DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
VASAN VILLAGE
GANDHINAGAR DISTRICT

PREPARED BY

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YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad – 382424 Gujarat

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ON

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CERTIFICATE

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

Detail Project Report for ,

VILLAGE_____VASAN_____

DISTRICT _____GANDHINAGAR_____

Under

Vishwakarma Yojana: Phase-VIII

in partial fulfillment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

during the academic year 2020-21.

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

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College Stamp:	

ABSTRACT

Vishwakarma Yojana is one of the approaches to reduce urban city Pressure and lower the migration rate by developing village with a “rural soul” but with all urban amenities that a city may have. With the help of Vishwakarma Yojna we can reduce migration from rural to urban areas due to lack of basic services and sufficient economic activities in rural areas. This can be achived by considering various aspects such as physical, social, and renewable infrastructural facilities. The environment in village through a judicious and economic consumption of resources is the thought for betterment of the village. . Rurbanization means urban facilities and amenities in rural area, developingvillage with help of rural soul and urban amenities. In this village on one hand some essentialinfrastructural facilities like Water Supply, Road Network and electricity, primary school, secondaryand higher secondary school etc. have been good and sufficient on the other hand lacking ofinfrastructural facilities like drainage, public toilet, and public garden. Under this scheme the villagesof Rurban areas will be adopted by various engineering colleges under the Gujarat technologicalUniversity. The engineering colleges would study the identified villages and make recommendationsto achieve integrated and comprehensive development through technology application and projectpreparation and management.

Vasan is a Village in Gandhinagar Taluka in Gandhinagar District of Gujarat State, India. It is located 12 KM away from Gandhinagar, which is both district & sub- district headquarter of Vasan village. Pin code of the Vasan village is 382650. Near by village of vasan are Rupal, Unava, Balva, Randheja etc.

Most of the basic facilities are available in the vasan village like overhead water tank, bank , post office, community Hall etc...About your proposed designs your view for village development: Most of the Villages are having basic facilities but due to lack of proper development people attract towards urban areas so village should develop with all facilities and recreational areas. Under this scheme the villages of Rurban areas will be adopted by various engineering colleges under the Gujarat technological University. The engineering colleges would study the identified villages and make recommendations to achieve integrated and comprehensive development through technology application and project preparation and management.

The developmental work in villages that could undertake as per the need of the village in particular includes Physical, Social, socio-economical, sociocultural, sustainable and Renewable infrastructure Facilities. On the basis of survey data we have observed that there are some physical infrastructures like water tank, dairy, primary school, etc. but among them some are not in usable condition which creates problems for villagers. The work of Sarpanch and Talati is good as per the feedback given by villagers. Clinic facility is also not available. Construction of roads are in better condition and usable. More such problems are identified and are to be designed and renovated in the project phases. In part 2 we will also work in the direction of the aesthetic appearance of the village for development of the tourism in the village.

Keywords: Infrastructure development, sustainable development, Social infrastructure, Road connectivity

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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

.

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

.

An act of gratitude is expressed to our internal guide / Evaluator / Nodal Officer,
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Above all we would like to thank our Parents, family members and Friends for their encouragement and support rendered in completion of the present this work

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
Vy	Vishwakarma yojana
PHC	Primary Health Center
CHC	Community health center
RCC	RCC Reinforced concrete structure
WBM	Water Bound Macadam
BM	Brick Masonry
D	Door
V	Ventilator
W	Window
WC	Water Closet
O	Opening
SWOT	Strength ,Weakness ,Opportunity, Threats

CHAPTER:1

Ideal village Visit

1.1 Basic Information About Vishwakarma Yojana :

Our Father of the Nation once said that "The soul of India lives in its villages". Around 69% of the State's populace living in country zones.

Individuals in rustic regions ought to have a similar personal satisfaction as is delighted in by individuals living in sub metropolitan and metropolitan regions. The falling impacts of neediness, joblessness, poor and insufficient framework in rustic territories on metropolitan focuses causing ghettos and important social and monetary strains is showing in financial hardship and metropolitan destitution. Henceforth Rural Development which is worried about monetary development and social improvement in the expectation for everyday comforts of the rustic individuals by giving satisfactory and quality social ad ministrations and least fundamental needs gets basic. The current system of provincial improvement predominantly centers on arrangement of fundamental civilities and foundation offices through creative program of compensation and independent work. For monetary improvement of nearby individuals, the above objectives will be accomplished by different program being actualized making association with networks, non- legislative associations, network-based associations, foundations, PRIs and mechanical foundations, while the Department of Rural Development will offer calculated help both on specialized and regulatory side for program usage.
For understanding these destinations, independent work and pay business program keep on invading in one structure or other. As a measure to reinforce the grass root level vote-based system, the Government is continually trying to enable Panchayat Raj Institutions as far as capacity

Different viewpoints that will at last prompt change of country life are additionally being underlined at the same time. The Government's strategy and program have laid accentuation on neediness mitigation, age of work and salary openings and arrangement of foundation and fundamental offices to address the issues of rustic poor.

By this Vishwakarma Yojana project government is looking at technical solution of the problem faced by Villages at the engineering point of view. In this project the problem is solved by the students. So, the government get very accurate solution of the existing problems in village it is best scheme out there in order to provide good life style to rural people with high standard, easy living & quality life.

1.1.1 Aim & Objective:

Development aims at improving rural people's livelihoods in an equitable and sustainable manner, both socially and environmentally, through better access to assets (natural, physical, human, technological and social capital), and services, and control over productive capital (in its financial or economic and political forms) that enable them to improve their livelihoods on a

sustainable and equitable basis. The Vishwakarma Yojna is aimed to designing Villages as Rurban communities, Re- imagining the economic structures of the villages and strengthens the community spirit. For achieving this aim detail information of the targeted villages are collected and with consultation of Local revenue authorities, TDO and DDO a projected development plan of the village to be prepared under this project. This development plan is prepared based on the future need of the village keeping to mind the need of days, future targeted population growth, growth of surrounding town or taluka places etc. The basic objectives of Rural Development Programmes have 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/Laboure's to discourage seasonal and permanent migration to urban areas. The objective of Vishwakarma Yojna is to prepare a complete roadmap of Rurban Development of village with detailed project report ready to execute. Forfulfill this objectives detail data are collected like education, health facility, transportation services, roads, water facility(drinking, domestic use, irrigation, etc.),electricity, sanitation and drainage, population, the coming plans for developing villages, and standard of living of that village like how many people are below poverty line upper middle class banking telecom post and telegraph ,cooperative sectors (doodh manadli, sevasahakari, co-operative society), other public amenities like community hall, public garden, children park, village pond, public library, solar energy, ongoing schemes of NGO or other funding agencies.

1.2 Concept: Ideal village, Normal Village :

- Before arranging anything in our town we have it is basic to consider which kind of administration/capacity and way of life offered in keen or ideal town.
- To see all segment of savvy town during this pandemic time. We experience web Accomplished our most extreme work with full safety measures.
- Previously, we picked our principle study are we mix web and attempt to perceive key point or key part in keen/ideal town.
- Generally, these segments are associated with:
- Enhancing intensity of satisfying fundamental needs (drinking water, water system, disinfection, dairy, power and so forth.)
- Enhancement of social force (training, mindfulness)
- Enhancement of living stander (dissemination of fundamental pack, basic need) Ease of living (offices, for example, banking, mail center) Connectivity (All methods of transportation)

1.2.1 Objectives:

- To study the existing growth, characteristics and development of villages.
- To study how to improve drainage and sanitation systems. To study the future developing and growth scenario of village.
- To study the existing infrastructure facilities and its management issues phasing by villages.
- Provide easier, faster and cheaper access to urban markets for agricultural produce or other marketable commodities produced in such villages.

- To study the existing infrastructure facilities and its management issues phasing by villages.

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

Dharnai, Bihar

When attempting to get fundamental power like most towns in India, Dharnai has now change while to totally run on sun-based force. Inhabitants of Dharnai had been utilizing diesel-based generators and dangerous fuel like cow compost to meet the power prerequisite for quite a long time, which were both exorbitant and undesirable. Since the dispatch of Greenpeace's sunlight based controlled100 kilowatts miniature network in 2014, quality power is being given to in excess of 2,400 individuals living in this town in Jehanabad area.

[Fig 1,2]

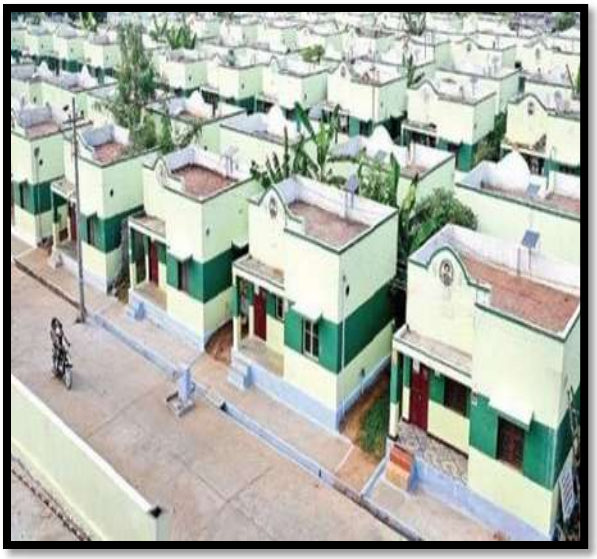
Hiware Bazaar, Maharashtra

Confronting a significant water emergency every year in view of the measly precipitation it gets, the town closet disregard water-concentrated yields and selected cultivation and dairy cultivating. Their predictable water protection activities prompted rising groundwater levels and the town began to thrive. Today, the town has 294 open wells, each overflowing with water similarly as the town overflows with flourishing.

[Fig 2,3]

Odanthurai, Tamilnadu

Odanthurai, a panchayat arranged in Mettupalayam taluka of Coimbatore locale, has been a model town for different towns for more than 10 years. The panchayat has not exclusively been producing power for their own utilization, yet additionally offering capacity to Tamil Nadu Electricity Board.



[Fig 5,6]

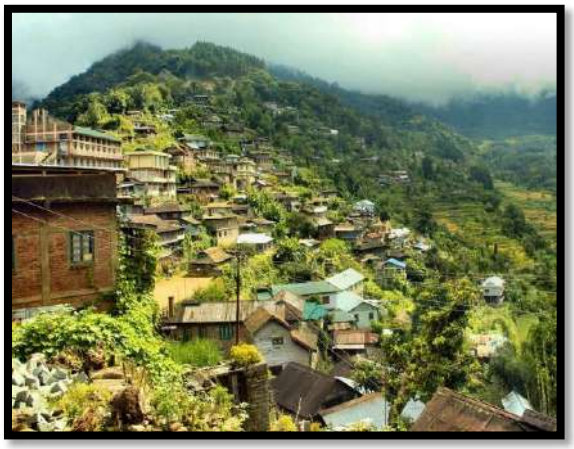
Punsari, Gujarat (opt as our study area)

Punsari village, barely 100 km from Ahmadabad, could be a textbook case of development. Closed-circuit cameras, water purifying plants, biogas plants, air-conditioned schools, Wi-Fi, biometric machines the village has it all the above facilities. And all of it was done in a matter of eight years, at a cost of Rs. 16 crores. The man behind the transformation is its young tech savvy sarpanch 33-year-old Himanshu Patel who proudly states that his village offers “the amenities of a city but the spirit of a village.”

[Fig 7,8]

Khonoma the Green Village, Nagaland

Khonoma town of Nagaland is the main green town in India, located in the western piece of Kohima region. The town is known for its clean ecological environment with appropriate sanitation, jhum development and green encompassing



[Fig 9,10]

Pothanikkad, Kerala

Pothanikkad village situated in Ernakulam district is the first village to achieve 100% literacy in India. From a village of forest and wild buffalos and elephants to one of the most educated and culturally advanced villages in Kerala.

[Fig 11,12]

1.2.3 The Idea of a model/Smart Village:

- India is a country of villages, where more the 68 % of the total population residue in villages.
- Said, ‘India lives in its villages’ Mahatma or ‘India’s soul is in villages’, which is the backbone of an Indian culture.
- Agriculture is practiced in the country from antiquity (from Harappa Civilization) where, communities settled and civilized structure of villages evolved.

- However, even after the collapse of such progressed civilizations, villages continued to exist and flourish through rich heritage and traditional practices.
- Now a day's urbanization has taken place on a big scale. Only due to lack of facilities and sources in villages.
- It was the dream of Mahatma Gandhi to make the Indian villages smarter and ideal/model by improving them in all aspects like physical, economic and social etc.
- The concept of smartness is popular in respect and honor of human development regardless of rural or urban area, literate or illiterate in all country and India is not omission to it.
- The ideas of smart village will also attention to multiple challenges such as unplanned urbanization, under development of village and smart villages.

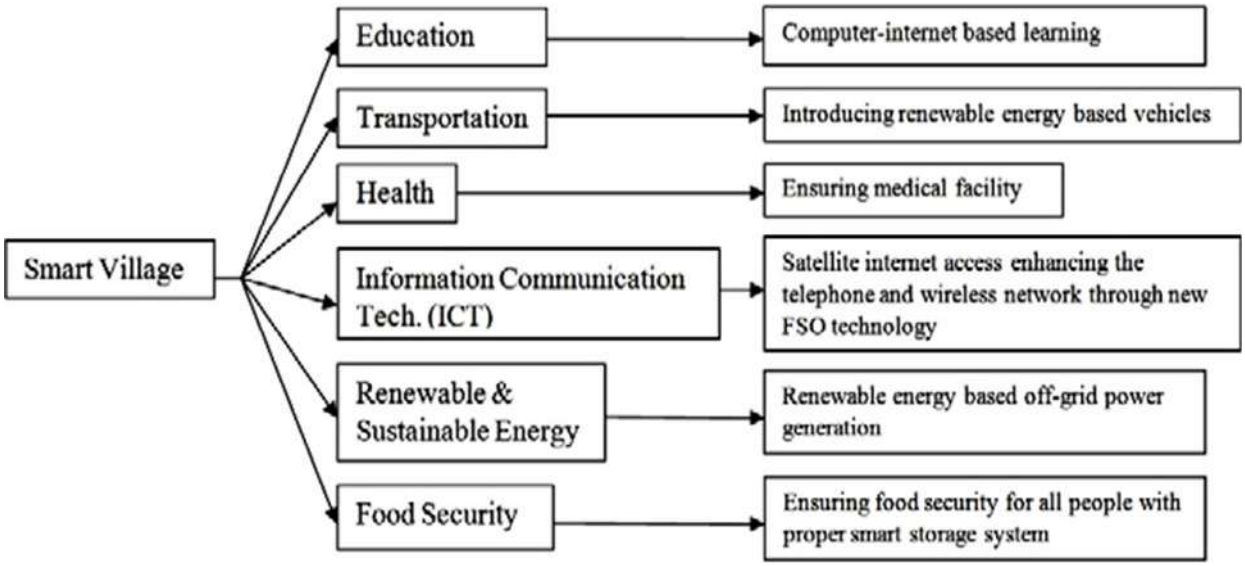
1.2.4 Ancient History Civil / Electrical concept about Indian Village / Foreign Countries Perspective and its Development :

It might be appropriate to assume that the science of civil engineering truly commenced between 4000 and 2000 BC in Egypt when transportation gained such importance that it led to the development of the wheel. According to the historians, the Pyramids were constructed in Egypt during 2800-2400 BC and may be considered as the first large structure construction ever. The Great Wall of China that was constructed around 200 BC is considered another achievement of ancient civil engineering. The Romans developed extensive structures in their empire, including aqueducts, bridges, and dams. A scientific approach to the physical sciences concerning civil engineering was implemented by Archimedes in the third century BC, by utilizing the Archimedes Principle concerning buoyancy and the Archimedes screw for raising water. The role of investment, especially foreign direct investment (FDI), in driving economic growth and development has been a contested one ever since the UN development decade of the 1960s. There have always been views in favor of FDI and against it. Some argue that FDI leads to economic growth and productivity increases in the economy as a whole and hence contributes to differences in economic growth and development performances across countries, but others stress the risk of FDI destroying local capabilities and extracting natural resources without adequately compensating poor countries. This background paper for UN World Economic and Social Survey examines trends in the relationship between FDI and development in an historical context. The government considers a village to be electrified if the number of households electrified is at least 10% and electricity is provided to public buildings including schools, health centers, dispensaries, community centers and village councils. So, by definition, all Indian villages have now been electrified. Remote and inaccessible villages have always proved to be a major challenge in the country's electrification drive. Though most Indian villages have some electrical connection today, connecting the last remote households in the surrounding areas can be expensive. Additionally, state-owned power distribution companies are struggling with debt and poor demand, which has made it difficult to practically electrify every Indian household.

1.3 Detail study (Socio economic, physical, Demographic and infrastructure details) of Ideal village/Smart Village with photograph:

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

[Fig 13:Flow chart of smart Village]



[Fig 14 :Flow chart of key elements]

1.3.1 Brief data about Punsari (Area of study):

Locality Name	Punsari
State	Gujarat
Taluka Name	Talod
District	SabarKantha
Sarpanch Name	Mr. Himanshu Patel

Table 1. Brief data about Punsari

Punsari is a town situated in SabarKantha locale in the territory of Gujarat, India. Punsari is considered as India's most intelligent town. The town is situated at about 80km from the state capital, Gandhinagar. Punsari is 20km from Parvati Hills. Parvati Hills is the biggest table top place where there is India. The town follows the Panchayat raj framework. The town degree is around 65 km. The land being used of farming is 6 hectares. The fundamental non cultivating action is dairy in this town. The town has gone through a change under the panchayat. There has been utilization of new and trend setting innovation in training. This town has wi-fi association for all individuals. Endeavors have been made for the strengthening of ladies and expanding security in the town. A portion of the offices gave by the panchayat incorporate neighborhood mineral water gracefully, sewer and seepage venture, a medical care place, banking office sand complementary grievance gathering administration.

[Fig 15:Punsari's map view]

1.3.2 Smart Village Survey:

We selected the ideal/smart village for a reference. Here is some basic information about amenities which were provided in an ideal village.

1.3.3 In Punsari following are the amenities available:

Village with Zero MMR &IMR:

Most of the locals in Punsari subject to drain as the wellspring g of income which expected them to walk 2km consistently for transportation of the equivalent. For pregnant women that regularly prompted high MMR (Mother Mortality Rate) and IMR (Infant Mortality Rate) reason for this a lot of development. This issue was totally settled as the locals procured its own transportation office. Today, with a little badge of Rs2/- smaller than expected transport drops these ladies to the milk banks and back to the home. Moreover, every resident here is 100% Vaccinated with no issue of malnourishment.

Fig 16:Bus Service

Greetings of Punsari :

Punsari have some common feature such that it has large entry gate which greets everyone as visitor and it's quite delightful to enter in Punsari.

Fig 17:Punsari Entrance

Gram Panchayat's Activities:

On one side when there's a trend of migration taking place from villages to cities, Punsari village in North Gujarat's Taloda Taluka stands Apart. Here the local gram panchayat has provided many facilities to Villagers including an efficient School, Mineral water supply, Local bus service, loud speaker covering

Fig 18.Connection with all

entire village. Drainage facilities, secure primary health care center, nearly about eight kinder garden schools, urban banking facility, toll-free complain receiving phone service, among others.

Water system:

Punsari has a Rs.30lakh RO plant venture in which a Rs.20/liter container of clean water for Rs.6 is provided to each doorstep of the town by utilizing two young people. This is non-productive undertaking, yet for social capacity the charge is Rs.20 per container, which is the typical reasonable almost around market rate. This activity was taken as a result of TDS level of 1400 in normally accessible water in the town. The plant is controlled by town adolescents. It was set up by panchayat**.**

Fig 19: Implementation of trends

No School dropouts:

As we know that our youth is the future of our nation. Punsari is also working on that project. In Punsari the rear zero incident of school dropouts and the children looktidyin their crisp uniform, they eat their free lunch distributed through the central government's midday meals scheme the school also offers Wi-Fi enabled computer classes.

Fig 20:Meal

Announcement Facilities and CCTV:

Punsari has 120 loud speakers covering each corner of the village. Vill agers listen to important announcement like telephone bill, power bill, results of 10th and 12th are made through those speakers.

Fig .21:CCTV

Fig22:Punsari power station

Own electricity production:
A waste collecting van, which would gather waste, and transfer that to a plant where renewable waste was created. The entire village is lit due to this renewable energy plant. Basically, this renewable plant is 66kv runs on bio-gas and from that electricity have been generated

Waste disposal/waste collection method:
Door to door waste collection system. Tractor were visited to collect waste from each house.

Other Services:
There are RCC roads covering entire village. Those who pay tax get gifts. The panchayat started with giving plastic dustbins as gifts. There's nearly 90% tax collection achieved. Toll free number to ask quarries from administer. If anyone some issue or problem related to local administration, he/she can dial toll free number 864 and talk to panchayat.

1.3.4 Investigation studies:

- Every home in the town has toilets; there are two essential schools, an essential wellbeing community, street lamps and a seepage framework.
- The whole town is Wi-Fi empowered, has CCTV cameras introduce which covers the whole population with the assistance of about 140 amplifiers introduced everywhere on the town.
- The panchayat has introduced a converse osmosis plant in 2010 to guarantee the gracefully of clean drinking water to the townspeople. During weddings and other functions, water big haulers are organized. Drinking water taps are accessible for all.
- The town also has a proper sanitation and waste framework, which is completely underground.
- So, this data of shrewd town overview is helpful for actualize in our assigned town.

1.3.5 The scope of study is bounded up to:

- Physical planning
- Physical and social infrastructure facilities.
- Sustainable and integrated rural development programs related to health, education, agriculture, forestry, land, renewable energy technology, water and environment based on resource endowments and comparative advantages of the working area.

- living standard of rural people by helping them develop their skill and subsequently by assisting them in implementing income generating activities in close coordination and cooperation with national and international organizations.
- To provide a comparative analysis of the economic, social and environmental context for rural development.

1.4 SWOT analysis of ideal village:

SWOT Analysis is a framework for identifying and analyzing the internal and external factors that can have an impact on the viability of a project, product, place or person and useful technique for understanding the Strengths and Weaknesses, and for identifying both the Opportunities and Threats.

Strengths

- Ponds and sidewalks
- Lake site
- Local businesses
- Schools and colleges
- Religious places (temples/masjid)
- Easy access to highway

Weaknesses

- No facility of clubs for adults and seniors.
- Need to upgrade village parks and playgrounds

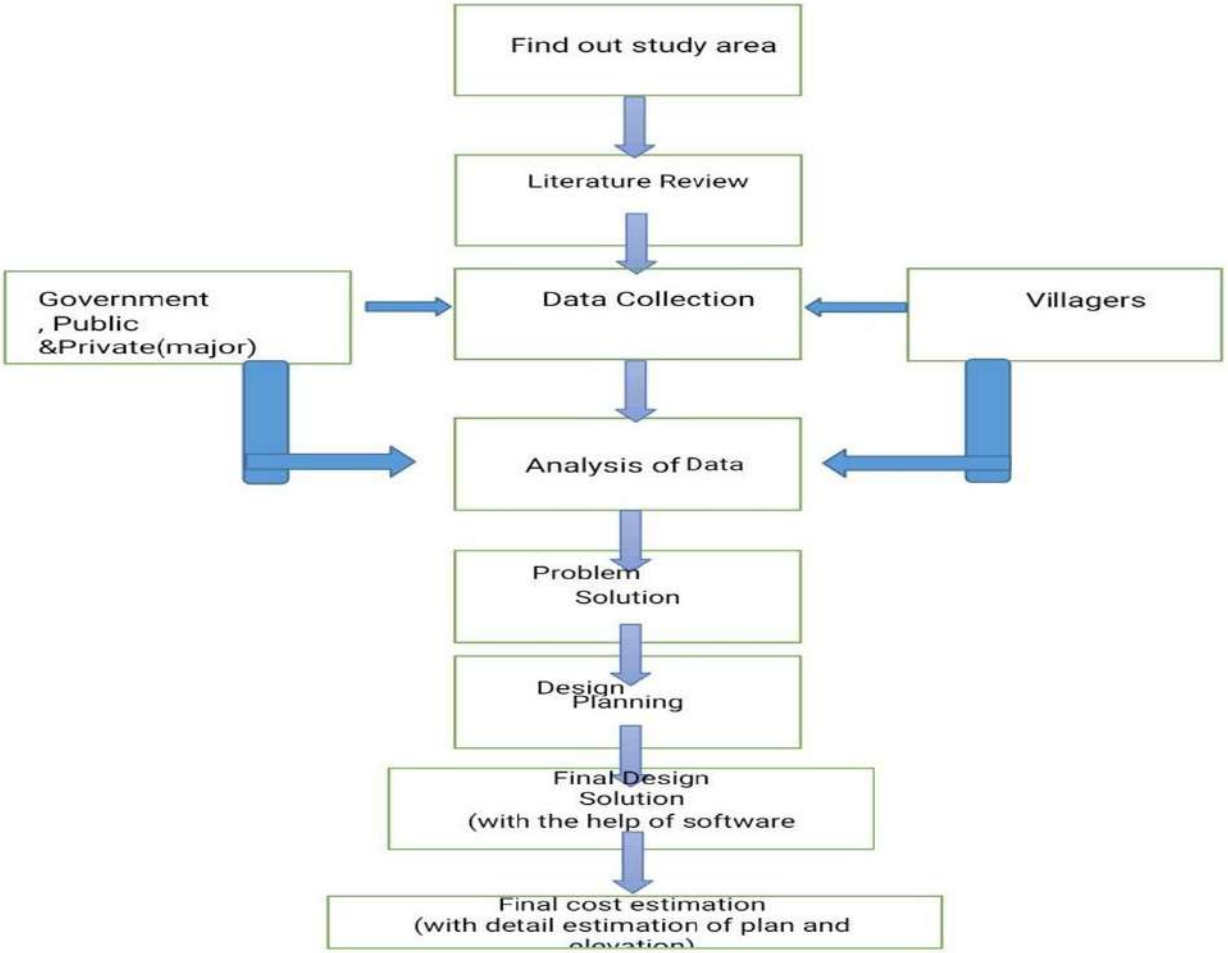
Opportunities

- Opportunity for more events in parks, ponds and open space
- Construction of public library
- Construction of movie theatre
- Opportunities for local business
- Redevelopment of vacant land
- Entertainment parks

Threats

- Algae in ponds.
- Accidents due to rough driving by college students.
- High commercial rents

❖ **Identify the problem using engineering knowledge, we give idea about solutions:**



[Fig 23:Flow Chart of Process]

Techno-financial review of towns: Collected this basic data from for example, Household information, Occupational detail, Water offices, Drainage offices, Sanitation accessibility, rain water organization, Solid waste Management offices, Electricity Networks, Amusement offices, Education offices, Health Facilities', Transportation offices, Road network, Irrigation framework, Use of non-ordinary fuel sources, Migration rate, Literacy rate and other vital information.
Development archive readiness: Plan and gauges of proposed improvement by evaluating whole examination.
Detailed Project report (DPR): Preparation of development methodologies and activity plan.
Data Analysis: GAP examination for all the chose towns were performed by looking at existing with the necessary offices. Rustic Planning Norms and UDPFI (Urban Development Plans, for mulation and Implementation) rules were taken as a source of perspective for giving frame work offices.
Design Proposals: according to the whole examination the proposed development and arranging Procedures have been planned according to all the guidelines and standards alongside the meeting of concerned Government Official's (TDO, DDO and Sarpanch). Understudies of all

separate towns have arranged plan recommendations for basic infrastructure offices, arranged prepared to execute documents, Detail gauges with abstract sheet, Measurement sheets, Summarization Sheet and Detail Drawings.

1.5 Future prospects of development of the ideal village :

- Providing ease of transportation
- Daily facilities
- A good banking system
- Financial growth
- Pure water
- Higher education
- Enhancing living standards
- Secure township
- Proper solid waste management

1.6 Benefits of the visit of ideal village / smart village:

By visiting such villages, we students of civil engineering can understand about the actual development that a rural area needs to satisfy its basic infrastructure facilities and to compete with urban area and can implement these techniques and facilities for the development of other villages which actually needs development and can implement the same for the development of the villages which are allotted to us in Vishwakarma Yojana Phase-VII as our final year project. We enjoyed lot during this visit and also we experienced lots of new things that not available in city. We got new ideas to develop the village facilities. We came to know what facilities actually needed in village.

We have seen the facilities exist and their conditions like, road network, Water distribution and management, Gram, Panchayat management, Connectivity with city. To study about the development as well as the infrastructure facilities of the villages which is an ideal village and can be considered as Benchmark for the development and growth of other villages which are developing or which needs development? After visiting the village, we came to know about the various facilities that can be provided in a village for Reurbanization of village and to reduce the migration of people from villages to city areas. We also came to know about the various methodologies and techniques that can be used for the development of the villages.

1.7 Civil aspects required in Ideal village:

We have observed the balance of commercial, residential and recreational land use in the punsari village but as per the feedback which were given by villagers some facilities are lacking in the village from civil aspects and need more development in terms of sustainable development.

Conclusion:

From the data collection we have attempted to explore the development journey of a smart and model village called Punsari. The grass-roots leadership, community participation, decentralization of powers to local bodies in rural areas, and financial support in the form of various government schemes can bring far-reaching changes in the rural landscape of India.

CHAPTER:2
Literature Review

2.1 Introduction: Urban and Rural Village Concept:

In general, a rural area is a geographic area that is located outside the cities and towns. Typical rural areas have a low population density and small settlements. Agricultural areas are commonly rural, though so are others such as forests. Different countries have varying definitions of "rural" for statistical and administrative purposes.

❖ India :

Rural areas are also known as 'countryside' or a 'village' in India. It has a very low density of population. In rural areas, agriculture is the chief source of livelihood along with fishing, cottage industries, pottery etc. According to the Planning Commission, a town with a maximum population of 15,000 is considered rural in nature. In these areas the panchayat takes all the decisions. There are five people in the panchayat. The National Sample Survey Organization.

❖ (NSSO) Defines 'RURAL' as follows :

An area with a population density of up to 400 per square kilometer, Villages with clear surveyed boundaries but no municipal board, A minimum of 75% of male working population involved in agriculture and allied activities defines rural areas as those areas with a population of less than 49,000.It is generally said that the rural areas house up to 70% of India's population. Rural India contributes a big chunk to India's GDP by way of agriculture, self-employment, services, construction etc. As per a strict measure used by the National Sample Survey in its 63rd round, called monthly per capita expenditure, rural expenditure accounts for 55% of total national monthly expenditure.

❖ United Kingdom :

In Britain, "rural" is defined by the government Department for Environment, Food and Rural Affairs (DEFRA), using population data from the latest census (Aperiodic count of the population), such as the United Kingdom Census 2001. These definitions have various grades, but the upper point is any local government area with less than 26% of its population living in a market town.
("market town" being defined as any settlement which has permission to hold a street market). This definition has changed over time in different countries.

Look at Rural area:

Rural zones are called the 'country side' or a 'town' in India. A country regions population thickness is extremely low. Numerous people live in a city, or metropolitan region. Their homes and organizations are located very close to one another. In a rustic zone, there are less people, and their homes and organizations are located faraway from one another. Agriculture is the primary business in most country regions people live or chip away at ranches or farms. Villas, towns, towns, and other little settlements are in or surrounded by provincial zones. Wildlife is more often found in rustic regions than in urban communities in light of the fact that of the nonattendance of people and structures. In fact, provincial zones are often called the country in light of the fact that inhabitants can see and interface with the country's local natural life Throughout the world, more individuals live in provincial regions than in metropolitan territories. This has been evolving quickly, however. Urbanization is going on all over the world. In Asia, for model, the United Nations gauges that the metropolitan population will increment by almost 2 billion. The government has begun many programs pointed toward improving the standard of living in towns or rustic zones. To manufacture country framework, the government dispatched a period bound strategy for action Bharat Nirman 2005. Under Bharat Nirman, action is proposed in the zones of Water Supply, Housing, Telecommunication and Information Technology, Roads, Electrification and Irrigation.

Fig 24:Rural watch 1

Fig 25:Rural watch 2

- **Information of intrigue has been classified under the following heads:**
- Livelihood
- Education
- Housing and Development
- Land Reforms
- Initiatives by State Governments
- E-Governance in Rural Development

Look at urban area concept:

A metropolitan region is the district encompassing a city. Most occupants of metropolitan regions have nonagricultural jobs. Metropolitan regions are very developed, which means there is a thickness of human structures, for example, houses, commercial structures, roads, extensions, and railroads. “Urban region" can allude to towns, urban areas, and rural areas. A metropolitan region incorporates the city itself, just as the encompassing regions. Numerous metropolitan zones are called metropolitan territories, or "more prominent," as in Greater New York or Greater London. When two or more metropolitan regions grow until they combine, the outcome might be known as megalopolis. India's as yet solid growth mirrors the reality that it stays a primarily rustic nation. According to the 2011 registration, only31%of the population of India lives in metropolitan regions. Metropolitan movement, of course.at a discernibly slower rate than in China. According to the United Nations, the metropolitan population of India will be under 35% in 2020 and approximately 40% in 2030. However, in spite of this, the quantity of new metropolitan inhabitants will be considerable. By 2030, another 225 million individuals will be included to the Indian metropolitan regions, more than the number of inhabitants in Japan and Germany joined. India's as yet solid growth mirrors the reality that it stays a primarily rustic nation. According to the 2011 registration, only31%of the population of India lives in metropolitan regions. Metropolitan movement, of course.at a discernibly slower rate than inchina. According to the United Nations, the metropolitan population of India will be under 35% in 2020 and approximately 40% in 2030. However, in spite of this, the quantity of new metropolitan inhabitants will be considerable. By 2030, another 225 million individuals will be included to the Indian metropolitan regions, more than the number of inhabitants in Japan and Germany joined.

Fig 26. Urban watch 1

Fig 27. Urban Watch 2

2.1.1 Sustainable Village Development concept :

Sustainable development is the organizing principle for sustaining finite resourcesNecessary to provide for the needs of future generations of life on the planet. It is a process that envisions a desirable future state for human societies in which living conditions and resource-use continue to meet human needs without undermining the "integrity, stability and beauty" of natural biotic systems. Sustainable development is a process for meeting human development goals while sustaining the ability of natural systems to continue to provide the natural resources and

ecosystem services upon which the economy and society depend. While the modern concept of sustainable development is derived most strongly from the 1987 Brundtland Report, it is rooted in earlier ideas about sustainable forest management and twentieth century environmental concerns.As the concept developed, it has shifted to focus more on economic development, social development and environmental protection.Sustainable Development is the development with consumption of resources in such a way that may not cause the unavailability of resources for the future generation.

2.2 Importance of the Rural development:

Rural development is important not only for the majority of the population residing in a rural area but the growth of rural activities is necessary to stimulate the speed of overall economic expansion of the nation. Rural development is pretended to be noticeable importance in the country today than in the olden days in the process of the evolution of the nation. It is a strategy trying to obtain improved rural creation and productivity, higher socio-economic equality, and ambition, stability in social and economic development. Primitive task is to decrease the famine roughly about 70 percent of the rural population, implement sufficient and healthy food. Later, serve fair equipment of clothing and footwear, a clean environment and house, medical attention, recreational provision, education, transport, and communication.

2.3 Ancient Villages / Different Definition of Rural Urban Villages :

Rural Urban Villages Rural areas have low population density and large amount of undeveloped land. Agricultural activities are more in rural areas. Rural areas are the opposite of urban areas. Rural areas, often called "the country", have low population density and large amounts of undeveloped land. Urban areas, often called "the country", have a density of human structures such as houses, commercial buildings, roads, bridges, and railways.

2.4 Scenario: Rural/Urban Village of India Population Growth:

Agenda of census of India is to release of provisional population totals-Rural urban distribution. Population of Rural and Urban area (in crore)

	2001	2011	Difference
India	**102.9**	**121.0**	**18.1**
Rural	**74.3**	**121.0**	**9.0**
Urban	**28.6**	**37.7**	**9.1**

Table:2.Population of Rural and Urban areas as per census

For the first in since independence, the absolute increase in population is more in urban areas that in rural areas. Rural-Urban Distribution: 68.84% & 31.16 Level of urbanization increased from 27.81% in 2001 census to 31.16% in 2011.

Literacy rates (in %):

	2001	2011	Difference
Male			
India	**75.3**	**82.1**	**+6.4**
Rural	**70.7**	**78.6**	**+7.9**
Urban	**86.3**	**89.7**	**+3.4**
Female			
India	**53.7**	**65.5**	**+11.8**
Rural	**46.1**	**58.8**	**+12.7**
Urban	**72.9**	**79.9**	**+7**

Table :3.Literacy rates (in%)

Total Literacy rates (in %):

	2001	2011	Difference
India	**64.8**	**74**	**+9.2**
Urban	**58.7**	**68.9**	**+10.2**
Rural	**79.9**	**85**	**+5.1**

Table:4 Total Literacy rates (in %)

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

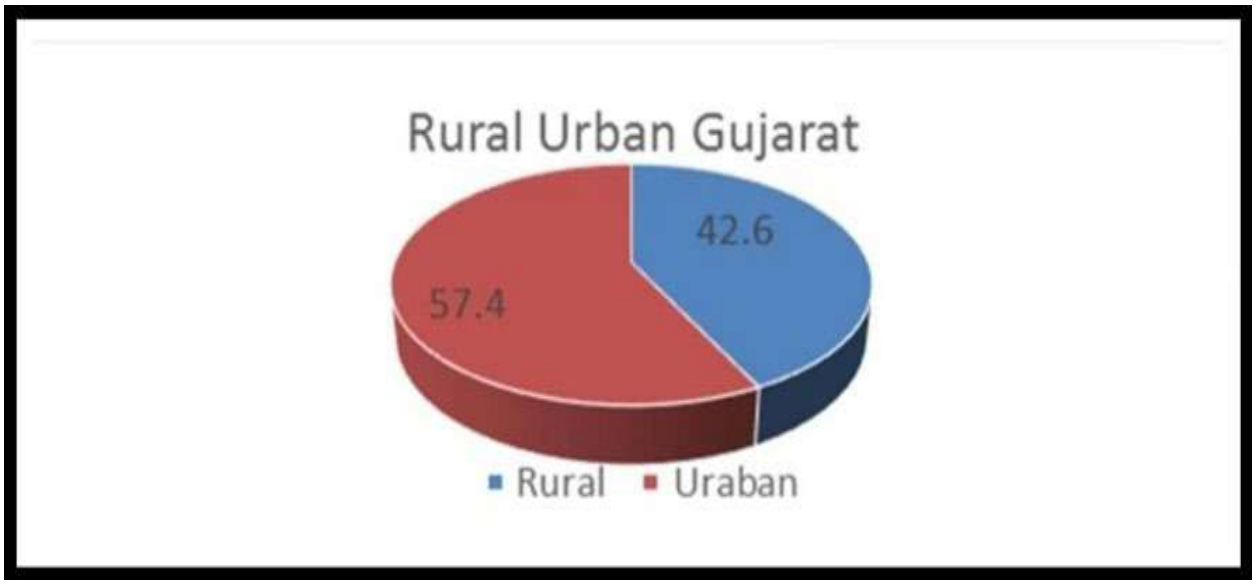


FIG.28:Population of Gujrat in %

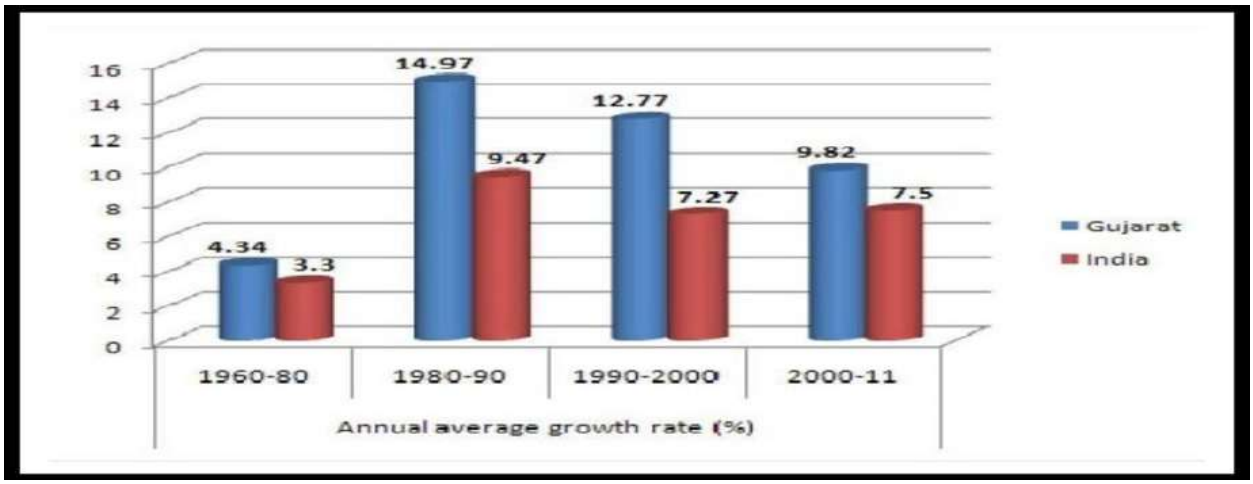


FIG.29:Rural and urban population growth

- Totalpopulation:60,439,692
- Total population of male:31,491,260
- Total population of female:28,948,432
- Total population growth in decade is19.28%
- Out of total population of Gujarat, 42.60% people lives in urban Region.

Description	Rural	Urban
Population	57.14%	42.60%
Total population	34,694,609	25,745,083
Male population	17,799,159	13,692,101
Female population	16,895,450	12,052,982
Population growth	9.31%	36.00%
Sex ratio	949	880
Literates	21,420,842	19,672,516
Average literacy	71.71%	86.31%

Table:5.Demographic data of Gujarat

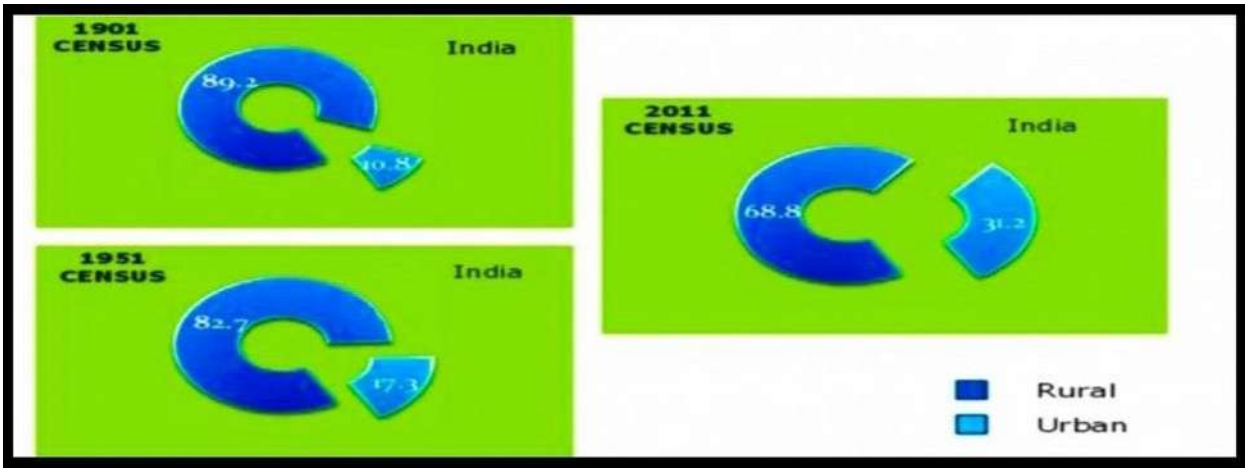


Fig.30:Different trend in Urban and Rural population percentage in 1901, 1951 and 2011

2.6 Rural Development Issues - Concerns – Measures:

Rural development is the national necessity and it has following measures:

- To develop rural area as whole in terms of culture, society, economy, technology and health.
- To develop living slandered of rural mass.
- Develop rural youths, children and women.
- To develop and empower human resource of rural area in terms of their psychology, skill, knowledge, attitude and other abilities.
- To develop infrastructure facility of rural area.
- To provide minimum facility to rural mass in terms of drinking water, education, transport, electricity and communication.
- To develop rural institutions like Panchayat, cooperatives, post, banking and credit.
- To provide financial assist to develop the artisans in the rural areas, farmers and agrarian unskilled labour, small and big rural entrepreneurs to improve their economy.
- To develop rural industries through the development of handicrafts, small scaled industries, village industries, rural crafts, cottage industries and other related economic operations in the rural sector.
- To develop agriculture, animal husbandry and other agricultural related areas.
- To restore uncultivated land, provide irrigation facilities and motivate farmers to adopt improved seed, fertilizers, package of practices of crop cultivation and soil conservation methods.

2.6.1 Importance in rural contexts:

An ideal village should have the following facilities:

Physical Facilities:

Road Facilities:

An ideal village must have good road facilities that the people can easily move from one place to other. The roads linking with the other nearby village or town or city must be provided.

Dwelling Houses:

The dwelling-house in an ideal village are very neat and clean. The dwellers of these houses look to the house sanitation and house-drainage. The houses have sufficient windows to let in light and air. All the houses are roofed by good tiles at least.

Electricity:

The electricity should be supplied 24 hours. The village should have good facilities of electricity because most of the work now adays depend on electricity.

Social Facilities:

Sanitation and Drainage:

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

Food and fodder:
The villagers grow food for themselves and fodder for their cattle. They eat fresh and healthy food. They grow good grass for fodder and also leave sufficient land for pasture.

Drinking Water:
An ideal village should have good supply of drinking water. There are enough tube-wells in an ideal village. There are separate ponds for men and cattle.
Agriculture and Industry:
People of an ideal village are good farmers and good artisans. They grow food crops, commercial crops and oil-seeds. They take up improved method of farming. They do all kinds of home-industry including spinning and weaving.

Educational Facilities:
There are Primary schools, High schools and craft schools in an ideal village. Primary education is free and compulsory.

Clinical Facilities:
In an ideal village, there are clinical facilities for men and the domestic animals. Hence, there are dispensaries and veterinary dispensaries.

Socio-Cultural Facilities:
These includes facilities like playgrounds, library, gardens, Lake Etc.

