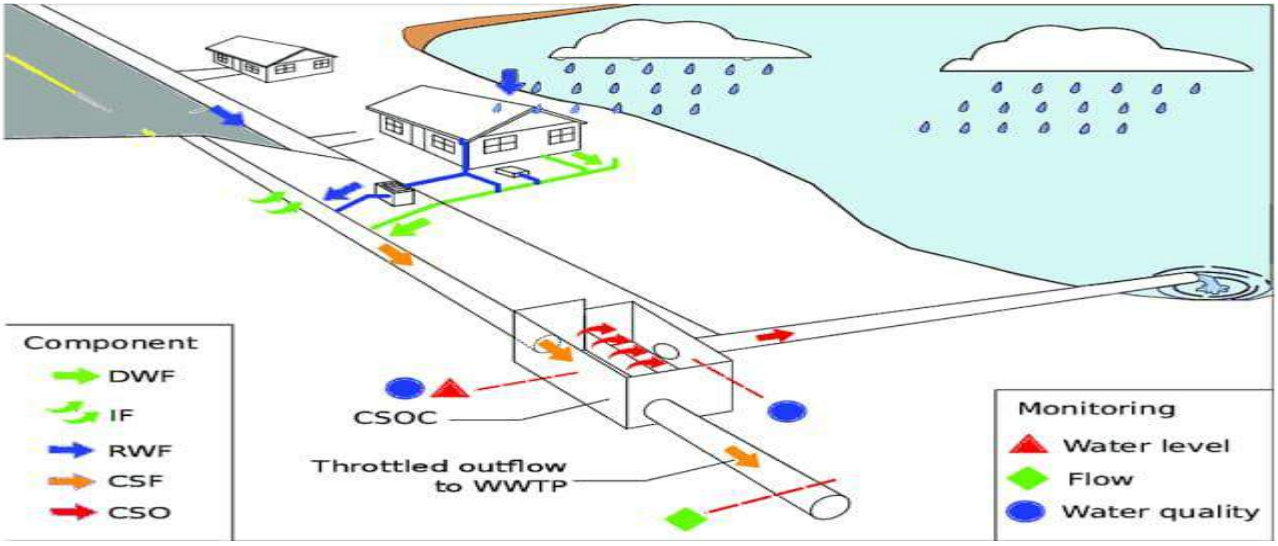


Figure:- 97 Separate sewer System

3 Partially Separate System

A partially separate system is a modification of the separate system in which the separate sewer discharging domestic sewage and industrial wastes also contain a portion of the surface drained from

back-paved yards and roofs of the house

Why we need partially separate system:-

It may raise that a combined system of sewerage has not been found quite suitable under tropical Indian conditions for reasons outlined below.

1. Concentrated and heavy rainfall during the monsoon period, which at most places last for only 3 to 4 months in a year. Thus, there is a considerable variation in the quantity of sewerage flow during the twelve months of the year.
2. Inadequate amounts of waste of waters reaching the sewers because of a vast tract of intervening unsewered areas or due to the other reasons so that the dry weather flow (DWF) is generally a tiny proportion of the total flow.
3. The low economy and limited funds available.
4. Difficulties in the operation and maintenance of the system due to inadequate supervision of less qualified staff. Local bodies in charge of the work usually do not pay much attention to keeping trained and skilled staff.
5. Because of the reasons described above, it has been found necessary in practice to have a compromise between the separate and combined system and to adopt as for as possible the partially combined or partially separate system of sewerage. The underground sewer system carries, only the sanitary or domestic sewerage into which may also be drained rainwater from the backyard and roofs of houses.
6. In contrast, the stormwater from the house front and the surface wash of streets and roads may separately discharge into a watercourse running near or to the same low lying area at some farther distance

Advantages

1. It simplifies the drainage of the houses.
2. It provides reasonable sizes of sewers and is economical.
3. The rainwater provides some safeguard against silting in the sewer.

Disadvantages

1. Low velocity during the dry period.
2. Storm overflows may be found necessary.

Chapter 15

15. Smart and/or Sustainable features of Chapter 8 & 13 designs, Impact on society. Period, Amount Expenditure and Benefit –

a) Immediately b) Within 1 year c) Long term (3-5 years) along with cost estimation.

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

Sr. No.	Design Name	Period	Amount Expenditure(Rs.)	Benfit
1.	Public Toilet	Immediately	3,40,000	• It will improve sanitation facility • It will be helpful to people who don't havetoilets in their home • It will promote cleanliness in village
2.	Public Park	Immediately	44,000	• Provide refreshment tothe village peoples. • Children use playground to improvetheir physical fitness
3.	Health Center	Within 1 year	2,87,858	• It will provide medicines to villagers • It will improve healthfacility. • Villagers will get all the primary treatmentin village.
4.	Community Hall	Withn 1year	59017	• It will help Gram Panchayat have continuous Power supply • It will reduce the energy Charges as it uses Renewable Source of Energy

5.	**Bus stand**	Immediatey	**24500**	• **One time Investment reduces the operatingcost.** • **No Energy Charges, asit will use renewable Energy Source.** • **Lighten up roads of village**
6.	**Bio gas plant**	Within 1 year	**54,215.61**	• **It will help to generateenergy from the pressure and motion of Moving vehicles with the help of Piezoelectric Sensors.** • **This energy generated can be used in multiple ways.**
7.	**Library**	Long Term (3-5 years)	**27,30,000**	• **The emphasis is to skillthe youths in such a way so that they get employment and also improve entrepreneurship.** • **Provides training, support and guidance tofarmers** • **To provide skills to women so that they become self-dependent** • **To aware villagers regarding new development schemesfor their betterment** • **To initiate start-ups invillage.**

