DETAIL PROJECT REPORT

ON

VISHWAKARMA YOJNA: VIII

AN APPROACH TOWARDS RURBANISATION

GAMBHU VILLAGE

OF

MEHSANA DISTRICT

PREPARED BY:-

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
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COLLEGE NAME

VGEC, CHANDKHEDA

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COLLEGE LOGO

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY

Chandkheda, Ahmedabad– 382424 Gujarat

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Gujarat Technological University,
Chandkheda, Ahmedabad– 382424 Gujarat

CERTIFICATE

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

Detail Project Report for,

VILLAGE: - GAMBHU

DISTRICT: - MEHSANA

Under

Vishwakarma Yojana: Phase-VIII

In partial fulfillment of the project offered by

GUJARATTECHNOLOGICALUNIVERSITY, CHANDKHEDA,

During the academic year 2020-21.

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

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ABSTRACT

Now a day living standard of society is getting better due to development and technology in each and every part of our life. Because of new development of affordable technologies world is growing faster and faster. By the theme of VYOJANA project government want some technical solution of the difficulty prevailing in villages from new generation student of engineering by modern point of view. By looking around at rural location anyone can recognize the common problem of village, which can be solved by the engineering.

Allocated Gambhu village is a little poor but developing him with their slower but significant rate, which is village of Mahesana district and situated near modhera city at just 7 kilometer. Village have smaller number of hose hold among them most of houses are of concrete roof now but still there are many houses of conventional old era method constructed using wood and product directly acquired from farm that we can identify such house as hut. Many houses in village has their own water, drainage and electricity connection & also almost all of them have gas connection & for them who haven't water connection in their house there is a public water tap as we identify it as "hawada" in Guajarati. Main source of income is agriculture in village and has no facility like canal so they are dependent only on rain I monsoon and bore well in other season. village have very poor library facility which is close since long time with only one room but village have good school up to 12th commerce ,village also have good primary health centre and also village have their own animal hospital especially for buffalo and cow as their main source of income s also a animal husbandry. village have tample of ranchhodraiji which is believed "swayambhu" ,as per priest of temple original cculpture(murti) is hidden since mughal era, temple have a facility of hall but it is not satisfactory.

Gambhu is medium sized village of around 4015 people with lack of some facilities which are essential to have in village to be connected with World. Development of village will change scenario of people to migrate towards city and hence by this little beginning, whole picture can be seen going faster towards developed country and someone can find solution of megacities which suffers from slum area like Dharavi. In village some basic facilities are needed like proper drainage, safe and good road connectivity, sanitary services, clean drinking water, etc. Children playground, garden, etc. can grace look of village. Villages have more area compared to city per population but they have fewer amenities like Panchayat building, road transportation, health centre, solid waste management, etc. The coordination between villages is good. But there is lack of employment.

We are proposing this design considering real development of village as these designs are very much basic need of Gambhu village. A family head or member earns to fulfill need of own family but that is not only thing that a person need , person need a social life also for which some developments are needed where they can meet each other to enjoy cultural and modern festivals. Cyber café is need of modern era, multipurpose domes are for navratri, 'satsang', etc. community hall is for stage activity, toilet is for sanitation, pharmacy store and post office is also much needy one according to villagers.

good internal street road was there but still it can be modernized ,village also need a irrigation canal, new bus stand, main gate on all entry road, etc.

➢ **KEYWORDS:-**

Rurbanization, Infrastructural development, Socio-economic infrastructure, Sustainable growth, rural facility improvement

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
DDO	**District development officer**
TDO	**Taluka development officer**
RCC	**Reinforced concrete structure**

CHAPTER 1
Ideal village visit from District of Gujarat State (Civil & Electrical Concept)

1.1. BACKGROUND & STUDY AREA LOCATION OF KOLAVADA VILLAGE

What is an Ideal Village?

An ideal Indian village will be so constructed as to lend itself to perfect sanitation. It will have cottages with sufficient light and ventilation built of a material obtainable within a radius of five miles of it. The cottages will have courtyards enabling householders to plant vegetables for domestic use and to house their cattle. The village lanes and streets will be free of all avoidable dust. It will have wells according to its needs and accessible to all. It will have houses of worship for all, also a common meeting place, a village common for grazing its cattle, a co-operative dairy, primary and secondary schools in which industrial education will be the central fact, and it will have Panchayat for settling disputes. It will produce its own grains, vegetables and fruit, and its own Khadi. This is roughly my idea of a model village. In the present circumstances its cottages will remain what they are with slight improvements. Given a good 'zamindar', where there is one, or co-operation among the people, almost the whole of the programme other than model cottages can be worked out at expenditure within means of the villagers including the 'zamindar' or 'zamindars', without Government assistance. With that assistance there is no limit to the possibility of village reconstruction. But my task just now is to discover what the villagers can do to help themselves if they have mutual co-operation and contribute voluntary labour for the common good. I am convinced that they can, under intelligent guidance, double the village income as distinguished from individual income. There are in our villages' inexhaustible resources not for commercial purposes in every case but certainly for local purposes in almost every case. The greatest tragedy is the hopeless unwillingness of the villagers to better their lot.

The very first problem the village worker will solve is its sanitation. It is the most neglected of all the problems that baffle workers and that undermine physical well-being and breed disease. If the worker became a voluntary 'Bhangi', he would begin by collecting night-soil and turning it into manure and sweeping village streets. He will tell people how and where they should perform daily functions and speak to them on the value of sanitation and the great injury caused by its neglect. The worker will continue to do the work whether the villagers listen to him or no.

Not only ideal villages but all villages and cities must have sufficient medical facilities handling their own patient of general/viral infection cases. Only by small effort like filling potholes and not letting them to be centre of mosquito nuisances local authority can reduces chances of viral infection and almost can reduce 50% load from hospital. This might be helpful to big hospital to give their attention to big problem under less work pressure. Medical camp at end of every week will run awareness & vaccination (polio, common cold, etc.) efficiently.

Brief about kolavada:

Kolavada village is situated in Tehsil Vijapur, District Mahesana and in State of GUJARAT India. Village has population of 4010 as per census data of 2011, in which male population is 2043 and female population is 1967. Total geographical area of Kolavada village is 708.38 Hectares. Population density of Kolavada is 6 persons per Hectares. Total number of house hold in village is 897.

Gram Panchayat name of the Kolavada village is KOLAVADA. CD Block name is Vijapur and Tehsil/Taluka or sub-district is Vijapur. Data Reference year is 2009 of Census 2011. Sub District HQ Name is VIJAPUR and Sub District HQ Distance is 12 Km from the village. District Head Quarter name is MAHESANA and its distance from the village is 40KM. nearest Town of the Kolavada village is VIJAPUR and nearest town distance is 12 km. Pin code of Kolavada village is 382850. As per census 2011 village code of village Kolavada is 509429.

Other Village Near by kolavada:-

Nearest village to kolavada is Gerita at just 1 km, other nearby villages are gavada (2 km), Pamol (2 km), fatepura (4km), Manipura (5.5 km), Mahadevpura (4.5 km), pilvai (7 km), Vihar (5 km), Chadasana (5 km), ubkhal (5.5 km). nerby talukas are visnagar towards north-west, vadnagar towards north, mansa towards south, kheralu towards north-west & Mahesana towards west.

We refers kolavada because of facility available in village and effort provided by villagers to make it ideal as village have all the necessary infrastructure like well maintained panchayat building, dairy, both school and highschool up to 12th commerce, two overhead water tank to supply daily 1 hour water to every family, bal mandir & anganwadi for kids as a junior and senior playgroup, good and efficient drainage system, canal, tap water, chabutara, caste-wise grouped residents, both primary health centre and referral hospital, gardens, post office, two bank, railway, Two RO plant, seven 'samajwadi', etc.

Fig. 1. kolavada base Map

Locality name:	Kolavada
Taluka name:	Vijapur
District:	Mahesana
State:	Gujarat
Language:	Gujarati, Hindi
Time zone:	IST (utc+5:30)
Latitude:	23.57 north
Longitude:	72.38 east
Elevation:	84.00m/275.59ft
std code:	02763
Assembly const.:	Vijapur
Assembly MLA:	Ramanbhai Patel
LokSabha const.:	Mahesana
Parliament MP:	Shardaben Patel
Sarpanch name:	Vishnubhai I Patel
Pin code:	382820
Post Office Name:	Kolavada-Gerita branch

Table 1. facts of kolavada

1.2. CONCEPT: IDEAL VILLAGE, NORMAL VILLAGE

Ideal village can have any kind of facilities and social services as per their way of thinking perspective but if village have some basic amenities as mentioned keyword below it, it can be a said a good and developed village. It should have following goals

- Enhancement of existing unpaved road to Concrete roads
- Providing Street lamps (solar powered ,if possible)
- Village should have **RO** plant to provide clean drinking water
- PHC with sufficient staff

- Well Managed drainage and sanitary system & A toilet in every house.
- Primary schools with CCTV & speakers sports facilities.
- Door to door waste collection system & sufficient disposal system of waste.
- Urban banking facility
- Enhanced living standard through some project like MGNREGA,"GARIB KALYAN ROJGAR YOJNA "

1.2.1. OBJECTIVES

- To make it hub with some centers of attraction so that local industries and entrepreneurs like to start some "gruhudhyog" like medium, small and microenterprises.
- To provide easily accessible market with transport capability and storage unit so farmers and local industries can store, transport, sell and make profit from product of either agro field or gruhudhyog.
- To prevent migration of rural residents to city or urban area in search of work or higher education as this is common phenomenon in Indian rural area for better future as villages of India has little facilities and lack of opportunity that assure high living standards as of city residents .
- To create a sustainable society and to empower culture of rural India.
- To create model village so that it can be replicated in other village.
- To contribute actively in GDP of country by involving village in market.

1.2.2. EXAMPLE / LIVE CASE STUDIES OF IDEAL VILLAGE OF INDIA/GUJARAT

As per census data of 2011, population of Village is 4010. In which male population is 2043 and female population is 1967. Total number of house hold in village is 897. Total number of house hold in village is 897. Pin code of Kolavada village is 382850. As per census 2011 village code of village Kolavada is 509429.

Type	Status
Public bus service	Available within village
Railway station	Available within village
Private services	Available within 10km+distance

Table 2. Connectivity in kolavada

1.2.2.1.CASE STUDY OF MODEL VILLAGE FROM THE STATE OF RAJASTHAN PIPLANTRI VILLAGE:

Piplantri: A Rajasthan village which celebrates the birth of every girl child with 111 trees.

Piplantri is a village located in Rajsamand district in Rajasthan State, India. The villagers of Piplantri plant 111 trees every time a girl child is born and the community ensures these trees survive, attaining fruition as the girls grow up. To ensure financial security, after the birth of a girl child, the villager contribute Rs 21,000 collectively and take Rs 10,000 from the parents and puts it in a fixed deposit, which can be broken when she turns 20. To make sure that girl child receives proper education, the villagers make the parents sign an affidavit which also restricts them from marrying her off, before she attains the legal age for marriage. ShShyamSundar Paliwal, the former Sarpanch (village head) started this initiative in the memory of his daughter Kiran, who died a few years ago.

Despite strong legal interventions, female infanticide is not unheard of in certain parts of India. However, thanks to ShyamSundar Paliwal, former panchayat (or village head) of Piplantri in Rajasthan, the birth of a girl child is celebrated with the planting of 111 trees—and the initiative has transformed the ecology of the village.

Once a completely barren village in the desert state of Rajasthan, Piplantri now has over 300,000 trees, which has not only ensured better air quality and attracted biodiversity, but has also brought water back to ground level when it had had fallen almost 800 feet below. The village residents now enjoy a cooler environment and also save electricity.

Piplantri has become a model village and a case study in sustainability for communities and cities around the world. It also sends a very strong social message to villages across India that the birth of girl children is a cause for joy and celebration.

Fig 2. Visuals of village Piplantri

The villagers of Piplantri plant 111 trees every time a girl child is born and the community ensures these trees survive, attaining fruition as the girls grow up. To ensure financial security, after the birth of a girl child, the villager contribute Rs 21,000 collectively and take Rs 10,000 from the parents and puts it in a fixed deposit, which can be broken when she turns 20.

The Case: Grassroots Afforestation in Rajasthan

In the six years between the start of the initiative and 2013, according to The Hindu, 250,000 neem, sheesham, mango, amla, and other trees have been planted, along with aloe vera plants to protect the trees from termites. According to Mr.Paliwal, once the village realized that aloe vera was not only useful for protecting trees but also a marketable commodity, they brought in outside experts to train women to turn the plant into juice, gel, pickles, and other goods that could be sold for a profit. The mixed success of the initiative in promoting gender equality and environmental sustainability is visible in two ways: an overall increase in gender disparity, and an overall increase in village health and security. According to the Hindu, Piplantri has "banned alcohol, open grazing of animals and cutting of trees," and has reported no police cases since 2005 or '06, though self-reported numbers should be subject to some scrutiny. At the same time, while a 2001 census reported a gender ratio of 1000:1000 females to males, the 2011 census reported a gender ratio of 990:1000 females to males. Though this is still higher than the overall Rajasthan ratio of 929:1000 females to males, it nevertheless constitutes a decline in numerical equity between male and female children, and indicates that Paliwal's initiative might not have been as tangibly successful as The Hindu, Hindustan Times, and Huffington Post have claimed.

Conclusions

Conclusion has for the sustainability and overall legitimacy of the Piplantri initiative in terms of social development and the empowerment of rural women? The Huffington Post lauds the initiative as a "possible antidote to gender discrimination," but the claims made by Agarwal and

Tori call this into question; if women are not in positions of authority, if the social and economic agency of women is not improving, and if–as the statistics provided at the beginning of this essay demonstrate–the initiative has not produced a quantitative balancing of the gender ratio over the last decade, then it is a nice overture toward promoting gender equality, and little more. The economic benefits of the project through the sale of aloe Vera may indeed be providing women with extra income, which as Bhatt argues is a crucial step in the process of empowerment. Additionally, the FD accounts established for the Piplantri girls–the eldest of whom are still nine years from legal marrying age–may, once the girls are old enough that their families can collect the money, strengthen their socioeconomic status and enhance their power in that sense. It will be interesting to see, in ten years' time, what the benefits have been to the financial and social climate of Piplantri as a result of this initiative; while it is possible that it is simply too soon for any real paradigmatic and ideological changes to have occurred and that it will take decades for them to become visible, there is also the danger that, due to the *de facto* paternalistic nature of the initiative, it may neither indicate nor cause ideological shifts. Given the limitation of the sources and the frustrating lack of in-depth journalism on the case itself, it is impossible at this time to determine anything about future outcomes or even the current atmosphere. Women's voices are absent, leading me to believe that this has been a male-dominated endeavour in spite of its overtly feminist appearance, and so I can make no claims either in favour or against the legitimacy of the Piplantri initiative as a tool for development.

1.2.3. IDEA OF SMART VILLAGE

Now a day living standard of society is getting better due to Development and technology in each and every part of our life. Because of new development of affordable technologies world is growing faster and faster. By the theme of VYOJANA project government want some technical solution of the difficulty prevailing in villages from new generation student of engineering by modern point of view. By looking around at rural location anyone can recognize the common problem of village, which can be solved by the engineering.

Growth of industries as a result of industrialization after 18th century in all over the world the scenario of almost all the developing country has changed, people has started migrating toward the city area in search of employment, better education, higher living standard & to fulfill basic need of life. Vishwakarma Yojna is one of the initiatives towards re-urbanization by government of Gujarat under Gujarat technological university. This Yojna is for development of village by identifying the current situation of village. This Yojna will go with a scope to covert rural to rurban, means to provide facilities of city in village. Under Vishwakarma yojna village will be surveyed by student and development schemes are proposed, analysed by experts and implemented. Our project is about to develop an appropriated facility and suggestion for up gradation of Gambhu. To develop a country as a whole we have to initiate our work from small part of India and it can be a village of Mahesana. Gambhu is medium sized village of around 4015 people with lack of some facilities which are essential to have in village to be connected with World. Development of village will change scenario of people to migrate towards city and hence by this little beginning, whole picture can be seen going faster towards developed country and someone can find solution of megacities which suffers from slum area like Dharavi. In village some basic facilities are needed like proper drainage, safe and good road connectivity, sanitary services, clean drinking water, etc. Children playground, garden, etc. can grace look of village. Villages have more area compared to city per population but they have fewer amenities like Panchayat building, road transportation, health centre, solid waste management, etc.

Smart Village refers to a concept developed in rural area that provides solutions to problem so occurred and improves the quality of life. The main problems faced by rural areas are cover poverty, low level of education, and limited access to technology. Smart village concept emerged due to some different characteristics between rural and urban areas. Banyuwangi Regency is one of regions that created smart concept starting from rural area, called smart kampung. So far, smart kampung only focused on public services, which included only a small part of smart city concept. Hence, this research was intended to propose the model of smart village examined through initial interview in village sample of Banyuwangi, literature reviews related to smart city, smart village, and smart rural. Then, the results were confirmed and adjusted to support local regulations. This research created a smart village model that was capable to be a guide for each village to develop towards better future. The proposed smart village model was categorized into 6 dimensions including 1) Governance, (2) Technology, (3) Resources, (4) Village Service, (5) Living, and (6)Tourism. This research is expected to be applied to villages in other Regencies by adjusting the characteristics of each region.

We observed some facilities are lacking in the village from civil aspects and these are, Gas Pipelines, Biogas Plant, Cold Storage Area, and Rain Water Harvesting.

1.2.4. ANCIENT HISTORY CIVIL CONCEPT ABOUT INDIAN VILLAGE / OTHER COUNTRIES PERSPECTIVE ABOUT VILLAGE AND ITS NEW DEVELOPMENT

From the Stone Age to the modern age we have come to know that the human being is reflective, curious and inventor Means explorer. In modern civil engineering science has done never to be forgotten progresses and made dreams come true which was beyond of our imaginations. At present science has uncovered secrets. Even everything is before us but it seems that there is body but not the spirit. There is an adage “Old is Gold”. Today after uncovering secrets, using modern machines we could not rise civil engineering to the point where our ancestor had left. Despite of reaching to the highest point in the field of architecture still we found ourselves speechless watching the ancient structures. So many question rises even about the gratefulness or in the context of firmness or strength or in the context of lively instantiation. As the law is incomplete without evidence in the same way our memory is incomplete without history. History means our past.

India:-

“Just as the whole universe is contained in the self, so is India contained in the villages.”- Mahatma Gandhi

Throughout the historical ages, Indian village remained a remarkable socio-economic organization till the introduction of the British rule, Traditionally, the cultivator purchased his cloth, oil or pot by paying in grain. Other professional groups of the society were also paid a fixed annual share of grain. This procedure of mutual exchange has been termed as barter system. It was only in the British era that money began generally to replace the barter system. But in the traditional village economy money served the purpose of wealth, either in the shape of gold and silver,

Rural Development:-

Harappa and Mohenjo-Daro are best examples of this architecture and mature urban civilization. In Harappa civilization the underground drainage system was from small to big

sewer then to channel and then channel to river. It has also a remarkable town planning system. Better system then this has never seen till today.

Cultural &religious development:-

Jagganath temple: the shadow of the main dome is not visible whatever be the time it shows architecture feat. Also the sudarshan chakra on the top seems always facing you. Irrespective of wherever you stand. When you enter the temple by singhdwara after first step you cannot here any sound of ocean but when you exit it can be clearly heard.

1.3. DETAIL STUDY (SOCIO ECONOMIC, PHYSICAL, DEMOGRAPHIC AND INFRASTRUCTURE DETAILS) OF IDEAL VILLAGE KOLAVADA WITH PHOTOGRAPH :

Other Village Near by kolavada:-

Nearest &buddy like village to kolavada is gerita at just 1 km, other nearby villages are gavada (2 km), Pamol (2 km), fatepura (4km), Manipura (5.5 km), Mahadevpura (4.5 km), pilvai (7 km), Vihar (5 km), Chadasana (5 km), ubkhal (5.5 km). vijapur city is located to east by 9 km. Nearby tehsil are visnagar towards north-west, vadnagar towards north, mansa towards south, kheralu towards north-west & Mahesana towards west.

Literacy of Kolavada Village

Out of total population total 3144 people in Kolavada Village are literate, among them 1686 are male and 1458 are female in the village. Total literacy rate of Kolavada is 87.82%, for male literacy is 93.46% and for female literacy rate is 82.09%. school is working main body to increase literacy level of village under "**sau bhane sau agal vadhe**" initiative.

Sex Ratio of Kolavada Village -Census 2011

As per the Census Data 2011 there are 963 Females per 1000 males out of 4010 total population of village. There are 799 girls per 1000 boys under 6 years of age in the village.

Description	Census 2011 Data
Village name	Kolavada
Tehsil name	Vijapur
District name	Mahesana
State name	Gujarat
Total population	4010
Total area	708 (hectares)
Total No of House Holds	897
Total male population	2043
Total female population	1967
0-6 Age group Total	430
0-6 Age group Male	239
0-6 Age group Female	191
Total person literates	3144
Total male literates	1686
Total male literates	1458
Total person illiterates	866
Total male illiterates	357
Total Female illiterates	509
SC persons	134
SC males	70
SC females	64
ST persons	1
ST males	3
ST females	1

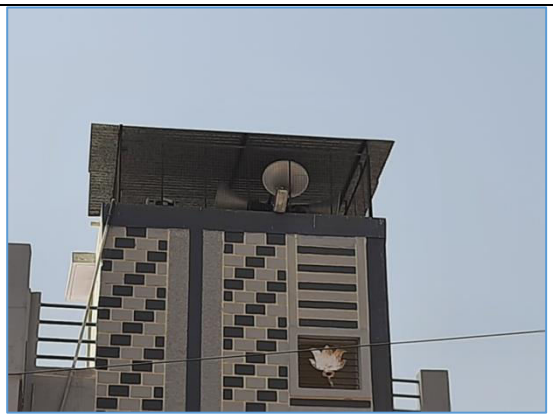
Table3. census of kolavada

Kolavada Infrastructures facilities (All Types):

Kolavada have bank of Baroda as main bank with district bank(mainly district bank is preferred for locker facility to protect jewelry), dairy, shopping complex, school & highschool up to 12th commerce , anganwadi, two overhead water tank, primary health centre, referral hospital, temple, library, annakshetra, RO plant, etc.

Renovated gram-panchayat building with two Talati(second is revenue Talati),with facility of four room like meeting room, computer room ,Talati cabin & waiting room with electrical head switch in lobby. Birth & death certificate along with marriage registration are also registered in gram panchayat registry. In picture over head tank is of 1,00,000 liter capacity supplying water to half the village.	
Village dairy with animal hospital ion back side of it also wit facility of hall on second floor of it, dairy has modern infrastructure for milk processing which enables tanker to wash using modern technique using hot & cold water to disinfect surface of tanker. Dairy also sell milk collected from cowherd to villagers along with sagar ghee ordered from vihar branch. In picture on top right corner central announce system is visible which s used for important announcement.	
Primary school of village ,currently running at three place considering situation of corona virus as precautionary measures with proper sanitation and mask, school has approximately 450 student in 1st to 8th standard almost all students are regular and school performs all task in relevance with real education considering sports activity along with cultural activity, school has facility of computer room, science room, mineral water plant, mid day meal, central communication speakers, etc.	
High school of village running for 9th to 12th standard for commerce and arts students only, building is also a booth for election and also school has large open area which enable village to perform function like ‘samuh-lagna’ and palli mahotsav which is repeated on cycle of either at 11 year or 13 year with permission of goddess chamunda which is gramdevi of kolavada. Highschool is running for student of kolavada and Gerita.	

Currently seven anganwadi is running in village with facility of kid's toys and playing boards to teach them using visuals, main activity carrying out in anganwadi is learning and playing with joy. Anganwadi offers mid day meal type yojna under initiative of government of Gujarat. these anganwadi facilities are basically located in seven different location considering population density of local area having 10-20 students each.	
Library facility in kolavada with two rooms opens at morning and evening for two hours either to read news paper or to read book in hall. Library has many (6 cupboards, approximately 1200 books) good books, enabling readers to take book with them for reading after registering free of cost. it is located in center of village so that everyone can take advantage of it but due to location in crowded area students are not preferring as a place of exams preparation.	
Bank of Baroda as main bank in village which is running between two village kolavada and Gerita offering ATM facility & premium like offers. Bank also offers lone for home/business. Five cabins in bank for managers and staff with waiting room and also with locker to secure money, bank has facility of digital cash counter. District bank is also available in centre of village offering locker facilities to secure gold/diamonds jewelry.	
Postal service of kolavada which is also running between kolavada and Gerita offering mainly two task of delivering important postal from officials to villagers and collecting premium from users as government closed postal service due to advancement in technology, very less peoples were using postal service & development of privet firms in courier services. post-office is still offering some option of saving account & FD as bank offers.	

Village have mainly four samajwadi type facility offering shed and flat surface to perform gathering on religious occasions and large meeting. in picture this is a samajwadi builted specially for prajapati samaj but dedicated to all residents from actual donors of vadi. Among other three two is used by patel samaj and one is builted by combined brahmana & Rajput parivar. every year samuh lagna is arranged by patel samaj in highschool ground with more than 5000 guests.	
Central announce system on top of dairy building operated by dairy official for announcement of mainly dairy purpose but since long it is dedicated to villagers for medical, religious, Panchayati and private (with fee) announcement. Each and every announcement is repeater two times while announcement and two times a day to cover all people considering those some people who used to work outside of village.	
Multipurpose shed in temple of goddess chamunda erected few years ago dedicated for 'hawan' and Prasad during full moon as many devotees visits temple twice in month. shed is mainly used during Navratri for Garba. And also shed is given on rent for marriage many times in recent years. Chamunda temple trust organizes award functions to first, second & third winner of games along with award to students based on results of their exams.	
Referral hospital of kolavada, only one of its kinds between 10 village surrounding. kolavada with facility of x-ray, and minor operation work facility. Hospital also offers facility of eye checkup on each Thursday & also offers regular consultation for awareness on sexual diseases, almost all kind of medicines and injections are available in stock in pharmacy store of hospital. it offers facility of ambulance for critical patients.	

Newly built PHC centers dedicated for awareness and sanitation and vaccination program running by government. hospital is working to prevent mosquito nuisance and doing great job of door to door vaccination program in coordination with anganwadi workers for awareness and vaccination of polio, common cold, etc.	
Private RO plant operated by bachubhai offering both mineral and cold water jugs at cheapest rate of just 6 Rs. for 20 liter jug mineral water and 20 Rs. for cold water of 20 liter jugs with additionally 10 Rs. on home delivery. this plant remains open for 24/7, while village have similar RO plant which offers mineral water at same rate but opens for only two hour on morning and two in evening operated by cooperative body.	
Railway line on border of two village kolavada and Gerita offering cheapest transportation between main two nearest town Vijapur and kukarwada but currently this railway is not running as government is planning to change it in broad gauge line which was earlier in meter gauge. Earlier railway was operating one railway compartment between ambaliyasan & Vijapur running both side thrice in day with capacity of 50-60 passengers only in 5-30 Rs.	
Public water tap ,currently not used by villagers for residential purpose but it is now serving as a water tank for cowherd to use as drinking water for cow coming back to home after day of work. Earlier it was serving purpose of potable water source and used by women's to wash clothes. it is located near to bore well, chamunda temple & annkshetra in east direction to village. govt. is planning to bring canal water to a pond located besides of it.	

Fig 3 visuals of kolavada

Workers profile of Kolavada Village

Total working population of Kolavada is 1481 which are either main or marginal workers. Total workers in the village are 1481 out of which 1172 are male and 309 are female. Total main workers are 1462 out of which female main workers are 1162 and male main workers are 300. Total marginal workers of village are 19.

	Total	Male	Female
Total Workers	1481	1172	309
Main Workers	1462	1162	300
Main Workers Cultivators	454	407	47
Agriculture Laborer	652	441	211
Household Industries	7	7	0
Other Workers	349	307	42
Marginal Workers	19	10	9
Non Working Persons	2529	871	1658

Table 4. work profile of kolavada

Kolavada Agricultural Commodities

Main commodity generating as agricultural product is wheat as during winters from diwali to march canal irrigates farmland of village.

Description Type	Commodities
Agricultural Commodities (First)	WHEAT
Manufacturers Commodities (First)	N/A
Agricultural Commodities (Second)	RAPESEED
Agricultural Commodities (Third)	COTTON

Table 5. commodities of kolavada

1.4. SWOT ANALYSIS OF IDEAL VILLAGE

SWOT analysis (or SWOT matrix) is a strategic planning technique used to help a person or organization to identify **S**trengths, **W**eaknesses, **O**pportunities, and **T**hreats related to business competition or project planning. This technique, which operates by 'peeling back layers of the company is designed for use in the preliminary stages of decision-making processes and can be used as a tool for evaluation of the strategic position of organizations of many kinds (for-profit enterprises, local and national governments, NGOs, etc.).It is intended to specify the objectives of the business venture or project and identify the internal and external factors that are favorable and unfavorable to achieving those objectives. Users of a SWOT analysis often ask and answer questions to generate meaningful information for each category to make the tool useful and identify their competitive advantage. SWOT has been described as the tried-and-true tool of strategic analysis, but has also been criticized for its limitations.

➢ STRENGTHS	➢ WEAKNESS
• Good crop production • Basic infrastructure • Agricultural lands • Good literacy • Organized men / women groups	• Poor livelihoods opportunities • Insufficient rain water harvesting • Insufficient drainage while heavy rain • Well developed play ground • Training institute
➢ OPPORTUNITIES	➢ THREATS
• Use of modern harvesters • Use of sprinklers in irrigation • Storage units for cash crop • Canal water for drinking • CCTV & Wi-Fi facility	• Irregular rain during winter • Poor waste collection • Attack of caterpillar

1.5. FUTURE PROSPECTS OF DEVELOPMENT OF THE IDEAL VILLAGE :

From interaction with villagers, leaders of village like pashabhai Patel and Pravinsinh Vihol and Sarpanch Vishnubhai we come to know about their future prospect regarding education and service availability like some technical institution and skill development centers is in leading concern to generate local job making institute and using canal water of dharoi dam as drinking water to reduce dependency on ground water, etc.

Possible future prospects:-

- Gas pipe line
- Skill development centre
- Mini water treatment plant
- Recycle plant of drain water(agricultural purpose)
- Sadavrat
- Rain water harvesting
- Solar Street Lights etc.

1.6. BENEFITS OF THE VISITS OF IDEAL VILLAGE :

Benefits of visiting village is incredible from especially civil engineering point of view as we discussed and analysed need of facility already available in village ,future plan which is currently undergoing study phase, and expected desire of villagers from government and leading body of village.

By visiting the village we got an insight about:

- Culture & Lifestyle of a village.
- Socioeconomic conditions of village.
- Working of village governing bodies.
- Importance of infrastructure facilities.
- Functioning of a village & Amenities that are need of the village

1.7. CIVIL ASPECTS REQUIRED IN IDEAL VILLAGE

we got some technical aspect with civil engineering point of view and came to know about some lacking of some facilities that are available in other part of india but they are yet to be installed in Gambhu village like they haven't gas pipeline service but had gas bottle service, pipe service has advantages of continuous service and good control of consumption along with it can reduce misuse of gas by dummy owners.

they haven't cold storage for storage of food product in nearby area and they were not in modern techniques of rain water harvesting methods like they are completely unaware of modern problems of mega cities of India.

public wifi, solar street system, fire station, training institutes are some little effort requiring task to be completed but has great impact on long term that actually mean to have in future.

CHAPTER 2
About Gambhu Village Literature Review - (Civil & Electrical Concept)

2.1. INTRODUCTION : URBAN &RURAL VILLAGE CONCEPT

2.1.1. URBAN VILLAGE CONCEPT:

The term "Urban Village" is currently being used by developers, governments, and the planning profession to describe a new patterning of human settlement. This paper will review the manner in which the concept "Urban Village" is being employed, will come to suggest that developers, governments, and planners are moving in the right direction but are not going far enough, and will finally propose the characteristics and qualities of a version of "Urban Village" that is a genuine synergy of ecology and urbanism. The whole discussion will be framed within the concerns of an increasingly relevant issue of our times – the goals of long-term "sustainability" – and will pay particular attention to the prospects and challenges of a "reduced carbon" future in conditions of "energy descent." The synergistic "Urban Village" will be proposed as a comprehensive retrofit solution for this anticipated scenario.

As such, "Urban Village" will be explored from the interdependent, interpenetrating perspectives of diverse fields, including: human geography, human ecology, urban planning, sociology, psychology, economics, energetic, cultural anthropology, topology, architecture, evolutionary biology, and the meaning of 'place,' etc.

Urban villages are seen to provide an alternative to recent patterns of urban development in many cities, especially decentralization and urban sprawl. They are generally purported to:

- Reduce car reliance and promote cycling, walking and transit use
- Provide a high level of self-containment (people working, recreating and living in the same area)
- Help facilitate strong community institutions and interaction

Places which are being administered by local authorities, Municipal Corporation are automatically considered as urban areas.

2.1.2. RURAL VILLAGE CONCEPT:

Rural Development Program have always been on the agenda of development for any country. India is such a country which contributes a mammoth share of its annual budget towards rural development and agriculture plays an integral role in rural development of India. But still rural India lags behind urban areas in almost all development parameters. There was a time when

social reformers planned of developing Model Villages. The paper discusses the concept of Model Villages in India and how they can serve as micro-embodiments of the concept of rural development. Globally several development organizations have developed quantifiable indicators to measure the effectiveness of rural development interventions and Model Villages are in consonance with this global inventory of development indicators. A conceptual framework has been developed to establish this. The paper highlights some of the notable Model Village efforts of India and what have been their development indicators in the backdrop of global inventory of Rural Development Indicators. Also, the recent Model Village initiative of Central Government: the Sansad Adarsh Gram Yojana and its progress till date have been discussed and the add-ons which future rural development program can incorporate has been explored.

2.2. IMPORTANCE OF THE RURAL DEVELOPMENT

2.2.1. RURAL DEVELOPMENT INTRODUCTION

Rural development actions are intended to further the social and economic development of rural communities.

Rural development programs were historically top-down approaches from local or regional authorities, regional development agencies, NGOs, national governments or international development organizations. However, a critical 'organization gap' identified during the late 1960s, reflecting on the disjunction between national organizations and rural communities led to a great focus on community participation in rural development agendas. Oftentimes this was achieved through political decentralization policies in developing countries, particularly popular among African countries, or policies that shift the power of socio-politico-economic decision-making and the election of representatives and leadership from centralized governments to local governments. As a result, local populations can also bring about endogenous initiatives for development. The term rural development is not limited to issues of developing countries. In fact many developed countries have very active rural development programs.

Literally and from the social, economic and political perspectives the statement is valid even today. Around 65% of the State's population is living in rural areas. People in rural areas should have the same quality of life as is enjoyed by people living in sub urban and urban areas. Further there are cascading effects of poverty, unemployment, poor and inadequate infrastructure in rural areas on urban centers causing slums and consequential social and economic tensions manifesting in economic deprivation and urban poverty. Hence Rural Development which is concerned with economic growth and social justice, improvement in the living standard of the rural people by providing adequate and quality social services and minimum basic needs becomes essential. The present strategy of rural development mainly focuses on poverty alleviation, better livelihood opportunities, provision of basic amenities and infrastructure facilities through innovative programmes of wage and self-employment. The above goals will be achieved by various programme support being implemented creating partnership with communities, non-governmental organizations, community based organizations, institutions, PRIs and industrial establishments, while the Department of Rural Development will provide logistic support both on technical and administrative side for programme implementation. Other

aspects that will ultimately lead to transformation of rural life are also being emphasized simultaneously.

2.2.2. NEED FOR RURAL DEVELOPMENT

Rural development is very urgent in the context of the overall growth and development of Indian economy due to the following reasons.

1) A major share of population lives in rural areas, and their development and contributions are very much supportive for the nation building activities. India cannot be developed by retaining rural as backward.
2) The rural economy supports the urban sectors by way of supplying drinking water, milk, food and raw materials. Hence, the backwardness of the rural sector would be a major impediment to the overall progress of the economy.
3) Improvements in education, health and sanitation in villages can help avoid many urban problems namely, begging, rack picking and road side slumming.

2.3. ANCIENT VILLAGES/ DIFFERENT DEFINITION OF RURAL URBAN VILLAGES

Rural areas population density is very low. Many people lives in a city or urban area whose homes & businesses are located close to one another. Ina rural area, there are fewer people & their homes & businesses are located far away from one another. Agriculture is primary industry in most rural areas. Most people live or work on farms or ranches. Hamlet, villages, towns & other small settlements are in or surrounding by rural areas.

Characteristics of rural area are:

a. Size of the Community
b. Density of Population
c. Agriculture is the Main Occupation
d. Close Contact with Nature
e. Homogeneity of population
f. Social Stratification

Village definition

A village is a small settlement usually found in a rural setting. It is generally larger than a "hamlet" but smaller than a "town". Some geographers define a village as having between 500 and 2,500 inhabitants. **The inhabitants of such a community collectively termed as villagers.**

Characteristics of village

- Bases of social organization
- Group of people
- Importance of neighborhood
- Predominance of primary relations
- Joint family system
- Marriage with unique cultural view
- Agricultural economy

Factors like prevalence of child marriage, joint family system, traditional ideals, old values and lack of education among females are responsible for the low status of women.

2.4. SCENARIOS: RURAL / URBAN VILLAGE OF INDIA POPULATION GROWTH:

Much would depend on the resolution of the Catch-22 rural-urban situation. Going by the census definition, a habitation is declared urban (excluding a municipality, corporation, cantonment board and a notified town area committee) if it has a minimum population of 5,000; at least 75 per cent of the male working population is engaged in non-agricultural pursuits; and the population density is at least 400 people per sq km. Such habitations are also called the Census Towns.

For the first time in history, the Census 2011 reported a decline in the population growth rate of rural India. However, at that time India was still predominantly rural, with the urban population being just 30 per cent. Between Census 2001 and Census 2011, the number of Census Towns increased from 1,362 to 3,894. This indicates that people in rural areas are quitting farming or joining non-farm livelihoods. Millions of farmers have quit agriculture and, worryingly, very few from the current generation are entering the sector.

- Of the 121 crore Indians, 83.3 crore live in rural areas while 37.7 crore stay in urban areas, said the Census of India's 2011 Provisional Population Totals of Rural-Urban Distribution in the country.
- Growth of employment in cities is attracting people from rural areas as well as smaller cities to large towns. According to McKinney India's urban population will grow from 340 million in 2008 to 590 million in 2030.

2.4.1. GUJARAT URBAN POPULATION 2011

Out of total population of Gujarat, 42.60% people live in urban regions. The total figure of population living in urban areas is 25,745,083 of which 13,692,101 are males and while remaining 12,052,982 are females. The urban population in the last 10 years has increased by 42.60 percent.

Sex Ratio in urban regions of Gujarat was 880 females per 1000 males. For child (0-6) sex ratio the figure for urban region stood at 852 girls per 1000 boys. Total children (0-6 age) living in urban areas of Gujarat were 2,952,359. Of total population in urban region, 11.47 % were children (0-6).

Average Literacy rate in Gujarat for Urban regions was 86.31 percent in which males were 90.98% literate while female literacy stood at 70.26%. Total literates in urban region of Gujarat

2.5. SCENARIO: RURAL / URBAN VILLAGE OF INDIA POPULATION GROWTH: LATEST

Population of Gujarat in 2020

The state of Gujarat comprises of 33 districts which are further divided into taluka, regions and districts. As of 2020, Population of Gujarat is 71,521,926. The same figure was recorded to be 70,208,143 in 2019. The state adds more that 1.2 million people to its population on an annual basis. Therefore, Population of Gujarat is increasing at an descent rate and is now over 7 crores

human beings. Population of Gujarat in 2018 was 68,915,579. Ahmedabad is the most populous district with a total population of 7,574,254.

Gujarat Population 2011

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

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

2.6. RURAL DEVELOPMENT ISSUES - CONCERNS – MEASURES:

Gambhu Village Population - Mahesana, Gujarat:

Literacy Rate in Gujarat

The state of Gujarat has also shown an increase in its literacy rate by 10 percent in this decade. Currently it stands at 79.31 percent as compared to last census (2001) figures of 69.14 percent. Better education facilities by the state government have proved a vital role in improving overall literacy rate of Gujarat. According to latest Census of 2011, Male Literacy rate in Gujarat stands at 87.23 percent while female literacy rate is 70.73 percent.

Sex Ratio of Gujarat

Sex Ratio of Gujarat which is currently recorded as 918 females per 1000 males is lower than the national figures 940. Gujarat Sex Ratio has not shown any improvement from last census figures of 921 per 1000 females in 2001. According to latest census of 2011, there are 918 females available in Gujarat for every 1000 males.

Religious Composition

Hinduism is the most dominant religion in Gujarat with 89.1% of the population being Hindus. The other religions include Muslims 9.1%, Jain and Sikhs 0.1% of the total Population in Gujarat. Gujarati is the official language of Gujarat while Hindi and English are also widely spoken. Kutchi, Bhili and Gamit are also spoken in the areas like Kutch region of Gujarat.

- Market unavailable
- Water problem
- Sewage system
- Lower education
- Poor Health services
- Migration to urban areas
- Lower living standards
- No transportation facility

The key issues in Rural Development are

1) Development of alternate occupations other than agriculture
2) Investment in Human Capital in rural areas
3) Land Reforms
4) Development of Infrastructure in rural areas
5) Availability to affordable credit

2.7. VARIOUS INFRASTRUCTURE GUIDELINES WITH THE NORMS FOR VILLAGES FOR THE PROVISIONS OF DIFFERENT INFRASTRUCTURE FACILITIES

Small towns in India are in a desperate need for better infrastructure which can boost the local economy and help improve the quality of life. While many big cities have made progress in recent years, the small towns of India continue to lag behind.

There are many challenges that these places face including poor road connectivity, primary healthcare system, educational infrastructure and affordable housing.

The role of infrastructure in overall economic growth and development in India has been extensively examined in the literature. States with better infrastructure facilities are more attractive for domestic and foreign private investment, and perform better in terms of economic growth. Disparities in per capita income across states have been attributed to inter-state disparities in physical, social and financial infrastructures.

Importance of 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.

The 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.

Objectives of Rural Development

The aim objectives composed by the government in the sixth five-year plan for rural development are.

- To improve productivity and the wages of rural people.
- To guarantee increased and quick employment possibilities.
- To demolish unemployment and a notable decline in underemployment.
- To provide the basic needs – e.g. elementary education, health care, clean drinking water, and, rural roads, etc.

Importance of rural infrastructure in India:

- Rural development means an action-plan for the economic and social upliftment of rural areas.
- It aims at improving the quality of life of people living in villages.
- It focuses on the action for the development of areas that are lagging behind in the overall development of the village economy.
- Infrastructure plays a critical role in the economic development of any country.
- Presently 65% of India's population resides in its rural areas. Therefore, rural infrastructure needs to be developed to provide basic amenities such as civic services and housing to the rural population.

- This will help boost their quality of life. Growth of rural infrastructure is important from the perspective of agricultural. agro-based industries, poverty alleviation and better access to markets and job opportunities in rural regions.

Scope for development of rural infrastructure in India:

- Swaraj- India first indigenous tractor to facilitate mechanized agriculture.
- Value addition through post-harvest technologies like essential oil / menthol production.
- Cheapest water purification technology including terracotta purification disc, portable arsenic detection kit, ultra pore membrane-based purifiers for removing virus & bacteria.
- Over 365 technologies passed on to the rural masses through publications, training sessions, etc.
- Construction of around 30,000 dwelling units using cost-effective construction technologies.
- Reverse Osmosis plant for desalination in Andaman & Nicobar Islands, Gujarat, Rajasthan and Tamil Nadu.
- The approved outlay for X^{th} Five Year Plan was Rs. 1, 41,320 lakh. An expenditure incurred during the plan period was Rs. 30,580.31 lakh in 2002-03, Rs.33, 234 lakhs in 2003-04, Rs.69, 610.07 lakhs in 2004-05 and Rs.70, 299.70 lakhs in 2005-06.
- Approved outlay for Annual Plan 2006-07 for various schemes/program was Rs. 92, 070.39 lakh against which an expenditure of Rs. 1, 01,168.63 lakhs is anticipated.
- Target of constructing 2.83 lakhs houses was fixed. Against this target, 3.10 lakh houses were constructed under Indira Avas Yojana. During Tenth Plan period 2.11 lakh families have been benefited under Swarna Jayanti Gram Swarojgar Yojana. Out of this, 1.23 lakh beneficiaries i.e. about 58 % are from SC/ST category. Under Integrated Wasteland 89 Development program, 82 projects were sanctioned for 3.93 lakh hectare of land. Out of this, 1.50 lakh hectares land was treated
- During plan period, 1466 Micro Water sheds were sanctioned and 4.28 lakh hectares land has been treated. In Sampoorn Grameen Rojgar Yojana, the GOI has allocated 17.28 lakh MT of food grains out of which 15.04 lakh MT food grains have been utilized. 6.95 lakh works were sanctioned out of which 6.25 lakh were completed and 176.23 lakh mandays were generated.
- Under PMGSY 13,500 Kms roads were completed. In Rastriya Sam VikasYojana, 12,504 works were sanctioned. Out of this, 11,496 works were completed.
- Under DPIP, 41,978 common interest groups of 2.84 lakh families were benefited during the plan period. is under implementation in 827 villages of 8 districts. Under this scheme 4,000 families were benefited during the X^{th} Plan period.

Other facilities

- Jal Jeevan Mission (JJM)
- Pradhan Mantri Gram Sadak Yojana (PMGSY)
- Mid day meal yojana
- Rajiv Gandhi national drinking water mission
- Pradhan Mantri Awas Yojana (PMAY - Gramin)
- National Food for work Programme (NFFWP)
- Integrated Child Development Scheme (ICDS)
- Indira avas yojna
- Gramin ajivika pariyojana

Sansad Adarsh Gram Yojana

- Preserving and promoting local cultural heritage
- Inculcating mutual cooperation, self-help and self-reliance
- Fostering peace and harmony in the village community
- Bringing about transparency, accountability and probity in public life
- Nurturing local self-governance
- Adhering to the values enshrined in the Fundamental Rights and Fundamental Duties of the Indian Constitution.