Sustainable Facilities:
An ideal village should have facilities like biogas plant, solar systems, use of rain water harvesting system etc.

- People are directly or indirectly dependent on agriculture and a large number of landowners have small and medium-sized landholding.
- Economy of the people living in rural areas is low.
- The price the farmers get for their produces less than in relation to the work they put in People have to migrate to the urban areas due to unavailability of education.
- The other rural problems are due to the fact that since the rural people do not live in concentrated masses, the availability of specialized service to them is minimum.

2.7 Various Infrastructure & Guidelines / Norms For Villages For The Provisions Of Different Infrastructure Facilities :

NORMS & STANDARDS

Construction of buildings on plots in layout to conform to certain standards – Layout Plan The distribution of land use for the preparation of layout plan shall be as follows:

2.7.1 Land Under Each Use:

In the land to be developed, maximum of the plots may be of size less than 100 sq. m. and no plot may be more than 500 sq. m. The layout should generally conform to the following land use

Area	Land under use
(i)Residential	50-60%
(ii) Work place, Schools, Institutions, NursingHome, Dispensary, Community places/Facilities, Veterinary Hospitals etc.	15-20%
(iii) Shops, Offices, Consumer Stores, Fertilizer Depot and other bazaar's	3-5%
(iv) Open spaces	10-15%
(v) Roads, Pedestrian Paths, Drains, Cooperative Bank, P.O. and other utilities	15-20%

Table:6 Land under each use

2.7.2 Residential Development :

The Residential plotted development, till the development plans are prepared, the following norms shall be as follows**:**

(a) Plotted Development excluding other activities such as Cattle Shed, Storage etc.	**60 and above plots/hectare**
(b) Covered area per dwelling unit.	25 sq. m. (minimum)
(c) Height of buildings	10 maximum (3 storey)

Table:7 Residential Development

2.7.3 Road hierarchy :

(a) Road which connects villages to nearby areas.	**9 m(min)**
(b) Main Village Roads	6m
(c) Internal Village Roads	4.5 m

Table: 8 Road hierarchy

2.7.4 Social Facilities :

Use	Standard/Population	Area
(a) Primary School	1 for 5000 population	**0.4 to .6 hectare**
(b) High School with primary school	1 for 15000 population	**1 hectar e**
(c)Dispensary/Hea lth Centre	1 for 5000 population	**.05 hectare**
(d) Community Hall	1 for 5000 population	**.05 hectare**
(e) Anganwadi	**1 for 5000 population**	**.05 hectare**

Table: 9. Social facilities

2.8 CONCEPT

2.8.1 Re-urban And Its Importance:

Urban town and its importance of all the essential qualities that are credited to the formation of a state I accept urbanization to be of boss significance. The method of reasoning behind this end is the office urbanization plays in the progress between traveling tracker assemble social orders to those that are inactive. When a general public has chosen to become stationary all different qualities of a state may then proceed.

It is through settlement that horticulture may result, which offers approach to social separation, which at that point leads to a complex economy, which then produces particular occupation sand exercises.Although do not accept that this relationship is authoritatively direct as I just recently expressed, I do accept that there a movement in any request initially happening with urbanization. The essential reason of a human progress of that it is a versatile reaction to a need, and subsequently, progresses out of a conclusive measure to change starting with one lifestyle then onto the next.

This society is made out of a gathering on groups. Here, one can see that a population is growing and is getting progressively slanted to a stationary way of life.

One of the main admonitions of urbanization is its populace. As exemplified here the populace is growing and its adaption is to reformulate its means methodology, enter the starting characteristic of farming. In the following stage of complexity is chiefdom.financial creation, prompting more noteworthy monetary additions, and in this manner giving its residents more prominent opportunity of decision as movement levels increment and more occupations become accessible

Its definition shifts relying upon the worldwide area, however commonlyin Europe, where metropolitan zones are seriously figured out how to forestall metropolitan sprawland secure rural

land, the metropolitan periphery will be portrayed by certain land utilizes which have either deliberately moved away from the metropolitan zone, or require a lot bigger lots of land. As specific illustrations:

- Roads, particularly motorways and sidesteps
- Waste depots, reusing offices and land filld estinations
- Park and ride destinations
- Airports
- Largeclinics
- Power, water and seweage offices
- Factories
- Large out-of-town shopping facilities, e.g. large supermarket

2.8.2 What is & Why We Need Rural Development ?

Rural improvement is the way toward improving the personal satisfaction and financial prosperity of individuals living in provincial territories, regularly generally segregated and scantily populated regions.

Rural improvement has customarily fixated on the abuse of land- concentrated characteristic assets, for example, horticulture and ranger service. In any case, changes in worldwide creation organizations and expanded urbanization have changed the personality of country zones.

[1] Progressively the travel industry, specialty makers, and entertainment have supplanted asset extraction and agribusiness as predominant monetary drivers.

[2] The requirement for country networks to move toward improvement from a more extensive viewpoint has made more spotlight on an expansive scope of advancement objectives instead of simply making impetus for agrarian or asset based organizations. Instruction, business, physical framework, and social foundation all assume a significant function in creating rustic regions.

[3] Rural advancement is likewise portrayed by its accentuation on privately delivered financial improvement strategies.

2.8.3 Other Information About Rural :

Agriculture is the significant wellspring of work in the rustic part. Mahatma Gandhi once said that the genuine advancement of India didn't mean basically the development and extension of modern metropolitan places yet principally the improvement of the towns. This thought of town improvement being at the focal point of the general advancement of the country is applicable even today. For what reason is this so For what reason would it be advisable for us to append such importance to rustic improvement when we see around us quickly developing urban communities with huge businesses and current data innovation centers.

2.9 Other Projects / Schemes of Gujarat / Indian Government :

Source:(https://www.mapsofindia.com/my-india/government/schemes-for-rural-development-launched-by-government-of-india)

MGNREGA: (Mahatma Gandhi National Rural Employment Guarantee)

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

PMGSY : (Pradhan Mantri Gram Sadak Yojana)

Pradhan Mantri Gram SadakYojana (PMGSY) was launched on 25th December 2000 as a fully funded Centrally Sponsored Scheme to provide all weather road connectivity in rural areas ofthe country. The programenvisages connecting all habitations with a population of 500 persons and above in the plain areas and 250 persons and above in hill States, the tribal and the desert areas

.

IAY : (Indira Awas Yojana)

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

PPP : (Public-Private-Partnership)

Public-Private-Partnership or PPP is a mode of implementing government programmes/schemes in partnership with the private sector. The term private in PPP encompasses all non-government Agencies such as the corporate sector, voluntary organizations, self-help groups, partnership firms, individuals and community based organizations, PPP, moreover, subsumes all the objectives of the service being provided earlier by the government, and is not intended to compromise on them. Essentially, the shift in emphasis is from delivering services directly, to service management and Coordination.The roles and responsibilities ofthe partners may vary from sector to sector. While in some schemes/projects, the private provider may have significant involvement in regard to all aspects of implementation; in others s/he may have only minor role.

Antyodaya Anna Yojana (AAY):

Antyodaya Anna Yojana is the sponsored scheme of Government of India to provide highly subsidized food to millions of the poorest families.

Sarv Siksha Abhiyan....

Sansad Adarsh GramYojana (SAGY) ...

National Social Assistance Programme....

Pradhan Mantri Awaas Yojana(Gramin)/Indira AwaasYojana....

Antyodaya Anna Yojana (AAY)

Provision of Urban Amenities In Rural Areas(PURA) National Rural Employment Guarantee Act. Etc...

Chapter -3

Smart (Cities/Village) Concept Idea and its Visit- (Civil Concept)

3.1 Introduction: Concepts, Definitions and Practices:

❖ Smart Village :

In Smart Villages access to Su stainable energy services acts as a catalyst for development enabling the provision of good education and healthcare, access to clean water, sanitation and Nutrition, the growth of productive enterprises to boost incomes, and enhanced security, gender equality and democratic engagement.

Concept of Smart Village:

Social, skilled and simple :
Zero tolerance for caste and creed or better no caste and creed and no discrimination on gender and religion everyone is literate and skilled simple living and high Thinking.

Moral, methodical and modern:
Moral values of Gandhi, swami Vivekananda etc method using total literacy and latest Modern like cities.

Aware, adaptive and adjusting:
Heights level of awareness on global social and economic issues . Adaptive and adjusting to fast changing environment.

Responsive and ready:
Responsive to collective wisdom ready to generate own resources for self-sufficiency and self-reliance.

Techno - savvy and transparent:
Techno-savvy for IT and mobile usage transparent in harmonic relation and delivery of service.
In India there are 6,00,000 villages out of them 1,25,000villages are backward so there is a need for designing and building the village as a smart village. With modernization and urbanization people migrate from one place to another place for different facilities such as education, employment and affinity of people towards the locality or city. Village is main criteria for development of nation. So, develop the village in such a way that which is self dependant in providing the services, employment and well connected to the rest of the world

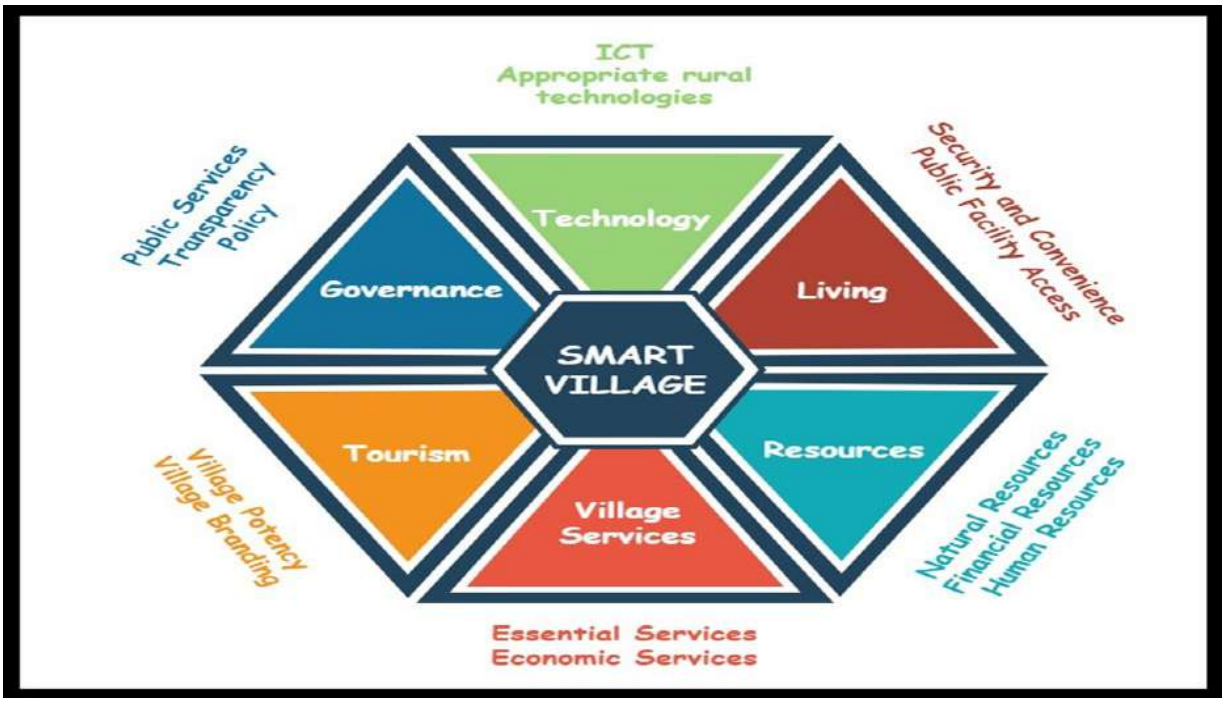


Fig.31 Smart village concept

3.2 Vision-Goals, Standards and Performance Measurement Indicators :

According to 2011 Census, the population of rural areas comprised of 68.84 per cent. Migration of the people from rural areas to urban areas causes some burden on the urban areas. If the vision of the founders of this nation is to be respected and implemented, then we all need to have the responsibility to make our villages smart, which means self-sufficient, efficient, healthy and educated villagers. To make the villages smart means to make the country self-reliant, stronger and secured. India lives in its villages. Villages are the food basket of the nation. Village Panchayats are the centers of grass root democracy.

However, the holistic development of rural India is still under tremendous pressure owing to the declining farm output, increasing trend of distressed migration, absence of basic amenities and emerging problems of environmental pollution and conflicts.

A. Transport

- Maximum travel time of 30 minutes in small & medium size cities and 45 minutes in metropolitan areas.Continuous unobstructed footpath for 2 m wide on either side of all street with Row 12 m more
- .Dedicated and physically segregated bicycle tracks with width of 2 m or more, one in each direction, should be provided on all streets with carriage way larger than 10 m.
- High quality and high frequency mass transport within 800 m (10-15-minute walking distance) of all residences in areas over 175persons /ha of built area.

Fig.32. Transport

Fig.33. Transport

B. Spatial Planning

- 95% of residences should have daily needs retail, parks, primary schools and recreational areas accessible within 400m walking distance.
- 95% residences should have access to employment and public and institutional transport or bicycle or walk.
- At least 20% of all residential units to be occupied by economically weaker sections in each Transit Oriented Development Zone 800m from transits.
- At Least 30% residential and 30 commercial / institutional in every TOD Zone within 800m of Transit Stations.

C. Water-Suply

- 24 x 7 supply of water.
- 100% Household with direct water supply connections.
- 135 liters of per capita supply of water.
- 100% metering of water connections
- 100% efficiency in collection of water related charges

D. Sewerage & Sanitation

- 100% Households should have access to toilets
- 100% Schools should have separate toilets for girls
- 100% Households should be connected to the waste water network
- 100% Efficiency in the collection and treatment of waste water.
- 100% Efficiency in the collection of sewerage network.

E. Solid Management

- 100% Households are covered by daily door-step Collection system.
- 100% Collection of municipal solid waste.
- 100% Segregation of waste at source, i.e. bio- degradable and non-degradable waste
  100% Recycling of solid waste.

F. Storm storage

- Aggregate number of incidents of water logging reported in a Year = 0
- 100 % rainwater harvesting**.**

G.Electricity

- 100% households have electricity connection 24 x 7 supply of electricity.
- 100% metering of electricity supply.
- 100% recovery of cost
- Tariff slabs that work towards minimizing waste.

H. **Health care facilities:**

- Availability of telemedicine facility to 100% residents.
- 30 minutes emergency response time.
- 1 dispensary for every 15,000 residents.
- Nursing home, child, welfare and maternity, center - 25 to 30 beds per lakh population.

❖ Smart Cities Performance Measurement Indicators:

- Electricity infrastructure.
- Uses of renewable sources like bio gas, solar etc.
- Smart primary health care 27 X7.
- Metal road and streets.
- Smart primary and secondary education.
- Solar energy plant to preserve electricity at the village level itself.
- Proper sanitation, disposal of rainwater.
- Hygienic drinking water and R.O system.
- Connectivity through internet, Wi-Fi mobile tower Availability of Banks, ATMs, post offices etc.
- Area for solid waste disposal and liquid waste disposal.
- Provision of Rain water harvesting system.
- Rural market with access to all basic facilities.

3.3 Technological Options :

Smart buildings: - Automated Intelligent Buildings, Advanced Heating Ventilation and Air conditioning systems (HVAC), Lighting Equipment.

Smart mobility: - Intelligent mobility; Advanced traffic management system (ATMS), Parking management, ITS-enabled transportation pricing system.

Smart governance and smart education: - Government on the Go, e-Government, education, Disaster management solutions.

Smart healthcare: - Intelligent Healthcare, Technology, Use of e-Health and m-Health systems, Intelligent and connected medical devices.

3.4 Road Map and Safe Guards :

India is a country of villages. Any product or solution that has to succeed and be popular in the country has to be of direct relevance to village life of this country. As per Census of India 2011, the country has a 69% rural population spread across more than 600,000 villages. Now, that being the case, no marketer worth his salt can ever dream of ignoring rural India. Globally the concept of 'Smart City' is a significant initiative that seeks to improve the quality of life of urban citizens. In India to the new central government's stated priority of building 'Smart Cities' has found a relatively modest budgetary allocation of Rs. 7,060 cr. for FY 2014-15, thoughts significance for the long term can be much larger. Be it the push of the 'Smart City' concept from solution providers, real estate developers or the government itself, the concept finds wide appeal. The Government of India's stated plan to set up 100 Smart Cities across the country has the potential to be a game- changer in the country's urban landscape and the lives of ordinary citizens.

3.5 Issues & Challenges :

Smart city council of is facing many issues and challenges in the smart city project. Some of the issues are shown below,

- Retrofitting existing legacy city infrastructure to make it smart
- Financing smart cities.
- Availability of master plan or city development plan
- Three-tier governance
- Providing clearances in a timely manner
- Dealing with a multivendor environment.
- Capacity building programmer.

3.6 Smart Infrastructure – Intelligent Traffic Management :

Smart infrastructure provides the foundation for all the key themes related to a smart city, including smart people, smart mobility, smart economy, smart living, smart governance and smart environment. The central characteristic that underlies most of these components is that

they are connected and that they generate data, which may be used intelligently to ensure the optimal use of resources and improve performance. This section introduces some key Components of smart city infrastructure and

Concludes by highlighting the need for a combined method in dealing with such infrastructure. Smart infrastructure includes following:

- Smart building
- Smart mobility
- Smart energy
- Smart waste management

3.6.1 Smart health Applications of smart infrastructure :

1. Energy :

For the National Grid, smartness is all about the timely use of information – getting that information at the right time and place so that informed decisions can be made.

2. Water :

Smart water systems are important in delivering more integrated and resilient water, wastewater and flood protection infrastructure to meet the current and emerging global sustainability and climate change challenges.

3. Transportation :

Transport being smart does not necessarily solve all problems because the infrastructure operators have no control over when people want to use the network – smartness needs to reach user level.

4. Communications :

Most communications devices and networks are relatively smart already, however other smart infrastructure depends upon communications.

5. The Built Environment :

Smartness is increasingly seen as the ability of buildings and systems within buildings to talk to each other.

3.7. Cyber Security:

Cyber security is the body of technologies, processes and practices designed to protect networks, computers, programs and data from attack, damage or unauthorized access. In a computing context, security includes both cyber security and physical security. It is important because government, military, corporate, financial, and medical organizations collect, process,

and store unprecedented amounts of data on computers and other devices. A significant portion of that data can be sensitive information, whether that is intellectual property, financial data, personal information, or other types of data for which unauthorized access or exposure could have negative consequences. Organizations transmit sensitive data across networks and to other devices in the course of doing businesses, and cyber security describe the discipline dedicated to protecting that information and the systems used to process or store it.Ensuring cyber security requires coordinated efforts throughout an information system. Elements of cyber security include:

- Application security
- Information security
- Network security
- Disaster recovery
- Operational security
- End-user education

3.8 Retrofitting- Redevelopment- Greenfield Development District Cooling :

Retrofitting :

Retrofitting means providing something with a component or feature not fitted during manufacture or adding something that it did not have when first constructed. It is often used in relation to the installation of new building systems, such as heating systems, but it might also refer to the fabric of a building, for example, retrofitting insulation or double glazing.

District heating and cooling :

Air condition from Hammond services In the Southeast, air conditioners are almost crucial pieces of equipment for home comfort. However, it can be difficult to find the right air conditioner for your home, one that will provide enough cool air in the summer to cool your home without driving your energy costs through the roof. We can help! At Hammond Services, we can help you choose the perfect air conditioner for your home, install it professionally, and even maintain/repair it in the years ahead.

Energy Efficient and Affordable Air Conditioners:

When it comes down to selecting a new air conditioner for your home, there are a few things you should consider. First of all is efficiency. By choosing an energy efficient model, you can be sure your money is being well spent and isn't being thrown away with inefficiencies. Get the most bang for your buck with an air conditioner that won't cost a fortune to run. Reliability You Can Count on As a Carrier Factory Authorized Dealer, our commitment to quality products you can count on is clear. We're confident when we say that with the proper maintenance, you can count on our air conditioners to operate efficiently for years to come. If you're having trouble choosing an air conditioner for your home, contact us today – we can help you weigh your options.

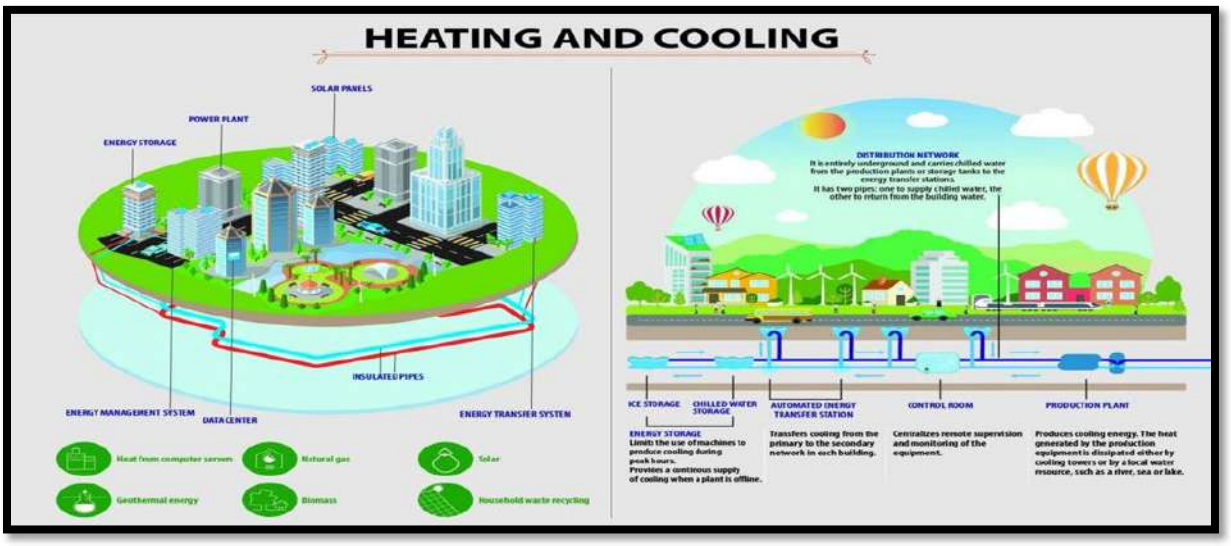


Fig.34 District heating and cooling

3.8.1 Green Building :

Green Building, also known as a sustainable building, is a structure that is designed, built, renovated, or re-used in an ecological and resource efficient manner. Sustainable development is maintaining delicate balance between the human need to improve lifestyles and feeling of well-being on one hand, and preserving natural resources and generations ecosystems, on which we & future depend.

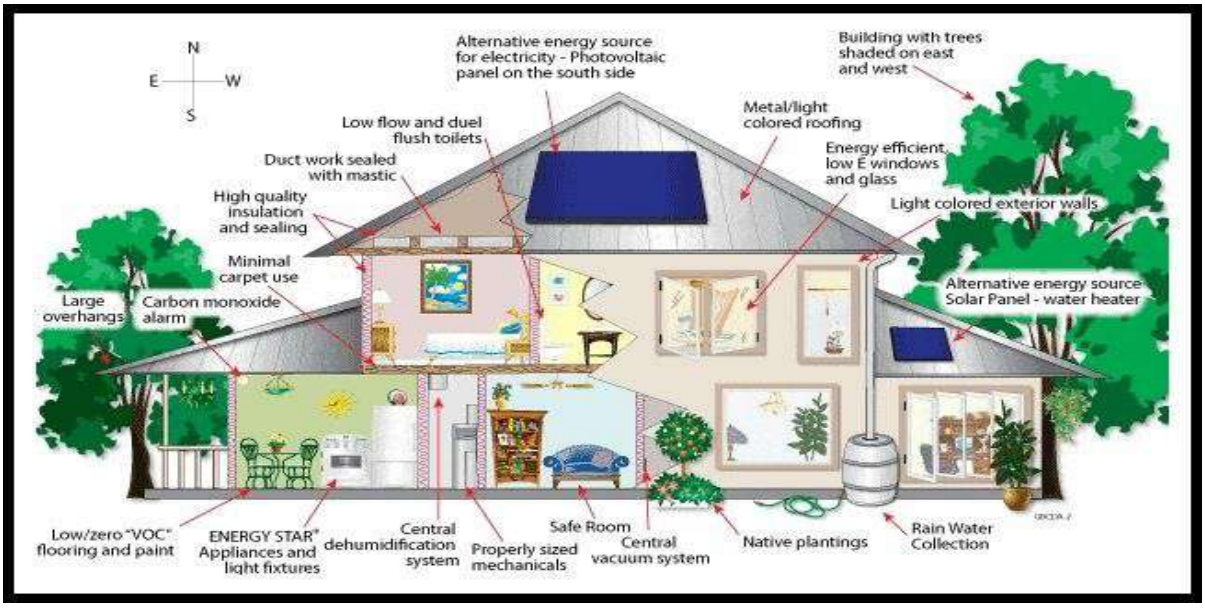


Fig.35 Concept of green building

Green building, or sustainable design, is the practice of increasing the efficiency with which buildings and their sites use energy, water, and materials, and of reducing impacts on humanhealth and the environment for the entire lifecycle of a building. Green-building concepts extend beyond the walls of buildings and include site planning, community and land-use planning issues as well. The growth and development of our communities has a large impact on our natural environment. The manufacturing, design, construction and operation of the buildings in which we live and work are responsible for the consumption of many of our natural resources.

Green Building Programs:

- Green Built Homes Certification Program is a statewide residential green-building rating program administered by the Green Built Alliance. Homes receive a rating and certificate based on third-party inspections. Contact the Green Built Alliance for more information.
- LEED, or Leadership in Energy and Environmental Design, is the nationally accepted rating system for commercial and institutional green buildings. The program helps establish a standard measurement for green building. Contact the U.S. Green Building Council for more information.
- Green Gauge with Home Energy Score is an innovative home-assessment tool to help homeowners save money, reduce energy usage and live in spaces that are healthier for themselves and the environment. Green Gauge uses a variety of criteria such as energy and water usage, building material sustainability, indoor air quality, site walkability and landscape ecology in order to determine how "green" a home is. The energy-efficiency portion of a Green Gauge Assessment is completed using the U.S. Department of Energy's Home Energy Score (HES). HES uses a systematic approach to provide a reliable, scientifically-based analysis of a home's energy characteristics and overall energy efficiency, which is rated on a scale of 1 to 10. Contact the Green Built Alliance for more information.

3.8.2 Objectives of a green building are :

- Protecting occupant health
- Improving employee productivity
- Using energy, water and other resources more efficiently
- Reducing overall impact to the environment
- Optimal environmental and economic performance
- Satisfying and quality indoor spaces

3.8.3 Benefits of green building :

1. Environmental Benefits

- Enhance and protect biodiversity and ecosystems.
- Improve air and water quality.
- Reduce waste streams

- Conserve and restore natural resources

2. Economic benefits of green building

- Reduce operating costs
- Improve occupant productivity
- Enhance asset value and profits
- Optimize life-cycle economic performance

3. Social benefits of green building:

- Enhance occupant health and comfort
- Improve indoor air quality
- Minimize strain on local utility infrastructure
- Improve overall quality of life

3.9 Strategic Options for Fast Development :

There are some solutions which may be considered strategically and economically for faster development of smart cities.

- E-governance and citizen services.
- Energy Management.
- Urban mobility.
- Waste management.
- Water Management.
- Resource Management
- Direct funding.
- People Awareness programs

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

Urban cities or areas are facing water scarcity challenge as more peoples are migrating every year to urban areas which leads to the scarcity of water in urban areas.

Due to migration of people sanitation problems are also occurring and main reason for it is water scarcity and availability of water per person per day.From Studies it is found that around 50 %of people will face scarcity of water in Year2050Main sanitation problems in India are the lack of public toilet facilities and still by this year also there are many villages in India in which no toilets are there in houses.It is estimated that by Year 2030 everyone in India will have access to basic toilets and due to which diseases will not spread.

By this step the water treatment plants will also be helpful and will be used widely to control the effluent Discharge.

Fig.36, 37 India's Urban Water and Sanitation Challenges

3.11 Initiatives in village development by local self-government :

- Local self-government of each and every state has taken steps to develop villages into smart cities by start in various Yojana.
- Still there are many villages in which there are no appointed officers such as Sarpanch, Talati. So, local self-government are taking steps to since 2015 that every village should have at least 1 person from the assembly that will work towards future development of the village/cities.
- Local self-government is giving awareness programs to the village peoples about how to help the village in converting it to smart village or cities.

3.12 Smart Initiatives by District Municipal Corporation :

Urban India faces an enormous challenge: managing its gigantic load of solid waste. It is not just a public health issue, but also turning out to be a serious law and order problem as people resort to violent methods to protest waste being dumped in their backyard. But cities simply do not have the space or the wherewithal to dispose of waste. The challenge is going to be tougher. With India's urban population growing at 3-3.5 per cent annually, the waste generated by cities is expected to increase by 5 per cent every year.

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

Singapore has shown its interest in helping India in realizing its ambitious dream of developing all the 100 smart cities. It has offered to help develop Amravati, the new state capital of Andhra Pradesh as a smart city. The country is also looking at re-engineering and upgrading the

transportation sector and retro-fitting the older Indian city.Canada has offered to help in providing solution to residential problem by providing wooden multi-storey housing complexes. Japan has signed a memorandum of understanding with India to develop Varanasi as a smart city. Germany has signed up with India to develop Bhubaneswar (Odisha), Kochi (Kerala) and Coimbatore (Tamil Nadu). The US' United States Trade and Development Agency (USTDA) has signed an agreement to develop Visakhapatnam (Andhra Pradesh), Allahabad (UP) and Ajmer (Rajasthan) as smart cities. Spain has proposed to cooperate with India in developing smart cities. The Barcelona Regional Agency of Spain has shown interest in exchanging technology with India. France has announced an investment of 2 billion euros in India to develop three cities -- Chandigarh, Pondicherry and Nagpur -- as smart cities. The UAE has committed itself to investing in the Smart City Project of India. An MoU has been signed between FICCI and the Federation of UAE for industrial and other ties between India and the UAE. China has shown interest in developing Pune as a smart city. It will be investing $2.5 billion in the city's security solutions and services. Sweden, Israel, the Netherlands, United Kingdom and Hong Kong have also shown interest in investing in India for developing smart cities. The British High Commission has shown interest in Belgavi city and proposed developing round-the- clock drinking water supply mechanism in the city. Italy has shown interest in the smart city concept and decided to invest of $1.2trillion over the next 20 years in its own initiatives. The Italian companies will contribute in terms of design and technology for the smart cities, with services ranging from consultancy to actual building of infrastructure.

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

After the Prime Minister Narendra Modi led government at the Centre announced its plans to develop 100 smart cities, various countries have been lining up to help India achieve the target. While 98 cities have so far been shortlisted to be developed, the names of the other two are to be announced at a later stage. Of those, 20 cities are selected in 2015-16 are to be provided funding in the first phase.

Government of India’s ‘smart cities mission’, a flagship initiative, is aimed at developing 100 sustainable and citizen friendly cities across the country. Each of these smart cities will be a key driver of economic growth boosting the GDP of the country and creating multiple new-age employment opportunities. With increased urbanization, urban areas are expected to house 40 per cent of India’s population and contribute to over 75 per cent of India’s GDP by 2030. This calls for large scale infrastructural development which is not just physical and institutional but also social and economic infrastructure.

Chapter-4

About Vasan Village

4.1Introduction:

4.1.1 Introduction about Vasan village details :

Vasan is a village placed in Gandhinagar Block of Gandhinagar district in Gujarat. Situated in rural region of Gandhinagar district of Gujarat, it is one of the 48 villages of Gandhinagar Block of Gandhinagar district. As per the government records, the village code of Vasan is 511238. The village has 816 families.

Vasan – Village Overview	
Gram Panchayat :	Vasan
Block / Tehsil :	Gandhinagar
District :	Gandhinagar
State :	Gujarat
Pincode :	511238
Area :	804.25 hectares.
Population :	3995
Households :	816
Nearest Town :	Gandhinagar

Table :10: Vasan village overview

4.1.2 Justification/ need of the study:

The need of the study is to provide the basic requirements of people in the village and for City Development of the village.For this purpose the information of the village is collected based on different categories such as Education, Water Facilities, Drainage Facilities, Transportation Facilities, Primary Health Care, Bank Facilities, Public Toilets, Community hall and other amenities.65% of the population of the country lives on Study Area (Broadly define)Vasan village is located in Gandhinagar Tehsil of Gandhinagar district in Gujarat, India. It is situated 12km away from Gandhinagar, which is both district & sub-district headquarter of Vasan village. As per 2009 stats, Vasan village is also a gram panchayat.Vasan Pin code is 382630 and postal head office is Rupal .Unava , Rupal , Chandisana , Amaja , Sonipur are the nearby Localities to Vasan. Gandhinagar, Mansa , Kalol , Dehgam are the nearby Cities to Gandhinagar.

4.1.3 Study Area (Broadly define) :

According to census 2011 information the location code or village code of Vasan village is 511238. Vasan village is located in Gandhinagar Tehsil of Gandhinagar district in Gujarat, India. It is situated 12km away from Gandhinagar, which is both district & sub-district headquarter of Vasan village. As per 2009 stats, Vasan village is also a gram panchayat. As per 2019 stats, Vasan village comes under Gandhinagar parliamentary constituency. Gandhinagar is nearest town to Vasan.

4.1.4 Objectives of the study:

To fulfill common requirement like drinking water, drainage system, transport system, improve living standards of people. To manage growth through good planning and appropriate development controls, reduce migration from rural to urban areas dueto lack of basic services and sufficient economic activities in rural areas. Electricity connections like street lighting that is energy efficient and eco-friendly. Health and Education facilities should be provided and ensure proper delivery of facilities to village dwellers. Repair & maintenance of Existing Public Buildings like Gram Panchayat, Public Library, School Buildings, Health Center, public Toilet Block &Other.

4.1.5 Scope of the Study:

By the analyzing present conditions, we can improve the basic amenities and facilities like agricultural facilities, milk cooperative facility, education facilities. To improve life style of the villagers by helping them to develop their skills by assisting them in implementing income generating activities in close coordination and cooperation with national and international organizations. agar, Mansa , Kalol , Dehgam are the nearby Cities to Gandhinagar. agriculture which contributes only 15 % to the country‘s GDP. If we compare this with China which has a similar sector contribution to the GDP, only 30% of people depend on agriculture whereas in country like USA just 2% of the people are dependent on agriculture Citification addresses this concern and imbalance by providing alternate jobs to village masses dependent upon agriculture. So it is very important to develop village area compare to city one.

4.1.6 Methodology Frame Work for development of your village :

4.1.6.1 Collection of Data :

- Population data (as per census)
- Literacy or illiteracy
- Socio-economic status
- Family composition

House Hold Information

- Occupation data

- Basic amenities
- Family composition
- Facility of water

Solid Waste Management

- Amount of waste generated.
- Method of collection of solid waste.
- Disposal of solid waste.

Transportation Data

- No of Main Roads
- No of Approach Road
- Types of Road

Smart village ecosystem: An Ecosystem comprises of networks of small and medium enterprises farmers, employees; local, state and central governments; other industrial, social and political organizations; infrastructure, logistics and Information Technology, communication services that connect the companies and the states to the external economic and social environment; and resources including natural, financial and skilled human resources with connections, knowledge of the industrial environment, interacting together with the Landscape (space or domain) and climate to provide the services for a village. This Ecosystem approach integrates all the institutions that are responsible, resources needed, services to be rendered and the service delivery technologies and mechanisms.

Proposed Methodology: The design methodology that we propose for building a smart village consists of:

1. Assessment of Investment Climate of the village Investment climate of a region is defined as policy, institutional, and behavioral Environment, both present and expected, that influences the returns, and risks, associated with an investment.

2. Formulate the growth strategies for the village Providing quality utility services like power, water, sanitation, and essential services such as education, healthcare, transportation, infrastructure (roads, railways, buildings, equipment) etc must be the primary strategy for the development of every village. Some of the utility services can be managed at a district level and others such as health care, schooling etc need to be managed at village level for proximity and accessibility reasons.

4.1.7 Available Methodology for development of related to civil :

- Design objectives
- Technical approach
- Proposed sustainability features
- Identify customer needs
- Project management structure
- Budget
- Resumes of team members

4.1.7.1 List of Objects Available related to Civil Methodology:

- Water tank
- Roadways
- Grampanchayat
- Community hall
- Lake
- Bus stop
- School

4.2 Vasan Village Study Area Profile :

4.2.1 Study area location with brief History land use details :

Census Parameter	Census Data
Total Population	3995
Total No of Houses	816
Female Population %	1917
Total Literacy rate %	80.87%
Female Literacy rate	71.97%
Scheduled Tribes Population %	0.0 % (0)
Scheduled Caste Population %	176
Working Population %	1314
Child(0 -6) Population by 2011	498
Girl Child(0 -6) Population % by 2011	233

Table 11: Vasan census detail

According to census 2011 information the location code or village code of Vasan village is 511238. Vasan village is located in Gandhinagar Tehsil of Gandhinagar district in Gujarat, India. It is situated 12km away from Gandhinagar

Connectivity of Vasan :

Type	Status
Public Bus Service	Available within village
Private Bus Service	Available near village
Railway Station	Available within 12+ distance

Table:12 Connectivity of Vasan

- **Detaied location :**

- Locality name: Vasan Taluka: Gandhinagar District: Gandhinagar State: Gujarat
- Pin code: 382650
- Area: 804.25 hectares
- Population: 3,995 approx.
- Households: 816
- Assembly Constituency: Gandhinagar North Parliament
- Constituency: Gandhinagar
- Nearest Town: Gandhinagar

Vasan is a Village in Gandhinagar Taluka in Gandhinagar District of Gujarat State, India. It is located 12 KM away from Gandhinagar, which is both district & sub-district headquarter of Vasan village.

Vasan is a village placed in Gandhinagar Block of Gandhinagar district in Gujarat. Situated in rural region of Gandhinagar district of Gujarat, it is one of the 48 villages of Gandhinagar Block of Gandhinagar district. As per the government records, the village code of Vasan is 511238. The village has 816 families.

Particulars	Total	Male	Female
Total No. of Houses	816	-	-
Population	3995	2078	1917
Child(0-6)	498	265	233
Schedule caste	176	92	84
Schedule tribe	0	0	0
Literacy	80.87%	89.13%	71.97%
Total Workers	1314	1134	180
Main worker	1227	-	-
Marginal worker	87	58	29

Table :13 Land use detail Vasan

4.2.2 Base location map, Land map, Gram Tal map :

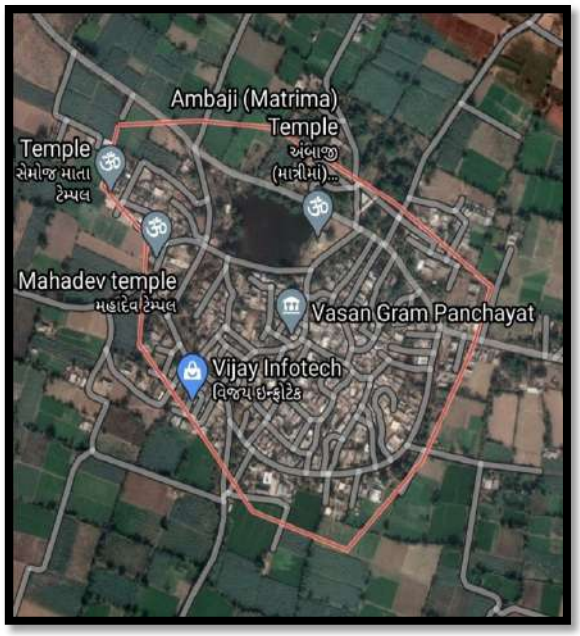


Fig.39:Satelite map of Vasan

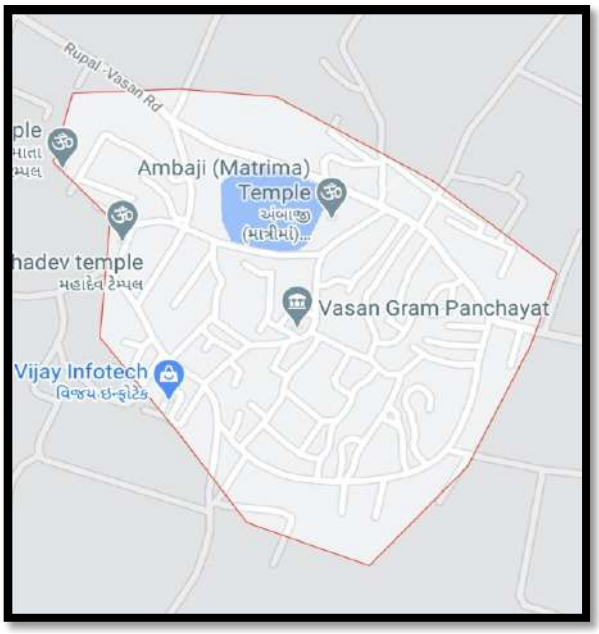


Fig.40.Map of Vasan

4.2.3 Physical & Demographical Growth :

Demographics :

Vasan is a large village located in Gandhinagar Taluka of Gandhinagar district, Gujarat with total 816 families residing. The Vasan village has population of 3995 of which 2078 are males and 1917 are females. In Vasan village population of children with age 0-6 is 498 which makes up 12.47 % of total population of village. Average Sex Ratio of Vasan village is 923 which is higher than Gujarat state average of 919. Child Sex Ratio for the Vasan as per census is 879, lower than Gujarat average of 890.

Literacy :

Vasan village has higher literacy rate compared to Gujarat. In 2011, literacy rate of Vasan village was 80.87 % compared to 78.03 % of Gujarat. In Vasan Male literacy stands at 89.13 % while female literacy rate was 71.97 %.

4.2.4 Economic generation profile / Banks :

The major sources of income are:

- Farming
- Animal Husbandry
- As Shopkeepers

4.2.5 Actual Problem faced by Villagers and smart solution :

During an interaction with people of Vasan village we understood their problems and issues like:

- There is a water logging problem during rainy season,

- There is no proper community hall available in the village,
- Lack of public toilet in the village.
- There is no PHC in the village.

Other than these the villagers have no any issues and they are satisfied with the work of Sarpanch and Talati of Vasan village.

Smart solutions:

- Community Hall
- PHC
- Water tank
- Cybercafe
- Supermarket
- Entrance Gate
- Rain water harvesting
- Public garden
- Solid waste management
- Skill development center
- Solar street lights and dustbins

4.2.6 Social scenario -Preservation of traditions, Festivals, Cuisine :

Gujarat Social Scenario :

CULTURE :

The Gujarati's are known for their diverse cultural heritage and rich traditions. It is a vibrant mix of Hinduism, Islam, Jainism and Buddhism and also a blend of different cultures of the Gujarat's like arts, beliefs, customs, traditions, institutions, inventions, language, technology and values. The culture of the people does not stop with one particular generation but instead the elders of the community see to that the future generations also practice it which automatically leads to the wisdom and appreciation of cultural traditions and lifestyles. They also as a part of their culture join hands to greet the guests and the elders. The lifestyle of the people of Gujarat is very balanced because of the fact that they have a perfect system of learning, religious practices and excellent forms of artistic expressions. The culture of the Gujarati's does not only prevails in Gujarat but it has been widespread to different parts of the world and now recognized as an international culture. There is not much of culture shock seen in the people of Gujarat and so it makes people bold and courageous with lot of energy to face different challenges raised by the global scenario.

CUSTOMS AND TRADITIONS :

Though modern and sophisticated houses have come in Gujarat, still there are places which have their traditional homes and wooden houses. Most of these traditionally built houses have beautiful and intricately designed interiors but as a customary practice each house has a special

"Chabutara" built for bird feeding. Pachchikam jewelry is one of the traditional jewelry of the people of Gujarat where instead of gold, the metal used in making of this ornament is silver. The Gujarati women as a part of their tradition carry a bunch of keys on their waist and the ring holder is usually made of silver. Some other jewelry which is worn by the ladies as part of their customs includes mangalsutra, earrings, necklace, rings and bangles. The Gujarati have lot of belief in various gods and goddesses. Cow is considered as mother God or "Gau-Mata" and the Gujarati's have lot of faith inthem. Some of the ceremonies which are must to be celebrated by the people of Gujarat are birth,thread ceremony, marriage and death. In all these ceremonies the rituals and poojas are performed by the Brahmans. As a part of the Gujarati's custom and tradition they celebrate festivals like Navratri andDiwali.

CUISINE :

Mostly Gujarati food is vegetarian because the state is dominated by Jains and the Vaishnavas. Most of their staple food includes wheat and millet varieties like jowar and bajri. No meal of Gujarati will miss roti along with a variety of vegetable curries and dishes. The food is generally served on a metal tray which is called as thali and 4-5 small bowls placed on it These thali mainly consists of roti, dal or kadhi, sabzi also known as shaak and rice. The Gujarati's are noted for their sweet tongue and every meal will be accompanied by a sweet dish. Sugar is also sometimes alternated by jaggery. Some of the other common food which is a must for the Gujarati's in their thali are dal,steamed vegetables, homemade pickles, buttermilk and salad. Vaghaar is Gujarat food a blend of spices, which is purified in hot oil and then added to the dal. Gujaratis generally use lot of salt, sugar, tomato and lemon in their cuisine. Desserts, which were in the ancient times offered only on festivity or some special occasions, have now found their way in the daily meals. Ghee is a must in the food of Gujarati's. Srikhand is a rich dessert made with curds and spiced with saffron, cardamom, nuts, and fruit. The Gujaratis evening snack include bhakri-shak or khichdi kadhi.

OCCUPATION :

The major occupation of the people of Gujarat is agriculture for at least one-half of the total land area is cultivable. Other area of economy and job sector includes dairy farming, primarily concerned with milk production. There are lot of industries which are involved in the production of fertilizers and petrochemicals.