8.	**Harritage Design**	Immediately	**2,83,682**	• **Provide refreshment tothe village peoples.**
				• **It will provide finance to farmers and students** • **It will provide banking** • **facilities to villagers**
9	**Co-Operative Bank**		**6,10,000**	• **There is no Co Oprative bank the village and it is uncomfortable for the villagers because they**
10.	**R.C.C Road**	Within 1 year	**19, 284,651**	**People have to travel in the city for any query related to the post office by this we are trying to give them thisfacility.**
11.	**Ground water recharge**	Within 1 year	**44000**	• **Using Renewable Energy** • **Easy pumping of water** • **Reduction in runningcost**
12.	**Green house farming**	Within 1 year	**27,727.7**	• **Using Renewable SolarEnergy** • **Cleaning system becomes automatic** • **Easy to use** • **less Pollution**

Chapter - 16. Suvey By Interrviewing With Talati And/Or Sarpanch

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

CHAPTER- 16

Sr.	Questions	Yes/ No	Remarks
1	What are the sources of income in village?	No	
2	What are the chances of employment in village?	yes	
3	What are the special technical facilities in village?	No	
4	Is any debt on village dwellers? ([illegible])	No	
5	Are village people getting agricultural help?	yes	
6	Is women health awareness Program organized in village?	No	
7	Are women having opportunity to work and income?	No	
8	Child girl education is appreciated in village?	yes	Health sub centre
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?	–	
11	Women help line number information is provided to village people?	–	[illegible]
12	Is water scarcity in village? How many days per year?	–	[illegible]
13	Is village under any debt?	–	[illegible]
14	Is any serious issue due to debt from bank or any person happened in village?	yes	
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	No	[illegible]
16	Is any death of patient occurred due to unavailability of medical facility in village?	yes	[illegible]
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.	–	
18	Is village improvement is observed in comparative scenario from past to present?	no	Infrastructure
19	Is any unavoidable difficulty village people are facing? Any natural calamity is there?	yes	physical great change
20	Life Living standard of girls and women is appreciated and uplifted in village?	yes	[illegible]
Nodal officer and students can add more questions. This is a sample. Having Minimum requirement.			

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

Chapter - 17.Irrigation / Agriculture Activites And Agro Industry

The various irrigation techniques used igriculren a

Ther are 7 types of irrigation techniques:-

1. Surface Irrigation
2. Localized Irrigation
3. Sprinkler Irrigation
4. Drip Irrigation
5. Centre Pivot Irrigation
6. Sub Irrigation
7. Manual Irrigation

Methods

- Traditional Methods
- Modern Methods

1. Sprinkler System
2. Drip System

What is Irrigation?

Irrigation is the process of applying water to the crops artificially to fulfil their water requirements. Nutrients may also be provided to the crops through irrigation. The various sources of water for irrigation are wells, ponds, lakes, canals, tube-wells and even dams. Irrigation offers moisture required for growth and development, germination and other related functions.

The frequency, rate, amount and time of irrigation are different for different crops and also vary according to the types of soil and seasons. For example, summer crops require a higher amount of water as compared to winter crops.

Let us have a look at different types of irrigation and the methods used for irrigation.

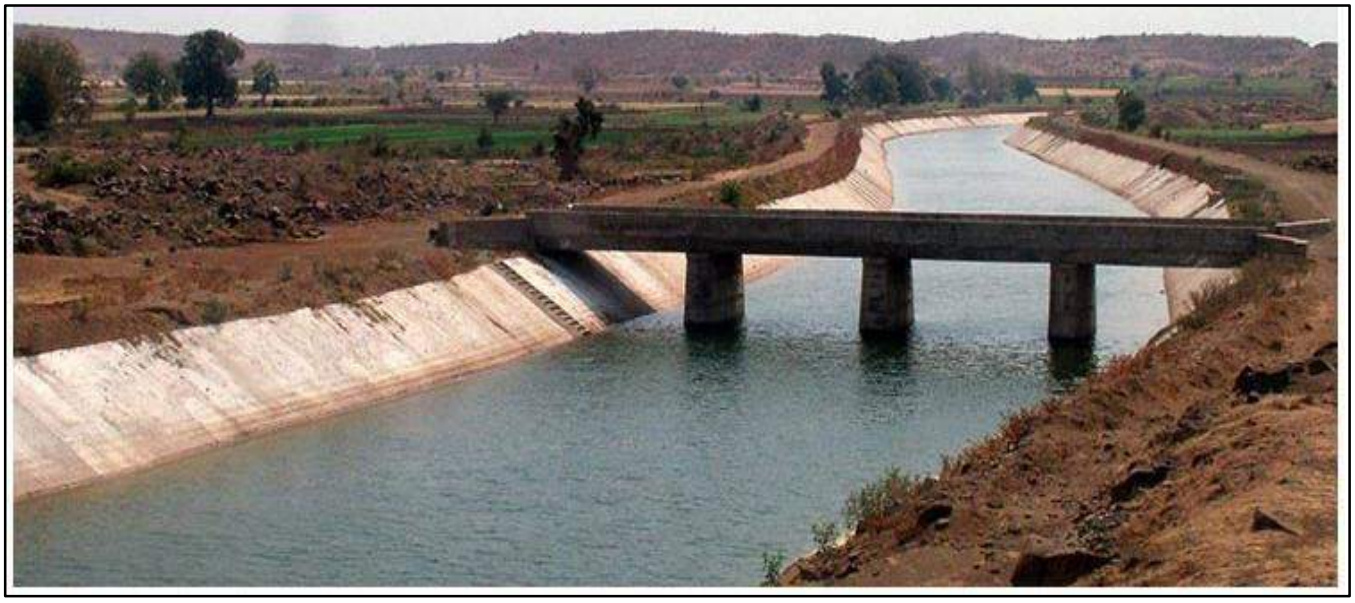


Figure:- 98 Modern Methods of irrigation

Types of Irrigatn :-

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

Surface Irrigation

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

Localized Irrigation

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

Sprinkler Irrigation

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

Drip Irrigation

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

Centre Pivot Irrigation

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

Sub Irrigation

Water is distributed through a system of pumping stations gates, ditches and canals by raising the water table.