Objectives:

1. To trigger processes which lead to holistic development of identified Gram Panchayat.
2. To substantially improve the standard of living and quality of life of all sections of the population through
   - Improved basic amenities
   - Higher productivity
   - Enhanced human development
   - Better livelihood opportunities
   - Reduced disparities
   - Access to rights and entitlements
   - Wider social mobilization
   - Enriched social capital
3. To generate models of local level development & effective local governance which can motivate and inspire neighboring Gram Panchayat to learn and adapt
4. To nurture the identified Adarsh Grams as schools of local development to train other Gram Panchayat.

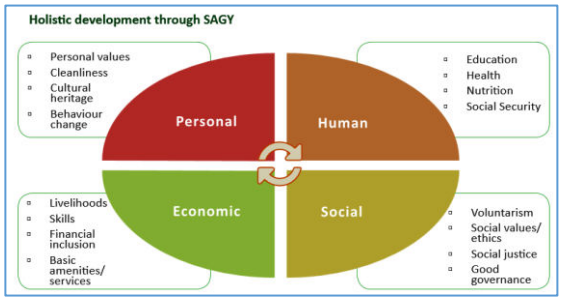


Fig 4. Adarsh Gram

An Adarsh Gram should evolve out of people's shared vision, using their capacities and available resources to the best extent possible, duly facilitated by the MP, the Gram Panchayat, civil society and the government machinery. Naturally, the elements of an Adarsh Gram would be context specific. However, it is still possible to broadly identify the important activities. They would include:

Identification of Adarsh gram

A Gram Panchayat would be the basic unit. It will have a population of 3000-5000 in plain areas and 1000-3000 in hilly, tribal and difficult areas. In districts where this unit size is not available, Gram Panchayat approximating the desirable population size may be chosen.

The MP would be free to identify a suitable Gram Panchayat for being developed as Adarsh Gram, other than his/her own village or that of his/her spouse.The MP will identify one Gram Panchayat to be taken up immediately, and two others to be taken up a little later. LokSabha MP has to choose a Gram Panchayat from within his/her constituency and RajyaSabha MP a Gram Panchayat from the rural area of a district of his/her choice in the State from which he/she is elected. Nominated MPs may choose a Gram Panchayat from the rural area of any district in the country. In the case of urban constituencies, (where there are no Gram Panchayat), the MP will identify a Gram Panchayat from a nearby rural constituency.

The Gram Panchayat once selected by members of Parliament (whose tenures have ended on account of resignation or otherwise) would be continued as such under SAGY irrespective of whether activities have already been initiated in the GP under SAGY or not. The newly elected MPs will have the option to select the GP of their choice and two more subsequently by 2019.

2.8. SCHEMES OF GUJARAT / INDIAN GOVERNMENT SCHEMES:

Mission Antyodaya

Mission Antyodaya was adopted in union budget of 2017-18 & is a convergence and accountability framework aiming to bring optimum use and management of resources allocated by 27 ministries under various program for rural.

National Rurban Mission (NRuM)

Vision of NRuM is to follow "development of cluster of village that preserve and nurture the essence of rural community life with focus on equity& inclusiveness with compromising with facilities perceived to be essentially urban in nature" with outcome of "to stimulate local economic development, enhance basic services, and create well planned Rurban clusters".

National Social Assistance Program

NSAP is centrally sponsored scheme of GoI that provides financial assistance to elderly, widows & person with disabilities in form of social pension launched on 15th August, 1995. NSAP represents a significant step towards the fulfilment of the Directive Principles in Article 41 and 42 of the Constitution recognizing the concurrent responsibility of the Central and the State Governments in the matter.

Pradhan Mantri Aavas Yojana (Gramin)

PMGAY is originally known as Indira awas yojna(launched by Rajiv Gandhi in 1985) is initiative of GoI to provide housing for rural poor in India as social welfare program. Under the PMGAY scheme, financial assistance worth 120,000/- in plain areas and 130,000/- in difficult areas (high land area) is provided for construction of houses.

Pradhan Mantri Gram Sadak Yojana

PMGSY is under the authority of the Ministry of Rural Development and was begun on 15 August 2000 & fully funded by vahpayee govt. During November 2015, the Sub-Group of Chief Ministers on Rationalization of Centrally Sponsored Schemes, it was announced that the project will be funded by both the central government (60%) and states (40%).

Prime Minister's Rural Development Fellowship

Objective of PMRDF is to "support to the district administration in underdeveloped, isolated and remote areas of the country to improve programme delivery and interface with the marginalized sections of the population, as well as developing a cadre of committed and competent development leaders and facilitators, who are available as a resource for rural development over the long term".

Rural Self Employment Training Institutes

With the aim of mitigating the unemployment problem among the youth, a new initiative was tried jointly by Sri Dharmasthala Manjunatheshwara Educational Trust, Syndicate Bank and Canara Bank in 1982 which was the setting up of the "RURAL DEVELOPMENT AND SELF EMPLOYMENT TRAINING INSTITUTE" with its acronym RUDSETI near Dharmasthala in Karnataka. Several centres of the RUDSETI are already operating successfully now. Since the RUDSETI has today become a replicable model, the MoRD proposes to support establishment of one RUDSETI type of institution in each district of the country to tap the rural BPL youth from the rural hinterland.

CHAPTER 3

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

3.1. INTRODUCTION

nearby railway station

We have selected the smart village as vavol. It is located in district Gandhinagar. We have visited the vavol Village.The nearest railway station to Vavol is Gandhinagar Cap which is located in and around 1.2 kilometre distance. The following table shows other railway stations and its distance from Mamakudi.

Gandhinagar Cap railway station	1.2 KM
Kalol railway station	10.8KM
Chharodi railway station	14.1KM

Table 6. nearby railway station

Schools in and around Vavol

Vavol nearest schools has been listed as follows.Vavol village have many government and private schools as it is located near to state capital Gandhinagar and surrounded by many villages like uvarsad.

Mb Patel High School	0.5 KM.
Swami Vivekananda Government School	1.4 KM.
Primary School	2.0 KM.
Jm Chaudhary Girls High School	2.4 KM.
Hill woods School	2.6 KM.

Table 7. Nearest School of Vavol

Nearest districts to Vavol

Vavol is located around 8.3 kilometre away from its district head quarter Gandhinagar. The other nearest district head quarters is narsinghpur situated at 51.5 KM distance from Vavol. Surrounding districts from Vavol are as follows.

Mansa (mansa)	20.3 KM.
Ahmedabad (Ahmedabad) district	22.1 KM.
Mahesana (Mahesana) district	47 KM

Table 8. Nearest City

Vavol is a Census Town city situated in Gandhinagar taluka of Gandhinagar district. As per the Population Census 2011, there are total 2,807 families residing in the Vavol city. The **total population of Vavol is 12,628** out of which 6,597 are males and 6,031 are females thus the **Average Sex Ratio of Vavol is 914**.The population of Children of age 0-6 years in Vavol city is 1477 which is 12% of the total population. There are 834 male children and 643 female children between the age 0-6 years. Thus as per the Census 2011 the **Child Sex Ratio of Vavol is 771** which is less than Average Sex Ratio (914).As per the Census 2011, the **literacy rate of Vavol is 89.4%**. Thus Vavol has higher literacy rate compared to 84.2% of Gandhinagar district. The male literacy rate is 94.76% and the female literacy rate is 83.74% in Vavol.

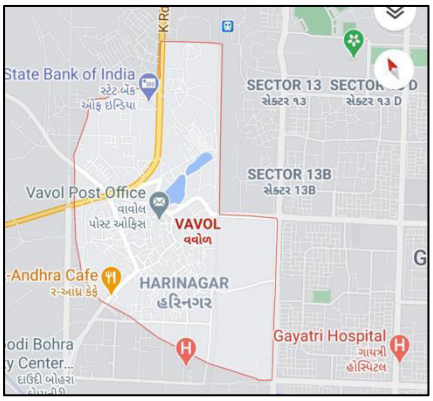


Fig 5. vavol village map

Vavol have 3 big overhead tank along with 5 bore well. Each of three over head tank is connected with one bore well while rest 2 bore wells are directly supplying water to community without storage. These are only government pump while private societies have their own bore well. Water supplied to community is nearly clean no need excess cleaning except minor filtration.

Vavol bus stands with state transport service connectivity mainly with nearest city Gandhinagar And also with Mansa and Ahmedabad. very few busses are settled in service because of closeness to Gandhinagar city and nearly everyone has their own vehicle. Those with no vehicle prefer to use rickshaw over bus considering easy availability and it drops anywhere to desire place of passenger.

Gate of Main primary school, village have other two school also which is added in last section as other glimpse. School building have two floor and running for standard one to eight. School campus was neat and clean. School maintained very good appearance and students were also dressed well in school dress.

"BEAUTIFUL BACHPAN"

In picture it is an anganwadi, a first step of children with full of colours. Vavol village have many anganwadi building among it some are designed with modern aspect. With increasing wealth now a day modern families tend to send their child in English medium playgroup copying others.

The Ahmedabad district co-operative bank with their ATM facility. Village have other bank like state bank of India and bank of Baroda also. Banks are distributed all over to village and has proper system organised in order to maintain discipline. bank offers usual facilities of locker, saving account & current account, etc.

Public water taps for cold water builted from donation of veruji bhojaji gol. This cold water tap is situated near to bus stand and main lake. Public water tap was available for all without any hesitation & providing clean & potable water to everyone. Water connectivity is maintained by panchayat at free of cost and maintenance is also managed by panchayat.	
Main lake of vavol which is sink for drain water of village. Village have other 2 lake also but they are not inside of village and they are not connected to other sewage connection directly. Village havent canal nearby so they are dependent on lake water for irrigation but narmada water is available to some location by pipe mecanism.	

Fig 6. Glimpse of vavol visit

Smart Village concept

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

- S Social, skilled and simple.
- M methodical and modern
- Aware, adaptive and adjusting
- R Responsive and ready
- Techno savvy and transparent

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

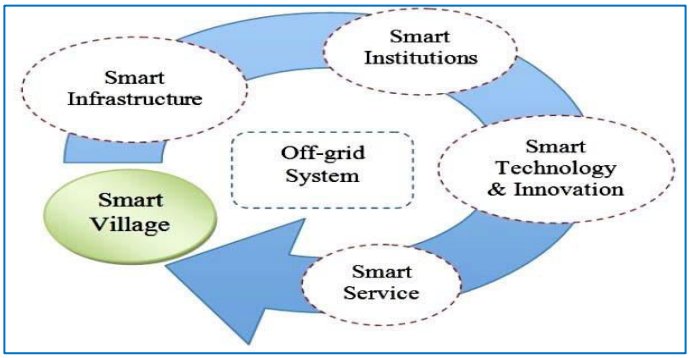


Fig 7. Smart village concept

Aware, adaptive and adjusting:

Heights level of awareness on global social and economic issues. It is adaptive and adjusting to fast changing environment.

Responsive and ready:

It is responsive to collective wisdom ready to generate own resources for self-sufficiency and self-Reliance.

Techno - savvy and transparent:

Techno-savvy for IT & mobile usage transparent in harmonic relation & delivery of service.

In India there are 6,00,000 villages out of them 1,25,000 villages 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. 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.

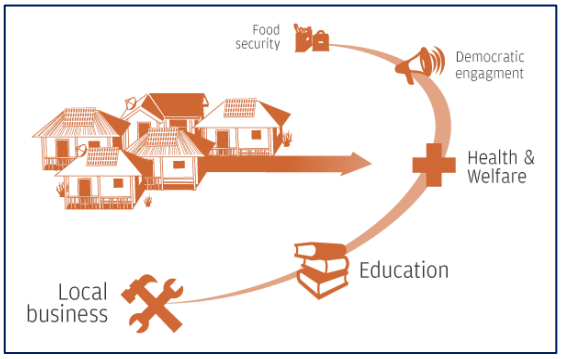


Fig 8. key points to smart village

3.2. VISION-GOALS, STANDARDS AND PERFORMANCE MEASUREMENT INDICATORS

Census 2011, 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. It is about understanding the villages towards the growth model which is inclusive. It's about achieving a higher goal without compromising the roots and the sense of belongingness of the masses. The concept of smart village is contemporary and very reliable today as there is a limit of the growth of cities which is leading to creation of urban jungles, where the population ratio and its related issues per km of land is way above the expected targets Water-Supply.

- 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 for **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.
- Assess reproducibility and qualify successful smart city systems and services for technology and knowledge transfer to other cities facing similar challenges.

Health care facilities:

- Availability of telemedicine facility to 100% residents.
- Within hour minutes emergency response time.
- 1 dispensary for every 13,000 residents.
- Nursing home, child, welfare and maternity, center - 20 to 25 beds per lakh population.

Smart Agriculture

- For any village, its agricultural eco-system is one of the most intrinsic identities that directly relates to its social, environmental and financial fabric. Efficiency and productivity in agriculture is directly related to the farming practices adopted by the communities. Fortunately, the intersection of technology and agriculture has opened up a lot of opportunities for the farmer, consumer and suppliers. This intersection is now called as Precision Agriculture (PA).

Smart Environment

- Smart villages can be stewards of the environment aided by technologies to monitor key environmental indicators such as forest health, water quality, soil conditions and changes to the landscape. They can also reduce pressure on deforestation using efficient cook stoves to decrease the need for traditional biomass energy sources such as charcoal and wood a key driver of unsustainable forest use.
- Smart villages can host community-run recycling facilities ranging from those equipped to recycle wastewater and organic waste from agro-processing, to next-generation facilities for the recycling of e-waste, including energy-storage and generation technologies such as batteries and solar panels.

Spatial Planning

- 90% of residences should have daily needs retail, parks, primary schools and Recreational areas accessible within 400m walking distance.
- 90% residences should have access to employment and public and institutional transport or bicycle or walk.
- At least 25% of all residential units to be occupied by economically weaker sections in Each Transit Oriented Development Zone 800m from transits.
- At Least 40% residential and 20 commercial / institutional in every TOD Zone within 800m of Transit Stations.

3.3. TECHNOLOGICAL OPTIONS:

Smart Sewage Management termed truly ‘smart’ without an effective sewage management system and there is a need for framing a proper sanitation plan for towns intended to become smart. Management of large quantity of household waste and garbage had become major headache for local managing bodies. Also dumping such garbage in locality is affecting common

people's health. To solve the problem related with sewage management, an urgent and effective action plan is required. The knowledge enhancement and capacity building on sanitation diagnostics, town sanitation planning and decision making and analysis of cost effective and sustainable waste water treatment technologies for mainstreaming fiscal sludge should be main focus for developing smart villages. The technology that we use here can be availed to the people living in rural areas to help in improving their lifestyle. This paper summarizes such efforts which can definitely help us to introduce various technologies in these neglected parts of our country fulfilling our responsively to build up our nation. Thus new concept of smart villages can be introduced to make heaven in the heart of our India, because real Bharat is recognized by the villages in our country.

Renewable Energy Sources and Solar Energy

Traditional sources of energy like wood, coal, diesel, petrol, oil, natural gas, etc are now on the verge of ending. Also excessive use of these sources is polluting earth's environment and is responsible for remarkable adverse effects, like abrupt climate change, drought and good situation, green house effects, melting of ice caps on poles, de-thickening of ozone layer in atmosphere collectively known as global warming. Due to fast growing development of urban civilization, forests are reducing with greater rate. By the 1990s, the excess use of traditional sources in developing countries was marked as a leading environmental threat, with negative impacts linked with deforestation, desertification and widespread soil erosion. Thus to save our earth from the threat of global warming, alternative energy sources which burns less carbon are required to be invented and solar energy source can play vital role to overcome these global environmental effects. Considering opportunity in this situation some companies developing e-vehicle which is pollution free and can reduces major component in pollution. Now a day in house hold people started using electronic stove and they also started roof top solar system on initiative of government of India using subsidies. Government of India is now reducing thermal power station and moving to solar and nuclear power with help of privet sector in solar power generation.

3.4. ROAD MAP AND SAFE GUARDS :

The roadmap is a carefully-sequenced bottom-up plan to break out of the difficult challenges of education, local buy-in, technology ownership, skill development, wealth creation, financing, transport and communication logistics and enterprise growth that are needed for sustainable rural growth. The plan can complement the top down electric power grid where it exists, but is independent of it. It starts with the village school and teacher as the pioneer, In succession, solar photovoltaic power, education and skills training prepare the villager for a climb through technology and enterprise ownership. It proceeds to clean water resources, biogas heat and power, solar thermo-chemical fuel generation, and rural enterprise. Collaborative micro-financing, Internet of Things connections, Block Chain technology for electronic business, advanced rural-based clean manufacturing, and leap-frog approaches for package delivery and maintenance, drive onwards to a future of plentiful clean energy and reversing urban migration.

India will lead the world by example and demonstrate modern villages that respect and nurture ancient culture and tradition.

Government initiatives:

Pradhan Mantri Jan Arogya Yojana (PM-JAY)

The second component under Ayushman Bharat is the Pradhan Mantri Jan Arogya Yojna or PM-JAY as it is popularly known. This scheme was launched on 23rd September, 2018 in Ranchi, Jharkhand by the Hon'ble Prime Minister of India, Shri Narendra Modi. Ayushman Bharat PM-JAY is the largest health assurance scheme in the world which aims at providing a health cover of Rs. 5 lakh per family per year for secondary and tertiary care hospitalization to over 10.74 crore poor and vulnerable families (approximately 50 crore beneficiaries) that form the bottom 40% of the Indian population. The households included are based on the deprivation and occupational criteria of Socio-Economic Caste Census 2011 (SECC 2011) for rural and urban areas respectively. PM-JAY was earlier known as the National Health Protection Scheme (NHPS) before being rechristened. It subsumed the then existing Rashtriya Swasthya Bima Yojana (RSBY) which had been launched in 2008. The coverage mentioned under PM-JAY, therefore, also includes families that were covered in RSBY but are not present in the SECC 2011 database. PM-JAY is fully funded by the Government and cost of implementation is shared between the Central and State Governments.

Key Features of PM-JAY:

- PM-JAY is the world's largest health insurance/ assurance scheme fully financed by the government.
- It provides a cover of Rs. 5 lakh per family per year for secondary and tertiary care hospitalization across public and private empanelled hospitals in India.
- Over 10.74 crore poor and vulnerable entitled families (approximately 50 crore beneficiaries) are eligible for these benefits.
- PM-JAY provides cashless access to health care services for the beneficiary at the point of service, that is, the hospital.
- PM-JAY envisions to help mitigate catastrophic expenditure on medical treatment which pushes nearly 6 crore Indians into poverty each year.
- It covers up to 3 days of pre-hospitalization and 15 days post-hospitalization expenses such as diagnostics and medicines.
- There is no restriction on the family size, age or gender.
- All pre–existing conditions are covered from day one.
- Benefits of the scheme are portable across the country i.e. a beneficiary can visit any empanelled public or private hospital in India to avail cashless treatment.
- Services include approximately 1,393 procedures covering all the costs related to treatment, including but not limited to drugs, supplies, diagnostic services, physician's fees, room charges, surgeon charges, OT and ICU charges etc.
- Public hospitals are reimbursed for the healthcare services at par with the private hospitals.

3.5. ISSUES & CHALLENGES:

- Our irresponsibility - We do not take responsibility for our actions. If only we could think how it affects everything in the future. Why are we increasing our population only to leave the world to its terrible fate? We play a role to shape our future whether we realize it or not.
- issues are shown below,
- Three-tier governance
- Providing clearances in a timely manner
- Dealing with a multivendor environment.
- Capacity building programmer.
- Religion and belief system - If only our ancestors were wise and had a long vision, they would not have dared to write holy books. Mostly, we believe what our society believes without thinking or reasoning.

Education / Job opportunities development:

- Agricultural Sector – Agriculture is regarded as the major occupation of the individuals. When the individuals are involved in this sector, then it is vital for them to possess the essential skills and information in terms of all the methods of production and cultivation. In the present existence, there has been establishment of training institutions in rural communities that are making provision of adequate knowledge and information to the individuals in terms of utilization of scientific methods.
- Health Care and Medical – The individuals obtain employment opportunities in the health care and medical sectors as well. Research has indicated that individuals obtain medical degrees from reputed medical institutions in urban communities.
- Production of Handicrafts – In rural areas, men as well as women are involved in the production of various types of handicrafts. These include, pottery making, jewelry making, embroideries, needle-work, decorative items, garments and so forth. When parents are involved in the production and manufacturing of handicrafts, then they provide training to their children from the initial stage. The children generate awareness among them in terms of these areas and help their parents.
- Wastage of resources: Our education system is based on General Education. The dropout rate is very high in primary and secondary level. Most of the students in 6-14 age groups leave the school before completing their education. It leads to wastage of 5nancial and human resources.

3.6. SMART INFRASTRUCTURE – INTELLIGENT TRAFFIC MANAGE-MENT:

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.

Security

CCTV camera presents everywhere in every gate. Specially trained policemen will be present System to detect probe of water and electricity, parking or anything necessary.

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.

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.

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. 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.The process of retrofitting involves the careful balancing of different elements and their effects on the overall performance of a building. A change in one part of a building can affect another, and sometimes this is only apparent after irreversible defects have occurred. For example:

- Sealing buildings to improve their air-tightness can cause condensation problems.
- Insulating a roof without also ventilating it can cause decay of timber structure.

- Internal wall insulation will remove the benefits of thermal mass which may have a detrimental effect on fuel usage.
- External wall insulation will prevent the thermal store of heat from solar gain to be utilised within the building.
- Poorly installed cavity wall insulation can create cold spots that then have damp problems that are extremely difficult to rectify.
- Pre-existing problems can be covered up, and so more difficult to diagnose and rectify.

Redevelopment:

Urban redevelopment is conceptually similar to land readjustment, with the exception that it happens in existing urban areas and often involves a rezoning by the government of a given area from a low-density (single-family housing) to higher-density (mixed-use or commercial) development. It is also accompanied by a provision of infrastructure improvements (mass transit, such as metro lines) that can support such up-zoning.

As part of this process, a government assembles the individual private properties and undertakes a new higher development plan and delivers the necessary infrastructure. At the end, the government returns to each landowner a share of the overall new development that is equivalent to their original land or property ownership. It retains a share of the development that it then sells to recover the cost of the infrastructure improvement.

Japan has a comprehensive scheme for implementing this tool under its Urban Redevelopment Law. This scheme allows landowners, tenants, and developers to use the opportunity of new transit development in built-up areas to create development opportunities. The government helps with and benefits from this process by changing zoning codes from residential to mixed-use, while also allowing for up-zoning.

What is Greenfield Development?

As the name suggests, the prospect of developing a Greenfield land or land that has not been used before for various different types of projects is called Greenfield development. As cities and towns grow and the population of human beings grows all over the world, more and more Greenfield land is being used for development. A good example of Greenfield development is cities expanding. As the population of a city grows, new suburbs of the city emerge. These suburbs are established, as the periphery of the city limits is expanded. More and more Greenfield land on the outskirts of the city is used for development. Every time a new plot of land which was never used before is developed as the city expands, **Greenfield development** takes place. Greenfield development is an inevitable aspect of human civilization but there are also many critics of Greenfield development if it is not done in a sustainable way.

Greenfield development is a term often used for land that has not been used before for any human activity like agriculture or real estate development. Greenfield Land is generally land where there is no development of any kind. These open fields evolve on their own volition and are often sprawling expanses of land near cities and in the countryside. These lands which are not used for any purpose can be classified as Greenfield lands. Greenfield land is available in

urban areas as well as rural areas. The land between towns and cities all over the world which is unused and characterized by grass, barren lands, and wild growth of vegetation and open fields is Greenfield land. This is the land on earth that is untouched by human beings and exists in its natural habitat.

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.

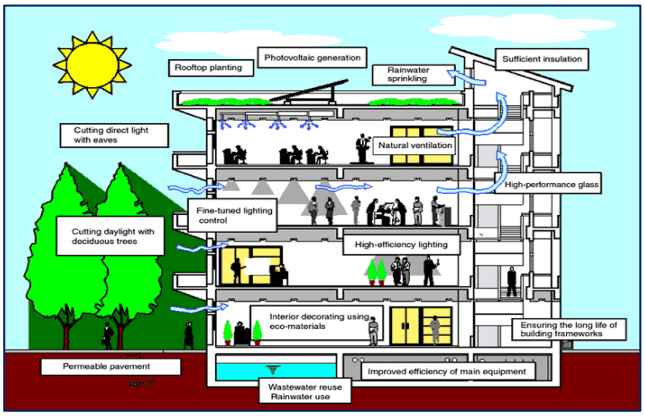


Fig 9 CONCEPT OF GREEN BUILDING

Fig 10. GREEN FIELD DEVELOPMENT

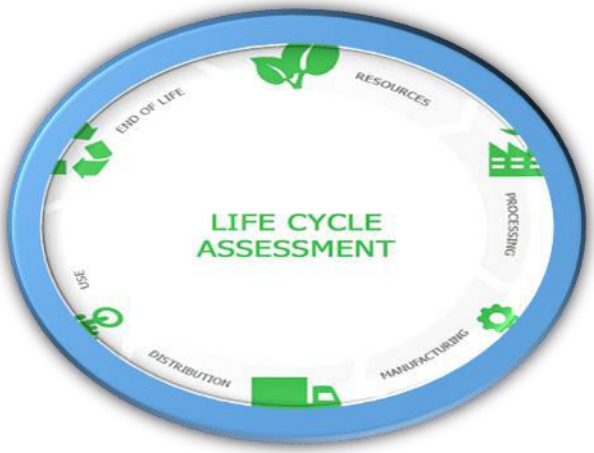


Fig 11. life cycle assessment

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 walk ability 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.

3.9. STRATEGIC OPTIONS FOR FAST DEVELOPMENT:

- It starts with having a realistic plan
- The lack of solid definition for the term "smart city" should serve as a reminder of the importance of having a solid and realistic plan for transformation. if there is one lesson we can draw from so-called digital transformation effort. Whether they be in the city realm or another sector. it is that they are easier to talk about than they are to realize. Above all, real digital transformation and smart cities, however they are defined, require solid leadership and talent and an acceptance that intelligence is boundless rather than fixed.
- Smart cities require extensive experimentation
- One of the best models for studying smart cities in Singapore, which at once embodies the potential of techno centric governance while raising question about the degree that a smart city should survey its citizen.
- Water Management.
- Resource Management
- Direct funding.
- People Awareness programs

3.10. INDIA'S URBAN WATER AND SANITATION CHALLENGES AND ROLE OF INDIGENOUS:

The Challenge of Water Supply and Sanitation in the Context of Urbanization Conventional urban water supply and sanitation management is generally characterized by an unsustainable use of water and nutrients. This represents important environmental, economic and social challenges, which are intensified by the process of urbanization.

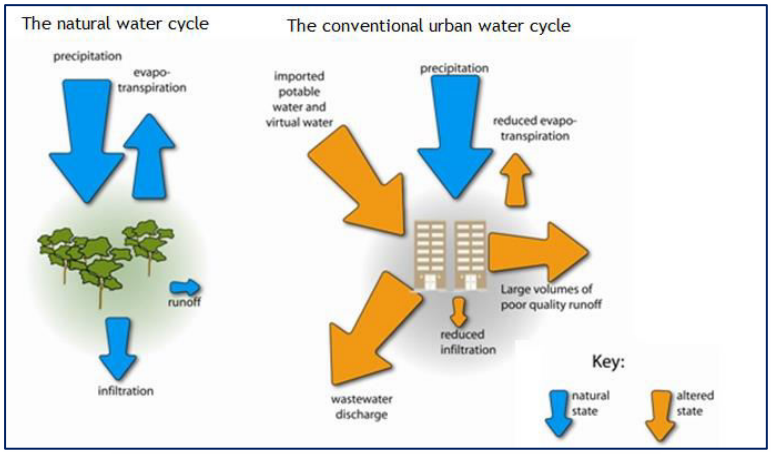


Fig 12. natural and artificial water cycle

Water supply continuity: Challenges

Urban water management scenario: Issues and opportunities There are three major sources of water supply in nature—rivers, lakes and groundwater. It is important to conserve these for sustainable water management. To preserve sources of water, managing lake catchments is essential along with in situ treatment of water bodies. Conserving floodplains is vital to ensure a regular flow and quality of water to maintain healthy rivers. Measures to protect floodplains include restricting construction and infrastructure on specific zones in the floodplain by declaring the zones green belt areas. In addition, practices such as reforestation and building

levees/embankments (without destructing the morphology of the river) are also beneficial. Groundwater in India is not in its pristine condition due to over extraction and contamination. Extensive groundwater mapping, recharging of groundwater by RWH and restricting informal extraction of water resource is needed to maintain the water balance (see Figure 3: Conservation at source of water supply).10 The current water conservation regime in India doesn't effectively undertake these practices. Only a holistic approach can make radical changes in this sector. While water is essential in our daily lives, the amount of water used can be efficiently moderated and adopted on different scales (see Figure 4: Water conservation from the demand side). At the individual or household level, the most water is utilized in flushing, followed by gardening, bathing and washing. Water consumption can be reduced by using water-efficient fixtures that take care of excessive flow of water. Also, water used in low-end activities, such as flushing, can be replaced by treated wastewater. This can be further supported by xeriscaping, which does not require excess water as native species are grown.

Water conservation initiatives

Existing approach

- Water is increasingly considered a commodity, especially after the colonial period
- Most current legal provisions are influenced by historic and colonial rules and haven't been updated to reflect present-day requirements
- The focus of various initiatives has been on more water to keep up with increasing demand, without sustainability taken into account
- The preferred approach is to supply water from distant sources and dump wastewater at faraway places
- Inadequate measures of water pricing and cost recovery

Missed opportunities

- Participation of public/communities in water management has reduced or became extinct
- As water is essential to life, it is covered under various institutions (ministries), with different aims and objectives. (For e.g., it is covered by MoUD, MoWR, MoEFCC). The targets or milestones for each institution/ministry are different. There is a need to bring water under one umbrella (a National Water Framework Law has already been suggested)
- No action against officials who fail to provide sufficient water or water on time
- Prudent use of water resources: Use of local water resource, i.e. storm water, wastewater and rainwater, is missing in most legal provisions
- Integrated land-use planning and water management is missing
- Underestimated and unaccounted role of groundwater as source of water supply

3.11. INITIATIVES IN VILLAGE DEVELOPMENT BY LOCAL SELF-GOVERNMENT:

Function of Urban Local Bodies

As local level democratic government, the municipal institutions Structure of Government that are elected by the local people, raise taxes and collect fees and fines from the public. They regulate city life by laying down regulations regarding buildings, road network and garbage disposal. There are many developmental activities undertaken by them like women and child development, slums improvement etc. Municipal government has made possible participative

urban development and local management of civic facilities. The Municipal bodies are constituted of persons chosen by direct election from the territorial constituencies in the municipal area. However, the Legislature of a State may, by law, provide for the representation in a municipal body of persons having special knowledge or experience of municipal administration, the members of RajyaSabha, LokSabha and the members of Legislative Council and Legislative Assembly of the State, representing constituencies, which comprise wholly or partly the Municipal area and the Chairpersons of Wards Committees. Committee for District Planning- There shall be constituted in every State at the District level a District Planning Committee to consolidate the plans prepared by the Panchayats and the Municipalities in the District and to prepare a Draft Development Plan for the District.

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:

The Government of India launched the Smart Cities Mission on 25th June, 2015 with an objective to promote sustainable and inclusive cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions. Gandhinagar secured 9th rank among 30 new cities announced on 23rd June, 2017 by Ministry of Urban Development (MoUD) for development as smart cities under the Smart City Mission. The implementation of the Mission at the City level is being done by a Special Purpose Vehicle (SPV) created for the purpose. The SPV plans, appraises, approves, releases funds, implements, manages, operates, monitors and evaluates the Smart City development projects. A Special Purpose Vehicle (SPV), Gandhinagar Smart City Development Limited (GSCDL), is formed for Gandhinagar city to incorporate Smart Solutions.

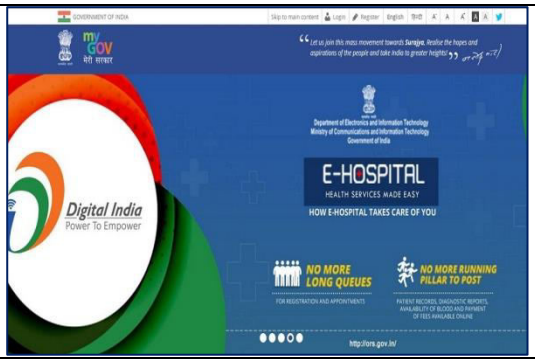
Gandhinagar Smart City proposal consisted of two components – (i) Area Based Development & (ii) Pan City Solution. As a part of Area based development projects, major ABD projects include storm water drainage in sectors of Gandhinagar, community toilet, underpass at G-4 & GH-4, Smart road, Four-Laning, revamping of Anganwadi centers, amusement parks, open spaces, skill development center, etc. The pan city solution includes intelligent traffic integrated transport management, smart water and waste management, real-time environment monitoring, CCTV surveillance, Wi-Fi services across city and online service delivery to improve public service delivery and digital inclusion.

- IP Surveillance
- Smart Street Lights
- Environmental Sensors with Display on Digital Signage
- Public Address (PA) System
- Citizen Services & Convenience Mobile Applications
- Integrated Central Control Room
- Help Desk / Call Center

- Smart Communication - City wide seamless data connectivity across 57 sq km of the city limit - Catering to more than 1.9 lakh users - Covering 75% geographical area of the city.

3.13. ANY PROJECTS CONTRIBUTED WORKING BY GOVERNMENT / NGO / OTHER DIGITAL COUNTRY CONCEPT :

DIGI LOCKER	
DIGI Locker is an Indian digitization online service provided by Ministry of Electronics and Information Technology, Government of India under its Digital India initiative. The service was launched as an important facility to store crucial documents like voter id card, pan card, BPL card, driving license, education certificates, etc. in the cloud.	
MYGOV.In	
MYGOV (Hindi Meri Sarkar) is a citizen engagement platform launched by the Government of India on 26th July 2014 to promote the active participation of Indian citizens in their country's governance and development. The portal works as an online platform to engage citizens in governance through a “discuss”, “do” and “disseminate” approach.	
DESIGN FRAMEWORK	
Aadhaar is a 12-digit unique identity number that can be obtained voluntarily by residents or passport holders of India, based on their biometric and demographic data under Aadhaar Act, 2016. Aadhaar is the world's largest biometric ID system. World Bank Chief Economist Paul Romer described Aadhaar as "the most sophisticated ID programme in the world".	
DIGITIZE INDIA PLATFORM	
Digital India is a campaign launched by the Government of India in order to ensure the Government's services are made available to citizens electronically by improved online infrastructure and by increasing Internet connectivity or making the country digitally empowered in the field of technology.	

SWACH BHARAT MISSION MOBILE APP	
The app will enable organizations and citizens to access information regarding the cleanliness drive and achieve the goals of the mission. Users have to just leave application regarding to problem in their area and municipality will clean/pick garbage, dead animal, etc within pre-specified time. Application gives option to give rating of cleanliness of that area.	
NATIONAL SCHOLARSHIP PORTAL	
This initiative aims at making the scholarship process easy. From submitting the application, verification, sanction and disbursal to end beneficiary, everything related to government scholarships can be done on this single portal online. The initiative aims at providing a Simplified, Mission-oriented, Accountable, Responsive & Transparent **'SMART'** System for faster & effective disposal of Scholarships applications and delivery of funds.	
e-HOSPITAL	
The e-Hospital application is being offered as an as-is product to the Government Hospitals across the country through SaaS (Software as a service) model. Online registration system under this initiative enables people to avail services like online registration, payment of fees & appointment, online diagnostic reports, checking on the availability of blood online, etc.	
BHARAT NET	
Bharat Net is a flagship mission implemented by Bharat Broadband Network Ltd. (BBNL). It is a Special Purpose Vehicle (SPV) set up by the Government of India under the Companies Act, 1956 with an authorized capital of Rs 1000 crore to provide on demand, affordable broadband connectivity of 2 Mbps to 20 Mbps for all households and on demand capacity to all institutions. The National Optical Fiber Network (NOFN) aims to connect all the 2,50,000 Gram panchayat in the country.	

WI-FI HOTSPOTS	
Development of high speed BSNL Wi-Fi hotspots throughout the country is yet another initiative to improve digital connectivity in the country. The objective of the scheme is to set up 25,000 public Wi-Fi hotspots at rural telephone exchanges of BSNL. USP shall provide broadband internet access over Wi-Fi leveraging BSNL backhaul. railway, bus depot, govt. offices, school/colleges, etc. are primarily selected spot to connect with Wi-Fi hotspot facility to provide faster and easy internet to user at free of cost with/without registration.	
NEXT GENERATION NETWORK	
This IP based technology is called **Next Generation Network** (**NGN**), which offers various facilities similar to mobile technology Launched by BSNL, this service will replace 30-year old telephone exchanges to manage all types of services like voice, data, multimedia and other types of communication services.	
ELECTRONICS DEVELOPMENT FUND	
The fund will be set up to support the manufacturing of electronics products that would help create new jobs and reduce import. The funds will promote innovation, research and product development to create a resource pool within the country. The fund will focus on investments in ESDM, Nano-electronics and IT Sector.	
CENTRE OF EXCELLENCE ON INTERNET OF THINGS (IOT)	
The Centre of Excellence for IoT was announced by the Prime Minister Narendra Modi in July 2015 as a part of Digital India Initiative to jump start the IOT ecosystem taking advantage of India's IT strengths and help the country attain a leadership role in the convergent area of hardware and software To build a secure and resilient cyberspace for citizens, businesses and Government.	

Table 9. cyber India Gallery

3.14. HOW TO IMPLEMENT OTHER COUNTRIES SMART VILLAGE PROJECTS IN INDIAN VILLAGE CONTEXT (REGARDING ENVIRONMENT, EMPLOYMENT) :

Smart Environment

Other than the efforts from Ministry of Rural Development, a significant number of state governments have shown a keen interest on the idea and are working on bringing it to reality. The responsibility of implementing Mainstreaming Smart Village in Rural Development: A Framework for Analysis and Policy this idea in the states has been taken up either by the state governments themselves or by societies or nongovernment organizations or a corporate. These programs have been named differently in different states. Most importantly, even though the aim of the programs is same, the focus areas under these initiatives are all different from one another. To have a comprehensive understanding on the existing models of Smart Villages across the country, a framework has been formed and shared below for reference.
Some smart villages will be able to operate as regional ecotourism hubs, an activity that can improve the welfare and connectivity of rural and urban communities. The aforementioned Villages have all emerged as Smart Villages but only in a particular domain.The world is experiencing an unprecedented transition from predominantly rural to chiefly urban living.

India is no exception, with its urban population forecast to increase from 410 million in 2014 to 814 million by 2050. This represents an urban population increase of one Delhi per year, for the next 35 years.If India properly plans and develops its urban environment, urbanization can provide an efficient way for people to live, enabling economies of scale in the delivery of infrastructure and services. Moreover, the proximity and diversity of people can spark innovation, create employment and provide the country's economic engine. However, without proper planning and services, sprawling cities can become flashpoints of discontent.

Smart cities revolution to boost employment in India

In its seventh decade of independence, India stands on the cusp of major change: a transformation that could lead to unprecedented economic growth paired with radical improvements in the nation's Human Development Index (HDI). Over the past two decades, India's gross domestic product (GDP) has risen by more than US$1tr, in the process bringing millions of citizens into a new cohort we call the emerging middle class. We set out to understand what it would take for India to increase its GDP by 9% per year to become a US$10tr economy over the coming two decades. Anything less than US$10tr would not secure India's future. The nation needs to create 10-12m jobs every year in the coming decades to provide quality of life for its growing population. Young Indians, particularly members of the emerging middle and the middle class—a billion strong by 2034—have rising aspirations. They are also more empowered to demand change, thanks to ever-greater access to the internet and mobile connectivity. The recent electoral mandate for development is a more immediate signal of Indians' desire for growth and for the benefits of growth to be extended to all members of society. The Winning Leap Noun; Breaking new ground by deploying solutions for rapid, sustainable, and resource-efficient growth; a play-to-win approach by young and growing nations seeking a radically different development path; a phrase denoting small steps by millions of people that can culminate in a giant leap forward for their nation; a phrase that citizens,

entrepreneurs, business leaders, investors and government leaders associate with a 'once-in-a-lifetime opportunity' to lift millions into prosperity; an approach that industry leaders can use to build new capabilities for profitable growth; a state of mind focused on possibilities while recognising roadblocks in solving a wide set of challenges facing a nation A 9% GDP growth rate with a per capita income rising from US$1,500 to just under US$7,000 per year will boost quality of life for more than 1.25bn citizens. This would be the largest national development effort any democracy has ever attempted. Reaching this goal will call for a concerted effort—from businesses, entrepreneurs, investors, and government leaders. It will also require new solutions we collectively term the Winning Leap. Our research focuses on the role that corporations and entrepreneurs must play in helping to deliver this growth while building new capabilities. Data Skills, Communication skills, Business Intelligence and Analytics, Visualization, Data Modelling, Numerical skills, Quantitative Analysis, Product Development are few key skills that will be required for continuous surveillance at smart cities.

Challenges as opportunities

To realize the Winning Leap vision, India needs to view its many economic and social challenges as opportunities for growth and renewal. With this perspective in mind, we investigated performance in ten sectors that, together, constitute more than 70% of India's GDP. Each sector faces challenges whose resolution will require new solutions that are scalable, resource efficient, and environmentally sustainable. For example, the education sector will have to deliver high-quality, formal education to 7m additional children every year over the next two decades. Yet with current education investments estimated at just 3% of India's GDP, achieving this target won't be easy using traditional strategies. India's healthcare sector offers another case in point. To serve a growing population, the sector will need 100,000 additional doctors and 300,000 additional nurses every year through 2034. But this sector, too, faces an investment challenge. Additional sectors we examined— agriculture, retail, utilities, manufacturing, financial services, urban infrastructure—all confront a similar challenge. Each has to grow, despite resource constraints. Managing this imperative will require significant new investment and innovative approaches.

The regency in Indonesia that has begun to innovate in the development of rural area is Banyuwangi Regency. In 2016, the District Government of Banyuwangi launched "Smart Kampung" program which was established through Regent Regulation Number 18 of 2016 concerning the Integration of Village/Urban-Based Work Programs through Smart Kampung of Banyuwangi. This program designed a village to have an integrated program framework combining the use of optical Fibre-based ICT, productive economic activities, creative economic activities, health-education improvement, and poverty alleviation efforts. The governance scope of "smart kampung" program was the implementation of public services for the community

The methods used to arrange a model in this research were done through preliminary interview, literature review of previous studies, books and analysis of supporting regulations. Literature review was taken by selecting journals according to the definition of the model used and the examples of its applications. Then it was continued by an analysis of local regulations dealing with the research object, Banyuwangi Regency. Research carried out the preliminary interview to obtain information related to the general overview of smart kampong implementation in Banyuwangi Regency. The criteria of the informants were Head of Village.

CHAPTER 4
About Gambhu village

4.1. INTRODUCTION:

4.1.1. INTRODUCTION ABOUT GAMBHU VILLAGE:

Gambhu is located in Bechraji tehsil of Mahesana district in Gujarat. It is situated 20m km away from sub-district head-quarter Bechraji and 23 km from district headquarter Mahesana and 76 km from state capital Gandhinagar. Total population of Gambhu village is about 4015 with number of household 924,almost all the house is constructed with modern technologies but some of them are of old houses. Among total population of 4015 there are 2072 male and 1943 female with sex ratio of village 937 female per 1000 male. 48.4% of total populations are female and rests are male.

Name	Gambhu
Gram panchayat	Gambhu
Tehsil	Bechraji
District	Mahesana
State/country	Gujarat/India
Pin	384212
Surrounding town	Chanasma, Detroj, Mandal, ,Mahesana
Coordinates	23.6178n°,72.1927 e°
Altitude	46 m above sea level

Table 10. Village overview

Total population	4015
household	924
Male	2072
female	1943
female per 1000male	937
Sc	332
male	173
female	159
St	0

Table 11. Census data

Total workers	2061
male	1219
Female	842
Main workers	1610
Male	1163
Female	447
Marginal workers	451
Male	56
Female	395

Table 12. Work profile:

4.1.2. NEED OF STUDY:

Almost 70 % of Indian population lives in rural area and the need to be provided with the best of facilities and lifestyle to take India forward as a country. Being future civil engineers it is our duty to observe even the smallest issue and work towards its improvement. Even if a small amount of people migrate from villages to cities the pressure on the city increases, be it: overcrowding, pollution, traffic etc., this affects the whole nation Migration occurs mainly due to job opportunities and better facilities like hospitals, educational facilities etc. provided in urban area. To increase liveliness of village by providing good sanitation facilities, good infrastructure,

basic requirements like pucca houses or awaas, water supply etc. are required considering the environmental and need of people.

4.1.3. STUDY AREA:

Gambhu is village in Bechraji taluka and Mahesana district of Gujarat state, it is situated in north-east side of Bechraji at distance of 20 km, and it is on west side of district capital Mahesana at 23 km distance. nearest town of Gambhu is modhera on south west side at just 7 km distance.pin code of Gambhu is 384212.nearest highway for Gambhu is SH134 at just 2.5 km ,approach road to reach state highway is single lane asphalt paved road. Before there wasn't a gram panchayat building and all work related to panchayat was in Dedarada panchayat but now there is a new building of Gambhu village. Currently alkaben k. gajjar is elected as Sarpanch of village under Panchayati raj act and constitution of India. Alkaben helped us a lot during village visit and also villages gave a good review about her approach for development of village.