4.2.7 Migration Reasons / Trends :

The latest census figures on migration for seven of Gujarat's eight municipal corporation managed cities have thrown up some eye-popping observations. Close to half the population in Gujarat cities are migrants made up of people whose last place of residence was in other urban and rural areas of the state and outside the state**.**

Reasons of migration of the people of the vasan village :

- Higher Education
- Lack of physical facilities
- Lack of infrastructure facilities

MIGRATION IN 7 MAJOR MUNICIPAL CORPORATIONS

Reason for migration	Ahmedabad	Rajkot	Vadodara	Surat	Jamnagar	Junagadh	Bhavnagar
Total migrants	25.64L	7.41L	9.01L	28.87L	2.69L	1.91L	2.51L
Migrants from other states	6.95L	56,215	2.26L	14.39L	26,537	5,726	13,942
Work/employment	4.45L	1.24L	1.68L	7.58L	30,897	26,167	33,078
Business	91,043	48,043	31,734	1.13L	10,597	7,905	10,818
Education	25,471	12,582	13,303	12,519	4,273	12,804	4,401
Marriage	4.37L	1.40L	1.87L	3.16L	48,476	38,440	57,215
Moved after birth	1.64L	44,367	83,882	1.75L	13,022	15,270	21,503
Moved with household	5.84L	2.25L	2.45L	8.81L	64,170	57,403	60,648

Gandhinagar Municipal Corporation has been avoided

(Fig.41 Reason of migration in 7 major municipal corporation of Gujrat)

4.3 Data Collection of Vasan village :

4.3.1 Describe Methods for data collection :

The main methods for data collection are :

1) Individual interviews :

- Interviews can be conducted in person or over telephone.
- Interviews can be done formally or informally.
- Questions should be focused , clear , and encourage open ended responses.
- They should be qualitative in nature.

2) Focus groups :

- A facilitated group interview with individual that has something in common.
- Gathers information about combined opinions.
- Responses are often coded in categories and analyzed .

3) Observations - Field trips :

- Allows for the study of the dynamics of a situation , frequency counts of target behavior.
- Good source for providing extra information about a certain group , can use videography.

4) Questionary Survey :

- Responses can be analyzed with quantitative methods by assigning numerical values to like type scales
- Results are generally easier to analyze.
- Other than this survey forms are prepared which are distributed to responders to record their opinions , data so that it can be analyzed.

Other Methods :

- Direct communication
- Government websites
- Communication with villagers
- Views of Sarpanch,
- Data from Talati
- Self observation

4.3.2 Primary details of survey :

Vasan is a Village in Gandhinagar Taluka in Gandhinagar District of Gujarat State, India. It is located 12 KM away from Gandhinagar, which is both district & sub-district headquarter of Vasan village.Vasan is a village placed in Gandhinagar Block of Gandhinagar district in Gujarat. Situated in rural region of Gandhinagar district of Gujarat, it is one of the 48 villages of Gandhinagar Block of Gandhinagar district. As per the government records, the village code of Vasan is 511238. The village has 816 families.

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

In Vasan village approx size of the house is 5x10 m.

Geo-Tagging of house – This facility is not available in Vasan village.

4.3.4 No of Human being in One House :

average 4

4.3.5 Material available locally in the village and Material Out Sourced by the villagers:

The materials like milk, Cow dung other grocery materials, wheat, potatoes and other agricultural cereals are used locally as they are locally easily available.

4.3.6 Geographical Detail :

The total geographical area of village is 804.25 hectares.

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

Total no of house – 816

Schedule Caste (SC) constitutes 4.41 % of total population in Vasan village. The village Vasan currently doesn't have any Schedule Tribe (ST) population.

4.3.8 Occupational Detail - Occupation wise Details / Majority business :

In Vasan village out of total population, 1314 were engaged in work activities. 93.38 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 6.62 % were involved in Marginal activity providing livelihood for less than 6 months. Of 1314 workers engaged in Main Work, 402 were cultivators (owner or co-owner) while 392 were Agricultural labourer.

4.3.9 Agricultural Details / Organic Farming / Fishery :

The number of occupied individual of Vasan village is 1314 while 2681 are non- working. And out of 1314 employed people 402 individuals are completely reliant on agriculture.

4.3.10 Infrastructure Facilities:

- The Physical infrastructure like Water tank, Underground seepage, reads and some basic facilities.
- Water Tank
- There is one water tanks accessible in town.
- The overhead tank of limit 1, 00,000 liter is accessible.
- Transportation and Road Network
- Town Approach Street is bituminous road and CC road. No railroad station and one bus stop is also provided in the village. There aren't any footpaths on the street.

4.3.11 Tourism development available in the village for attracting the tourist :

In Vasan village is having famous temple which is important for tourism activity.
Tourism Development can be implemented in Vasan as ,Touring , Cultural activities , Water-related activities, Health-related activities ,Aerial activities ,Passive activities ,Sporting activities etc.

4.4 Infrastructure Details (With Exiting Village Photograph) :

Most of the basic facilities are available in vasan village like bank, post office, community Hall, water tank etc.

4.4.1 Drinking Water / Water Management Facilities :

Vasan village is having one over head water tank for fulfilment of the water requirements.There is only one over head tank in vasan village

Which is not in proper condition.There is a need of other provision of water storage system for that construction of new water tank with large storage capacity is require

To fulfil the water requirement of the people of the vasan village.

Fig.42 : water tank

4.4.2 Drainage Network / Sanitation Facilities :

Vasan village is having underground drainage system. and There is a good sanitation facility available in Vasan village. Sanitation is done daily by villagers and there is no any solid waste collection system available in the village. No government sweepers are coming daily for other waste collection and for cleaning of the village.

4.4.3 Transportation & Road Network :

The operation of bus stops significantly influence transit system performance, customer satisfaction and customer safety. For that purpose vasan village is also having a bus stop which is in a medium condition. Provision of new bus stop can give aesthetic view to village. bus-stop locations are established by a transit authority.Bus stops are primary requirement of the road users and it is require to provide minimum one bus stop in village areas.

Fig.43 Bus stops

4.4.4 Housing condition :

In Vasan village the major structures such as schools, panchayat buildings and majority of the houses are not in very good condition.

Fig.44,45 Housing condition

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

Social Infrastructures:

In Vasan village there are 3 anganwadi , 2 primary school ,1 high school, 2-3 temples , 1 Post office and 1 Panchayat building. Village does not have any health care center and recreational area or public garden.

Health Facilities :
In the village no PHC, CHC, dispensary or any kind of private clinics are available in the village. The villagers go to Unava village for any kind of health facility.

Education Facilities :
In Vasan village there are 3 anganwadi , 2 primary school ,1 high school. Schools are well managed by the local bodies.

1.Grampanchayat :

Gram panchayat are responsible for the overall development of the village and play a key role in providing basic services. Vasan village is having gram panchayat also.

Fig.46: Grampanchayat

Gram Panchayat is a basic village governing institute in Indian villages. It is a democratic structure at the grass-roots level in India. It is a political institute, acting as cabinet of the village. The Gram-Sabha work as the general body of Gram-Panchayat. The members of the Gram panchayat are elected by the Gram Sabha.

2.Community Hall and lake of the village:

Vasan village is having one community hall but it is in very poor condition. Vasan village also having one lake.

Fig.47: Community hall

Fig.48: lake

3.Temple:

Beauty of villages are always center of attraction for the people especially when village is having eminent temple. And vasan village is having legendary temple of Shri Vaijnath (Vasaniya) Mahadev.

Fig.49: temple

Fig.50: temple

4.Bank :

Fig.51:Bank

Fig.52:Bank

5.Public Library :

There is no any Public library available in the Vasan village. Only schools are having small library for students of the school only.

6. School & Anganwadi :

Fig.53 school

Fig.54 anganwadi

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

In the Vasan village as per the interaction with the villagers the maintenance is required in the village lake. Water tank is present but is not in good condition. Community-Hall is also present but it is not in good condition and construction of new community-Hall is require.

4.4.7 Technology Mobile/ WIFI / Internet Usage Details :

Almost in all the households the villagers are using mobile phone and they are also using the internet facility for personal usage. And whole Vasan village is having wi-fi connection.

4.4.8 Sports Activity as Gram Panchayat :

There are no any sports activities are being done by gram panchayat in Vasan village. The primary school has some sports equipment and tools & also children and students are using these facilities.

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

The Vasan village has panchayat building and it is in good condition. The separate Post office building is there in village. Public Library is not available in the village.

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

There are no any kind of facilities like smart toilet-coin operated entry, footpath development, self-cleansing, waterless public building, etc. in the Vasan village.

4.4.11 Any other details :

There is not any other facilities in the village.

4.5 Existing Institution like - Village Administration – Detail Profile :

4.5.1 Bachat Mandali : In the Vasan village there is no any Bachat Mandali existing.

4.5.2 Dudh Mandali : There is one Dudh Mandali existing in the Vasan village.

Fig.55,56 Dudh Mandali

4.5.3 Mahila forum :

A mahila forum is active in the Vasan village.so that mahilas have the decision making authority in the Vasan village.

4.5.4 Plantation for the Air Pollution :

Tree plantation activity done in the Vasan village for reducing the air pollution. Also this kind of activities are done in the primary school by the students of the Vasan village.

4.5.5 Rain Water Harvesting - Waste Water Recycling :

In the Vasan village no one is using the system of rain water harvesting and there is no any kind of waste water recycling process done.

4.5.6 Agricultural Development :

The village farmers have agricultural tools and equipment. All the agri-materials are available in the village.

4.5.7 Any Other :

There are no any other kind of institutions existing in the Vasan village apart from panchayat building, dairy, primary school, temples, agricultural co-operative office building, anganwadi, etc.

4.5.8 Desiredamenities :

As per above report of a gap analysis and based on discussion with village people and higher authorities we have decided to design the following infrastructures in our village.

Social Infrastructure : Public Latrine blocks, Public Health Centre Building

Socio Cultural Infrastructure : Public Library, Higher level education ,Public Garden

Hi-Tech Solution : Computer classes in scho

Chapter 5.

Technical Options with Case Studies : (FOR ANY ONE TOPIC, Take a new concept design , prototype model with actual costing)

5.1 Concept (civil) :

5.1.1 Advance Sustainable construction techniques / Practices and Quantity Surveying

3D printing :

In the construction industry, 3D printing can be used to create construction components or to 'print' entire buildings. Construction is well-suited to 3D printing as much of the information necessary to create an item will exist as a result of the design process, and the industry is already experienced in computer aided manufacturing. The recent emergence of building information modelling (BIM) in particular may facilitate greater use of 3D printing.

Building information modelling (BIM) :

Building Information Modeling (BIM) is an intelligent 3D model-based process that gives architecture, engineering, and construction (AEC) professionals the insight and tools to more efficiently plan, design, construct, and manage buildings and infrastructure.

Cladding systems :

Wall cladding means that the exterior of a building is covered with panels of a different material than the cover-up. To maintain the structure, frame and exterior walls of a building, certain panel systems are applied. The panels are installed over other materials used in construction.

Computer aided design and computer aided manufacturing (CAD/CAM) :

Computer-aided design (CAD) involves creating computer models defined by geometrical parameters. These models typically appear on a computer monitor as a three-dimensional representation of a part or a system of parts, which can be readily altered by changing relevant parameters. CAD systems enable designers to view objects under a wide variety of representations and to test these objects by simulating real-world conditions.

Other techniques are :

- Computer numerical control
- Construction plant.
- Modern methods of construction.
- Modular construction
- Smart technology
- Robotics

Causes Prevention and Repair of Cracks in Building / rectification of building tilt / rehabilitation techniques:

- **Repair of cracks**

The repair of cracks can be achieved with the following techniques:

1)By epoxy-injection grouting
2) By routing and sealing
3) By flexible sealing
4) By stitching
5) By providing additional reinforcement
6) By drilling and plugging
7) By prestressing steel
8) By grouting
9) Dry packing
10) Overlays
11) Auto generous healing
12) Surface coatings

Here we will discuss about most popular repair technique of cracks such as epoxy-injection method and grouting.

1) Crack Repair by Epoxy-injection Method

Epoxy compounds are having very well compressive, tensile and bond strength. They can be used for preparing repair mortars but if used as bonding/binding materials for concrete i.e. epoxy concrete, the cost is prohibitic. Cracks as narrow as 0.05 mm can be bonded by the injections of epoxy. It is excellent material for repairing cracks because they have very good properties such as resistant against water penetration, resistant to crack formation and their very good adhesive properties. This method hasbeen successfully used in the repair of cracks in building, bridges, and other types of concrete structures. The repair process by this method is as follow:

a) Clean the cracks

The very first step is to clean the cracks that have Contaminants such as oil, grease, dirt or fine particles. Because such contaminants prevent epoxy penetration in the cracks to be repaired. For this reason, cleaning is required.

b) Sealing of the surfaces

Surface cracks should be sealed. It is used to keep the epoxy from leaking out before it has gelled. This can be done by applying an epoxy, polyester or other appropriate sealing material to the surface of the crack and allowing it to harden.

c) Install the entry and venting port

When the cracks are v-grooved, drill holes are made in the groove of about 20mm diameter below the apex of the v-grooved section. Fittings such as pipe nipples are inserted in to the holes. But when the cracks are not v-grooved, an entry port is to be bond a fitting flush with the concrete face over the crack.

d) Mixing of epoxy

It is done either by batch or continuous methods. In batch mixing, the adhesive components are premixed according to the manufacturer's instructions, usually with the use of mechanical stirrer, like a paint mixing paddle. In the continuous method, the two liquid adhesive components pass through metering and driving pumps prior to passing through an automatic mixing head.

5.1.2 Soil liquefaction:

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

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

Fig.57,58 soil liquefaction

The phenomenon is most often observed in saturated, loose (low density or uncompacted), sandy soils. This is because a loose sand has a tendency to compress when a load is applied. Dense sands, by contrast, tend to expand in volume or 'dilate'. If the soil is saturated by water, a condition that often exists when the soil is below the water table or sea level, then water fills the gaps between soil grains ('pore spaces'). In response to soil compressing, the pore water pressure increases and the water attempts to flow out from the soil to zones of low pressure (usually upward towards the ground surface). However, if the loading is rapidly applied and large enough, or is repeated many times (e.g. earthquake shaking, storm wave loading) such that the water does not flow out before the next cycle of load is applied, the water pressures may build to the extent that it exceeds the force (contact stresses) between the grains of soil that keep them in contact. These contacts between grains are the means by which the weight from buildings and overlying soil layers is transferred from the ground surface to layers of soil or rock

at greater depths. This loss of soil structure causes it to lose its strength (the ability to transfer shear stress), and it may be observed to flow like a liquid (hence 'liquefaction')

Soil liquefaction occurs when the effective stress (shear strength) of soil is reduced to essentially zero. This may be initiated by either monotonic loading (i.e. a single, sudden occurrence of a change in stress – examples include an increase in load on an embankment or sudden loss of toe support) or cyclic loading (i.e. repeated changes in stress condition – examples include wave loading or earthquake shaking). In both cases a soil in a saturated loose state, and one which may generate significant pore water pressure on a change in load are the most likely to liquefy. This is because loose soil has the tendency to compress when sheared, generating large excess porewater pressure as load is transferred from the soil skeleton to adjacent pore water during undrained loading. As pore water pressure rises, a progressive loss of strength of the soil occurs as effective stress is reduced. Liquefaction is more likely to occur in sandy or non-plastic silty soils, but may in rare cases occur in gravels and clays.

A 'flow failure' may initiate if the strength of the soil is reduced below the stresses required to maintain the equilibrium of a slope or footing of a structure. This can occur due to monotonic loading or cyclic loading, and can be sudden and catastrophic. A historical example is the Aberfan disaster. Casagrande[8] referred to this type of phenomena as 'flow liquefaction' although a state of zero effective stress is not required for this to occur.

Disaster management in natural calamities :

Disaster management in India refers to conservation of lives and property during a natural and man-made disaster. Disaster management plans are multi-layered and are planned to address issues such as floods, hurricanes, fires, mass failure of utilities and the rapid spread of disease. India is especially vulnerable to natural disasters because of its unique geo-climatic conditions, having recurrent floods, droughts, cyclones, earthquakes, and landslides. As India is a very large country, different regions are vulnerable to different natural disasters. For example, during rainy season the peninsular regions of South India is mostly affected by cyclones and states of West India experience severe drought during summer.

Disaster management Act,2005:

The Disaster Management Act was passed by the Lok Sabha on 28 November 2005, and by the Rajya Sabha on 12 December 2005. It received the assent of the President of India on 9 January 2006. The Act calls for the establishment of a National Disaster Management Authority (NDMA), with the Prime Minister of India as chairperson. The NDMA has no more than nine members at a time, including a Vice-Chairperson. The tenure of the members of the NDMA is 5 years. The NDMA which was initially established on 30 May 2005 by an executive order was constituted under Section-3(1) of the Disaster Management Act, on 27 September 2005. The NDMA is responsible for "laying down the policies, plans and guidelines for disaster management" and to ensure very timely and effective response to disaster". Under section 6 of the Act it is responsible for laying "down guidelines to be followed by the State Authorities in drawing up the country Plans".

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", fromthe experience of the user, excreta and wastewater collection methods, transportation or conveyanceof waste, treatment, and reuse or disposal. The Sustainable Sanitation Alliance (SuSanA) includes fivefeatures (or criteria) in its definition of "sustainable sanitation": Systems need to be economically andsocially acceptable, technically and institutionally appropriate and protect the environment and naturalresources. The purpose of sustainable sanitation is the same as sanitation in general: to protect humanhealth. However, "sustainable sanitation" attends to all processes of the system: This includes methodsof collecting, transporting, treating and the disposal (or reuse) of waste.

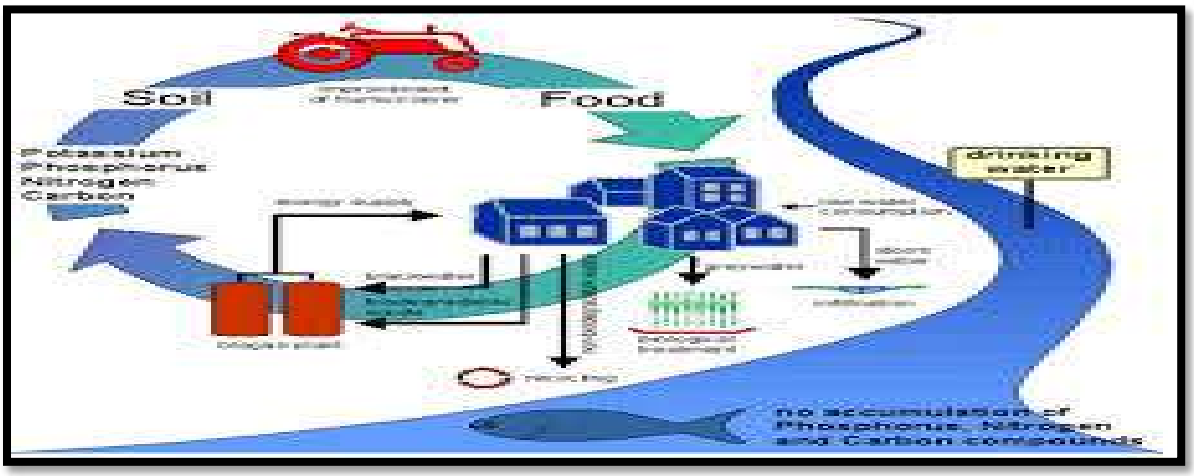


Fig. 59:Sustainable Sanitation

5.1.4 Transport Infrastructure / system :

Various types of roads/Intelligent transportation system :

The roads are classified based on many factors as follows.

- Location & function
- Traffic Volume
- Width
- Economy
- Traffic type
- Rigidity
- Topography

5.1.4.1 Types of Roads Based on Materials :

- Earthen roads
- Gravel roads

- Murrum roads
- Kankar roads
- WBM roads
- Bituminous roads
- Concrete roads

Earthen Roads

Earthen roads are laid with soil. They are cheaper of all types of roads. This type of road is provided for less traffic areas and or for countryside areas. Good drainage system should be required which reflects good performance for longer period.

Fig.60 : Earthen Roads

Gravel Roads

Gravel roads are also low quality roads but they are good when compared to earthen roads. Compacted mixture of gravel and earth is used as pavement material in this case.

Fig.61: Gravel Roads

Kankar Road :

Kankar is nothing but impure form of lime stone. Kankar roads are provided where lime is available in good quantity. These are also low quality and performance wise they are similar to gravel and murrum roads.

Fig . 62: Kankar Roads

WBM Road :

Water Bound Macadam (WBM) roads contain crushed stone aggregate in its base course. The aggregates are spread on the surface and these are rolled after sprinkling water.WBM roads provides better performance compared to earthen, gravel, murrum and kankar roads.WBM roads are laid as layers about 10cm thickness of each layer. They are very rough and may disintegrate immediately under traffic.

Fig. 63:WBM Roads

Bituminous roads:

Bituminous roads are very popular roads around the world. They are most used roads in the world. They are low in cost and good for driving conditions. They are flexible and thickness of bituminous roads depends upon the subgrade soil conditions.

Fig .64:Bituminous Roads

Concrete Roads

Cement concrete is used to construct the pavements in case of concrete roads. These are very popular and costlier than all other types of roads. They are not flexible so, they require less maintenance.Concrete roads are suitable for high traffic areas. Concrete roads are laid with joints and time of construction is more.

Fig.65 Concrete Roads

5.1.5 Vertical Farming:

Vertical farming is the practice of producing food on vertically inclined surfaces. Instead of farming vegetables and other foods on a single level, such as in a field or a greenhouse, this method produces foods in vertically stacked layers commonly integrated into other structures like a skyscraper, shipping container or repurposed warehouse.

Using Controlled Environment Agriculture (CEA) technology, this modern idea uses indoor farming techniques. The artificial control of temperature, light, humidity, and gases makes producing foods and medicine indoor possible. In many ways, vertical farming is similar to greenhouses where metal reflectors and artificial lighting augment natural sunlight. The primary goal of vertical farming is maximizing crops output in a limited space.

FIG.66, 67:Vertical Farming

Advantages of Vertical Farming:

Having greater output from a small cultivation area is not the only advantage of vertical farming. Following are some of the major benefits of vertical farming:

- Preparation for Future: By 2050, around 68% of the world population is expected to live in urban areas, and the growing population will lead to an increased demand for food.The efficient use of vertical farming may perhaps play a significant role in preparing for such a challenge.
- Increased And Year-Round Crop Production: Vertical farming allows us to produce more crops from the same square footage of growing area. In fact, 1 acre of an indoor area offers equivalent production to at least 4-6 acres of outdoor capacity. According to an independent estimate, a 30-story building with a basal area of 5 acres can potentially produce an equivalent of 2,400 acres of conventional horizontal farming. Additionally, year-round crop production is possible in a controlled indoor environment which is completely controlled by vertical farming technologies.
- Less Use Of Water In Cultivation: Vertical farming allows us to produce crops with 70% to 95% less water than required for normal cultivation.
- Not Affected By Unfavorable Weather Conditions: Crops in a field can be adversely affected by natural calamities such as torrential rains, cyclones, flooding or severe droughts—events which are becoming increasingly common as a result of global

warming. Indoor vertical farms are less likely to feel the brunt of the unfavorable weather, providing greater certainty of harvest output throughout the year.

- Increased Production of Organic Crops: As crops are produced in a well-controlled indoor environment without the use of chemical pesticides, vertical farming allows us to grow pesticide-free and organic crops.

Various types of environmental factors:

1) High quantity of Exhaust gases: The biggest reason by far for all kinds of environmental degradation is the exorbitant amount of gases, harmful to the environment, which is released by the various industries. Prime amongst these gases are C02, S02 and NH3. Of course there are many more, and these are the main culprits for ozone holes and global warming.

2) Deforestation: Close second comes the deforestation all over the world, to harness forest resources, to clear land, for wood and for various other reasons. Deforestation causes major problems for one simple reason; it decreases the number of trees, which clean the environment, provide oxygen and also affect rain patterns. This is the major reason why there are calls for tree plantation; it is to make up for this loss.

3) High number of industries such as mining: Mining creates a lot of pollution, mainly because it releases particulate matter, which qualifies as Respirable Particulate Matter (RPM); the particulate matter which can enter our lungs and can harm the entirerespiratory system. This form causes the most direct harm to humans, also particulate matter can come from indoor pollution, as can be seen in cooking on traditional ‘choolahs’ and cottage industries like ‘bangle-making’.

4) Chemical effluents: Effluents are another by-product of industries which poses threat to the environment, leather and tanning industries, petroleum industries and chemical manufacturing industries create major waste products which are released directly into nearby streams without treatment, creating river pollution and causing harm to aquatic life.

5) Transport: As the spending power of the population increases and as cars become available more, the number of vehicles on the road increases. The amount has grown exponentially in countries like India, Brazil and China and this is a point form of pollution which directly affects humans. Smog is a nuisance that is created because of vehicular pollution, and Hydro-Carbons released from engines are the cause of creation of lower level ozone that is harmful to humans.

6) Unprecedented Construction: Urban Heat Island is a direct cause of the unprecedented construction activities that are being carried out right now, and urban heat island causes trapping of pollutants. Urban Heat island is an effect caused due to trapping of solar radiation by concrete and cement which are materials which trap heat extremely well. Construction causes removal of vegetative cover which usually allows for better exchange of heat. This heat island effect causes constricted circulation of air, which traps pollutants released in urban areas and does not allow for mixing of the air, thus decreasing the air quality.

7) Secondary Pollutants: Secondary pollutants are ones that are not directly emitted; however they get created when primary pollutants react amongst themselves. Major amongst them is the creation of ozone from reaction between non-burnt Hydrocarbons and Nitrous Oxides. There are various other secondary pollutants and the reaction between these pollutants cause reactions that lead to formation of ozone holes. Stratospheric clouds are the main reaction sites for such pollutants.

8) Ruinous agricultural policies: Overloading the land with fertilizers, overgrazing and shifting agriculture are ruinous agricultural policies that degrade land, creating soil erosion that leads to silting in major rivers and reservoirs. Soil degradation is a continuous cycle and it ultimately leads to desertification and degradation of land quality by allowing the direct action of eroding agents on cultivable land.

9) The Population Explosion: The increasing population creates a load that the entire environment has to support, not only in terms of food and lodging, but also in terms of the amount of waste that it generates and the ability of the environment to sustain this growth. All major activities are carried out to support this growing population, and whilst this is unavoidable, what is required is the proper planning that should come with this explosion.

10) Unplanned Land-use policies: Land models are available these days which help in proper planning and use of land resources. However, failure to use these models and land management policies can lead to land pollution and degradation of the worst kind. Extraction from mines renders them unusable for habitation and if rehabilitation work.

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure :

Mechanism : In the case of Reinforced concrete structure the ingress of moisture or air may lead to corrosion of steel, cracking and spalling of the concrete cover thereby reducing durability of the concrete structure . Repair has been suggested as the protective solution for damaged structure dueto corrosion. Corrosion of reinforcing steel is a significant economic and safety problem, preventing many buildings from attaining their design life. It is now a must look into field as corrosion of reinforcing steel is seen almost in every 10 out of 100 constructions within a life of 10years. Nowadays the increase content of pollutants in the city atmosphere has very much affected the lifespan of RCC structures. The increased content of pollutants include a very high rates ofSulphates and Chlorides which when these mixes with rain water and falls over these structures anddamages the visible parts.

Prevention : Corrosion of steel in reinforced concrete structures can be divided into four different categories, based on how they provide protection:

1) Alternative reinforcement and slab design method includes materials that electrically isolate thesteel from the concrete and create a barrier for chloride ions, materials that protect steel galvanic-ally, and materials that have significantly higher corrosion thresholds than

conventional reinforcing steel. Concrete slabs have been designed without any internal reinforcement.

2) Barrier methods protect reinforced concrete from corrosion damage by preventing water,oxygen, and chloride ions from reaching the reinforcement and initiating corrosion.

3) Electrochemical methods use current and an external anode to protect the reinforcement, even when the chloride ion concentration is above the corrosion threshold.

4) Corrosion inhibitors offer protection by raising the threshold chloride concentration level, byreducing the permeability of the concrete, or by doing both.

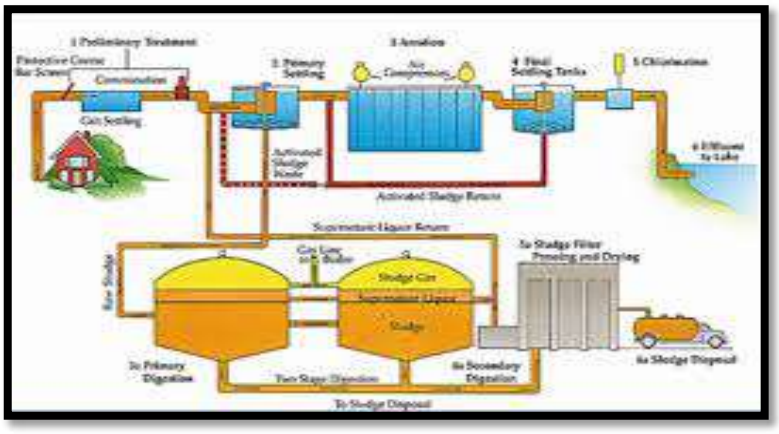
5.1.7 Sewage treatment plant :

It includes physical, biological and sometimes chemical processes to remove pollutants. Its aim is to produce an environmentally safe sewage water, called effluent, and a solid waste, called sludge or biosolids, suitable for disposal or reuse. Reuse is often for agricultural purposes, but more recently, sludge is being used as a fuel source.Water from the mains, used by manufacturing, farming, houses (toilets, baths, showers, kitchens, sinks), hospitals, commercial and industrial sites, is reduced in quality as a result of the introduction of contaminating constituents. Organic wastes, suspended solids, bacteria, nitrates, and phosphates are pollutants that must be removed.

Sewage water can travel towards treatment plants via piping and in a flow aided by gravity and pumps. The first part of thefiltration of sewage typically includes a bar screen to filter solids and large objects that are then collected in dumpsters and disposed of in landfills. Fat and grease are also removed before the primarytreatment of sewage.

The term "sewage treatment plant" (or "sewage treatment works" in some countries) is nowadays oftenreplaced with the term wastewater treatment plant or wastewater treatment station .

Sewage treatment plant processes fall into two basic types:Anaerobic Sewage Treatment : Sewage is partly decomposed by anerobic bacteria in a tank without the introduction of air, containing oxygen. This leads to a reduction of Organic Matter into Methane, Hydrogen Sulphide, Carbon Dioxide etc. It is widely used to treat wastewater sludge and organic waste because it provides volume and mass reduction of the input material to a large extent.. The methane produced by large-scale municipal anerobic sludge treatment is currently being examined for use in homes and industry, for heating purposes. Septic tanks are an example of an anerobic process, but the amount of methane produced by a septic tank (it is only the SLUDGE at the bottom that produces methane) serving less than 100 people is miniscule. In addition to this, septic tank effluent still contains about 70% of the original pollutants and the process smells very badly, due



to the Hydrogen Sulphide, if not vented correctly. The effluent produced by this process is highly polluting and cannot be discharged t oany watercourse. Fig.68: sewage treatment plant

It must be discharged into the Aerobic layer of the soil (within the top metre of the ground) for the aerobic soil bacteria to continue the sewage treatment via the aerobic process below.

Fig.69: sewage treatment plant

Aerobic Sewage Treatment : In this process, aerobic bacteria digest the pollutants. To establish an aerobic bacterial colony you must provide air for the bacteria to breathe. In a sewage treatment plant, air is continuously supplied to the Biozone either by direct Surface Aeration using Impellers propelled by pumps which whisk the surface of the liquid with air, or by Submerged Diffused Aeration using blowers for air supply through bubble diffusers at the bottom of the tank. (The most modern aerobic sewage systems use natural air currents and do not require electricity, though these are only used for small scale sewage systems at the moment. Sewage treatment is the process of removing contaminants from municipal wastewater, containing mainly household sewage plus some industrial wastewater. Physical, chemical, and biological processes are used to remove contaminants and produce treated wastewater (or treated effluent) that is safe enough for release into the environment. A by-product of sewage treatment is a semi-solid waste or slurry, called sewage sludge. The sludge has to undergo further treatment before being suitable for disposal or application to land.

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

Chapter 6.

Swachh Bharat Abhiyan (Clean India)

6.1 Strategic Technology options for Swatchh Bharat Abhiyan (SBA) :

- **Swatchh Bharat Abhiyan**

On October 2nd 2014, Prime Minister Narendra Modi officially launched the Swachh Bharat Abhiyan (SBA) at Rajpath, New Delhi, by taking up the broom to clean a road.

The SBA was launched with eight core objectives. The principal objective was to ensure a healthy life for Indian citizens and to improve India's semblance globally.

SBA has specific goals aimed for the rural as well as urban areas. Gramin SBA, i.e., for the rural areas has a target of 11 crore household latrines to be installed in villages by 2019. The central agency for this work is the Drinking Water and Sanitary Ministry.

The Urban SBA has a target to build 1 crore household toilets, 2.5 lakh community toilets, 2.6 lakh public toilets and solid waste management. Ministries are to build 50,000 toilets in schools by August 2015.The central agency for this work is the Urban Development and Housing Ministry.

SBA has to achieve its ultimate goal by 2019, the 150th birth anniversary of Mahatma Gandhi, to ensure a clean and green India (every city and village). The intention and expected results of SBA undoubtedly are remarkable however, apt implementation remains as a significant challenge.

Fig.70: Swachh bharat abhiyan

Fig.71: Swachh Bharat Abhiyan

Strategic:

The focus of the Strategy is to move towards a 'Swachh Bharat' by providing flexibility to State Governments, as Sanitation is a state subject, to decide on their implementation policy and mechanisms, taking into account State specific requirements.

It is suggested that Implementation Framework of each State be prepared with a road map of activities covering the 3 important phases necessary for the Programmer:

- Planning Phase
- Implementation Phase
- Sustainability Phase

Each of these phases will have activities that need to be specifically catered for with concrete Plans of Action, which shall need specific preparation and planning.

A schematic representation of the SBM Programmer Implementation Diagram is represented below as an illustrative model. A schematic representation of the SBM Programmed Implementation Diagram is represented below as an illustrative model.As part of the campaign, volunteers, known as Swachhagrahis, or "Ambassadors of cleanliness", promoted indoor plumbing and community approaches to sanitation (CAS) at the village level. Otheractivities included national real-time monitoring and updates from non-governmental organizations (NGOs) such as The Ugly Indian, Waste Warriors, and SWaCH Pune (Solid Waste Collection and Handling). The government provided subsidy for construction of nearly 110 million toilets between 2014 and 2019, although many Indians especially in rural areas choose to not use them. The campaign was criticized for using coercive approaches to force people to use toilets. Many households werethreatened with a loss of benefits such as access to electricity or food entitlements through the public distribution system.

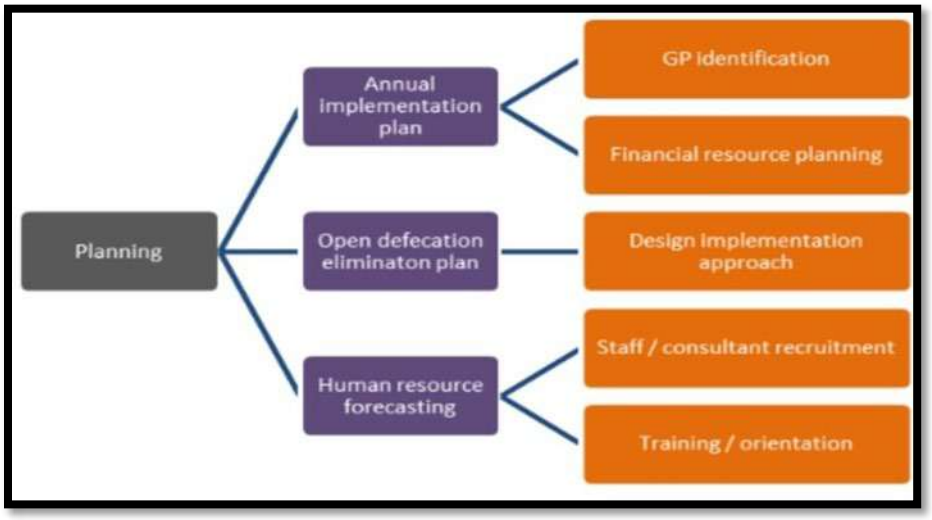


Fig.72 Planning phase SBM

6.2 Guidelines for the process of the implementation of SBA :

Implementation of SBM (G) is proposed with 'District 'as the base unit, with the goal of creating ODF GPS. A project proposal shall be prepared by a District, and scrutinized and consolidated by the State Government into a State Plan**.**Funds are to be made available for these preliminary IEC works including for triggering behavior change. This will endeavor to reach every household in every community and shall disseminate information regarding the need for safe sanitation, and the ill effects of open defecation getting the population oriented towards satisfying their felt-needs.

The provision of Incentives for individual household latrine units to the rural households is available to States which wish to provide the same this may also be used to maximize coverage so as to attain community outcomes. The Scheme shall aim to saturate coverage in the first instance the States/ Districts/ GPs in all major river basins of India e.g. Sutlej , Ravi, Beas, Ganga, for pollution free rivers, in addition to ODF communities. Yamuna, Godavari, Narmada, Tapti, Kaveri, Brahmaputra. This will ensure the outcomes required A robust Monitoring arrangement has to be put in place to monitor open defecation status of a village, the implementation of Solid and Liquid Waste Management projects as well as the construction and us of Household, Schools, Anganwadi toilets and Community Sanitary Complexes. The monitoring has inter-alia also to use a robust community led system, like Social Audit.To accelerate coverage in Gram Panchayat selected under the SansadAdarsh Gram Yojana, these GPs may be selected on priority for coverage under the SBM**.**

6.3 Activities Done by Students for Vasan village :

we have done one activity of swachhta awareness in the village and we have done an interaction with villagers and aware them about the importance of swachhta in our life and told them to keep the village and infrastructure clean and safe. We have also done a cleaning of village street. We have suggested them for not dumping the waste in village streets and dispose it at right place.

Chapter 7.
Village condition due to Covid-19

With respect to COVID 19 pandemic, Ministry of Panchayati Raj, Government of India in close collaboration with State Governments has taken various initiatives. Close consultation and guidance of the State as well as District authorities is being maintained to ensure that lock down conditions are not violated and norms of social distancing are scrupulously followed to contain the spread of the disease. India has overtaken Brazil and become the second-worst affected country in the world by the coronavirus pandemic, with more than 4 million cases. COVID-19 had mostly remained in India's cities, but the disease is now spreading to rural India – an area with over 850 million people and far worse healthcare. The reason for this shift appears to be migrant workers who have been returning to their villages since lockdown was eased at the end of June. The medical response to stop the spread and treat those infected has been inadequate, according to media reports. With one trained doctor for every 1,497 people, against the World Health Organization recommended one per 1,000, and public health expenditure for 2018 at just 1.3% of GDP, India faces an uphill struggle in dealing with the pandemic. While two-thirds of India's population lives in rural areas, there are almost four times as many health workers per person in cities. Most rural communities rely on untrained health workers. Over two-thirds of these rural health providers have no formal medical training, but remain the only option of medical support for most of the rural population.

This situation is worsened by the stigma and misinformation that surrounds COVID-19 in India. Fear of the virus has led to widespread mistrust of trained healthcare professionals. Indian doctors have reported being evicted from rented accommodation and others have been violently targeted in some slum communities. The misconception is that health professionals are sources of infection and that they will force people to be removed from their families into quarantine centres. These centres are viewed with suspicion and fear.

The stigmatization of those infected or suspected to have COVID-19 is likely to result in unreported cases. And, indeed, some reports suggest that this is taking place. This means the situation can only get worse for COVID-19 victims and is undermining efforts to mitigate the pandemic.

In the long term, it threatens India's recovery and progress, with the potential for many people to become debilitated with illness and economic hardship. In rural India, basic preventative measures of washing hands pose challenges because of the lack of access to clean running water.

Trust in and cooperation with the state, health professionals, or law enforcement agencies is key in the context of a pandemic. This is evidenced in countries such as Germany, South Korea and Taiwan, where trust is high, as well as the Indian state of Kerala and India's biggest slum Dharavi in Mumbai, where citizens have cooperated and followed the guidelines. In each of these examples, the spread of the virus has been halted and controlled by a rigorous approach of test, track and trace. In a parliamentary democracy, the bedrock of this approach is the willingness of the people to cooperate, accept responsibility and have confidence in the system. These three pillars, in turn, are anchored in the trust citizens have in the government machinery delivering public services. people have unreserved trust in their local village informal health practitioner. This is also echoed in other states of India. These practitioners are not trained, and often patients end up being taken to the city at great expense.

The villagers in my research were aware of these limitations but valued the support and immediate access, which can be lifesaving. I witnessed an informal practitioner removing a bone from the throat of an elderly man using crude iron tongs. The man had been taken for dead by his family after severely choking as he ate.

7.1 Taken steps in Vasan village related to existing situation:

During interaction with the Talati, he told us that quarantine place and home quarantine facility were implemented during the lockdown. According to Talati, Sarpanch and villagers ; in the Vasan village the sanitization process was done during the lockdown period when first case of covid 19 came in the village.

Fig.73,74 : situation in Vasan village

7.2 Activities Done by Students for Vasan village :

We have taken a permission from Talati and Sarpanch for doing one awareness camp regarding covid 19 in the vasan village and then we did awareness camp regarding covid 19. We also did discussion with sarpanch regarding covid 19.

7.3 Any other steps taken by the students / villagers :

During interaction with the Sarpanch, he told us that quarantine place and home quarantine facility wereimplemented during the lockdown. In the COVID-19 situation cleaning, fogging and sanitization weredone in the village.

Chapter 8.

Sustainable Design Planning Proposal (Prototype Design) - Part- I (Scenario / Existing Situation / Proposed Design in Auto cad / Recapitulation Sheet / Measurement Sheet / Abstract Sheet / Sustainability of Proposal / Any other software)

8.1 Design Proposals:

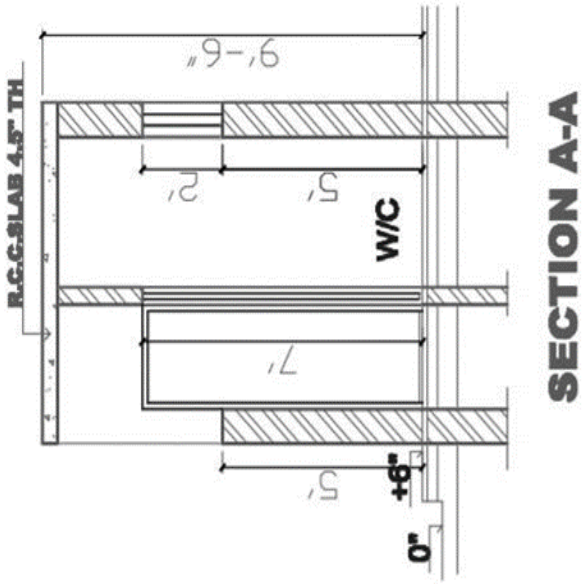
SR NO.	Village	Description	Design
1	Vasan	Civil	Public Toilet
2	Vasan	Civil	Bus stop
3	Vasan	Civil	WBM
4	Vasan	Civil	Skill development center
5	Vasan	Civil	Chabutro
6	Vasan	Civil	PHC

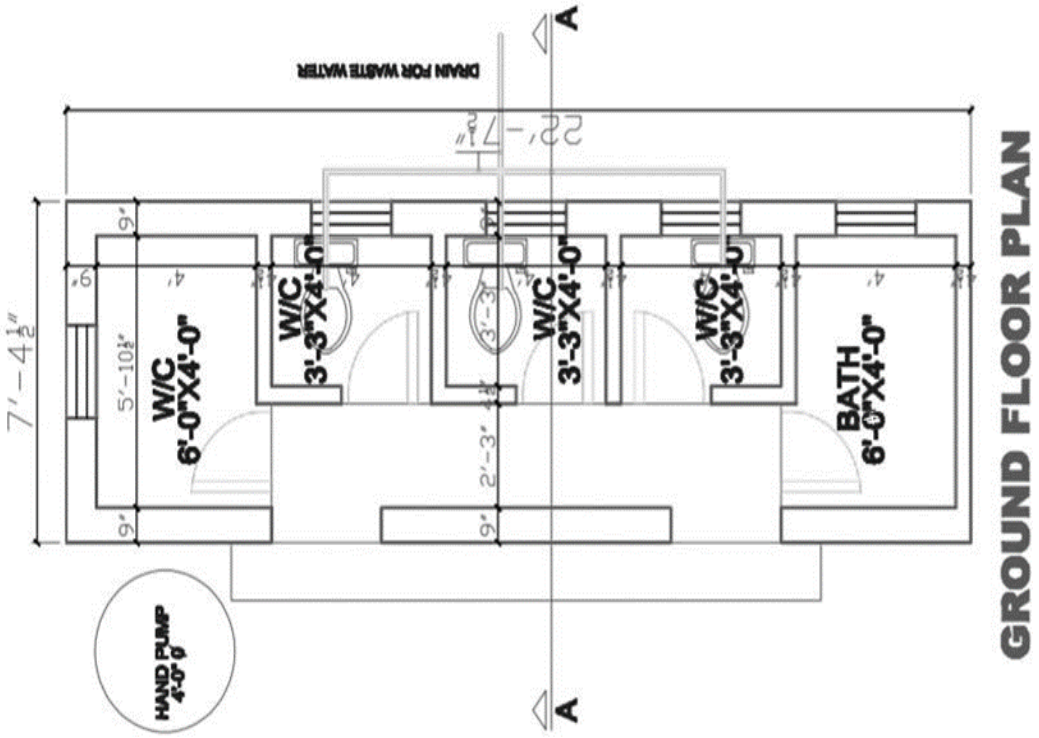
Table :14 Design proposals

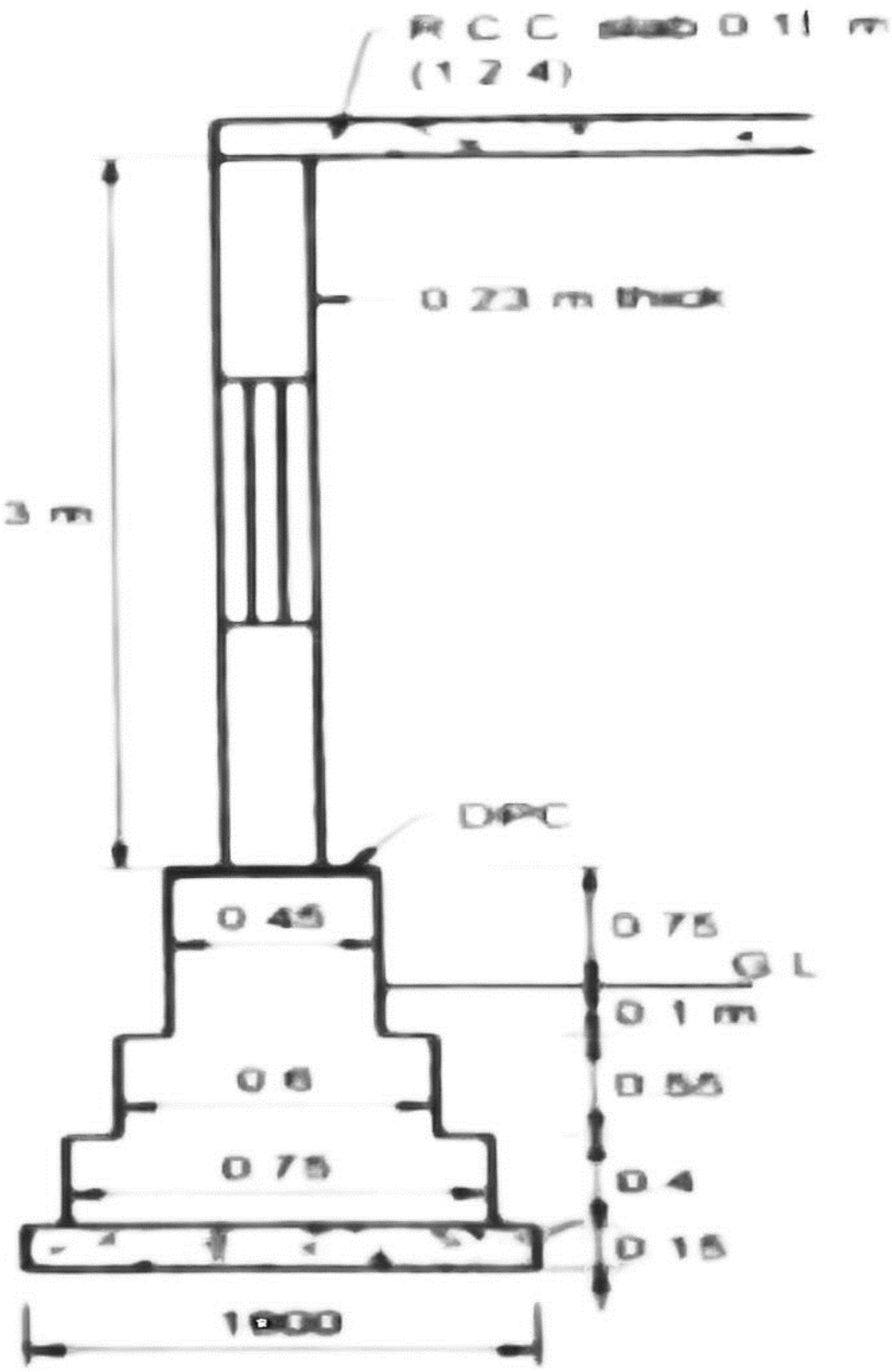
8.2 Reason for Students Recommending this Design :

- Public toilet : Under Mission Clean India and for better health of the people of the village design of the public toilet were required.
- Bus stop : Bus stop is already exist in the vasan village but it is not in proper condition. So for making smooth traveling of the people of the village proper bus stop is require in vasan village.
- Compost pit : compost pit is require for improvement of the quality of soil.
- Intze water tank : Because of the increase demand of the water in the village design of intze water tank is require.
- Chabutro : It is a socio cultural design which is recommended by the villagers.
- PHC : To satisfy the requirements of medicines to the public.