Manual Irrigation

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

Methods of Irrigation

Irrigation can be carried out by two different methods:

- Traditional Methods
- Modern Methods

Traditional Methods of Irrigation

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

The main advantage of this method is that it is cheap. But its efficiency is poor because of the uneven distribution of water. Also, the chances of water loss are very high. Some examples of the traditional system are pulley system, lever system, chain pump. Among these, the pump system is the most common and used widely.

Modern Methods of Irrigation

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

The modern method involves two systems:

- Sprinkler system
- Drip system

Sprinkler System

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

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

Drip System

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

Importance of Irrigation

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

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

Irrigation should be optimum because even over-irrigation can spoil the crop production. Excess water leads to waterlogging, hinder germination, increased salt concentration and uprooting because roots can’t withstand standing water. Thus the proper method is to be used for the best cultivation.

The economic activities included in agriculture proper are:-

India is the world's largest producer of milk, pulses and jute, and ranks as the second largest producer of rice, wheat, sugarcane, groundnut, vegetables, fruit and cotton. It is also one of the leading producers of spices, fish, poultry, livestock and plantation crops.

(i) growing of field crops, fruits, nuts, seeds and vegetables,

(ii) management of tea, coffee and rubber plantations,

(iii) agricultural and horticultural services on a fee or on contract basis such as harvesting, baling and thrashing, preparation of tobacco .

Types of Agriculture farming:-

Short scale farming and large scale farming are the two types of Agriculture based on the availability of land cycle that maintains stable water availability

Cropping pattern means there are different ways of growing crops. These different ways can be used to give maximum benefit.

Cropping season

India has three cropping season :

1.Kharif

2. Zaid

3. Rabi

Categories of Crops in India

1.Food

2. Commercial Crops

3. Plantation Crops

4. Horticulture

Figure:- 99 Cropping Process

The prevailing agricultural system, variously called “conventional farming,” “modern agriculture,” or “industrial farming,” has delivered tremendous gains in productivity and efficiency. Food production worldwide has risen in the past 50 years; the World Bank estimates that between 70 percent and 90 percent

of the recent increases in food production are the result of conventional agriculture rather than greater acreage under cultivation. U.S. consumers have come to expect abundant and inexpensive food.

Conventional agriculture is dependent on large investments in mechanized equipment powered mostly by fossil fuels. This has made agriculture efficient, but has had an impact on the environment. Cotton Harvest by Kimberly Vardeman is licensed under CC BY 4.0.

Conventional farming systems vary from farm to farm and from country to country. However, they share many characteristics such as rapid technological innovation, large capital investments in equipment and technology, large-scale farms, single crops (**monocultures**); uniform high-yield hybrid crops, dependency on agribusiness, mechanization of farm work, and extensive use of pesticides, fertilizers, and herbicides. In the case of livestock, most production comes from systems where animals are highly concentrated and confined. Both positive and negative consequences have come with the bounty associated with industrial farming. Some concerns about conventional agriculture are presented below.

Ecological Concerns :- Agriculture profoundly affects many ecological systems. Negative effects of current practices include the following:Decline in soil productivity can be due to wind and water erosion of exposed topsoil, soil compaction, loss of soil organic matter, water holding capacity, and biological activity; and **salinization** (increased salinity) of soils in highly-irrigated farming areas. Converting land to desert (**desertification)** can be caused by overgrazing of livestock and is a growing problem, especially in parts of Africa.

Agricultural practices have been found to contribute to non-point source water pollutants that include salts, fertilizers (nitrates and phosphorus, especially), pesticides, and herbicides. Pesticides from every chemical class have been detected in groundwater and are commonly found in groundwater beneath agricultural areas. They are also widespread in the nation's surface waters. Eutrophication and "dead zones" due to nutrient runoff affect many rivers, lakes, and oceans. Reduced water quality impacts agricultural production, drinking water supplies, and fishery production. Water scarcity (discussed in the previous chapter) in many places is due to overuse of surface and ground water for irrigation with little concern for the natural cycle that maintains stable water availability.

Other environmental ills include over 400 insects and mite pests and more than 70 fungal pathogens that have become resistant to one or more pesticides. Pesticides have also placed stresses on pollinators and other beneficial insect species. This, along with habitat loss due to converting wildlands into agricultural fields, has affected entire ecosystems (such as the practice of converting tropical rainforests into grasslands for raising cattle).

Agriculture's link to global climate change is just beginning to be appreciated. Destruction of tropical forests and other native vegetation for agricultural production has a role in elevated levels of carbon dioxide and other greenhouse gases. Recent studies have found that soils may be large reservoirs of carbon.

Impacts on Human Health :- Many potential health hazards are tied to farming practices. The general public may be affected by the sub-therapeutic use of antibiotics in animal production and the contamination of food and water by pesticides and nitrates. These are areas of active research to determine the levels of risk. The health of farm workers is also of concern, as their risk of exposure is much higher.Smart Farming has become the main trend in agriculture sector. Industrial investment are increasing from day to day achieve interation of the solution in their smart farming products to cut down the overall cost, increase quality and quantity of the harvesting. Advancements in communication technologies such as GSM and GPRS have enabled controlling of irrigation systems. But a precision agriculture needs continuous monitoring of all climatic conditions.