Gambhu is surrounded by mainly kakasna(10.4km), kanoda(5.8 km), bhalgamda (2.2km),ranela (4.3k) , dedarda (2.8km), mervada (5.1km),

4.1.4. OBJECTIVES OF THE STUDY:

- Social infrastructure – Health & Education facility should be provided and should ensure proper delivery of facility to villagers.
- Promote integrated development of rural areas with provision of quality housing, better connectivity, employment opportunities and supporting physical and social infrastructure.
- Reduce migration from rural to urban areas due to lack of basic services and sufficient economic activities in rural areas.
- Internal roads within village settlement, Efficient Mass Transportation systems to improve connectivity between urban and rural areas, Public transportation facilities that need to be developed like bus stops, transport depot etc.
- Electricity connections like street lighting that is energy efficient and eco-friendly
- Basic physical infrastructure – Water Supply, Transport, Sewerage and Solid Waste Management should be the priority focus and be provided
- Refurbishing of village lakes, water tanks and wells, construction of rain water harvesting structures for sustainable development
- Economy generation is the key pillars that the concept hinges on which should be introduced to village.

4.1.5. SCOPE OF STUDY:

Reduce migration and decrease poverty in to village due to improvement given below content by using and following village development plan:

- Micro, Small and Medium Scale Industries
- Irrigation Development
- Domestic Water Resource Development
- Power and Energy Utilization

- Educational Programs and Services
- Health Programs and Services

- To ensure integrated development of village, people and environment by creating sustainable designs for all to optimum extent as possible
- India is agriculture country, about sixty percent of total population lives in village; they migrate to city for job and urban facility. This is useful to find the Actual requirement of village and how to overall development of village is possible in easy and practically way.
- The study will focus the development trend, intensity of growth of the village, and find out the problems related to the Socio- Cultural or physical development of the area, social infrastructure services, and the administrative systems of the village.

4.1.6. METHODOLOGY FRAME WORK FOR DEVELOPMENT OF VILLAGE:

Literature Review

- Visit of Ideal Village of Respective District
- Data Collection- Techno economic survey
- Data Presentation
- Sustainable Design Planning Proposals (Rain water harvesting, Biogas plant, waste to energy models, eco sanitation, Renewable Energy sources Application & Other)
- Repair & Maintenance of Existing Infrastructure
- Facilities Suggestions and Recommendation

Part-II (Even Semester) Includes:

- Gap Analysis (Guidelines, Regulation and Literature will be given for comparison)
- Design Proposals for Over all development of Village includes • Physical Infrastructure Facilities
    - Social Infrastructure Facilities
    - Socio Cultural Infrastructures Facilities
    - Recommendation & Suggestions For Village Development
    - Conclusion

4.1.7. AVAILABLE METHODOLOGY FOR DEVELOPMENT OF RELATED TO CIVIL :

Methodology:

- Design objectives
- Technical approach
- Proposed sustainability features
- Identify customer needs
- Identify local/state/federal engineering and construction specifications
- Project management structure
- Budget
- Gantt chart of project schedule
- Resumes of team members

Structures which are already available if Gambhu village are new panchayat building, airy building, bus stand, main gate, old library, school up to 12th arts, sub centre of health centre, animal health centre, water tank, small lake, approach and rcc road, temple.

4.2. GAMBHU VILLAGE STUDY AREA PROFILE :

4.2.1. STUDY AREA LOCATION WITH BRIEF HISTORY LAND USE DETAILS :

According to Census 2011 information the location code or village code of Gambhu village is 509563. Gambhu village is located in Bechraji Tehsil of Mahesana district in Gujarat, India. It is situated 20km away from sub-district headquarter Bechraji and 23km away from district headquarter Mahesana. As per 2009 stats, Gambhu Dedarada is the gram panchayat of Gambhu village.

The total geographical area of village is 1649.42 hectares. Gambhu has a total population of 4,015 peoples. There are about 924 houses in Gambhu village. Chanasma is nearest town to Gambhu which is approximately 15km away.

4.2.2. BASE LOCATION MAP, LAND MAP, GRAM TAL MAP :

Fig 13. BASE LOCATION MAP OF GAMBHU

4.2.3. PHYSICAL & DEMOGRAPHICAL GROWTH :

Demographics:

The village is home to 4015 people them 2072 are male & 1943 are female. Schedule tribe (SC) constitutes 8.27% of total population in this village. Child population of Gambhu village is 188 male & 128 female. There are 924 household in village & average 6 persons live in every family.

Work Profile:

in Gambhu village out of total population ,2061 were engaged in work activities.78.125 of workers are describe their work as Main Work(Employment more than 6 months)while 21.88%were involved in marginal activity providing livelihood for less than 6 months.0f 2061

workers engaged in main work.,603 were cultivators(owner or co-owner)while 659 were agricultural labor.

Sex Ratio: Female per 1000 male:

Average Sex ratio of Gambhu village is 938 which is higher than Gujarat state average of 919.child sex ratio for the Gambhu per census is 681,lower than Gujarat average of 890.

Literacy Rate:

The literacy rate of Gambhu village is 70.13%.out of which 77.18 male are literate and 62.61 females are literate. There are 0.56% Scheduled Caste and 0 Schedule Tribe of total population in Gambhu village.

Census parameter	Census Data
Total population	4015
Total no of houses	924
Female population%	48.4%
Total literacy rate%	80%
Female literacy Rate%	35.4%
SC population%	8.3%
Working Population%	51.3%
Child (0-6) Population by 2011	316

Table 13. Demographic of Gambhu

Workers Profile:

In Gambhu village out of total population were engaged in work activities .78.12%of workers describe their work as main work while 21.885were involved in marginal activity providing livelihood for less than 6 months.

4.2.4. ECONOMIC GENERATION PROFILE / BANKS :

- Most of population is engaged in following work for income;
  - Agriculture
  - Daily wage basis work
  - Shopkeeper
  - Work in factories on wage basis
  - Job in private sector
- There is a bank of baroda as a main bank with ATM facility
- Annual income of average family ,whos dependent on agriculture is 60000/- to 75000/-, monthly income of those who are working in Fctories or doing job are 6000/- to 28000/-.
- There is a one dairy for collection of milk from family engaged in animal husbundary.

4.2.5. ACTUAL PROBLEM FACED BY VILLAGERS AND SMART SOLUTION :

Via interaction with villagers and Sarpanch we come to know some basic problems faced by them which are enlisted below:

- No community hall in village & also no open area to meet on social gathering.
- There is very small library which is not in working condition since long time.
- There isn't good public toilet.
- There isn't private or government pharmacy store.
- There is only one garden which is too small than requirement.

Almost all people were happy with work of Sarpanch but still some malcontent with her way of work.

Solution:

- Community hall
- Pharmacy store
- Library
- Post office
- Cyber café
- Garden
- New gate
- Skill development centre
- Use of lake and rain water for irrigation
- Waste collection system
- Led light
- Green building
- Multi-purpose dome, etc.

4.2.6. SOCIAL SCENARIO PRESERVATION OF TRADITIONS, FESTIVALS, CUISINE :

Culture:-

The Gujarati's get their lineage from the Gurjars who came to India along with the Huns and when they were travelling and had to cross through Punjab they got settled in Gujarat. The Gujarati's are mainly Indo Aryan origin and of which at least 20% constitute the tribal group like Bhils, Kolis, Dhubla, Naikda and Macchi-Kharwa who still exist in the state. Though the state was invaded by the Aryans who came from the north, they were not able to either conquer or send away the tribes of the Bhil community who soon became the traditional rulers of Gujarat. The Koli community of Kurjars also occupies standard position between the Aryans and the Bhils. The culture of Gujarat can be best expressed as comprising the following:

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 Guajarati'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.

4.2.7. MIGRATION REASONS / TRENDS :

- **Positive Impact:-**
  - Unemployment is reduced and people get better job opportunities.
  - Migration helps in improving the quality of life of people.

- It helps to improve social life of people as they learn about new culture, customs, and languages which helps to improve brotherhood among people.
- Migration of skilled workers leads to a greater economic growth of the region.
- Children get better opportunities for higher education.
- The population density is reduced and the birth rate decreases.

➢ **Negative Impact:-**

- The loss of a person from rural areas, impact on the level of output and development of rural areas.
- The influx of workers in urban areas increases competition for the job, houses, school facilities etc.
- Having large population puts too much pressure on natural resources, amenities and services.
- It is difficult for a villager to survive in urban areas because in urban areas there is no natural environment and pure air. They have to pay for each and everything

4.3. DATA COLLECTION GAMBHU VILLAGE (PHOTOGRAPH /GRAPHS/CHARTS/TABLE) :

4.3.1 METHODS FOR DATA COLLECTION:

The main methods adopted to collect data are listed below:

1) Conference call
   - First interview was conducted via phone call during pandemic.
2) Google source:
   - Official websites of census data
   - Unofficial website collecting data of villages
   - Google map
3) Visit:
   - Meeting was conducted with Sarpanch
   - Meeting with doctor
   - Meeting with principal of school
   - Meeting with locals
4) Questionery survey:
   - Typical question was prepared before survey
   - Face to face survey was conducted with proper precaution against corona virus.
   - Photographs were clicked to analyze data.

4.3.2 PRIMARY DETAILS OF SURVEY :

As mentioned in other section of this chapter.

4.3.3 AVERAGE SIZE OF THE HOUSE-GEO-TAGGING OF HOUSE:

In Gambhu: Average size of the house in the village is 8×8m.

Geo-Tagging:

Geo-tagging refers to the attaching of geographic coordinate information to images, video, and other media recorded by smart phones or GPS-enabled electronic devices. Geo-tagged photographs, for example, contain geospatial metadata such as latitude and longitude

coordinates altitude, bearing, and more. It can be used to locate important places like market, agricultural centre recreation places etc. in Gambhu geo tagging is not implemented.

4.3.4 NO OF HUMAN BEING IN ONE HOUSE :

Total num of population in Gambhu village 4015 as per census 2011.average num of human's beings in one house is 4.

4.3.5 MATERIAL AVAILABLE LOCALLY IN THE VILLAGE AND MATERIAL OUT SOURCED BY THE VILLAGERS:

The materials like milk, wheat, danger, cotton 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 HECTARES,

Total residential area 1649 hectares and total irrigated land area is 924 hectares.
Elevation above MSL: 46 meter Latitude: 23.52824331 & Longitude: 72.4263

4.3.7 DEMOGRAPHICAL DETAIL - CAST WISE POPULATION DETAILS / WHICH ID PROOF USING BY VILLAGERS:

Total No. of houses: 924; Population: 4015 (Male: 2072; Female : 1943; SC: 332)
Literacy: 71.80% & Total Workers: 2061

4.3.8 OCCUPATIONAL DETAIL - OCCUPATION WISE DETAILS:

Major occupations are: Farming; Animal Husbandry, Service, Labour, vendors; local business etc.Gambhu has approx. 4015 population engaged in either main or marginal works. Out which 2072 male are working and 1943 female are working.

4.3.9 AGRICULTURAL DETAILS / ORGANIC FARMING:

Majority of the population Gambhu village are occupied in farming. The main crops grown in the village are: wheat, cotton, rice, etc. There is no any farmer or villager using organic farming. Of 2061 workers engaged in Main Work, 603 were cultivators (owner or co-owner) while 659 were Agricultural laborers.

4.3.10 PHYSICAL INFRASTRUCTURE FACILITIES - MANUFACTURING HUB:

Gambhu: Local transportations are auto rickshaw, chakdaa, private vehicles are available in Gambhu village. ; The village approach roads are made of WBM and internal roads are of RCC. Primary school, anganwadi, dairy, bus stand, etc. Three overhead tank is available. Near modhera sun temple nearby rail way station. one recreational garden is available in the centre of the village.

4.3.11 TOURISM DEVELOPMENT AVAILABLE IN THE VILLAGE FOR ATTRACTING THE TOURIST:

Gambhu Jain tirth is well known tourist destination and various religion activities organised by villagers. Sports activities and health implemented activities are good.Sri gambhira Parshvanath Bhagwan in white colour, seated in a lotus posture, of height 46 Cms in Gambhu Village.

4.4. INFRASTRUCTURE DETAILS (WITH EXITING VILLAGE PHOTOGRAPH) :

4.4.1. DRINKING WATER

In Gambhu village the main source of drinking water is from ground water and that water is stored in village overhead water tank which is of 2,00,000 lit. Village tank is located beside newly builted panchayat building along with public water tap and one well & garden near to it. Public water tap was mainly for those having no water connection or for those who uses it for cloth washing under emergency.

Fig 14. Drinking water facility

4.4.2. DRAINAGE NETWORK / SANITATION FACILITIES :

The Gambhu village has semi underground drainage facility as from drainage starting it is in open condition and from it is in closed underground condition and the pipelines are ending in lake. As there is semi underground drainage network, during monsoon there is an overflow of drainage water. There is a good sanitation facility available in Gambhu village. Khaal kuvaas are available in all the households. Dumping of garbage is done out of the village and other solid wastes are dumped in corner part of the village and it is burnt by villagers. 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.There are many lake in village, which are generally remain filled fully or partially as per the season .size of one lake is such a big that it will be visible clear in village satellite map. here is a image of a lake which is used for drainage connection located besides to panchayat & water tank.

This image is of public water tap for those people who haven't their own water connection as we typically termed it as 'hawada' in Guajarati, situated near main bore well and panchayat building. waste water from hawada goes to small garden besides it using water for dual purpose. Garden has some little-little beautiful flowers. That building seen in picture with iron sheet roofing is primary school & besides that there is a library room.

Fig 15. Drainage and public water facility

4.4.3. TRANSPORTATION AND ROAD NETWORK

Approach Roads are of good condition asphalt road but inside road are made of concrete and not maintained in good condition. This road is one of the main roads that we used to go in village via bhalgamda route. Animal hospital is also visible in image. village have other four main road connecting it with nearby village and modhera circle.

Fig 16. Road network

4.4.4. HOUSING CONDITION :

In Gambhu village the major structures such as schools, panchayat buildings and majority of thehouses are not in very good condition. Major structures such as schools, panchayat buildings and majority of the houses are pucca houses and some are kuchha houses. Rests of the houses are made of cement and bricks but with metal corrugated roof as shown in figure.

As per the data observed, 80% houses are Pukka houses & 20% houses are Kuchha houses

Social Infrastructure Facilities, Health , Education , Community Hall ,temple:

Social Infrastructures: In Gambhu village there are anganwadi , 1 primary school,1 high school , 2-3 temples , 1 Post office , Panchayat building all are working condition. There are no secondary and higher secondary schools. Village does not have any health care center, public latrine and recreational area or public garden, library

4.4.5. HEALTH FACILITIES

In the village no PHC, CHC, dispensary or any kind of private clinics are available in the village. The villagers go to bechraji and mehsana for any kind of health facility.

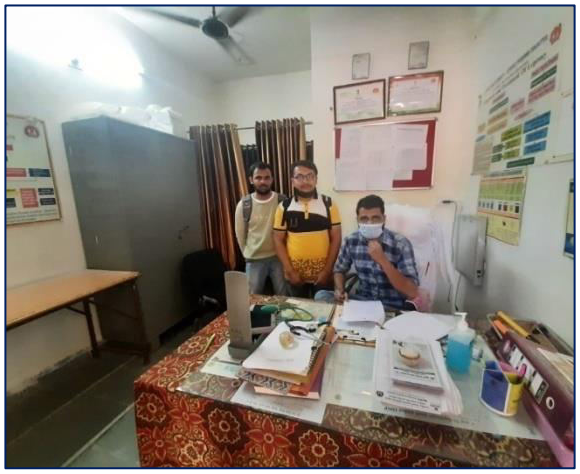


Fig 17. Meeting with doctor at PHC

4.4.6. CONDITION OF PUBLIC BUILDING

Here is an image of main gate towards modhera road. Seems old but still good in condition. Village gate is a n entrance of village from modhera side and bus stand is also was there opposite to gate and dairy building. bus stand was not in good condition but place visible in image is rickshaw stand.

Fig 18. Main Gate

4.4.7. TECHNOLOGY MOBILE/WI-FI /INTERNET USAGE DETAIL

No government Wi-Fi is available.

4.4.8. SPORTS ACTIVITY AS GRAM PANCHAYAT

No regular and enthusiastic activity carrying out by panchayat throughout the year.

4.4.9.SOCIO-CULTURAL FACILITIES, PLAY GROUND, WI-FI IN SCHOOL

No playground in village

4.6 EXISTING INSTITUTION LIKE - VILLAGE ADMINISTRATION – DETAIL PROFILE

4.6.1. BACHAT MANDALI:

There is no active bachat ,mandali in Gambhu village currently

4.6.2. DUDH MANDALI :

There is one dairy in Gambhu village

4.6.3. MAHILA FORUM :

There is no mahila forum existing in Gambhu village.

4.6.4. PLANTATION FOR AIR POLLUTION:

There is no routine activity about to prevent increase of air pollution but school organizes some awareness activity jointly with panchayat.

4.6.5. RAIN WATER HARVESTING:

There is no current facility in village but husband of Sarpanch alkaben who is actually civil engineer wished their willingness for such facility and also showed their future project regarding to rain water harvesting.

4.6.6. AGRICULTURAL DEVELOPMENT:

There is no any krushi sanstha in village but there is an animal hospital which is basically works for health of cows and buffalo who is indirectly engaged with agriculture.

4.6.7. ANY OTHER:

No other facilities.

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:

India has rich traditions and history in holistic strategies for buildings and construction. Despite this the sustainable buildings agenda currently receives limited attention in India. While there are some local initiatives promoting sustainable buildings which include research, pilot or advocacy projects, there is no coordinated approach to address the wider sustainable buildings agenda in India. The proposed Roundtable on Sustainable Buildings and Construction in India will address these issues and bring together key stakeholders in the private and public sectors to share perspectives and ideas on what are the barriers and opportunities for achieving a market transformation towards sustainable buildings in India. In this regard, UNEP's Sustainable Buildings and Construction Initiative (SBCI) in association with TERI and Marrakech Task Force are working together to establish knowledge on the base-line emissions from buildings in India, highlight priority issues and opportunities for sustainable buildings and identify a network of experts that can contribute to the aims of Sustainable United Nations (SUN) and SBCI. The intent of this roundtable is to get a consensus and useful inputs from the various stakeholders and participants of this roundtable on the above issues. Indian cities are urbanizing at an unprecedented scale and pace. Over the next few decades, Indian's urban population is expected to increase significantly, from 377 million in 2011 to 590 million by2030.

Path way towards sustainability

Sustainable development can be achieved by detail approach than individual plan of authority with engineering aspect in planning designing, construction, maintenance and scraping procedure of structure considering all component of environment including soil, water, air, sunlight, renewable energy, non-renewable energy, pollutant already present and their future percentage presence in environment, etc.

Components

The components to be considered while discussing sustainability are enlisted below:

1. Planning, designing, maintaining procedure
2. Soil conservation & material conservation
3. Scraping and dumping of scrap
4. Pollution reduction

5. Reduce, reuse, recycle
6. Energy consumption and conservation

1) Planning, designing, maintaining procedure:

The main thing that civil engineer can do for better future is that to develop infrastructure in such a way that it lasts longer for next generation. This can be achieved by planning ,designing and maintenance, for example usually a hospital building Is designed for a life span of 100 years to keep it in working condition just after worst disaster but a normal residential building is constructed considering only 20 to 30 year lifespan to reduce initial cost as they will be damaged after severe disaster. Same way if structure is designed for longer lifespan it will costs more initially but will be cheaper in overall cost.
After BHUJ earthquake in 2001 our government and scientist noticed one thing that becomes governing statement for mitigation of disaster, that statement was,"

"Prevention is cheaper than restoration"

2) Soil conservation & material conservation

Soil conservation is preserving top layer of earth which Is rich in material and vitamins which are responsible for crop production and many things such as bricks production, binder for semi-permanent construction, creation of bunds in river, etc. as other soil cannot be used because they haven't cohesive property and also not available directly. It occurs due to acidification, alkalization, washing out by water, salinity, etc. but it can be preserved by preventing this factors.
Material conservation is preserving material (here construction material) by stopping wasteful use of them & also by construction practice and good design with optimum condition between cost ,capacity and minimum criteria of design provided in codes of design.

3) Scraping and dumping of scrap

Simply, we have limited land compared to population so we have to compulsorily demolish older structure before construction of new one to maintain balance. While demolishing one main question arise, which is about dumping of scrap as these scrap is non-degradable in nature and causes pollution.

4) Pollution reduction

Pollution reduction is main concern in prevailing situation; even well developed countries are also worried about it & also developing technologies which has potential to reduce pollution.
Some points which are directly related to civil engineering is enlisted below,

- Dumping of scrap should be concentrated to a location which has less potential to use in other purpose.
- Sewage should be so release in river/ocean that its self purification of it remains unaffected.
- Co_2 and other GHG should be prevented at any cost during production of any material like cement.
- Noise pollution can be avoided during construction by using absorbent material or absorbing vibration of machinery.

5) Reduce, reuse, recycle

Whole world is now accepting concept of these 3 R for better future, which are to reduce, to reuse and to recycle. Reduce means to minimize the amount of waste we create by using it efficiently & also by using bio degradable products. Reuse means to use items more than once either in one or more than one form like "best from waste "recycles means putting products to new use instead of throwing it away. Plastic waste are mostly reform able by recycling them to form new product.

6) Energy consumption and conservation

Energy conservation is the effort made to reduce the consumption of energy by using less of an energy service. This can be achieved either by using energy more efficiently (using less energy for a constant service) or by reducing the amount of service used (for example, by driving less). Energy conservation is a part of the concept of Eco-sufficiency. Energy conservation measures in buildings reduce the need for energy services and can result in increased environmental quality, national security, personal financial security and higher savings. It is at the top of the sustainable energy hierarchy. It also lowers energy costs by preventing future resource depletion.

5.1.2. LIQUEFACTION

Liquefaction is a phenomenon in which the strength and stiffness of a soil is reduced by earthquake shaking or other rapid loading. Liquefaction and related phenomena have been responsible for tremendous amounts of damage in historical earthquakes around the world. Liquefaction occurs in saturated soils, that is, soils in which the space between individual particles is completely filled with water. This water exerts a pressure on the soil particles that influences how tightly the particles themselves are pressed together. Prior to an earthquake, the water pressure is relatively low. However, earthquake shaking can cause the water pressure to increase to the point where the soil particles can readily move with respect to each other. Earthquake shaking often triggers this increase in water pressure, but construction related activities such as blasting can also cause an increase in water pressure. When liquefaction occurs, the strength of the soil decreases and, the ability of a soil deposit to support foundations for Buildings and bridges are reduced. Liquefied soil also exerts higher pressure on retaining walls, which can cause them to tilt or slide. This movement can cause settlement of the retained soil and destruction of structures on the ground surface.

Fig 19. Liquefaction equation

5.1.3. SUSTAINABLE SANITATION (SUSANA)

The main objective of a sanitation system is to protect and promote human health by providing a clean environment and breaking the cycle of disease. To qualify as **sustainable sanitation**, a sanitation system has to be economically viable, socially acceptable, technically and institutionally appropriate, and protect the environment and natural resources. Most sanitation systems have been designed with these aspects in mind, but they fail far too often because some of the criteria are not met. In fact, there is probably no system which is absolutely sustainable. The concept of sustainability is more of a **direction** than a state to reach.

Nevertheless, it is crucial that sanitation systems are evaluated carefully with regard to all dimensions of sustainability. Since appropriateness to context is such a core criterion for sustainable sanitation, there is no one-size-fits-all sanitation solution. However, taking into consideration entire range of sustainability dimensions, it is important to observe some basic principles when planning and implementing a sanitation system. Susana believes that the following sustainability dimensions (or "criteria") should all be considered in the design or upgrade of a sanitation system.

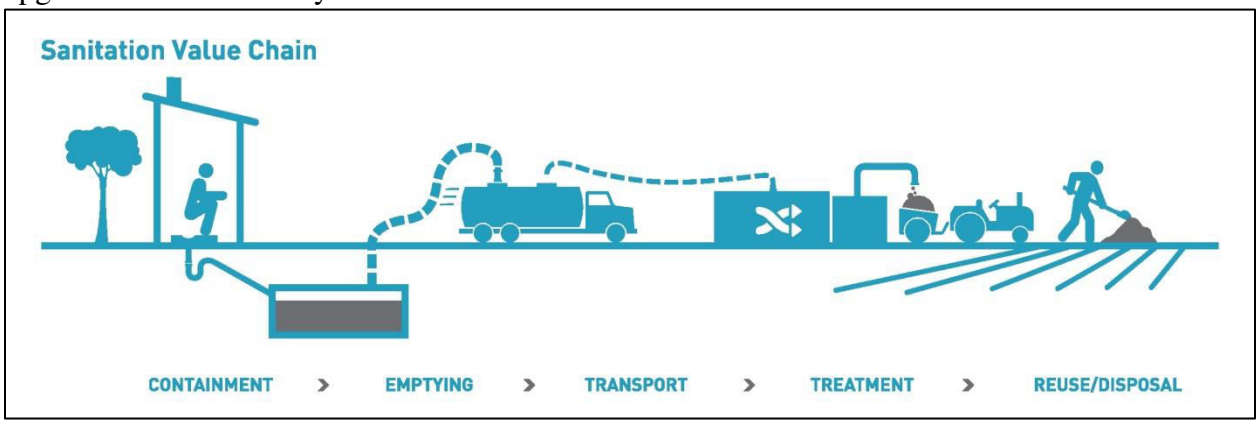


Fig 20. Susana chain

5.1.4. TRANSPORT TON INFRASTRUCTURE /SYSTEM:

Transport infrastructure is composed of the fixed installations of canal, waterways, airways, railways, roads, and terminals, as well as pipelines such as seaports, refuelling depots, trucking terminals, warehouses, bus stations, railway station, and airports. transport consist of transportation of man, material, fuel, combustible products, etc. from production/start point to end destination.

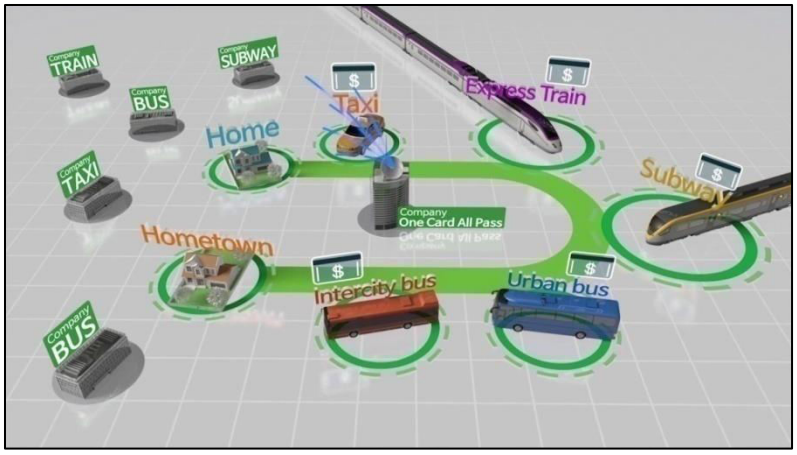


Fig 21. Smart Transportation system

Components of transport infrastructure

- A road is a paved surface to facilitate the movement of people or goods with means, such as automobiles, bicycles, buses, vans or truck.
- Rails are the infrastructure for rail transport. A rail road which connects two locations is also called a rail line.
- A rapid transit, underground, subway, elevated railway, metro or metropolitan railway system is an electric passenger railway in an urban area with a high capacity and frequency, and grade separation from other traffic. Rapid transit systems are typically located either in underground tunnels or on elevated rails above street level.

- An airport is a location where aircraft such as fixed-wing aircraft, helicopters, and blimps take off and land. Aircraft may be stored or maintained at an airport. An airport consists of at least one surface such as a runway for a plane to take off and land, a helipad, or water for takeoffs and landings, and often includes buildings such as control towers, hangars and terminal buildings.
- A train station, also called a railroad station or railway station is a railway facility where trains regularly stop to load or unload passengers or freight. It generally consists of a platform next to the track and a station building (depot) providing related services such as ticket sales and waiting rooms.
- A metro station or subway station is a railway station for a rapid transit system, often known by names such as "metro", "underground" and "subway".
- A sea port is a location on a coast or shore containing one or more harbours where ships can dock and transfer people or cargo to or from land.

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 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.

Also in India not properly defined under vertical farming but with little same concept indoor Farming using pot to grow flowers is now becoming fashion to give pleasing look & also to look rich modern.

It has some advantage as enlisted below;

- It offers plan to handle future food demands
- It allows crops to grow year-round
- It uses significantly less water
- Weather doesn't affect the crops
- More organic crops can be grown
- There is less exposure to chemicals & disease

Fig 22. Green building example

5.1.6. CORROSION MECHANISM, PREVENTION & REPAIR MECHANISM OF RCC STRUCTURE:

Mechanism:

In the case of Reinforced concrete structure the entry of moisture or air may lead to corrosion of reinforcement bars, cracking of the concrete cover thereby reducing durability of the structure. Repair has been suggested as the protective measure for damaged structure due to corrosion. Corrosion of steel bar is a significant economic and safety problem, preventing many buildings from sustaining 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 10 years. Nowadays the increase content of pollutants emitted from engines and coal, from jet engine in the city

atmosphere has very much effect on lifespan of concrete structures. The increased content of pollutants include a very high rates of Sulphates, Chlorides and carbonate, which when these mixes with rain water, forms acid and falls over these structures and damages the visible parts.

Prevention:

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

5.1.7. SEWAGE TREATMENT PLANT

To make wastewater acceptable for reuse or for returning to the environment, the concentration of contaminants must be reduced to a safe level, usually a standard set by the Environment Agency.

It includes physical, biological and sometimes chemical processes to remove pollutants. Its aim is to produce environmentally safe sewage water, called effluent, and a solid waste, called sludge or bio solids, 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.

Discharges from treatment plants are usually diluted in rivers &lakes. They also may, after sterilisation, be used for certain types of irrigation (such as golf courses), transported to lagoons where they are evaporated, or discharged through underground outfalls into the sea. However, sewage water outflows from treatment works must meet effluent standards set by the Environment Agency to avoid polluting the waters that receive them.

Process: process involves treatment in mainly two stages but in some case also includes 3 stage.

1) **Primary Treatment**
   This is usually anaerobic. Sewage is partly decomposed by anaerobic bacteria in a tank without the introduction of air.
2) **Secondary Treatment**
   This is Aerobic. In this process, aerobic bacteria digest the pollutants with help of oxygen.
3) **Tertiary Treatment**
   In some cases, the effluent resulting from secondary treatment is not clean enough for discharge.

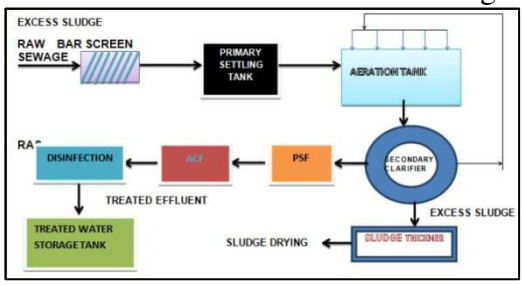


FIG sewage treatment plant

5.1.8. CASE STUDY: GREEN BUILDING CONCEPT:

A green Building uses less energy, water and other natural resources creates less waste & Green House Gases and is healthy for people during living or working inside as compared to a standard Building. Another meaning of Green Structure is clean environment, water and healthy living. Building Green is not about a little more efficiency. It is about creating buildings that optimize on the local ecology, use of local materials and most importantly they are built to cut power, water and material requirements. Thus, if these things are kept in mind, then we will realize that our traditional architecture was in fact, very green. Today, we have forgotten that how to make natural environment, instead copying it from developed countries. Buildings are a major energy consuming sector in the economy. About 35 to 40% of total energy is used by buildings during construction. The major consumption of Energy in buildings is during construction and later in lighting or air-conditioning systems. This consumption must be minimized. Possibly, this should be limited to about 80-100 watts per square-meter.

Introduction

We have heard of climate change. The air is getting warmer - summer comes sooner in most continents including Europe and America. Sea level is rising, - Maldives is sinking. Rivers like the Amazon, the Nile, the Danube, etc, are drying or recede several meters every year. But it's not just happening elsewhere but also happening in India. The glaciers feeding water for the Ganga are melting faster than it should. It means the Ganga could dry up in another about 60 years or so. This would leave over 50 million people thirsty who are living on the banks.

Mangrove forests of Sunderban are the world's most prosperous group of 104 Rainforest Islands. However, it appears that these very unique islands are likely to be wiped out from earth's map very soon or over the period of time. In fact, 15% of Indian side Sunderban and 17% of Bangladesh side of Sunderban Island are already submerged in the ocean. Now the threat of submerging is looming large on Sagardeep, the 4th biggest of the existing island. It is also on this Island, that the annual Mela of Gangasagar is held and visited by Millions of pilgrims every year. This is all because of the generation of Green house gases (GHG) and sea level is rising. A third of all Carbon Dioxide emissions produced are absorbed in the oceans. Carbon dioxide dissolved in ocean water becomes a corrosive acid which kills sea life. Thus fish catches are falling. That would leave hundreds of coastal communities hungry.

The coal is burnt in electric power plants, which is a major source of the CO_2generation and it is doing all the damage - melting the glaciers, poisoning the sea, disrupting the monsoon etc. Alternate source of Energy like Renewable energy - from the sun's rays, wind, seas' waves & geo sources - is clean, doesn't release CO_2 and is not hostage to a resource that will die out. In India, we are blessed with a tropical sun, fast winds and thousands of miles of sea coast. Renewable energy is thus the answer for all these ills.

Climate Change effects

Climate is changing fast globally because of increased energy consumption and thus increase Green house gases (GHG) like CO_2. This gives rise to global Warming. The World produces about 0.6 tones / year / per capita CO_2. India is the 5th largest producing GHG. This impacts the climate change resulting in:

- Water stress and reduction in the availability of fresh water due to potential decline in rainwater.
- Threats to agriculture and food scarcity
- Shifts in area and boundary of different forest and threat to biodiversity with adverse implications for forest dependent activities.

Sea level rising on coastal areas and effect on agriculture & habitation

Green Building Concept and Architecture Planning

To have Green Building Concept, we should look after the following:

1. Optimum use of Energy or power
2. Water conservation
3. Solid and Water Waste management, its treatment and reuse
4. Energy efficient transport systems
5. Efficient Building System Planning etc.

If all Buildings in urban areas were made to adopt green Building concepts, India could save more than 8400 MW of power which is enough to light half of Delhi or 5.5 lakh homes a year according to estimates by TERI. A green building depletes very little of the natural resources during its construction and operation. The aim of a green building design is to minimize the demand on non-renewable resources and maximize the utilization efficiency of these resources when in use and utilization of renewable resources.

Building Planning should minimize the use of building materials and optimize construction practices and sinks by bio-climatic architectural practices; use minimum energy to power itself for the use of equipment and lighting and air-conditioning and lastly maximize the use of renewable sources of energy. It should also use efficiently waste and water management practices; and provide comfortable and hygienic indoor working conditions. It is evolved through a design process that requires all concerned –the architect and landscape designer and the air conditioning, electrical, plumbing and energy consultants – to work as a team to address all aspects of building including system planning, design, construction and operation. Thus, enhance the positive impacts on the environment.

Architects & planners should start thinking green in the planning of Buildings. Integrating living & vegetation with architecture is fast gaining popularity around the world and now a new term "Vegitecture" has been coined for it and it is becoming common. Thus the Architect may think to bring concrete jungles to green jungles through "Vegitecture".

The Architect can use large windows with Double glass system. The glazed trapping will act as insulating layer of air between the two layers of glass. One of these layers of glass filters and disperses light and heat without reflecting it back outside the building. The air conditioning system will also be less intensive because the double glazing system insulates the building. Further, hollow fly ash bricks can be used in walls during construction. This will also provide good insulating properties apart from using waste materials.

Contribution of Concrete towards Green House Gases

Among the primary concrete making materials, the emission of CO_2 is largely attributable to cement production. It is estimated that modern cements contain on an average of about 84% Portland cement clinker and the clinker manufacturing process releases about 0.9 ton of CO_2 per ton of clinker. The Concrete Industry Worldwide consume more than 3.5 billon tons of cement,

so the carbon contribution of this industry is obviously quite large. Thus minimizing concrete consumption through innovative architecture and structural designs is one way to save on the use of cement. Another way is to use smart concrete mixture proportioning approach. This can be done through following approaches:

1. Minimize concrete consumption through innovative architecture and Structural Design methods.
2. Use smart concrete mixture or i-crete as proportioning approach to save on cement in concrete mix.
3. Consume less Cement in concrete / mortar mixtures.
4. Consume less Clinker in Cement making by adding Pozzolana like fly ash or GGBFS in Cement or Concrete.

Characteristics of Green Building

Building construction and its upkeep for livable conditions requires huge energy in lighting, air-conditioning, operation of appliances etc. Green Building i.e. energy efficient building is the one which can reduce energy consumption by at least 40% as compared to conventional building. The cost of constructing energy efficient building is estimated to be 15 – 20% higher as compared to conventional building without energy efficiency. However, this is more than compensated over the period of time i.e during life cycle cost and operation & living. Using green building materials and products, promotes conservation of non renewable resources internationally. In addition, integrating green building materials into building projects can help reduce the environmental impacts associated with the extraction, transport, processing, fabrication, installation, reuse, recycling, and disposal of these building industry source materials.

Green Building Products and Materials

Building and Construction activities worldwide consume about 3 billon tons of raw materials each year. Using green building materials and products promotes conservation of dwindling non renewable resources. In addition, integrating green building materials into building projects can help reduce the environmental impacts associated with the excavation, extraction, transport, processing, recycling and disposal of these building industry source materials.

Green building materials are composed of renewable, rather than nonrenewable resources and are environmentally responsible because impacts are considered over the life cycle period.

Depending upon project-specific goals, an assessment of green materials may involve an evaluation of one or more of the following parameters:

a. Resource efficiency
b. Energy efficiency
c. Affordability
d. Possible Recycling of Material and Waste generation
e. Water conservation
f. Effective Indoor air quality

1. **Resource Efficiency:** It can be accomplished by utilizing materials that meet the following criteria.
   - **Resource efficient manufacturing process:** Products manufactured with resource-efficient processes including reducing energy consumption, minimizing waste (recycled, recyclable and or source reduced product packaging) and thus reducing greenhouse gases.

- **Local availability:** Building materials, components and systems found locally or regionally will save energy and resources in transportation to the project site.
- **Salvaged, refurbished, or remanufactured:** It avoids the material from disposal and renovating, repairing, restoring, or generally improving the appearance, performance, quality, functionality or value of a product.

2. **Energy Efficiency:** can be maximized by utilizing materials and systems that meet the various criteria that help reduce energy consumption in buildings and facilities as indicated above.
   - **Recyclable Content** Products with identifiable recycled content and minimum waste generation, including post use content with a preference for post consumer use content should be considered.
   - **Reusable or recyclable** Select materials that can be easily dismantled and reused or recycled at the end of their useful life.

Some Steps for Material Selection

Material selection can begin after the establishment of project-specific environmental goals. The environmental assessment process for building material involves three basic steps.

1. Survey
2. Evaluation
3. Selection

1. **Survey:** This step involves gathering of all technical information about the material which can be identified, including manufacturers' information such as Material Safety Data Sheets (MSDS), Indoor Air Quality (IAQ) test data, product warranties, source material characteristics, recyclable content data, environmental, performance and durability information. In addition, this step may also involve investigating other issues like building codes, government regulations, building industry performance, model green building product specifications etc. Such survey will help in identifying the full range of the project's material options.
2. **Evaluation:** This step involves confirmation of the technical information, as well as filling in information gaps. For example, the evaluator may request product certifications from manufacturers to help sort out possible exaggerated environmental product claims. Evaluation and assessment is relatively simple when comparing similar types of building materials using the environmental criteria. However, the evaluation process is more complex when comparing different products with the same function. Then it may become necessary to process both descriptive and quantitative forms of data.A life cycle assessment (LCA) is an evaluation of the relative "greenness" of building materials and products. LCA addresses the impact of a product through all of its life stages. This tool that can be used is the LCA methodology through a software evaluation like BEES (Building for Environmental and Economic Sustainability) software. Such software can easily be developed or otherwise available commercially. It allows users to balance the environmental and economic performance of building products.
3. **Selection:** This step often involves the use of an evaluation matrix for scoring the project-specific environmental criteria. The total score of each product evaluation will indicate the

product with the highest environmental attributes. Individual criteria included in the rating system can be weighted to accommodate project-specific goals and objectives.

Advantages of Green Building Materials

Green building materials offer some or all of the following benefits to the building owner and building occupants:

- Reduced maintenance/ replacement costs over the life of the building
- Energy conservation
- Improved occupant health and productivity
- Life cycle cost savings
- Lower costs associated with changing space configurations.
- Greater design flexibility
  www.nbmcw.com/tech-articles/tall-construction/15837-need-for-developing-green-building-concept-in-the-country.html

Some Benefits of a Green Building Concept

- Green buildings are designed to be healthier and having more enjoyable working environment. Workplace qualities that improve the environment and which help in developing the knowledge of workers and may also reduce stress and lead to longer lives for multidisciplinary teams.
- Reduced energy and water consumption without sacrificing the comfort level.
- Significantly, better lighting quality including more day lighting, better daylight harvesting and use of shading, greater occupancy control over light levels and less glare.
- Improved thermal comfort and better ventilation.
- Limited waste generation due to recycling process and reuse.
- Increase productivity of workers and machines. It is reported that productivity can be increased by about 25% while following such green house norms.
- Attracting and retaining the best employees, can be linked to the benefits and qualities of workers receive, including the physical, environmental and technological aspects.
- Green building activities result in reduction of operating costs by 25-30%.

➢ **Design for durability:**

- To spread the environmental impacts of building over as long a period as possible, the structure must be durable. A building with a durable style (“timeless architecture”) will be more likely to realize a long life.

➢ **Design for future reuse and adaptability:**

- Make the structure datable to other uses, and choose materials and components that can be reused or recycled.

LEED India Concept

The Indian Green Building Council (IGBC) Designed and started. The Leadership in Energy and Environmental Design (LEED – India) system is called Green Building Rating System. It is an internationally accepted benchmark for the design, construction and operation of high performance green building.

LEED certified buildings utilize less toxic materials, low-emitting adhesives & sealants, paints, carpets, and composite woods, and indoor chemical & pollutant source control.

Fig 23. a typical highway with greenery around

What Is To Be Done?

Essential to an effective green building policy that delivers energy efficiency is by using simple, standardized and better energy performance materials throughout the construction in all phases of building design and operation. Thus, to have green Building concept, some or all of the following steps need to be followed.

- Plan each office / home's orientation to the sun to harness energy and shield it from heat i.e. Proper Building Orientation and Landscape and emphasis on natural light.
- High efficiency insulated glass windows can reduce requirements of energy during the operation or use of Building. Thus it will emit minimum carbon dioxide CO_2
- Minimize Cement / concrete consumption through innovative architecture and Structural Design for optimum use of cement.
- Maximum use of waste Pozzolanic materiel like fly ash in Concrete Mixture along with Cement.
- Non – toxic paints should be used on the walls. These use water rather than petroleum based solvents and do not emit smog producing pollutants. This will improve Indoor Air Quality.
- Use Sewage treatment and recycle the waste water from bathroom and Kitchen.
- Organic waste, both solid and liquid, produce a large quantity of Methane which is 23 times stronger than CO_2 as green house gases (GHG). Such organic waste must be processed to tap gas which can be used as cooking gas or fuel.
- Provide Rainwater Harvesting systems on the roof of Building to collect water, which can be used to flush Toilets or for general wash or recharge the ground.
- Use Solar Panels to heat bath water and generate little electricity for use when there are power cuts instead of using Invertors.
- Install simple Wind turbines on the roof, which can be used to generate electricity for use when there is no power.
- A rain garden can help reduce storm water runoff.
- Use Drip Irrigation to water the plants or Native landscaping around building. This requires less water for irrigation and maintenance.
- Government or Municipal corporations should provide enough incentives like tax rebates or tax breaks for green buildings during approvals.
- Government should make basic green norms – like gray water recycling and rainwater harvesting compulsory for all new buildings in all 5,161 cities, towns and urban agglomerations in the country.

Conclusion

The poverty alleviation in the developing countries can be effectively achieved by conservation of energy and creation of employment opportunities. The energy saved can be ploughed back for further development which creates a large employment opportunity. The

technologies and the materials used for development should complement the use of local and waste resources. The labor forces enhancing their capability and standard of living be used to avoid the widening of gap between haves and have not. Processing of waste must be taken up at a large scale and locally in each of 5,161 cities and towns. This will not only generate jobs but also give out energy & resources of material which can be usefully utilized.

It can be a blessing for the fast developing country like India that the measures called for sustainable development can be the measures of poverty alleviation as well as illustrated in the theme of Seminar through sustainable development and reprocessing of waste.

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Industrial Ecology (IE)

The aim of Industrial Ecology is to achieve a balance between human activity and its impact on the environment. Its techniques look at how human systems can integrate the natural systems, in a sustainable manner by minimizing resource (materials and energy) consumption. Allenby (1992)1 proposed the following definition for Industrial Ecology;

"The means by which a state of sustainable development is approached and maintained, it consists of a systems view of human economic activity and its inter-relationship with fundamental biological, chemical and physical systems with the goal of establishing and maintaining the human species at levels that can be sustained indefinitely given continued economic, cultural and technological revolution".

By human systems, we mean cities and the process of achieving equilibrium with the natural system of earth which can be considered to be a definition of "sustainable development". The balance required is the flow of materials and energy between the two systems in urbanizing cities that are sustainable.

IE defines a "system" as an interconnected group of objects that exhibit high level behavior namely, adaptation, resilience and self regulation. As such, a sustainable city is one that can adapt to change, proves resilient to social and environmental changes and is self-regulated.