8.1.1 Public Toilet :






R C C
(1 2 4)
0 23 m thick
3 m
DPC
0 45
0 6
0 75
0 75
G L
0 1 m
0 55
0 4
0 15

Sr no.	Description	No.	L (m)	B (m)	H (m)	Quantity (m^3)	Total
1.	**Excavationin foundation**						
	LW= 6.72 +1 = 7.72 m	2	7.72	1	1.2	18.528	
	SW1= 2.02 – 1 = 1.02 m	1	1.02	1	1.2	1.224	
	SW2 = 2.02 – 1 = 1.02 m	1	1.02	1	1.2	1.224	
							20.976 m3
2	**PCC**						
	LW=6.72+ 1 = 7.72 m	2	7.72	1	0.15	2.316	
	SW= 2.02 - =1.02 m	1	1.02	1	0.15	0.153	
	SW= 2.02 - 1= 1.02 m	1	1.02	1	0.15	0.153	
							2.622 m3
3	**2nd class brick masonry up to plinth level**						
	Setp 1						
	LW=6.72+0.75 =7.47 m	2	7.47	0.75	0.4	4.482	
	SW1= 2.02 - 0.75= 1.27 m	1	1.27	0.75	0.4	0.38	
	SW2= 2.02 - 0.75 =1.27 m	1	1.27	0.75	0.4	0.38	
							5.242 m3
	Step 2						
	LW= 6.72+ 0.6= 7.32 m	2	7.32	0.6	0.55	4.83	
	SW1= 2.02 - 0.6=1.42 m	1	1.42	0.6	0.55	0.468	
	SW2 = 2.02 - 0.6 = 1.42 m	1	1.42	0.6	0.55	0.468	
							5.766 m3
	Step 3						
	LW= 6.72 + 0.45 = 7.17 m	2	7.17	0.45	0.1	0.645	
	SW1=2.02 - 0.45 = 1.57 m	1	1.57	0.45	0.1	0.07	
	SW2= 2.02 - 0.45 = 1.57 m	1	1.57	0.45	0.1	0.07	
							0.785 m3
	Step 4						
	LW= 6.72+ 0.45 = 7.17 m	2	7.17	0.45	0.75	4.839	
	SW1= 2.02 - 0.45 = 1.57 m	1	1.57	0.45	0.75	0.53	
	SW2= 2.02 - 0.45 = 1.57 m	1	1.57	0.45	0.75	0.53	
							5.899 m3
							17.692m3
4	**Filling in excavation 20.976- (14.415)**						**6.561 m3**
5	**DPC**						
	LW	2	7.17	0.45		6.453	

	SW1	1	1.57	0.45		0.706	
	SW2	1	1.57	0.45		0.706	
							7.865 m2
	Deduction						
	Open space	2	0.68	0.45		0.612	
							7.253 m2
6	**Murrum filling**						
	W/C & Bath	2	1.82	1.22	0.5	2.22	
	W/C	3	0.99	1.22	0.5	1.81	
	Passage	1	0.68	3.88	0.5	1.319	
							5.349 m3
7	**1stclass brick masonry up to 3 m**						
	LW=6.72+0.17= 6.89 m	2	6.89	0.23	3	4.75	
	SW1= 2.02 - 0.23= 1.79 m	1	1.79	0.23	3	1.235	
	SW2 = 2.02 - 0.23= 1.79 m	3	1.79	0.11	3	1.77	
	Partition wall1= 3.99+0.11= 4.1 m	1	4.1	0.11	3	1.353	
	Partition wall 2= 1.16 - 0.17=0.99 m	2	0.99	0.11	3	0.653	
							9.761 m3
	Deduction						
	Door	5	0.68	0.11	2.1	0.796	
	Window	5	0.68	0.23	0.6	0.477	
	O/S	2	0.68	0.23	2.8	0.90	
	Front wall	1	2.53	0.23	1.5	0.88	
							3.053 m3
							6.708 m3
8	**RCC Slab**	1	6.89	2.25	0.1	1.705	
							1.705 m3
9	**Teakwood frame fully paneled Door**	5	0.68		2.13	7.242	
							7.242 m3
10	**Teakwood frame fully glazed Window**	5	0.68		0.61	2.074	
							2.074 m3
11	**Tiles flooring**						
	W/C & Bath	2	1.82	1.22	0.1	0.444	

	W/C	3	0.99	1.22	0.1	0.362	
	Passage	1	0.68	3.88	0.1	0.264	
	Sill of door	5	0.68	0.11	0.1	0.037	
	O/S	2	0.68	0.23	0.1	0.031	
							1.138 m3
12	**Single coat mala Plaster (Internal)**						
	W/C & Bath						
	Wall A	4	1.82		3	21.84	
	Wall B	4	1.22		3	14.64	
	Celling	2	1.82	1.22		4.44	
	W/C						
	Wall A	6	1.22		3	21.96	
	Wall B	6	0.99		3	17.82	
	Celling	3	1.22	0.99		3.62	
	Passage						
	Wall A	2	0.68		3	4.08	
	Wall B	2	3.88		3	23.28	
	Celling	1	0.68	3.88		2.638	
							114.318 m2
	Deduction						
	Door	5	0.68		2.13	7.242	
	Window	5	0.68		0.61	2.074	
	O/S	2	0.68		2.89	3.93	
							13.246 m2
							101.072m2
13	**Double coat mala Plaster (External)**						
	O/O distance						
	Wall A	2	6.89		3	41.34	
	Wall B	2	2.25		3	13.5	
							54.84 m2
	Deduction						
	Window	5	0.68		0.61	2.074	
	Fw	1	2.53		1.52	3.85	
	Open space	2	0.68		2.89	3.93	
							9.854 m2
							44.986 m2
14	**Dedo tiles**						
	W/C & Bath						
	Wall A	4	1.82		3	21.84	
	Wall B	4	1.82		3	14.64	

	W/C						
	Wall A	6	1.22		3	21.96	
	Wall B	6	0.99		3	17.82	
	Passage						
	Wall A	2	0.68		3	4.08	
	Wall B	2	3.88		3	23.28	
							103.62 m2
	Deduction						
	Door	5	0.68		2.13	7.242	
	Window	5	0.68		0.61	2.074	
	FW	1	2.53		1.52	3.85	
	Open space	2	0.68		2.89	3.93	
							17.096 m2
							86.524 m2
15	**External painting**						
	Wall A	2	6.89		3	41.34	
	Wall B	2	2.25		3	13.5	
							54.84 m2
	Deduction						
	Window	5	0.68		0.61	2.074	
	FW	1	2.53		1.52	3.85	
	Open space	2	0.68		0.89	3.93	
							9.854 m2
							44.986 m2

Table 15 : quantity sheet of public toilet

8.1.2 Bus stop : (Socio-Cultural design):

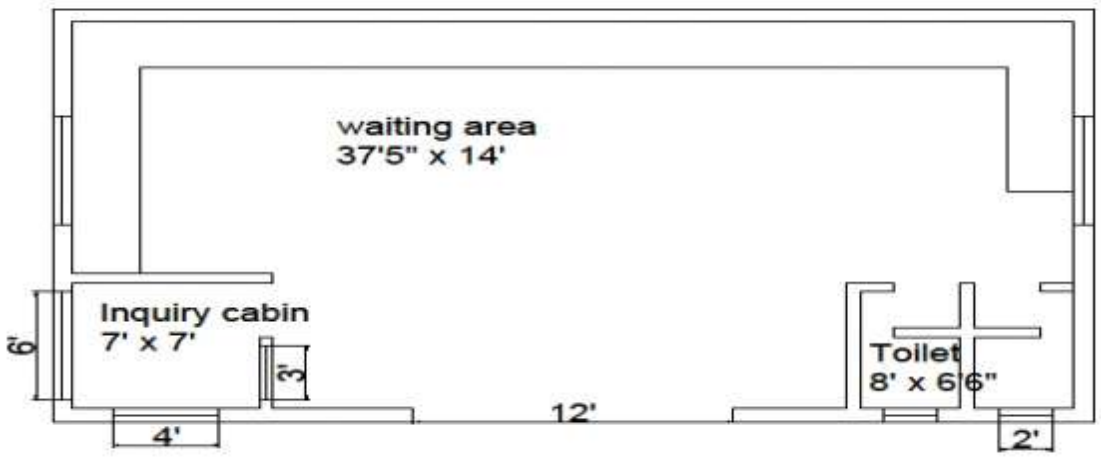


Fig.75 plan of bus station

Bus-stand Elevation:

Fig.76 Elevation of Bus stand

Estimate of Bus Stand:

Total Centre line length
L=11.73x2=23.46m
L=7x2=14m
L=2.43x2=4.86m
L=2.74x1=2.74m
L=2.28x1=2.28m
Total Centre line length = 47.34m
Total no of Junction=4

Sr no.	Item Description	No.	Length (m)	Width (m)	Height (m)	Quantity (m^3)
1	Excavation In Foundation					
	= 47.34 – 0.5*0.9*4					
	= 45.54 m	1	45.54	0.9	1.5	61.479
2	PCC in foundation 1:3:6	1	45.54	0.9	0.3	12.296
3	Brick work in foundation					
	Up to plinth					
	Step 1					
	L= 47.34- 0.5*0.6*4					

	= 46.14 m	1	46.14	0.6	0.2	5.5368
	Step 2					
	L= 47.34- 0.5*0.5*4					
	= 46.34 m	1	46.34	0.5	0.2	4.634
	Step 3					
	L = 47.34- 0.5*0.4*4					
	= 46.54 m	1	46.54	0.4	0.2	3.7232
	Step 4					
	L = 47.34- 0.5*0.3*4					
	= 46.74 m	1	46.74	0.3	1.2	16.826
	h = (1.5-0.3-3*0.2)+0.6					
	= 1.2m					
	Total quantity = 30.7204 m^3					
4	Brick work in superstructure					
	In cement mortar 1:6					
	L= 47.34- 0.5*0.3*4					
	= 46.74 m	1	46.74	0.3	3	42.066
5	RCC Slab					
		1	12.03	7.3	0.12	10.538
6	Plaster on inside wall					
	And celling in CM (1:3)					
	Waiting area wall	1	11.43		4	45.72
		2	4.27		4	34.16
		1	2.13		4	8.52
	Waiting area celling	1	11.43	4 27		48.806
	Inquiry cabin wall	5	2.13		4	42.6
	Inquiry cabin celling	1	2.13	2.13		4.5369
	Toilet wall	3	2.44		4	29.28
		3	1.98		4	23.76
	Toilet celling	1	2.44	1.98		4.83
	Total quantity =. 242.2142					
7	Parapet wall					
	L = 37.46 m	1	37.46	0.3	0.91	10.2266

Table :16 Estimate of bus stop

Abstract sheet of bus stand :

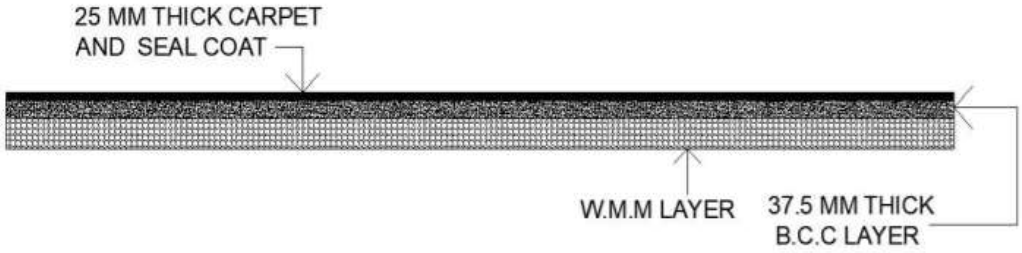
Sr No.	Item Description	Quantity	Rate	Per	Amount RS.
1	Excavation in foundation	61.48 m3	87	m3	5348.76
2	Brick Bat cement concrete				
	In foundation	12.39m3	3210	m3	39483

3	First class brickwork upto plinth				
	In CM 1:6	30.72m3	3219	m3	98611.2
4	Brick work in superstructure				
	In CM 1:6	42.066	3525	m3	148282.65
5	Brickwork for parapet wall	10.23m3	3525	m3	36060.75
6	RCC work for slab	10.53 m3	8900	m3	93717
7	Plaster on in side wall				
	and celling in CM 1:3	242.21 m2	160	m2	38753.6
				RS.	460256.96
		Add 5% contingencies			23012.848
				RS.	483269.808

Table :17 Abstract sheet of bus stand

8.1.3: WBM :

In the Vasan village there are some roads which are kutccha roads and not in the good condition. In the rainy season roads gets clogged and people have to face very inconvenience. So we decided to give a WBM road design.



[Fig.77 : cross section of road]

❖ Measurement sheet :

Sr no	Description	Nos	L(m)	B(m)	H(m)	Qty m3
1	Preparing sub grade	1	1000	4.5	0.01	45
2	Preparing base course	1	1000	4.2	0.135	567
3	Preparing wearing course	1	1000	3.9	0.115	448

Table : measurement sheet for WBM

- Use 125 mm granular size broken stones in sub grade.
- Use 90 mm granular size aggregate in base course.

❖ **Abstract sheet :**

Item description	Qty	Rate	per	amount
Preparing sub grade	45	800	1 m3	36000
Preparing base course	567	700	1 m3	396900
Preparing wearing course	448.5	900		403650
Total material cost=836550				

Table :18 abstract sheet for WBM

For 1 Km cost is 836550 Rs.

10 % profit of contractor = 0.1 x 836550

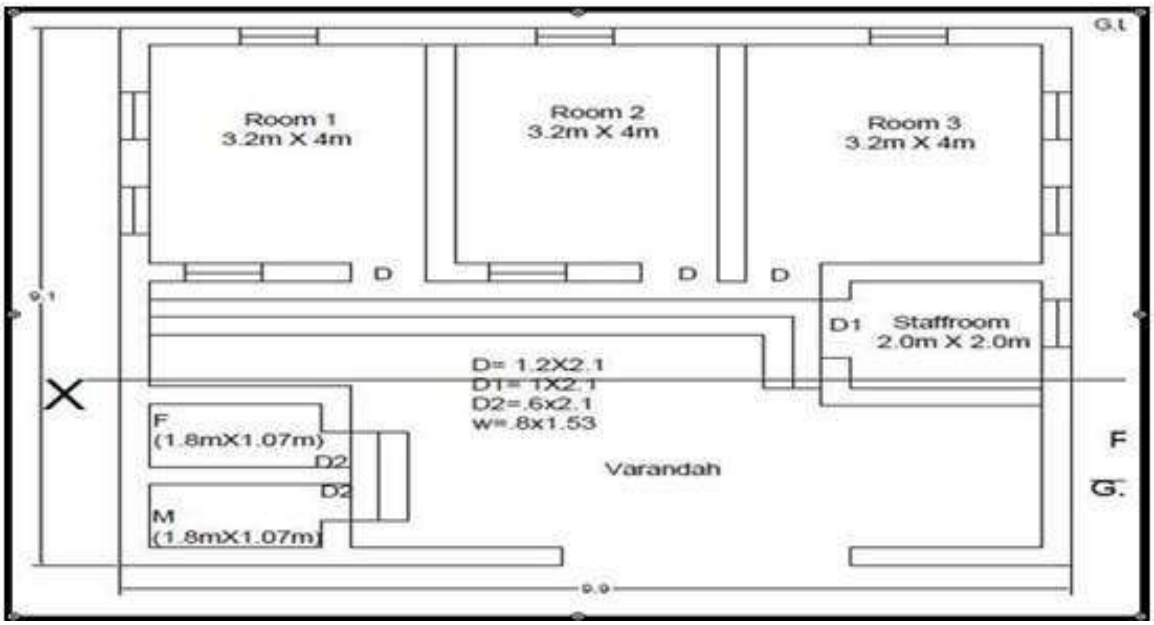
= 83655

1.5 water charges = 0.015 x 836550

= 12548.25

Total cost **861646.5 Rs.**

8.1.4: skill development classes :



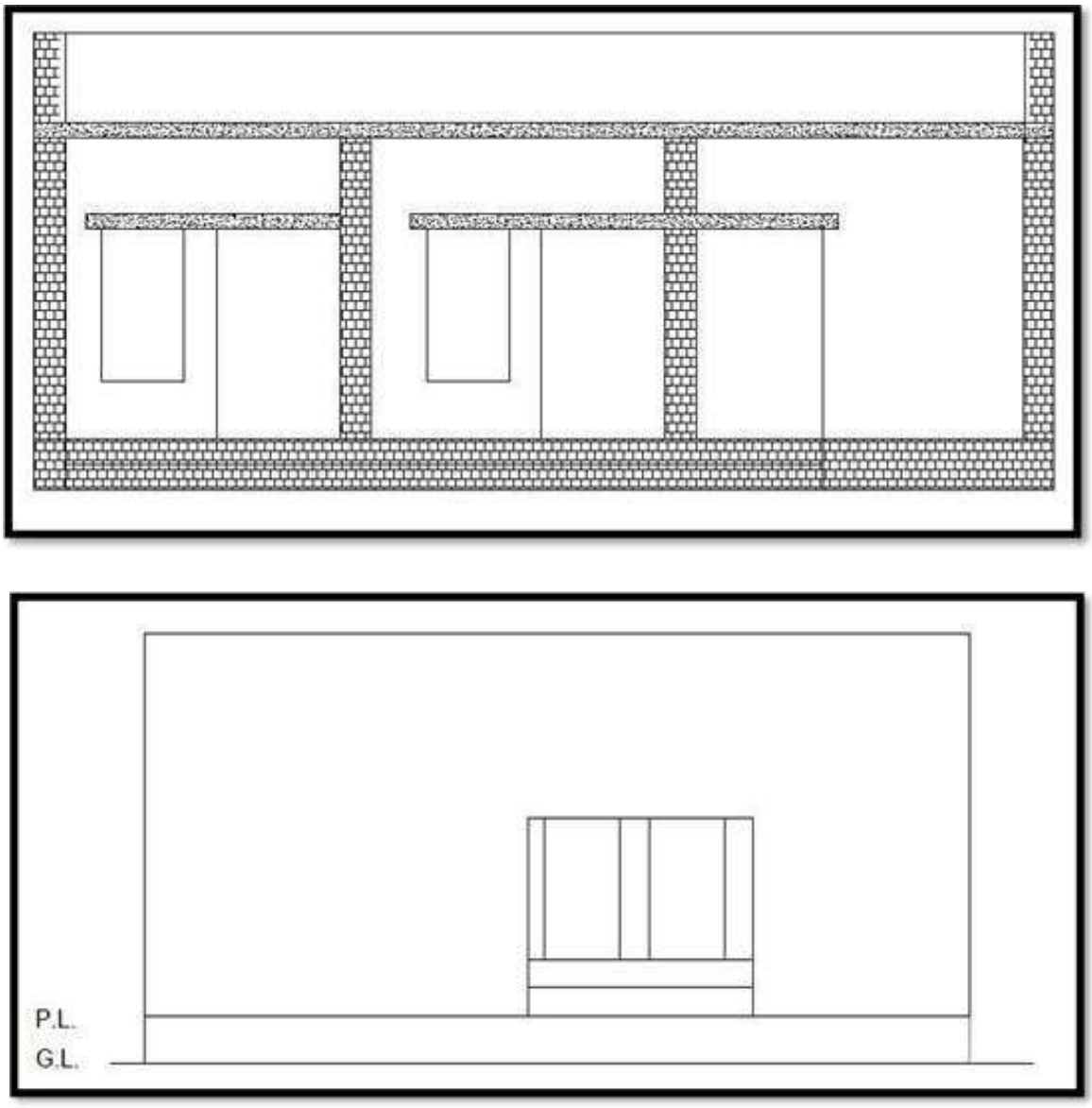


Fig.78 : Plan, Section & Elevation of skill development classes

Quantity Sheet :

Sr No	Item Description	Length (m)	Width(m)	height(m)	Quantity (cu. m)	Total Quantity
1	Excavation for foundation in soft ordinary soil. Total length = 64.84– 0.5 x 12 x 0.9	59.44	0.9	1.1	58.84	58.84

2	Providing and laying Foundation concrete (P.C.C.) (1:4:8) at Foundation.	59.84	0.9	0.3	16.15	16.15
3	Providing and laying Brick masonry at foundation upto G.L.					
	1st footing Total length= 64.84 – 0.5x12x0.6	61.24	0.6	0.3	11.02	36.96
	2nd footing Total length= 64.84 0.5x12x0.5	61.84	0.5	0.2	6.184	
	3rd footing (up to G.L.) Total length= 64.84 – 0.5x12x0.4	62.44	0.4	0.3	7.49	
	Brick masonry up to P.L.	61.34	0.4	0.5	12.26	
4	Providing refilling of the ordinary soil in foundation trenches.	Refilling = Total Excavation – (P.C.C. + Brick masonry of 1st – 3rd footing + Brick masonry upto G.L.) =59.44 – (43.11) Total refilling = 16.33 cu. m.				
5	Providing and refilling of the	Refilling = (0.5 x 3.2x 4) + (0.5 x 3.2 x4) +(0.5x3.2x4)+ (0.5x2x2) + 2(0.5x1.8x1.07) =23.126 cu. m.				
	Yellow soil upto the Plinth level.					

6	Providing and laying Brick masonry upto bottom of the slab. Total length = 64.84 – 0.5x12x0.3	1	63.04	0.3	3	56.73	56.73
	Deduction D D1 D2 W	 3 1 2 10	 1.2 1 0.6 0.8	 0.3 0.3 0.3 0.3	 2.1 2.1 2.1 1.5 3	 2.268 0.63 0.756 3.672	7.32
	Total brickwork = 49.40 cu. m.						

Abstract Sheet :

Sr. No.	Particulars	Total Qty.	Rat e	Per	Amount
1	Excavation for foundation in soft ordinary soil.	59.44	236	M^3	14028
2	Providing and laying Foundation concrete (P.C.C.) (1:4:8) at foundation.	16.15	2604	M^3	42055
3	Providing and laying Brick masonry at foundation and plinth.	36.96	3198	M^3	118200
4	Providing refilling of the ordinary soil in foundation trenches.	16.33	302	M^3	4932
5	Providing and refilling of the Yellow soil at Plinth level.	23.126	366	M^3	8464
6	Providing and laying Brick masonry up to bottom of the slab and parapet.	65.52	3321	M3	207629
7	Providing and Laying R.C.C. (1:2:4) work	11.32	3692	M3	41794
8	Steel (2% Of concrete / In 1 m3 157 kg)	1774.1	47	Kg	83382
9	Providing 12 mm thick cement plaster in C.M. (1:4)	597.57	235	M2	140429
10	Providing and fixing tile flooring	46.25	2116	M2	97865
11	Providing and fixing 10 cm height tiles. (Skirting)	51.2	100	RM	5120
12	Colour work 1 coat 50 micron & 2 coat 100 micron	597.57	149	Sqm	89038
			Total cost in Rupees =852935.93		

Contractors Profit 10%

= 0.10 * 852935.93

= 85293.59 Rs

Water Charges 2 %

= 17058 Rs

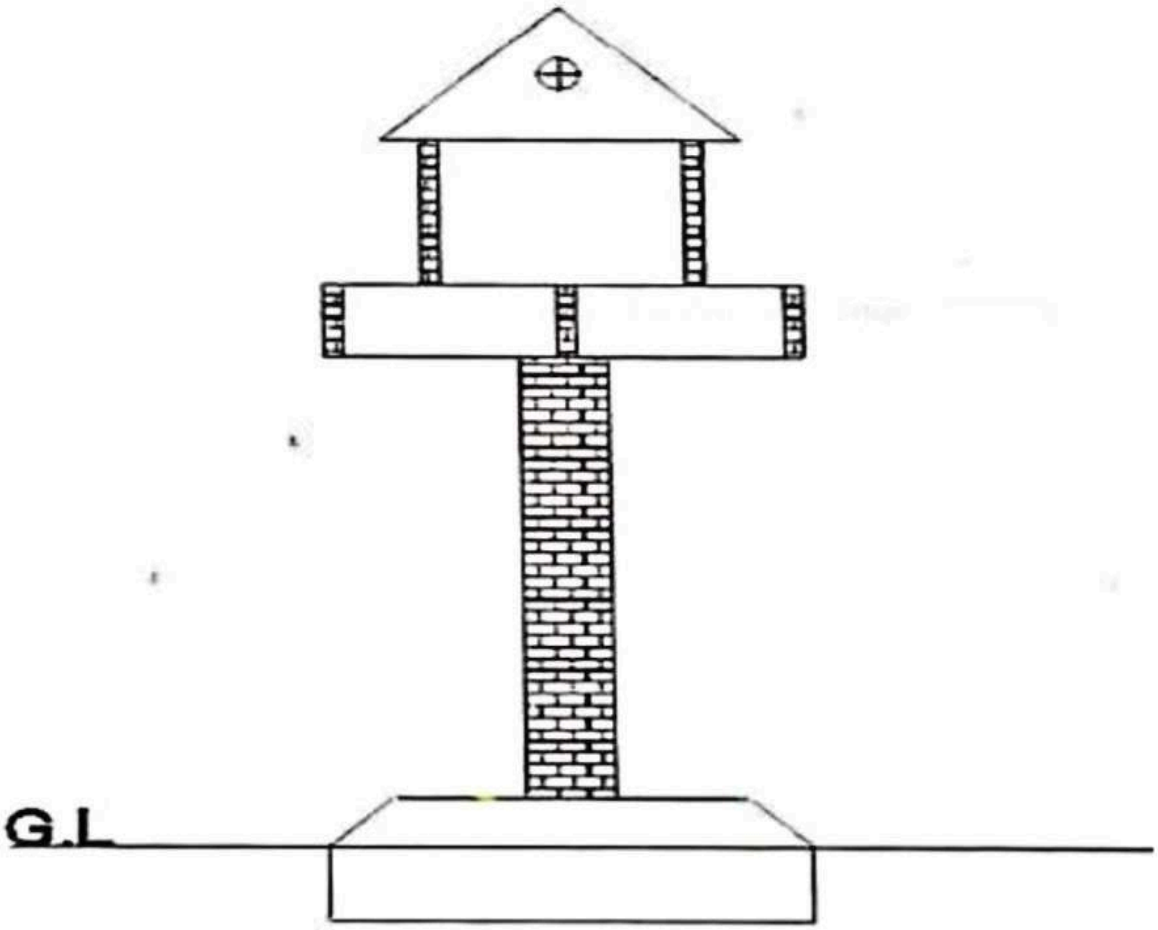
Add % Contingencies 5 %

= 42646 Rs

Total Cost = 997934.27

Nearby = 998000 Rs.

8.1.5: Socio cultural design: Chabutro:



CHABUTRA
ELEVATION
(1.2 M X 4.5 M)

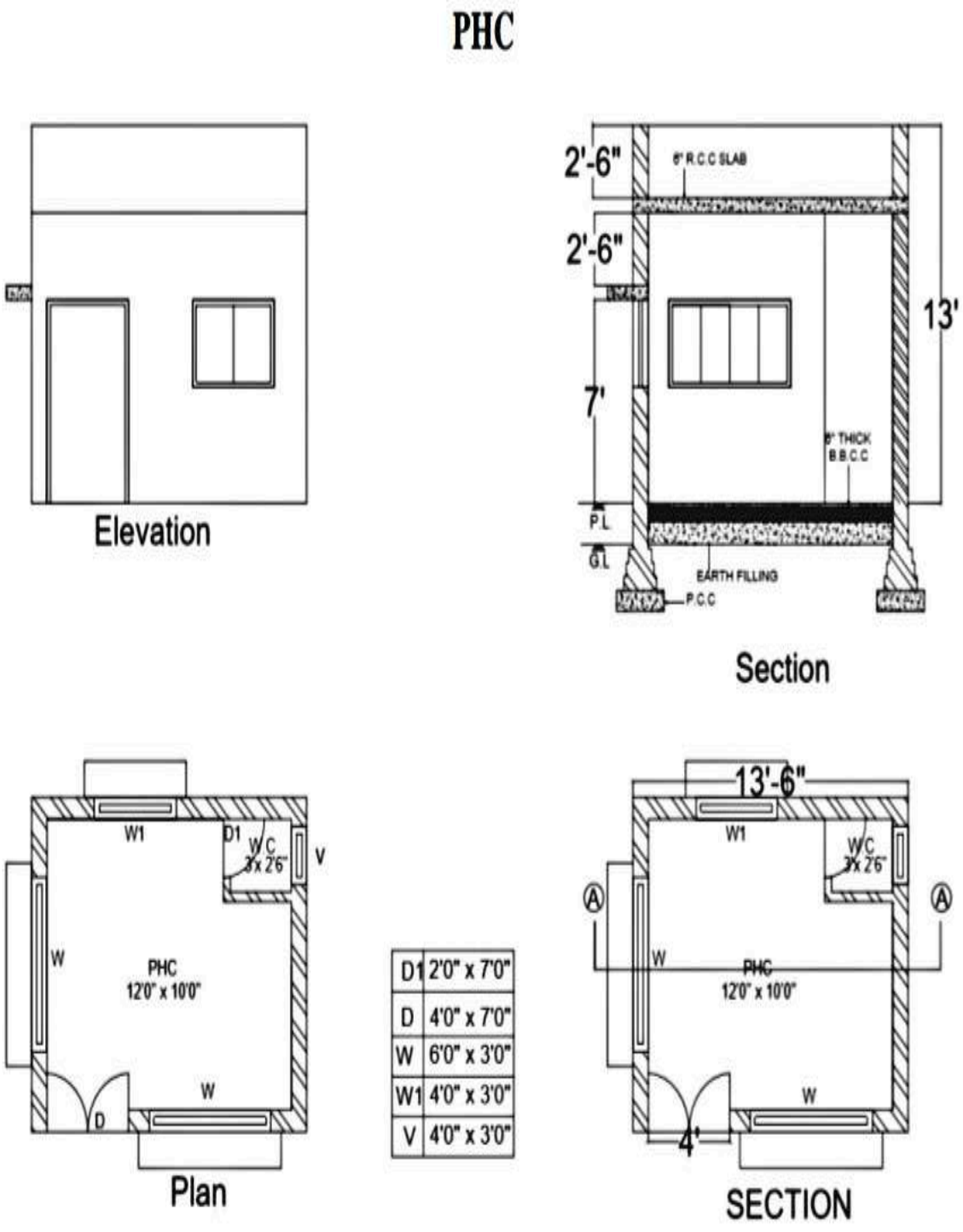
Measurement sheet :

Sr no.	Item Description	No.	Length (m)	Breadth (m)	Height (m)	Quantity (m3)
1	Excavation in foundation	-	1.5	1.5	0.5	1.125
2	RCC in foundation	-	1.5	1.5	0.4	0.9
3	PCC in foundation	-	1.5	1.5	0.10	0.225
4	Footing RCC step above (GL)	-	1.2	1.2	0.20	0.288
5	Brick work for partition wall	3	1.5	0.10	0.6	0.27
6	Wall for upper partition	2	1.2	0.10	0.4	0.096
7	Marble for flooring	2	1.5	1.5	-	2.25
8	Wood work for shed	4	(1/2×1.5- 1.5× 0.03)			0.0337
9	Concrete in trapezoidal Vol. Of trapezoidal = H/3* (a1+a2+(√a1+a2) = 0.066*(3.69*2.94) = 0.7160	1	-	-	0.2	0.7160

Abstract :

Excavation in foundation	1.125	250	m3	281.25
RCC in foundation	0.9	4450	m3	4005
PCC in foundation	0.225	2600	m3	585
Footing RCC (above GL)	0.288	3700	m3	1065.6
Brickwork for partition wall	0.27	400	m3	108
Wall for upper partition	0.096	400	m3	38.4
Marble flooring	2.25	55	Ft/sq	1331
Woodwork for shed	2.25	500	Ft/sq	1125
Concrete in trapezoid	0.7160	3700	m3	2649.2
			Total	11188.45
	Add 10 % Contractor profit			1118.84
	Add 1.5 % water Charges			167.82
				12475.11

8 .1.6 : Primary Health Center(PHC) :



Estimation and costing:

Sr No.	Description of items	No.	Length Inches	Breadth Inches	Height Inches	Quantity Inches	Total Quantity
	CL (12+0.45+0.45)*2□+(10+0.45+0.45)*2		564"				
1	Earthwork in foundation	1	564"	36"	36"	730944"	11.98 m3
2	PCC in foundation	1	564"	36"	6"	121824"	2.00m3
3	Brick work up to plinth Level						
	Step 1	1	564"	23"	7"	90804"	1.49m3
	Step 2	1	564"	18"	7"	71064"	1.16m3
	Step 3	1	564"	14"	7"	55272"	0.91m3
	Step 4	1	564"	9"	21"	106596"	1.75m3
						Total	5.31m3
4	Brick work in superstructure						
	Outer wall	1	564"	9"	120"	609120"	9.98m3
	Inner wall	1	74"	4"	120"	35520"	0.58m3
	Parapet wall	1	564"	4"	30"	67680"	1.11 m3
	Deduction						
	D	1	48"	9"	84"	36288"	0.59m3
	W	2	72"	9"	36"	46656"	0.76m3
	W1	1	48"	9"	36"	15552"	0.25m3
	V	1	48"	9"	36"	15552"	0.25m3
	D1	1	24"	9"	84"	18144"	0.30m3
						Total	2.15 m3
				Total quantity = 9.52 m3			
5	RCC						
	Slab	1	162"	138"	6"	134136"	2.20m3
	Coping	1	564"	9"	5"	25380"	0.42m3
	Chajja						
	W= 4+1	1	60"	15"	6"	5400"	0.09m3
	W1 = 6+1	2	84"	15"	6"	15120"	0.25m3
	Lintel						
	D	1	60"	9"	6"	3240"	0.06m3
	Door D1	1	36"	4"	6"	864"	0.015m3
	VentilatorV	1	36"	4"	6"	864"	0.015m3
	Window W1	1	60"	9"	6"	3240"	0.06m3
	Window W	2	84"	9"	6"	9072"	0.15m3

Abstract sheet :

Sr. No	Particular item	Quantity	Rate(RS.)	Per	Amount (RS)
1	Excavation in foundation	11.98	85	Cu.m	1019
2	PCC work in foundation	2	3200	Cu.m	6400
3	Brick work in foundation up to plinth	5.31	3200	Cu.m	16992
4	Brick work for superstructure	9.52	3500	Cu.m	33320
5	RCC work	3.26	8800	Cu.m	28688
				Total= 86,419/-Rs.	

8.3 Suggestions/ Benefit of The Villagers:

- Public toilet as per guidelines of Swachha Bharat Abhiyan for cleanliness of village.
- Bus Stop can make smooth transportation system for the villagers.
- We Suggest to the villagers to use non conventional energy source like solar energy, Bio Gas energy, wind energy etc…
- Water tank can be provided for extra storage of water for summer season or it can also use for farming.

Chapter.9

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

In next semester, we give design and estimation of infrastructure or building required in the village. More survey and detail will be in consecutive report.

For future development of the Vasan village we are proposing the designs for Part II design in which following points should be considered:

Socio-Cultural design :

Skill Development Center There is no any child development or maternity home or skill development center in the Vasan village but for the better development of students and children there should be one skill development center in the village. Or design of the community hall in the Vasan village.

Sustainable. design: Rain water harvesting

An additional source of water will be available which could be used at the time of emergency or water shortage by implementing the Rain Water Harvesting system in the Vasan village households.

Physical design: Solid Waste Management

Currently the villagers are dumping their solid waste at outer part of the village and burn it at a specific location. By that air pollution will increase and waste collection is not done regularly so that solid waste management system should be there in the village for cleanliness and safe environment.

Heritage village design :

Public Garden In the Vasanl village there is no any recreational area existing. So that for the better living standard and entertainment purpose we have proposed one design of public garden as recreational area in the village.

There are some of the proposed design for future development of the Vasan village for Vishwakarma Yojana phase VIII , Part 2 design.

Chapter 10
Conclusion of the Entire Village Activities of the Project

We have visited the Vasan village and that visit helped us to know about the type of infrastructure needed by the village. With help of techno-economic survey and gap analysis. The project tends to improve the physical, social as well as socio-cultural aspects of the village by implementing and improvising various infrastructures with regards to lesser or least hindrance to its rural authenticity.

The amenities designed under this Vishwakarma project phase viii will be helpful for better development of the village as physically as well as socially, which improves the overall lifestyle of people along with nation with preserving nature bit by bit. This will help in developing Smart villages in sustainable manner, reduce migration from villages and prevent the cities from the urban pressure. This should lead to some rethinking about the meaning of efficiency beyond the usual conceptions of economic or technical efficiency. Indeed, employment expansion is at least as important as growth in productivity.

In a sense, both represent the utilization of labor as a resource. Why, then, does thinking about efficiency focus on one and neglect the other It is important to reflect on this question. The answer, which calls for change in both economics and politics, could make a real difference.

Students who want to work towards preservation of rural soul of country can do many things for our own good and environment. By implanting given design proposals, we can say that all the missing amenities are provided will stop the migration of rural people towards the urban area. This can cause reduce the load on urban areas as well as pollution in both sector can be minimized gradually. These amenities designed under this project will be helpful for better development of village as physically as well as socially, which improves the overall lifestyle of people along with nation with preserving nature.