Table 13 type of crops and major crops

SI No.	Types of Crops	Meaning	Major Crops
1.	**Food grains**	**Crop that are us for Human consumption**	**Rice, wheat,maize, plis and oil sides.**
2.	**Commercial crops**	**Crop wich are grow for sale aither in row and semi proceced from**	**Cotton, jute,sugarcane, Tabacoo and oile seeds**
3.	**Plantatin crops**	**Crop wich are grow for planation covering large estates**	**Tea, coffee, coconut and Rabber**
4.	**Horiculture**	**Section of agriculture in which fruits and vegetable are grow**	**Fruites and vegetables**

Chapter - 18. Social Activities – Any Activates Planned By Students

First – Turning waste into energy

One of the biggest innovations coming to the waste management industry is the ability to turn waste into actual power. Instead of sitting in a landfill, certain types of waste can simply be converted into energy. New machinery known as “digesters” can take the waste and the biogas it produces and turn it into energy that can be used on site. This kind of technology can be used on avariety of waste, including food, animal waste, agricultural leftovers, and more.

Thermal conversion is another new technology that can be used to convert waste into specialty products. This process takes some cues from natural geothermal processes that use heat and pressure to turn useless materials into useful products. It could be used to turn waste into chemicals,fertilizes, oils, and other things that could give your waste another life. Some landfill gas can evenbe converted into energy. This kind of gas would normally be released or flared, but now it can beturned into energy with the aid of some new technology. Bioreactors, microturbine technology, and even fuel cells can now be used to do something useful with waste.

Second – Indore method of compositing

Composting is any system of mixing and decaying natural wastes (manure, garbage, etc.) in a pileor pit, so as to obtain a product resembling what the forest makes on its floor. Compost is very richin humus. Humus is the final state of decomposing organic matter. It is humus which feeds the soilmicrobes and improves the texture of the soil. It makes the soil easier to work, have better aerationand absorb and holds more water. Nutrients are held best by a soil with good sponge structure. Compost provides nutrients for plant growth and the humic acid in compost helps release locked up nutrients.

The Indore compost pile is built 5 to 10 feet wide, 5 feet high and any length. Wooden stakes 3 or4 inches in diameter and 6 feet tall, are set two feet apart along the Centre of the pile. These will serve to

allow air into the pile. The materials which can be used in this method are plant, animal, and garden wastes, kitchen waste, dustpan waste, wood ashes, weed cleanings from roadside ditches, bagasse, saw dust, and any other kind of organic materials that can be found in large enough quantities.

The first layer is of straw or brush about 12 inches thick. This provides a base for the pile. Then the heap is built in layers; first a 6-inch layer of green matter such as weeds, crop wastes, kitchenwaste, then a layer of animal manure, less if poultry manure is used, followed by a thin layer of soil. These layers are repeated until the pile is 5 feet high. Each layer is watered so as to resemblea squeezed-out sponge. A pile is turned after six weeks, and again after 12 weeks to allow air to penetrate all parts of the pile. The compost should be ready to use in 3 months.

Third – Dry Composite Toilet

These dry compose toilet contains two special pans in which human excreta is separated from urineand wash water and it is stored in chamber provided below toilet. There are two pans and two chambers provided in toilet so when one chamber completely fills than toilet can be used with thehelp of another toilet chamber.

After complete filling the one chamber ash and soil and saw dust. And after 5 to 6 months it will turn in to organic fertilizer. And if we want to use these toilets as public toilet than as shown in following fig. a plastic bag (container) is used in chamber for storing of excrete. After filled of container, it will be replaced with another container and we can continually use the toilet.

Fourth – Sewage and sanitation

- 100 % household should have access to toilets
- 100 % schools should have separate toilets for girls
- 100 % households should be connected to the water network
- 100 % efficiency in the collection and treatment of the waste water
- 100 % efficiency in the collection of sewerage network.

Fifth - Smart Data Centre

Smart Data Centre Facilities solution provides a modern foundation for distributed cloud application for individual and corporations. As more computing power is used, data centers must:

- Easily scale up or scale out to meet the growing demand for cloud computing, virtualization,and other advanced technologies.
- Incorporate intelligent pug-and play micro modulus that address the requirements of branchand headquarters data centers.
- Be based on digital, intelligent network technologies.

Sixth - Adoption of latest technology from glob

- After considering all the above parameters, a final step for village development is get in touchwith latest technology.
- If we talk about water, Punsari village installed a R.O. cooling plant to provide safe drinking water to villagers. With little charge like 4/- Rs. And 15/- Rs. Villagers can get water as per their requirement.
- Hence villagers don't require to purchase their own R.O. plant and these can save the cost.
- We should also know the solar technology. Solar light, solar cooker, solar water heater these all are sustainable way of development.
- Now a day central and state government providing subsidy on installing such systems. So, weshould need to aware of this.
- **Household Toilet**: Making a toilet in all houses of thevillage under government schemes to make village clean.
- **Solid Waste Management**
- We are observing that in our village a big problem is solid waste so by providing

a solid waste management with fixed dustbins in villageand also giving a dustbin collection management systemto make village clean.

- Ban on plastic bag, use paper bags.
- Avoiding of chewing of tobacco, gutka etc.
- Giving a proper education of cleaning village to the villagers.
- Motivate villagers to make clean village and improve the habit of use of dustbin in stand of throwing waste onground.
- Providing sweepers & Cleaners for cleaning of village.