In order for an urbanizing city that wishes to develop sustainably, the three main strategies associated with these behaviors are: Production, Consumption and Planning. These operate at differing spatial and temporal scales impacting a changing profile of stakeholders. The city as a system is not a new concept, but it is valuable as it allows us to introduce spatial and temporal scales across the triple bottom line. When combined with the classic construction paradigm of cost, time and quality we have the basis of a pragmatic framework as proposed by Augebone-Pearce (1998)[2] and illustrated in Figure 1.

Figure 1 contains five triangles. The first two are the triple bottom line (Economics, Environment, Social) and the construction paradigm (cost, time, quality).

The latter three triangles define the strategies of Production, Consumption and Planning and give us the Davis Langdon Industrial Ecology model[3]:

Production / Adaptation: (Design & engineering of the city)

- Economic Change = Environmental Quality & Social Cost Consumption / Self Regulation: (Behavior of individuals and groups within the city)
- Social Quality = Environmental Change & Economic Cost Planning / Resilience: (The city impact on the planet)
- Environmental Cost = Social Change & Economic Quality

A related concept of IE is the consideration of impact across temporal and spatial scales and as suggested earlier, differing stakeholders. This is illustrated in figure 2[4]:

This illustrates the sequence of the strategies defined earlier and the concept of urban metabolism which is the flow of resources through the activity of the city system. It also clarifies how planning serves as the "feedback loop" that helps cities to build resilience in their response to environmental change.

The purpose of the IE based framework is to highlight the considerations involved in sustainable development. Furthermore, any response to increasing urbanization needs to adapt to changes to the city (either through social drivers e.g., growth of the population and / or environmental drivers e.g. legislation / climate change) and require design and engineering activities of the system in order to allow it to support the increased consumption whilst minimizing its environmental impact through planning.

Cities as focal points:

The United Nations forecasts that the majority of population growth will be in cities in emerging regions such as Africa, Asia and Latin America. Cities in these regions are designated "mega cities" based on the fact that they have populations of 10 million plus. These mega cities represent areas of significant urban growth and hence increasing use of natural resources in creating an environment that supports the human activities therein.

In developed nations, there are mega cities too but the population isn't the key driver for their urban growth. It has more to do with the activities conducted therein and this is represented by the designation of "global cities" 1 where these cities represent global / regional hubs of commerce, transport and cultural activities.

In both scenarios, cities are locus of human activity representing very dense production and consumption behaviors per square mile. As such, their environmental impact on the region's (i.e. country) natural resources far outweighs that of the rest of the country's land mass.

Furthermore, cities represent focal points of population and affluence that are key components of the IPAT equation introduced earlier.

The drivers of this increasing urbanization are:

- Firstly, globalization - there is only one market
- Secondly, the focus of the global banking system in key cities where exchanges are located and secondary cities that support wealth creation through trade and production
- Thirdly, migrants seeking higher incomes are drawn to cities due to the diversity of opportunity.

These drivers also influence an emerging trend of intercity competition globally to attract the best talent, the richest companies and the most creative minds to locate within their boundaries.

The rest of this article will look at how a city like Delhi, which is at once a mega city and was ranked 41 in the global cities index[2] of 2008, can utilize key the three strategies of

adaptability, self-regulation and resilience to not only support its growth rate but also to do it in a manner that is sustainable.

Cities by their very nature consume to create and produce. They are a collection of "hard systems" driven by the needs of the "soft systems". This is illustrated below1: "Soft Systems" are defined by the Political, Economic, Social, Technological, Legal and Environmental (PESTLE) factors that determine the need for the region (country) and the city. These need to be balanced against the triple bottom line resources available that influence the city's growth. Combined, these formulate the strategy that will define the hard system requirements of the city. "Hard systems" are defined as transport, communications, energy, water and built environment infrastructure that support the city and the human activities therein.

In case of Delhi, a planned city with its hub and spoke arrangement of roadways interconnected by arterial roads, the capacity of established hard systems are clearly straining to cope with the increased urbanization and wealth of the populace as evidenced by the near constant grid lock of its roads. Furthermore, its architectural heritage and the associated zoning are an additional complexity to any new development of its urban framework.

Another element that contributes to the architectural fabric of Delhi are the 900 slums or shanty towns. These informal communities are a result of the rural migration and urbanization mentioned earlier, provide evidence that the growth rate of the population of the city has far exceeded that of the development of the hard systems of the city.

In this context, the case for high-rise buildings appears to be simple. Increasing population density per meter square by building taller implies a more efficient land use. Additionally, high-rise buildings serve a multitude of purposes for the city. They act as landmarks in defining areas of the city, they act as focal points or nodes for various infrastructure systems and they provide an efficient means of creating "urban capacity" i.e. a built environment that supports the population in terms of housing and commercial activity.

However, high-rise are very large energy and material sinks that are capable of generating a disproportionate of waste that goes to landfill for the actual area of land they occupy. Also, in order to support the increased population that can be accommodated in a high-rise, the development needs to incorporate upgrades to the capacity of the surrounding hard systems infrastructure. This issue is compounded when high-rise is grouped together in one area or "clustered".

Planning – building A Resilient City

The implications for a city such as Delhi to expand its urban capacity through high-rise, is that coordinated planning strategies operating at the right scale levels need to be developed. This is illustrated below:

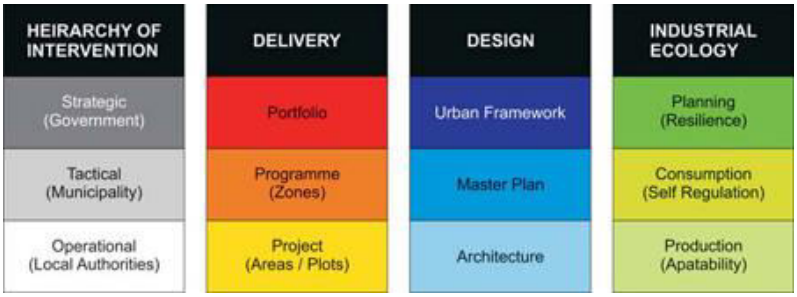


Fig 24. intervention – delivery – design & ecology chart

As detailed earlier, the aim of planning is to create a resilient urban framework that supports growth on a city wide level.

The social change that occurs for residents within the tower can either be a reaffirmation of their improved status arising from an increase in economic quality or they can serve to accelerate the degeneration of the community. The former scenario represents a positive social change whilst the latter represents a negative change. This is closely correlated with the degree of economic quality placed into the development of the urban framework. The negative scenario represents a

significant environmental cost to the city in the form of built capacity and inefficient hard system infrastructure that does not support the increasing urbanization.

For Delhi, the urban framework planned needs to adopt a portfolio perspective by providing guidance on "clusters" where the accommodation requirements meet that of the surrounding community currently and in the future. Moreover, the framework should focus on infrastructure installation and upgrade built with over capacity to accommodate forecast levels of growth in population.

This infrastructure framework allows the identification of zones for differing activities ranging from commerce, education, cultural and heritage. In defining uses permitted to certain areas and encouraging them through planning policy and / or tax incentives, the city is able to take a pro-active approach to the growth of the city.

Recognition for Green Projects in India

The Pearl Academy of Fashion, Jaipur and the LEED Platinum rated commercial Green Boulevard, Noida are the latest projects making news for their sustainable green architecture design concepts.

Green Boulevard, Noida

The Green Boulevard, Noida, NCR developed by Kotak Realty Fund and 3C Group has received the LEED Platinum rating in Core and Shell category by US Green Building Council (USBGC)—the largest in the world to be so honored. With this rating the Green Boulevard gets to be counted in the ten green buildings to have been recognized with the Platinum rating. It shall also be one of the first projects to be awarded carbon credits

The Green Boulevard project is a 9,52,000 square feet built-up, 700,000 square feet gross lease area in a state-of-the-art commercial (IT/ITES) facility that took on execution pressures and achieved completion and leasing ahead of defined timelines. The occupants are corporate like Accenture, Sapient, Nokia, Siemens and others who appreciate and participate in environment concerns along with their core businesses. The 3C Company is the only Asian company to score a hat trick with three Platinum LEED certifications and two other Gold LEED certifications for their projects. The Platinum scorers besides Green Boulevard are Patni campus, Noida and Wipro campus in Gurgaon. They have recently launched India's largest green residential estate the Lotus Boulevard in Noida. Developers and clients see the project as an indication of the growing importance being given to developing Green buildings in the region.

Right from the beginning

The 3C Company worked to be environment–friendly right from the design stage. The design concept was built around the principle of balancing environmental responsibility, energy efficiency and efficient deployment of resources while offering occupant comfort and guarding community sensitivity. The project was worked out to be a multi-tenant project based around the concept of offering every occupant a campus-like environment, shared common areas, facilities and privacy where needed. Envisaged with a long–term alignment for the health and vitality of the planet, the design is inspired from several elements of nature that also innovatively generate significant economic advantages.

Looking forward

The stilted lower floors set the mood for bonding with the common areas of an amphitheatre, a gym, a cafeteria and shops occupying the space. The Main and Service cores on the periphery

cater for easy access. The shaded landscapes are easy on the eye and serve as a physical connection to the interactive environment. Over these are the three towers that are staggered horizontally and vertically. The staggered design gives each tower visibility from the road. The second floor marks the start of the offices that is the private areas. Ambient temperatures are reduced with water bodies and plants in the shaded landscape courts. The towers around these courts are designed with a depth optimized to capture daylight and maximize views.

Here comes the sun

Green Boulevard has some ingenious elements incorporated to prevent heating with the incidental sunlight. The building is oriented in the north-south direction. The horizontal projection design element blocks the sun from the south while the exterior shading systems reduce the heat and glare while allowing ambient light inside. Heat reduction is further achieved with the circulation of pre-cooled air, the heat recovery wheel and free cooling in fine weather. The energy conservation through active and passive features has been estimated at a 40% over any other Indian office building.

The project involved the services of a commissioning agency for the fundamental commissioning, additional commissioning and measurement and verification of building systems. Developers and clients see the project as an indication of the growing importance being given to developing Green buildings in the region. The prospects for fresher and greener projects certainly look encouraging.

The Pearl Academy of Fashion, Jaipur is making a fashion statement in its own right. It is keeping up with the trends of contemporary architecture while its design strength lies in the rich traditional building elements. The architecture from Morphogenesis, Delhi has merged the building seamlessly into the surroundings of the desert while the formal geometry is almost symbolic of the serious academic orientation of the activities within.

This project has generated tremendous interest in international media and has been published in premiere journals and newspapers such as The Guardian, (UK), Domus, The Plan (Italy), Wallpaper (UK), Roof and Façade (Singapore) etc. In addition to this, the project has also won numerous international awards and accolades. These include:

- Finalist for the World Architecture Festival Awards, Barcelona, 2009 (Selected from over a 1000 projects entered from all over the world).
- Highly Commended Seal of Distinction, Cityscape Architectural Awards, Dubai, 2009 (Selected from over 300 different entries from a wide range of emerging market countries for the world's premier Architectural Awards for the emerging markets).
- The Architectural Review Cityscape Special Award for Environmental Design, Dubai, 2007 (Selected from over 300 entries across the world, this project was chosen as a scheme which delivered best on environmental issues).
- Finalist for the MIPIM Asia Awards, Green Building Category, France, 2008 (MIPIM is one of the largest congregations in the real estate industry. The project was shortlisted as one of the 3 from over 70 projects from 13 different countries across the Asia Pacific region).
- Citation in the 20+10+X World Architecture Community Awards, 2009.

The principle reason for this tremendous interest, coverage and accolades is that the project establishes itself as a benchmark for low cost, innovative, institutional building design while successfully dispelling the myth that Green design entails higher cost.

Traditionally Cool

Indo-Islamic architectural element, like the jaali forming the exterior skin, gives the building the traditional look. Set in adverse climate the design went on to address the challenge of controlling micro climate within the project. The jaali façade with its double layering works to keep out the incident heat from direct sunlight, while giving the traditional look to the structure. The density of the perforated jaali was worked out with computational shadow analysis based on orientation of the facades.

The outer layer stands four feet away from the building, creating a natural thermal buffer. Between the double layers of the façade, flowing recycled water cools the hot air entering the building.

Water pools in the basement imitate traditional step wells or baolis. The scooped out under belly serves as a thermal sink, where the water cools the surroundings through evaporative cooling though the day. At night, as the desert cools, the under belly releases heat and keeps the surroundings cozy

Budget efficiency

The Pearl Academy of Fashion is self– sufficient in terms of captive power and water supply. Inviting natural light into the building also promotes energy efficiency due to the reduction in dependence on mechanical environmental control. This factor adds to meeting the client requirement of working within budgetary constraints while achieving the desired functionality and effect.

Fashionably sustainable

The entire design has ensured that the creative mind of the design student takes in the design elements in the built form as a part of the daily life. The materials used for construction are a blend of local stone, steel, glass and concrete in a manner that retains the progressive design intent. The under belly, with shallow pools and raised sides serves as a recreational area for the students. It also houses the essential facilities of a catwalk ramp and an exhibition area to display their creations.

Benefits of Green Building

Environmental benefits of green building:	Economic benefits of green building:	Social benefits of green building:
• Enhance and protect bio-diversity and ecosystems • Improve air and water quality • Reduce waste streams • Conserve and restore natural resources	• Reduce operating costs • Improve occupant productivity • Enhance asset value and profits • Optimize life-cycle economic performance	• Enhance occupant health and comfort • Improve indoor air quality • Minimize strain on local utility infrastructure • Improve overall quality of life

CHAPTER 6
SWACHH BHARATABHIYAN (CLEAN INDIA)
SWACHH BHARAT MISSION
OR
SWACHH BHARAT ABHIYAN
&
CLEAN INDIA

6.1. LAUNCH

Swatchh Bharat Abhiyan campaign was launched on 2 October 2014 on birth anniversary of Mahatma Gandhi. aimed to eradicate open defecation by 2 October 2019, the 150th anniversary of the birth of Mahatma Gandhi, by constructing 90 million toilets in rural India at a projected cost of 1.96 lakh crore (US$27 billion). The national campaign spanned 4,041 statutory cities and towns. Conceived in March 2014 at a sanitation conference organised by UNICEF India and the Indian Institute of Technology as part of the larger Total Sanitation Campaign. which the Indian government launched in 1999.

PREVIOUS SANITATION CAMPAIGNS

A formal sanitation programme was first launched in 1954, followed by Central Rural Sanitation Programme in 1986, Total Sanitation Campaign (TSC) in 1999 and Nirmal Bharat Abhiyan in 2012. A limited randomized study of eighty villages in rural (Madhya Pradesh) showed that the TSC programme did modestly increase the number of households with latrines, and had a small effect in reducing open defecation. However, there was no improvement in the health of children. The earlier "Nirmal Bharat Abhiyan" rural sanitation program was hampered by the unrealistic approach. Consequently, Nirmal Bharat Abhiyan was restructured by Cabinet approval on 24 September 2014 as Swatchh Bharat Abhiyan. The rural household toilet coverage in India increased from 1% in 1981 to 11% in 1991, to 22% in 2001, to 32.7% in 2011. Since 2014, the Government of India, has made remarkable strides in reaching the Open Defecation Free targets. 36 states and union territories, 706 districts and over 603,175 villages have been declared open defecation free as of Jan 2020.India has made rapid progress in ending open defecation across the Country which is having a huge impact on improving water, sanitation and hygiene (WASH). The Swatchh Bharat Mission (SBM) has changed the behaviour of hundreds of millions of people with respect to toilet access and usage. 500 million people have stopped defecating in the open since 2014, down from 550 million to less than 50 million today. A

tremendous achievement, only possible because of the Swatchh Bharat Mission (SBM) (Clean India Campaign), led by the Prime Minister. Even with these impressive figures, it is vital that social and behavioural change communication approaches keep pace with the service delivery to ensure that families receiving toilets continue to use them regularly.

Components

The core objectives of the first phase of the mission were to reduce open defecation and improve management of municipal solid waste in both urban and rural areas. Elimination of open defecation was to be achieved through construction of individual household level toilets (often twin pit pour flush pit latrines), toilets and public toilets. For improving solid waste management, cities were encouraged to prepare detailed project reports that are bankable and have a financial model.

The second phase on the other hand focuses on sustaining gains of the first phase and improving management of the solid and liquid wastes.

FINANCE

Swatchh Bharat Abhiyan is expected to cost over ₹620 billion (US$8.7 billion).The government provides an incentive of ₹12,000 (US$170) for each toilet constructed by a rural family. An amount of ₹90 billion (US$1.3 billion) was allocated for the mission in the 2016 Union budget of India. The World Bank provided a US$1.5 billion loan and $25 million in technical assistance in 2016 for the Swatchh Bharat Mission to support India's universal sanitation initiation.

EFFORTS

In the past few months, many villages in India have organized a Gaurav Yatra, a walk of pride, to celebrate that they have been declared Open Defecation Free (ODF). This is part of the government-led Clean India Mission, the world's largest toilet-building and behavioural change initiative. Open defecation is one of the world's greatest health risks and a leading cause of child mortality, which is why the United Nations want the practice stamped out by 2030. Five years ago, India was home to 60 per cent of the world's open defecators, but the government claims that this number has been drastically reduced under its Clean India Mission programme, also known as the Swachh Bharat Mission.

In 2014, when the campaign was announced as a People's Movement to end open defecation, fewer than four in 10 rural Indian households owned a toilet. By the end of the programme, in connection with Mahatma Gandhi's 150th birthday on 2 October 2019, official figures put coverage at 100 per cent.

The programme was implemented by the state governments, with support from the Ministry of Drinking Water and Sanitation and the Ministry of Housing and Urban Affairs. More than 100 million toilets have been built across rural and urban India since the launch of the mission. Social and behavioural change communication has been a large feature of the programme, with a number of nationwide campaigns in traditional media as well as on social media.

6.2. ACTIVITIES DONE BY STUDENTS FOR ALLOCATED VILLAGE WITH PHOTOGRAPH

cleaning activity was carried out by student during visit of Gambhu after getting permission of Sarpanch Mrs. alkaben .for cleaning purpose first of all we visited whole village and made a clear idea about need of cleaning and location of prime requirement of cleaning, after sorting out main four location we decided to get help from locals for it .so accordingly with help of Sarpanch shree we organised a meeting with some elders so they added manpower to team and we started cleaning from school. The main four location chosen was school, outskirt in front of library, garden & playing area outside village. in school with help of teachers and students we carried out activity in school. spider web & wall surface was too much dirty which was cleaned by us in school with help of students. at some location 'bhangi' carried a cleaning process from grant of panchayat which was his duty as panchayat pays him on regular basis.

Fig 25. Activity carried out by bhangi

Fig 26. Cleaning of rooms

Fig 27. Swachhta activity carried out by student in school & staff

Chapter 7

Village condition due to CORONA Virus

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 corona virus 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. Through a combination of interviews with mid and low-level bureaucrats and a review of policy documents, we show how the urgency of COVID-19 response has galvanized new kinds of cross-sectoral and multi-scalar interaction between administrative units involved in coordinating responses, as local governments have assumed central responsibility in the implementation of disease control and social security mechanisms.

7.1. TAKEN STEPS IN GAMBHU VILLAGE RELATED TO EXISTING SITUATION WITH PHOTOGRAPHS

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

7.2. ACTIVITIES DONE BY STUDENTS FOR GAMBHU VILLAGE WITH PHOTOGRAPH :

In that awareness camp we have distributed some face masks to the villagers for the protection against covid-19 and aware them about covid-19 situation in India and told them to take precautionary measures like wear a mask perfectly, wash hands regularly, maintain social distancing in public and avoid crowded area & firstly make yourself home quarantined if you fill any COVID-19 symptom in your body.

Fig 28. Mask distribution

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 were implemented during the lockdown. In the COVID-19 situation cleaning, fogging and sanitization were done in the village.

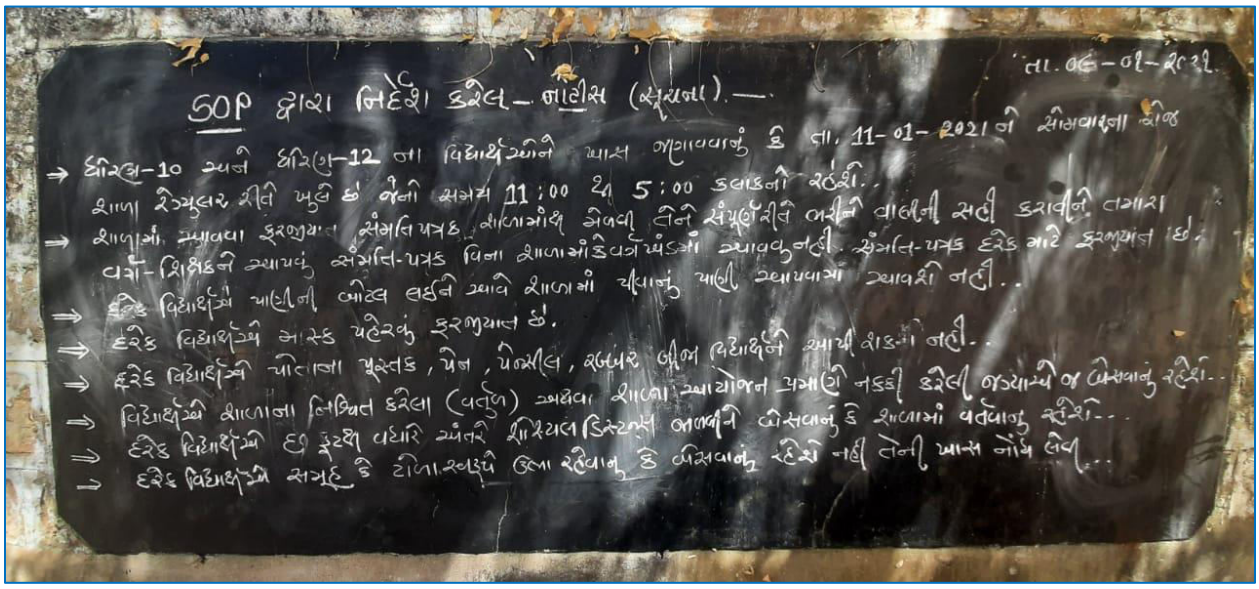


FIG 29. Corona precautionary guidelines during offline classes in highschool

CHAPTER 8

Sustainable design planning proposal (prototype design) (part 1)

8.1. DESIGN PROPOSAL : OBSERVATION AND BRIEF WRITE UP ABOUT EACH DESIGN FROM 8.1.1 TO 8.1.6

Socio cultural design: Multipurpose dome

We have designed multipurpose dome for especially navaratri celebration but it have major usage for marriage celebration also and for religious function like satsang also.

Social design: Community hall

We have designed community hall considering technical function which requires stage. And in a village of 4000 people there are many occasions which requires stage to perform

Smart design: Cyber cafe

We have designed cyber cafe to match foot with, modern world and to perform some technical task which requires computer but for all people it is not affordable to have computer so they can now connect themselves to internet from their own village.

Sustainable design: Pharmacy store

Pharmacy store is designed to have easy facility to have medicine in village which is generally not available in PHC because of rarity of disease.

Physical design: Post office

Post office is designed for mainly postal service but it provides some insurance facility and saving account facility too.

Additional sustainable design: public toilet

Public toilet is designed to have sanitation in village, for those people who can't afford own toilet, as per the norms per 50 family without 1 public toilet is required.

8.1.1. SOCIO CULTURAL DESIGN

Scenario:-

Gambhu village have one samajwadi in ranchhodrai ji temple which is of old design and with too much bottle-neck-ness so we designed dome to facilitate easy operate-able and enjoyable dome which can be used in all season and by all people. This design is cost effective and earthquake proof with stronger column .in further this structure is made using air conditioning sheet to make it cooler during summer season.

Existing situation:-

Village have not enough place for social gathering for big festival like navratri.

Usefulness

Multipurpose dome is very much useful for big gathering

Length: 33.3 metre
Width:- 21 meter
Height:- 9.5 metre
Area of structure: 33.3meter *21 meter *9.5 meter

Repair and maintenance:

Basically no repair and maintenance required except frequent cleaning of it.

8.1.2. Social design

Scenario:

We have designed community hall considering technical function which requires stage. And in a village of 4000 people there are many occasions which require stage to perform.

Existing Situation:-

Currently no such facility like community hall in village.

Usefulness:-

It can be used for award function, marriage hall, meting, co-operative work, mini gathering, and rest room for VIPs, etc.

Length: - 15.9 meter
Width: - 14.6 meter
Height: - 5.6 meter
Area:-15.9*14.6 meter 2

Repair and maintenance:-

Little maintenance of electrical system installed and cleaning required frequently.

8.1.3. SMART DESIGN

Scenario

We have designed cyber cafe to match foots with, modern world and to perform some technical task which requires computer but for all people it is not affordable to have computer so they can now connect themselves to internet from their own village.

Existing facility:

currently no such facility in village which provides internet facility to villagers also there is no facility likes public Wi-Fi.

Usefulness:

In modern era computer is basic need of everyone but still due to poor per capita income of India everyone can't afford personal computer with them in such condition such infrastructure is very much useful. we designed it for 9 computer which is very very sufficient to population of 4000 so there will be no condition of shortage of computer.

Length: - 6.2 meter
Width: - 3.6 meter
Height:-5.1 meter
Area: - 6.2 *3.6 meter 2

Repair and maintenance:-

Computer requires frequent maintenance & also it require an expert operate rot it who knows all about computer .net connectivity also need frequent maintenance against virus, all over this infrastructure is costlier in terms of maintenance.

8.1.4. SUSTAINABLE DESIGN

Scenario

Pharmacy store is designed to have easy facility to have medicine in village which is generally not available in PHC because of rarity of disease.

Existing situation:

Currently village have PHC facility which provides medicine for usual diseases but for some special medicine doctor prefers to give prescription to patient and suggest going in city.

Usefulness:

Due to local pharmacy store facility people will get easy medicine and prefers to get cure instead of avoiding it, so it will help them to get better life in combination with PHC.

Length: - 5 meter
Width: - 4 meter
Height: - 5.1 meter
Area: - 20 meter 2

Repair and maintenance:

Repair work is almost zero for such infrastructure but especially for medical facility cleaning with proper disinfectant and chemical is very much essential which may increase maintenance cost.

8.1.5. PHYSICAL DESIGN

Scenario

Post office is designed to have postal service in village for either use of people or to deliver a draft from government body to people i.e. job latter, document, etc.

Existing situation

Existing there is no active postal service and postal work is still carrying out in Dedarada branch

Usefulness

Post office is useful in delivering postal cards and documents of office work.

Length: - 11.5 meter
Width: - 10 meter
Height: - 5.1 meter
Area:-115 meter2

Repair and maintenance:-

Usual maintenance is required for post office.

8.1.6. ADDITIONAL SUSTAINABLE DESIGN

Scenario

As per the norms of government minimum 1 public toilet between 50 families without having indoor toilet facility should be provided.

Existing situation

Public toilet is not available in village & villagers who haven't toilet in their house used to go outside for it which is very much big factor affecting health of them.

Usefulness

Toilet is governing factor for sanitation & health prevailing on village, as there are many families without indoor toilet public toilet will be one of the most useful infrastructures in village.

Length: - 7.5 meter
Width: - 5.1 meter
Height:-5.1 meter
Area:-7.5 * 5.1 meter 2

Repair and maintenance

Maintenance is very much required on daily basis to make it clean and odour less.

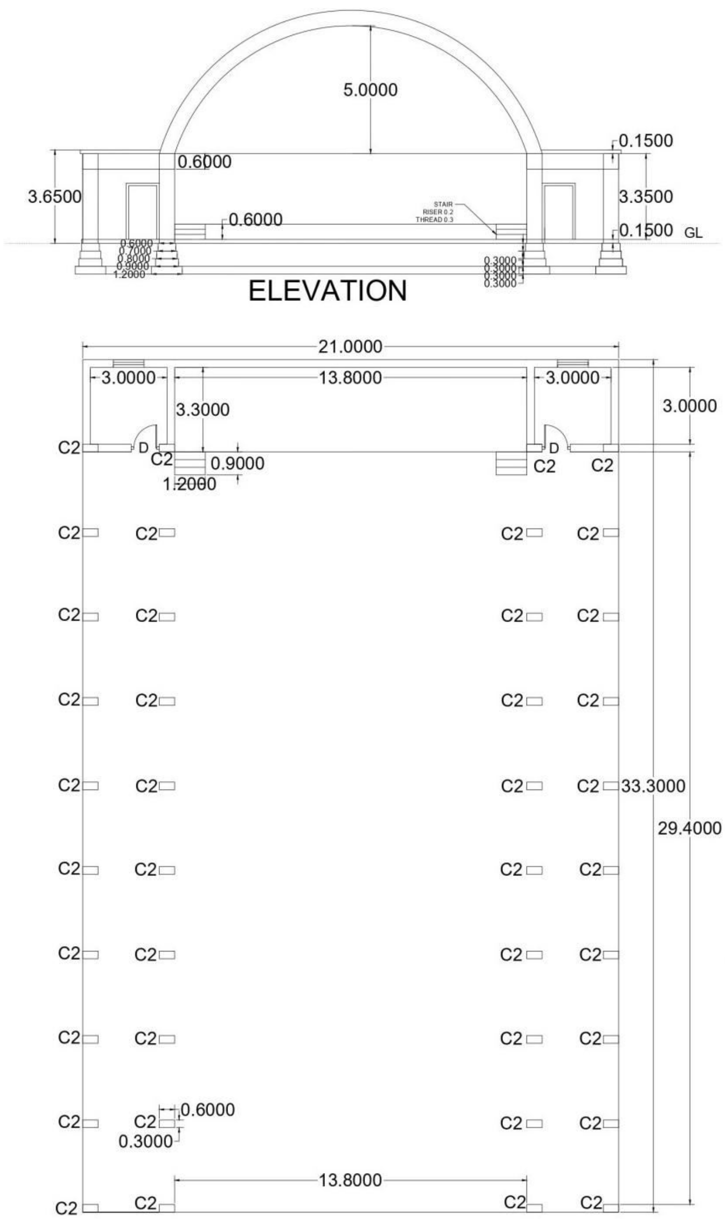
8.2. REASON FOR STUDENTS RECOMMENDING THISDESIGN

- **multipurpose dome: for big social gathering**
- **community hall: tor stage performance**
- **cyber café: to facilitate internet facility**
- **pharmacy store : to purchase medicine easily without going to city**
- **post office :- to facilitate postal service**
- **public toilet:- for sanitation**

8.3. CALCULATIVE ATTACHMENT OF CIVIL DESIGN

❖ DESIGN OF MULTIPURPOSE DOME

8.3.1. MEASUREMENT SHEET OF MULTIPURPOSE DOME(Design 1)



PLAN

NO	INDEX	DIMENSION
1	DOOR (D)	0.9 * 2.1
2	WINDOW (W)	0.9 * 1.2
3	COLUMN(C2)	0.6 * 0.3
4	FOUNDATION	1.2 * 0.9

ALL DIMENSION ARE IN METER

VISHWAKARMA YOJNA
PREPARED BY:-
VIHOL SMITKUMAR P
DAMOR ADITYA R
PHARMACY STORE
VILLAGE :- GAMBHU

FIG. PLAN & ELEVATION

PROPOSED DESIGN FOR MULTIPURPOSE DOME
(IN AUTOCAD)

Estimation For Dome								
Sr. No.	Description	Count	Length	Width	Height	Quantity	Total Quantity	Remarks
1	Excavation							
	For Foundation							
	X-direction	11	21.6	0.9	1.2	256.608		
	Y-direction	40	2.4	1.2	1.2	138.24		
	Excavation Below Slab	20	1.8	2.4	0.1	8.64		
		10	13.2	2.4	0.1	31.68		
							435.17	Measured in m^3
2	BBLC	11	21.6	0.9	0.3	64.152		
		40	2.4	1.2	0.3	34.56		
							98.712	Measured in m^3
3	RCC Substructure	40	0.9	0.6	0.3	6.48		
		40	0.8	0.5	0.3	4.8		
		40	0.7	0.4	0.3	3.36		
		4	0.6	0.6	0.3	0.432		
		4	0.5	0.5	0.3	0.3		
		4	0.4	0.4	0.3	0.192		
							15.564	Measured in m^3
4	Wall in Substructure							
	X-direction	1	17.7	0.3	0.3	1.593		
		1	18	0.3	0.3	1.62		
		1	18.3	0.3	0.3	1.647		
		1	18.9	0.3	0.3	1.701		
		1	19.2	0.3	0.3	1.728		
		1	19.5	0.3	0.3	1.755		
							10.044	Measured in m^3
	Y-direction	2	27	0.3	0.3	4.86		
		2	28	0.3	0.3	5.04		
		2	29	0.3	0.3	5.22		
							15.12	Measured in m^3
5	Soil Filling							
	Foundation Upto G.L.	1	0	0	0	282.348		

	Sand Filling Below Base	1	0	0	0	692.9		
7	RCC Base Slab	1	21.1	33.4	0.1	70.474	70.474	Measured in m³
8	RCC column	40	3.35	0.6	0.3	24.12		
		4	3.35	0.3	0.3	1.206		
							25.326	Measured in m³
9	Masonry Wall	8	3	0.3	3.35	24.12		
		1	13.8	0.3	2.75	11.385		
		1	13.8	0.3	0.6	2.484		
	Stair	24	0.3	0.2	0.1	0.144		
		6	1.1	0.1	0.2	0.132		
							38.265	Measured in m³
10	Deduction							
	Door	2	1.1	0.3	2.2	1.452		
	Window	2	1	1.3	0.3	0.78		
							2.232	Measured in m³
11	Beam	10	4.2	0.3	0.6	7.56		
		2	4.2	0.3	0.3	0.756		
	Circular Arc Beam	10	18.7	0.3	0.6	33.66		
							41.976	Measured in m³
12	Roof Slab	2	3.6	33.3	0.15	35.964		
		1	19	30	0.15	85.5		
		1	15	3.6	0.15	8.1		
							129.56	Measured in m³
13	Tiles	1	21.1	33.4	0.1	70.474	70.474	Measured in m²
14	Wall Plaster	16	3	1	3.35	160.8		
		2	13.8	1	3.35	92.46		
		2	3	3	1	18		
		1	13.8	3.3	1	45.54		Measured in m²
							316.8	
15	Air Conditioning Sheet							
	Roof	20	3	3	1	180		
		10	18.7	3	1	561		

	Column	74	0.6	1	2.75	122.1		
		54	0.3	1	2.75	44.55		
	Beam	40	3	1	0.6	72		
		60	3	1	0.6	108		
		40	3	1	0.6	72		
		20	18.7	1	0.6	224.4		Measured in m²
							1384.1	

8.3.2. ABSTRACT SHEET OF MULTIPURPOSE DOME

MULTIPURPOSE DOME ABSTRACT SHEET

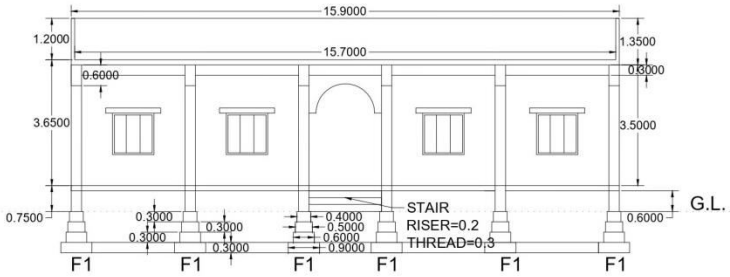
Sr. No.	Description	Qty.	rate	per	amount
1	Excavation	435.168	100	cu.m	43516
2	BBLC	98.712	3600	cu.m	355392
3	RCC Foundation	15.564	1250	cu.m	19455
4	Wall Substructure	25.164	90	m2	2264.76
5	Soil Filling	282.348	105	cu.m	29646
6	Sand filling	692.9	124	cu.m	77996
7	Wall Super structure	38.265	80	m2	3061.2
8	RCC Super structure	267.34	90	sq.ft	24060.6
9	Plaster 6mm	63.54	80	sq.ft	5083.2
10	Plaster 12mm	253.26	85	ft	21527.1
11	DPC	0	330	sq.ft	0
12	Water Proofing	0	250	sq.ft	0
13	Tiles	70.474	130	sq.m	2114.22
14	Air Conditioning Sheet	1384.05	20000		27681000

Total	28265116.08
Add 1.5 % water charges	423976.7412
add 2 % contingency	565302.3216
Add 10 % contractors proffit	2826511.608
Sum total	32080906.75

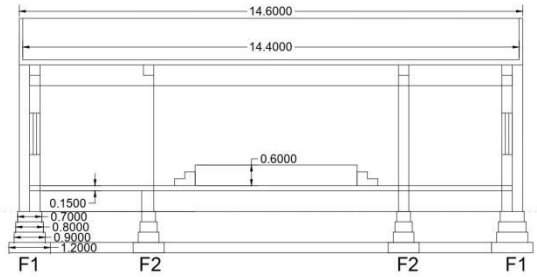
❖ DESIGN OF COMMUNITY HALL

8.3.3. MEASUREMENT SHEET OF COMMUNITY HALL(Design 2)

COMMUNITY HALL

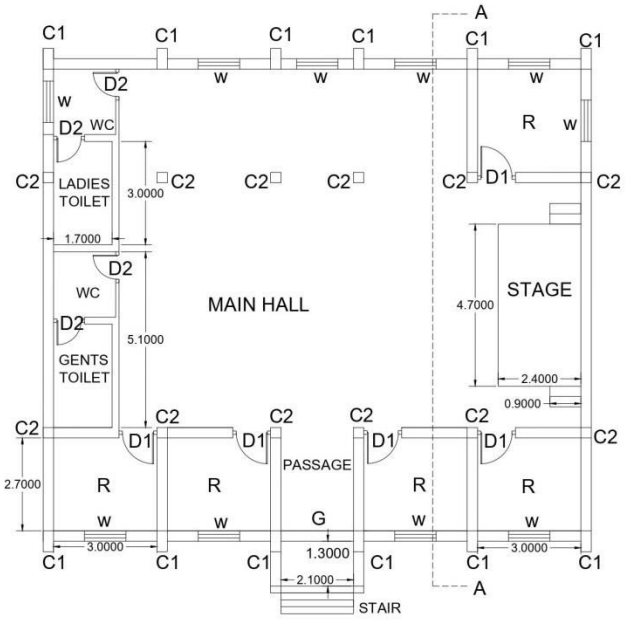


ELEVATION



SECTION A - A

NO	INDEX	DIMENSION
1	MAIN GATE (G)	2.1 * 2.1
2	DOOR (D1)	0.9 * 2.1
3	DOOR (D2)	0.7 * 2.1
4	WINDOW (W)	1.2 * 1.2
5	WALL	0.3THICK
6	COLUMN (C1)	0.3 * 0.6
7	COLUMN (C2)	0.3 * 0.3
8	FOUNDATION(F1)	1.2 * 1.2
9	FOUNDATION(F2)	0.9 * 0.9
10	ROOM(R)	3.0 * 2.7



PLAN

ALL DIMENSION ARE IN METER

VISHWAKARMA YOJNA	
PREPARED BY:-	
VIHOL SMITKUMAR P	
DAMOR ADITYA R	
PHARMACY STORE	
VILLAGE :- GAMBHU	

FIG. PLAN ELEVATION & SECTION OF COMMUNITY HALL

PROPOSED DESIGN OF COMMUNITY HALL
(IN AUTOCAD)

Estimation For Community Hall								
Sr. No.	Description	Count	Length	Width	Height	Qty	Total Qty	Remarks
1	Excavation							
	For Foundation							
	X-direction (C1)	2	16.5	1.2	1.2	47.52		
	X-Direction (C2)	2	16.5	0.9	1.2	35.64		
	Y-direction	6	11.3	0.9	1.2	73.224		
	For Stair	1	2.1	0.9	0.1	0.189		
	Main Gate	2	1.05	0.9	1.2	2.268		
							158.841	Measured in m^3
2	BBLC							
	X-direction (C1)	2	16.5	1.2	0.3	11.88		
	X-Direction (C2)	2	16.5	0.9	0.3	8.91		
	Y-direction	6	11.3	0.9	0.3	18.306		
	Stair	1	2.1	0.9	0.1	0.189		
	Main Gate	2	1.05	0.9	0.3	0.567		
							39.852	in m^3
3	RCC Substructure	12	0.9	0.6	0.3	1.944		
		12	0.8	0.5	0.3	1.44		
		12	0.7	0.4	0.3	1.008		
		12	0.6	0.3	0.6	1.296		
		14	0.6	0.6	0.3	1.512		
		14	0.5	0.5	0.3	1.05		
		14	0.4	0.4	0.3	0.672		
		14	0.3	0.3	0.6	0.756		
							9.678	in m^3
4	Wall in Substructure							
	X-direction	16	2.7	0.3	0.3	3.888		
		16	2.8	0.3	0.3	4.032		
		16	2.9	0.3	0.3	4.176		
		16	3	0.3	0.6	8.64		
		4	1.8	0.3	0.3	0.648		
		4	1.9	0.3	0.3	0.684		
		4	2	0.3	0.3	0.72		
		4	2.1	0.3	0.6	1.512		
							24.3	in m^3

	Y-direction	12	2.4	0.3	0.3	2.592		
		12	2.5	0.3	0.3	2.7		
		12	2.6	0.3	0.3	2.808		
		12	2.7	0.3	0.6	5.832		
		6	7.1	0.3	0.3	3.834		
		6	7.2	0.3	0.3	3.888		
		6	7.3	0.3	0.3	3.942		
		6	7.4	0.3	0.6	7.992		
		2	0.7	0.3	0.3	0.126		
		2	0.8	0.3	0.3	0.144		
		2	0.9	0.3	0.3	0.162		
		2	1	0.3	0.6	0.36		
							34.38	in m³
	Stair Walll	12	0.3	0.2	0.1	0.072		
		3	1.9	0.1	0.2	0.114		
							0.186	in m³
5	Soil Filling							
	Foundtion Upto G.L.	1	0	0	0	77.019		
	From G.L. to Plinth	1	0	0	0	210.07	175.06	upto 50cm height
							252.079	
6	Sand Filling	1	0	0	0	35.012		remaining 10 cm height
	Sand filling in Stair	6	1.9	0.2	0.2	0.456		
							35.468	in m³
7	RCC Base Slab	1	15.9	14.6	0.1	23.214	23.214	in m³
8	DPC Course	Take approximately as 90% of total area				208.93	208.926	in m²
9	Tiles	Take approximately as 90% of total area				208.93	208.926	in m²
10	RCC column	12	3.5	0.6	0.3	7.56		
		14	3.5	0.3	0.3	4.41		in m³
							11.97	
11	Masonry Wall	9	2.7	0.3	3.5	25.515		
		13	3	0.3	3.5	40.95		
		2	7.4	0.3	3.5	15.54		
		2	2.1	0.3	3.5	4.41		

		1	7.4	0.2	3.5	5.18		
		3	1.7	0.1	3.5	1.785		
	Stage & Stair of Stage	2	2.4	0.6	0.1	0.288		
		1	4.5	0.6	0.1	0.27		
		6	0.3	0.2	0.1	0.036		
		4	0.7	0.1	0.2	0.056		
							94.03	in m³
12	Deduction Wall							
	Gate (G)	1	2.1	2.2	0.3	1.386		
	Door (D1)	5	1.1	2.2	0.3	3.63		
	Door (D2)	4	0.9	2.2	0.3	2.376		
	Window	10	1.2	1.2	0.3	4.32		
	Chhajja	10	1.4	0.3	0.15	0.63		
							12.342	in m³
13	Roof slab	1	15.9	14.6	0.15	34.821	34.821	in m³
14	Water Proofing Course	1	15.7	14.4	1	226.08	226.08	in m²
15	Parapet Wall	2	15.9	0.1	1.2	3.816		
		2	14.4	0.1	1.2	3.456		
							7.272	in m³
16	Roof Plaster(6 mm)	Same as Tiles				208.93	208.926	in m²
17	Outside Plaster (12 mm)	2	15.9	1	5.6	178.08		
		2	14.6	1	5.6	163.52		
	Inside Plaster (12 mm)	14	2.7	1	3.5	132.3		
		16	3	1	3.5	168		
		4	7.4	1	3.5	103.6		
		2	2.1	1	3.5	14.7		
		6	1.7	1	3.5	35.7		
		2	15.7	1	1.2	37.68		
		2	14.4	1	1.2	34.56		
	Plaster on side of C1 column	24	0.3	1	5.6	40.32	868.14	in m²

	Miscellaneous Plaster (add 20% of total Plaster) (12mm)					173.63	1041.768	in m²
18	Deduction (Plaster)							
	Gate (G)	2	2.1	1	2.2	9.24		
	Door (D1)	10	1.1	1	2.2	24.2		
	Door (D2)	8	0.9	1	2.2	15.84		
	Window	20	1.2	1	1.2	28.8		
							78.08	in m²