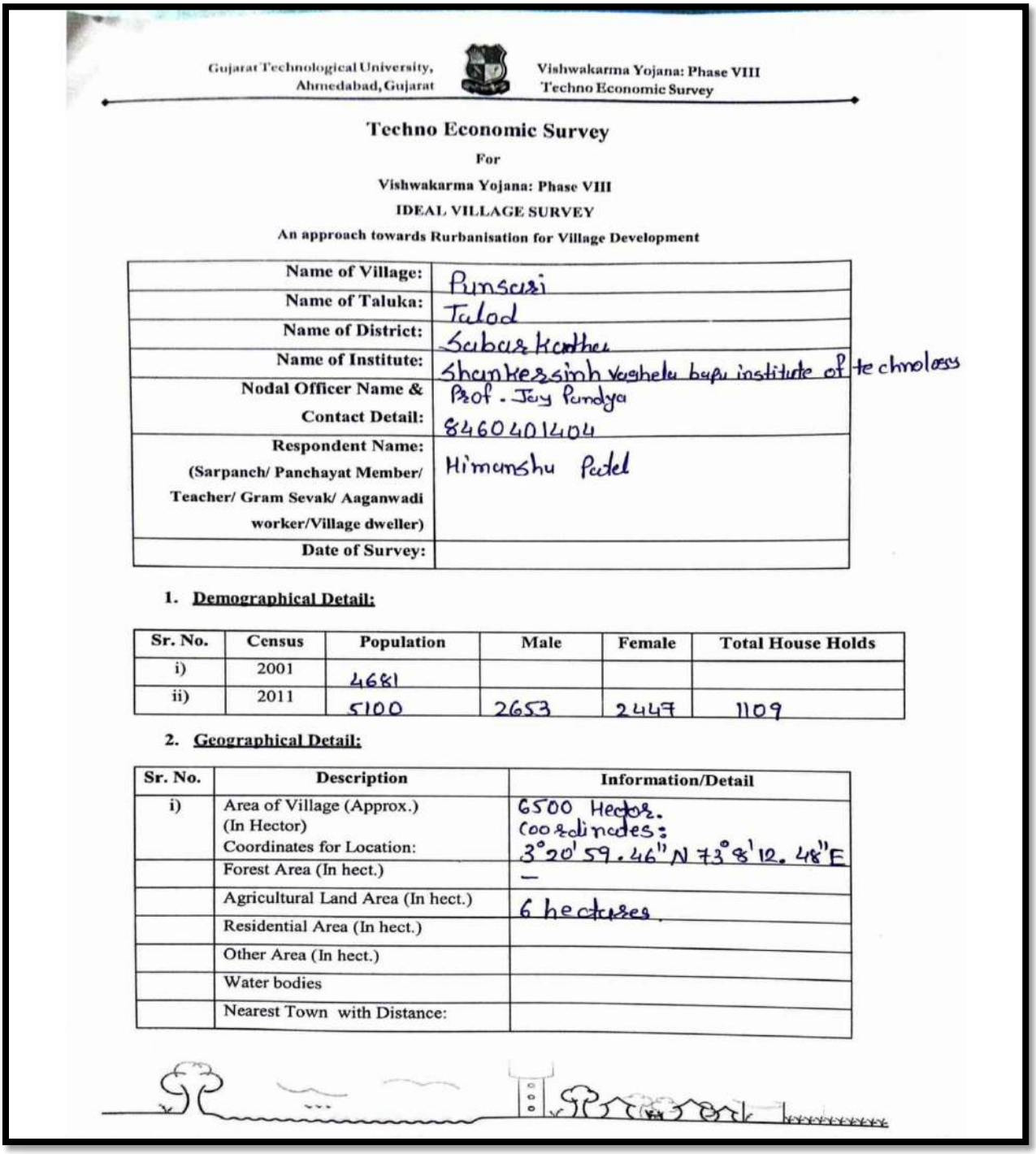
Chapter 11

References refereed for this project

1. **Rural area concept- Wikipedia**
2. **(https://en.wikipedia.org/wiki/Rural_area)**
3. **Urban area concept-Google search (https://www.nationalgeographic.org/encyclopedia/urban-area/)**
4. **Different yojana for rural development (2019) (https://www.mapsofindia.com/my-india/government/schemes-for-rural- development-launched- by-government-of-india)**
5. **Urbantown & importance (Feb 15-16) (http://www.arthapedia.in/index.php?title=Rurban)**
6. **Study of various research paper.**
7. **Data collection from village vasan.**
8. **Census 2011 (http://censusindia.gov.in)**
9. **UMC (urban management system)**
10. **Google map**
11. **http://vy.gtu.ac.in - Vishwakarma literatures**
12. **Schedule of rate**
13. **UDPFI Guidelines**

CHAPTER 12
Annexure attachment

12.1 Survey form of Ideal Village Scanned copy attachment in the report for Part-I:



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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	Punsari
Name of Taluka:	Talod
Name of District:	Sabarkantha
Name of Institute:	Shankarsinh Vaghela bapu institute of technology
Nodal Officer Name & Contact Detail:	Prof. Jay Pandya 8460401404
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Himanshu Patel
Date of Survey:	

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	4681			
ii)	2011	5100	2653	2447	1109

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	6500 Hector. Coordinates: 3°20'59.46"N 73°8'12.48"E
	Forest Area (In hect.)	—
	Agricultural Land Area (In hect.)	6 hectares.
	Residential Area (In hect.)	
	Other Area (In hect.)	
	Water bodies	
	Nearest Town with Distance:	

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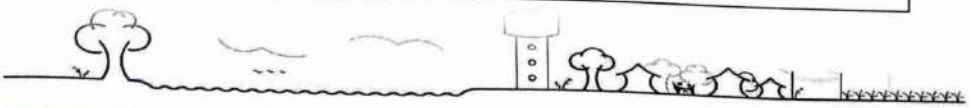
3. **Occupational Details:**

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

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	Treated Panchayat has a RS. 30lakh RO Plant Venture in which a RS.20/l Containes of clean water RS.6 is Provided to each door step.	Adequate		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:			
	Underground Sump	Capacity:			
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	Yes	Adequate		
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	closed	Adequate		
	If Open than Pucca / Kutchcha				
	Whether drain water is discharged directly in to Water bodies/ Sewer plants				
Suggestions if any:					



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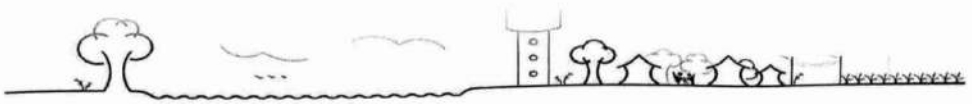
E.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	WBM	Adequate		
	Main road	WBM	Adequate		
	Internal streets		Adequate		
	Nearest NH/SH/MDR/ODR Dist. in kms.	WBM	Adequate		
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Nearest rail-way station is 10 km away	Adequate		
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	Adequate		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Special bus service	Adequate		
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes more than 6 hours	Adequate		
	Power supply for Domestic Use		Adequate		
	Power supply for Agricultural Use		Adequate		
	Power supply for Commercial Use		Adequate		
	Road/ Street Lights		Adequate		



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	Electrification in Government Buildings/ Schools/ Hospitals		Adequate		
	Renewable Energy Source Facilities (Y/ N)	Yes Electricity generated by Renewable plant			
	LED Facilities		Adequate		
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.				
	Location Condition				
	Community Toilet (With bath/ without bath facilities)				
	Solid & liquid waste Disposal system available	Door to door waste collection system	Adequate		
	Any facility for Waste collection from road	A waste collecting van, which would gather waste.	Adequate		
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)				
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)		Adequate		

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

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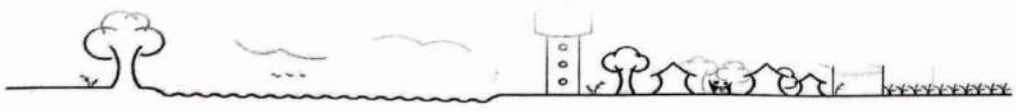
K.	Health Facilities:				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:		Adequate		
	Private Clinic/Private Hospital/ Nursing Home				
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
L.	Education Facilities:				
	Aaganwadi/ Play group				
	Primary School	2	Adequate		
	Secondary school		Adequate		
	Higher sec. School				
	ITI college/ vocational Training Center			Inadequate	
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities		Inadequate		
	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:				

	Condition:				
	Public Library (With daily newspaper supply: Y/N) Location: Condition:				
	Public Garden Location: Condition:				
	Village Pond Location: Condition:				
	Recreation Center Location: Condition:				
	Cinema/ Video Hall Location: Condition:				
	Assembly Polling Station Location: Condition:				
	Birth & Death Registration Office Location: Condition:				
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		Adequate		
	Telecommunication Network/ STD booth				



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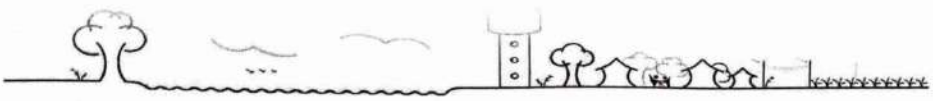
	General Market		Adequate		
	Shops (Public Distribution System)		Adequate		
	Panchayat Building	Smart System	Adequate		
	Pharmacy/Medical Shop				
	Bank & ATM Facility		Adequate		
	Agriculture Co-operative Society				
	Milk Co-operative Soc.		Adequate		
	Small Scale Industries				
	Internet Cafes/ Common Service Center/Wi Fi	Wi fi	Adequate		This Village has wi-fi connection
	Other Facility	CCTV cameras	Adequate		
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	A Waste transfer to a Plant where renewable energy was created	Adequate		
P.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System		Adequate		
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)		
2.	Additional Information/ Requirement		

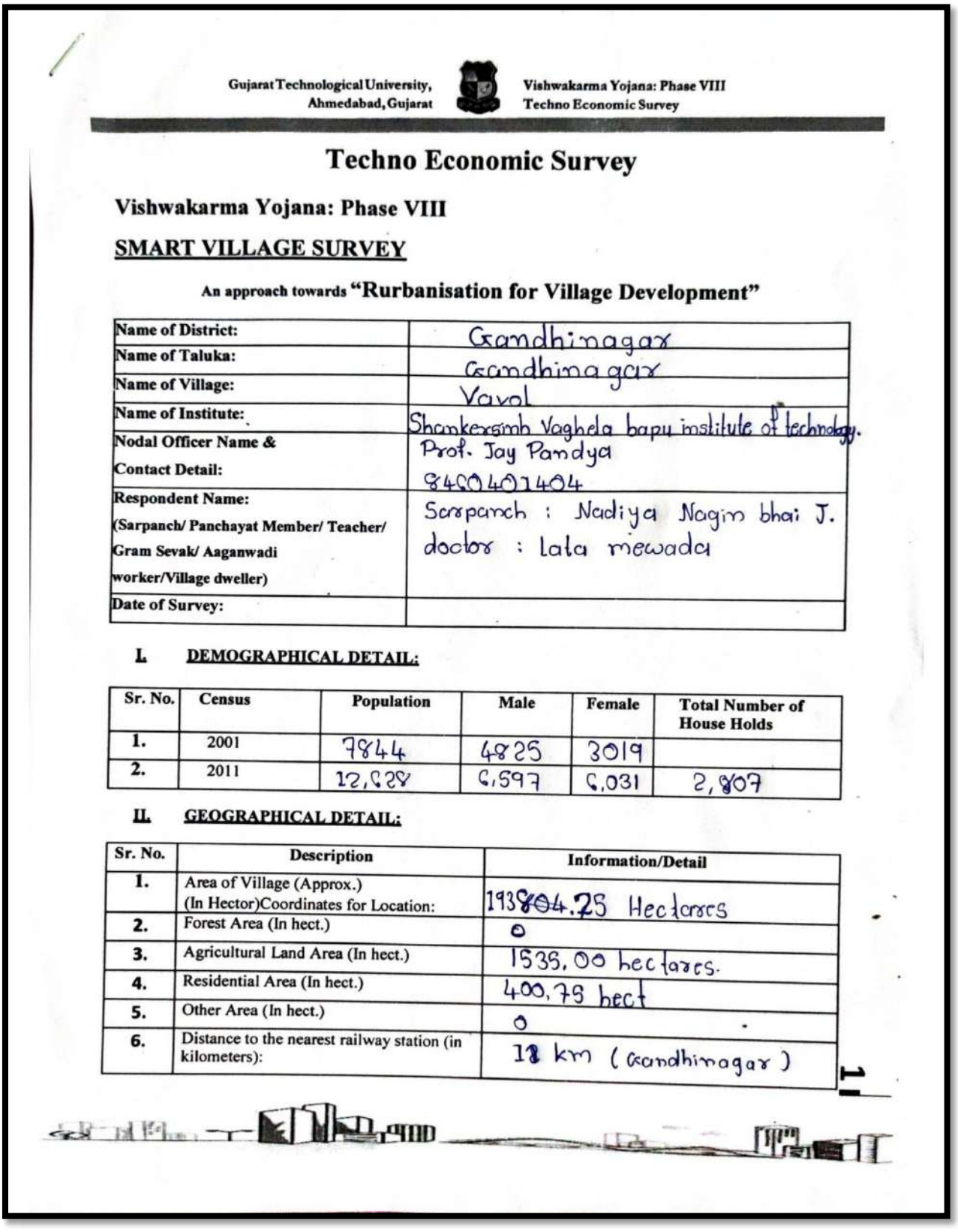
9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

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

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

12.2 Survey form of Smart Village Scanned copy attachment in the report for Part-I :



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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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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:	Vavol
Name of Institute:	Shankersinh Vaghela bapu institute of technology.
Nodal Officer Name & Contact Detail:	Prof. Jay Pandya 8460401404
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sarpanch : Nadiya Nagin bhai J. doctor : Lata mewada
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	7844	4825	3019	
2.	2011	12,628	6,597	6,031	2,807

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	193804.25 Hectares
2.	Forest Area (In hect.)	0
3.	Agricultural Land Area (In hect.)	1535.00 hectares.
4.	Residential Area (In hect.)	400.75 hect
5.	Other Area (In hect.)	0
6.	Distance to the nearest railway station (in kilometers):	18 km (Gandhinagar)

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

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Job
	2.	Workers (GIDC)
	3.	
Major crops grown in the village:	1.	-
	2.	-
	3.	-

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

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Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	3 lakh		
	Underground Sump	Capacity:	1 lakh		
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	Under ground	adequate		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Yes			four - lane Paved
	Main road	Yes			Paved
	Internal streets	Yes			Concrete
	Nearest NH/SH/MDR/ODR Dist. in kms.	Yes			within range by Pass.
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No			available within range
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes			Goverment service only
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes			Private
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes			24 hour. (UGVCL)

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

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

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

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Suggestions if any:

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

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

Suggestions if any:

M.	Other Facilities	Condition	Location	Available (YES)	Available (NO)
	Post-office	Good		✓	
	Telecommunication Network/ STD booth				✓
	General Market			✓	
	Shops (Public Distribution System)			✓	
	Panchayat Building	Good		✓	
	Pharmacy/Medical Shop	Good		✓	
	Bank & ATM Facility	4-bank		✓	
	Agriculture Co-operative Society				✓
	Milk Co-operative Soc.	Good.		✓	
	Small Scale Industries				✓
	Internet Cafes/ Common Service Center/Wi Fi				✓
	Youth Club				✓
	Mahila Mandal			✓	

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Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries	NO		-	-
Other Facility	-	-	-	-

Suggestions if any:

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

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

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

IX. Smart Village / Heritage Details

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

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

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

સરપંચ
વાવોલ ગ્રામ પંચાયત
તા. જી. ગાંધીનગર

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12.3 Survey form of Allocated Village Scanned copy attachment in the report for Part-I :

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Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	Gandhinagar
Name of Taluka:	Gandhinagar
Name of Village:	Vasan
Name of Institute:	Shankersinh Vaghela Bapu Institute of Tech.
Nodal Officer Name & Contact Detail:	Prof. Jay Pandya 8490401404
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Anganwadi worker/Village dweller)	Priyankaba Vijaybhai Vaghela
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	3995	2078	1917	815

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	804.25 Hectares
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	
4.	Residential Area (In hect.)	
5.	Other Area (In hect.)	
6.	Distance to the nearest railway station (in kilometers):	12 km.

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

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. Farming 2. 3.
Major crops grown in the village:	1. 2. 3.

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

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Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 1,00,000	Adequate		
	Underground Sump	Capacity:	Adequate		
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET		Adequate		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	WBM	Adequate		
	Main road	WBM	Adequate		
	Internal streets	CC		Inadequate	
	Nearest NH/SH/MDR/ODR Dist. in kms.	Bituminous road	Adequate		
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO 12 km			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)				
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)		Adequate		
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)				

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

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

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

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Suggestions if any:

L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)	Not good	In the village	Yes	
	Public Library (With daily newspaper supply: Y/N)				NO
	Public Garden				NO
	Village Pond			Yes	
	Recreation Center				NO
	Cinema/ Video Hall				NO
	Assembly Polling Station				
	Birth & Death Registration			Yes	

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

Suggestions if any:

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

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

Suggestions if any:

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

VII. DATA COLLECTION FROM VILLAGE

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

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

IX. Smart Village / Heritage Details

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

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

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

12.4 Gap Analysis of the Allocated Village : (T-12.3- Gap Analysis) :

VILLAGE GAP Analysis

Village Facilities	Planning Commission/UDPFI Norms	Village Name:	BALVA		
		Population:			6504
		Existing	Required as per Norms	Smart Vilage / Cities / Heritage Future Projection Design	Gap
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	7	2		5
Primary School	Each Per 2500 population	1	1		0
Secondary School	Per 7,500 population	1	1		0
Higher Secondary School	Per 15,000 Population	1	1		0
College	Per 125,000 Population	0	0		0
Tech. Training Institute	Per 100000 Population	0	0		0
Agriculture Research Centre	Per 100000 Population	0	0		0
Skill Development Center	Per 100000 Population	0	0		0
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	1	1		0
Primary Health & Child Health Center	Per 20,000 population	0	0		0
Child Welfare and Maternity Home	Per 10,000 population	0	0		0
Multispeciality Hospital	Per 100000 Population	0	0		0
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutcha house)	0	1		-1
Physical Infrastructure Facilities					
Transportation		Adequate/ Inadequate			
Pucca Village Approach Road	Each village	Adequate			
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	Inadequate	1		1
Drinking Water (Minimum 70 lpcd)		Adequate/ Inadequate			
Over Head Tank	1/3 of Total Demand	Inadequate	1		-1
U/G Sump	2/3 of Total Demand	Inadequate	1		-1
Drainage Network - Open		Adequate/ Inadequate			
Drainage Network - Cover		Adequate			
Waste Management System		Adequate/ 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		1
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	0		0
Shopping Mall					
Electrical Design					
Electricity Network		Adequate/ Inadequate			
Any Smart Village Facility					
Technology					
		ESR cap	0		
		Sump cap	0		
		Lat	0		

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

Summary of Project Village			
Village features	**Allocated Village**	**Ideal village**	**Smart village**
Village	Vasan	Punsari	Vavol
Taluka	Gandhinagar	Talod	Gandhinagar
District	Gandhinagar	Sabarkantha	Gandhinagar
Sarpanch	Priyanka ba Vaghela	Mr.Himanshu Patel	Naginbhai nadiya
Distance	12 Km	80 Km	6 Km
Population (As per Census 2011)	3995 approx	5100	11957
Pin code	382650	383307	382016
Nearest Town	Gandhinagar	Talod	Gandhinagar
Surveys	Techno-economic survey	Ideal village survey	Smart village survey
Technology	Computers in school, Wifi in village	4G internet , wi-fi Etc…	Well developed infrastructure
Agriculture Area (In hect.)	205hect	6 hect	1535.0 hect
Total number of house hold	816 approx	1109 approx	2807 approx

Summary of all villages designs				
Sr no.	Village name	Discipline	Part -1	Part-2
1.	Vasan	Civil	Public toilet	Farmer-help center
			Bus stop	Garden
			WBM road	Community Hall
			Skill development class	Vegetable market
			Chabutro	Soak pit
			PHC	Rain water harvesting
2.	Punsari	Civil	Cybercafe	Skill development class
			Garden	Community Hall
			Bank	Chabutro
			Water tank	Post office
			Rain water harvesting	Krishi Kendra
			ATM	PHC
3.	Vavol	Civil	Community Hall	School
			Rain water harvesting	ATM
			Garden	Solid Waste management
			Pond purification	Public toilet
			PHC	Post office
			Underground sump	Cybercafe

Table : 25 Summary of designs

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

All the drawings and images are attached in their respective chapters along with designs.

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

12.8 Village Interaction with sarpanch/talati Report :

INTERACTION LETTER

INTERACTION WITH SARPANCH AND TALATI

Vishwakarma yojana phase–VIII
Vasan village, Gandhinagar
Pin code – 382650

Subject: - Interaction for VishwakarmaYojana initiative of GTU with talati and sarpanch

I sarpanch/talati of Vasan village undersigned give approval to the

1) Shivangi B. Raval (170750106024)
2) Krishna N. Patel (180753106004)

Student of SVBIT, Vasan working for Vishwakarma Yojana project phase-viii to interact with villagers of Vasan and assure that their village visit will be under my guidance with proper safety precaution against novel corona virus & I will help them with all possible way to meet their ideal expectation from me.

Sign:

12.9 Sarpanch Letter giving information about the village development :

- **Permission letter :**

"જન સેવા એજ પ્રભુ સેવા" "વિના સહકાર નહિ ઉધ્ધાર"

વાસન ગ્રામ પંચાયત

VASAN GRAM PANCHAYAT

મુ. વાસન (મહાદેવ), તા. જી. ગાંધીનગર

સરપંચશ્રી
વાઘેલા પ્રિયંકબા વિજયસિંહ
મો. ૯૭૧૪૫ ૨૫૦૦૦

અમે ડિગ્રી સિવિલ એન્જિનિયરિંગ ડિપાર્ટમેન્ટ SVBIT, ગાંધીનગર મા અભ્યાસ કરીએ છીએ. અમારા પ્રોજેક્ટના કામ માટે કૃપા કરીને તમારા ગામ વાસન ની મુલાકાત લેવા અને ફીલ્ડ વર્ક સંકલિત કરવાની અમને મંજૂરી આપો.

❖ **Approval Letter for Proposed Designs approval:**

APPROVAL LETTER

APPROVAL OF DESIGN PROPOSAL FROM SARPANCH AND TALATI

Vishwakarma yojana phase–VIII
Vasan village, Gandhinagar
Pin code – 382650

Subject: - approval of design proposal for Vasan village from talati and sarpanch

I sarpanch/talati of Vasan village undersigned give approval to the

1) Shivangi B. Raval (170750106024)
2) Krishna N. Patel (180753106004)

Student of SVBIT, Vasan working for Vishwakarma Yojana project phase-viii to design essential infrastructure and facilities for villagers of Vasan and assure that their proposed design will ensure efficient progress of village to achieve idea of ideal village in future. I sarpanch/talati will help them in all possible aspect to meet their requirement for design of infrastructure from civil point of view.

Sign :

❖ **Approval Letter For Swachhta & Covid Awareness Activity approval :**

APPROVAL LETTER

APPROVAL OF AWARENESS ACTIVITY FOR SWACHHTA AND CORONA VIRUS

Vishwakarma yojana phase–VIII
Vasan village, Gandhinagar
Pin code –382650

Subject: - Approval to carry out awareness activity for SWACHH BHARAT ABHIYAN and fight against corona virus from talati and sarpanch

I sarpanch/talati of Vasan village undersigned give approval to the

1) Shivangi B. Raval (170750106024)
2) Krishna N. Patel (180753106004)

Student of SVBIT, Vasan working for Vishwakarma Yojana project phase-viii to carry out awareness activity under banner of swachh bharat abhiyan and fight against corona virus with villagers of Vasan and assure that their village activity will be under my guidance & I will help them with all possible way to meet their ideal expectation from me.

Sign :

PART-II

Chapter-13

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

13.1 Design proposals :

In the Vishwakarma Yojana Phase-VII Part – II we have given total six design according To the village need and useful for the villagers. The design proposals are :

- Farmer help center
- Garden
- Soak pit
- Vegetable market
- Community hall
- Rain water harvesting

Farmer Help Center

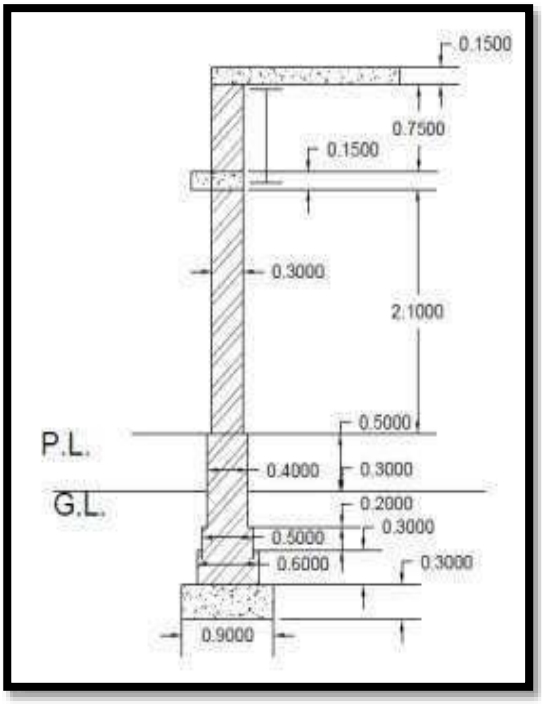


Fig.79 Foundation of farmer help center

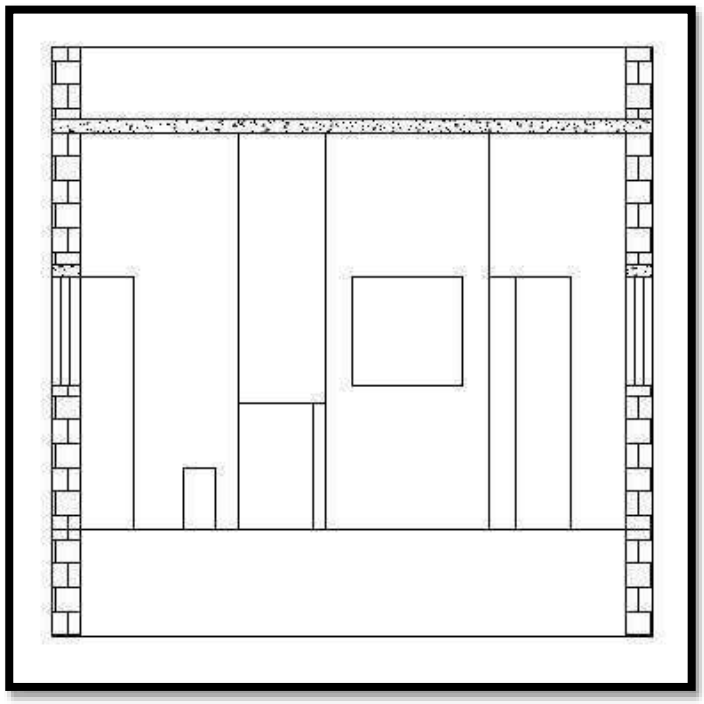


Fig.80Section of farmer helpcenter

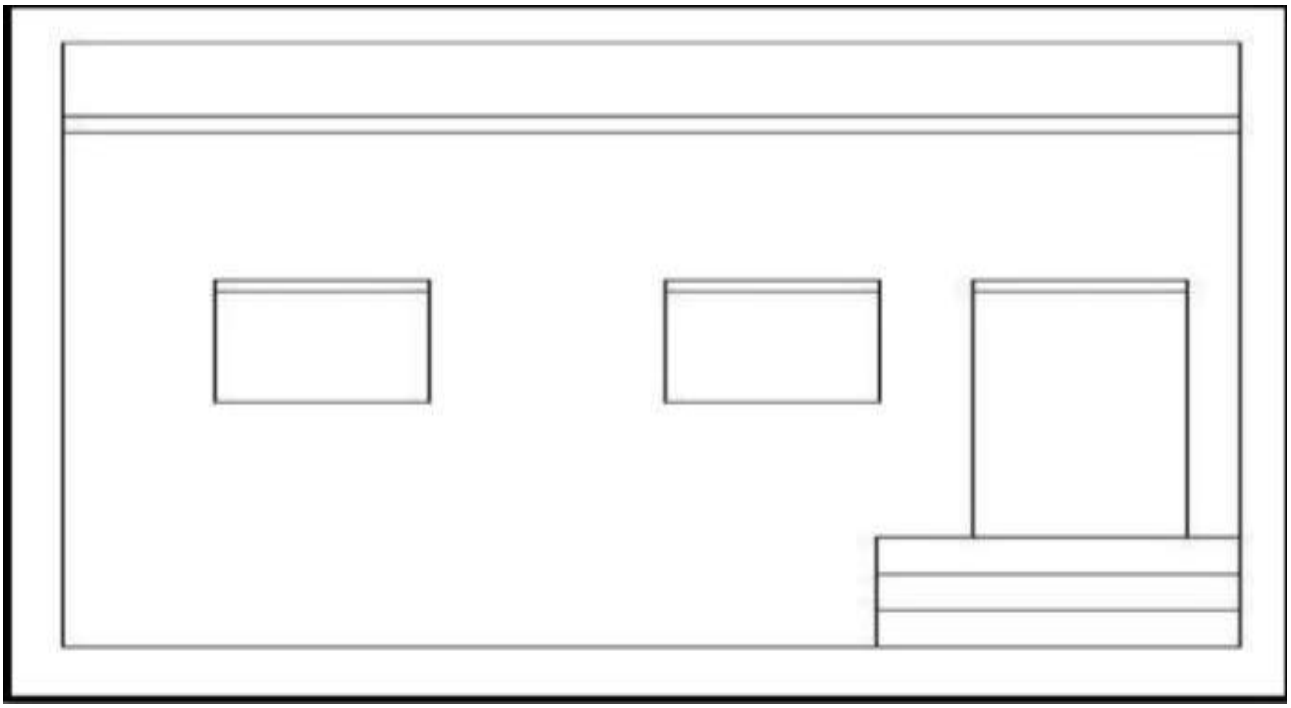


Fig.81 elevation of farmer help center

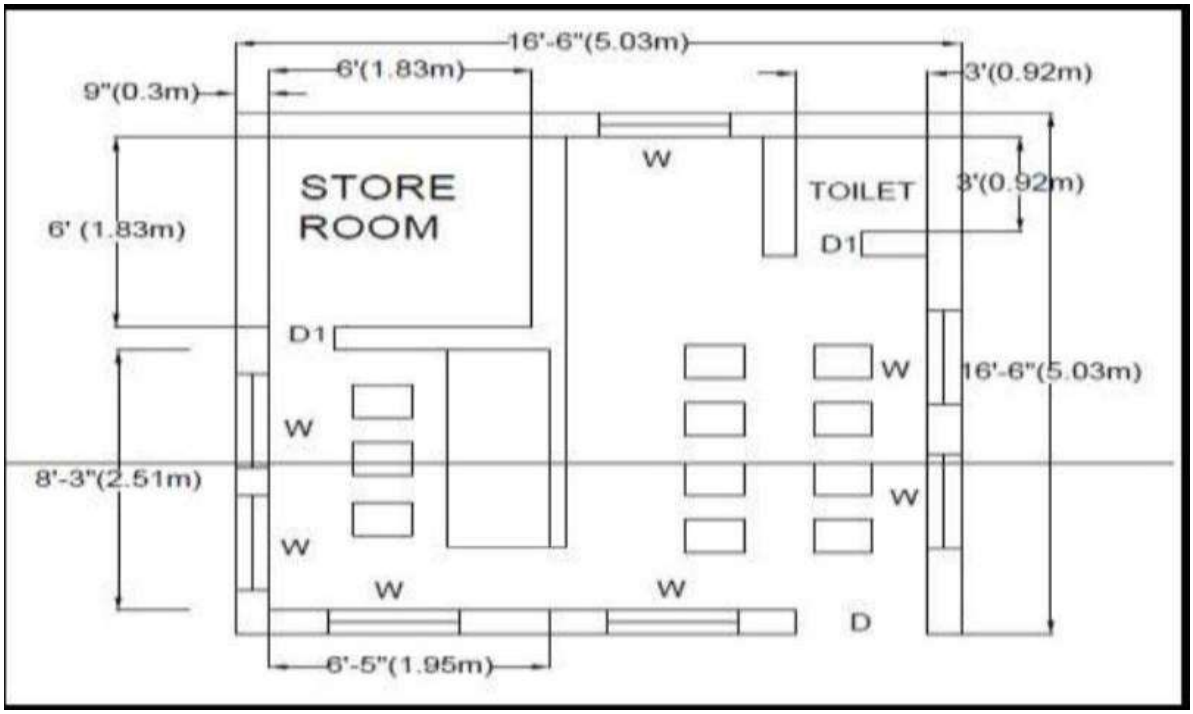


Fig.82 Plan of farmer help center

Measurement Sheet

Table.26 measurement sheet of farmer help center

Sr no	Item Description	Length (m)	Width (m)	Height (m)	Quantity (cu. m)	Total Quantity
1	Excavation for foundation in Soft ordinary soil. Total length = 25.62– 0.5 x 4 x 0.9	23.82	0.9	1.1	23.58	23.58
2	Providing and laying Foundation concrete (P.C.C.) (1:4:8) at foundation.	23.82	0.9	0.3	6.43	6.43
3	Providing and laying Brickmasonry at foundation unto G.L.					

3.1	1st footing Total length= 25.62 – 0.5x4x0.6	24.42	0.6	0.3	4.39	14.82
3.2	2nd footing Total length= 25.62 – 0.5x4x0.5	24.62	0.5	0.2	2.46	
3.3	3rd footing (up to G.L.) Total length= 25.62 – 0.5x4x0.4	24.82	0.4	0.3	2.97	
3.4	Brick masonry up to P.L.	25.02	0.4	0.5	5	
4	Providing refilling of the ordinary soil in foundationtrenches	Refilling = Total Excavation – (P.C.C. + Brick masonry of 1st – 3rd footing + Brick masonry up toG.L.) =23.58 – (14.82 + 6.43) Total refilling = 2.33 cu. m.				
5	Providing and refilling of the Yellow soil up to thePlinthlevel.	Refilling = (0.5 x 1.83 x 1.83) + (0.5 x 0.92 x 0.92) +(0.5x2.51x2.04) + (0.5x4.57x2.51) =10.39 cu. m.				
6	Providing and laying Brick masonry up to bottom of the slab. Total length = 25.62 – 0.5x4x0.3	1	25.02	0.3	3	22.51
6.1	Providing and laying Brick masonry up to bottom of the slab. Total length = 25.62 – 0.5x4x0.3	1	25.02	0.3	3	22.51

	Deduction D D1 W	1 1 7	1.2 1 0.8	0.3 0.3 0.3	2.1 2.1 1.53	0.75 0.63 2.57	3.95
						Total brickwork = 18.56 cu. m.	

7	Providing and Laying R.C.C. (1:2:4) work for slab		5.03	5.03	0.15	3.79	3.79
	R.C.C. Lintels (1:2:4) D D1 W	 1 1 7	 1.5 1.3 1.1	 0.3 0.3 0.3	 0.15 0.15 0.15	 0.06 0.05 0.34	0.45
	R.C.C. Chajja (1:2:4) D D1 W	 1 1 7	 1.5 1.3 1.1	 0.6 0.6 0.6	 0.15 0.15 0.15	 0.135 0.117 0.693	0.945
	Total R.C.C. (1:2:4) Work = 5.185 cu. m.						
8	Providing and laying Brick masonry CM (1:6) for parapet wall	1	20.12	0.3	0.9	5.43	5.43
9	Plaster						
9.1	Outside plaster Total length = 2(5.03 x 5.03)	1	20.12	4.55	-	91.54 Sq.m.	91.54 Sq.m.
	Deduction D D1 W	 1 1 7	 1.2 1 0.8	 -	 2.1 2.1 1.53	 2.52 2.1 8.56	=0.5 X 13.18 =6.59 sq.m.
	Total outside plaster = 84.94 sq. m.						
9.2	Inside plaster	1	25.13	-	3	75.39	
10	Flooring	1					17.74 sq.m.
11	Skirting 25.62 – 2(0.92 + 0.92)	1					21.94 m

Abstract Sheet

Table.27 abstract sheet of farmer help center

Sr. No.	Particulars	Total Qty.	Rate	Per	Amount
1	Excavation for foundation in soft ordinary soil.	23.58	110	M^3	2593.8
2	Providing and laying Foundation concrete (P.C.C.) (1:4:8) at foundation.	6.43	1501	M^3	9655.28
3	Providing and laying Brick masonry at foundation And plinth.	14.82	951.5	M^3	14101.97
4	Providing refilling of the ordinary soil in foundation Trenches.	2.33	106.9	M^3	246.98
5	Providing and refilling of the Yellow soil at Plinth level.	10.39	211.7	M^3	2199.35
6	Providing and laying Brick masonry up to bottom of the slab and parapet.	18.56	951.5	M^3	17660.76
7	Providing and Laying R.C.C. (1:2:4) work	5.185	8500	M^3	44072.5
8	Providing 12 mm thick cement plaster in C.M. (1:4)	153.75	138.5	M^2	21293.9
9	Providing and fixing tile flooring	17.74	644.3	M^2	11429
10	Providing and fixing 10 cm height tiles. (Skirting)	21.94	40	RM	887.6
			Total cost in Rupees = 4,14,871 rs		

No of bricks required = 16690 nos
PCC work 1:4:8

No of cement bags = 22 bags Sand = 3 m3

Aggregate = 6 m3

RCC work 1:2:4

Cement = 32 bags

Sand = 2.25 m3

Aggregate = 4.5 m3

Plaster 12 mm thick

Cement = 56 bags

Sand = 7.87 m3

Tiles = 46.25 m2 / 0.0625

= 740 tiles

Material abstract Sheet

Sr. no.	Particulars	Qty	Rate	Per	amount
1	Cement	110	290	Bag	31900
2	Aggregate	11.5	800	M^3	9200
3	Bricks	16690	4000	1000 nos	66760
4	Steel	510	45	Kg	22950
					Total cost =1,30,810

Table.28 material sheet of farmer help center

Total cost of building

= 4, 14,871 + 1, 30,810

= 5, 45,681 Rs.

Physical design:-

Among various physical design play ground is not available in Vasan village And so it is design below.

Plan of garden :

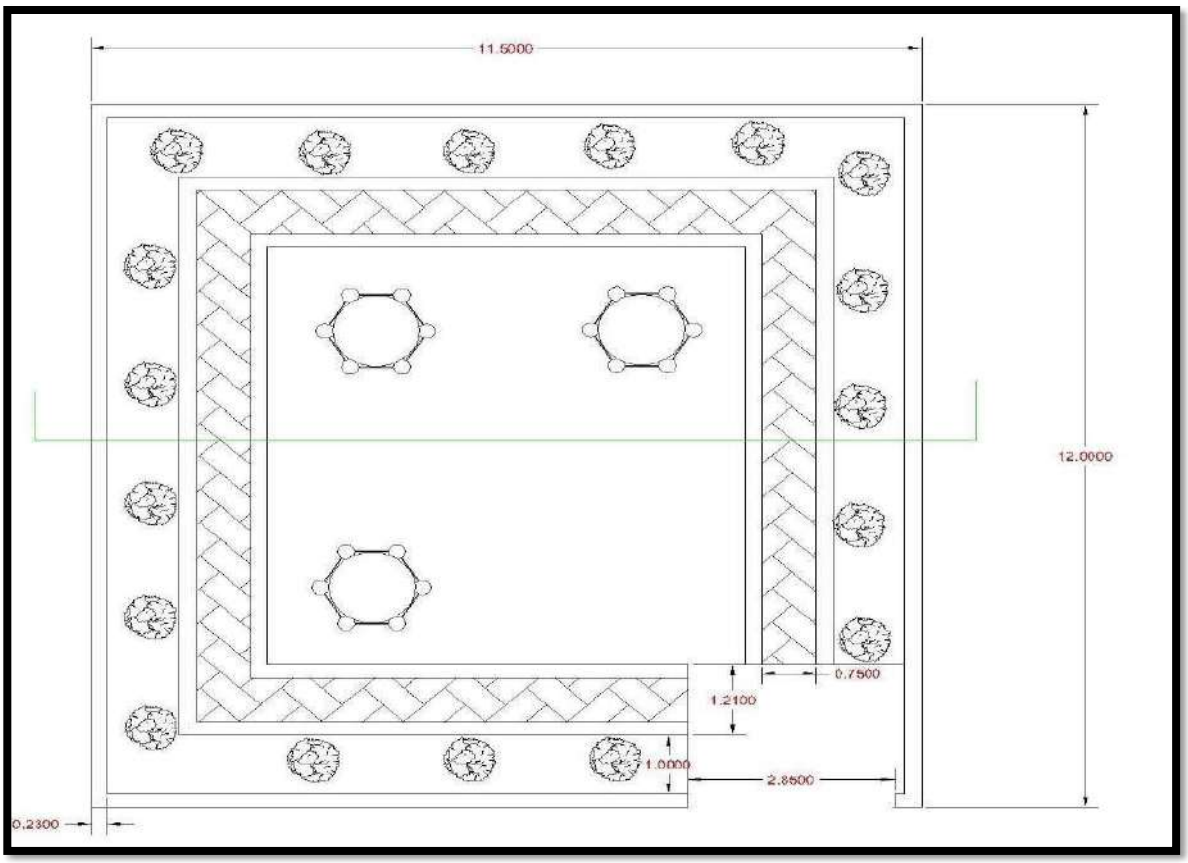


Fig.83 Plan of garden

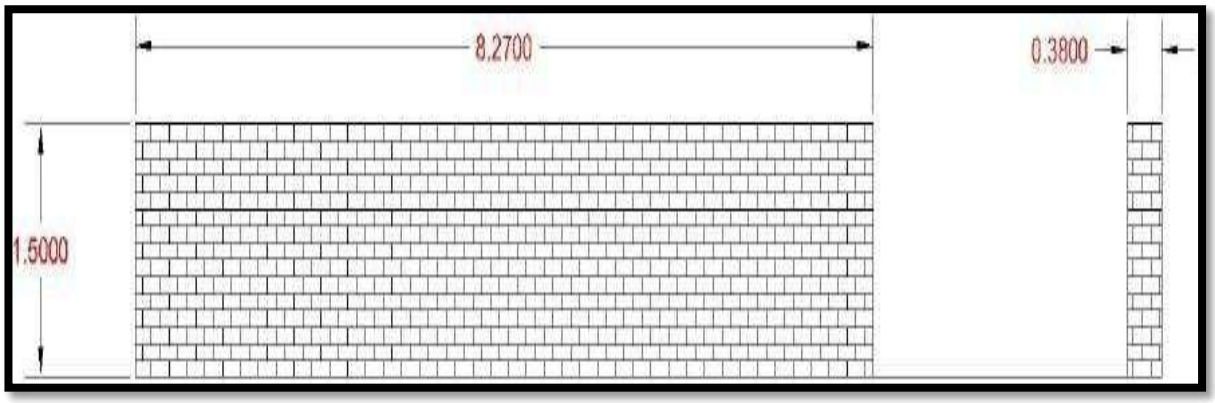


Fig.84 Elevation of garden

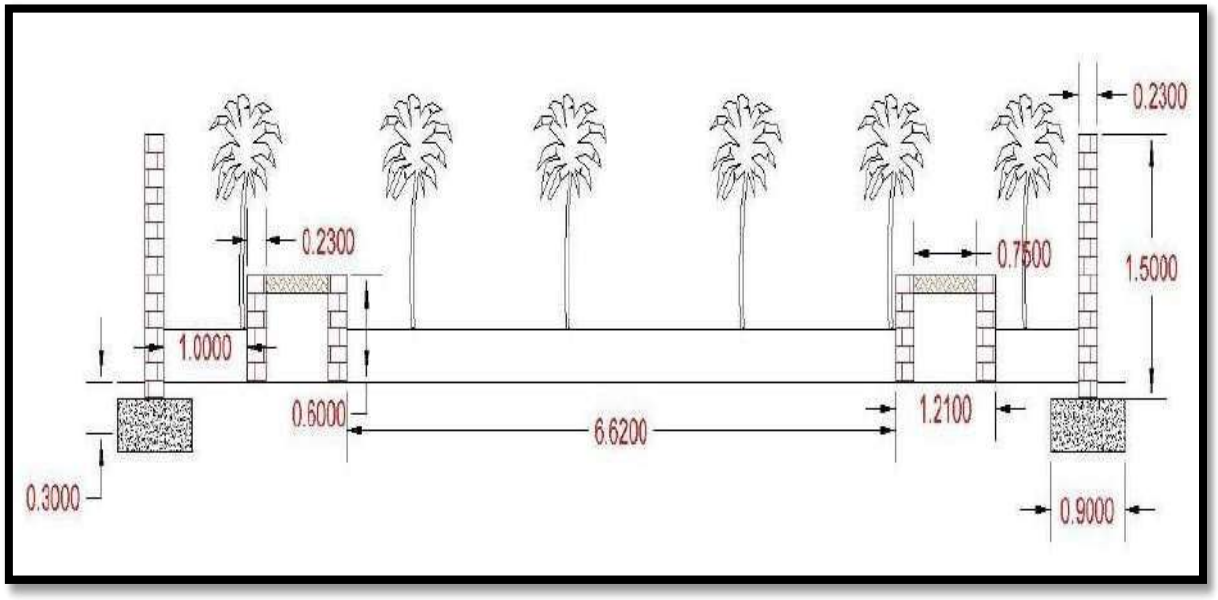


Fig.85 Section of garden

Costing of play garden :-

Item no	Item description	No	Length	Width	Height	Quantity
1	Excavation of Foundation inSoft Murrum, Soil or Sand from 0.0mtr.to 1.50 mtr depth including lifting and laying In 90 mtr. lead area as instructed	1	45.4	0.9	0.3	12.258
2	P.C.C work [1:4:8]	1	45.4	0.9	0.3	12.258
3	wall	1	45.4	0.23	1.5	15.663
4	20mm thick plaster	1	94		1.5	141
	deduction gate	1	5.68		1.5	8.52
	total =					132.48
5	brick wall	1	60.66	0.23	0.6	8.37108
	earth filling					

6	middle part	1	7.12	6.62	0.3	14.14032
	side part	1	36.95	1	0.3	11.085
	under walk path	1	30.33	0.75	0.5	11.37375
	total =					36.59907

Item Material	Descriptn	Quantity	Per	Rate	Amount
Excavation of Foundation in SoftMurrum, SoilorSandfrom0.0mtr.to1.50mtrdepth including lifting and laying in 90 mtr. lead area as instructed		12.26	m^3	96.90	1187.99
P.C.C in foundation in 1:3:6		12.26	m^3	1900	23294
Brick Masonry Super Structure in proportion of1:6		15.66	m^3	3218	50393.88
Filling with foundation & plinth with selected garden soil in layer of 20cm including watering and ramming complete		36.60	m^3	290	10614
Water Proof Cement Plaster 20 mm thick using Water Proofing Compound and in the ratio of 1:3 with necessary finishing		132.48	m^2	203	26893.44
Carpet lawn		47.17	m^2	260	12264.2
Tree plantation		18	no	220	3960
Supply & Fixing of CC Precast interlocking paving blocks of size 60 mm thick and of compresive strength of 250kg/ sq.cm (Red / Yellow / Grey Color), to be supplied and fixed as instructed withConcreting 1:2:4 the end blocks (without Cement joints) in bedding of Bhogavo		22.73	m^2	348	7910.04
Total =136517.55					
Add 3% contingency = 4095.52					
Contractor profit 10% =13651.75					
Add 2% Work charge = 2730.35					
Total cost = 156995.17 Rs.					