Household Toilet:

Making a toilet in all houses of thevillage under government schemes to make village clean.

Solid Waste Management:

We are observing that in our village a big problem is solid waste so by providinga solid waste management with fixed dustbins in villageand also giving a dustbin collection management systemto make village clean.

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- Motivate villagers to make clean village and improve the habit of use of dustbin in stand of throwing waste onground.

Chapter - 19. ALLOCATED VILLAGE SAGY Questionnaire

Survey form with the Sarpanch Signature

2

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Nardipur Gram Panchayat: Nardipur Ward No. —

Block: — District: Gandhinagar Panchayat

State: Gujarat L S Constituency:

1. Family Identity and Size

Name of Head of Household	Patel Hitubhai							Male/ Female	M
SECC Survey ID:		Family Size	5	Over 18	4	6 to 18	0	Under 6	1

2. Category & Entitlement Details (Tick as appropriate)

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

2. Adults (above 18 years)

Name	Age	Sex M/F/O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/ N)	Bank A/C (Y/N)	Social Security Pension[5]
Rajubhai Thakor	56	M	N	Yes	8th	Y	N	N
Vikrambhai Thakor	32	M	N	Yes	SSC	Y	Y	N
Hemaben Thakor	50	F	N	Yes	5th	Y	N	N
Mayaben Thakor	30	F	N	Yes	HSC	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

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
Mayaben Thakor	5	F	N	Y	N	Y	Y	25

[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)

3

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	Y	Y
Children	N	N

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~~	300 M
Community Water Tap	Yes / ~~No~~	200 M
Hand Pump (Public / Private)	Yes / ~~No~~	200 M
Open Well(Public / Private)	Yes / ~~No~~	100 M
Other (mention):		

11. Source of Lighting and Power

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

12. Landholding (Acres)

1. Total	13 Acre	2. Cultivable Area	7 Acre
3. Irrigated Area	6 Acre	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
Veepas	100 Hbol	100
Bajri	20 Hbol	70
Selheti	Hbol	110

17. Livestock Numbers

Cows: 2	Bullocks: 1	Calves: —
Female Buffalo: 1	Male Buffalo: 1	Buffalo Calves: —
Goats/ Sheep: —	Poultry/ Ducks: —	Pigs: —
Any other: Type —		No. —
Shelter for Livestock: Pucca / Kutcha / ~~None~~		
Average Daily Production of Milk(Litres): 100		

18. What games do Children Play

Outdoor games

19. Do children play musical instrument (mention)

No

Schedule Filled By:
Principal Respondent:
Date of Survey:

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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: Nardipur

b. Block: –

c. District: Gandhinagar

d. State: Gujarat

e. Lok Sabha Constituency: _____

f. Number of Wards in the Gram Panchayat: _____

g. Number of Villages in the Gram Panchayat: _____

h. Names of Villages:

Demographic Information

Number of Households 590 Total Population 2400 Male 1150 Female 1530 (2020)

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

I. Access to Infrastructure / Facilities / Services

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
a.	ANM/ Health Sub Centre	Y	
b.	Nearest Primary Health Centre (PHC)	N	
c.	Nearest Community Health Centre (CHC)	N	
d.	Nearest Post Office	N	
e.	Nearest Bank Branch (Any)	Y	
f.	Nearest Bank with CBS Facility	N	
g.	Nearest ATM	N	
h.	Nearest Primary School	N	
i.	Nearest Middle School	N	
j.	Nearest Secondary School	N	Haedgaon - 2KM.
k.	Nearest Higher Secondary School / +2 College	N	Kalol - 4km
l.	Nearest Graduate College	N	Kalol - 4km
m	Nearest ITI / Polytechnic Centre	N	
n	Kisan Seva Kendra	N	Ancient

1

5

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	~~15 KM~~ N
p	Nearest Agro Service Centre	Yes	10 km
p	MSP based Government Procurement Centre	No	15 km
q	Milk Cooperative /Collection Centre	Yes	5 km
r	Veterinary Care Centre	Yes	15 km
s	Ayurveda Centre	–	–
t	E – Seva Kendra	Yes	5 km
u	Bus Stop	Yes	3 km
v	Railway Station	Yes	30 km
w	Library	Yes	7 km
x	Common Service Centre	–	15 km

IV. Sports Facilities in the Gram Panchayat

a. Number of Play Grounds in the GP: Total 1 Public Yes Private –

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 1

b. Number of villages without Angan Wadi Centres –

Names of such villages: Nardipur

c. Schools (Number)

Primary Private: – Primary Govt.: Yes

Middle Private: – Middle Govt.: –

Secondary Private: Yes Secondary Govt.: No

Higher Secondary Private: – Higher Secondary Govt: –

VI. Public Distribution System

	Item	Private Contractor	Women's SHG	Gram Panchayat	Cooperative	Other (Mention)	Location in GP (mention Location)	If outside GP, Location & distance from GP HQrs)
a.	Cereal (Rice/ Wheat/ Millets)	–	–	✓	–	–	Nardipur	(2KM)
b.	Kerosene	–	–	✓	–	–	Nardipur	(2KM)
c.	Other (mention)	–	–	✓	–	–	Nardipur	(2KM)

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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 ✓ good Not Covered ____	Jcs hepcer	—
b.	Hand Pump Coverage in Villages:	Covered ✓ ____ Not Covered ____	10 nos.	—
c.	Coverage under Covered Drains:	Covered ✓ ____ Not Covered ____	45 %. Crowilcase	—
d.	Coverage under Open Drains:	Covered ✓ 25 %. Not Covered ____	23 %. Covered	—
e.	Villages with Household Electricity Connection (Numbers)	Connected 402 Not Connected	2102 connected.	120 not Concreted.