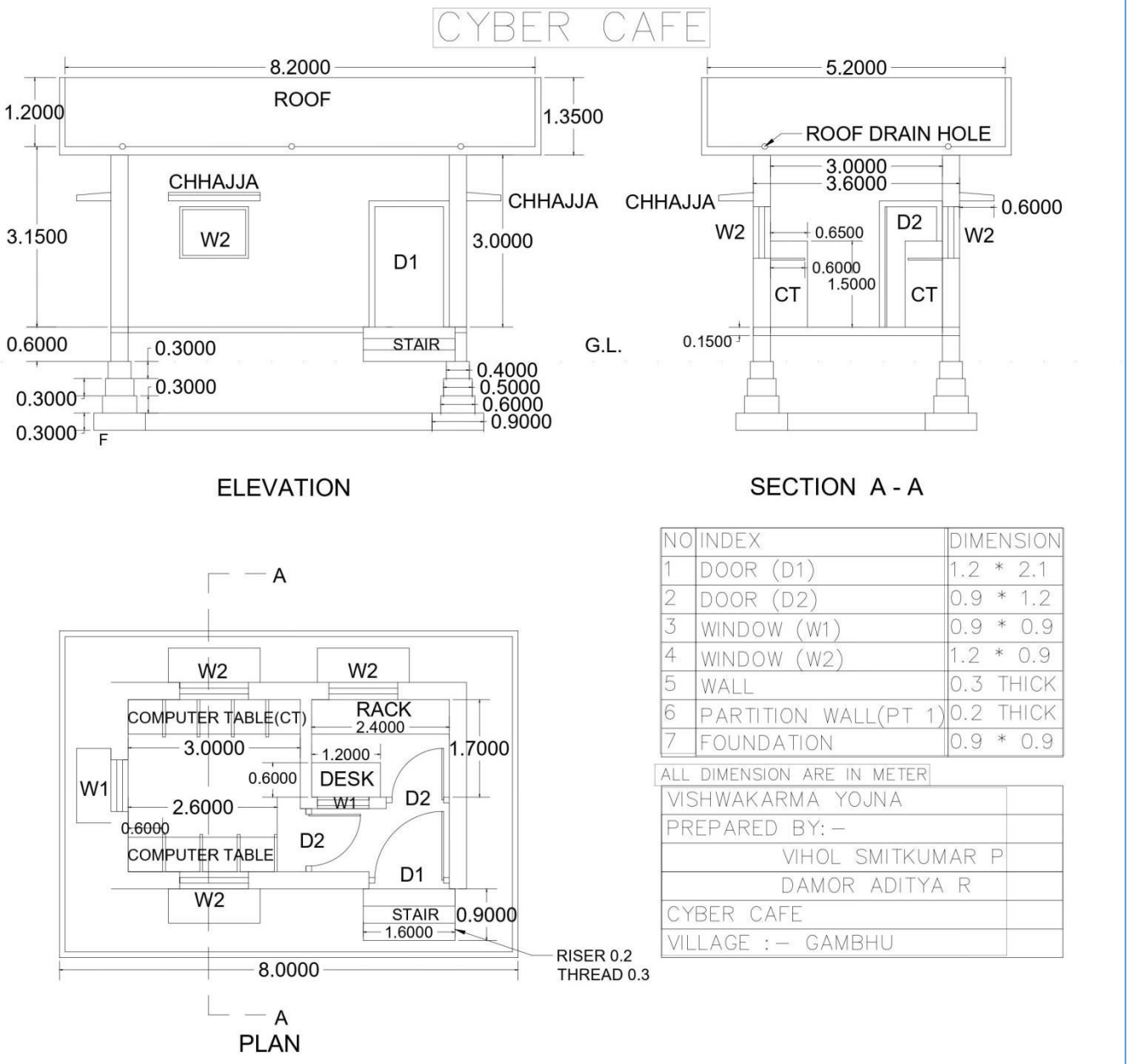
8.3.4. ABSTRACT SHEET OF COMMUNITY HALL

COMMUNITY HALL ABSTRACT SHEET					
Sr. No.	**Description**	**Qty.**	**rate**	**per**	**amount**
1	Excavation	158.841	100	cu.m	15884.1
2	BBLC	39.852	3500	cu.m	139,482
3	RCC Foundation	9.678	1200	cu.m	11613.6
4	Wall Substructure	58.866	80	m2	4709
5	Soil Filling	252.079	105	cu.m	26468.295
6	Sand filling	35.468	124	cu.m	4398.032
7	Wall Super structure	88.96	80	m2	7116.8
8	RCC Super structure	70.005	90	sq.ft	6300
9	Plaster 6mm	208.926	80	sq.ft	16714.08
10	Plaster 12mm	963.688	85	sq.ft	81913.48
11	DPC	208.926	330	sq.m	68945
12	Water Proofing	226.08	250	sq.ft	56520
13	Tiles	208.926	130	sq.m	27160.38
		Total			467584.767

add 1.5% water charges	7013.77151
Add 2 % contingency	9351.69534
add 10% profit	46758.4767
Sum total	530708.711

❖ DESIGN OF CYBER CAFE

8.3.5. MEASUREMENT SHEET OF CYBER CAFE(Design 3)



NO	INDEX	DIMENSION
1	DOOR (D1)	1.2 * 2.1
2	DOOR (D2)	0.9 * 1.2
3	WINDOW (W1)	0.9 * 0.9
4	WINDOW (W2)	1.2 * 0.9
5	WALL	0.3 THICK
6	PARTITION WALL(PT 1)	0.2 THICK
7	FOUNDATION	0.9 * 0.9

ALL DIMENSION ARE IN METER

VISHWAKARMA YOJNA
PREPARED BY: –
VIHOL SMITKUMAR P
DAMOR ADITYA R
CYBER CAFE
VILLAGE : – GAMBHU

FIG. PLAN ELEVATION & SECTION OF CYBER CAFE

PROPOSED DESIGN OF CYBER CAFE
(IN AUTOCAD)

Estimate For Cyber Café								
Sr. No.	Description	Count	Length	Width	Height	Qty.	Total Qty.	Remarks
1	Excavation							
	For Foundation							
	X-direction	2	7.1	0.9	1.2	15.336		
	Y-direction	2	2.1	0.9	1.2	4.536		
	For Stair	1	1.5	0.9	0.1	0.135		
							20.007	Measured in m^3
2	BBLC							
	Foundation	2	7.1	0.9	0.3	3.834		
		2	2.1	0.9	0.3	1.134		
	Stair	1	1.5	0.9	0.1	0.135		
							5.103	Measured in m^3
3	RCC Substructure	4	0.6	0.6	0.3	0.432		
		4	0.5	0.5	0.3	0.3		
		4	0.4	0.4	0.3	0.192		
		4	0.3	0.3	0.6	0.216		
							1.14	Measured in m^3
4	Wall in Substructure							
	X-direction	2	5.3	0.3	0.3	0.954		
		2	5.4	0.3	0.3	0.972		
		2	5.5	0.3	0.3	0.99		
		2	5.6	0.3	0.6	2.016		
	Y-direction	2	2.7	0.3	0.3	0.486		
		2	2.8	0.3	0.3	0.504		
		2	2.9	0.3	0.3	0.522		
		2	3	0.3	0.6	1.08		
		1	3	0.2	0.6	0.36		
							7.884	Measured in m^3
	Stair Wall	12	0.3	0.2	0.1	0.072		
		3	1.5	0.1	0.2	0.09		
							0.162	Measured in m^3
5	Soil Filling							
	Foundation Up to G.L.	1	0	0	0	9.552		
	From G.L. to	1	5.4	3	0.4	6.48		

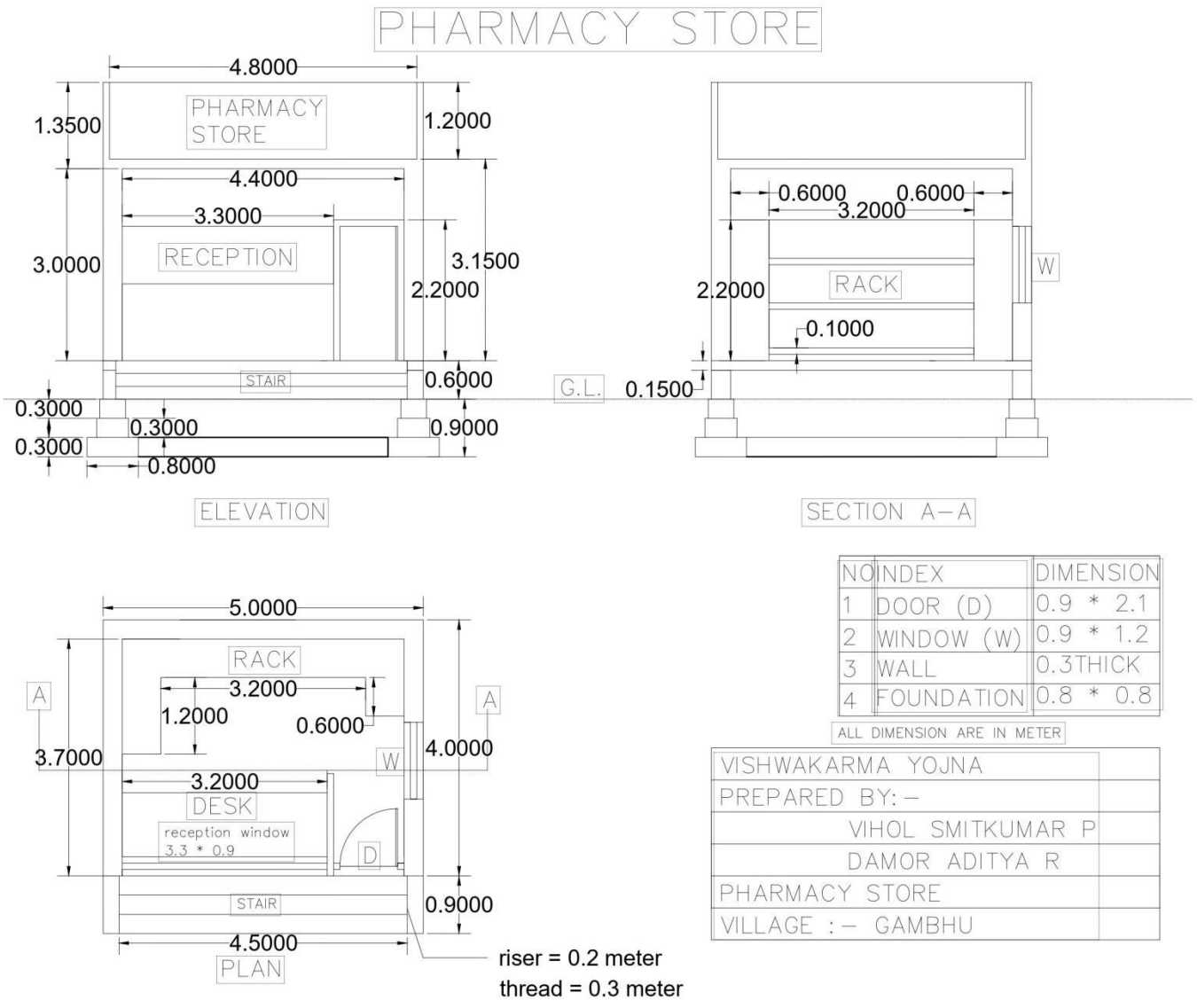
	Plinth							
							16.032	Measured in m^3
6	Sand Filling	1	5.4	3	0.1	1.62		
	Sand filling in Stair	6	1.3	0.2	0.2	0.312		
							1.932	Measured in m^3
7	RCC Base Slab	1	6.2	3.6	0.1	2.232	2.232	Measured in m^3
8	DPC Course	1	5.4	3	1	16.2	16.2	Measured in m^2
9	Tiles	1	5.4	3	1	16.2	16.2	Measured in m^2
10	RCC column	4	3	0.3	0.3	1.08	1.08	Measured in m^3
11	Masonry Wall	2	5.6	0.3	3	10.08		
		2	3	0.3	3	5.4		
		1	3	0.2	3	1.8		
		1	2.4	0.1	3	0.72		Measured in
							18	m^3
12	Deduction (Wall)							
	Door (D1)	1	1.4	2.2	0.3	0.924		
	Door (D2)	1	1.1	2.2	0.2	0.484		
	Door (D2)	1	1.1	2.2	0.1	0.242		
	Window (W1)	1	1.1	1.1	0.3	0.363		
	Window (W1)	1	1.1	1.1	0.1	0.121		
	Window (W2)	3	1.4	1.1	0.3	1.386		
	Chajja (W1)	1	1.5	0.3	0.15	0.0675		
	Chajja (W2)	3	1.8	0.3	0.15	0.243		Measured in
							3.8305	m^3
13	Roof slab	1	6.2	3.6	0.1	2.232	2.232	Measured in m^3
14	Water Proofing Course	1	8.2	5.2	1	8.2	8.2	Measured in m^2
15	Parapet Wall	2	8.4	0.1	1.2	20.16		
		2	5.2	0.1	1.2	12.48		Measured in
							32.64	m^3
16	Roof Plaster (6 mm)	1	5.4	3	1	16.2	16.2	Measured in m^2
17	Outside Plaster (12 mm)	2	6.2	1	3.6	44.64		
		2	8.4	1	1.35	22.68		
		2	1	3.6	3.6	25.92		
		2	1	5.4	1.35	14.58		

	Inside Plaster (12 mm)	2	5.4	1	3	32.4		
		4	1	3	3	36		
	Inside Parapet Plaster (12 mm)	2	8.2	1	1.2	19.68		Measured in
		2	1	5.2	1.2	12.48	208.38	m²
	Miscellaneous Plaster (add 20% of total Plaster) (12mm)					41.676	250.06	Measured in m²
18	Deduction (Plaster)							
	Door (D1)	2	1.4	2.2	1	6.16		
	Door (D2)	4	1.1	2.2	1	9.68		
	Window (W1)	4	1.1	1.1	1	4.84		
	Window (W2)	6	1.4	1.1	1	9.24		Measured in
							29.92	m²

8.3.6. ABSTRACT SHEET OF CYBER CAFE

CYBER CAFÉ ABSTRACT SHEET					
Sr. No.	Index	Qty.	rate	per	amount
1	Excavation	20.007	100.00	cu.m	2000
2	BBLC	5.103	3000.00	cu.m	15309.00
3	RCC Foundation	1.14	1260.00	cu.m	1436.40
4	Wall Substructure	8.046	80.00	m2	643.68
5	Soil Filling	16.032	105.00	cu.m	633.36
6	Sand filling	1.932	124.00	cu.m	115.57
7	Wall Super structure	46.8095	80.00	m2	3744.00
8	RCC Super structure	5.544	90.00	sq.ft	500.00
9	Plaster 6mm	16.2	80.00	sq.m	1296.00
10	Plaster 12mm	220.136	30.00	sq.m	6604.00
11	DPC	16.2	250.00	sq.ft	4050.00
12	Water Proofing	8.2	120.00	sq.m	984.00
		Total			37316.008
		add 1.5% water charges			559.74012
		Add 2 % contingency			746.32016
		add 10% contractor profit			3731.6008
		Sum Total			42353.66908

❖ DESIGN OF PHARMACY STORE



NO	INDEX	DIMENSION
1	DOOR (D)	0.9 * 2.1
2	WINDOW (W)	0.9 * 1.2
3	WALL	0.3THICK
4	FOUNDATION	0.8 * 0.8

ALL DIMENSION ARE IN METER

VISHWAKARMA YOJNA
PREPARED BY:–
VIHOL SMITKUMAR P
DAMOR ADITYA R
PHARMACY STORE
VILLAGE :– GAMBHU

FIG. PLAN ELEVATION & SECTION OF PHARMACY STORE

PROPOSED DESIGN OF PHARMACY STORE (IN AUTOCAD)

8.3.7. MEASUREMENT SHEET OF PHARMACY STORE(Design 4)

Estimation For Pharmacy Store								
Sr. No	Description	Count	Length	Width	Height	Quantity	Total Quantity	Remarks
1	Excavation							
	For Foundation							
	X-direction L=5.0+0.25+0.25	2	5.5	0.8	0.9	7.92		
	Y-direction B=4.0-0.3-0.3-0.25-0.25	2	2.9	0.8	0.9	4.176		
	For Stair	1	4.5	0.9	0.1	0.405		
							12.501	Measured in m^3
2	BBLC							
	Foundation	2	5.5	0.8	0.3	2.64		
		2	2.9	0.8	0.3	1.392		
	Stair	1	4.5	0.9	0.1	0.405		
							4.437	Measured in m^3
3	RCC Substructure	4	0.5	0.5	0.3	0.3		
		4	0.4	0.4	0.3	0.192		
		4	0.3	0.3	0.6	0.216		
							0.708	Measured in m^3
4	Wall in Substructure							
	X-direction	2	4.2	0.3	0.3	0.756		
		2	4.3	0.3	0.3	0.774		
		2	4.4	0.3	0.5	1.32		
	Y-direction	2	3.2	0.3	0.3	0.576		
		2	3.3	0.3	0.3	0.594		
		2	3.4	0.3	0.5	1.02		
							5.04	Measured in m^3
	Stair Walll	2	0.3	0.1	0.2	0.012		
		2	0.3	0.1	0.4	0.024		
		2	0.3	0.1	0.6	0.036		
		3	4.3	0.1	0.2	0.258		
							0.33	Measured in m^3
5	Soil Filling							
	Foundtion Upto G.L.	1	0	0	0	4.872		

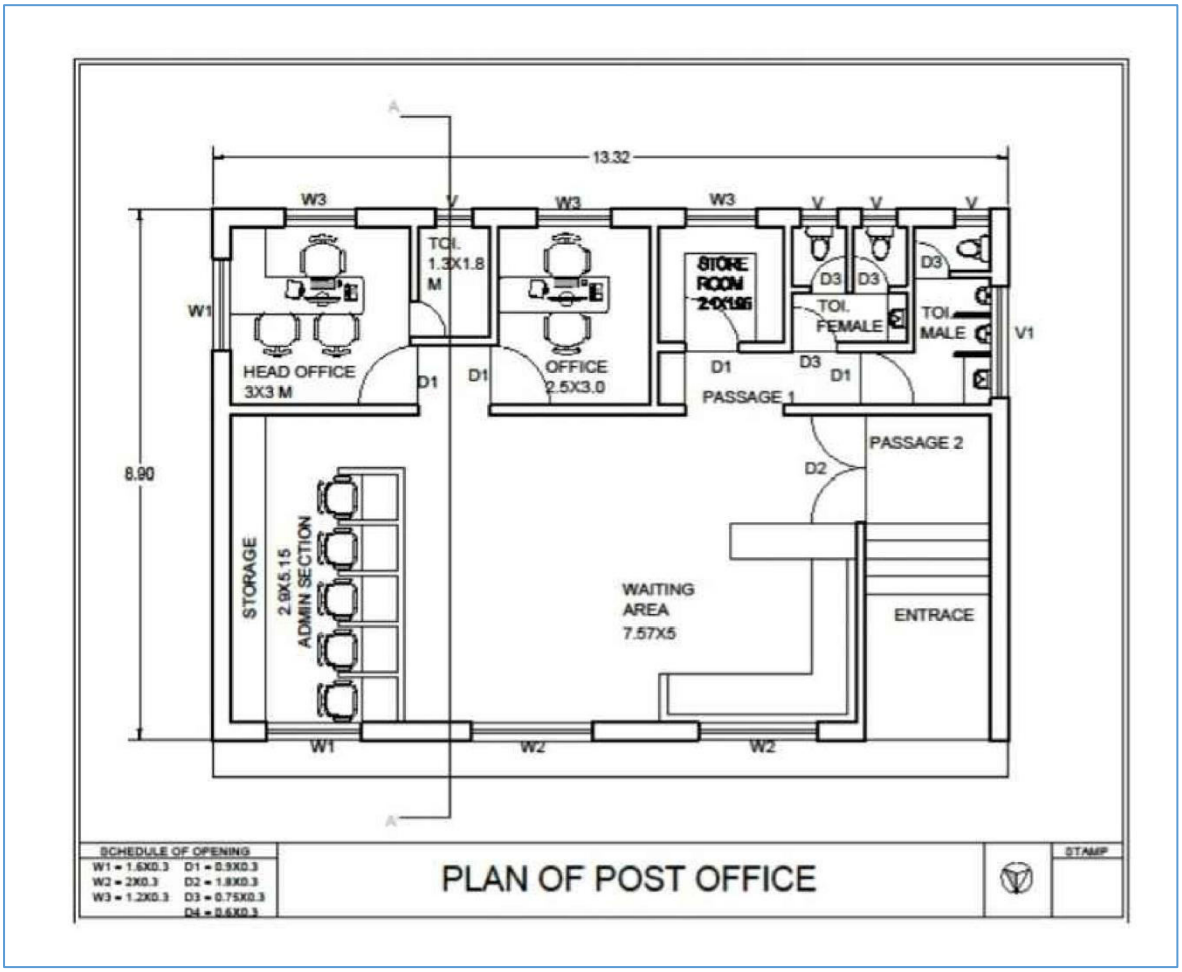
	From G.L. to Plinth	1	4.4	3.4	0.4	5.984		
							10.856	Measured in m^3
6	Sand Filling	1	4.4	3.4	0.1	1.496		
	Sand filling in Stair	6	4.3	0.2	0.2	1.032		
							2.528	Measured in m^3
7	RCC Base Slab	1	5	4	0.1	2	2	Measured in m^3
8	DPC Course	1	4.4	3.4	1	14.96	14.96	Measured in m^2
9	Tiles	1	4.4	3.4	1	14.96	14.96	Measured in m^2
10	RCC column	4	3	0.3	0.3	1.08	1.08	Measured in m^3
11	Masonry Wall	2	4.4	0.3	3	7.92		
		2	3.4	0.3	3	6.12		
		1	0.9	0.1	3	0.27		
							14.31	Measured in m^3
12	Deduction (Wall)							
	Door	1	0.9	0.3	2.2	0.594		
	Window	1	0.9	0.3	1.2	0.324		
	Reception	1	3.3	0.3	0.9	0.891		
	Chhajjas	2	1.1	0.3	0.15	0.099		
							1.908	Meas. in m^3
12	Roof slab	1	5	4	0.1	2	2	Meas. in m^3
13	Water Proofing	1	4.8	3.8	1	18.24	18.24	
14	Parapet Wall	2	5	0.1	1.2	1.2		
		2	3.8	0.1	1.2	0.912		
							2.112	Meas. in m^3
15	Roof Plaster(6 mm)	1	4.4	3.4	1	14.96	14.96	Measured in m^2
16	Outside Plaster (12 mm)	2	5	1	5.1	51		
		2	1	4	5.1	40.8		
	Inside Plaster (12 mm)	2	4.4	1	3	26.4		

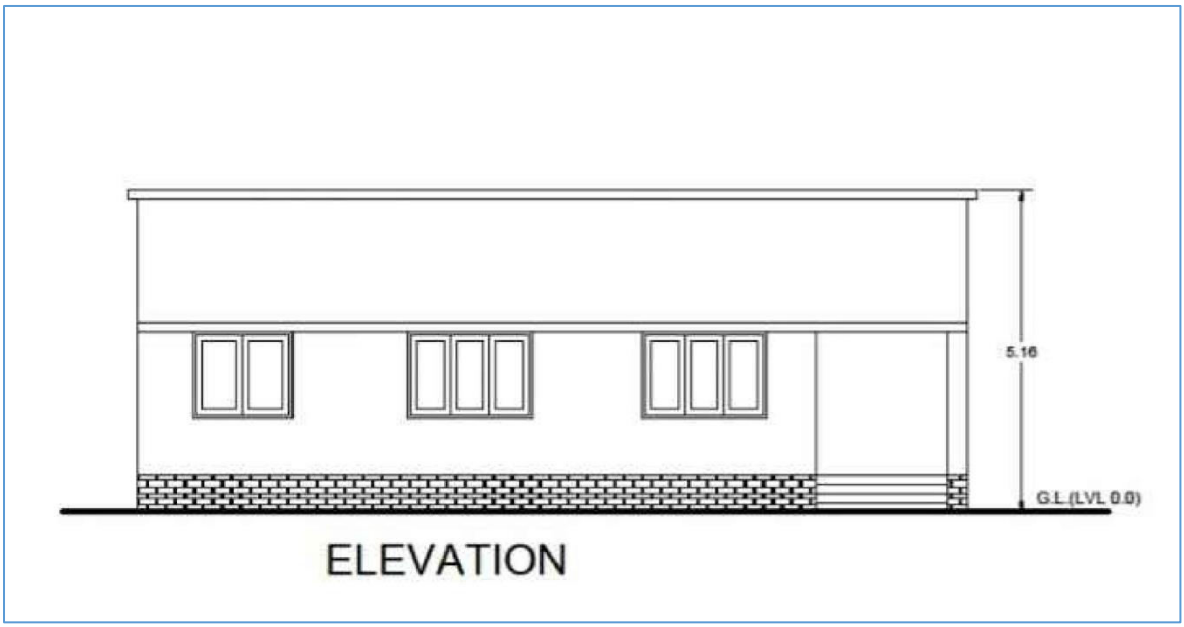
		2	1	3.4	3	20.4		
	Inside Parapet Plaster (12 mm)	2	4.8	1	1.2	11.52		
		2	1	3.8	1.2	9.12	159.24	Meas.in m²
	Miscellaneous Plaster (add 20% of total Plaster) (12mm)					31.848	191.088	Measured in m²
17	Deduction (Plaster)							
	Door	2	0.9	2.2	1	3.96		
	Window	2	0.9	1.2	1	2.16		
	Reception	2	3.3	0.9	1	5.94		
							12.06	Meas. in m²
	(note:- Rack & Desk are made of either Plastic, Wood or Steel & hence it is not calculated here as they are mad on contract basis after completion of construction.)							

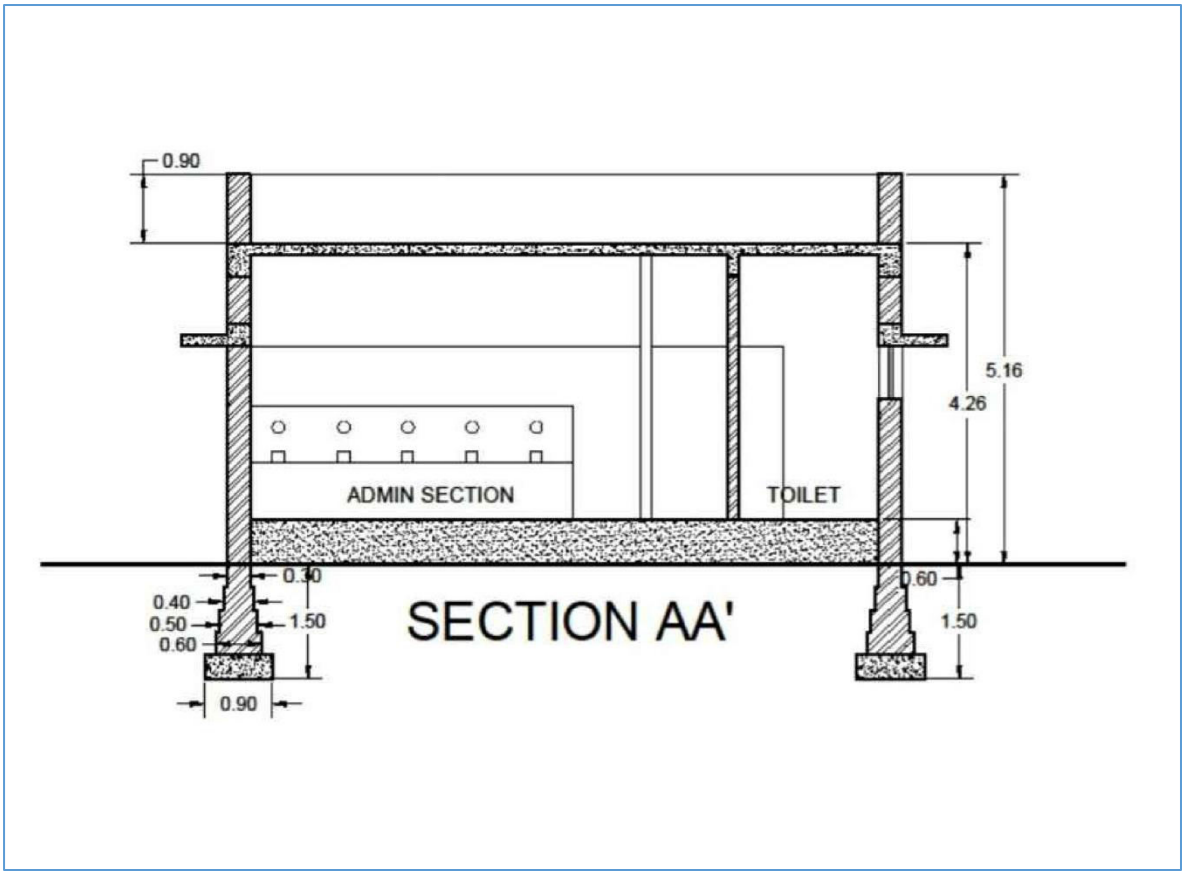
8.3.8. ABSTRACT SHEET OF PHARMACY STORE

ABSTRACT SHEET PHARMACY STORE					
Sr. No.	Description	Qty.	rate	Per	Amount
1	Excavation	12.501	100	cu.m	112.501
2	BBLC	4.437	3000	cu.m	13311
3	RCC Foundation	0.708	1260	cu.m	892.08
4	Wall Substructure	5.37	80	m2	430
5	Soil Filling	10.856	105	cu.m	1139.88
6	Sand filling	2.528	124	cu.m	313.472
7	Wall Super structure	14.514	80	m2	1161.12
8	RCC Super structure	5.179	90	sq.ft	466.11
9	Plaster 6mm	14.96	80	sq.ft	1196.8
10	Plaster 12mm	179.028	85	sq.ft	15300
11	DPC	14.96	330	sq.m	4936.8
12	Water Proofing	18.24	250	sq.ft	4560
13	Tiles	14.96	120	sq.m	1785.2
		total			45604.963
		add 1.5% water charges			684.074445
		Add 2 % contingency			912.09926
		Add 10% contractors profit			4560.4963
		Sum Total			51761.63301

❖ DESIGN OF POST OFFICE(Design 5)







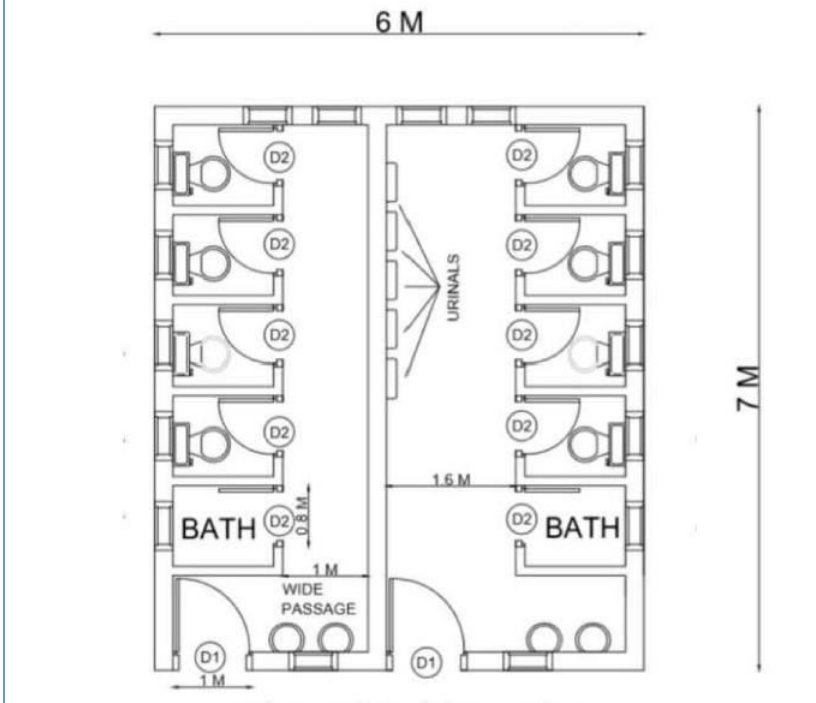
8.3.9. MEASUREMENT SHEET OF POST OFFICE

measurement sheet of post office							
sr no	item number	no	L (m)	w(m)	D(m)	Quantity	
1	excavation		9.97	12	1.5	**179.46**	cu.m
2	PCC						
	step 1		9.97	12	1	116.04	
	step 2		9.97	9	0.15	13.45	
	step 3		9.67	6	0.15	8.973	
						138.463	in cu.m
3	wall up to plinth level		9.67	0.3	1.5	1.49	
4	wall up to roof level		9.67	0.3	1.3	3.77	
5	RCC		9.67	3	0.15	**4.35**	cu.m

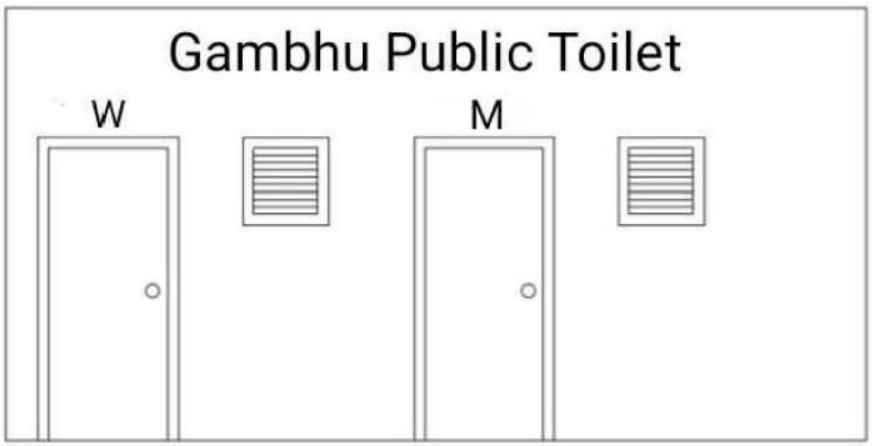
8.3.10. ABSTRACT SHEET OF POST OFFICE

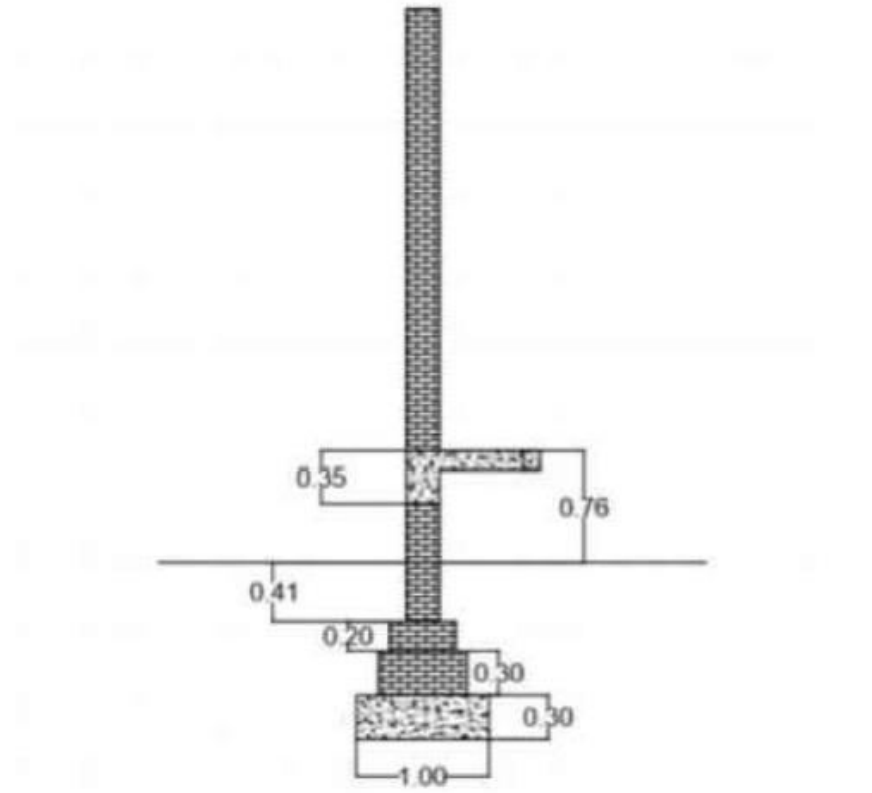
Abstract Sheet of post office									
Sr.No.	item number	L(m)	w(m)	D(m)	Quantity		rate	per	amount
1	excavation	9.97	12	1.5	179.46	cu.m	100	cu.m	17946
2	PCC								
	step 1	9.97	12	1	116.04				
	step 2	9.97	9	0.15	13.45				
	step 3	9.67	6	0.15	8.973				
					138.46	cu.m	138.5	cu.m	484620
3	wall upto plinth	9.67	0.3	1.5	1.49				
4	wall upto roof	9.67	0.3	1.3	3.77				
						5.26	3000	cu.m	15780
5	RCC	9.67	3	0.15	4.35	cu.m	8800	cu.m	38280
						Total cost			556626
						add 5% water charges			27831
						add 10% contractor profit			55662
						total estimate			640119

❖ DESIGN OF PUBLIC TOILET(Design 6)



Plan Of Public Toilet





Section Of Public Toilet

8.3.11. MEASUREMENT SHEET OF PUBLIC TOILET

Estimation for public toilet								
Sr. No	Description	Count	Length	Width	Height	Quantity	Total Qty	Remarks
1	Excavation		30.5	0.74	1.47	33.177	33.177	Meas. in m³
2	PCC							
	step 1		30.5	0.74	0.2	5.51		
	step 2		30.5	0.6	0.2	3.66		
	step 3		30.5	0.45	0.2	2.745		
							11.915	Meas. in m³
3	RCC Substructure	4	8	0.8	0.3	40	307.2	Meas. in m³
	RCC column	10	4	0.6	0.3	7.1		
		3	4	0.3	0.3	1.07		
							8.17	Meas. in m³
4	Masonry Wall	8	3	0.3	3.35	24.12		
		1	13.8	0.3	2.75	11.385		
		1	13.8	0.3	0.6	2.484		
	Stair	24	0.3	0.2	0.1	0.144		
		6	1.1	0.1	0.2	0.132		
							38.265	Meas. in m³
5	Deduction							
	Door	1	1	0.2	2	0.5		
	Window	1	1	1.5	0.4	0.7		
							1.2	m3

8.3.12. ABSTRACT SHEET OFPUBLIC TOILET

abstract sheet of public toilet					
Sr. No.	item	quantity	rate	per	amount
1	Exavation	33.17	100	cu.m	3317
2	pcc	11.915	3000	cu.m	35745
2	rcc	307.2	8800	cu.m	2703360
3	brickwork	8.17	800	cu.m	6536
4	stair	38.265	150	sq.m	5739
5	masonary wall	581.4	3500	cu.m	2034900
		total			4789597
		add 1.5% water charges			71843.96
		add 2% contingency			95791.94
		add 10%profit			478959.7
		sum total			5436193

CHAPTER 9

Proposing designs for Future Development of the Village for

PART-II Design:

Anganwadi

In the Gambhu village there is some anganwadi buildings are available. But for the better and entertained educational standard we have proposed one design of anganwadi as educational design in the village.

Maternity home

Village has hospital building near to school and panchayat building but to meet extra requirement of hospital in we are suggesting maternity home.

Library

Currently the village has library building which is of size 2.7*2.7 meter2 and is insufficient to meet requirement of students and aspirins.

Training centre

Villagers are mainly dependents on agriculture sources for their food & wealth, we are suggesting training centre to be designed in future considering opportunity of better living standard.

Grocery shop

Grocery shop is suggested considering low income families whose day to day earning is less and which goes in grocery items, if these items cost can be controlled then it has big impact on their life.

E-seva Kendra

E-seva Kendra is suggested considering online works of revenue, nfsa & agriculture.

CHAPTER 10

Conclusion of the Entire Village Activities of the Project :

We have visited the Gambhu 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 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 bit by bit. This can cause reduce the load on urban areas as well as pollution in both sector can be minimized gradually.

CHAPTER 11

References refereed for this project

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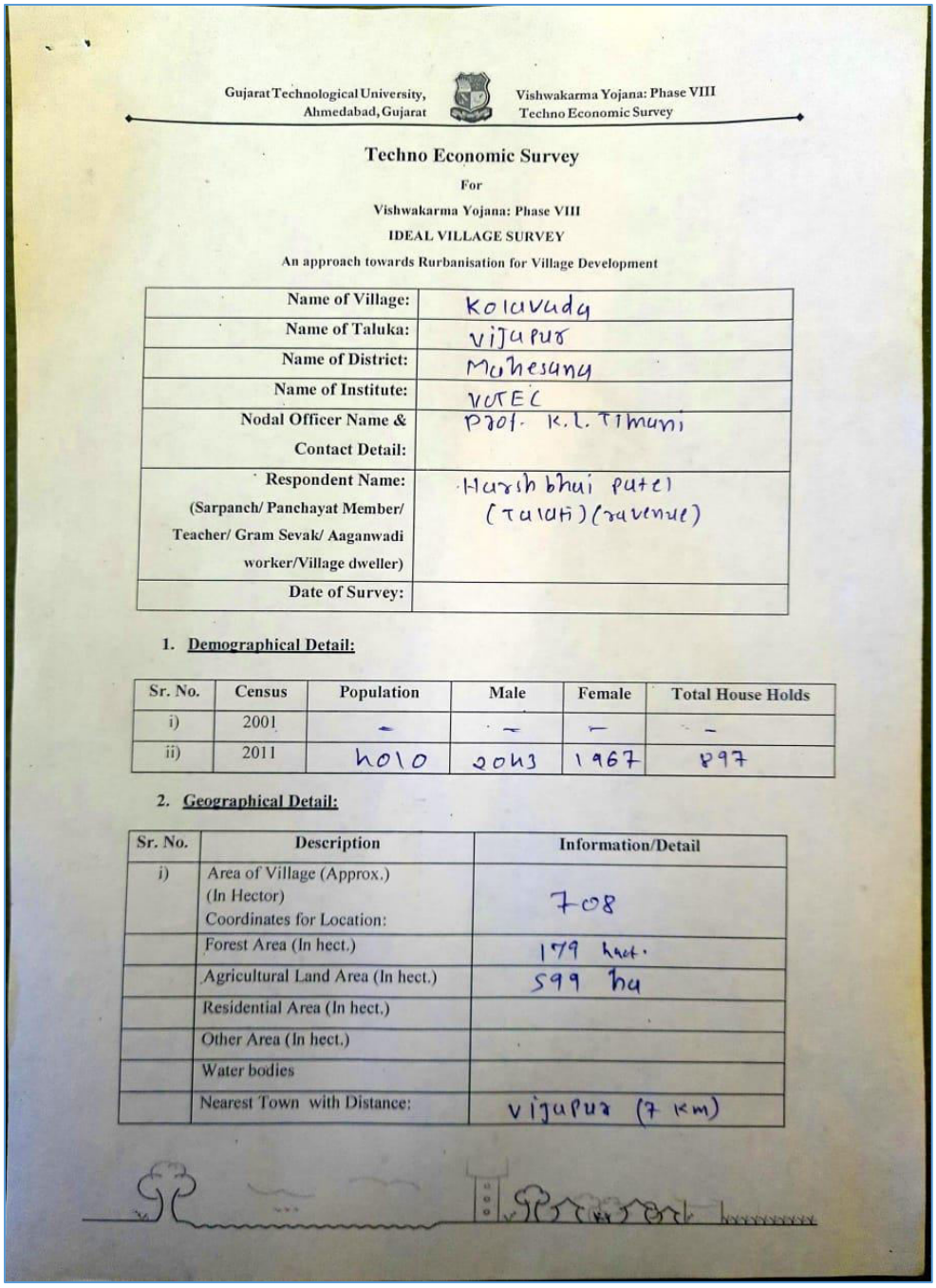
CHAPTER 12

Annexure attachment

12.1. SURVEY FORM OF IDEAL VILLAGE SCANNED COPY ATTACHMENT IN THE REPORT FOR PART-



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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:	Kolavada
Name of Taluka:	Vijapur
Name of District:	Mahesana
Name of Institute:	VVTEC
Nodal Officer Name & Contact Detail:	Prof. K.L. Timani
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Harish bhai Patel (Talati) (Revenue)
Date of Survey:	

1. Demographical Detail:

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	-	-	-	-
ii)	2011	4010	2043	1967	897

2. Geographical Detail:

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	708
	Forest Area (In hect.)	179 hect.
	Agricultural Land Area (In hect.)	599 ha
	Residential Area (In hect.)	
	Other Area (In hect.)	
	Water bodies	
	Nearest Town with Distance:	Vijapur (7 km)

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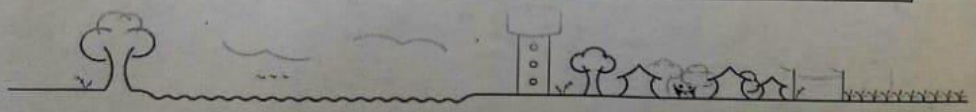
3. Occupational Details:

Name of Three Major Occupation groups in Village	
	1. Agriculture
	2. private business
	3. local wage work

4. Physical Infrastructure Facilities:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated)	Two Nawady	✓		
	• RO Water	Two Plant	✓		
	• Well (Covered/ Uncovered)			✓	private
	• Hand pumps	-	-	✓	not req^d.
	• Tube well/ Borehole	Two	✓		
	• River/ Canal/ Spring/ Lake/ Pond	Dhuroi (canal)			
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	2×100000	-	-
	Underground Sump	Capacity:	-	-	-
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	Yes	✓		
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	closed			
	If Open than Pucca / Kutchcha	-	-	-	-
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	discharged lake			used for irrigation
Suggestions if any:					



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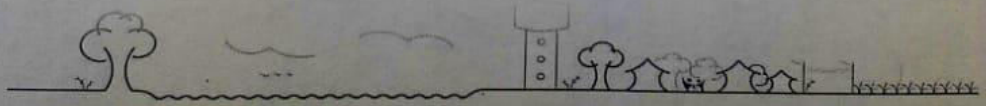
E.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	Pucca	–	–	Asphalt
	Main road				
	Internal streets	–	–		RCC
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH -			5 Km
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Yes	–		within village
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	–		within village
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes	–		Auto
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes	–	–	more than 6 hr
	Power supply for Domestic Use	Yes			
	Power supply for Agricultural Use	Yes			
	Power supply for Commercial Use	Yes			
	Road/ Street Lights	Yes			LED



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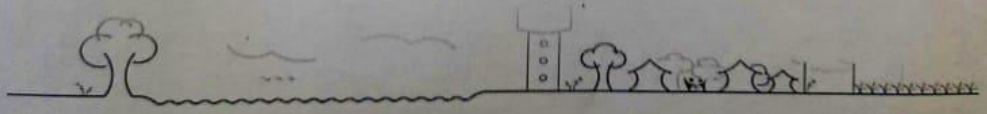
	Electrification in Government Buildings/ Schools/ Hospitals	yes			
	Renewable Energy Source Facilities (Y/ N)	no			
	LED Facilities	yes			
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	yes			many
	Location Condition	good.			distributed
	Community Toilet (With bath/ without bath facilities)	yes			without bath
	Solid & liquid waste Disposal system available	yes		inadequate	
	Any facility for Waste collection from road	yes		inadequate	
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	canal			
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	300/800			

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks



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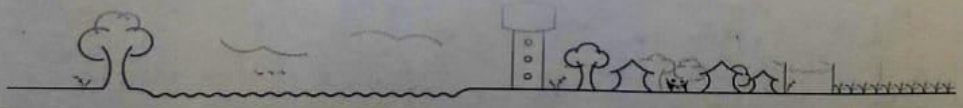
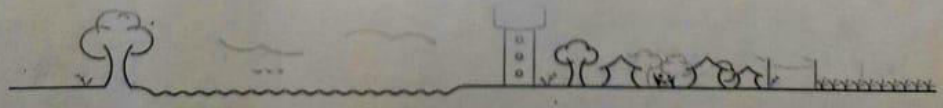
K.	Health Facilities:				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	PHC – referral hospital good			
	Private Clinic/Private Hospital/ Nursing Home				
	If any of the above Facility is not available in village than approx.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

L.	Education Facilities:				
	Aaganwadi/ Play group	yes			7.
	Primary School	yes			one
	Secondary school	yes			One
	Higher sec. School	yes			one
	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.				
Suggestions if any:					

M.	Socio- Culture Facilities				
	Community Hall (With or without TV) Location:	yes (Dairy)			without TV



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



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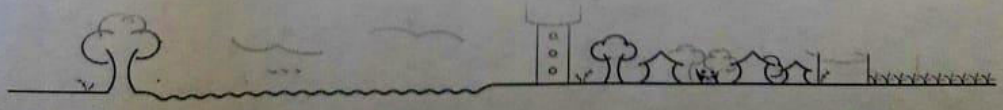
	General Market	Yes			
	Shops (Public Distribution System)	Yes			
	Panchayat Building	Yes			
	Pharmacy/Medical Shop	Yes			
	Bank & ATM Facility	Yes			
	Agriculture Co-operative Society	–			
	Milk Co-operative Soc.	Yes			
	Small Scale Industries	Yes			
	Internet Cafes/ Common Service Center/Wi Fi	Yes			
	Other Facility	–			
Suggestions if any:					

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

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

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	soft copy.