Table.29 material sheet of Garden

Sustainable design Soak pit :

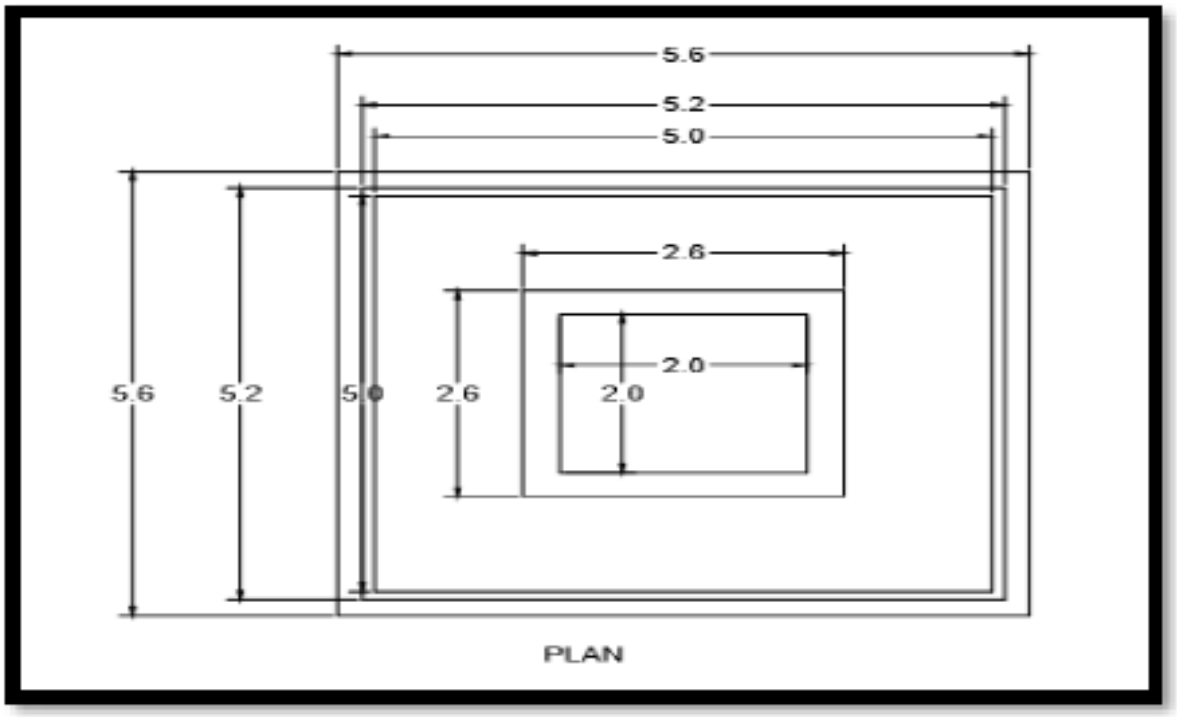
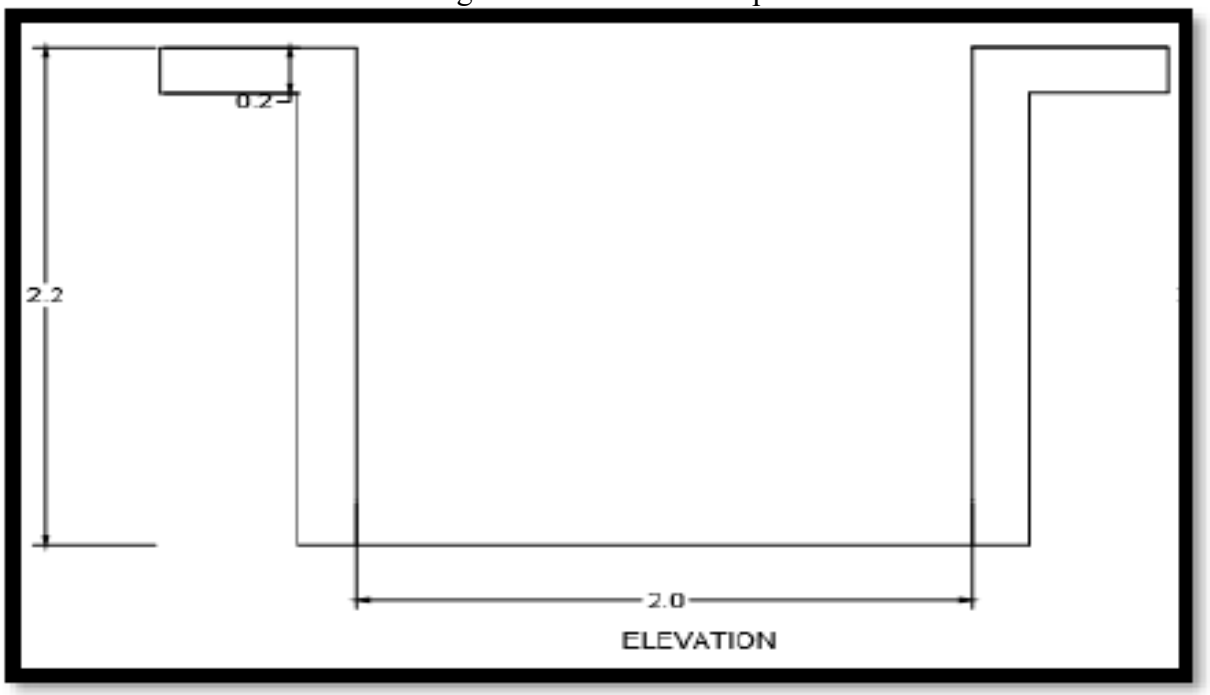


Fig.86 Plan of soak pit

Fig.87 Elevation of soak pit



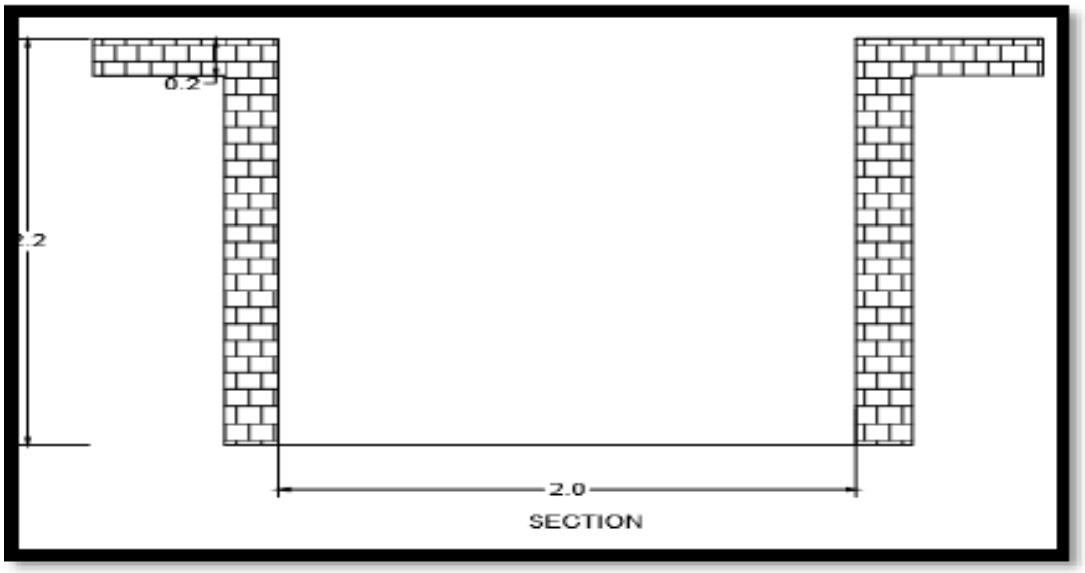


Fig.88section of soak pit

Costing :

Measurement sheet for soak pit

S.r. no	Item description	NO.	Length	Breadth	Height	Qty.
1	Excavation in ground	1	4	2	2	16
2	P.C.C. (1:4:8)	1	4	2	0.2	1.6
3	Brick masonry	1	1	2	2	4

Table30.Measurement sheet for soak pit

Brick masonry for 4 m^3 2000 nos.

Abstract sheet for soak pit

Item description	Qty.	Rate	Per	amount
Excavation for ground	16 cu. m.	86	m3	1376
Brickwork	2000	4	No.	8000
PCC	1.6 cu. m.	2100	M3	3360
				cost = 12736 rs

Table.31 Abstract sheet for soak pit

Water charges = 0.015x 12736

` = 191.5 rs

contractor profit = 0.1x 12736

= 1273.6 rs

Total cost of soak pit =14201.6 Rs

Physical design :

Design of vegetable market :

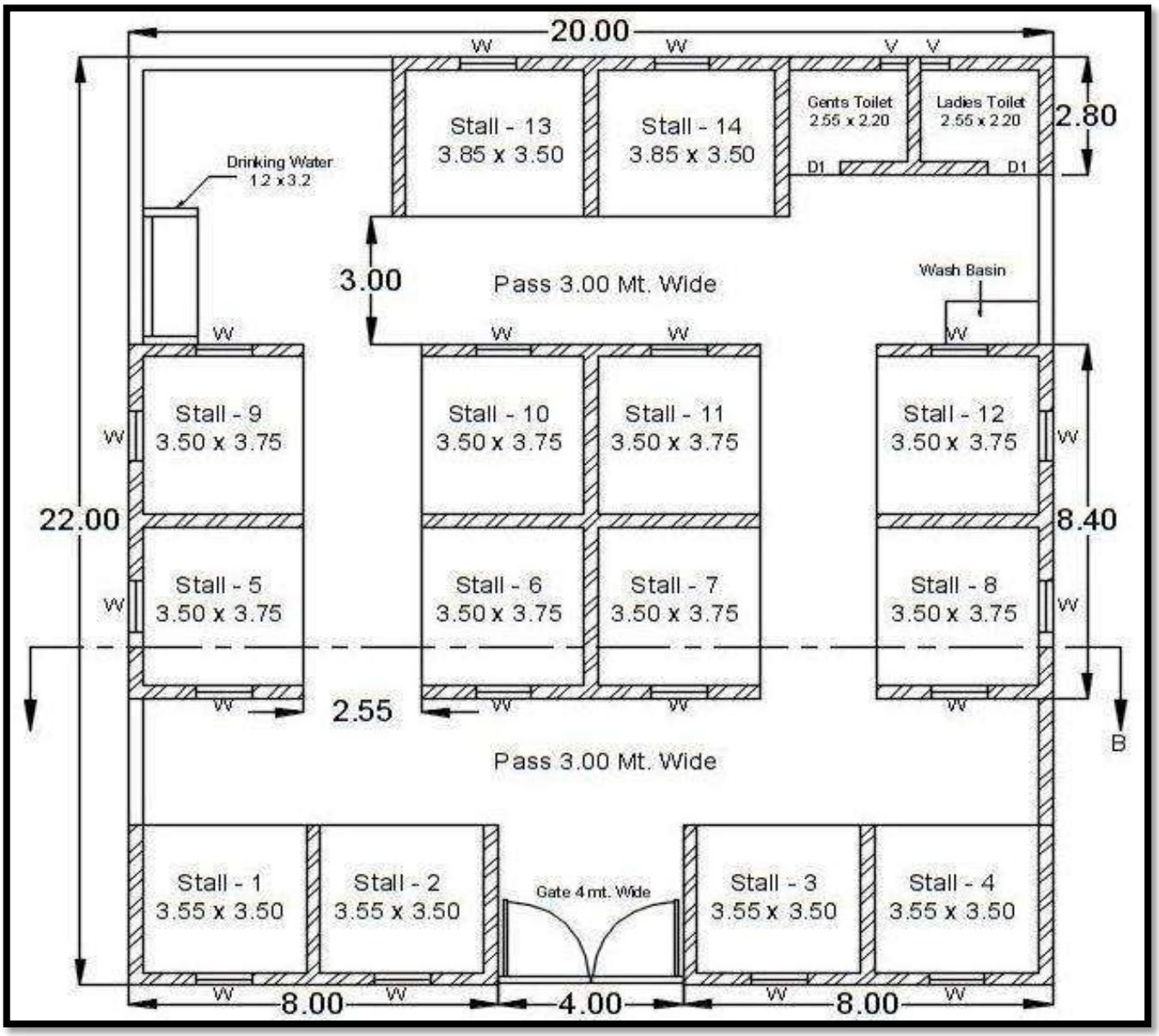


Fig.89 Plan of vegetable market

Schedule Of Door And Windows	
W	1.20 x 1.20
V	0.60 x 0.60
All Dimensions Are In Meter	

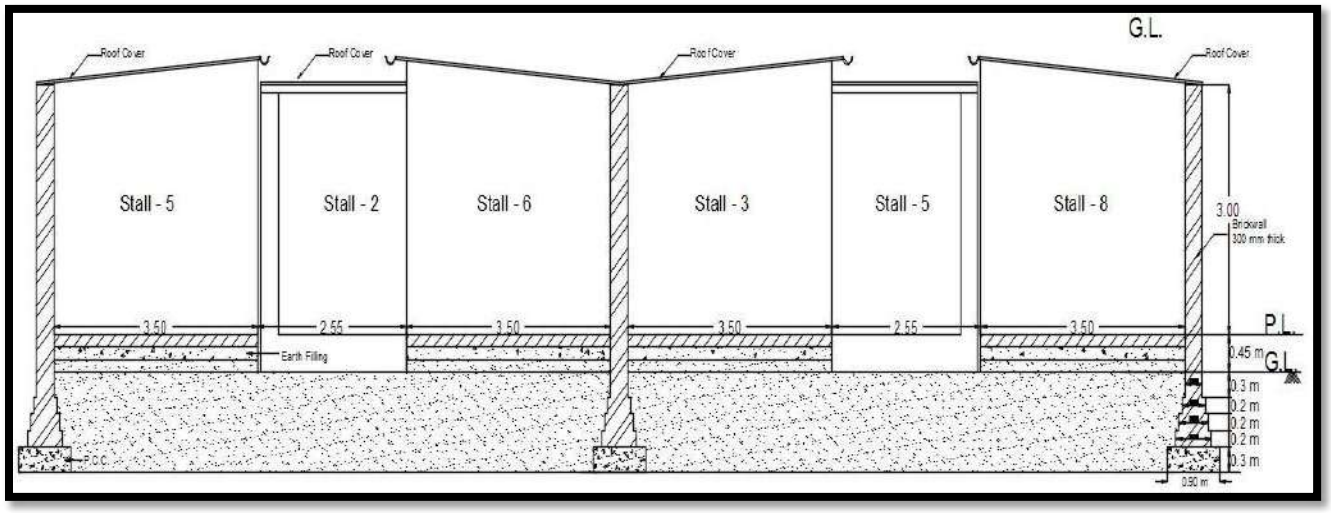
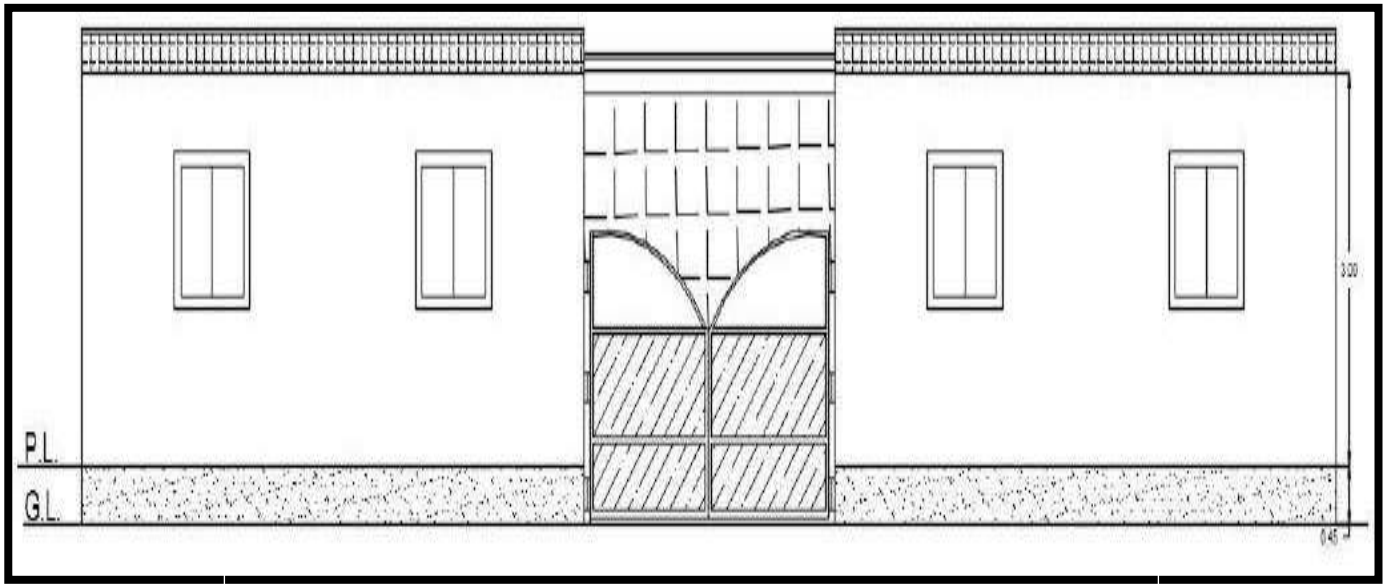


Fig.90Section of vegetable market



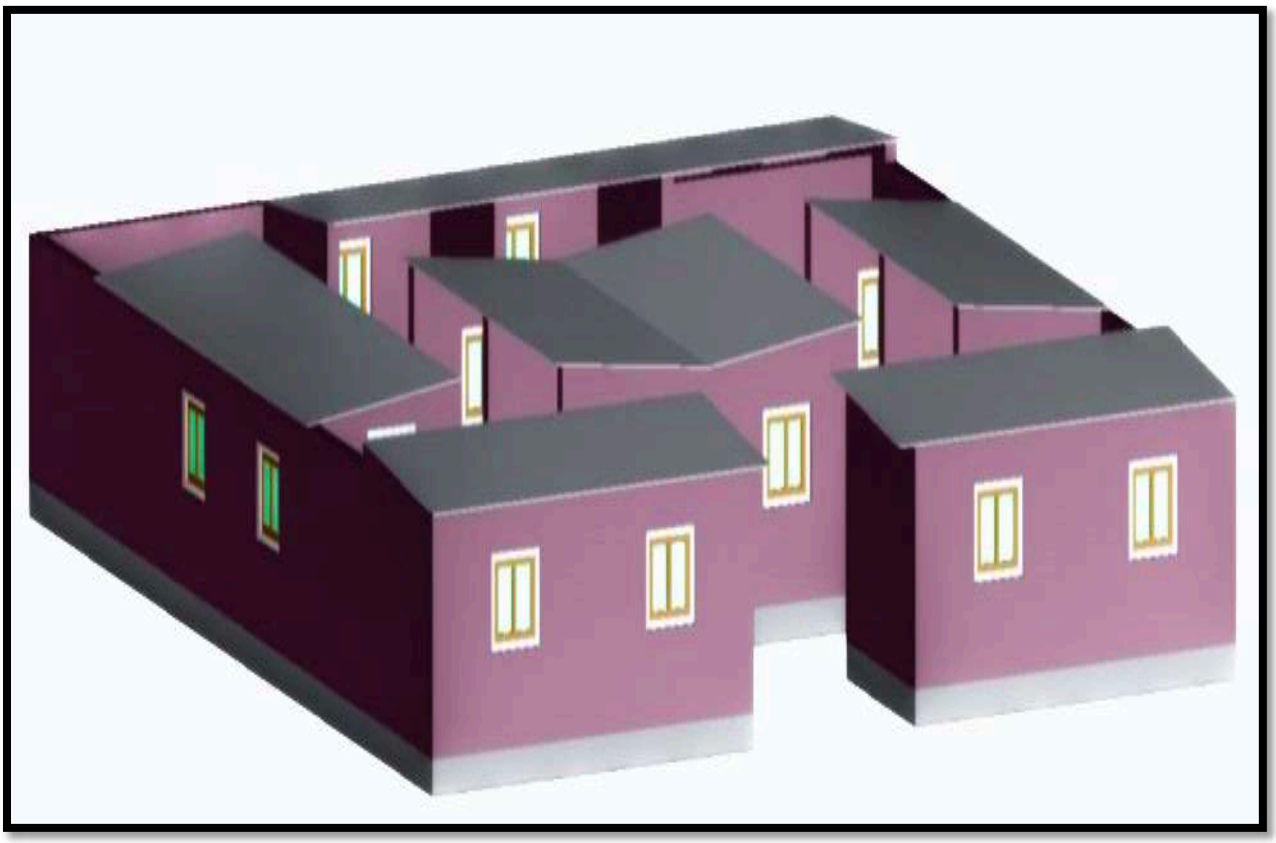


Fig.913D drg of vegetable market

Table 32: Measurement Sheet of Vegetable Market

MEASUREMENT SHEET						
Vegetable Market						
Item no.	**Item Description**	**No.**	**Length (m)**	**Breadth (m)**	**Height (m)**	**Quantity**
1	**Excavation for foundation**					
	Net centre line length					
	167.56 - (1/2 × 0.9 × 18) = **159.46m**	1	159.46	0.9	1.2	**172.21 m^3**
2	**P.C.C in foundation**	1	159.46	0.9	0.3	**43.05 m^3**
3	**Masonary steps upto plinth**					
=>	STEP 1					

	L = 167.56 - (0.5 × 0.6 × 18) = **162.16m**	1	162.16	0.6	0.2	**19.45 m^3**
=>	STEP 2					
	L = 167.56 - (0.5 × 0.5 × 18) = 163.06m	1	163.06	0.5	0.2	16.30 m3
=>	STEP 3					
	L = 167.56 - (0.5 × 0.4 × 18) = 163.96m	1	163.96	0.4	0.2	13.11 m3
=>	STEP 4					
	L = 167.56 - (0.5 × 0.3 × 18) = 164.86m	1	164.86	0.3	0.75	37.09 m3
						TOTAL = 86.00 m^3
4	Sand filling upto G.L.					
	Q = (Excavation - PCC - Brick upto G.L)					
	(12.21 - 43.05 - 86) = 43.6m	–	–	–	–	43.16 m^3
5	Brick Masonry above plinth upto slab level					
	Compound Wall, L = 16.01m	1	16.01	0.3	1.2	5.76 m^3
	Walls os Stall, L = 139.75m	1	139.75	0.3	3	125.75 m^3
						= 131.51 m^3
	Deduction for					
	Main gate	1	4	0.3	1.2	– 1.44 m3
	Ventilation	2	0.6	0.6	0.6	– 0.432 m^3
	Window	14	1.2	0.3	1.2	– 6.04 m^3

						= 132.59 m^3
						TOTAL BRICKWORK = 86 + 132.59 = 218.59 m^3
6	Sand filling for Plinth level					
	Total area	1	22	20	0.45	198 m^3
	Deduction of wall	1	135.1	0.3	0.45	–18.23 m^3
						TOTAL = 179.77 m^3
7	PCC above sand filling					
	Total area	1	22	20	0.1	44 m^3
	Deduction of wall	1	135.1	0.3	0.1	– 4.05 m^3
						TOTAL = 39.94 m^3
8	Inside plaster					
	Stall 1	8	10.75	–	3	285 m^2
	Stall 2	6	10.85	–	3	195 m^2
	Toilet block	2	9.5	–	3	57 m^2
	Open space	1	44.95	–	3	134.85 m^2
						= 672.15 m^2
	Deduction					
	Door	2	2.1	–	3	– 12.6 m^2
	Gate	0.5	4	–	3	**– 6 m^2**
	Window	14	1.2	–	1.2	**– 20.6 m^2**
	V	2	0.6	–	0.6	**– 0.72 m^2**
						= – 39.48 m^2

						TOTAL = 632.67 m^2
9	**Outside plaster**	1	48.8	–	3	**146.4 m^2**
	Compound wall	1	16.01	–	1.2	**19.21 m^2**
	Deduction for gate	1	4	–	1.2	**– 4.8 m^2**
						TOTAL = 160.81 m^2
10	**Roof of stall**					
	Stall 1	8	4.35	3.8	–	**132.24m^2**
	Stall 2	4	4.15	3.8	–	**63.08 m^2**
	Stall 3	2	4.45	3.8	–	**33.82 m^2**
	Toilet	2	3.15	2.8	–	**17.64 m^2**
						TOTAL = 246.78 m^2

Table.33 : Abstract Sheet of Vegetable Market

ABSTRACT SHEET					
Vegetable Market					
Item no.	**Item Description**	**Quantity**	**Rate**	**Per**	**Amount**
1	**Excavation**	172.21	110	Cu. m	**18,944**
2	**P.C.C**	83	965	Cu. m	**80,095**
3	**Sand filling**	222.93	90	Cum	**20,064**
4	**Brick Work**	218.59	1200	Cu. m	**273,238**
5	**Inside Plaster**	632.67	150	Sq. m	**94,901**

6	**Outside Plaster**	160.81	250	Sq.m	**40,203**
7	**Roof**	246.76	250	Sq.m	**61,690**
8	**Cement**	669	280	bag	**187,320**
9	**Sand**	113.15	900	Cu. m	**101,835**
10	**Brick**	109295	4	brick	**437,180**
11	**Aggregate**	77.62	1000	Cu. m	**77,620**
			TOTAL = 1393090		
	Add 1.5% water charges				**20897**
	Add 10% Cotractor Profit				**139309**
				TOTAL = 1393090 Rs.	

Socio-Cultural Design :
Community Hall

Existing Situation/Scenario:
The community hall is not available in Vasan. Community hall is useful for Panchayat meetings, gathering place or as a library.

Recapitulation Sheet :

Table.34 Recapitulation Sheet of community hall

Community hall			
Sr. No	**Location**	**Description**	**Estimated cost**
1.	Adjacent to surpanch office	Community hall cum library	Rs. **833665**

Proposed Drawing of Community Hall:

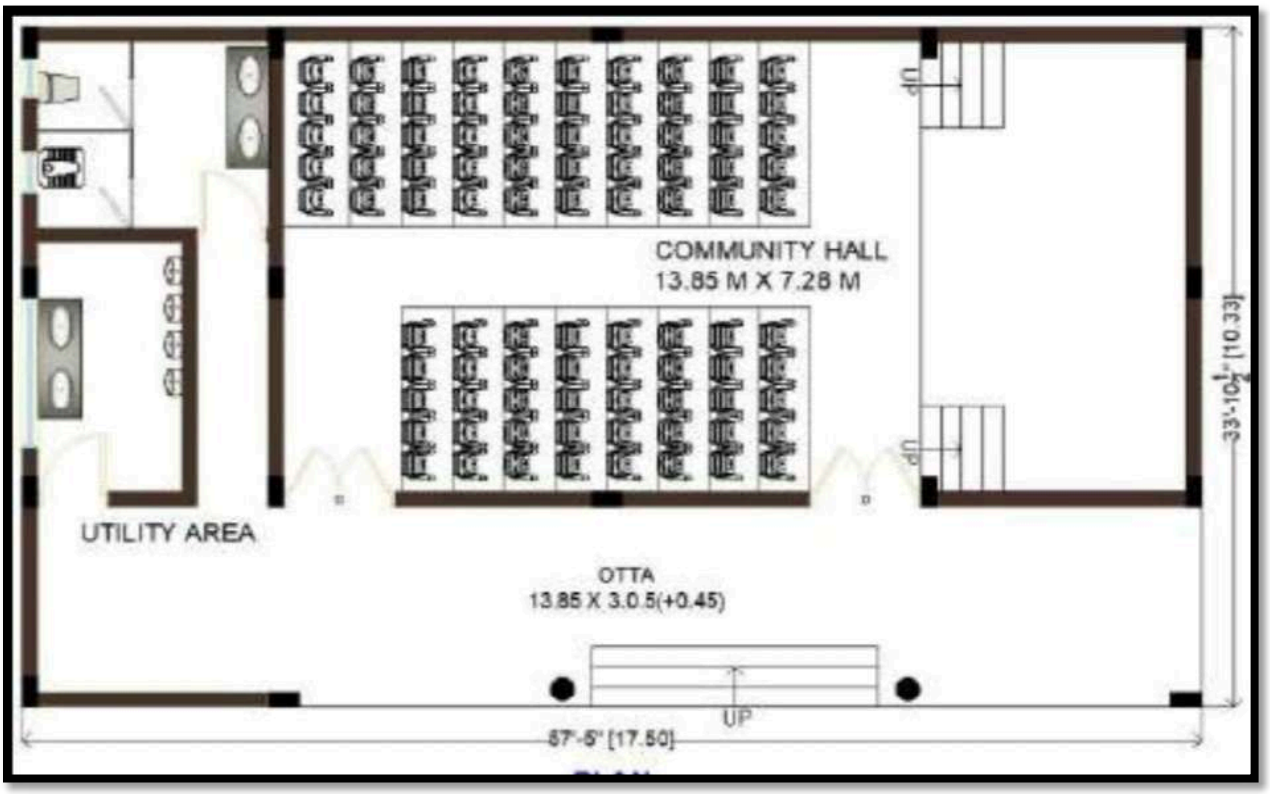


Fig.92 Plan of community hall

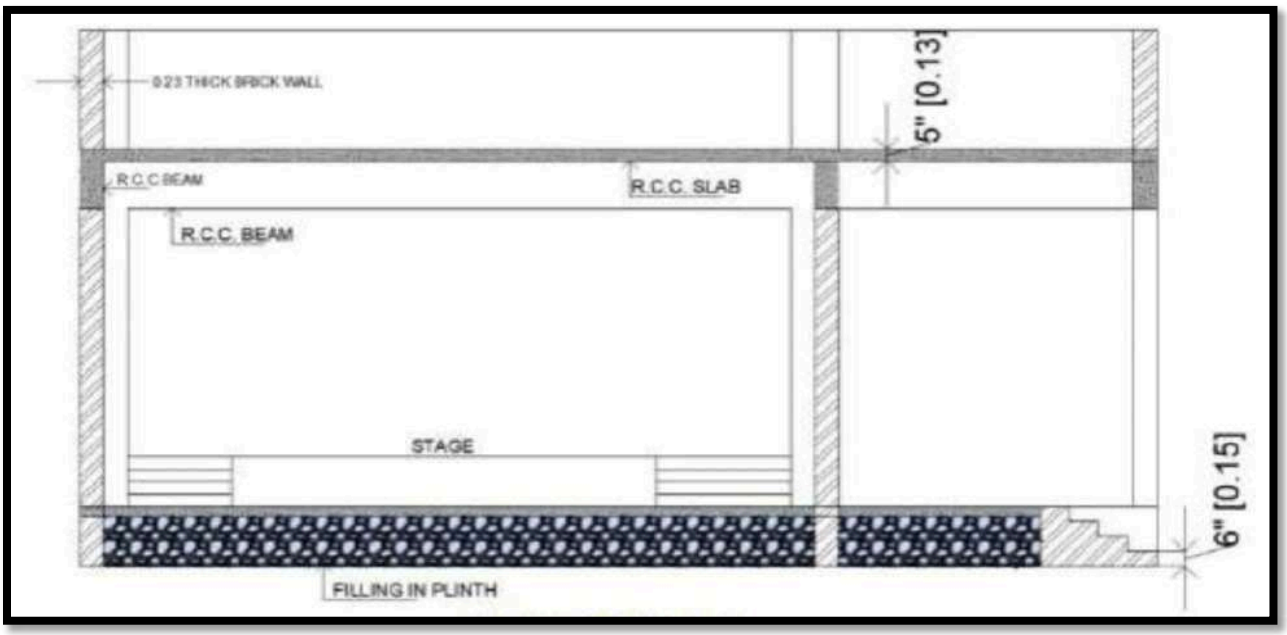


Fig.93 Section of community hall

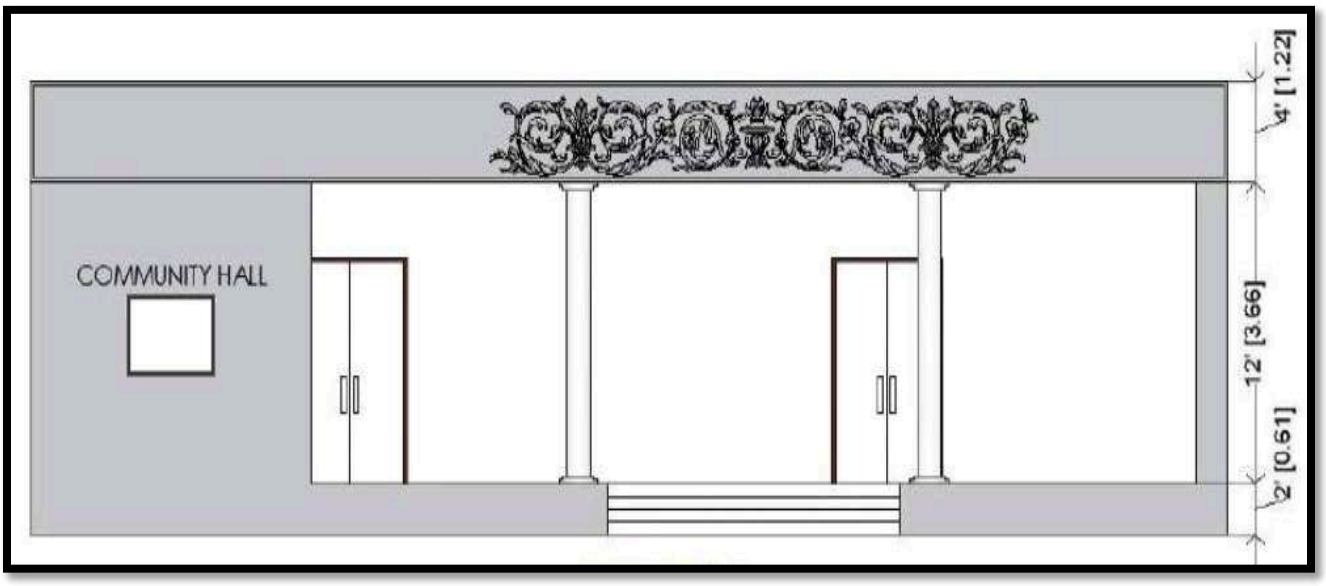


Fig.94 Elevation of community hall

Table.35 Measurement sheet of Community Hall

Sr.no	Item description	Nos	L	B	H	Unit	Quntity	Total
1.	Excavation for foundation							
	Excavation in soil<2M	12	1.65	1.65	2	m^3	65.34	
	Excavation in soil>2M	12	1.65	1.65	0.50	m^3	16.34	
2.	P.C.C.(1:4:8)in footing	11	1.35	1.380	0.075	m^3	1.64	
3.	R.C.C.9(1:5:3)in footing Trapezoidal formula= (L×B×H)×H/3×(a1+a2)	14	1.2	1.3	0.15	m^3	8.11	
4.	R.C.C(1:5:3)in column	11	6.87	0.23	0.3	m^3	5.69	
5.	P.C.C(1:4:8)in ground beam	1	28.4	0.23	0.075	m^3	0.49	
6.	R.C.C(1:1.5:3)in plinth beam	1	28.4	0.23	0.3	m^3	1.96	
7.	Filing of moorum up to plinth level	1	9.54	5.54	1	m^3	52.85	
8.	Masonary up to terrace level							
	Long wall	2	10	0.230	3.1	m^3	14.26	
	Short wall	2	5054	0.23	3.1	m^3	7.9	
	Parapet							
	Long wall	2	10	0.23	0.7	m^3	3.22	
	Short wall	2	5054	023	0.7	m^3	1.78	
	Deduction							
	i. deduction of door	1	1.8	0.23	2.2	m^3	-0.91	
	ii.deduction of window	7	1.5	0.23	1.2	m^3	-2.89	

								23.36
9.	Lintel beam R.C.C.(1:1.5:3)	7	1.8	0.23	0.1	m^3	0.29	
10.	ChajjaR.C.C.(1:1.5:3)	7	1.8	0.5	0.1	m^3	0.63	
11.	Top beam R.C.C(1:1.5:3)	1	43.7	0.23	0.3	m^3	3.02	
12.	Slab R.C.C(1:1.5:3)	1	10	6	0.125	m^3	7.5	
13.	Flooring	1	9.54	5.54		m^2	52.85	
	Skirting	1	30.16	0.15		m^2	4.52	
								57.37
14.	Plastering							
	External plaster							
	External long wall	2	10		3.9	m2	78.3	
	External short wall	2	6		3.9	m2	46.8	
	Parapet long wall	2	10		0.7	m2	14	
	Deduction						-16.56	
								130.1
	Internal plaster							
	Internal long plaster	2	9.54		3.1	m2	59.15	
	Internal short wall	2	5.54		3.1	m2	34.35	
	Deduction					m2	-16.56	
	Slab	1	9.54		5.54	m2	52.85	
	Long beam	2	5.54		0.3	m2	3.32	
	Short beam	2	9.54		0.3	m2	5.72	
								138.83
15.	Painting							
	External painting							
	External long wall	2	10		3.9	m2	78.3	
	External short wall	2	6		3.9	m2	46.8	
	Parapet long wall	2	10		0.7	m2	14	
	Parapet short wall	2	5.4		0.7	m2	7.56	
	Deduction						-16.56	
	Slab	1	9.54		5.54	m2	52.85	
	Long beam	2	5.54		0.3	m2	3.32	
	Short beam	2	9.54		0.3	m2	5.72	
								138.83
16.	Lum sum external structure steel stairs going on terrace(LS-1)	1	-	-	-	Kg	270	
17.	Water proofing	1	9.54	-	5.54	m2	52.85	
18.	Door	1	1.8		2.2	m2	3.96	
19.	Window	7	1.5		1.2	m2	12.6	
20.	Electric works	-	-	-		RM	200	
21.	Shuttering							
i.	Raft							

	P.C.C	48	1.35	0.08	m2	5.18	
	R.C.C	48	1.2	0.2	m2	11.52	
ii.	Column						
	R.C.C. below G.L.	24	1.45	0.3	m2	10.44	
	R.C.C. below G.L.	24	1.45	0.23	m2	8	
							35.14
	R.C.C. above G.L.	24	5.5	0.3	m2	39.60	
	R.C.C. above G.L.	24	5.5	0.23	m2	30.36	
iii.	Plinth beam						
	P.C.C	2	28.4	0.08	m^2	4.54	
	R.C.C	2	28.4	0.35	m^2	19.88	
iv.	Top beam						
	R.C.C.	2	43.7	0.35	m^2	30.6	
v.	Slab	1	10	6	m^2	60	
vi.	Floor						
	-1 Side	2	10	0.15	m^2	3	
	-2 Side	2	10	0.15	m^2	1.8	
vii.	Chajja						
	Front	7	1.8	0.15	m^2	1.89	
	Side	14	0.5	0.15	m^2	1.05	
	Bottom	7	1.8	0.5	m^2	6.3	
viii.	Lintel beam	14	1.8	0.15	m^2	3.78	
							202.8

	Description	Reinforcement	Horizontal bars in m	Vertical Bars in m	Total length	Unit	Total metres X multiplying	Total KG
i.	Raft							
	Main bar	16mm	18	18	36	Kg	682.5	
ii.	Column							
	Main bar	16mm	72	9	648	Kg	1023.84	
	Ring bar	8mm(C/C-0.15m, 12nos)	90	0.96	86.4	Kg	34.13	
iii.	Plinth beam							
	Main bar	12mm	32	6	192	Kg	168.96	
	Ring bar	8mm(C/C-0.2m)	160	0.86	137.6	Kg	54.35	
iv.	Top beam			Length wih lap				
	Main bar	16mm	6	63	378	Kg	597.24	

	Ring beam	8mm	314	0.86	270	Kg	106.67	
v.	Top slab							
	Main bar	12mm	10	67	670	Kg	589.60	
	Distribution Bar	10mm	6	41	246	Kg	152.52	
vi.	Floor slab							
	Horizontal Bar	10mm	10	40	400	Kg	248.00	
	Vertical bar	10mm	6	25	150	Kg	93	
								5840.00

Abstract Sheet:

Sr. no	Item	Quantity	Rate	Unit	Amount
1.	**Excavation for Foundation:** Excavation for foundation in any type of soil except rock. Rate to include dressing the sides and bottom, bailing out of water if encountered, shoring, strutting, backfilling with available excavated earth (in layers 150 mm compacted thickness, including watering, compaction by saturation, earth rammer, hand rammer, all complete after the construction work), and disposal of surplus excavated earth within/outside HPCL's premises to an unobjectionable place, as directed by the Engineer in Charge including spreading, watering and compaction, complete.				
	Excavation in soil < 2m	65.43	205.00	m^3	13394.70
	Excavation in soil > 2m	16.34	236.00	m^3	3856.24
2.	**P.C.C.(1:4:8)** Providing and laying PCC 1:4:8 using 40 mm and down size graded stone aggregates including machine mixing, placing, compacting by hand ramming , curing etcComplete.	2.13	2604.00	m^3	5546.52

3.	**R.C.C.(1:1.5:3) Footing** Providing, mixing and placing RCC 1:1.5:3 mix for Footings & Pile caps with OPC/ PPC using 20mm and down size graded crushed aggregate including machine mixing, compacting by vibrators, curing, hacking the surface to receive plaster etc. complete. Rate shall be exclusive of the cost of steel reinforcement, which will be paid	8.11	4426.00	m^3	35894.86
	under a separate item. Concrete conforming to relevant specifications of IS 456 Latest Edn.				
4.	R.C.C.(1:1.5:3) Column and Beam Same as Item no.3 but for Columns & Beams.	10.96	4792.00	m^3	52520.32
5.	R.C.C.(1:1.5:3) SLABS Same as Item no.3 but for Building Slab	7.5	4621.00	m^3	34657.50
6.	MURRUMFILLING Supply and filling murrum (plasticity index between 5 to 7) in 150mm to 200mm thick layers including leveling with dozer, watering, compacting each layer with 8/10 MT road roller to obtain field dry density 92% of MDD, dressing top layer to the required slope, testing of murrum samples for OMC & MDD and testing of field dry density by core cutter for checking compaction. Payment will be made only for compacted thickness.	52.85	366.00	m3	19343.10
7.	Brick Masonry Providing and constructing 230 mm & above thickness brick masonry in CM 1:5 using bricks having minimum compressive strength 35 Kg/cm2 and conforming to IS: 1077- Latest Edition including providing all openings and projections as per the drawing, raking the joints to 1cmdeep, Scaffolding, soaking of bricks in water prior to use and curing etc complete as per specification.	23.647	3321.00	m3	78531.69
9.	Kota Stone Flooring Providing and fixing 20mm & higher thickness Kota stone (2' x 2'/1.5') with 25mm to 50mm bedding CM 1:3, cement slurry and machine	57.37	700.00	m2	40159.00

	polishing on one side for flooring and shelf slab including curing, chipping, finishing the joints, scaffolding etc all complete as directed by engineer in charge.				
10.	Sand faced Plaster (BLDG) 20MM Providing and laying average 20 mm thick sand faced cement plaster to salesroom etc as per following procedure : Apply 12 mm thick coat of CM 1:4 mixed with CICO/	130.1	145.00	m2	18864.5
	IMPERMO/ACCOPROOF water proofing compound mixed as per manufacturer's specifications as 1st coat and leaving the surface rough. Apply 2nd coat of 8 mm thick of CM 1:4 and finishing the surface by Rubbing with sponge till uniform texture is obtained. Rate shall include providing necessary scaffolding, surface cleaning, chipping, watering, finishing, chicken wire mesh at all joints of brick and concrete surfaces, with a minimum overlap of 150mm in all directions and curing complete. No Extra payment shall be made for additional thickness if required to achieve perfect line and level.				
11.	SMOOTH PLASTERING (BLDG) 15MM Providing and laying 15mm thick smooth cement plastering with Niru/ Lime Finish in 1:4 CM in single coat to all the interior walls of sales room & other buildings including providing necessary scaffolding, chipping, cleaning the surface, watering, finishing, chicken wire mesh at all joints of brick and concrete surfaces, with a minimum overlap of 150mm in all directions and additional Thickness if required to achieve perfect line and level without any extra cost.	138.83	130.00	m2	18047.9
12.	APEX PAINT (External Paint) Providing and applying 2 coats of apex paint to all exterior surfaces over a coat of primer as per Manufacture’s specification including	130.1	80.00	m2	10408.00

	necessary scaffolding, curing etc., complete. If additional coats are required to obtain uniform and smooth finish, the same shall be carried out at no extra Cost.				
13.	Oil Bound Distemper (Internal Paint)	138.83	45.00	m2	6247.35
	Providing and applying 2 coats (first coat with brush and final coat with roller) of OBD of approved make and shade on all surfaces and heights to give an even shade including priming coat and full putty after thoroughly brushing the surface free from mortar dropping and other foreign matter and also including preparing the surface even and sand papered smooth, scaffolding, necessary surface preparation, additional coats if reqd. etc all material and labor complete as directed by engineer in charge.				
14.	Water proofing at Terrace Providing and laying integral cement based water proofing of average 100 mm thick in proper slope as per specifications given below: Cleaning RCC slab and applying neat cement slurry mixed withWaterproofing compound. Providing and laying brickbat coba in CM 1:4 mixed with water proofing compound and curing for a period of24hours. laying of 25mm thick PCC 1:1.5:3 mix with 6mm and down size coarse aggregate and water proofing compound, finishing smooth,making Half round vata at the junction of parapet wall and slab, and curing for 10 days.	52.85	474	m2	25050.90
15.	Centring and Shuttering including strutting, propping etc. and removal of formwork for:				
	Foundation ,footing, bases for column	35.15	100	m2	3515.00
	Columns, piers ,abutment, pillars ,posts and struts	202.8	227	M2	51455.2

16.	ReinforcementSteel: Supply, fabrication, hoisting andplacingin position HYSD reinforcement bars conforming toIS1786 - Latest Edition Grade FE 415 as per detailed drawing and specifications including cutting, bending and tying with 18 SWG binding wire complete. The rates shall be applicable for all heights and depths. Payment shall be made as per reinforcement	3750.81	55.00	Kg.	206294.6
	drawings and with theoretical weights only including all authorized laps and hooks. Unauthorized chairs, spacers and laps will not be measured and paid for.				
17.	StructuralSteel: Stairs for going on terrace	270.00	76.00	Kg.	20520.00
18.	Aluminium Window (Open able) Providing and fixing Deep Blue Powder coated aluminium glazed windows with 4 mm glass & extruded built up section of wall thickness not less than 1.5 mm and approved make with glass panel fixed to side hung shutter with aluminium snap beading and neoprene/ PVC gasket/ CP Brass/ Stainless steel screws fixed to the wall with requisite rawl plugs and screw or with fixing clips or with expansion hold fasteners including necessary filling up of gaps at junctions, at top, bottom and sides with PVC/ neoprene felt/ polusilphide sealant/ silicon sealant including heavy duty handle cum locking arrangement etc. all complete as advised by EIC. Al. window section of INDAL make or equivalent approved make with following sections: Outer frame -2082 - 34 X 44.45 X 28.5 X 2 of weight @ 0.554 Kg/Mtr. Shutter frame - 4124 - 34 X 44.5 x 28.5 X 1.5 of weight @ 0.494 Kg/Mtr. Mullion - 9139 - 57 X 34 x 25 X 2 of weight	12.6	2600.00	m2	32760

	@ 0.810 Kg/Mtr. Cleat angle - 2081 - 50 X 50 x 4.9 of weight @ 1.177 Kg/Mtr. Glazing clip : 4125 - 31 X 17.5 X 1.2 of weight @ 0.184 kg/mtr.				
19.	Flush Door 900 x 2100 : Providing and fixing solid core flush door of size 900mm x 2100mm in single leaf 35mm thick commercial plywood of seasoned wood without ventilator. Door frame to be made of 60mm x 100mm teak wood with wrough iron hold fasts. Door to be fitted	1	3916	Each	3916
	with brass fitting-hinges, handles on both sides, tower bolts etc. completed. Frame and door to be painted in three coats of synaptic enamel paint over a coat of wood primer including scrapping, surface preparation etc complete.				
21.	Wiring 4X10 SQMM + 1X6SQMM Supply, laying and commissioning of wiring using 4 runs of 6 sqmm and 1 run of 4 sqmm, PVC insulated, FRLS, unsheathed, multi strained copper wires drawn in 32 mm dia PVC conduit from panel to Distribution boards. Rate to include supply of 16 GI fish wire, conduits & accessories, wiring, terminations etc complete.	200	378.00	RM.	75600
22.	Wall mounted Meter Board Supply and fixing of wall mounting type meter board (Electricity Board approved) made out of 16SWG CRCA sheet steel and single iron with 3 nos 200A Fuse cutouts N.L ,1 no. earth link, 1 no neutral link and space for accommodating 1 no. 3 ph, 4 wire KWH meter complete with adequate Size of copper wire interconnections, powder coating etc. complete.	1	13970.0	EA.	13970.0
23.	Plate Earthling Construction of Earth Pit as per IS 3043 at various Retail Outlets under Rajkot Retail Region as per Enclosed drawing. Job includes	1	8471.00	EA.	8471.00

	Excavation to minimum 3.0m depth. (Soil, rock,RCCetc.) Providing 600X600X6mmGIPlate Providing two 50X6mm GI Stripes from Plate tothetop. Providing 40mm dia medium duty GI Pipe with 8mm holes from Plate tothetop. Providing GI Funnel with Wire-mesh on top ofGIPipe. Connecting all the above parts with necessary nuts, bolts&washers. Filling the pit in Alternate layers of 300mm thick Charcoal&Salt. Constructing 400 X 400 X400mm				
	Plastered Brick Chamber with ISA 25X25X3 Frame, Necessary hold fasts & CI/ 12mm thick MS Cover. Providing & Fixing250X150X3mm Painted MS Sheet indicating Earthling Details. Carrying out &SubmittingTestReport.				
24.	CEILING FANS Supplying and fixing of the ceiling fansof approved make with detail as below : Sweep :1400/ 1200 mm (as per HPCL requirement) Color:White Bearing type : Double ball bearing Down Rod : Clear 300 mm long Regulator : Electronic type ANCHOR/MK make Accessories : Screws, wall nuts etc.	6	2239.00	Each	13434
25.	1X36W TUBELIGHT WITH REFLECTOR Supply, fixing and commissioning of 1x36 W tube light fitting with lamp (Philips make Batten TMS21/136 HPF series (Box Type with reflector) or equivalent from Crompton, Bajaj GE). Rate to include all accessories, interconnection of wires from ceiling rose to the fittings and fluorescent tube/GLS/PL lamps, copper choke etc. include all accessories, interconnection of wires from ceiling rose to the fittings and fluorescent tube/GLS/PL	10	1216.00	Each	12160

	lamps, copper choke etc.				
26.	Miscellaneous:				20000
GranTotal					**833665**

Smart VillageDesign :

DESIGN OF RAIN WATER HARVESTING:

Component required for rain water harvesting:

- Storagetank
- Filter orscreen
- Pipe system with Firstflush
- Floating switch orvalve
- Rechargepit

Advantages:

- The cost of recharge to sub-surface reservoir is lower than surfacereservoirs.
- No land is wasted for storage purpose and no population movement isinvolved.
- Ground water is not directly exposed to evaporation andpollution.
- Storing water under ground is environmentfriendly.
- It increases the productivity ofaquifer.
- It reduces floodhazards.
- Effects rise in ground waterlevels.
- Mitigates effects ofdrought.
- Reduces soilerosion.