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	Lsoheed	d.	Pasture / Grazing Land	—	g.	Check Dam	—
b.	Irrigated Land		e.	Forests/ Plantations	—	h.	Wells/Bore Wells	6
c.	Un-irrigated Land		f.	Other Common Land	—	i	Tanks /Ponds	1

1 Jaloving

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

3

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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)	10-1.
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	90-1.
e)	Number of eligible HHs having ration cards	
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	
h)	Number of active Job Card holders under MGNREGA	
i)	Number of Job Card holders who completed 100 days of work during 2013-14	
j)	Number of shops selling alcohol	
k)	Number of BPL families	10-1.
l)	Number of landless households	40-1.
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	5-10-1.
q)	Number of Households headed by physically handicapped persons	
r)	Total number of Persons with Disability in the village	
s)	Number of SHGs	5-1.
t)	Number of active SHGs	
u)	Number of SHG Federations	
v)	Number of Youth Clubs	
w)	Number of Bharat Nirman Volunteers	

Name and Signature of Surveyor and Respondent'

Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey

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

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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: Nardipur
b. Ward Number: –
c. Gram Panchayat: Nardipur Panchayat
d. Block: –
e. District: Gandhinagar
f. State: Gujarat
g. Lok Sabha Constituency: ______
h. Number of Habitations / Hamlets in the Gram Panchayat: ______

i. Names of Habitations / Hamlets:

Demographic Information

Number of Households 590 | Total Population 2800 | Male 1450 | Female 1350 (2010)

SC HHs______ ST HHs______ OBC HHs______ Other HHs______

II. Access to Infrastructure/Amenities etc.

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
a.	Nearest Primary School	Y	
b.	Nearest Middle School	N	
c.	Nearest Secondary School	N	
d.	Kisan Seva Kendra	N	
e.	Milk Cooperative /Collection Centre	Y	
g.	Health Sub Centre	N	Hadgud – 6m
h.	Bank	N	Alenti - 2km
i.	ATM	N	Neeri
j.	Bus Stop	N	
k.	Railway Station	N	Anand

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

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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	N	
m	Common Service Centre	N	
n	Veterinary Care Centre	N	

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: Am

iii. Drinking Water Facilities

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

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

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

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

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

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

v. Coverage of Habitations under Electrification

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

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

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

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

vi. Sports Facilities in the Village

a.Number of Play Grounds in the Village (minimum size 200 square meters): None

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 2

c. Schools (Number)

Primary Private: ____ Primary Govt.: 1

Middle Private: ____ Middle Govt.: ____

Secondary Private: ____ Secondary Govt.: ____

Higher Secondary Private: ____ Higher Secondary Govt: ____

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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	1 Scheed.	d.	Pasture / Grazing Land	–	g.	Check Dam	–
b.	Irrigated Land		e.	Forests/ Plnatations	–	h.	Wells/Bore Wells	6
c.	Un-irrigated Land		f.	Other Common Land	–	I	Tanks /Ponds	1

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	-
2	Number of active Job Card holders who have completed 100 days of work	–
3	Number of shops selling alcohol	–
4	Number of BPL families	9 20%
5	Number of landless households	30-50%
6	Number of IAY beneficiaries	-
7	Number of FRA beneficiaries	-
8	Number of common sanitation complexes	-
9	Number of SHGs	-
10	Number of active SHGs	-
11	Existence of SHG Federation in the Village (Yes / No)	-
12	Number of Youth Clubs	-
13	Number of Bharat Nirman Volunteers	-