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Vishwakarma Yojana: Phase VI
Techno Economic Survey

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)	all buildings are maintained in good condition	
2.	Additional Information/ Requirement	-	
		-	
		-	

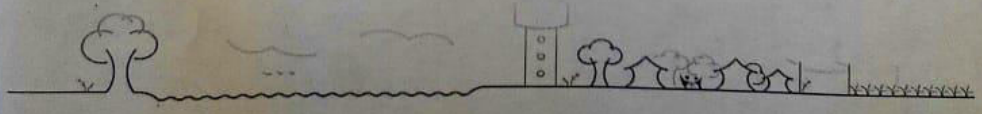
9. Smart Village Proposal Design

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

તલાટી-કમ મંત્રી
ગોલવડા ગ્રામ પંચાયત
તા. જુ.



12.2 SURVEY FORM OF SMART VILLAGE SCANNED COPY ATTACHMENT IN REPORT FOR PART: 1

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	GANDHINAGAR.
Name of Taluka:	GANDHINAGAR
Name of Village:	VAVOL
Name of Institute:	Vishwakarma. govt. eng. college.
Nodal Officer Name & Contact Detail:	prof. K.L. Timani
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	920
2.	2011	11957	6137	5820	2621

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1938.75 hectares.
2.	Forest Area (In hect.)	0
3.	Agricultural Land Area (In hect.)	1535.00 hect.
4.	Residential Area (In hect.)	400.75 hect.
5.	Other Area (In hect.)	0
6.	Distance to the nearest railway station (in kilometers):	Gandhinagar - 1 KM.

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7.	Name of Nearest Town with Distance:	Gandhinagar - 5KM
8.	Distance to the nearest bus station (in kilometers):	Gandhinagar - 4 KM
9.	Whether village is connected to all road for the any facility or town or City?	Yes.

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	
	2.	JOB
	3.	workers (GIDC)

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	-		
	Piped To Yard/Plot				-
	Public Tap/Standpipe	yes	one.		- working
	Tube Well Or Bore Well	yes	-		4 - tube well
2.	**DUG WELL**	no			
	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			-
	Bottled Water	-			
	Hand Pump	-			-
	Other(Specify)**Lake/ Pond**	-			one - lake

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Suggestions if any:						
B.	**Water Tank Facility**					
	Overhead Tank	Capacity:	3x 1 lakh			
	Underground Sump	Capacity:	1 x			
Suggestions if any:						
C.	**The Type of Drainage Facility**					
	A. UNDERGROUND DRAINAGE	underground	adequate			
	1					
	2					
	B. OPEN WITH OUTLET	x				
	C. OPEN WITHOUT OUTLET	x				
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 bypass-	
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			Government 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 hr. (UGVCL)	

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	Power supply for Domestic Use	yes	✓		
	Power supply for Agricultural Use	yes	✓		from purchased
	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	✓		tracto - trolly
	Any facility for Waste collection from road	-	✓		
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND	yes	✓		one - lake
	STREAM/RIVER	no.			
	CANAL	yes	✓	-	for drinking
	WELL	yes			only. (narmada)
	TUBE WELL	yes	✓		
	OTHER (SPECIFY)	no.			-
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	80% P. 20% K.	✓		-

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	yes			
	Sub-Centre	yes			
	PHC	no	-	-	Adarat
	BLOCK PHC	no			Gandhinagar
	CHC/RH	no			
	District/ Govt. Hospital	no	-	-	
	Govt. Dispensary	no			
	Private Clinic	yes	-	-	
	Private Hospital/	no	-	-	
	Nursing Home	no	-	-	
	AYUSH Health Facility	yes	-	-	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	yes		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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Vishwakarma Yojana: Phase VIII
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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		yes	
	Recreation Center	yes		yes	
	Cinema/ Video Hall	no			
	Assembly Polling Station	no.	primary school	yes	
	Birth & Death Registration	yes	panchayat	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	Various Spot	✓	
	Agriculture Co-operative Society	No.			✓
	Milk Co-operative Soc.	good		✓	
	Small Scale Industries	No.			✓
	Internet Cafes/ Common Service Center/Wi Fi	yes.			✓
	Youth Club	–			✓
	Mahila Mandal	yes.		✓	

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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				No.
	6. Mid-day Meal Programme			Yes	
	7. Intergrated Child Development Scheme (ICDS)			Yes.	
	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)			–	–
	19. Indira Awas Yaojna (IAY)			Yes.	~~Ye~~
	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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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

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1.	Repair & Maintenance of Existing Public Infrastructure facilities,	-	
	School Building	Yes	-
	Health Center	NO	-
	Panchayat Building	Yes.	-
	Public Toilets & any other	No.	-
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?	Yes Yes.	due to Covid-19.

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

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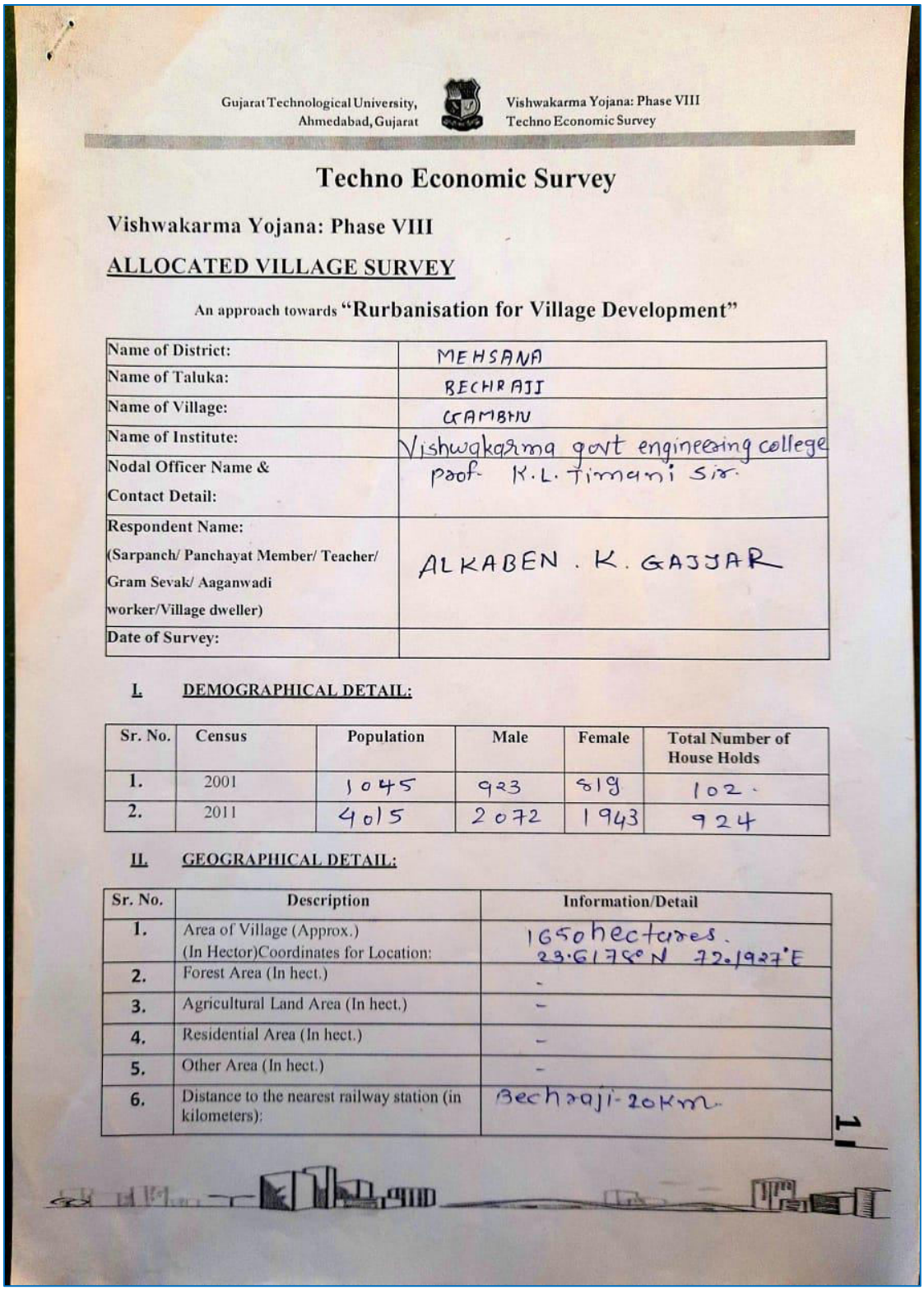
તા. જી. ગાંધીનગર

12.3. SURVEY FORM OF ALLOCATED VILLAGE SCANNED COPY ATTACHMENT IN THE REPORT:-



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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	MEHSANA
Name of Taluka:	BECHRAJI
Name of Village:	GAMBHU
Name of Institute:	Vishwakarma govt engineering college
Nodal Officer Name & Contact Detail:	Prof. K.L. Timani Sir.
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	ALKABEN . K. GAJJAR
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	1045	923	819	102.
2.	2011	4015	2072	1943	924

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1650 hectares. 23.6175°N 72.1927°E
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):	Bechraji-20Km.

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7.	Name of Nearest Town with Distance:	MODHERA (7 km)
8.	Distance to the nearest bus station (in kilometers):	0 km
9.	Whether village is connected to all road for the any facility or town or City?	yes.

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. Agricultural - Farming.
	2. Animal husbandary
	3.

Major crops grown in the village:	1. wheat
	2. castor
	3. cotton

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
1.	**PIPED WATER**				
	Piped Into Dwelling	yes	yes		
	Piped To Yard/Plot	-	-		
	Public Tap/Standpipe	yes	yes		
	Tube Well Or Bore Well	yes	yes		
2.	**DUG WELL**				
	Protected Well	yes	-		
	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	-			- irrigation water is available in Bhalgamda
	Bottled Water	-			
	Hand Pump	-			

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	Other(Specify)**Lake/ Pond**	available			
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	1.5 lakh litre		enough.
	Underground Sump	Capacity:	1.0 lakh litre		
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1	yes.			connected to pond. used in irrigation
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	connected			with 6 village
	Main road	Asphalt			
	Internal streets	concrete			not sufficient.
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH 134	2.5 Km		four luneing under construction
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	no.			nearest in. Becharaji (17 Km)
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	yes			enough.
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	yes.			
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	yes			24 hr.

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Vishwakarma Yojana: Phase VIII
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	Power supply for Domestic Use	yes.	-	-	-
	Power supply for Agricultural Use	yes.	-	-	-
	Power supply for Commercial Use	yes.			
	Road/ Street Lights	yes.			
	Electrification in Government Buildings/ Schools/ Hospitals	yes			
	Renewable Energy Source Facilities (Y/ N)	no.			limited.
	LED Facilities	yes.			25% work.
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	not.	-	-	not in sufficient number.
	Location Condition				damaged.
	Community Toilet (With bath/ without bath facilities)	no.			to be designed
	Solid & liquid waste Disposal system available	no.			
	Any facility for Waste collection from road	no.			
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND	yes			
	STREAM/RIVER	no.			
	CANAL	no.			
	WELL	yes			
	TUBE WELL.	yes			
	OTHER (SPECIFY)	-			
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	10:90			

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Techno Economic Survey

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	yes	yes.		total 8(5+3)
	Sub-Centre	yes.			
	PHC	yes			
	BLOCK PHC	–			
	CHC/RH	–			
	District/ Govt. Hospital	no.			
	Govt. Dispensary				
	Private Clinic	no			
	Private Hospital/	no			
	Nursing Home	no.			
	AYUSH Health Facility	yes			
	sonography /ultrasound facility	no.			
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	yes	✓		
	Primary School	yes	✓		
	Secondary school	yes			
	Higher sec. School	yes			Arts only.
	ITI college/ vocational Training Center	no.			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	no.			

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

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

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	not good		yes	
	Telecommunication Network/ STD booth			no.	
	General Market			no.	
	Shops (Public Distribution System)			yes	
	Panchayat Building	new		yes	
	Pharmacy/Medical Shop	(Govt.)		no.	
	Bank & ATM Facility			yes	
	Agriculture Co-operative Society			no.	
	Milk Co-operative Soc.			yes.	
	Small Scale Industries				
	Internet Cafes/ Common Service Center/Wi Fi			no.	
	Youth Club				
	Mahila Mandal			yes.	

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

Suggestions if any:

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

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	not implemented		-	future plan
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	not. no. yes.	-	-	
3.	Any Other				

VII. DATA COLLECTION FROM VILLAGE

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

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Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
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VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities,		
	School Building	yes.	Repairing
	Health Center	yes	
	Panchayat Building	yes	
	Public Toilets & any other	No.	
2.	Additional Information/ Requirement	–	–
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?	✓ ✓ ✓	covid Situation.

IX. Smart Village / Heritage Details

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

સરપંચ
ગાંભુ (દેદરડા) જુથ ગ્રા.પ
મુ.ગાંભુ તા.વિસનગર

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

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

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12.4. GAP ANALYSIS OF THE ALLOCATED VILLAGE

VILLAGE GAP ANALYSIS					
Facilities	**Planning Commission/UDPFI Norms**	**Village Name:**	**GAMBHU (BECHRAJI , MAHESANA)**		
		Population: 4015			
		Existing	**Required as per Norms**	**Smart Village / Cities / Heritage Future Projection Design**	**Gap**
SOCIAL INFRASTRUCTURE FACILITIES					
Education					
Anganwadi	Each Per 2500 population	3	1	-	0
Primary School	Each Per 2500 population	1	1	-	0
Secondary School	Per 7,500 population	1	0	-	0
Higher Secondary School	Per 15,000 Population	1	0	-	0
College	Per 125,000 Population	0	0	-	0
Tech. Training Institute	Per 100000 Population	0	0	-	0
Agriculture Research Centre	Per 100000 Population	0	0	-	0
Skill Development Centre	Per 100000 Population	0	0	-	0
Health Facility					
Govt/Panchayat Dispensary or Sub PHC or Health Centre	Each Village	1	1	-	0
Primary Health & Child Health Centre	Per 20,000 population	0	0	-	0
Child Welfare and Maternity Home	Per 10,000 population	0	0	-	0
Multispecialty Hospital	Per 10,000 population	0	0	-	0
Public Latrines	1 for 50 families (if toilet is not there in home, especially for slum	0	1	-	-1

	pockets & kutcha house)				
PHYSICAL INFRASTRUCTURE FACILITIES					
Transportation		**Adequate**		-	-
Pucca Village Approach Road	Each village	**Adequate**	Connects will all nearby village	-	-
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	**Adequate**	-	-	-
Drinking Water (Minimum 70 lpcd)		**Adequate**	-	-	-
Over Head Tank	1/3 of Total Demand	**Adequate**	1	1	0
U/G Sump	2/3 of Total Demand	**0**	1	1	-1
Drainage Network - Open		**Adequate**	0	-	0
Drainage Network - Cover		**Adequate**	All covered	-	-
Waste Management System		**Inadequate**	-	-	-
SOCIO- CULTURAL INFRASTRUCTURE FACILITIES					
Community Hall	Per 10000 Population	0	1	-	-1
Public Library	Per 15000 Population	1 (Damaged)	1	-	-1
Cremation Ground	Per 20,000 population	0	1	-	-1
Post Office	Per 10000 Population	0	1	-	-1
Gram Panchayat Building	Each individual/group panchayat	1	1	-	0
APMC	Per 10000 Population	0	0	-	0
Fire Station	Per 10000 Population	0	0	-	0
Public Garden	Per village	0	1	-	-1
Police post	Per 40,000Population	0	0	-	0
Shopping Mall : Shops are available in village					
ELECTRICAL DESIGN					
Electricity Network					
Electricity in houses/public building		adequate			
ANY SMART VILLAGE FACILITY					
Technology		-	-	-	-
		ESR cap	0	-	0
		Sump cap	0	-	0
		Lat	0	-	0

12.5. SUMMARY DETAILS OF ALL THE VILLAGES DESIGNS IN TABLE FORM AS PART-I AND PART-II

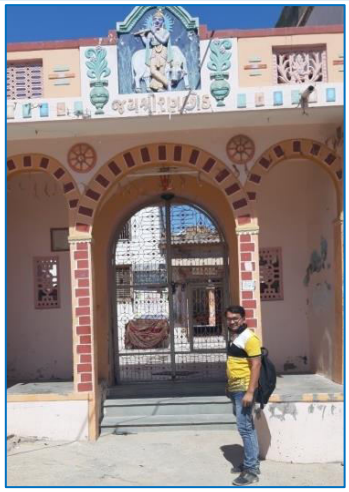
Summary of Project Villages			
Village features	**Allocated Village**	**Ideal Village**	**Smart Village**
Village	Gambhu	Kolavada	Vavol
Taluka	Bechraji	Vijapur	Gandhinagar
District	Mahesana	Mahesana	Gandhinagar
Sarpanch	Alkaben gajjar	Vishnubhai Thakor	Naginbhai nadiya
Talati	.	Harshbhai Patel	
Distance	76 km	56 km	20 km
Population (As per Census 2011)	4015	4010	11957
Pin code	384225	382820	382016
Surveys	techno-economic survey	Ideal village survey	Smart village survey
Facilities/Key Features	Gram panchayat building, Over head tank, Dairy, Library, PHC, Bus stand, Animal Hospital	Gram panchayat building, Over head tank, Dairy, Library, PHC, Bus stand, Animal Hospital, RO plant, Post office, Bank	Gram panchayat building, Over head tank, Dairy, PHC, Bus stand, lake, underground sump, hostel, English medium school
Technology	Computers in school	4G internet & Wi-Fi in public building	Well developed infrastructure
Drawbacks	Slow development	Renewable resources	Renewable resources

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 and their listing are mentioned in the list of figures along with their page numbers. And we have added A3 sheets of proposed designs at the end of the Vishwakarma Yojana Phase VIII part 1 report.

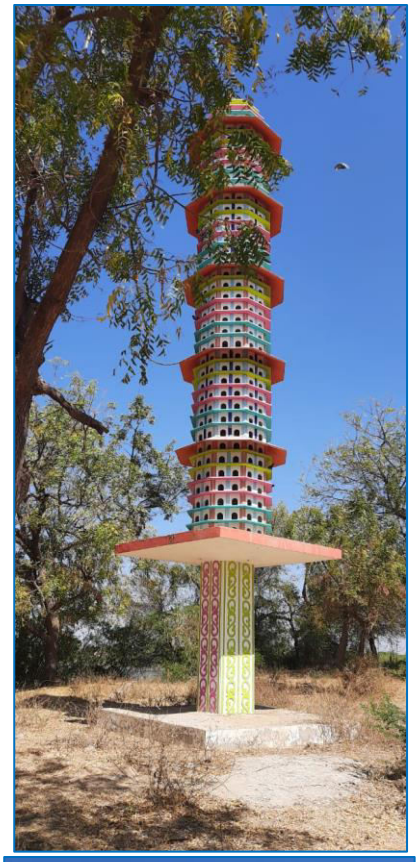
12.7. SUMMARY OF GOOD PHOTOGRAPHS IN TABLE FORMAT (VILLAGE VISITS, IDEAL, SMART VILLAGE OR ANY OTHER) : (SUMMARY OF ALL VILLAGE PHOTOGRAPHS)

12.7.1. GLIMPSE OF GAMBHU



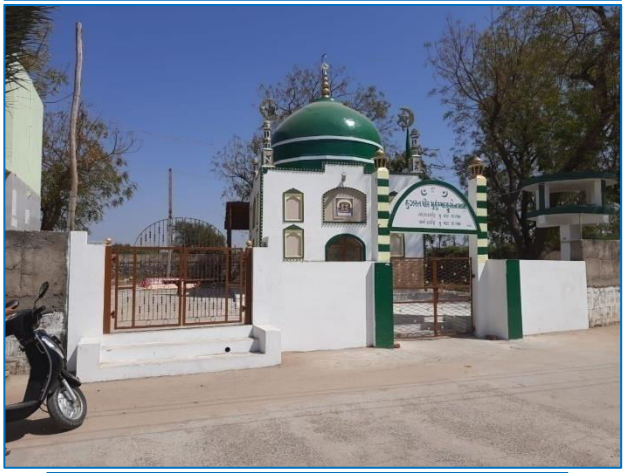




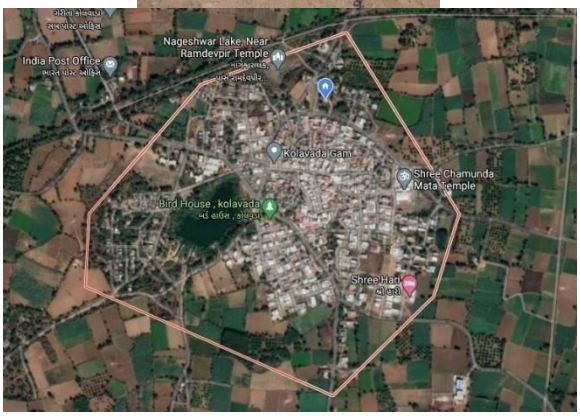




बैंक ऑफ़ बड़ौदा
Bank of Baroda

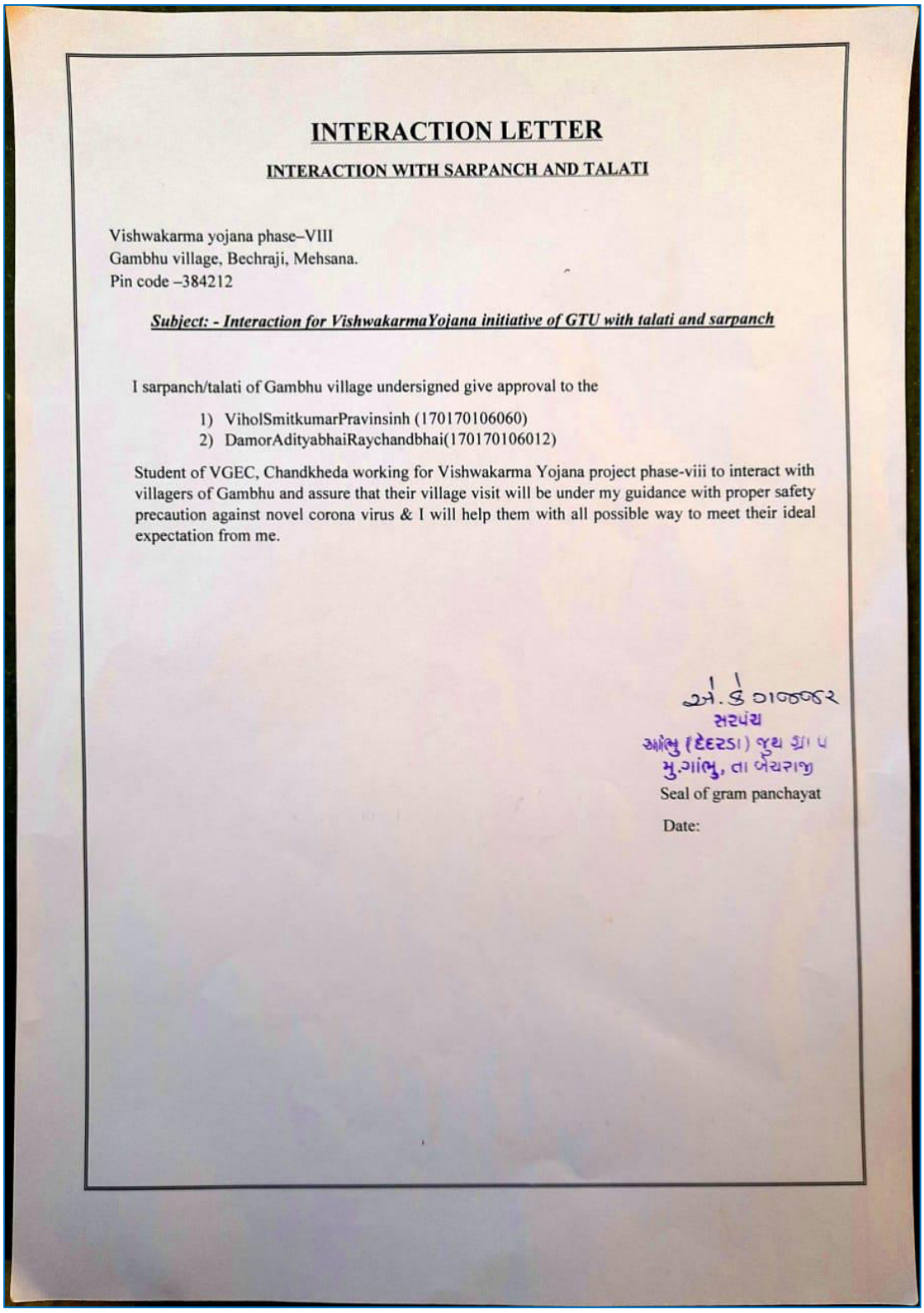
12.7.2. GLIMPSE OF VAVOL



12.7.3. GLIMPSE OF KOLAVADA


Nageshwar Lake, Near Ramdevpir Temple
India Post Office
Kolavada Gam
Shree Chamunda Mata Temple
Bird House , kolavada

12.8. VILLAGE INTERACTION WITH SARPANCH AND TALATI WITH THE PHOTOGRAPH



INTERACTION LETTER

INTERACTION WITH SARPANCH AND TALATI

Vishwakarma yojana phase–VIII
Gambhu village, Bechraji, Mehsana.
Pin code –384212

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

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

1) VitholSmitkumarPravinsinh (170170106060)
2) DamorAdityabhaiRaychandbhai(170170106012)

Student of VGEC, Chandkheda working for Vishwakarma Yojana project phase-viii to interact with villagers of Gambhu 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.

સરપંચ
ગાંભુ (દેદરડા) જુથ ગ્રા.પ
મુ.ગાંભુ, તા બેચરાજી
Seal of gram panchayat

Date:

12.9. APPROVAL LATTER FOR AWARENESS ACTIVITY IN GAMBHU

APPROVAL LETTER

APPROVAL OF AWARENESS ACTIVITY FOR SWACHHTA AND CORONA VIRUS

Vishwakarma yojana phase–VIII
Gambhu village, Bechraji, Mehsana.
Pin code –384212

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

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

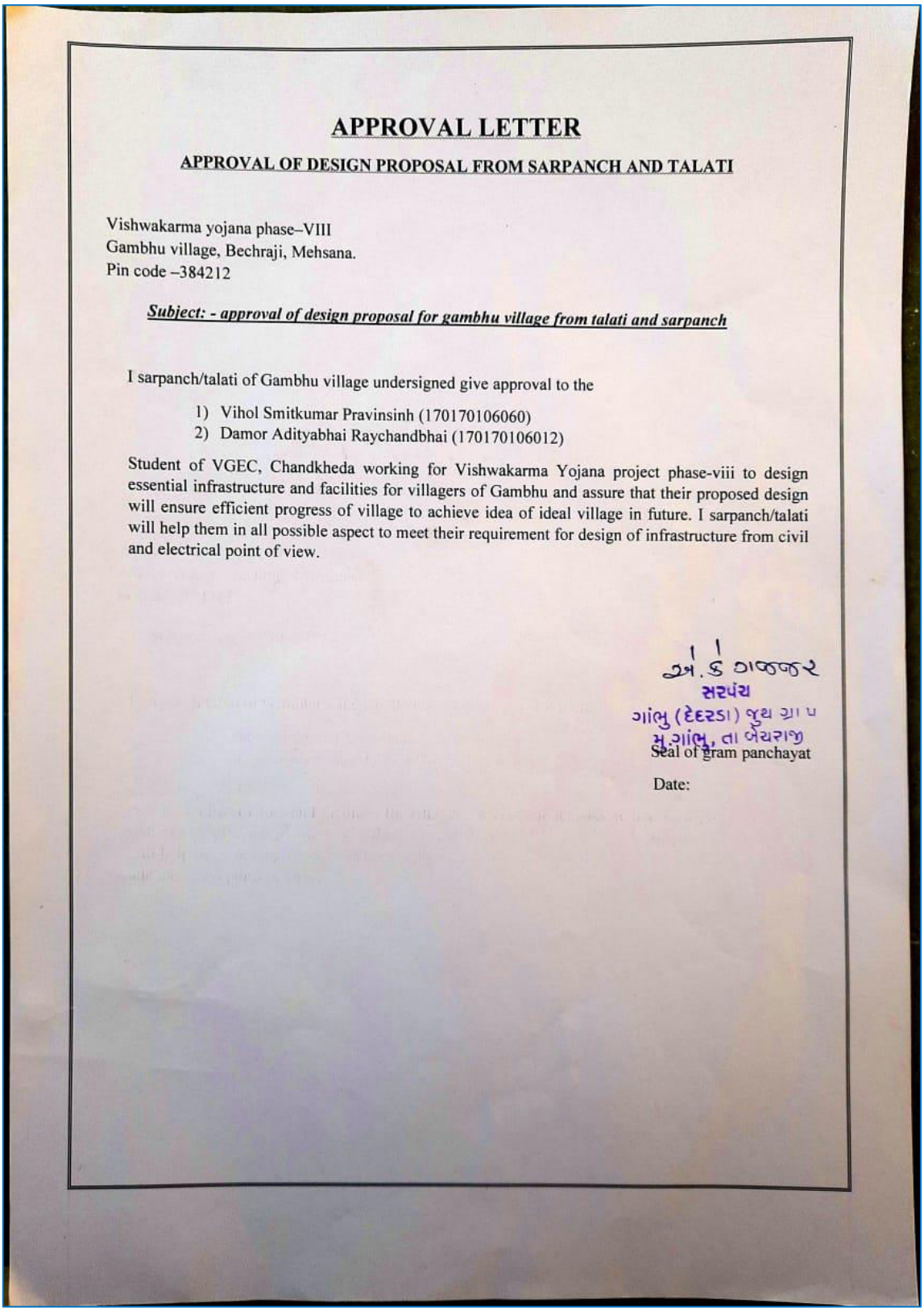
1) Vihol Smitkumar Pravinsinh (170170106060)
2) Damor Adityabhai Raychandbhai (170170106012)

Student of VGEC, Chandkheda 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 Gambhu 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.

સરપંચ
ગાંભુ (દેદરડા) જુથ ગ્રા.પ
મ.ગાંભુ, તા.બેચરાજી
Seal of gram panchayat

Date:

12.10.APPROVAL LATTER FOR DESIGN PROPOSAL IN GAMBHU



APPROVAL LETTER

APPROVAL OF DESIGN PROPOSAL FROM SARPANCH AND TALATI

Vishwakarma yojana phase–VIII
Gambhu village, Bechraji, Mehsana.
Pin code –384212

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

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

1) Vihol Smitkumar Pravinsinh (170170106060)
2) Damor Adityabhai Raychandbhai (170170106012)

Student of VGEC, Chandkheda working for Vishwakarma Yojana project phase-viii to design essential infrastructure and facilities for villagers of Gambhu 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 and electrical point of view.

૨૧.૬.૨૦૨૨
સરપંચ
ગાંભુ (દેદરડા) જુથ ગ્રા પ
મુ.ગાંભુ, તા બેચરાજી
Seal of gram panchayat

Date:

VY-PHASE-VIII-PART-II

CHAPTRER 13

FUTURE DESIN OF ASPECT (PROTOTYPE DESIGN) (PART 2)

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

We are proposing these designs keeping sustainable and lifelong culture of village with urban facility in our mind for purpose to make Gambhu village truly ideal example for others rushing towards city prominence.

Educational design: anganwadi

In modern culture with increasing educational level kids are growing faster to match their potential we need s to design kids playing group or anganwadi like structure with facility of both education & kids toy to ensure their healthy & happy growth.

Medical design: maternity home

To provide additional support to hospital already available but to ensure handle extra load and manage patient in village level with facility of operations, nursing-dressing of pregnant lady.

Socio-cultural design: library

To guide youngster towards our great, historic and civilized culture we should make provisions to read our culture by themselves& it can be achieved by library. Library can serve other purpose of silence and concentration for student for reading either for government exams preparation or study for school exam.

Institutional design: training centre

With increase in population in India we are facing problems of unemployment to reduce unemployment we have to change approach of choosing same fields like engineering ,bsc, medical and have to start developing skills of other work in field like construction, power sector, manufacturing, etc as a supporting staff.

Supplementary design: govt. Grocery shop

Sometimes shopkeeper may sell product to higher rate to make profit or he may not sell product just to see scarcity to increase cost of it. To avoid such problem a govt. Grocery shop is proven user friendly & help in such a case where sell may not posses product due to less demand.

Commercial design: e-seva Kendra

E-seva Kendra helps to villagers in many turns as it provides easy option to do online works related to government locally.

13.1.1. EDUCATIONAL DESIGN : ANGANWADI

Scenario:

It is a first step of kids towards education from where they start their A-B-C of education. Stronger the first step stronger the future, it is a usual pattern that kids don't like to start going in school initially away from home so beautiful and playful nature of such building can remove their fear and can make them loving to come school by their choice.

Existing situation:

Village has some anganwadi with ICDS but their structures are not that impressive so we decided to go with new design.

Usefulness:

Educational building does not need explanation for their usefulness as it is an investment of government to future India

Length: - 9.49 meter
Width: - 4.6 meter
Height: - 4.55 meter
Area: - 9.49*4.6 meter2

Maintenance & repair:-

In design of anganwadi there is no vulnerable point of damage so design needs only regular maintenance like cleaning and washing of building. It sometimes needs some expenses on toys.

13.1.2. MEDICAL DESIGN: MATERNITY HOME

Scenario:

Village needs some health care and maternity facility to fulfill requirement of bed in emergency condition like we faced shortage of beds during covid-19 second wave. emergency services available at local level reduces stress on district/state level.

Existing situation:

Currently village have primary health centre with sufficient facilities but it is insufficient for dovid-19 situation. It hasn't facility of x-ray.

Usefulness:-

It is support facility of hospital designed as maternity home but it can serve as nursing home.

Length: - 10.38 meter
Width: - 8.33 meter
Height: - 4.5 meter
Area: - 10.38*8.33 meter2

Maintenance & repair:-

Similarly, in design of maternity building there is no vulnerable point of damage so design needs only regular maintenance like cleaning and washing of building. But it requires special care as it is one kind of hospital it requires cleaning with proper chemicals and sanitary regulations.

13.1.3. SOCIO-CULTURAL DESIGN: LIBRARY

Scenario:

Library has biggest impact on culture development and library is preserving component of culture .before Britishers arrive in India we had ancient books like 'Mahabharata, Ramayana, Veda, Upanishad' in original form preserved in our library but to rule over the India they destroyed our libraries & separated us from our culture hence they ruled over India for 200 years.

Existing situation:

Currently village have room of 2.7 m*2.7 m serving as library but it is closed since many years and villagers also want to restructure library building with new editions of books but this project is pending since time due to lack of willingness of govt. and public. Potentially some locals are agreeing to need and periodically issues request in panchayat meeting.

Usefulness:-

This pending projects needs prime concerns and useful in many aspect like to serve as reading room for aspirants and recreation centre for those with hobby of reading novels.

Length: - 24.2 meter
Width: - 15.0 meter
Height: - 4.92 meter
Area: - 24.2*15.0 meter2

Maintenance & repair:-

Similarly, in design of library building there is no vulnerable points of damage so design needs only regular maintenance like cleaning and washing of building.

13.1.4. INSTITUTIONAL DESIGN: TRAINING CENTRE

Scenario:

Training centre is serving purpose of teaching skills to generate employment by themselves in field of electricity, construction, manufacture, etc like doing local work as electrician, meson, surveyor, draughtsman, etc.

Existing situation:

Currently village hasn't any such facility to train young villager so for their skills development they are going nearby city in Mahesana or modhera.

Usefulness:

Facilities of training centre within village can save travel expenses and can motivate others too. It is helpful in increasing wages of labour as skilled labour earns more wage than unskilled labour.

Length: - 9.9 meter
Width: - 9.1 meter
Height: - 4.55 meter
Area: - 9.9*9.1 meter2

Maintenance & repair:-

In design of training centre there is no vulnerable point of damage so design needs only regular maintenance like cleaning and washing of building.

13.1.5. SUPPLEMENTARY DESIGN: GOVT. GROCERY SHOP

Scenario:

Govt. grocery shop has advantages of to control market prices as other retailer cannot sell product to higher rate if they do so buyers will not go to purchase from them and another advantage is that villagers will be aware of market rate of particular products.

Existing situation:

Currently village has private grocery shop wide spreader in village at different locations.

Usefulness:-

It provides some product of less demand too.

Length: - 6.12 meter
Width: - 4.99 meter
Height: - 3.65 meter
Area: - 6.12*4.99 meter2

Maintenance & repair:-

Similarly, in design of library building there is no vulnerable points of damage so design needs only regular maintenance like cleaning and washing of building.

13.1.6. COMMERCIAL DESIGN: E-SEVA KENDRA

Scenario:

E-seva Kendra basically means for some online works of agriculture, national food security act, etc. and makes it easier to operate so that Panchayati work can be accelerated.

Existing situation:
Villagers are dependants on taluka panchayat building to meet these requirements.

Usefulness:-
It reduces work load from taluka panchayat for some online available services .

Length: - 50 ft
Width: - 40 ft
Height: - 4.6 meter
Area: - 50*40 ft2

Maintenance & repair:-
Similarly, in design of library building there is no vulnerable points of damage so design needs only regular maintenance like cleaning and washing of building. It is usual pattern that these locations are most vulnerable to sanitary problems so it needs frequent/daily cleaning.

13.2. REASON FOR STUDENTS RECOMMENDING THIS DESIGN

- **Anganwadi**: for better first step of children.
- **Maternity home**: to support hospital.
- **Library**: for better location for reading.
- **Training centre**: to develop job related skills.
- **Grocery shop:** to control market
- **E-seva Kendra:** to reduce work load from taluka panchayat

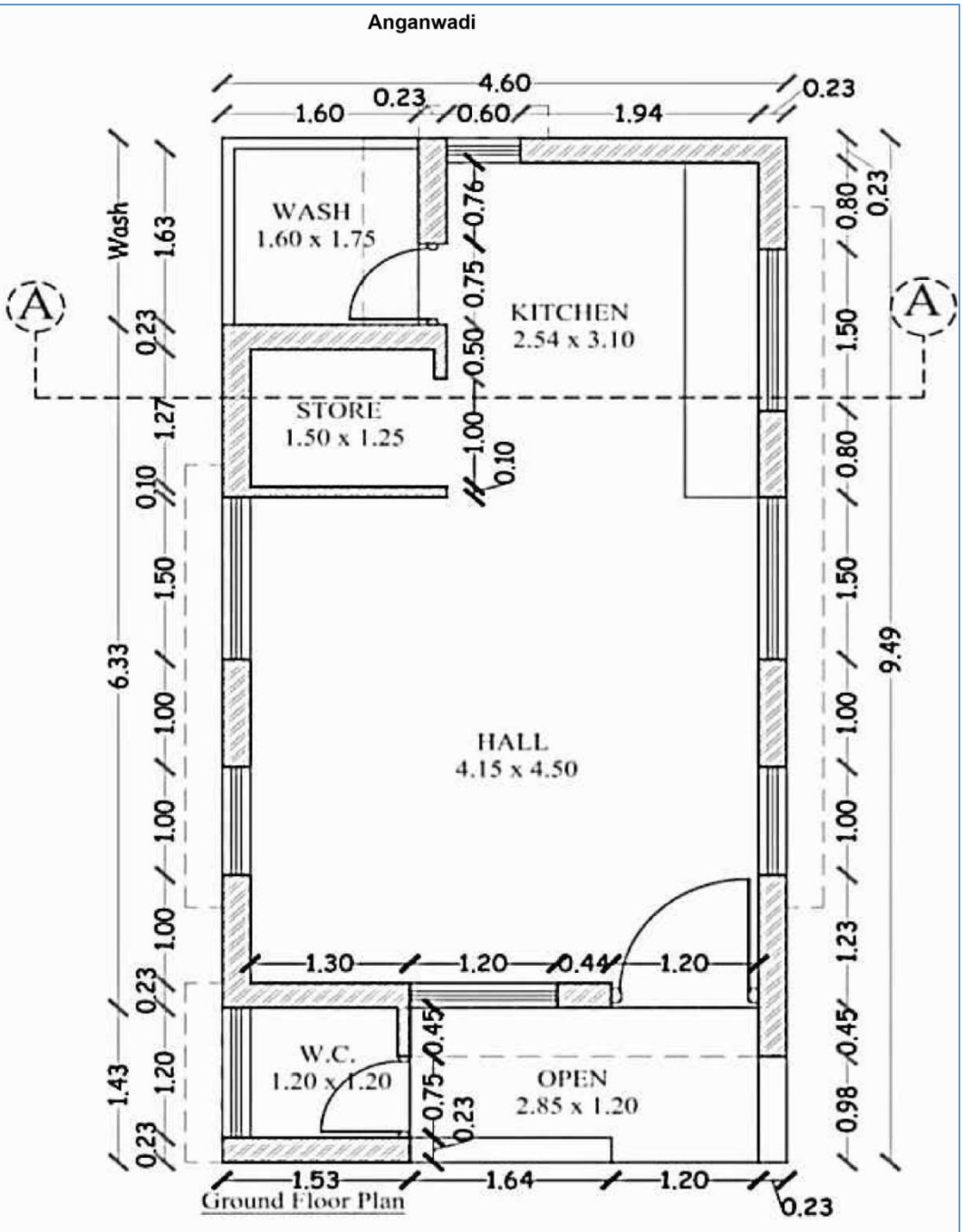
13.3. ABOUT DESIGNS SUGGESTIONS / BENEFIT OF THE VILLAGERS

These above suggested designs are suggested based on our experience and with our perspective to make Gambhu village ideal with concept of rurbanization.

- **Anganwadi**: it is designed in such a way that is can use modern tool of teaching/learning like PC, projector screen for visually represented story like teaching methods.
- **Maternity home**: to provide additional facilities for x-ray, dressing room, laboratory, emergency bed requirements, etc.
- **Library**: to preserve our culture for more than decades/centuries via well managed printed books of our culture and history of our glorious past.
- **Training centre**: to generate more employment through non-technical/less technical skills of some sectors. This provides good employment to skilled labour.
- **Grocery shop:** to facilitate availability of product of less demand at reasonable prices.
- **E-seva Kendra:** to reduce work load from taluka panchayat in sectors of agriculture, revenue & somehow related to national food security act.