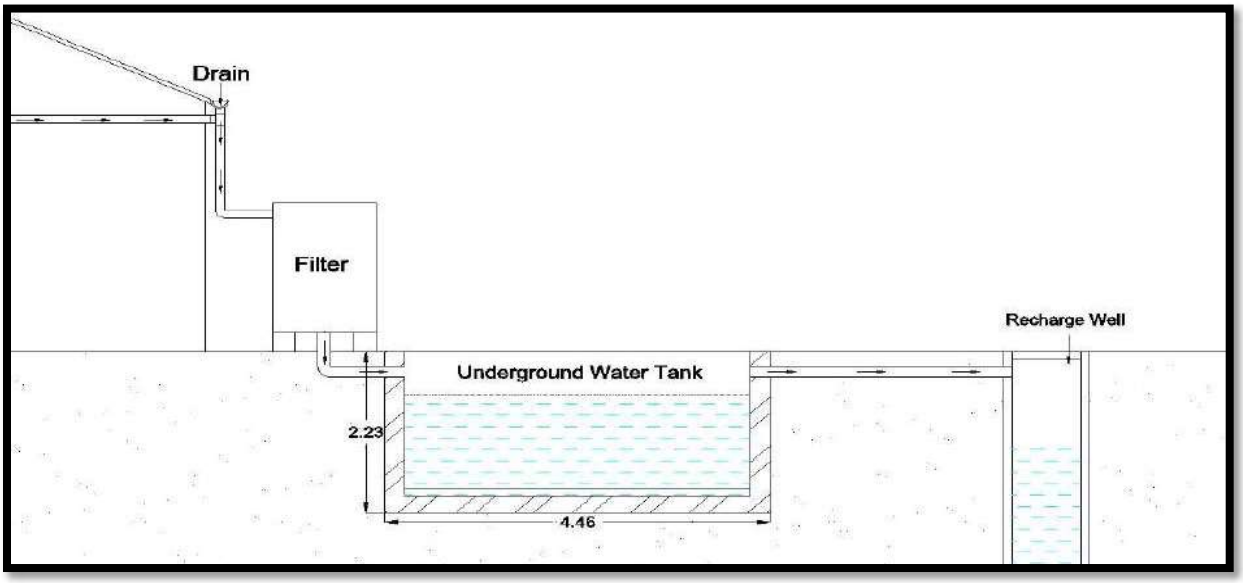


Fig.95 Elevation of rain water harvesting

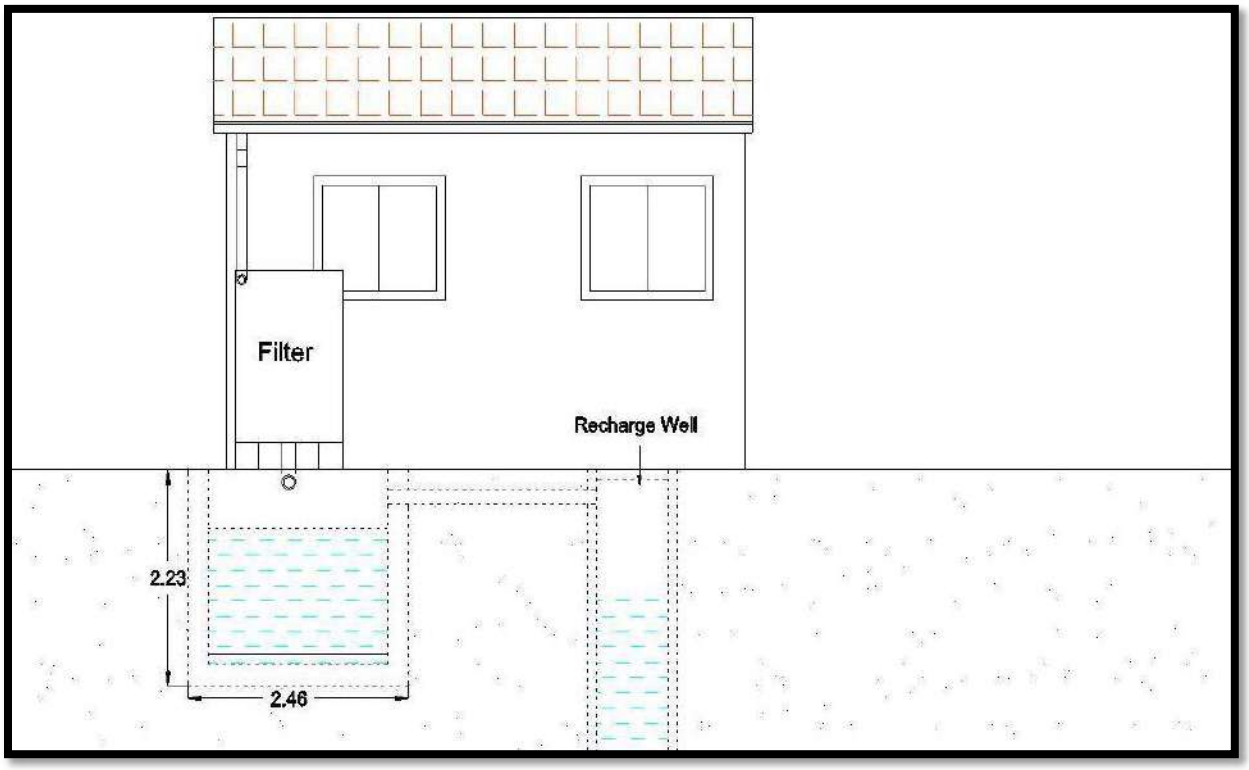


Fig.96 Rain water harvesting

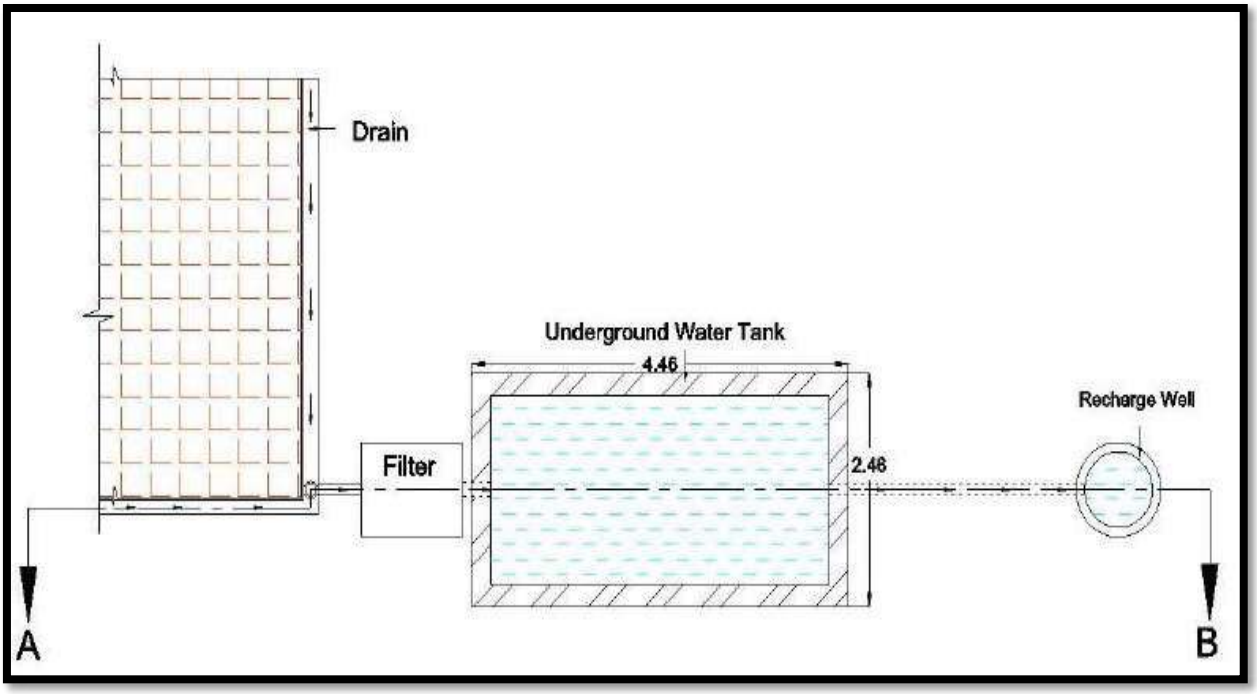


Fig.97 Elevationof Rain water harvesting

Table.36 : Measurement Sheet of Rain Ware Harvesting

MEASUREMENT SHEET						
Rain Water Harvesting						
Item no.	Item Description	No.	Lengh (m)	Breadh (m)	Heigt (m)	Quantity
1	**Excavation**					
	Storage Tank	1	4.46	2.46	2.23	**24.46 m^3**
2	**RCC Work**					
	Bottom Slab	1	4.46	2.46	0.3	**3.29 m^3**
	C/C length of side walls	1	12.92	0.3	2	**7.75 m^3**
	Top Slab	1	4.46	2.46	0.15	**1.65 m^3**
						TOTAL = 12.69 m^3
3	**Plastering Work**					
	Plaster outside tank	1	13.84	–	2.23	30.86 m^2
	Bottom of tank outside	1	4.46	2.46	–	10.97 m^2
						TOTAL = 41.83 m^2
	Plaster inside tank	1	12.92	–	2	25.74 m^2
	Top of bottom slab (inside)	1	4.23	2.23	–	9.43 m^2
	Bottom of top slab (inside)	1	4.23	2.23	–	9.43 m^2
						TOTAL = 44.7 m^2
4	**Centering & Shuttering**					
	Bottom Slab :					
	Bottom	1	4.46	2.46	–	**10.97 m^2**
	Side 1	2	4.46	–	0.3	**2.67 m^2**
	Side 2	2	–	2.43	0.3	**1.46 m^2**
	RCC Walls :					
	Total length of Wall 1	2	4.46		2	**17.84 m^2**
	Total length of Wall 2	2	2		2	**6 m^2**
	Top Slab :					
	Bottom of slab	1	4.46	2.46		**16.97 m2**

	Side 1	1	4.46		0.15	**0.67 m2**
	Side 2	1		2.46	0.15	**0.37 m2**
						TOTAL = 50.95 m^2

Table.37 : Abstract Sheet of Rain Water Harvesting

ABSTRACT SHEET					
Rain WaterHarvesting					
Item no.	**Item Description**	**Quantiy**	**Rate**	**Per**	**Amount**
1	**Excavation**	24.46	110	Cu.m	**2,691**
2	**RCC Work**	12.69	965	Cu.m	**12,246**
3	**Cement**	110	280	Bag	**30,800**
4	**Centering Work**	50.95	130	Sq.m	**6,624**
5	**Steel Work**	50.95	200	Sq.m	**10,190**
6	**Sand**	6.64	900	Cu.m	**5,976**
7	**Aggregate**	10.25	1000	Sq.m	**10,250**
8	**Steel**	997	55	KG	**54,835**
9	**Binding Wire**	9.97	60	KG	**599**
10	**Shuttering**	50.95	70	Sq.m	**3,567**
11	**Filter media**	1.5		L.S.	**9,000**
12	**Inside Plaster**	44.47	1.5	Sq.m	**6,671**
13	**Outside Plaster**	41.83	250	Sq.m	**10,458**
					TOTAL = 1,63,907 Rs.
	Add 1.5% water charges				**2459**

Add 10% Cotractor Profit	**16391**
	TOTAL = 1,82,727 Rs.

13.2.Reason for Students Recommending this Design :

Farmer help center :

Most of the population of Vasan village is connected with agriculture activities. So farmer help center is very helpful to the people of the Vasan village.

Soak pit :

There is no soak pit in the village, by providing soak pit it allows water to slowly soak into the ground.

Vegetable market :

By providing vegetable market villagers can get the vegetables from the one place easily.

Community hall :

The community hall is not available in Vasan. Community hall is useful for Panchayat meetings, gathering place or as a library.

Garden :

There is not any garden in the Vasan village. So construction of one recreational area is required for Vasan village.

Rain water harvesting :

The main reason of providing rain water harvesting is to use locally available waterto meet water requirements.

13.3 About designs suggestion / Benefit of the villagers

Farmer help center :

To guide villagers about new policies and governmental schemes.

Soak pit : By providing soak pit it allows water to slowly soak into the ground.

Vegetable market :

To get the vegetable from the one place.

Community hall :

There are no facilities like community Hall , so we design community hall for meetings and other activities.

Garden :

Development of the recreational area of the village is also necessary. So we design a garden for the public.

Rain water harvesting :

By providing vegetable market the villagers can easily get vegetables from it and no need to go far away for the same.

Chapter-14

Technical Options with Case Studies(EXPLAIN ALL TOPIC AND FORMINIMUM ONE TOPIC EXPLAINNEW CONCEPT, DESIGN,PROTOTYPE MODEL WITH ACTUALCOST ESTIMATION)

14.1 Civil Engineering :

14.1.1 Advanced Earthquake Resistant :

Among the most important advanced techniques of earthquake resistant design and construction are:

1.Base Isolation

A base isolated structure is supported by a series of bearing pads which are placed between the building and the building's foundation. A variety of different types of base isolation bearing pads have now been developed.The bearing is very stiff and strong in the vertical direction, but flexible in the horizontal direction.

The basic principle behind base isolation is that the response of the structure or a building is modified such that the ground below is capable of moving without transmitting minimal or no motion to the structure above. A complete separation is possible only in an ideal system. In a real world scenario, it is necessary to have a vertical support to transfer the vertical loads to the base.

Type of Base Isolation Systems :

Elastomeric Rubber Bearings

Bearings formed of horizontal layers of synthetic or natural rubber in thin layers bound between steel plates. These bearings are capable of supporting high vertical loads with very small deformations. These bearings are flexible under lateral loads. Steel plates prevent the rubber layers from bulging. Lead cores are provided to increase damping capacity as plain elastomeric bearings does not provide significant damping. They are usually soft in horizontal direction and hard in vertical direction.

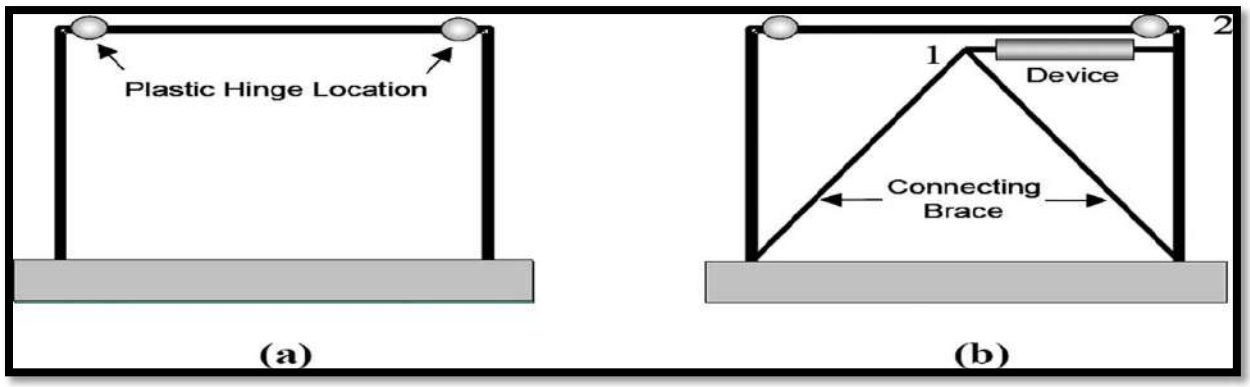


Fig.98 Frame without and with passive energy dissipation devices

Roller and Ball Bearings :

For isolation applications in machinery isolation, roller and ball bearing are used. It includes cylindrical rollers and balls. It is sufficient to resist service movements and damping depending on the material used.

Fig.99,100 Roller and Ball Bearings

Springs :

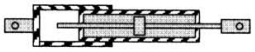
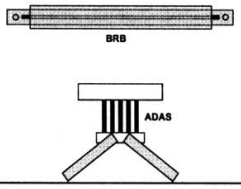
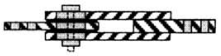
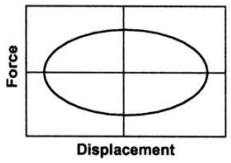
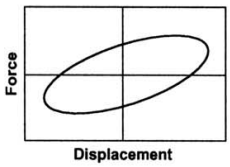
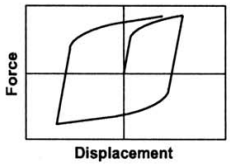
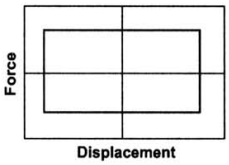
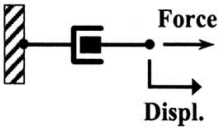
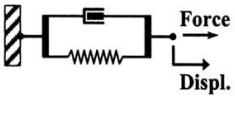
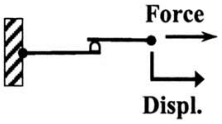
Steel springs are most likely used in mechanical applications as in roller bearings. It is not adopted in structural applications because it is flexible in both vertical and horizontal directions. This will increase service deflections.

Fig.101,102 Springs

2.Energy Dissipation Devices

Passive energy dissipation systems for seismic applications have been under development for a number of years with a rapid in- crease in implementations starting in the mid-1990s. The princi-

pal function of a passive energy dissipation system is to reduce the inelastic energy dissipation demand on the framing system of a structure.

	Viscous Fluid Damper	Viscoelastic Solid Damper	Metallic Damper	Friction Damper
Basic Construction				
Idealized Hysteretic Behavior				
Idealized Physical Model			Idealized Model Not Available	
Advantages	- Activated at low displacements - Minimal restoring force - For linear damper, modeling of damper is simplified. - Properties largely frequency and temperature-independent - Proven record of performance in military applications	- Activated at low displacements - Provides restoring force - Linear behavior, therefore simplified modeling of damper	- Stable hysteretic behavior - Long-term reliability - Insensitivity to ambient temperature - Materials and behavior familiar to practicing engineers	- Large energy dissipation per cycle - Insensitivity to ambient temperature
Disadvantages	- Possible fluid seal leakage (reliability concern)	- Limited deformation capacity - Properties are frequency and temperature-dependent - Possible debonding and tearing of VE material (reliability concern)	- Device damaged after earthquake; may require replacement - Nonlinear behavior; may require nonlinear analysis	- Sliding interface conditions may change with time (reliability concern) - Strongly nonlinear behavior; may excite higher modes and require nonlinear analysis - Permanent displacements if no restoring force mechanism provided

Recent Applications of Passive Energy Dissipation Systems

Some of the earliest applications of damping systems were used to reduce deflections in very tall buildings. In such buildings, large amplitudes of sway oscillations, from either wind forces or seismic effects, can be very discomforting to the occupants.

Hotel Stockton, Stockton, Calif.

This historic 13,470 m^2, six-story nonductile reinforced concrete structure was built in 1910 and renovated in 2004. The renovation included a seismic retrofit wherein a combination of 16 nonlinear viscous fluid dampers and four viscoelastic fluid dampers were employed within diagonal bracing at the first story level to mitigate a weak soft story and a torsional irregularity.

Fig.103,104 Hotel Stockton, Stockton, Calif.

Torre Mayor Tower, Mexico City, Mexico

Construction of this 57-story steel and reinforced concrete office/ hotel tower with 77,000 $m^2$of column-free office space was com- pleted in 2003. The tower is currently the tallest building in Latin America.

Fig.105,106 Torre Mayor Tower, Mexico City, Mexico

Wallace F. Bennett Federal Building, Salt Lake City, Utah

This is a retrofit project of a 27,870 m^2, eight-story reinforced concrete building that was originally constructed in the early 1960s. The building is located in close proximity to the Wasatch Fault and was not expected to perform well in the event of a large magnitude earthquake originating on this fault.


Fig.107,108 Wallace F. Bennett Federal Building, Salt Lake City, Utah

Patient Tower, Seattle

This structure is a 14-story tower that recently underwent a seis- mic retrofit incorporating friction dampers. The tower was originally constructed in 1970 as a concrete shear wall building.


Fig.109,110 Patient Tower, Seattle

14.1.2 Seismic Retrofitting of Buildings :

Seismic retrofitting is the modification of existing structures to make them more resistant to seismic activity, ground motion, or soil failure due to earthquakes. With better understanding of seismic demand on structures and with our recent experiences with large earthquakes near urban centers, the need of seismic retrofitting is well acknowledged.

Need for Seismic Retrofitting:

- To ensure the safety and security of a building, employees, structure functionality, machinery and inventory
- Essential to reduce hazard and losses from non-structural elements.
- predominantly concerned with structural improvement to reduce seismic hazard.
- Important buildings must be strengthened whose services are assumed to be essential just after an earthquake like hospitals.

Classification of Retrofitting Techniques:

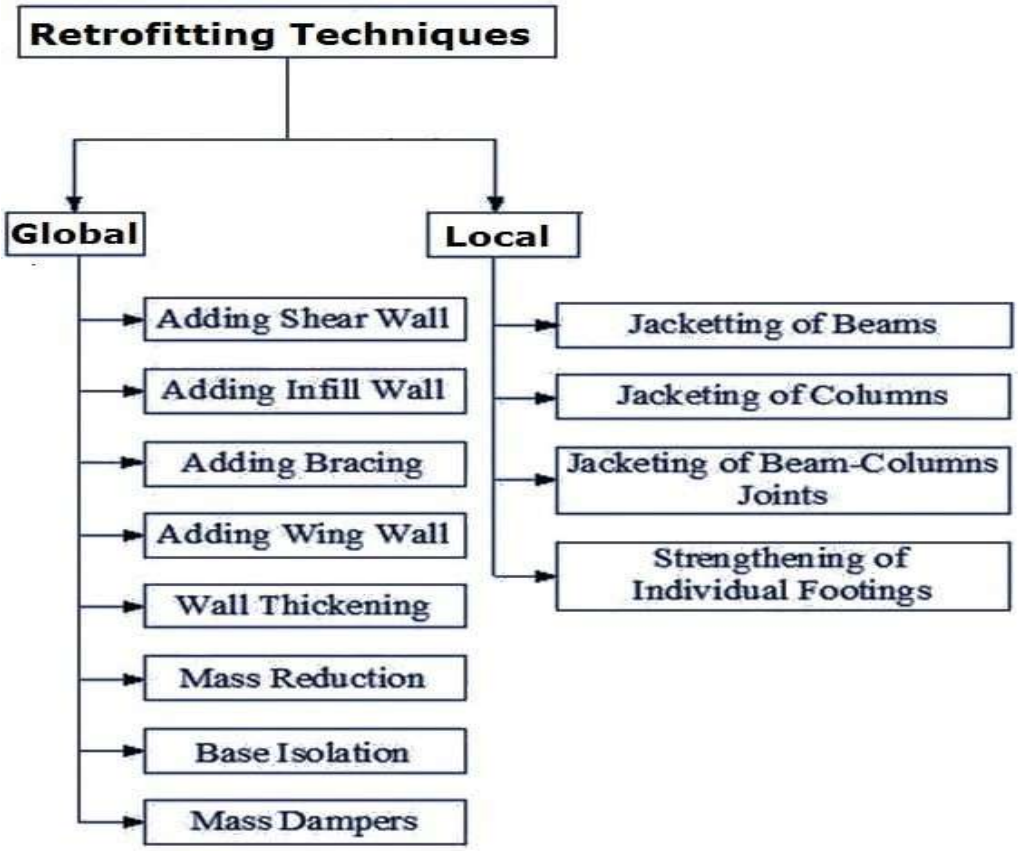


Fig.111 Retrofitting Techniques for Reinforced Concrete Structures

Conclusion – Seismic Retrofitting Techniques for concrete structures:

- Seismic Retrofitting is a suitable technology for protection of a variety of structures.
- It has matured in the recent years to a highly reliable technology.

- But, the expertise needed is not available in the basic level.
- The main challenge is to achieve a desired performance level at a minimum cost, which can be achieved through a detailed nonlinear analysis.
- Optimization techniques are needed to know the most efficient retrofit for a particular structure.
- Proper Design Codes are needed to be published as code of practice for professionals related to this field.

Fig.112 Seismic Retrofitting Techniques for concrete structures

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

Advance construction techniques

3D Volumetric Construction :

Using this modular construction technology, 3D units are produced in controlled factory settings using needful construction and building materials. Finished units are transported to site in various modules, basic structural blocks or final touched up units without all amenities installed, for assembly. Blocks can be erected rapidly at site and properties of concrete like fire retardant, sound resistivity, thermal mass etc. are retained.

Precast Flat Panel Modules :

These are primarily wall and floor modules which are manufactured away from the actual site and then transported to site for erection. Load bearing components like decorative cladding and insulation panels can also be produced. Also called cross-wall construction, the technology has gained momentum due to seamless adherence to specifications and ease as well as swiftness of construction.


Fig.113,114 Precast Flat Panel Modules

Tunnel Formwork System :

With this tunnel technique, construction is paced up for cellular structures of repetitive patterns through the building of monolithic walls or units in a single operation per day.

Expeditious work is achieved by deploying formwork and readily mixed concrete with the convenience and agility of factory conditions. Formworks in tunnel form are stacked and used at the site with cranes.


Fig.115,116 Tunnel Formwork System

Pre-cast Foundation Technique :

Foundations can be built swiftly with precast concrete units which are produced in a factory and are high on quality quotient. Strength is imparted to foundation related building construction materials through interconnected concrete piles. This technique allows construction work to progress even in inclement weather and minimizes excavation activity.


Fig.117,118 Pre-cast Foundation Technique

Hybrid Concrete Building Technique :

This technique expedites construction turnaround time by blending the advantages of concrete pre-casting with the in-situ building. Quality improves, whereas the cost of construction plummets.Hybrid concrete structures are easy to build, competitive in nature and perform consistently.


Fig.119,120 Hybrid Concrete Building Technique

Morden construction materials :

1. Stabilized, Compressed earth Blocks: are made of mud stabilized with 5% cement/lime etc. and compacted in block making machine with no burning. A good walling material as burnt bricks and is economical, stronger, energy saving and simple to manufacture. The soil to be used for the blocks should have the requisite component of clay and silt and sand etc. Soil stabilized hollow and interlocking blocks can provide better thermal insulation.

2. Stabilized Adobe: is an improvement over traditional adobe or hand moulded and sun dried mud block in which mud is mixed with a small proportion of cement or lime or broken or cut dry

grass as reinforcing media to impart added strength and lower the permeability. It is appropriate in dry climates.

3. Clay Fly ash Burnt Bricks: produced from fly ash and clay, are stronger than conventional burnt clay bricks, consume less energy, provide better thermal insulation and solve the environmental problem through utilization of the fly ash, an industrial waste.

4. Fly ash/ Sand-Lime Bricks: produced from fly ash or sand with lime as binder, are strong, superior in water absorption and crushing strength. However this needs autoclaving.

5. Fly ash-Lime-Gypsum (Fal-G) Products: manufactured by blending fly ash, lime and calcined gypsum (from byproduct of phosphogypsum or natural gypsum) for making a useful product, named Fal-G, and can be used as a cementeous material for mortar/plasters and for masonry blocks of any desired strength. It can also be used for road pavements and plain concrete in the form of Fal-G concrete.

6. Clay Red Mud Burnt Bricks: produced from alumina red mud or bauxite an industrial waste of aluminum producing plants in combination with clay. Possess all the physical properties of normal clay bricks and solves the problem of disposal of the waste product and environmental pollution. In addition, they have good architectural value as facing bricks due to their pleasing hues of colour. Red mud in addition improves the quality of bricks made frominferior soil deficient in clay content.

7. Lato Blocks: are improved bricks made from lateritic soil and cement or lime. Available in South-West India as large soft rock masses. The blocks are moulded under pressure to produce strong and good quality blocks which consume lesser energy than conventional bricks and hence cheaper. They are available in pleasing hues of colours ranging from cream to light crimson.

8. Precast Stone Blocks: of larger size than normal bricks are manufactured by using waste stone pieces of various sizes with lean cement concrete and enable a rationalized use of natural locally available materials. Shaping stones in this manner, enables speedy construction saves on cement, reduces thickness of stone walls and effects overall saving by eliminating plasters on internal/external wall surface. Appropriate architectural rendering on exterior surfaces can also be given.

9. Precast Concrete Blocks: made to similar dimension of stone blocks without large size stone pieces, but using coarse and fine graded aggregate with cement. They have excellent properties comparable to other masonry block, are cheaper and facilitate speedy construction and especially suitable where good quality clay for brick making is not available.

14.1.4 Engineering Aspects Of Soil mechanics - Environmental Impact Assessment

Engineering Aspects Of Soil Mechanics :

The term "soil" can have different meanings, depending upon the field in which it is considered. To a geologist, it is the material in the relative thin zone of the Earth's surface within which roots occur, and which are formed as the products of past surface processes. The rest of the crust is grouped under the term "rock".
To a pedologist, it is the substance existing on the surface, which supports plant life.

To an engineer, it is a material that can be:
built on: foundations of buildings, bridges
built in: basements, culverts, tunnels
built with: embankments, roads, dams
supported: retaining walls
Soil Mechanics is a discipline of Civil Engineering involving the study of soil, its behaviour and application as an engineering material.

Soil Mechanics is the application of laws of mechanics and hydraulics to engineering problems dealing with sediments and other unconsolidated accumulations of solid particles, which are produced by the mechanical and chemical disintegration of rocks, regardless of whether or not they contain an admixture of organic constituents.

Soil consists of a multiphase aggregation of solid particles, water, and air. This fundamental composition gives rise to unique engineering properties, and the description of its mechanical behavior requires some of the most classic principles of engineering mechanics.

Engineers are concerned with soil's mechanical properties: permeability, stiffness, and strength. These depend primarily on the nature of the soil grains, the current stress, the water content and unit weight.

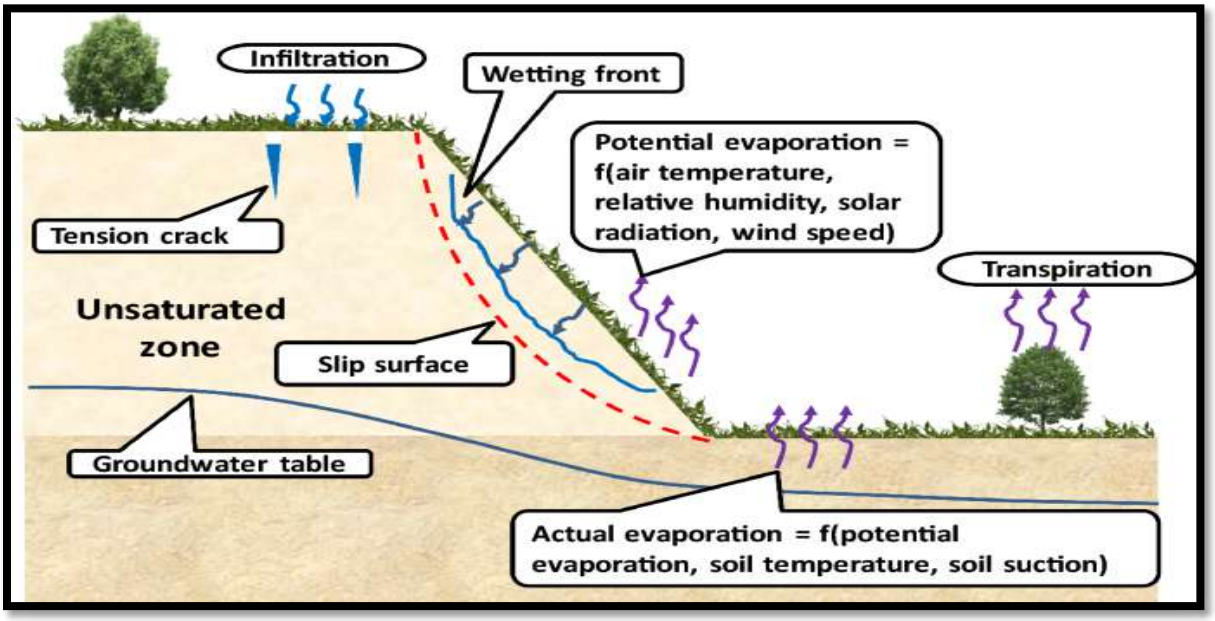


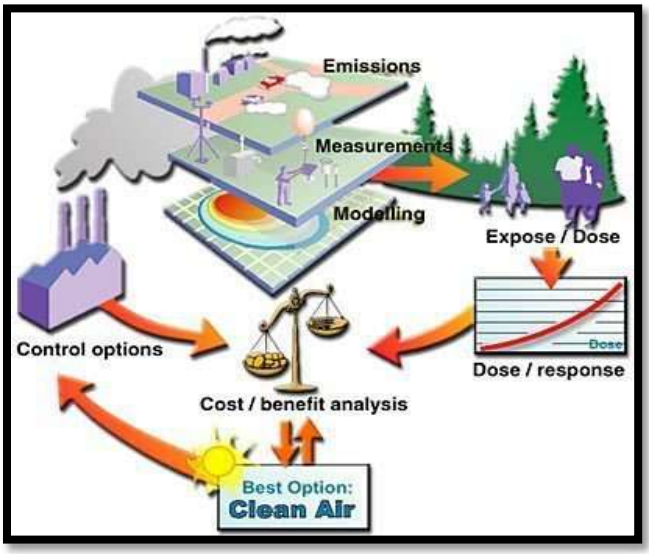
Fig.121 Environmental cycle

Environmental Impact Assessment :

An Environmental Impact Assessment is a formal method of judging the impact that any new developmental project would have on the environment and its constituents. This can include changes that the project would create in the physical aspects of existing geography, chemical changes to the atmosphere including air and water, biological changes that affect plant, animal and human life, cultural impact of a project on the society in the area, and other socio-economic effects that the project can have.

Such an assessment allows problems to be foreseen, so that the design and planning of the projects is modified to reduce any negative effects. It is now fashionable to build green buildings which have a positive effect on the environment.

There is historical precedent for the now mandatory Environmental Impact Assessments (EIA). Past efforts by governments have resulted in bans on activities that caused noxious odors, garbage dumps were positioned at places far away from habitation, and commercial activities were restricted to town centers.



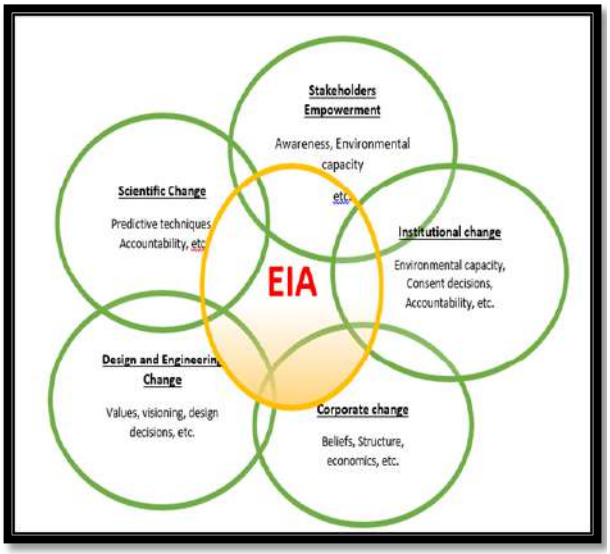


Fig.122,123Environmental Impact Assessment

❖ **Objectives of Environmental Impact Assessment :**

The objective of an EIA is to predict the environmental impact project would have on all aspects of the environment. Once this is done, a study has to be made to see if the impacts can be reduced in any way. The project has then to be modified to suit the local environment and all predictions and likely options presented to decision makers for final decisions.

You can gain a better understanding of EIA by understanding how any typical project can affect the environment of a particular area. Take for example the building of a new road in a city.

The alignment of the road may require that certain lands have to be leveled or new embankments created. Cutting of the land and the new embankments would affect the geography of the area

and probably upset its drainage pattern. This would require re-planning existing methods of treating the run-off and could cause existing watercourses to be modified. The new road may require the removal of existing green cover and this could affect the living conditions in that area. The traffic going through that area can cause pollution problems from vehicles which also includes an increase in sound pollution. The emissions from the vehicles can affect already existing atmospheric pollutants which in turn could affect human health, animal health and affect greenery in the area. The road may affect existing structures in the area which may have to be removed and can cause changes in the economic wellbeing of the persons who are using those structures.

A positive impact of the new road may mean a reduction in traffic congestion, its positive effect on pollution, and the economic advantage of these two aspects.

For any environmental impact assessment, complete data on all these aspects as they are at present has to be made so that any changes can be reasonably judged to existing standards required for good living. The deterioration or increase in these living standards has then to be highlighted by the EIA before any final decision on the project can be undertaken.

The EIA Process :

EIA involves the steps mentioned below. However, the EIA process is cyclical with interaction between the various steps.

Screening : The project plan is screened for scale of investment, location and type of development and if the project needs statutory clearance.

Scoping : The project's potential impacts, zone of impacts, mitigation possibilities and need for monitoring.

Collection of baseline data : Baseline data is the environmental status of study area.

Impact prediction: Positive and negative, reversible and irreversible and temporary and permanent impacts need to be predicted which presupposes a good understanding of the project by the assessment agency.

Mitigation measures and EIA report: The EIA report should include the actions and steps for preventing, minimizing or by passing the impacts or else the level of compensation for probable environmental damage or loss.

Public hearing: On completion of the EIA report, public and environmental groups living close to project site may be informed and consulted.

Impact Assessment Report: For every project, possible alternatives should be identified, and environmental attributes compared. Alternatives should cover both project location and process technologies.Once alternatives have been reviewed, a mitigation plan should be drawn up for the

selected option and is supplemented with an Environmental Management Plan (EMP) to guide the proponent towards environmental improvements.

Risk assessment: Inventory analysis and hazard probability and index also form part of EIA procedures.

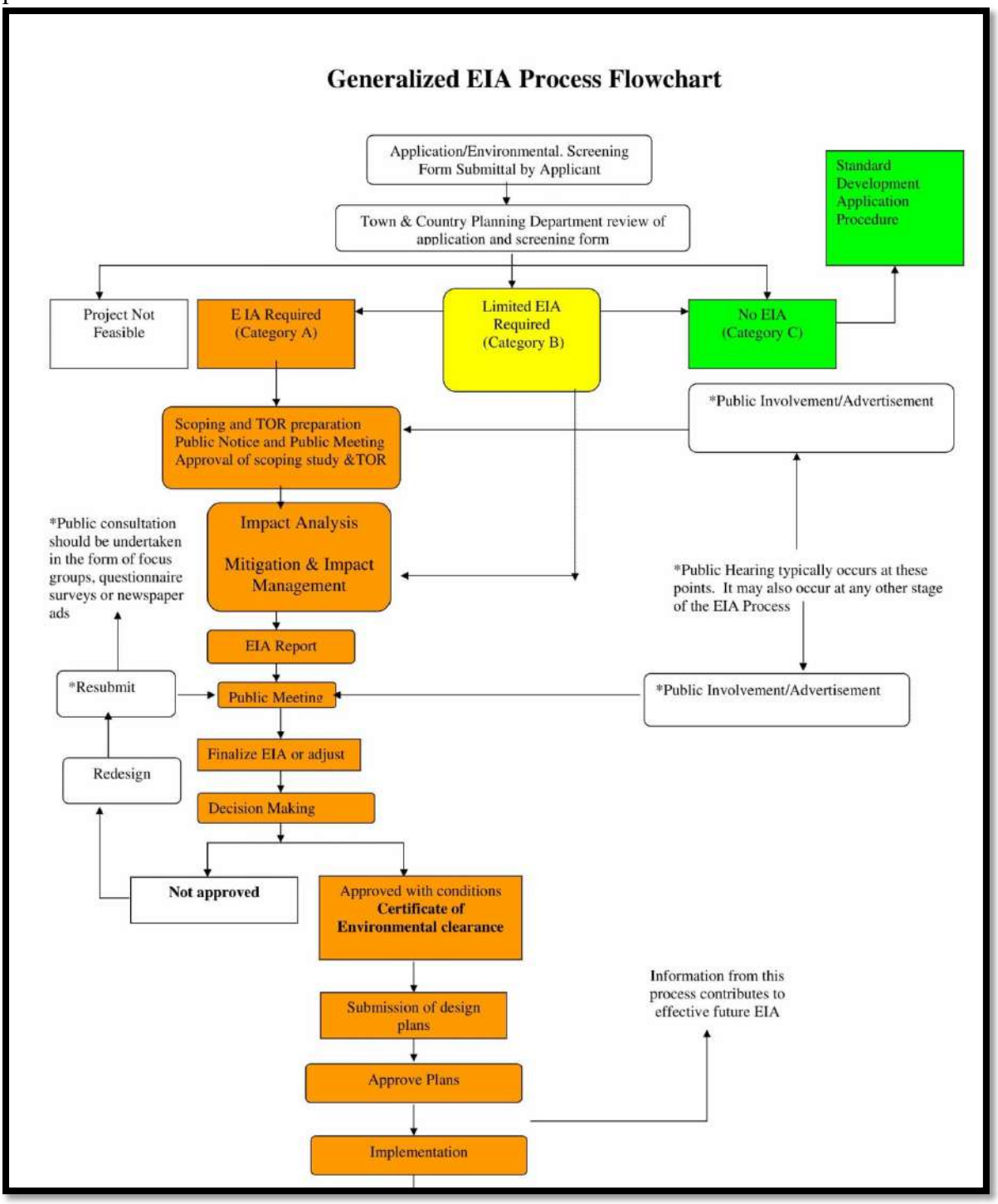


Fig.124 EIA process

Importance of EIA :

- EIA links environment with development for environmentally safe and sustainable development.
- EIA provides a cost effective method to eliminate or minimize the adverse impact of developmental projects.
- EIA enables the decision makers to analyse the effect of developmental activities on the environment well before the developmental project is implemented.
- EIA encourages the adaptation of mitigation strategies in the developmental plan.
- EIA makes sure that the developmental plan is environmentally sound and within the limits of the capacity of assimilation and regeneration of the ecosystem.

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

Sustainability in Water Supply :
Sustainable water systems should provide adequate water quantity and appropriate water quality for a given need, without compromising the future ability to provide this capacity and quality. Water systems in the realm of sustainable development may not literally include the use of water, but include systems where the use of water has traditionally been required. Examples include waterless toilets and waterless car washes, whose use helps to alleviate water stress and secure a sustainable water supply.

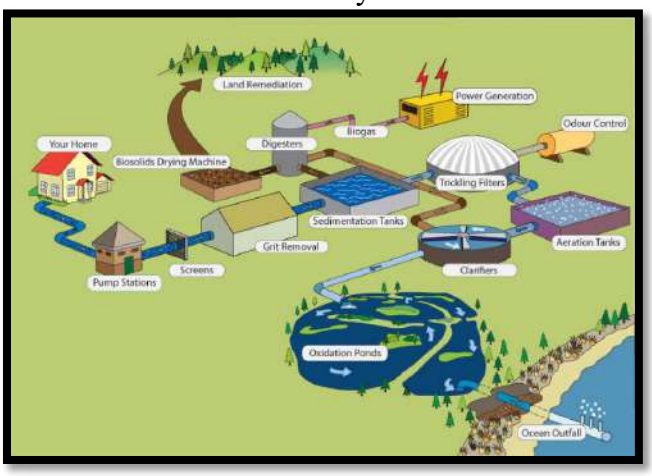
Accessing the sustainability features in water supply, that is to say, the three-fold goals of economic feasibility, social responsibility and environmental integrity, is linked to the purpose of water use. Sometimes, these purposes compete when resources are limited; for example, water needed to meet the demands of an increasingly urban population and those needs of rural agriculture. Water is used (1) for drinking as a survival necessity, (2) in industrial operations (energy production, manufacturing of goods, etc.), (3) domestic applications (cooking, cleaning, bathing, sanitation), and (4) agriculture. Sustainable water supply is a component of integrated water resource management, the practice of bringing together multiple stakeholders with various viewpoints in order to determine how water should best be managed. In order to decide if a water system is sustainable, various economical, social and ecological considerations must be considered.

- **Sewerage system-Waste Water :**

Now that pollution is at a critical level and has become a serious worldwide concern, we are becoming increasingly aware of how important it is to choose eco friendly and sustainable options as often as possible. We are less inclined to use single use plastics, are more likely to recycle, eat clean and choose solar or wind powered electricity options where possible. And for some of us, we now thankfully have the option to choose eco friendly and sustainable home sewage treatment options.

In a sense, the concept of modern sewage treatment is already an eco friendly process. It involves reducing harmful compounds in sewage water that would otherwise cause damage to human

health and natural eco systems. However, not all modern home sewage treatment plants can claim to be both eco friendly and sustainable.