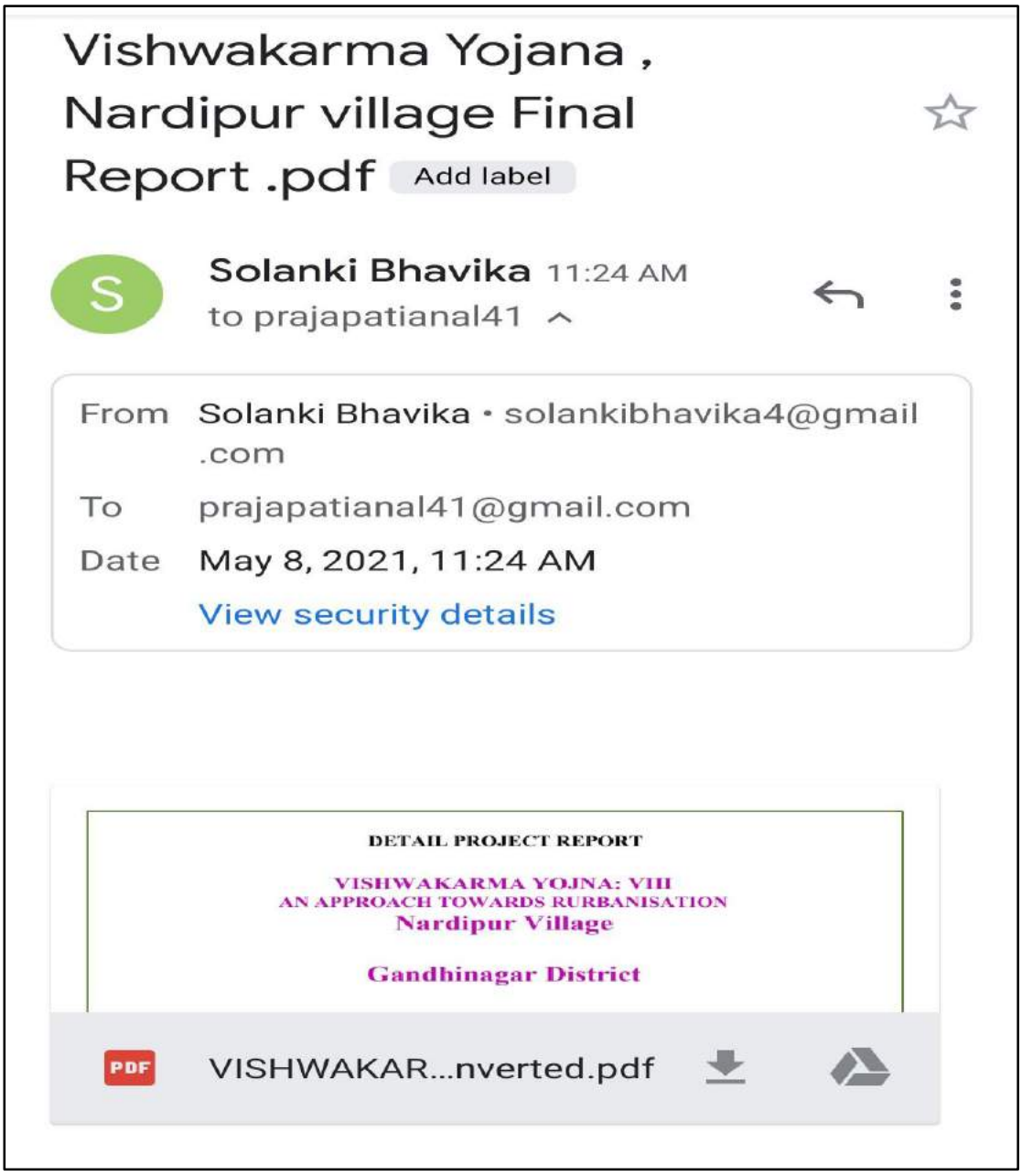
Name and Signature of Surveyor and Respondent'

Surveyor	PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey

સરપંચશ્રી
નારદીપુર ગ્રામ પંચાયત
તા.કલોલ,જી.ગાંધીનગર

3

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



Chapter 21 – Comprehensive report for the entire village

VISHWAKARMA YOJANA PROJECT is a very good initiative by GTU to find out and develop the backward villages in Gujarat, with the help of young talents. Through this project we aim at the study and development of POR VILLAGE located in Gandhinagar District. Nardipur is located around 14.9 kilometer away from its district head quarter Gandhinagar.Khodiyar railway station is the nearest railway station which is 6.6km away and Sardar Vallabhbhai Patel International Airport is the nearest air port located 10.5 km As per 2011 Census 68.84% of India's population lives in villages. The backwardness of the rural areas would be a major cause to the overall progress of Indian economy. Major part of rural population depends on farming for their livelihood. Due to the unawareness about modern farming technologies and changing climate adversely affects the economical development of rural occupants away from the village. Literacy rate in Nardipur town area is 73%. 3707 out of total 5069 population is educated here. Among males the literacy rate is81% whereas female literacy rate is 63%. The number of occupied persons of Nardipur village area is 1874 however 3195 are un-employed. And out of 1874 occupied individual 146 individuals are completely dependent on cultivation.

Objectives:-

To study the existing growth, characteristics and development of villages.To study the existing infrastructure facilities and its management issues phasing by villages.To study strategic planning development of villages. Proposal in the form of Physical, Social and Renewable infrastructure facilities.To provide modern technologies of agriculture facilities for growing crops and take production off arm.To provide Bank and ATM facilities for easier and faster transaction

Scope Of The Study:-

To study the future growth and future scenario ofvillage.The study will focus the development trend intensity of growth of the village find out the problems related to the physical development of the area and infrastructure services ofthe village.The information of the village is collected based on different categories like, Education, water facilities, drainage facilities, transportation facilities, primary health center, bank facilities, public toilets, community hall and otheramenities.Based on these studies the requirement can be known and the further plan based on this requirement can be visualize for compacted development of the village To study how to improve facilityof ruralarea.

Location of Village

Nardipur is a Village in Kalol Taluka in Gandhinagar District of Gujarat State, India. It is located 18 KM towards North from District head quarters Gandhinagar. 13 KM from . 17 KM from State capital Gandhinagar Nardipur Pin code is 382735 and postal head office is Nardipur .

Condition of Village

In Nardipur village same Infrastructure Available like a Primary health center, Gram panchayt, Water Tank, Aanganwadi, Primary School for Boys, Primary School for Girls, Post office, Bus stand, there are three number of tube wells is provided invillage.Two bore well's , four water tank, Overhead tank with Capacity of 50,000 liters, uder ground sump with capacity 1,00,000 litters.For irrigation farmers use water from there are seven to eight number of hand pump exist in village.Generally villagers use water for irrigation from tube wells. One pond is exist in village. For education only one primary school is exist in village and school is not in good condition need maintenance from leakage in rainyseason.There is no availability of secondary ,higher school, collegesetc.One dudh mandali (small dairy) is available in village. Gram panchayat is available in village with goodcondition.There is no availability of community hall, Library, public garden. Post office, market, Bank and ATM facilities, Internet cafesetc.