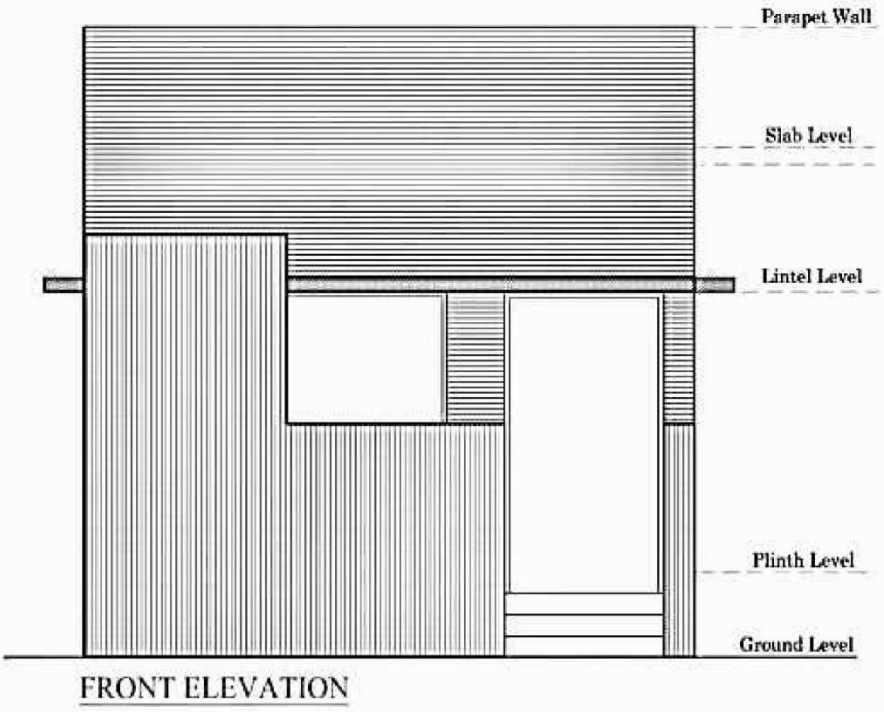
13.4. CALCULATIVE ATTACHMENT

❖ DESIGN OF ANGANWADI(Design 7)

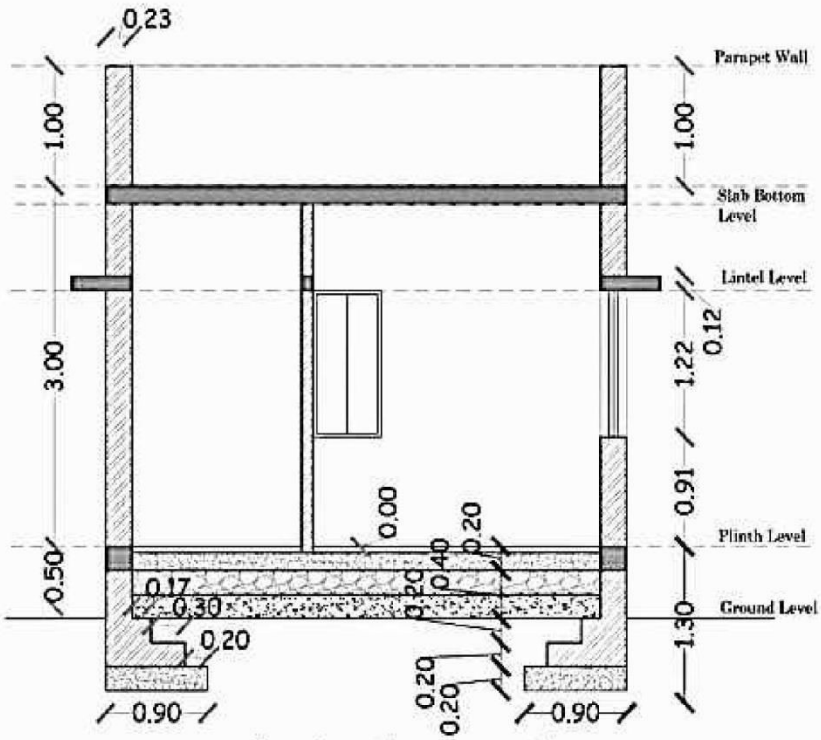


Plan (Anganwadi)

Figure :-Anganwadi (Plan, Elevation, Section)



Elevation (Anganwadi)



Section (Anganwadi)

Measurement Sheet Anganwadi								
Sr No.	**Item Description**	**Unit**	**nos.**	**Length**	**Width**	**Height**	**Qty**	**Total Qty (m^3)**
1	**Excavation**							
	Excavation below The ground level							
	As Per Centre Line Total Length is 38.8 m Available Junction In Plan So As Per Calculation Total Centre Line Length =38.8(0.5*8*0.9)=35.2	m^3	1	35.2	0.9	0.6	19.0	19.00
2	**PCC Work**							
	PCC work At Bottom Of foundation As Per Centre Line Total Length is 38.8 m Available Junction In Plan So As Per Calculation Total Centre Line Length = 38.8-(0.5*8*0.9)=35.2m	m^3	1	35.2	0.9	0.2	6.34	6.34
	AS Per Proposed Wall Alignment							
3	**Brick Work In Foundation**							
	Step-1							
	As Per Center Line Total Length is 38.8m Available Junction In Plan So As Per Calculation Total Center Line Length =38.8(0.5*8*0.7)=36m	m^3	1	36	0.7	0.2	5.04	5.04
	Step-2							
	As Per Center Line Total Length is38.8m Available Junction In Plan 8So As Per Calculation Total Center Line Length = 38.8-(0.5*8*0.4)=37.2m	m^3	1	37.2	0.4	0.2	2.98	2.98
	Step -3 Up To Plinth Level							
	As Per Center Line Total Length is 38.8m Available Junction In Plan 8So As Per Calculation Total Center Line Length =38.8 -(0.5*8*0.23)=37.88 m	m^3	1	37.88	0.23	0.6	5.23	5.23
4	**Earth Filling in Plinth**	m^3						
	Front open Area		1	2.85	1.2	0.6	2.052	
	Bottom Of WC Area		1	1.2	1.2	0.6	0.864	
	Front hall Area		1	4.15	4.5	0.6	11.21	
	Back Side Area Kitchen Area		1	2.54	3.1	0.6	4.72	
	Bottom Store Area		1	1.5	1.	0.6	1.125	26.31

					25			
	Bottom Wash Area		1	1.6	1.75	0.6	1.68	
						Total	21.65	
5	**Earth filling in foundation tranches**	Excavation Quantity-PCC-Foundation Step 1 &2(m^3)					4.656	
6	**Dempproof course**	m^3	1	37.88	0.23	0.05	0.44	0.44
7	**Super Structure**							
	Brick Work Plinth To Slab bottom							
	As Per Center Line Total Length is 38.8m Available Junction In Plan 8So As Per Calculation Total Center Line Length =38.8 -(0.5*8*0.23)=37.88m	m^3	1	37.88	0.23	2.73	23.78	
	Deduction(-)							
	For Door							
	D1	m^3	1	1.2	0.23	2.1	0.58	
	D2	m^3	1	1	0.23	2.1	0.48	
	D3	m^3	2	0.75	0.23	2.1	0.72	
	For Window							
	W1	m^3	3	1.5	0.23	1.2	1.24	
	W2	m^3	1	1.2	0.23	1.2	0.33	
	W3	m^3	2	1	0.23	1.2	0.55	
	W4	m^3	1	0.6	0.23	1.2	0.17	
	For Ventilation							
	V	m^3	1	1.2	0.23	0.6	0.17	19.54
						Total	4.24	
8	**Lintel**	m^3	1	37.88	0.23	0.12	1.05	1.05
9	**Chhajjas**	m^3						
	Above To Main Entrance Door		1	2.8	0.45	0.12	0.1512	
	Above WC Ventilation		1	1.7	0.45	0.12	0.0918	
	At LHS Wall		1	4.1	0.45	0.12	0.2214	
	Above Wash Area out Side		1	1.7	0.45	0.12	0.0918	
	Back Side Wall Chhajjas		1	1.1	0.45	0.12	0.0594	0.97
	RHS Wall Chhajjas		1	6.5	0.45	0.12	0.351	

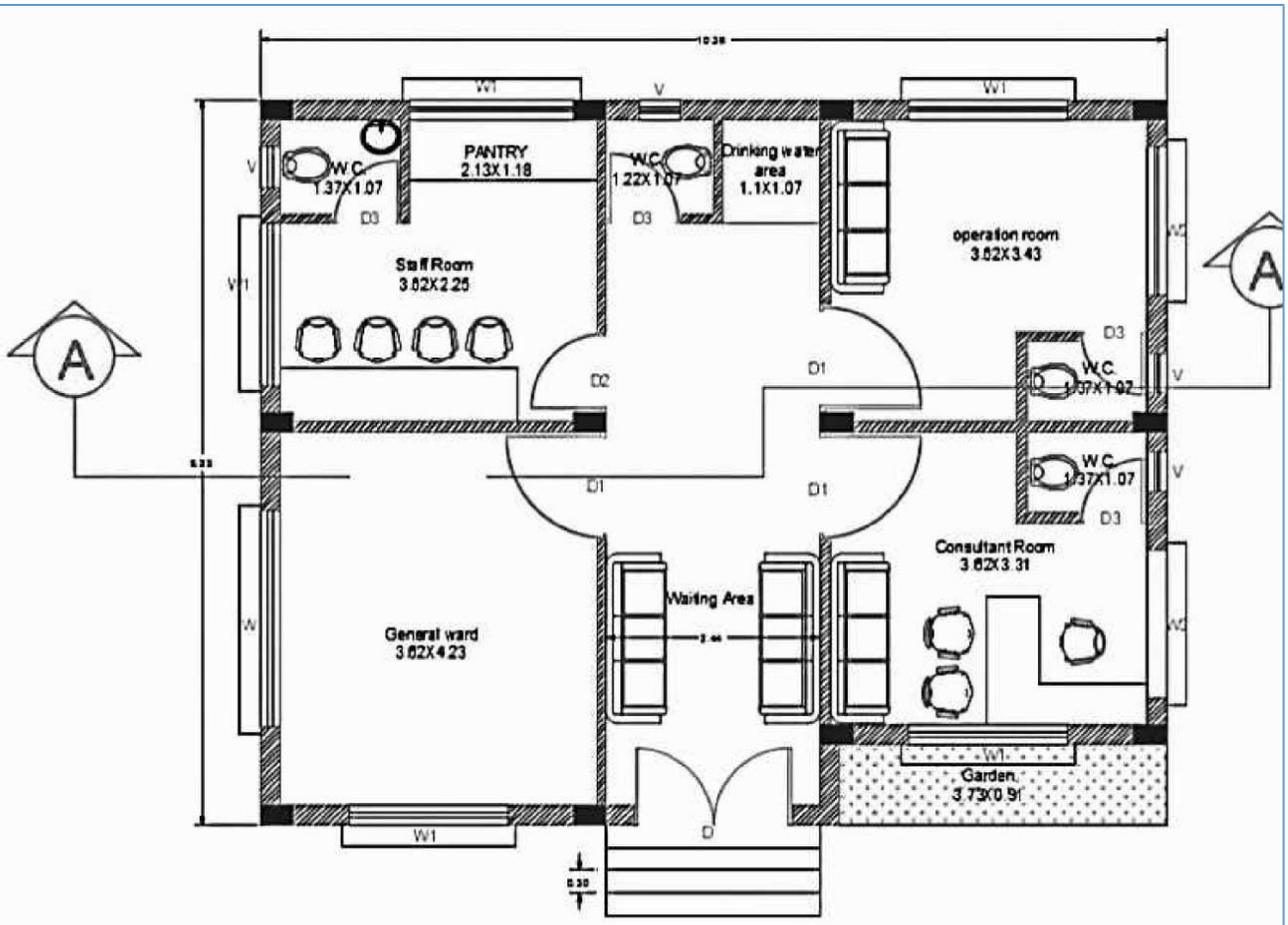
10	**Slab**	m^3	1	13.15	9	0.15	17.75	
	Over All Area	m^3	1	9.5	4.6	0.15	6.55	
	Less Front Open Area	m^3	1	2.85	1.45	0.15	0.62	
	Less Backside Wash Area	m^3	1	1.6	1.75	0.15	0.42	23.27
						Total	23.27	
11	**Parapet Wall**	m^3	1	24.4	0.23	1	5.61	5.61
12	**Plaster Work**							
	Outer Side Plaster for full Height wall	m^2	1	28.18		4.6	129.63	
	Outer side plaster for parapet Top face.	m^2	1	27.26	0.23	1	6.27	
	Outer side plaster For parapet inner face.	m^2	1	26.34		1	26.34	
	Outer Side Plaster for 1.65m Height wall	m^2	1	6.66		1.65	10.989	
			1	3.74		1.65	6.17	
			1	3.33		1.65	5.49	
						Total	184.89	
	Deduction							
	For Door							
	D1	m^2	0.5	1.2		2.1	1.26	
	D3	m^2	1	0.75		2.1	1.575	
	For Window							
	W1	m^2	1.5	1.5		1.2	2.7	
	W2	m^2	0.5	1.2		1.2	0.72	
	W3	m^2	1	1		1.2	1.2	
	W4	m^2	0.5	0.6		1.2	0.36	
	For Ventilation							
	V	m^2	0.5	1.2		0.6	0.36	176.71
						Total	8.175	
	Over All Inside Plaster Before Deduction							
	Main Hall	m^2	1	17.28		2.85	49.248	
	Kitchen	m^2	1	11.28		2.85	32.148	
	Store Room	m^2	1	5.54		2.85	15.789	
	W.C.	m^2	1	4.8		2.85	13.68	102.69
						Total	110.865	

	Inner Deduction Ventilation And Window							
	Deduction							
	For Door							
	D1	m^2	0.5	1.2		2.1	1.26	
	D3	m^2	1	0.75		2.1	1.575	
	Gap	m^2	1					
	For Window							
	W1	m^2	1.5	1.5		1.2	2.7	
	W2	m^2	0.5	1.2		1.2	0.72	
	W3	m^2	1	1		1.2	1.2	
	W4	m^2	0.5	0.6		1.2	0.36	
	For Ventilation							
	V	m^2	0.5	1.2		0.6	0.36	
						Total	8.175	

Abstract Sheet Anganwadi					
Sr No.	**Item Description**	**Unit**	**SOR**	**Total Qty**	**Total Rate**
1	**Excavation**				
	Excavation for foundation up to 1.5 m depth including sorting out and stacking of useful materials and disposing off the excavated stuff up to 50 Meter lead.(B)Dense or Hard soil	cu.m	152	19	2888
2	**PCC Work**				
	Providingandlayingcementconcrete1:2:4(1-Cement:2-Coarsesand:4graded stone aggregates 20 mm nominal size)for reinforced concrete Chhajjas not exceeding 10cm. thickness up to floor two level including finishing the exposed surfaces with cement mortar 1:3 (1-cement,3 Fine sand) to give a smooth and even surface centering and formwork and curing complete excluding cost of reinforcement. (more than 10ton)	cu.m	4655	6.34	29512.7
3	**Brick Work In Foundation**				
	Brick work using common burnt clay building brick shaving crushing strength not less than 35kg/Sq. cm. in foundation and plinth in Cement Mortar 1:5. (1-Cement:5- fine sand)(B)Conventional (up to10 ton)	cu.m	2872	13.25	38054

4	**Earth Filling in Plinth & foundation tranches**				
	Filling available excavated earth in trenches. Plinth, sides of foundations etc. in layers not exceeding 20 cm. in depth consolidating each Deposited layer by ramming and watering.	cu.m	85	19	1615
	Filling in foundation and plinth with Murom or selected soil in layers of 20 cm. thickness including watering ramming and consolidating etc. completed.	cu.m	250	7.3	1825
5	**Dempproof course**	Sq.m	350	8.72	3052
6	**Super Structure**				
	Brick work using common burnt clay building bricks having crushing strength not less than 35kg./Sq. cm. in Ground floor wallinCementMortar1:6(1-Cement:6-finesand)(B)Conventional(up to10 ton)	cu.m	2955	19.55	57770.25
7	**Lintel(ground floor)**	cu.m	6715	1.05	7050.75
8	**Chhajjas(ground floor)**	cu.m	5370	0.967	5192.79
9	**Slab (ground floor)**	cu.m	5938	5.52	32777.76
10	**Parapet Wall**				
	Brick work using common burnt clay building bricks having crushing strength not less than 35kg./Sq. cm. in parapet wall in Cement Mortar 1:6 (1-Cement: 6-finesand) (B) Conventional (up to 10 ton)	cu.m	2990	5.62	16803.8
11	**Out-Side Plaster**				
	20 mm thick sand faced cement plaster on walls up to height 10 meters above ground level consisting of 12 mm thick backing coat of C.M. 1:3 (1- cement: 3-sand) and 8mm thick finishing coat of C.M.1:1 (1-cement: 1-sand) etc. complete.	Sq.m	189	176.72	33400.08
	In-side Plaster				
	Providing15 mm thick cement plaster in single coat on Rough (Similar) side of single or half brick walls for interior plastering up to floor two level and finished even and smoothing Cement mortar 1:3 (1-cement: 3-sand)	Sq.m	108	102.7	11091.6
	Total Estimated Cost of Main Items				241033.73
	Add 20% cost of Miscellaneous Building Items				48206.75
	Add 10% contractor profit				28924.05
	Final Estimated Cost Building				318164.52

❖ DESIGNS OF MATERNITY HOME(Design 8)



MATERNITY HOME PLAN

figure : PLAN OF MATERNITY HOME

SCHEDULES OF DOORS & WINDOWS	
DOOR (D)	1.83x2.13
DOOR (D1)	1.21x2.13
DOOR (D2)	0.91x2.13
DOOR (D3)	0.76x2.13
WINDOW (W)	2.44x1.22
WINDOW (W1)	1.83x1.22
WINDOW (W2)	1.58x1.22
VENTILATION (V)	0.46x0.61

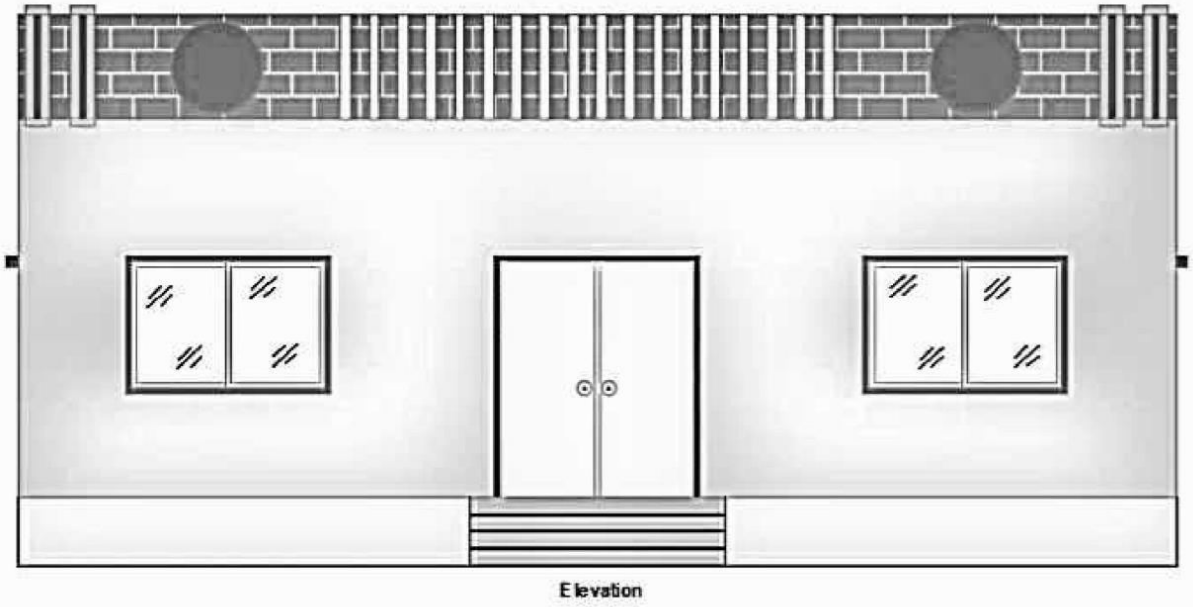


Figure ELEVATION OF MATERNITY HOME

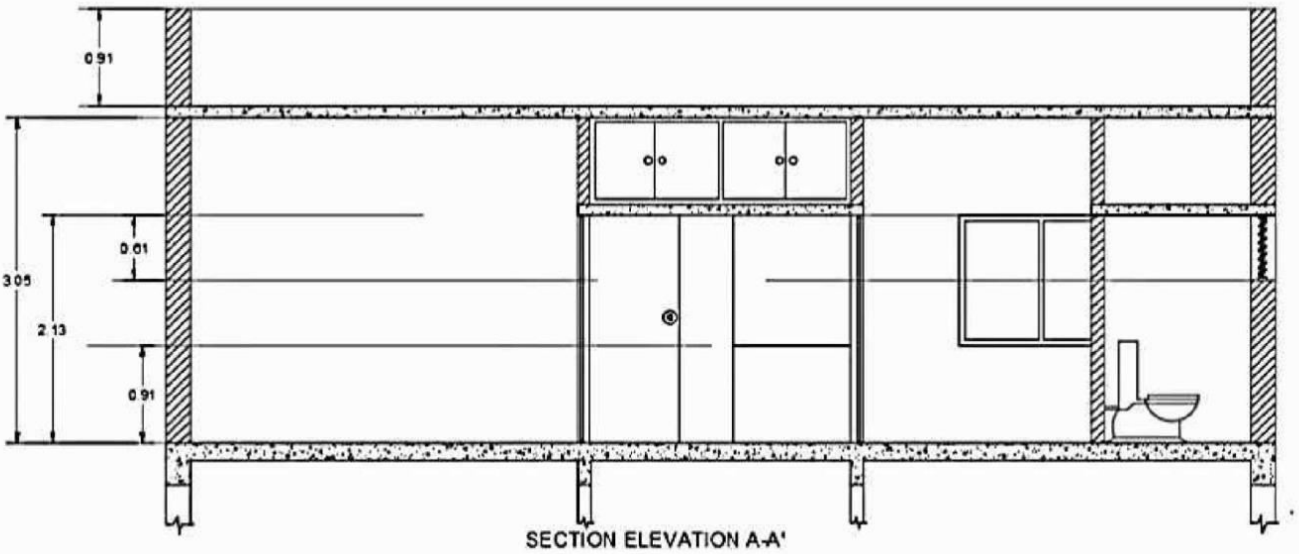


Figure SECTION OF MATERNITY HOME

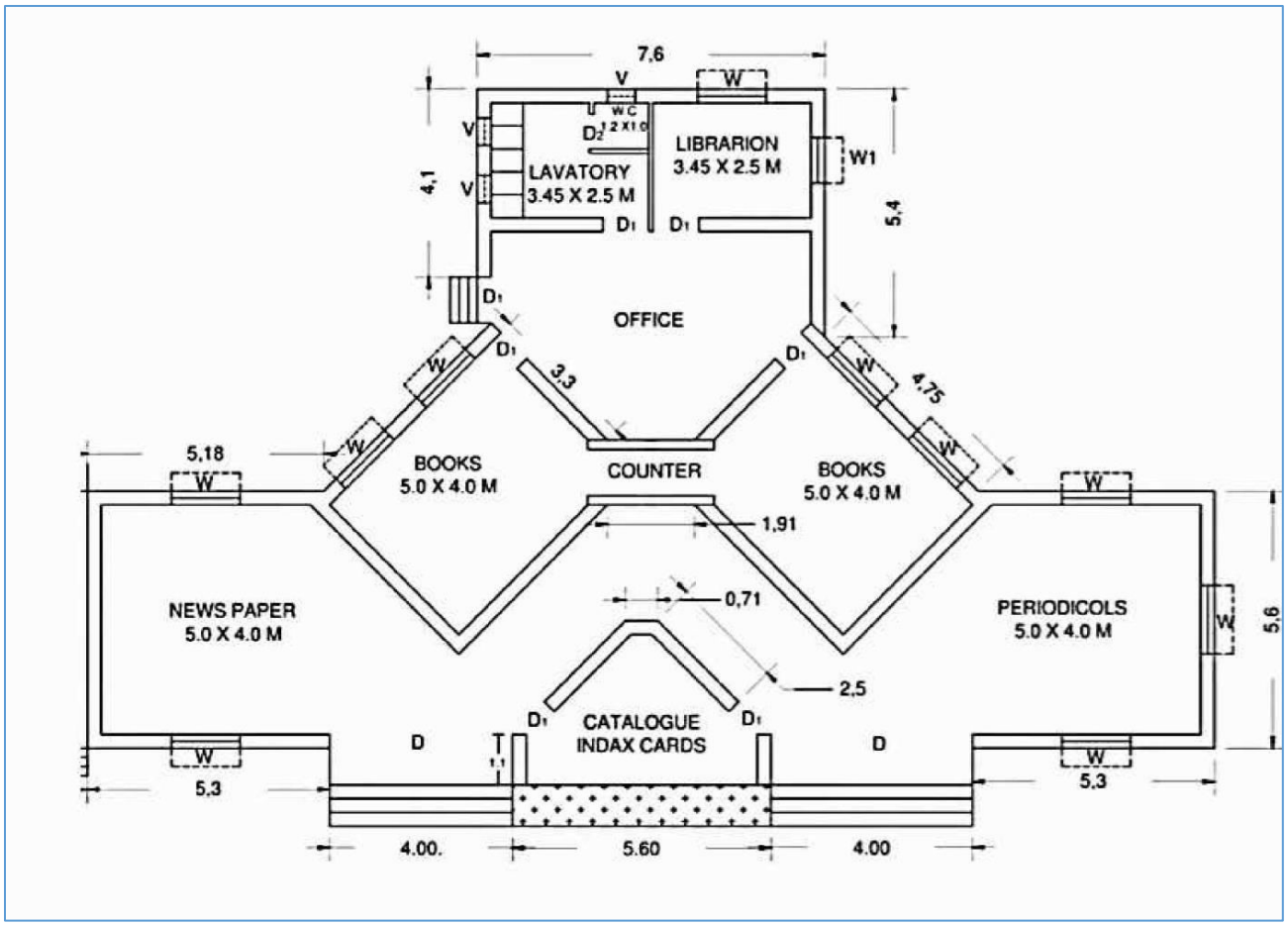
MEASUREMENT SHEET OF MATERNITY HOME						
SR NO	**DESCRIPTION OF ITEM**	**NO**	**LENGTH**	**WIDTH**	**DEPTH**	**TOTAL QTY**
1	EXCAVATION	12	1.2	1.2	1.5	25.92
2	PCC LINTEL	12	1.2	1.2	0.5	5.184
3	RCC FOR COLUMN FOOTING UPTO LINTEL	12	0.9	0.9	0.6	5.832
4	RCC FOR COLUMN FOOTING UPTO PL 1st STEP	12	0.4	0.23	0.6	0.6624
5	TOTAL EARTH FILLING =25.92 -(5.184+5.832+0.6624)= 14.24 m^3					
6	GROUND BEAM	1	55.03	0.3	0.3	4.99
7	YELLOW SOIL FILLING	1	10.36	8.23	0.25	21.31
8	SAND FILLING	1	10.36	8.23	0.2	17.05
9	PCC AT PL	1	10.36	8.23	0.1	8.52
10	OUTER LINE	1	37.18	0.3	3	33.46
11	INNER LINE 1	1	21.64	0.2	3	12.98
	INNER LINE 2	1	9.61	0.2	2.1	4.03
12	OPENING IN EXTERIOR : W-(2)+(51.53)+(2.44) = 4.84 D =0.97 , V =0.33					
	NET OUTER BRICK WORK = 33.46 – (4.84+0.97+0.33) =27.32 m^3					
13	OPENING IN INNER = D –( )+(3 1.21)+(0.81)					
	NET OUTER BRICK WORK =17.01 – (3.21) =13.8 m^3					
14	COLUMN	12	0.4	0.23	9	9.93 m^3
15	SLAB	1	10.36	8.23	0.12	10.23 m^3
16	SLAB BEAM	1	55.53	0.3	0.3	4.99 m^3
17	INNER PLASTER	1	-	-	-	247.84 m^2
18	OUTER PLASTER	1	37.18	-	3.9	125.40 m^2
	TOTAL RCC	31.65 m^3				
	M20(1:1.5:3)					
	CEMENT=5.75 m^3	165 BAGES				
	SAND= 8.63 m^3	8.63m^3				
	AGGREGATE=17.26m^3	17.26 m^3				
20	TOTAL PCC WORK	13.7 m^3				
	M15(1:2:4)					
	CEMENT=1.95 m^3	56 BAGES				
	SAND=3.91 m^3	3.91 m^3				
	AGGREGATE=7.82 m^3	7.82 m^3				

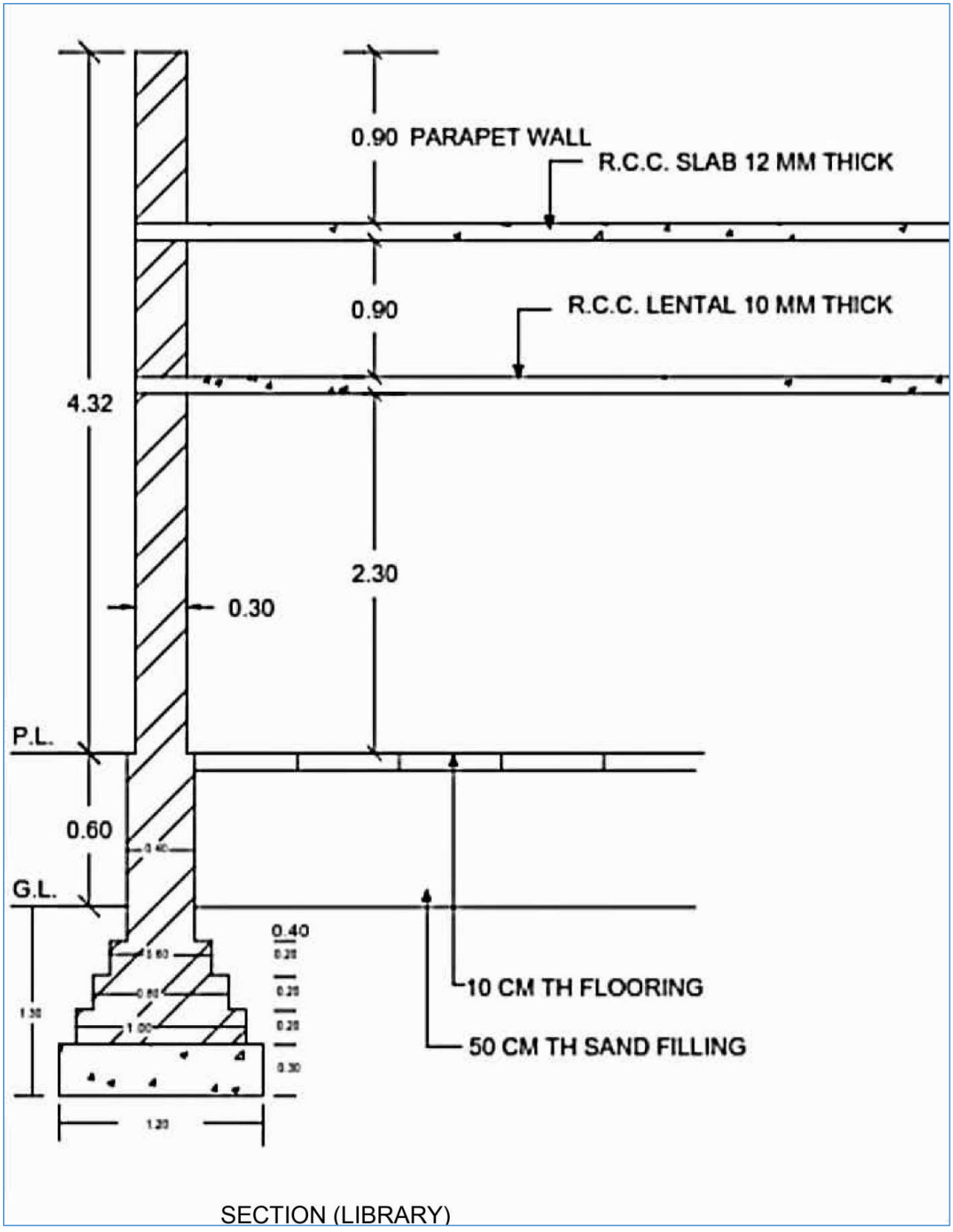
ABSTARCT SHEET OF MATERNITY HOME					
SR NO	**DESCRIPTION OF ITEM**	**QTY**	**RATE**	**PER**	**COST(Rs.)**
1	EXCAVATION	25.92	85	Cu.m	2203
2	PCC LINTEL	5.184	900	Cu.m	4665
3	RCC FOR COLUMN FOOTING UPTO PL	5.832	1400	Cu.m	8164
4	TOTAL EARTH FILLING	14.24	50	Cu.m	712
5	YELLOW SOIL FILLING	21.31	55	Cu.m	1172
6	SAND FILLING	17.05	950	Cu.m	16200
7	PCC AT PL	8.52	900	Cu.m	7668
8	NET OUTER BRICK WORK	27.32	3500	Cu.m	95620
9	NET INNER BRICK WORK	13.8	440	Cu.m	6072
10	PLASTER				
	INNER	247.84	150	Sq.m	57146
11	RCC				
	CEMENT	100	280	BAGS	28000
	SAND	8.63	800	m^3	6904
	AGGREGATE	17.26	1000	m^3	17260
	STEEL	2486	45	Kg	111900
12	PCC				
	CEMENT	56	280	BAGES	15680
	SAND	3.91	800	m^3	3128
	AGGREGATE	7.82	1000	m^3	7820
13	TOILET BLOCK	4 NOS.	2000	-	8000
14	MAIN DOOR	1 NOS.	6000	-	6000
15	PVC DOOR	4 NOS.	1100	-	4400
16	DOOR	4 NOS.	4000	-	16000
17	FLOORING	84.43	350	m^2	29550
18	LABOUR WORK				125000
					TOTAL COST = 8,70,000.00

TOTAL COST SHEET OF MATERNITY HOME		
SR. NO	DESCRIPTION OF ITEM	TOTAL COST(Rs.)
1	TOTAL CIVIL COST OF PLINTH	85,784
2	TOTAL CIVIL COST OF PLINTH / Sq.m =85,784 / (8.23)	900
3	TOTAL CIVIL GROUND FLOOR	7,74,216
4	TOTAL CIVIL GROUND FLOOR / Sq.m	6700
5	TOTAL CIVIL GROUND FLOOR INCLUDING FOUNDATION (1+3)	8,60,000
6	TOTAL CIVIL GROUND FLOOR INCLUDING FOUNDATION/ Sq.m	7600
7	TOTAL CIVIL COST OF THE MATERNITY HOME	8,60,000
8	TOTAL CIVIL COST OF THE MATERNITY HOME / Sq.m	7600
	GRAND TOTAL	8,60,000.00

RECAPITULATION SHEET OF MATERNITY HOME		
SR NO	**NAME OF WORK**	**TOTAL COST (Rs.)**
1	TOTAL COST OF WORK	A=8,70,000.00
2	ADD PLUMBING AND SANITARY WORK @ 10%	
	= 8,70,000.00 0.1 = 87000.00	87,000
3	ADD 5% CONSTINGENCY CHARGES	
	= 8,70,000.00 0.05 =43,500.00	43,500
4	ADD 7% ELECTRICATION	
	= 8,70,000.00 0.07 = 60,900.00	60,900.00
	TOTAL OF (2+3+4)	B=1,91,400.00
5	TOTAL(A+B)	10,51,400
6	ADD 10% CONTRACTOR'SPROFIT	1,05,140
	GRAND TOTAL	**11,56,540.00**

❖ DESIGNS OF LIBRARY(Design 9)





SECTION (LIBRARY)

Measurement sheet library						
SR.NO	**ITEM**	**NO**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**
1	**EXCAVTION IN FOUNDATION**					
	LONG WALL					
	WAAL-1	2	6.08	1.2	1.3	18.9696
	WALL-2	2	25.1	1.2	1.3	78.312
	WALL-3	2	5.5	1.2	1.3	17.16
	WALL-4	2	8.5	1.2	1.3	26.52
	SHORT WALL					
	WALL-A	2	4.1	1.2	1.3	12.792
	WALL-B	4	4.1	1.2	1.3	25.584
	WALL-C	2	3.9	1.2	1.3	12.168
	WALL-D	2	4	1.2	1.3	12.48
	WALL-E	2	1.1	1.2	1.3	3.432
	Step	2	4	0.6	0.1	0.48
					Total (m^3)	**207.8976**
2	**P.C.C 1:3:6 in foundation**					
	Long wall					
	Wall-1	2	6.08	1.2	0.3	4.3776
	Wall-2	2	25.1	1.2	0.3	18.072
	Wall-3	4	4.8	1.2	0.3	6.912
	Wall-4	2	8.5	1.2	0.3	6.12
	Short wall					
	Wall-a	2	4.1	1.2	0.3	2.952
	Wall-b	4	4.1	1.2	0.3	5.904
	Wall-c	2	3.9	1.2	0.3	2.808
	Wall-d	2	4	1.2	0.3	2.88
	Wall-e	2	1.1	1.2	0.3	0.792
					Total (m^3)	**50.8176**
3	**First class brick masonry work Up to plinth** 1:6 cm Step-1 100cm thick Long wall					
	Wall-1	2	5.8	1	0.2	2.32
	Wall-2	2	24.9	1	0.2	9.96
	Wall-3	4	5.3	1	0.2	4.24
	Wall-4	2	80.3	1	0.2	32.12
	Short wall					
	Wall-a	2	6.3	1	0.2	2.52
	Wall-b	4	6.3	1	0.2	5.04
	Wall-c	2	6.1	1	0.2	2.44
	Wall-d	2	6.2	1	0.2	2.48
	Wall-e	2	3.3	1	0.2	1.32

	Step-2 0.80 cm thick wall Long wall					
	Wall-1	2	5.68	0.8	0.2	1.8176
	Wall-2	2	24.2	0.8	0.2	7.744
	Wall-3	4	5.1	0.8	0.2	3.264
	Wall-4	2	8.1	0.8	0.2	2.592
	Short wall					
	Wall-a	2	4.5	0.8	0.2	1.44
	Wall-b	4	4.5	0.8	0.2	2.88
	Wall-c	2	4.3	0.8	0.2	1.376
	Wall-d	2	4.4	0.8	0.2	1.408
	Wall-e	2	1.5	0.8	0.2	0.48
	Step-3 , 0.60 cm thick wall Long wall					
	Wall-1	2	5.48		0.2	1.3152
	Wall-2	2	24.5	0.6	0.2	5.88
	Wall-3	4	4.9	0.6	0.2	2.352
	Wall-4	2	7.9	0.6	0.2	1.896
	Short wall					
	Wall-a	2	4.7	0.8	0.2	1.504
	Wall-b	4	4.7	0.8	0.2	3.008
	Wall-c	2	4.5	0.8	0.2	1.44
	Wall-d	2	4.6	0.8	0.2	1.472
	Wall-e	2	1.2	0.8	0.2	0.384
	Step- 4 , 0.40 cm thick wall Long wall					
	Wall-1	2	5.28	0.4	0.9	3.8016
	Wall-2	2	24.3	0.4	0.9	17.496
	Wall-3	4	4.7	0.4	0.9	6.768
	Wall-4	2	7.7	0.4	0.9	5.544
	Short wall					
	Wall-a	2	4.9	0.4	0.9	3.528
	Wall-b	4	4.9	0.4	0.9	7.056
	Wall-c	2	4.7	0.4	0.9	3.384
	Wall-d	2	4.8	0.4	0.9	3.456
	Wall-e	2	1.9	0.4	0.9	1.368
					Total (m^3)	**157.0944**
4	**D.P.C at plinth level 10cm thick (1:2:4)**					
	Long wall					
	Wall-1	2	5.28	0.4	0.1	0.4224
	Wall-2	2	24.3	0.4	0.1	1.944
	Wall-3	4	4.7	0.4	0.1	0.752
	Wall-4	2	2.7	0.4	0.1	0.216
	Short wall					
	Wall-a	2	4.9	0.4	0.1	0.392

	Wall-b	4	4.9	0.4	0.1	0.784
	Wall-c	2	4.7	0.4	0.1	0.376
	Wall-d	2	7.8	0.4	0.1	0.624
	Wall-e	2	1.9	0.4	0.1	0.152
					Total(m^3)	**5.6624**
5	**Earth filling in foundation**					
	Excavation in Foundation cu.m 207.8976					
	20				**Total(m^3)**	**41.79**
6	**Sand filling in plinth**					
	News					
	paper/Periodicals	2	5	4	0.5	20
	Books room	2	5	4	0.5	20
	office	1	7	4.5	0.5	15.75
	Catalogue/Index	1	1.1	3.5	0.5	1.925
	cards					
	Counter	1	1.91	0.5	0.5	0.4775
	Lavatory block	1	3.45	2.5	0.5	4.3125
	Librarian	1	3.45	2.5	0.5	4.3125
					Total(m^3)	**66.7775**
7	**First class brick masonry in s.s. 1:6 CM**					
	Long wall					
	wall 1	2	5.18	0.3	3.2	9.9456
	wall 2	2	24.2	0.3	3.2	46.464
	wall 3	4	4.6	0.3	3.2	17.664
	wall 4	2	7.6	0.3	3.2	14.592
	Short wall					
	wall a	2	5	0.3	3.2	9.6
	wall b	4	5	0.3	3.2	19.2
	wall c	2	4.8	0.3	3.2	9.216
	wall d	2	4.9	0.3	3.2	9.408
	wall e	2	2	0.3	3.2	3.84
	20 cm thick wall	1	3.7	0.2	2.3	1.702
					Total (m^3)	**141.6316**
	Deduction					
	Door-D	2	3	0.3	2.3	4.14
	Door-D1	6	1.5	0.3	2.3	6.21
	Door-D2	2	0.8	0.3	2.3	1.104
	Window-W	10	1.5	0.3	1.5	6.75
	Window-W1	1	1	0.3	1.5	0.45

						18.654
					Gr. total(m³)	**122.9776**
8	**RCC Work 1:2:4 (slab)**					
	Area 73.36 m²	1	73.6		0.12	8.8032
	Lintel					
	Long wall					
	wall 1	2	5.18	0.3	0.1	0.3108
	wall 2	2	24.2	0.3	0.1	1.452
	wall 3	4	4.6	0.3	0.1	0.552
	wall 4	2	7.6	0.3	0.1	0.456
	Short wall					
	wall a	2	5	0.3	0.1	0.3
	wall b	4	5	0.3	0.1	0.6
	wall c	2	4.8	0.3	0.1	0.288
	wall d	2	4.9	0.3	0.1	0.294
	wall e	2	2	0.3	0.1	0.12
	Window Projection					
	Window-W	10	1.5	0.4	0.1	0.6
	Window-W1	1	1	0.4	0.1	0.04
					Total(m³)	**13.816**
9	**Steel/Reinforcement**					
	Slab (1%) cu.m 13.816					0.1078
	0.78*0.1382					
	Lintels (0.8%)					
	%					
	cu.m					
	100					
	13.816					
	0.8					
	?					0.0861
	0.78*0.1105					
	Projection (0.8%)					
	%					
	cu.m					
	100					
	13.816					0.0861
	0.8					
	?					
					Total (Q)	**0.28**
10	**Internal plaster 12 mm thick cement plaster 1:4 CM**					

	Long wall	2	5		3.3	33
	Short wall	2	4		3.3	26.4
	Ceiling	1	5	4		20
	Periodicals					
	Long wall	2	5		3.3	33
	Short wall	2	4		3.3	26.4
	Ceiling	1	5	4		20
	Books					
	Long wall	4	5		3.3	66
	Short wall	4	4		3.3	52.8
	Ceiling	2	5	4		40
	Office					
	Wall 1	2	3.3		3.3	21.78
	Wall 2	1	7		3.3	23.1
	Wall 3	2	2.3		3.3	15.18
	Catalogue Index					
	cards					
	Wall 1	2	1.1		3.3	7.26
	Wall 2	2	3.5		3.3	23.1
	Wall 3	1	0.71		3.3	2.343
	Ceiling	1	1.1	3.5		3.85
	Open space					
	Wall 1	1	1.91		3.3	6.303
	Wall 2	1	6.71		3.3	22.143
	Wall 3	2	3.3		3.3	21.78
	Ceiling	1	3.3	1.91		6.303
					Total (m²)	470.742
	Deduction					
	Door-D	2	3		2.3	13.8
	Door-D1	6	1.5		2.3	20.7
	Door-D2	2	0.8		2.3	3.68
	Window-W	10	1.5		1.5	22.5
	Window-W1	1	1		1.5	1.5
						62.18
					Gr. total(m²)	408.562
	External plaster					
11	Work 20mm thick					
	1:4 CM					
	Length=73.36m	1	73.36		3.42	250.8912
	20cm thick cement					
	plaster work in Step					
	1:4 CM					
	Tread	6	4		0.2	4.8
	Rise	6	4		0.15	3.6
	Side 1	1	4		0.6	2.4

	Side 2	1	4		0.6	2.4
					Total (m²)	264.0912
	Flooring vitrified					
12	tiles flooring					
	Newspaper/periodic					
	l	2	5	4		11
	Books	2	5	4		11
	Catalogue Index					
	Cards	1	5.6	3.5		10.1
	Open space	1	4.3	1.91		7.21
	Office	1	7	3.3		11.3
	Librarian	1	3.45	2.5		6.95
					Total (m²)	57.56
	Skirting					
	Newspaper/periodica l					
	l	2	20			22
	Books	2	19.6			21.6
	Catalogue Index					
	Cards	1	19.6			20.6
	Open space	1	8.21			9.21
	Office	1	23.1			24.1
	Librarian	1	8.63			9.63
					Total (m²)	107.14
	Wall tiles in WC					
	Long wall	2	3.45		2.3	7.75
	Short wall	2	2.5		2.3	6.8
					Total (m²)	14.55
13	painting 3 coat					
	Plaster work internal					
	and external				Total (m²)	672.6532
14	**oil painting 3 coat**					
	Door-D	2*2.5	3		2.3	6.9
	Door-D1	6*2.5	1.5		2.3	3.45
	Door-D2	2*2.5	0.8		2.3	1.84
	Window-W	5	1.5		1.5	2.25
	Window-W1	1*2.5	1		1.5	1.5
					Total (m²)	**15.94**
	Indian water					
15	**Closet**					
		1			**Total(No)**	1
16	**Urinals**	**5**			**Total(No)**	**5**