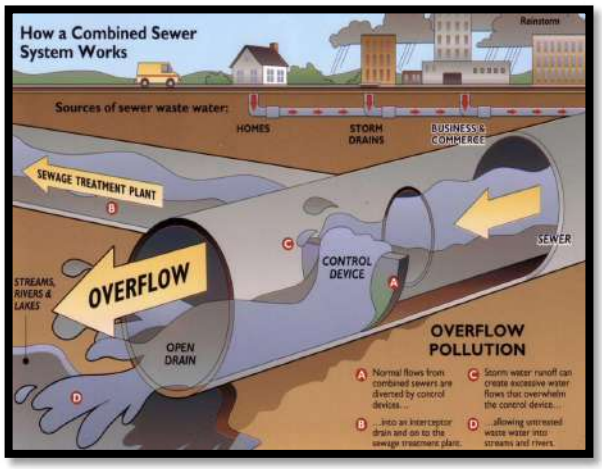


Fig.125,126 Sewerage system-Waste Water

Ecological Sewage Systems :

Ecological or biological sewage systems are based on natural ecosystems that use ecological processes for water purification and nutrient recycling. Their exact design is dependent on location, climate and population, but all involve wastewater being passed through a managed or constructed environment where a diversity of plant and animal organisms transform the waste in the water.

Aquatic plants such as water hyacinths, reeds, rushes, lilies, and duckweeds, break down toxic chemicals, nitrates and phosphates through their root microbes, and bioaccumulate heavy metals in their stems and leaves. There are two main types of ecological sewage systems: constructed reed beds, and solar aquatic systems.

Case study :

Soil Biotechnology Treatment at Naval Dockyard Housing Society, Mumbai :

The wastewater is collected in a sump. The wastewater from the sump is pumped and distributed over the reactor bed. The treated wastewater gets collected in the collection tank and recirculated in order to achieve the desired result. One operation cycle lasts for 4-5 hrs. The bed is then rested for drying prior to next cycle of use. The designed capacity of the system is 50KLD. However, it treats 150 KLD in three batches of 50 KLD each with an operation cycle of 4-5 hrs/batch.

Increase in DO: 0.7 to 4.8
BOD reduction: 94%
COD reduction: 94%
SS reduction: 96%
(Source: Sugam ParyavaranVikalp, Mumbai)

Fig.127 Soil Biotechnology Treatment

Chapter - 15

Smart and/or Sustainable features of Chapter 8 & 13 designs, Impact on society. (For Allocated village development, villagers happiness, comfortable and for enhancement of the village) (With the Smart village development Concept As Per Your Idea And Village Visit, modern technology with innovation).with doing small changes, 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.

Public toilet : For swachhabharatabhiyaan construction of public toilet is very important in village areas.

Phc :
At least one health center is required in every village for emergency.

skill development center :
We will give design of skill development classes for the village where lots of activity villagers do like women empowerment classes, karate classesetc.

Wbm :
Provision of well constructed road is basic requirement of any village now a days.

Bus stop :
It is very useful for the passengers who are waiting for the bus. From the one particular place all the passengers can get the bus.

Farmer help center : Agriculture is the main occupation of the village so one farmer help center is required for the village.

Garden : Development of the recreational area of the village is also necessary. So we design a garden for the public.

Community Hall : There are no facilities like community Hall , so we design community hall for meetings and other activities.

Vegetable market : By providing vegetable market the villagers can easily get vegetables from it and no need to go far away for the same.

Soak pit : There is no soak pit in village, by providing soak pit it allows water to slowly soak into the ground.

Rain water harvesting : The main purpose of providing Rain Water Harvesting System is to use locally available rainwater to meet water requirements throught the year.

Sr. No	Design Name	Period	Amount Expenditure	Benefit
1.	Public toilet	Within 1 year	16,94,593 Rs.	As a part of swatch bharat. Increase hygiene and reduce dirtiness.
2.	PHC	4 months	86,419/-Rs.	Increase health facility. Reduce disease spreading.
3.	Chabutro	1 week	12475.11Rs.	To feed birds.
4.	Skill developmen t center	Within 1 year	998000 Rs.	For public benefit purpose
5.	WBM	2 months	861646.5 Rs.	For comfort traveling of the people.
6.	Bus stop	3 months	483269.808 Rs.	For getting the bus from one place.
7.	Farmer help center	6 months	5, 45,681 Rs.	For farmer's information
8.	Garden	Within 1 year	156995.17 Rs.	For public's refreshment purpose.
9.	Community hall	Within 2 year	**8,33,665 RS.**	To organize event.
10.	Vegetable market	Within 1 year	**13,93,090 Rs.**	Increase availability of vegetable. Increase facility of people.
11.	Soak pit	1 month	14201.6 Rs	Increase reuse of water. Make clean and pollution free village.
12.	Rain water harvesting	Within 1 year	**1,82,727 Rs.**	Increase ground water level. Water can be used during scarcity of water.

Chapter-16

Survey by Interviewing With Talati and/or Sarpanch

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

VASAN (Gandhinagar)

An approach towards "Rurbanisation for Village Development"

CHAPTER- 16

Sr.	Questions	Yes/No	Remarks
1	What are the sources of income in village?	Yes	animal husbandry
2	What are the chances of employment in village?	No	only farming
3	What are the special technical facilities in village?	No	not availble
4	Is any debt on village dwellers?	Yes	individually
5	Are village people getting agricultural help?	Yes	-
6	Is women health awareness Program organized in village?	Yes	-
7	Are women having opportunity to work and income?	Yes	Sewing machine Project
8	Child girl education is appreciated in village?	Yes	highly
9	Facility of vaccination to child is available in village?	Yes	100% ratio
10	Are village people aware about child vaccination and done to each and every child as per norms?	Yes	dedicated asha workers
11	Women help line number information is provided to village people?	Yes	-
12	Is water scarcity in village? How many days per year?	No	village has 60 Borewell
13	Is village under any debt?	No	-
14	Is any serious issue due to debt from bank or any person happened in village?	No	-
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	No	-
16	Is any death of patient occurred due to unavailability of medical facility in village?	No	-
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	Yes	7 People 1 - 18 year old 5 - above 50 year old
18	Is village improvement is observed in comparative scenario from past to present?	Yes	-
19	Is any unavoidable difficulty village people are facing? Any natural calamity is there?	Yes	Village is highly in (Primary) need of health center
20	Life Living standard of girls and women is appreciated and uplifted in village?	Yes	-

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

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

Dt. 20/03/2020

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Chapter-17

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

Agriculture Activities :

Around 60 to 70 % of workers are engaged with agricultural activities, which includes many are cultivators (owner or co-owner) while many are Agricultural labourer . There is a double and triple cropping pattern adopted by the farmers,with the major crops sown in are Dangar, Paddy, Bajari, Juvar, Castor (Eranda),Cotton, and Wheat. Private bore wells are the main source for the irrigation. The farmers with no private bore well, buy the water for irrigation from the other farmers with private bore wells. Power supply for agricultural activity is available in this village. The nearest APMC market in Kadi around 12 km distance; with good connectivity and transport facilities, accessing the APMC is convenient. Apart from this, normally all farmers have a private godown within their farms for short termstorage for their produces .Nearest KVK (Krishi Vigyan Kendra) is in randheja , which is around 5 km at distance. Being agricultural activities are a mode of livelihood for more than 60%workers in the village, it would be better to have a center within the village so the farmers can get proper guidance regarding technology generation, technology assessment and refinement and dissemination in the field of agriculture and alliedsectors.

Suggestions

- Creation of new water sources; repair, restoration and renovation of defunctwaterSources; construction of water harvesting structures, secondary & microstorage,Groundwater development, enhancing potentials of traditional waterbodies at village level like Jal Mandir (Gujarat)
- Developing/augmenting distribution network where irrigation sources (bothassured And protective) are available or created;
- Promotion of scientific moisture conservation and run off control measures to
- improve Ground water recharge so as to create opportunities for farmer toaccess recharged water Through shallow tube/dug wells;
- Promoting efficient water conveyance and field application devices within the
- farm viz, Underground piping system, Drip & Sprinklers, pivots, rain-guns andother application Devices etc.
- Encouraging community irrigation through registered user groups/farmerproducers, organizations/NGOs and Farmer oriented activities like capacitybuilding, training and exposure visits, demonstrations, farm schools, skilldevelopment in efficient water and crop management practices (cropalignment) including large scale awareness on more crop per drop of waterthrough mass media campaign, exhibitions, field days, and extension activitiesthrough short animation films etc.

Programme Components:

- Accelerated Irrigation Benefit Programme (AIBP) a) To focus on faster completion of ongoing Major and Medium Irrigation including National Projects

- PMKSY (Har Khet ko Pani) a) Creation of new water sources through Minor Irrigation (both surface and ground water); b) Repair, restoration and renovation of waterbodies; strengthening carrying capacity of traditional water sources, construction rain water harvesting structures (Jal Sanchay); c) Command area development, strengtheningand creation of distribution network from source to the farm; d) Ground water development in the areas where it is abundant, so that sink is created to store runoff/ flood water during peak rainy season. e) Improvement in water management and distribution system for water bodies to take advantage of the available source which is not tapped to its fullest capacity (deriving benefits from low hanging fruits). At least 10% of the command area to be covered under micro/precision irrigation.

Dairy farming :

The economy of household milk producers: Dairy industry was the most important occupation besides agriculture in Vasan. This included desi and hybrid cows (Holstein Friesian-HF and Jersey), bullocks as well as male and female buffaloes. The dairy economy consisted of CDFs (tabelaas), landless bharwad (a traditionally cattle rearing community), as well as household milk producers who consisted of small and marginal farmers as well as landless labourers. Cow based organic farming system adopted by the farmer of Vasan, during the visit it was found that, the farmer is very happy by crop production through cow based organic farming and obtaining 20-30 % higher production as compared to previous inorganic farming using chemical fertilizers and pesticides. There is great demand of his farm produce owing to better quality in the market.

Organic farming is a new concept and most of the studies have focused on the environmental aspect of Organic farm practices. Very little research has been done to study the economics of Organic farming. Organic farming can be studied as a strong link that associates environment with economy. There is urgent needto transfer the available technology of low cost organic farming through thesystematic approaches of extension to create awareness among the farmercommunities to adopt organic farming and produce healthy food in a eco-friendly manner and enhance their income.

Agro industry :

Agro-industries provide a means of converting raw agricultural materials into value added products while generating income and employment and contributing to overall economic development in both developed and developing countries.

Food processing converts relatively bulky, perishable and typically inedible raw materials into more useful, shelf-stable and palatable foods or potable beverages. Processing contributes to food security by minimizing waste and loss in the food chain and by increasing food availability and marketability. Food is also processed to improve its quality and safety.

Chapter-18

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

Social activity on business idea for village

While on the visit of the Vasan village we have discussed further with the few villagers about the business idea that can be useful for in terms of village empowerment, since the most of the villagers have their own land where their mostly work is on farming and animal farming, however we had few business idea that we shared with few interested parties.

1. Fertilizers and Seeds Storage Store:
Villages consist of farmers and farmers rely on agriculture. To earn their livelihood villagers must ensure that their crops are well irrigated and further sold at good prices. To make things easy for villagers, the business of opening a storage store of fertilizers and seeds can be of much interest. This business does not require much investment, as just the purchase of fertilizers and seeds with a store can make anyone run this business.

- Store fertilizers separate from other chemicals in dry conditions.
- Extra care needs to be given to concentrate stock solutions. Secondary containment should be used.
- Provide pallets to keep large drums or bags off the floor. Shelves for smaller containers should have a lip to keep the containers from sliding off easily. Steel shelves are easier to clean than wood if a spill occurs.
- If you plan to store large bulk tanks, provide a containment area large enough to confine 125 percent of the contents of the largest bulk container.

Education facility:

Education is the basic requirement of any village. it is the most important part of a person‘s life where they get an opportunity to learn and experience many new things. Education also results to increase in social status, social health, and economic growth and helps the nation as a entire. Smart school is a concept which uses technologies or some modern equipment in the classrooms which allows in giving better learning experience to the students. This also helps in attracting more students to school and also will help in decreasing school dropouts. Introducing smart school systems will helps in making education more interesting as everything will be taught with images and videos which make the class more interactive and learning.

Chapter-19

<<ALLOCATED VILLAGE>> SAGY Questionnaire Survey form with the Sarpanch Signature (Scanned copy attachment in the soft copy report and Original copy in hardbound report)

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: VASAN Gram Panchayat: VASAN Ward No. —

Block: Gandhinagar District: Gandhinagar

State: GUJARAT L S Constituency: NORTH (Gandhinagar)

1. Family Identity and Size

Name of Head of Household	VAGHELA VIJAYSINH B.							Male/ Female	M
SECC Survey ID:	—	Family Size	8	Over 18	4	6 to 18	3	Under 6	1

2. Category & Entitlement Details (Tick as appropriate)

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

2. Adults (above 18 years)

Name	Age	Sex M/F/O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/ N)	Bank A/C (Y/N)	Social Security Pension[5]
Vijaysinh Vaghela	40	M	N	married	B.A	✓	✓	—
Chandrashyamsinh V.	42	M	N	M	10th	✓	✓	—
Nirubha Vaghela	40	F	N	M	10th	✓	✓	—
Priyamanbha V.	37	F	N	M	10th	✓	✓	—

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
Toral ben Vaghela	17	F	N	Un.	12th	Y	12th	Y
Nikita ben Vaghela	6	F	N	—	1st	Y	1st	N
Veerraj Singh								

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
Neel Raj Singh	1.5	M	N	N	N	N	N	36

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

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

5. Hand washing

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

6. Use of Mosquito Net

Children (Yes) / No Adults (Yes) / No

7. Do members take Regular Physical Exercise

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

8. Consumption of Tobacco

	Smoking	Chewing
Adults	0	0
Children	0	0

9. House & Homestead Data

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

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

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

11. Source of Lighting and Power

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

12. Landholding (Acres)

1. Total	10 Bigha	2. Cultivable Area	—
3. Irrigated Area	10 Bigha	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
Cotton	—	300 KG
Grain	—	800 kg

17. Livestock Numbers

Cows: 0	Bullocks: 1	Calves: —
Female Buffalo: 6	Male Buffalo: —	Buffalo Calves: —
Goats/ Sheep: —	Poultry/ Ducks: —	Pigs: —
Any other: Type —		No. —
Shelter for Livestock: (Pucca) / Kutcha / None		
Average Daily Production of Milk(Litres): 20		

18. What games do Children Play

Out door

19. Do children play musical instrument (mention)

NON

Schedule Filled By:
Principal Respondent:
Date of Survey:

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

I. Basic Information

a. Gram Panchayat: VASAN

b. Block: Gandhinagar

c. District: Gandhinagar

d. State: Gujarat

e. Lok Sabha Constituency: NORTH Gandhinagar

f. Number of Wards in the Gram Panchayat: 10

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages:

VASAN

Demographic Information

Number of Households 1000 Total Population 3800 Male 2000 Female 1800

SC HHs 5 % ST HHs 5 % OBC HHs 3 % Other HHs 87 %

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	10 KM
c.	Nearest Community Health Centre (CHC)	N	10 KM
d.	Nearest Post Office	Y	–
e.	Nearest Bank Branch (Any)	Y	–
f.	Nearest Bank with CBS Facility	Y	–
g.	Nearest ATM	Y	–
h.	Nearest Primary School	Y	–
i.	Nearest Middle School	Y	–
j.	Nearest Secondary School	Y	–
k.	Nearest Higher Secondary School / +2 College	N	5 KM
l.	Nearest Graduate College	Y	–
m	Nearest ITI / Polytechnic Centre	Y	–
n	Kisan Seva Kendra	Y	–

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society	N	10 km
p	Nearest Agro Service Centre	N	10 km
p	MSP based Government Procurement Centre	N	10 km
q	Milk Cooperative /Collection Centre	Y	-
r	Veterinary Care Centre	Y	-
s	Ayurveda Centre	N	10 km
t	E – Seva Kendra	Y	-
u	Bus Stop	Y	-
v	Railway Station	N	10 km
w	Library	N	10 km
x	Common Service Centre	N	10 km

IV. Sports Facilities in the Gram Panchayat

a. Number of Play Grounds in the GP: Total 1 Public 1 Private 0

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 3

b. Number of villages without Angan Wadi Centres 0

Names of such villages: NONE

c. Schools (Number)

Primary Private: 0 Primary Govt.: 1

Middle Private: 0 Middle Govt.: 1

Secondary Private: 0 Secondary Govt.: 1

Higher Secondary Private: 0 Higher Secondary Govt: 0

VI. Public Distribution System

	Item	Private Contractor	Women's SHG	Gram Panchayat	Cooperative	Other (Mention)	Location in GP (mention Location)	If outside GP, Location & distance from GP HQrs)
a.	Cereal (Rice/ Wheat/ Millets)	-	-	-	-	YES	-	-
b.	Kerosene	-	-	-	-	No	-	-
c.	Other (mention)	-	-	-	-	YES	-	-

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

VII. Coverage of Villages under different Facilities & Services

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

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	–	d.	Pasture / Grazing Land	–	g.	Check Dam	–
b.	Irrigated Land	1562	e.	Forests/ Plantations	–	h.	Wells/Bore Wells	60
c.	Un-irrigated Land	–	f.	Other Common Land	–	i	Tanks /Ponds	5

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

3

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

IX. Parameters relating to Households & Institutions

		Number
a)	Number of eligible Households for pension (old age, widow, disability)	266
b)	Number of Households receiving pension (old age, widow, disability)	266
c)	Number of eligible Households who are not receiving pension	1
d)	Number of Households eligible for Ration Card	1000
e)	Number of eligible HHs having ration cards	1000
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	1000
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	—
h)	Number of active Job Card holders under MGNREGA	110
i)	Number of Job Card holders who completed 100 days of work during 2013-14	—
j)	Number of shops selling alcohol	No
k)	Number of BPL families	35
l)	Number of landless households	—
m)	Number of IAY beneficiaries	—
n)	Number of FRA[2] beneficiaries	—
o)	Number of Community Sanitary Complexes	1
p)	Number of Households headed by single women	15
q)	Number of Households headed by physically handicapped persons	—
r)	Total number of Persons with Disability in the village	6
s)	Number of SHGs	—
t)	Number of active SHGs	—
u)	Number of SHG Federations	—
v)	Number of Youth Clubs	—
w)	Number of Bharat Nirman Volunteers	—

Name and Signature of Surveyor and Respondent'

Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	10/6/21 Date of Survey

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

4

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: VASAN
b. Ward Number: –
c. Gram Panchayat: VASAN
d. Block: Gandhinagar
e. District: Gandhinagar
f. State: GUJARAT
g. Lok Sabha Constituency: Gandhinagar North
h. Number of Habitations / Hamlets in the Gram Panchayat: 1

i. Names of Habitations / Hamlets:

VASAN

Demographic Information

Number of Households 1000 Total Population 3800 Male 2000 Female 1800

SC HHs 5% ST HHs 5 % OBC HHs 3 % Other HHs 87 %

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	Y	–
c.	Nearest Secondary School	Y	–
d.	Kisan Seva Kendra	N	10 km
e.	Milk Cooperative /Collection Centre	Y	–
g.	Health Sub Centre	Y	–
h.	Bank	Y	–
i.	ATM	Y	–
j.	Bus Stop	Y	–
k.	Railway Station	N	10 km

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

1

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
l	Library	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: 1

iii. Drinking Water Facilities

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

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

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

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

iv. Coverage of Habitations under Waste Management System

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

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

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

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

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

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: 1

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

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): 2000 APROX.

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 6

c. Schools (Number)

Primary Private: 0 Primary Govt.: 1

Middle Private: 0 Middle Govt.: 1

Secondary Private: 0 Secondary Govt.: 1

Higher Secondary Private: 0 Higher Secondary Govt: 0

2

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

viii. Land Category		Area in Acres		Land Category	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	—	d.	Pasture / Grazing Land	—	g.	Check Dam	—
b.	Irrigated Land	1562. acer	e.	Forests/ Plnatations	—	h.	Wells/Bore Wells	60
c.	Un-irrigated Land	—	f.	Other Common Land	—	I	Tanks /Ponds	2

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	110
2	Number of active Job Card holders who have completed 100 days of work	20
3	Number of shops selling alcohol	-
4	Number of BPL families	35
5	Number of landless households	-
6	Number of IAY beneficiaries	-
7	Number of FRA beneficiaries	-
8	Number of common sanitation complexes	1
9	Number of SHGs	—
10	Number of active SHGs	—
11	Existence of SHG Federation in the Village (Yes / No)	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
	૧૦/૬/૨૦૨૧	૧૦/૬/૨૦૨૧	10/6/21

Chapter-20

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

As per the Vishwakarma Yojana phase – VIII guidelines student have selected your Vasan village for their academic project work. From past one year you have helped them in giving data and such information and letting them survey your village. Now they have proposed 6 designs as per the below mentioned to complete project report work. Kindly approve from your side

Students name with enrollment number
1 Krishna Patel
En no. 180753106004
2 Shivangi Raval
En no. 170750106024

Design list
1 public toilet
2 bus stop
3 wbm road
4 skill development class
5 chabutro
6 phc
Thank you

V

Vijbha Vaghela 2:54 PM

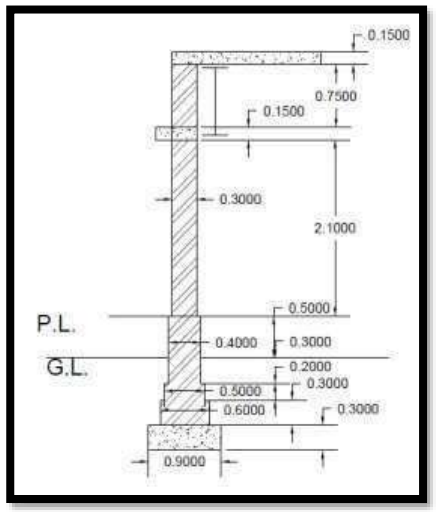
to me

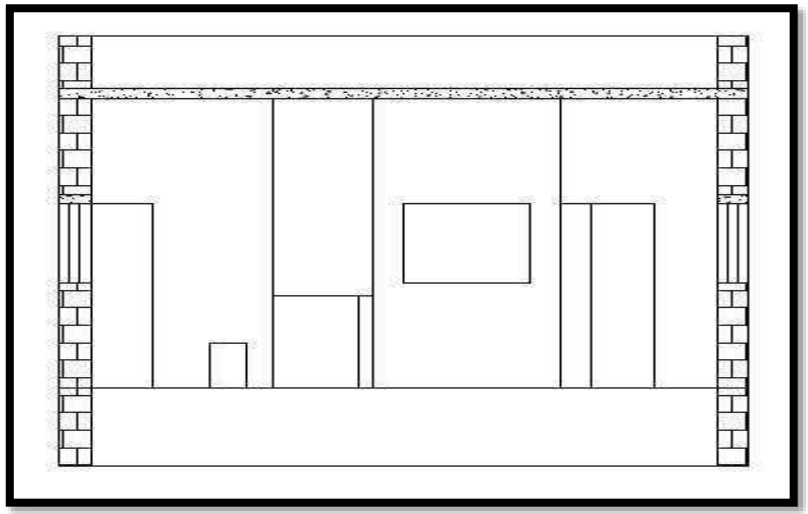
I'm sarpanch of vasan village and accepting your proposal design for development of village given by guidelines from vishwakarma Yolanda phase-VIII

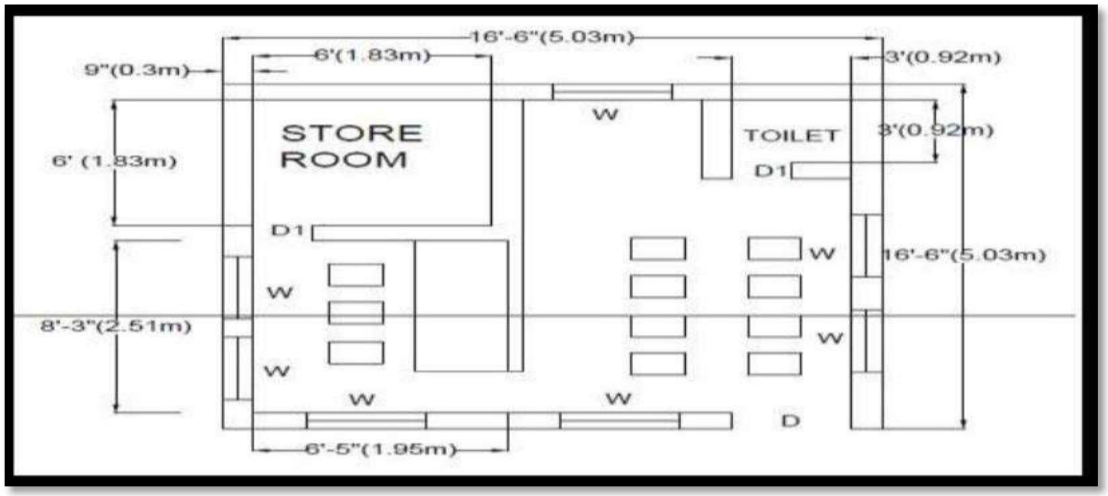
Chapter-21

Comprehensive report for the entire village

Sr no.	Village name	Discipline	Part -1	Part-2
1.	Vasan	Civil	Public toilet	Garden
			Bus stop	Community Hall
			WBM road	Lake purification
			Skill development class	Residential house
			Chabutro	Post office
			PHC	Bridge over lake
2.	Punsari	Civil	Cybercafe	Skill development class
			Garden	Community Hall
			Bank	Chabutro
			Water tank	Post office
			Rain water harvesting	Krishi Kendra
			ATM	PHC
3.	Vavol	Civil	Community Hall	School
			Rain water harvesting	ATM
			Garden	Solid Waste management
			Pond purification	Public toilet







GUJARAT TECHNOLOGICAL UNIVERSIY

- All dimension inmeter.
- Drawing should be read not to scale.

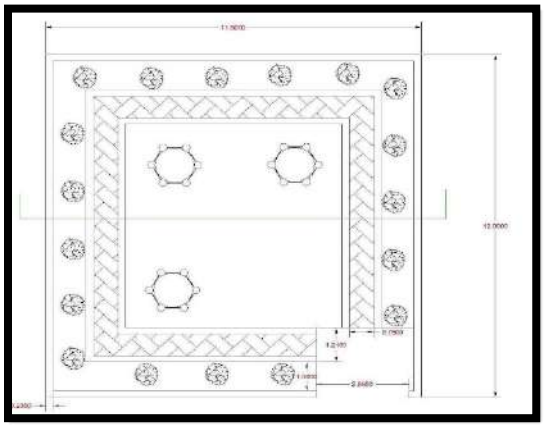
Shankersinh Vaghela Bapu Institute of Technology

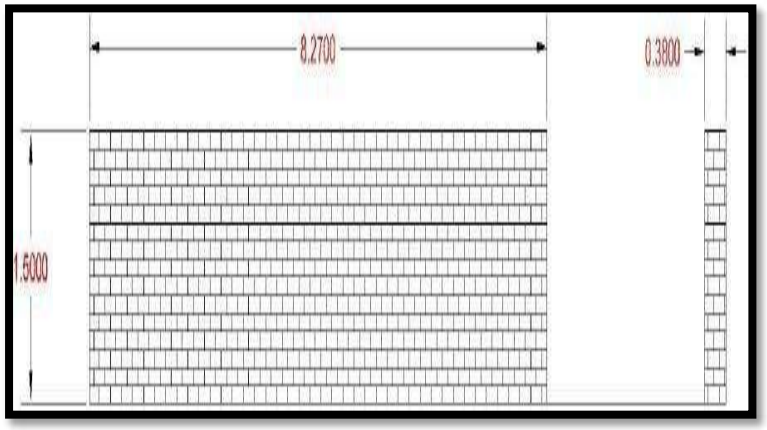
DesignBy: Shivangi B. Raval
Krishna N. Patel

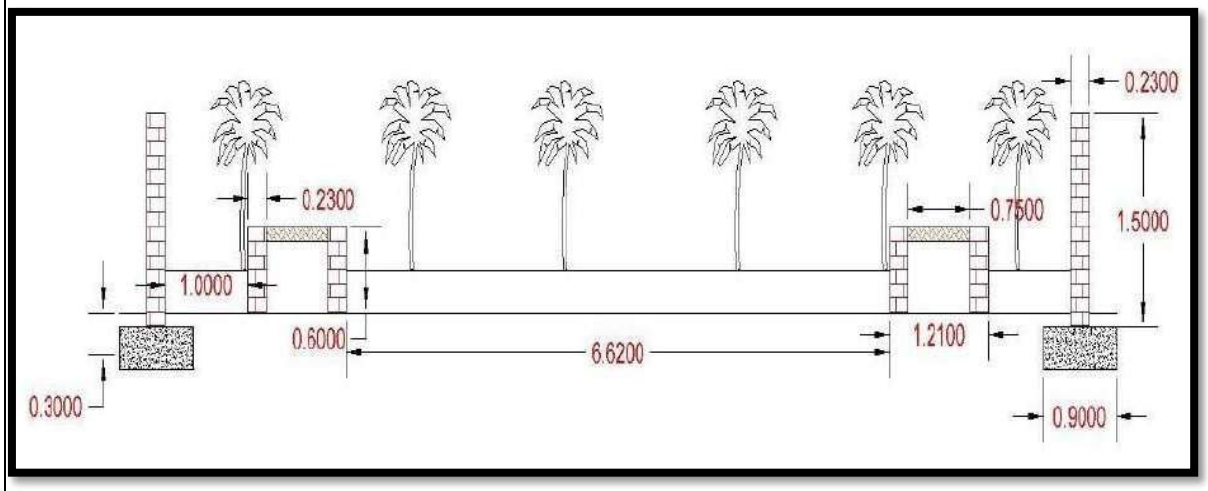
Vishwakarma Yojana: PhaseVIII

Vasan Village, Gandhinagar District

Farmer Help Center







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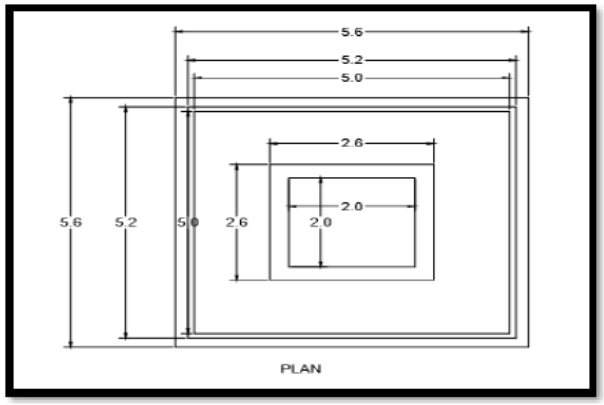
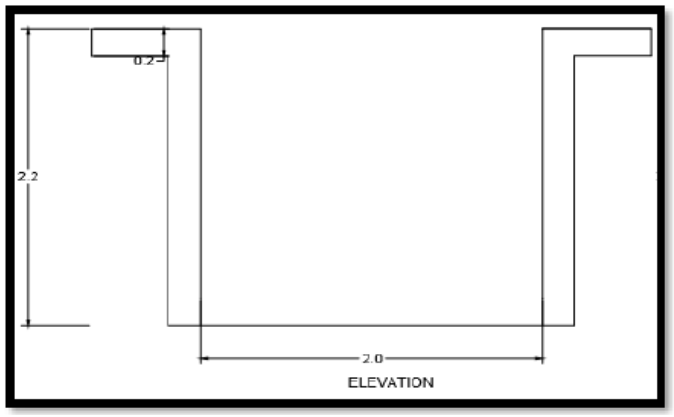
Krishna N. Patel

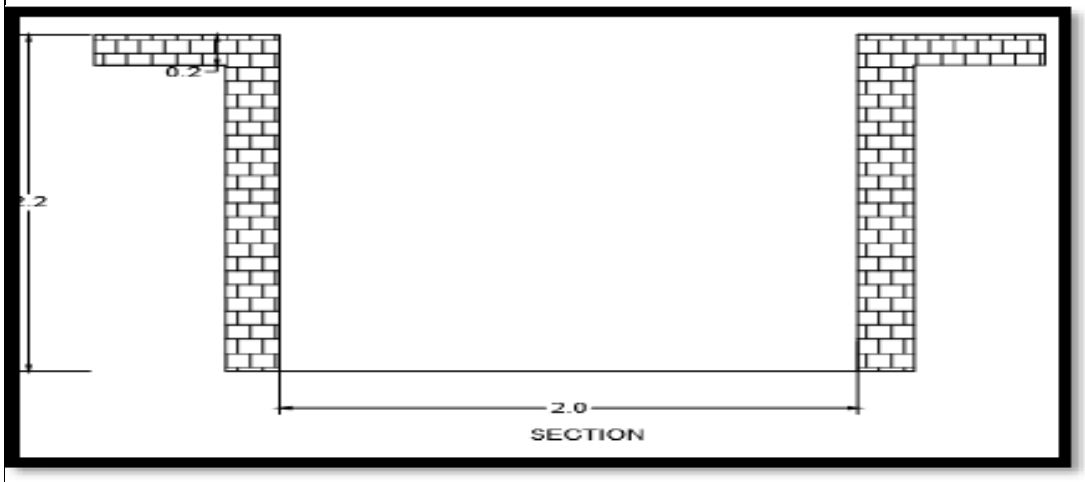
Vishwakarma Yojana: PhaseVIII

Vasan Village, Gandhinagar District

Garden







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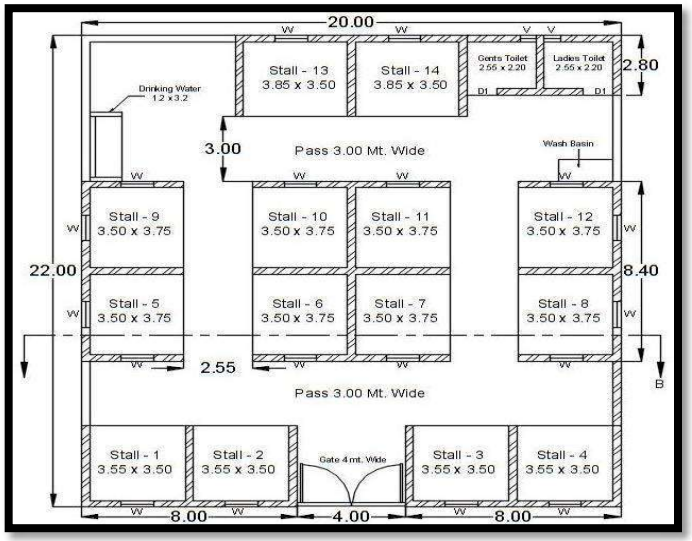
Shankersinh Vaghela Bapu Institute of Technology

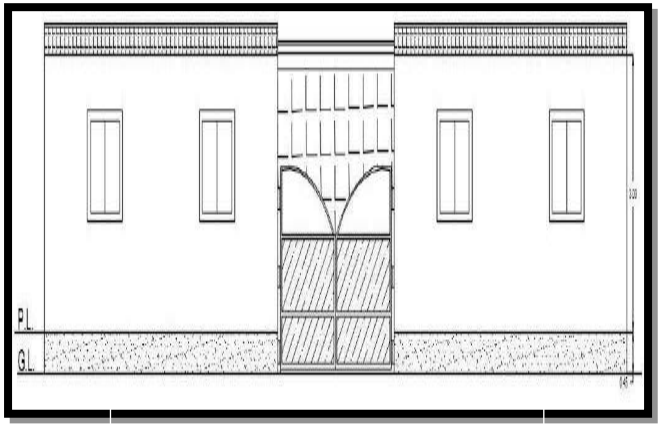
DesignBy: Shivangi B. Raval
Krishna N. Patel

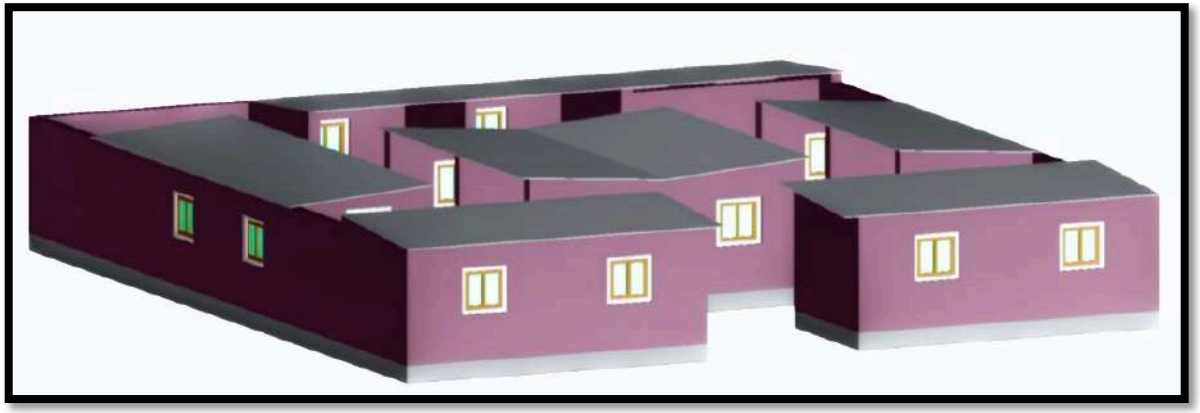
Vishwakarma Yojana: PhaseVIII

Vasan Village, Gandhinagar District

Sustainable design Soak pit







GUJARAT TECHNOLOGICAL UNIVERSIY

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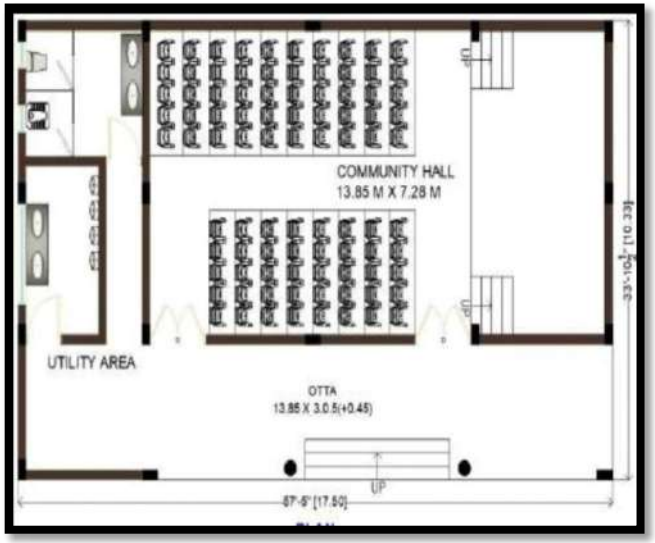
Shankersinh Vaghela Bapu Institute of Technology

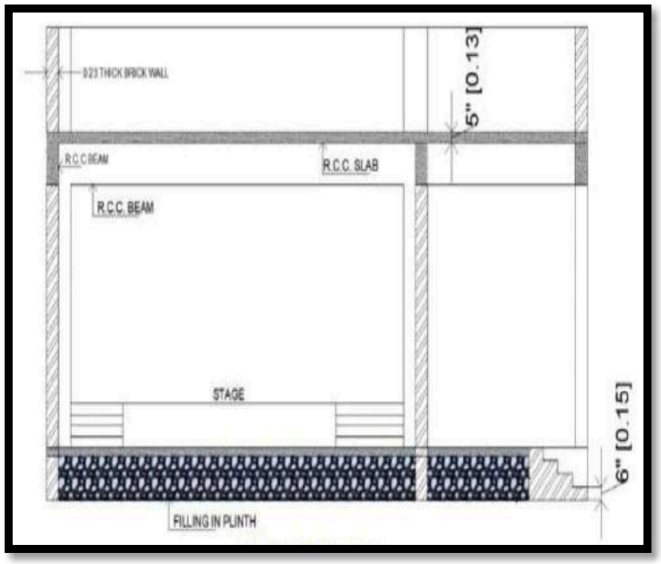
DesignBy: Shivangi B. Raval
Krishna N. Patel

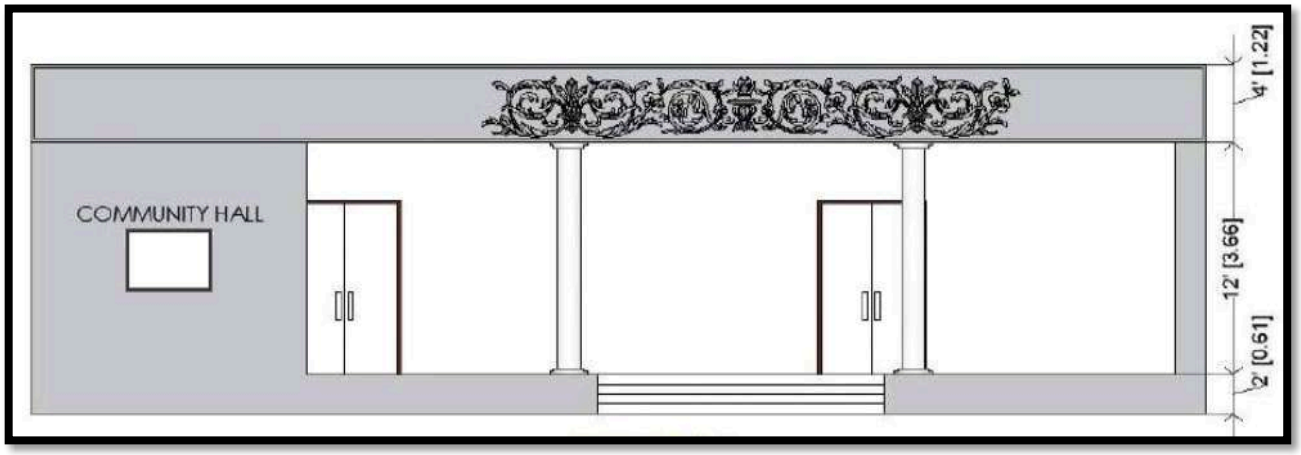
Vishwakarma Yojana: PhaseVIII

Vasan Village, Gandhinagar District

Design of vegetable market







GUJARAT TECHNOLOGICAL UNIVERSIY

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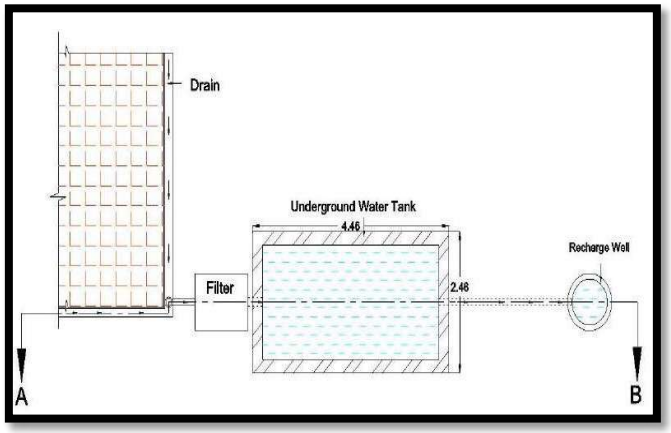
Shankersinh Vaghela Bapu Institute of Technology

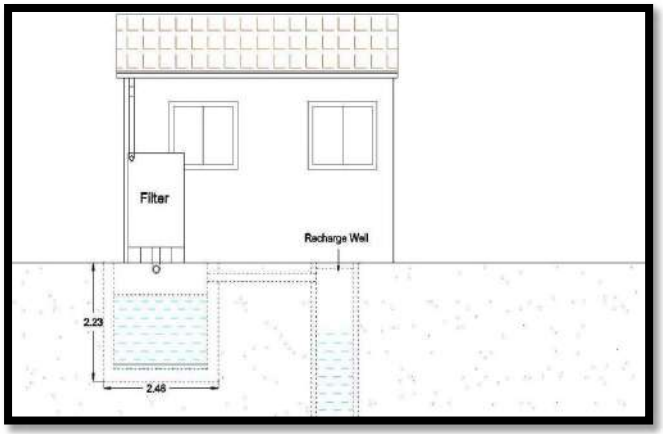
DesignBy: Shivangi B. Raval
Krishna N. Patel

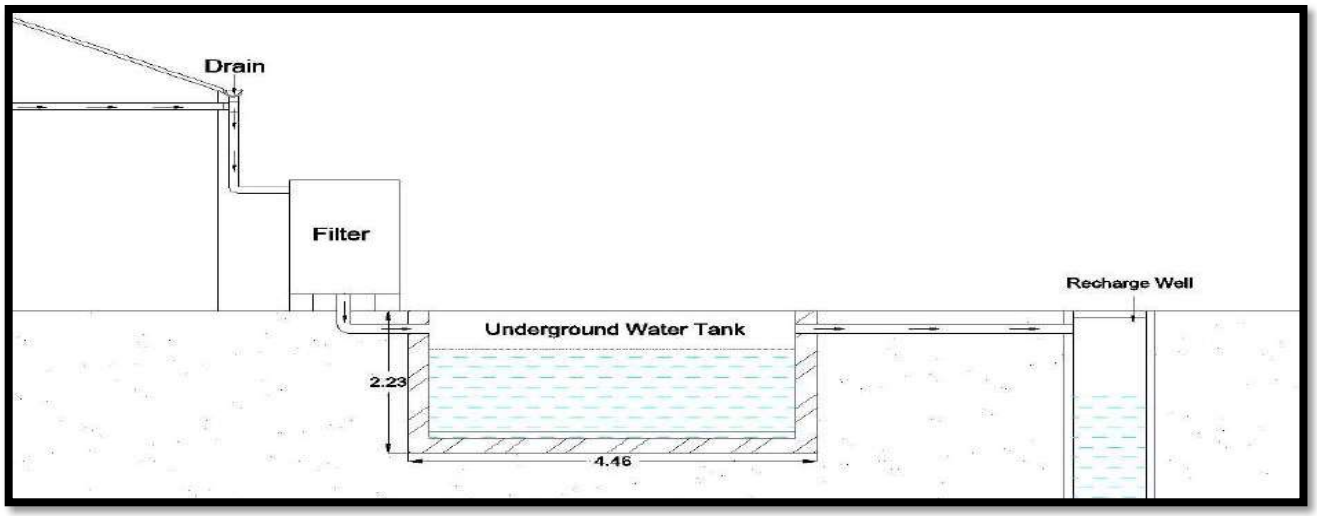
Vishwakarma Yojana: PhaseVIII

Vasan Village, Gandhinagar District

Community Hall







GUJARAT TECHNOLOGICAL UNIVERSIY

- All dimension inmeter.
- Drawing should be read not to scale.

Shankersinh Vaghela Bapu Institute of Technology

DesignBy: Shivangi B. Raval
Krishna N. Patel

Vishwakarma Yojana: PhaseVIII

Vasan Village, Gandhinagar District

Designofrain water harvesting