Figure 100 Condition of village

As per census of India total population of Nardipur village in 2011 total population of Nardipur Village is 7757 out of this male population is 3985 and female population is 3772. Total no of Households in 2011 are 1643. Literacy rate in Nardipur village is 2001 out of total 5114population is Literate here. In males the literacy rate is 2557 males out of total 1536 are literate while female Literacy rate is 871 out of total 985 females are educated in NardipurVillage. The house condition in the village is very nice among this there is 60% Pucca house and 40% Kutchha house Nardipur is large village of kalol In Nardipur village there is private clinics and sub center for any other facility the peoples have totravel nearby area like Dhamasna. In Nardipur village there is 2 nos. of the primary school and 2 nos. of Aanganwadi and higher secondary school is also in the village. There is no library

in the village but the design proposal is given by the development the library in the village

Geographical Detail

Sr. No.	Description	Information/ Detail
1	Area of village (Approx.).	446 hectors.
2	Forest area.	0 hector.
3	Agricultural area.	100 hectors.
4	Residential area.	100 hectors.
5	Distance to the nearest railway station.	In Village
6	Name of the nearest town.	Dhamasna
7	Distance to the nearest bus station.	In Village

Economic profile

- The major population of Nardipur village is engaged with agricultural activities and other some people is doing business and services.
- The main crops are grown in Nardipur villageis:
- Wheat, bajra/ pearlmillet and costar and agriculture commodities grow in thisvillage.

Socialscenario

Particulars	Total	Male	Female
Total No. of Houses	1643	-	-
Population	7757	3985	3772
Child (0-6)	843	459	384
Schedule Caste	263	134	129
Schedule Tribe	24	0	14
Literacy	80.25 %	90.78 %	73.88 %
Total Workers	2901	2183	718
Main Worker	2559	-	-
Marginal Worker	342	94	248

Occupational Detail:-

- In Nardipur village most of the peoples are connected with farming and laborworks.

Services Cluster:-

- Some small-scale industries are available invillag

Agricultural Details:-

- In Nardipur village 346 hector agricultural land is available for farming and bore well and piped water is used for irrigationpurpose.
- Nardipur village people mostly depends on agriculture product like Cotton, Ground nut, Sugar can, Wheat, Vegetables,etc.

Manufacturing HUB:-

- There is no any warehouse or manufacturing hub in Nardipurvillage.

Tourism Cluster:-

- There is no any tourism cluster in Nardipurvillage.

List the items from smart cities with the village concept as per Survey and visit, modern technology with innovation can be used in Nardipur village :

First-Smart energy

- "Lighting is ubiquitous—it's everywhere that people work, travel, shop, dine, and relax. Digital communications and energy-efficient LED lighting are revolutionizing urban lighting infrastructures already in place, transforming them into information pathways with the capacity to collect and share data and offer new insights that enable, and really drive, the smart city," said Susanne Seating, PhD., Philips Lighting, professional systems.

Second- Smart Care

- The Smart Care electronic health record system (EHR) has been developed and deployed by the Zambia Ministry of Health (MoH) in collaboration with the Centres for Disease Control and Prevention (CDC) and many other implementing partners. A fully integrated electronic health record system to provide continuity of 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. Giving caretakers access to patient information will help doctors collaborate in new ways to give the best patient care possible.

Third- infrastructure :Smart

- A smart system uses a feedback loop of data, which provides evidence for Informed decision-making. The system can monitor, measure, analyze, communicate and act, based on information captured from sensors. Different levels of smart systems exist.
  A system may:
- Collect usage and performance data to help future designers to produce the next, more efficientversion.
- Collect data, process them and present information to help a human operator to take decisions

  (for example, traffic systems that detect congestion and inform drivers).

Fourth- Health care facilities :

- Availability of telemedicine facilities to 100% residents.
- 30 minutes‘ emergency response time.
- 1 dispensary for every15,000residents
- Nursing home, child, welfare and maternity.
- Center - 25 to 30 beds per lakh population.

Fifth- Smart Public Services :

- Smart technologies are making their mark in the public service. One of the main roles of governments involves enhancing provision of smart public services that meets the increasing citizens' expectation. The public sector is essential in society.
- By connecting village residents and authorities using innovative communication technology, villages can become safer, cleaner and the general village standard will improve. If residents have the possibility to report trash or infrastructural problems.

List of important survey for comfortable & enhancement of the village :

First- The Main road of the village is not properly design. So firstly provide proper R.C.C. road village.

Second- A higher education. for students don_t have to go far for

Third- Steps towards enforcement of ―SWACHHTA OF VILLAGE ―which is one initiative towards ―SWACHHBHARATABHIYAN‖.

Forth- Provides clear water facilities of villagers and educates them to use water after filter or boil.

Five- Help them to understand about technologies and then understand new farming technologies.

Design Proposals:-

In the Vishwakarma Yojana Phase-VII we amid to provide some facility is require in Nardipur village like Health Center, Public Toilet ,Bus Stand, Community Hall, Library, Public Park, Bank, Road design, Samaj seva Kendra, Bio gas Plant, West water treatment, Vertical shaft all destine attached in report All Desgine included Plan, Elevation, Section

Conclusion

The conclusion operates a return on the objective of this work, which was to provide elements of understanding on the dynamics of rural and peri-urban territories, combining regional science and works more explicitly dedicated to rural development and the policy relating thereto. The need to take fully into account the territorial dimension—i.e. a fine knowledge of identity, governance, organizational aspects and local resources, etc.—is emphasized as a central element for understanding the diversity of trajectories and patterns of rural and peri-urban areas, and implement appropriate public policies. But think future patterns of development rural areas also means paying attention to adaptation and resilience processes, energy transition and climate change issues, and new initiatives—often marked by technology and collaborative dimensions—that bloom everywhere on the planet. The development and implementation of experimental, interdisciplinary and participatory research devices is in this context a crucial need.