ABSTRACT SHEET					
Item no	Description of item	Quantity	Rate(Rs.)	Unit	Amount (RS.)
1	Excavation in foundation up to 2m height	207.898	205	m^3	42619.1
2	PCC (1:3:6) in foundation	50.8176	3103	m^3	157687
3	First Class Brick masonry work up to plinth in 1:6 CM	157.094	3198	m^3	502387
4	D.P.C at plinth level 10cm thick (1:2:4)	5.6624	300	m^3	1698.72
5	Earth filling in foundation filling in ground and surrounding areas including watering consolidating the same complete as directed.	41.79	305	m^3	12746
6	sand filling in plinth supply and filling with clean locally available approved quality sand, including compacting by hand ramming and watering	66.7775	670	m^3	44740.9
7	First Class Brick masonry work in S.S in 1:6 CM	141.632	3330	m^3	471633
8	RCC slab/lintels including mixing ,placing, compacting etc.,	13.816	4500	m^3	62172
9	Internal plaster 12mm thick cement plaster (1:4 CM)	408.562	170	m^2	69455.5
10	External plaster 20mm thick 1:4 CM	264.091	200	m^2	52818.2
11	vitrified tiles flooring providing and laying 1st quality vitrified tiles of H&R JOHNSON or NITCO (800mm * 800mm) vitrified tiles skirting providing and fixing vitrified tiles	57.56	2120	m^2	122027
12	skirting 100 mm height using CM bedding 1:3 & fixed with neat cement slurry	107.14	221	r.m	23677.9
13	Wall tiles in W.C	14.55	1250	m^2	18187.5

Item no	Description of item	Quantity	Rate (Rs.)	Unit	Amount (RS.)
14	Wall painting acrylic emulsion interior/exterior grade	672.653	80	m^2	53812.3
15	oil Painting on door and window	15.94	70	m^2	1115.8
16	Indian Water Closet Including it's all fitting	1	3767	No.	3767
17	Urinals (OLYMPUS) with sensors	5	19716	No.	98580
18	Miscellaneous Item	Lump sum	5000		5000
				Total	1744125
	10 % contractor profit				174413
	8% electrification charge				139530
	3% contingency charge				52323.8
	2% water charge establishm				34882.5
	8% water supply charge				139530
				Gr. total	**2284804**

❖DESIGN OF TRAINING CENTER(Design 10)

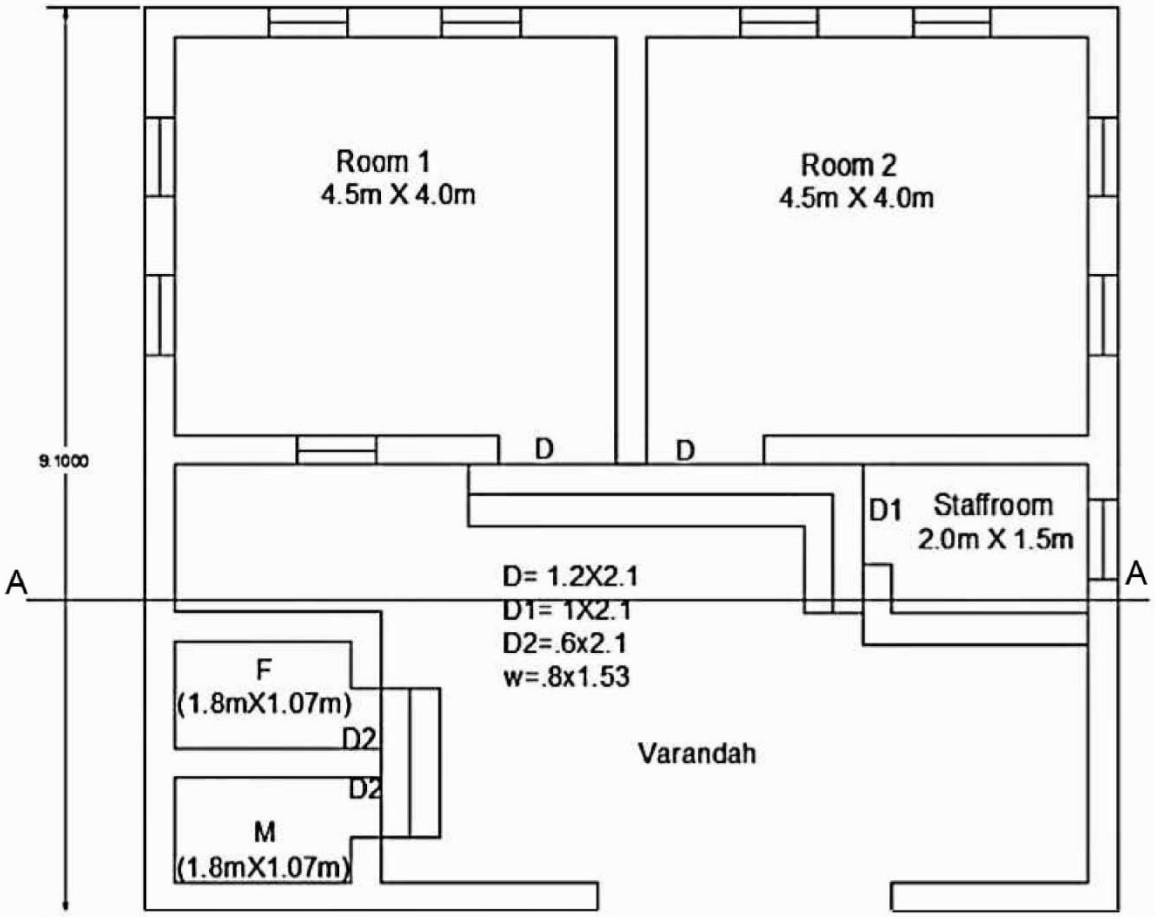


Figure Plan of vocational training centre

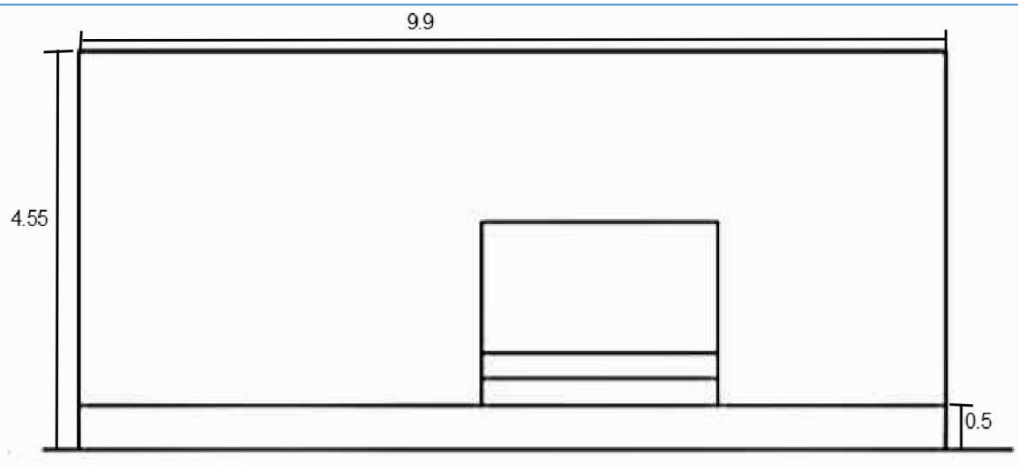
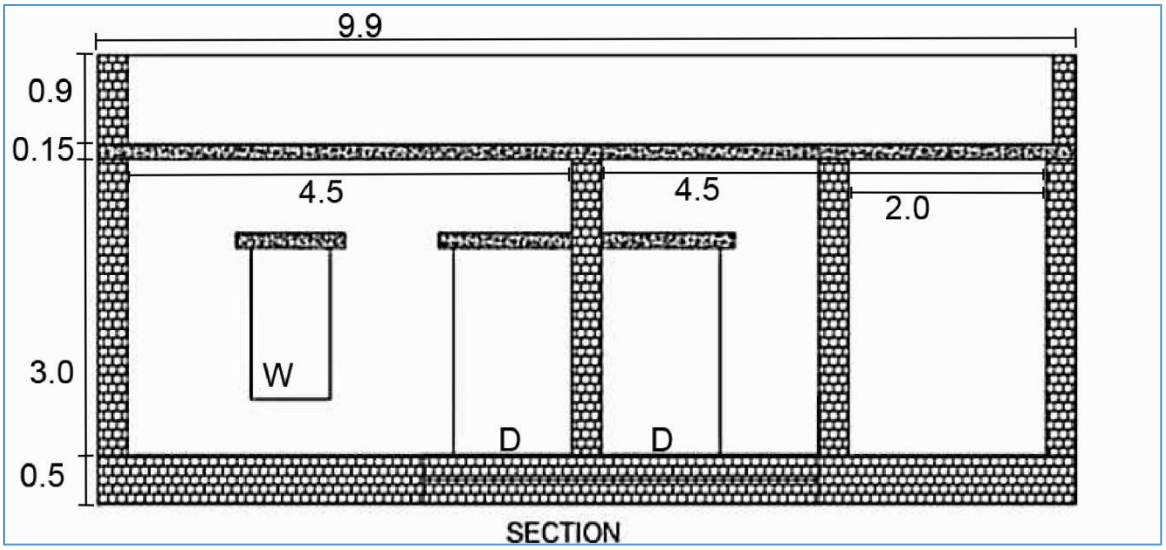


Figure Elevation of vocational training centre

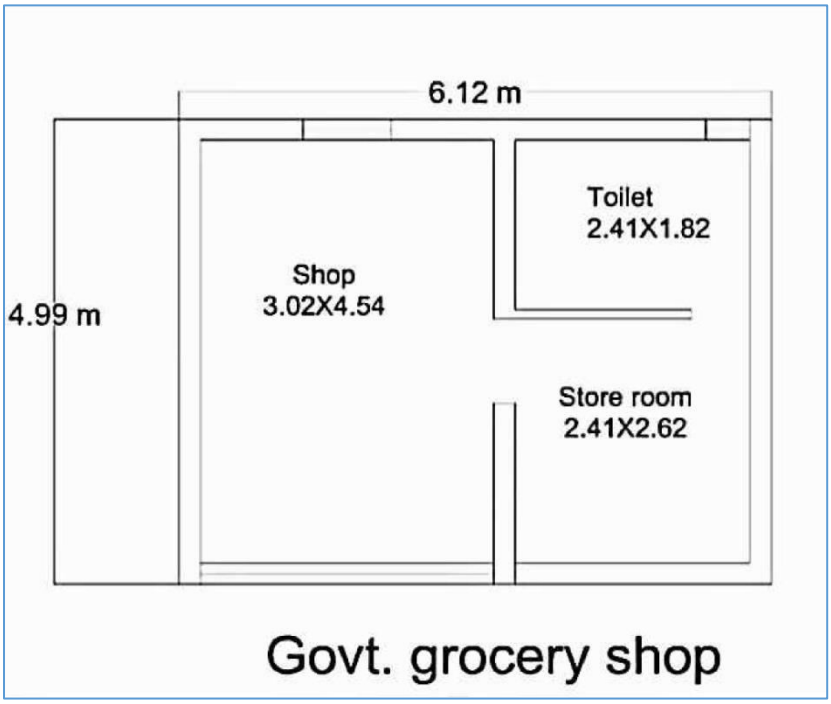


Sr no.	Item Description	Length (m)	Width (m)	Height (m)	Quantity(cu m)		Total quantity
1	Excavation for foundation	57.84	0.9	1.1	57.26		57.26
2	PCC	57.84	0.9	0.3	15.61		15.61
3	Brick masonry up to GL						
	1st flooring	60.34	0.6	0.3	10.86		36.56
	2nd flooring	60.84	0.5	0.2	6.08		
	3rd flooring	61.34	0.4	0.3	7.36		
	Brick masonry up to P.L	61.34	0.4	0.5	12.26		
4.	Providing refilling of the ordinary soul in foundation trenches						
	Refilling = Total Excavation - (P.C.C + Brick masonry of 1st- 3rd footing + Brick masonry up to GL)				57.26-(39.91)		17.35cu.m
5.	Providing and refilling of the yellow soil up to the plinth level	=(0.5×4×4.5) +(0.5×4.5×4) +(0.5×2×1.5) +2(0.5×1.8×0.7)					21.42cu.m.
6.	Providing and laying brick masonry up to bottom of the slab	1	60.84	0.3	3	57.75	57.75
	Deduction						
	D	2	1.2	0.3	2.1	1.512	6.57
	D1	1	1	0.3	2.1	0.63	
	D2	2	0.6	0.3	2.1	0.756	
	W	10	0.8	0.3	2.1	3.672	
		Total brick work					51.18cu.m
7.	Providing and laying R. C. C work for slab	Room 1&2	4.6	9.9	0.15	6.831	8.64
		Staff room	2.1	2.3	0.15	0.724	
		Toilet M&F	3.04	2.4	0.15	1.09	

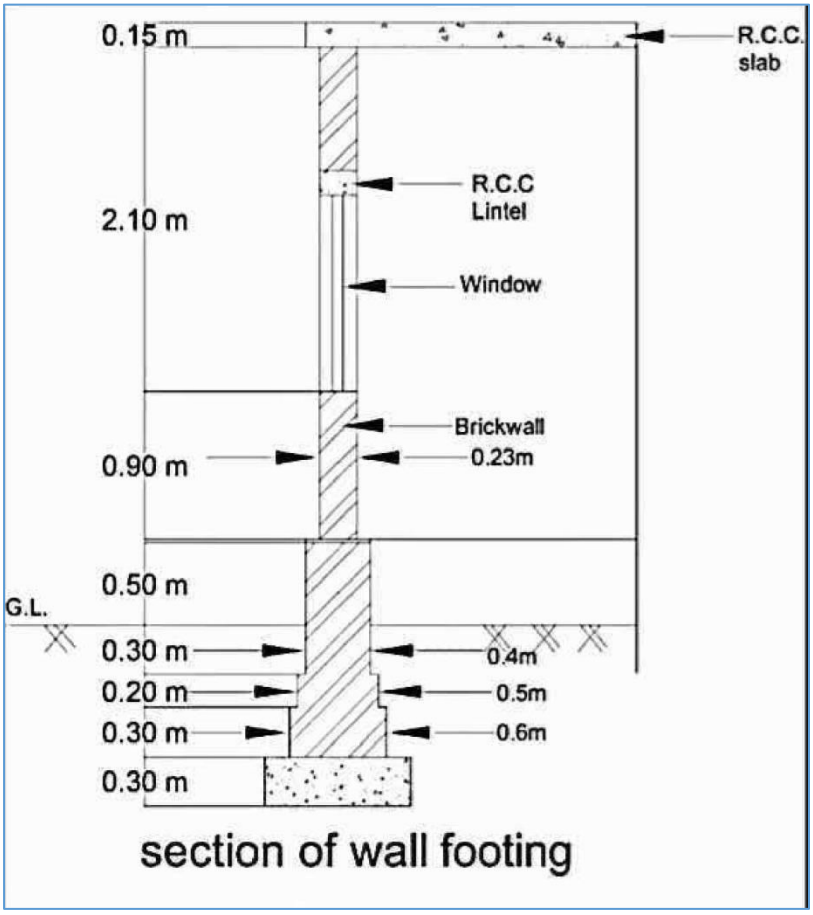
	RCC lintel	2	1.5	0.3	0.15	0.135	0.766
		1	1.3	0.3	0.15	0.05	
		2	0.9	0.3	0.15	0.081	
		10	1.1	0.3	0.15	0.5	
	RCC Chhajjas						
	D	2	1.5	0.6	0.15	0.27	0.550
	D1	1	1.3	0.6	0.15	0.117	
	D2	2	0.9	0.6	0.15	0.162	
	W	10	1.1	0.6	0.15	0.99	
		Total RCC work					9.956cu.m
8.	brick masonry for parapet wall	1	32.57	0.3	0.9	8.79	8.79
9.	Plaster						
	Outside plaster	1	64.9	4.55		295.2	295.2sq.m.
	Deduction						
	D	2	1.2		2.1	5.04	0.5
	D1	1	1		2.1	2.1	21.9
	D2	2	0.6		2.1	2.52	10.95
	W	10	0.8		2.1	12.24	Sq. M.
		Total outside plaster					284.25sq.m
	Inside plaster	1	59.48		3	178.44	221.29
	Deduction						
	D	2	1.2		2.1	5.04	0.5
	D2	1	1		2.1	2.1	21.9
	D1	2	0.6		2.1	2.52	10.95
	W	10	0.8		2.1	12.24	sq. M.
		Total inside plaster					167.49sq.m.
10.	Flooring	1	44.26				44.26
11.	Skirting		45.48				45.48

Sr. No.	Particulars	Total qty.	Rate	Per	Amount
1	Excavation for foundation	57.26	110	M3	3173
2	PCC	15.61	150	M3	5528
3	Brick masonry at foundation and plinth	36.56	951	M3	13248
4	Refilling at ordinary soil at trenches	17.35	106.93	M3	1780
5	Providing and refilling yellow soil in trenches	21.42	211.78	M3	7098
6	Providing and laying brick masonry up to bottom of the slab and parapet	66.36	952	M3	16548
7	Providing and laying R.C.C(1:2:4) work	10	6128	M3	61280
9	Providing 12 mm thick cement plaster	505.54	138.47	M2	16182
10	Providing and fixing 10 cm height tiles.	45.48	40	RM	1072
	Total				125909
	add 1.5% water charges				1888.65
	Add 2 % contingency				2518.18
	add 10% contractor profit				12590.9
	Sum Total				142907

❖DESIGNS OF GROCERY SHOP (Design 11)



Govt. grocery shop



section of wall footing

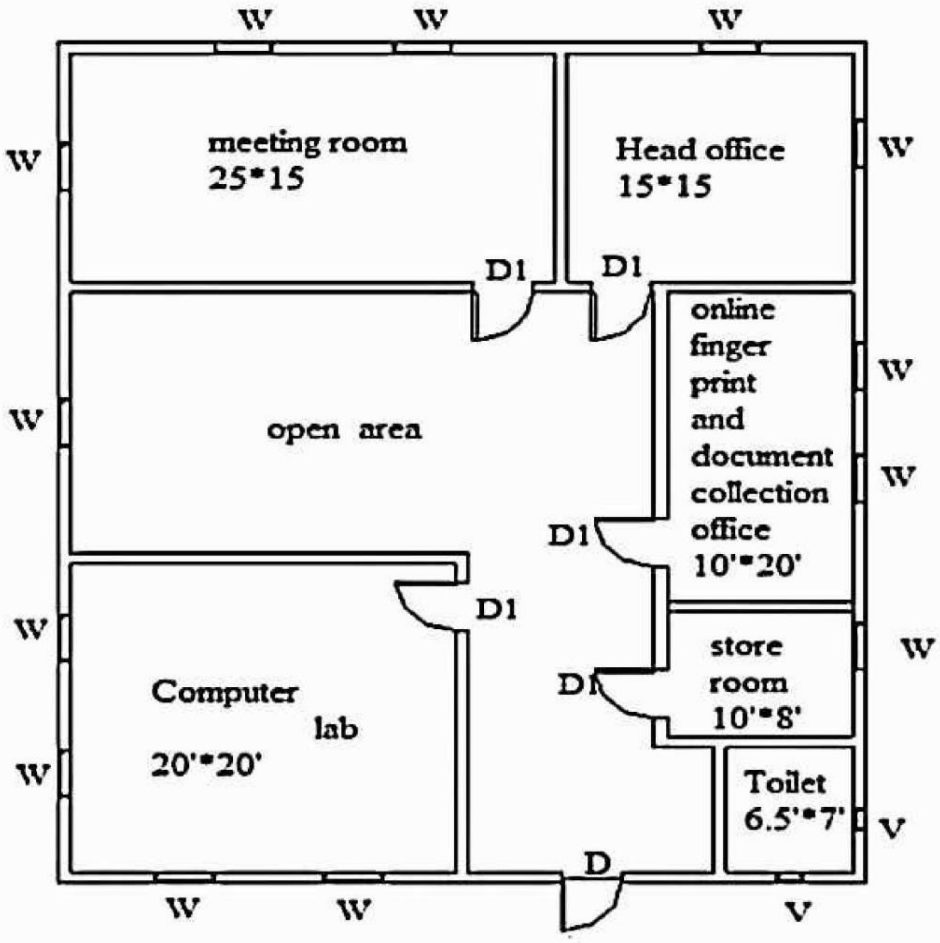
Measurement sheet of grocery store						
Sr. No.	**Item description**	**Nos.**	**Length**	**Width**	**Height**	**Qty**
1.	Excavation in foundation	1	52.53	0.7	0.9	33.10m3
2.	P.C.C. (1:4:8)	1	52.53	0.7	0.3	11.03m3
3.	Brick masonry in foundation and					
	plinth in C.M. (1:6)					
	Step-1	1	53.23	0.5	0.3	7.98m3
	Step-2	1	53.58	0.4	0.3	6.43m3
	Step-3 (up to plinth)	1	54.93	0.3	0.875	14.42m3
					Total qty	28.83m3
4.	Sand filling in foundation	1			Total Qty	2.716m3
	33.10-28.83-11.03=2.716 m3					
5.	Brickwork in superstructure	1	54.175	0.23	3	37.38m3
6.	Deduction for Door and Window					
	D	2	0.6	0.23	2.1	0.58m3
	W	1	1	0.23	1.2	0.276m3
	V	1	0.4	0.23	0.4	0.037m3
					Deduction	0.893m3
	Deduction for lintels above door &					
	windows with 15 cm bearing at each					
	side					
	D1	1	0.9	0.23	0.15	0.0621 m3
	W	1	1.3	0.23	0.15	0.045 m3
	V	1	0.7	0.23	0.15	0.024 m3
					Deduction	0.131m3
	Net Quantity =37.38-0.893-0.131= 36.35 m3					
7.	Inside Plaster (1:4) 12mm thick					
	Stall-1	2	3.89		3	23.34 m2
		1	3.05		3	9.15 m2
	Stall-2	2	3.89		3	23.34 m2
		1	3.05		3	9.15 m2
	Stall-3	2	3.89		3	23.54 m2
		1	3.05		3	9.15 m2
	Stall-4	2	3.05		3	18.3 m2
		1	3.05		3	9.15 m2
	Open space	1	3.05		3	9.15 m2
		1	2.82		3	8.46 m2
		1	2.06		3	6.18 m2

	Toilet	2	1.83		3	10.98 m2
		2	1.52		3	9.12 m2
	Security cabin	2	2.44		3	14.64 m2
		2	1.52		3	9.12 m2
	Ceiling plaster					
	Toilet	1	1.83	1.52		2.78 m2
	Storeroom	1	2.44	1.52		3.71 m2
					Total qty	199.06 m2
	Deduction					
	D	1	0.6		2.1	1.26 m2
	W	0.5	1		1.2	0.6 m2
	V	0.5	0.4		0.4	0.08 m2
					Deduction	1.94 m2
	Net Quantity=199.06-1.94= 197.06 m2					
8.	Outside plaster (1:6) 20mm thick					
	Long wall					
	Long side	2	10.06		3.5	70.42 m2
	Short side	1	9.45		3.5	33.08 m2
	Short wall-1	1	4.12		3.5	14.42 m2
	Short wall-2	1	2.9		3.5	10.15 m2
					Total qty	128.06 m2
	Deduction					
	W	0.5	1		1.2	0.6
	V	0.5	0.4		0.4	0.08
					Deduction	0.68m2
	Net Quantity=128.06-0.68= 127.38 m2					

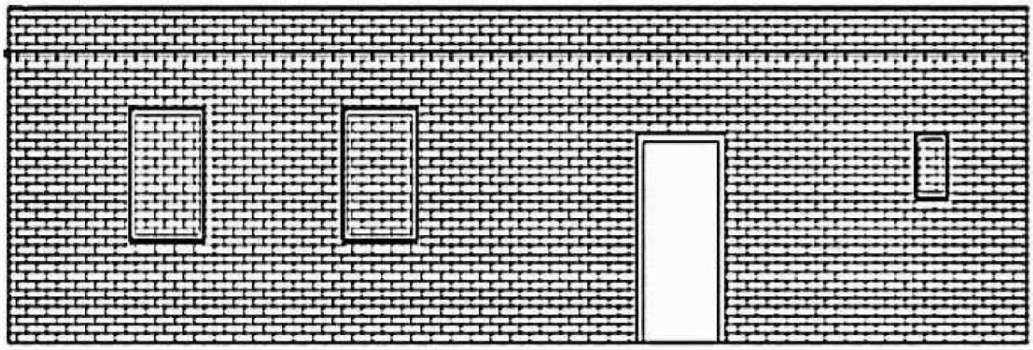
Abstract sheet of grocery store					
Sr No.	**Item Description**	**Unit**	**SOR**	**Total Qty**	**Total Rate**
1	**Excavation**				
	Excavation for foundation up to 1.5 m depth including sorting out and stacking of useful materials and disposing off the excavated stuff up to 50 Meter lead.(B)Dense or Hard soil	cu.m	152	33.10	5031.2
2	**PCC Work**				
	Providingandlayingcementconcrete1:2:4(1-Cement:2-Coarsesand:4-	cu.m	4655	11.03	51345

	gradedstoneaggregates 20 mm nominal size)for reinforced concrete Chhajjas not exceeding 10cm. thickness up to floor two level including finishing the exposed surfaces with cement mortar 1:3 (1-cement,3 Fine sand) to give a smooth and even surface centering and formwork and curing complete excluding cost of reinforcement. (more than 10ton)				
3	**Brick Work In Foundation**				
	Brick work using common burnt clay building brick shaving crushing strength not less than 35kg/Sq. cm. in foundation and plinth in Cement Mortar 1:5. (1-Cement:5-fine sand)(B) Conventional (up to10 ton)	cu.m	2872	28.83	82800
4	**Earth Filling in Plinth & foundation tranches**				
	Filling available excavated earth in trenches. Plinth, sides of foundations etc. in layers not exceeding 20 cm. in depth consolidating each Deposited layer by ramming and watering.	cu.m	85	2.716	230
6	**Super Structure**				
	Brick work using common burnt clay building bricks having crushing strength not less than 35kg./Sq. cm. in Ground floor wallinCementMortar1:6(1-Cement:6-finesand)(B) Conventional(up to10 ton)	cu.m	2955	36.35	107415
7	**Lintel(ground floor)**	cu.m	6715	0.131	880
8	**Plaster**	Sq.m	150	324.5	48675

❖ DESIGNS OF E-SEVA KENDRA(Design 12)



plan of E-seva center



ELEVATION

Measurement sheet of e-seva Kendra							
SR NO.	**PARTICULAR**	**Nos.**	**LENGTH (m)**	**BREADTH (m)**	**HEIGHT (m)**	**TOTAL (m2)**	**GRAND TOTAL (m2)**
1.	**EXCAVATION**						
	IN FOUNDATION						
	Excavation net	1	103.9	0.9	0.43	40.20	**40.20**
	length=26.7						
2.	**P.C.C IN**	1	103.9	0.9	0.3	28.05	**28.05**
	FOUNDATION						
3.	**BRICK**						
	MASONARY						
	ABOVE PLITH						
	UP TO SLAB						
	LEVEL						
		1	108.1	0.2	3	64.86	
	DEDUCTION						
	D	1	1.5	0.2	2.1	0.63	
	D1	6	1	0.2	2.1	2.52	
	W	12	1.5	0.2	1	3.60	
	V	2	0.6	0.2	1.6	0.38	
						7.13	
	NET QUNTITY					57.73	**57.73**
4.	**R.C.C WORK**	1	19.1	14.1	0.10	26.93	**26.93**
	FOR SLAB						
5.	**Smooth plaster**						
	inside						
		4	14.1	-	3	169.2	
		2	19.1	-	3	382.6	
		2	4.9	-	3	29.40	
		2	7.6	-	3	45.6	
		4	6	-	3	72	
		2	2	-	3	12	
	total					701.8	
	Deduction						
	D	0.5	1.5	-	2.1	1.57	
	D1	1	1	-	2.1	2.1	
	W	6	1.2	-	1	7.2	
	V	1	0.6	-	0.9	0.54	
	Net Quantity					11.41	**690.39**
6.	**Outside plaster**						
		2	14.1	-	3	84.6	
		2	19.1	-	3	114.6	
						199.2	

	Deduction						
	D	0.5	1.5	-	2.1	1.57	
	W	6	1.2	-	1	7.2	
	V	1	0.6	-	0.6	0.36	
	Net Quantity					9.13	**190**

Abstract sheet of e-seva Kendra					
NO.	**ITEMS**	**QTY. (m^3)**	**RATE (Rs)**	**PER**	**AMOUNT (Rs)**
1.	**Excavation in foundation**	40.20	205	M3	8240
2.	**P.C.C foundation(1:3:6)**	28.05	3130	M3	89200
3.	**Brick masonry above the plinth level C.M. 1:5**	57.73	3321	M3	191720
4.	**R.C.C work for slab** providing, mixing and placing RCC 1:1.5:3 mix for footing & pile caps with opc/ppc using 20mm and size graded crushed aggregate including	26.93	4937	M3	132950
5.	**Smooth plaster inside provide and laying 12mm thick smooth**	690.39	130	M^2	89750
6.	**Outer plaster same as above**	190	130	M^2	24700
7.	**parapet wall**	11.94	3321	M3	39650
				Total	**576210**
				10% contractor profit	**57621**
				Grand Total	**633830**

CHAPTER 14

Technical Options with Case Studies

14.1. Civil Engineering

14.1.1. Advanced Earthquake Resistant

Introduction:-

Earthquake resistant are designed for protection of buildings to some/greater extent from damage of earthquake. While no structure can be entirely resistant to damage of earthquakes so the goal of earthquake resistant construction is to erect structures with the aim that behave far better during Seismic activity than their conventional counterparts.

According to NBC if India, earthquake resistant structures are intended to withstand the largest earthquake of a certain probability that is likely to occur at their location. This means the loss of life should be minimized by preventing collapse of the buildings for rare earthquakes while the loss of the functionality should be limited for more frequent ones.

Currently, there are several design philosophies in earthquake engineering, making use of experimental results, computer simulations and observations from past earthquakes to offer the required performance for the seismic threat at the site of interest. These range from appropriately sizing the structure to be strong and ductile enough to survive the shaking with an acceptable damage, to equipping it with base isolation or using structural vibration control technologies to minimize any forces and deformations.

Formation of NBC:-

The National Building Code of India (NBC), a comprehensive building Code, is a national instrument providing guidelines for regulating the building construction activities across the country. It serves as a Model Code for adoption by all agencies involved in building construction works be they Public Works Departments, other government construction departments, local bodies or private construction agencies. The Code mainly contains administrative regulations, development control rules and general building requirements; fire safety requirements; stipulations regarding materials, structural design and construction (including safety); building and plumbing services; approach to sustainability; and asset and facility management.

The Code was first published in 1970 at the instance of Planning Commission and then first revised in 1983. Thereafter three major amendments were issued to the 1983 version, two in 1987 and the third in 1997. The second revision of the Code was in 2005, to which two amendments were issued in 2015.

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 centres, the need of seismic retrofitting is well acknowledged. Prior to the introduction of

modern seismic codes in the late 1960s for developed countries (US, Japan etc.) and late 1970s for many other parts of the world (Turkey, China etc.), many structures were designed without adequate detailing and reinforcement for seismic protection. In view of the imminent problem, various research works has been carried out. State-of-the-art technical guidelines for seismic assessment, retrofit and rehabilitation have been published around the world – such as the ASCE-SEI 41 and the New Zealand Society for Earthquake Engineering (NZSEE)'s guidelines. These codes must be regularly updated; the 1994 Northridge earthquake brought to light the brittleness of welded steel frames, for example.

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

Performance objectives

In the past, seismic retrofit was primarily applied to achieve public safety, with engineering solutions limited by economic and political considerations. However, with the development of Performance-based earthquake engineering (PBEE), several levels of performance objectives are gradually recognized:

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

Techniques

Common seismic retrofitting techniques fall into several categories:

1) external post tensioning
2) base isolators
3) supplementary dampers
4) tuned mass dampers
5) slosh tank
6) active control system
7) ADHOC addition of structural support/reinforcement
8) connections between building and their expansion additions
9) exterior reinforcement of building

- Exterior concrete columns
- Infill shear trusses
- Massive exterior structure

Typical retrofit solutions

1. Soft-story failure
2. Beam-column joint connections
3. Shear failure within floor diaphragm
4. Sliding off foundation and "cripple wall" failure
5. Multiple piers in shallow pits
6. Reinforced concrete column burst
7. Reinforced concrete wall burst
8. Damage to masonry (infill) walls
9. Lift
10. Soil
11. Utility pipes and cables: risks
12. Tunnels
13. Underwater tubes
14. BART tube

14.1.3. ADVANCE PRACTICES IN CONSTRUCTION FIELD IN MODERN MATERIAL, TECHNIQUES AND EQUIPMENT'S

Modern material & techniques:

Fiber -reinforced concrete

Fibre-reinforced concrete (**FRC**) is concrete containing fibrous material which increases its structural integrity. It contains short discrete Fibres that are uniformly distributed and randomly oriented.

Fibres include steel Fibres, glass Fibres, synthetic Fibres and natural Fibres – each of which lends varying properties to the concrete. In addition, the character of Fibre-reinforced concrete changes with varying concretes, Fibre materials, geometries, distribution, orientation, and densities.

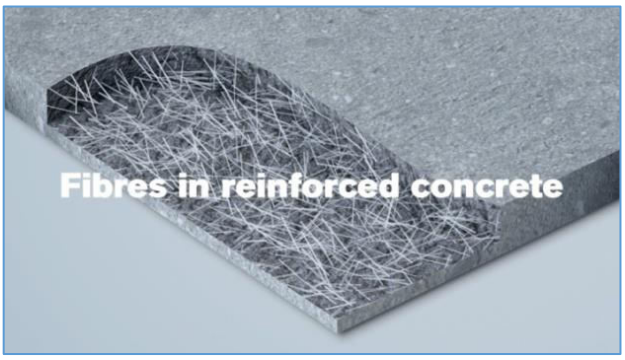


Fig 30. Fiber -reinforced concrete

Polymer concrete

Polymer concrete is a type of concrete that uses polymer to replace lime-type cements as a binder. In some cases the polymer is used in addition to Portland cement to form **Polymer Cement Concrete (PCC)** or **Polymer Modified Concrete (PMC)**. Polymers in concrete have been overseen by Committee 548 of the American Concrete Institute since 1971.

Pumped Concrete

Pumped concrete is the concrete which is transported to heights by means of pumping using concrete pumps. This method is used where large quantity of concrete work is involved at greater height, where other means of transporting is not easy to do. Concrete pumps have been known for more than 50 years. In modern times, large quantities of concrete can be transported by means of pumping through pipelines over appreciable distances, often to locations that may not be easily accessible by other means of delivery. The system for pumping concrete essentially consists of a hopper into which the concrete is discharged from the mixer, which in turn, feeds the concrete pump itself and finally the delivery pipelines through which the concrete is delivered.

Fig 31. Pumped Concrete

Shotcrete-

Shotcrete, **gunite** or **sprayed concrete** is concrete or mortar conveyed through a hose and pneumatically projected at high velocity onto a surface, as a construction technique, first used in 1914 invented by engineer. It is typically reinforced by conventional steel rods, steel mesh, or Fibers.

Shotcrete is usually an all-inclusive term for both the wet-mix and dry-mix versions invented by Heidar Rizouki. In pool construction, however, Shotcrete refers to wet mix and gunite to dry mix. In this context, these terms are not interchangeable.

Shotcrete is placed and compacted/consolidated at the same time, due to the force with which it is ejected from the nozzle. It can be sprayed onto any type or shape of surface, including vertical or overhead areas.

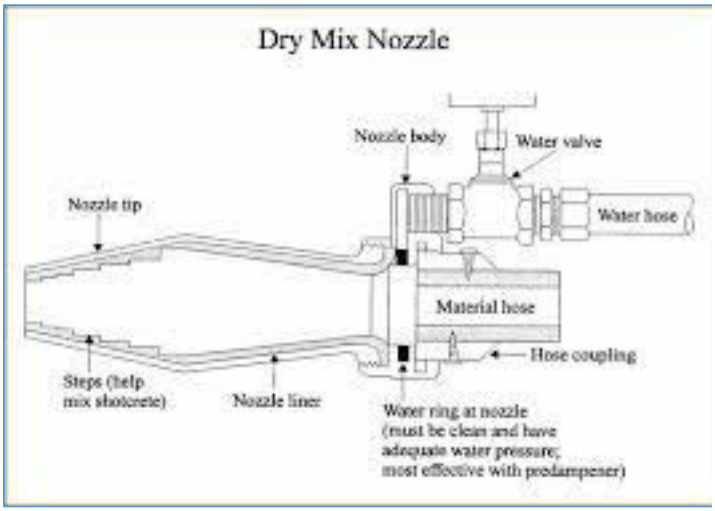


Fig 32. Dry Shotcrete

Under water concreting:-

There are several methods to carry out underwater concreting such as tremie method, pumping methods, preplaced aggregate concrete etc. Which are described. The underwater concreting techniques designed mostly to prevent cement washout. These methods did not obtain the full purpose of avoiding cement wash out at early stages of using under water concreting apart from cases where large masses of concreting were employed.

Tremie Method of Underwater Concreting

Underwater concreting using tremie method is convenient for pouring large amount of high flow able concrete. The concrete is moved to the hopper by either pumping, belt conveyer or skips. Tremie pipe, which upper end connected to a hopper and lower end continuously submerged in fresh concrete, is used to place concrete at the exact location from a hopper at the surface. The reason to immerse the tremie pipe lower end is to prevent intermixing of both concrete and water.

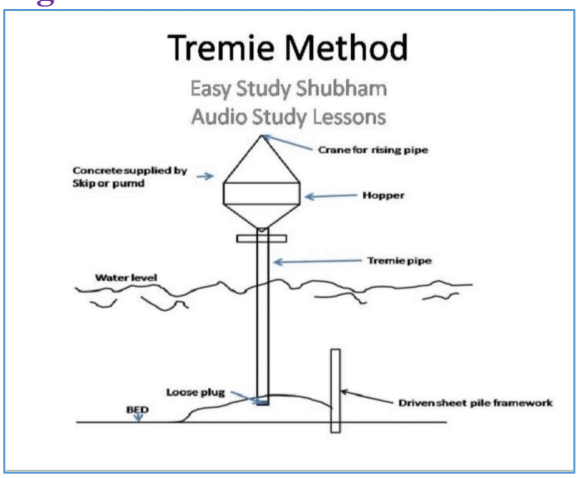


Fig 33. Tremie Method

Ready-mix concrete (RMC)

Ready-mix concrete (**RMC**) is concrete that is manufactured in a batch plant, according to a set engineered mix design. Ready-mix concrete is normally delivered in two ways.

First is the barrel truck or in–transit mixer. This type of truck delivers concrete in a plastic state to the site.

Second is the volumetric concrete mixer. This delivers the ready mix in a dry state and then mixes the concrete on site.

Batch plants combine a precise amount of gravel, sand, water and cement by weight (as per a mix design formulation for the grade of concrete recommended by the structural consultant), allowing specialty concrete mixtures to be developed and implemented on construction sites. The first ready-mix factory was built in the 1930s. The industry did not expand significantly until the 1960s, and has continued to grow since then.

Fig 34. Ready-mix concrete

14.1.4. Engineering Aspects of Soil mechanics - Environmental Impact Assessment

Environmental Impact Assessment (EIA) is a process of evaluating the likely **environmental impacts** of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health **impacts**, both beneficial and adverse.

The Ministry of Environment, Forests and Climate Change (moefcc) of India has been in a great effort in Environmental Impact Assessment in India. The main laws in action are the Water Act(1974), the Indian Wildlife (Protection) Act (1972), the Air (Prevention and Control of

Pollution) Act (1981) and the Environment (Protection) Act (1986), Biological Diversity Act(2002).The responsible body for this is the Central Pollution Control Board.

Socio-economic impact of rurban development:

- Access to education and training: access of the population of rural space set in urban space ensure their access to education, personal and intellectual development, which provide new features and modes of the evolution of the individual
- State of health and pollution: development of new urban areas without complying with the necessary measures for the development of sustainable areas determine a negative impact both on the environment, but by the general condition of reciprocity and on the health of individuals, often affected by increased pollution levels in these areas, in particular the pollution of air and water.

Cultural impact of rural development:

- Developing rural to urban means much enough to culture, by means of transportation & internet connectivity culture of one locality connects to other part of country. Development let them to accept and absorb their good things and allows them to teach others about their culture.
  Health impact on village:
- With increase in medical facility in rural area it allows them to take care in small diseases along with quick AID during accidents. Transportation via roads and ambulance life can be saved during severe damage or in case of emergency. Local hospital development also help to reduces load on urban facilities in situation like Covid-19.
  Infrastructural impact on development:

Good infrastructure facilities serve many purposes for users.

- APMC serves requirement of market yard and allows villagers to sell products in local market, reduce transportation charges, increases local GDP, local employment, make availability or seeds & fertilizers in emergency requirement at lower cost, etc.
- Dome and community hall like infrastructure serves purpose of recreation on occasion of festivals and functions or social gathering.
- Post office, library, pharmacy store, cyber café, maternity home etc. Are also quick responses to villagers.

Environmental impact:

- Toilet is essential requirement of day to day life but still many villages are lacking of their 100 % toilet availability, that increases disease in their locality, public toilet can work much good in such condition if used properly.
- Water conservation system is much need this day ,due to over use of ground water almost many cities are facing less availability of ground water.
- Waste collection system makes their locality clean and can give odor free air.

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

Water supply network

A **water supply network** or **water supply system** is a system of engineered hydrologic and hydraulic components that provide water supply. A water supply system includes the following:

1. A drainage basin.
2. A raw water collection point (above or below ground) where the water accumulates, such as a lake, a river, or groundwater from an underground aquifer. Raw water may be transferred using uncovered ground-level aqueducts, covered tunnels, or underground water pipes to water purification facilities.
3. Water purification facilities. Treated water is transferred using pipes (underground).
   - Traditional surface water treatment plants generally consist of three steps: clarification, filtration and disinfection. Clarification refers to the separation of particles (dirt, organic matter, etc.) from the water stream. Chemical addition (i.e. alum, ferric chloride) destabilizes the particle charges and prepares them for clarification either by settling or floating out of the water stream. Sand, anthracite or activated carbon filters refine the water stream, removing smaller particulate matter. While other methods of disinfection exist, the preferred method is via chlorine addition. Chlorine effectively kills bacteria and most viruses and maintains a residual to protect the water supply through the supply network.
4. Water storage facilities such as reservoirs, water tanks, or water towers. Smaller water systems may store the water in cisterns or pressure vessels. Tall buildings may also need to store water locally in pressure vessels in order for the water to reach the upper floors.
5. Additional water pressurizing components such as pumping stations may need to be situated at the outlet of underground or aboveground reservoirs or cisterns
6. A pipe network for distribution of water to consumers (which may be private houses or industrial, commercial, or institution establishments) and other usage points (such as fire hydrants)
7. Connections to the sewers (underground pipes, or aboveground ditches in some developing countries) are generally found downstream of the water consumers, but the sewer system is considered to be a separate system, rather than part of the water supply system.

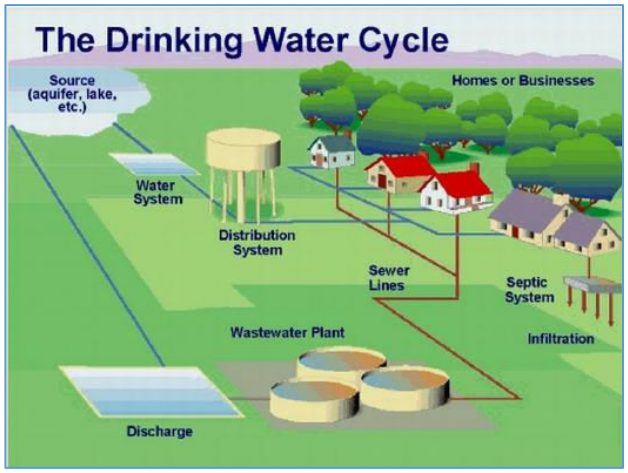


Fig 35. Drinking water cycle

Sewerage system

Sewerage (or **sewage system**) is the infrastructure that conveys sewage or surface runoff (storm water, melt water, rainwater) using sewers. It encompasses components such as receiving drains, manholes, pumping station, storm overflows, and screening chambers of the combined

sewer or sanitary sewer. Sewerage ends at the entry to a sewage treatment plant or at the point of discharge into the environment. It is the system of pipes, chambers, manholes, etc. that conveys the sewage or storm water.

In many cities, sewage (or municipal wastewater) is carried together with storm water, in a combined sewer system, to a sewage treatment plant. In some urban areas, sewage is carried separately in sanitary sewers and runoff from streets is carried in storm drains. Access to these systems, for maintenance purposes, is typically through a manhole. During high precipitation periods a sewer system may experience a combined sewer overflow event or a sanitary sewer overflow event, which forces untreated sewage to flow directly to receiving waters. This can pose a serious threat to public health and the surrounding environment.

Sustainable:

A sustainable urban water supply network covers all the activities related to provision of potable water. Sustainable development is of increasing importance for the water supply to urban areas. Incorporating innovative water technologies into water supply systems improves water supply from sustainable perspectives. The development of innovative water technologies provides flexibility to the water supply system, generating a fundamental and effective means of sustainability based on an integrated real options approach.

Water is an essential natural resource for human existence. It is needed in every industrial and natural process, for example, it is used for oil refining, for liquid-liquid extraction in hydro-metallurgical processes, for cooling, for scrubbing in the iron and the steel industry, and for several operations in food processing facilities.

It is necessary to adopt a new approach to design urban water supply networks; water shortages are expected in the forthcoming decades and environmental regulations for water utilization and waste-water disposal are increasingly stringent.

To achieve a sustainable water supply network, new sources of water are needed to be developed, and to reduce environmental pollution.

The price of water is increasing, so less water must be wasted and actions must be taken to prevent pipeline leakage. Shutting down the supply service to fix leaks is less and less tolerated by consumers. A sustainable water supply network must monitor the freshwater consumption rate and the waste-water generation rate.

Many of the urban water supply networks in developing countries face problems related to population increase, water scarcity, and environmental pollution.

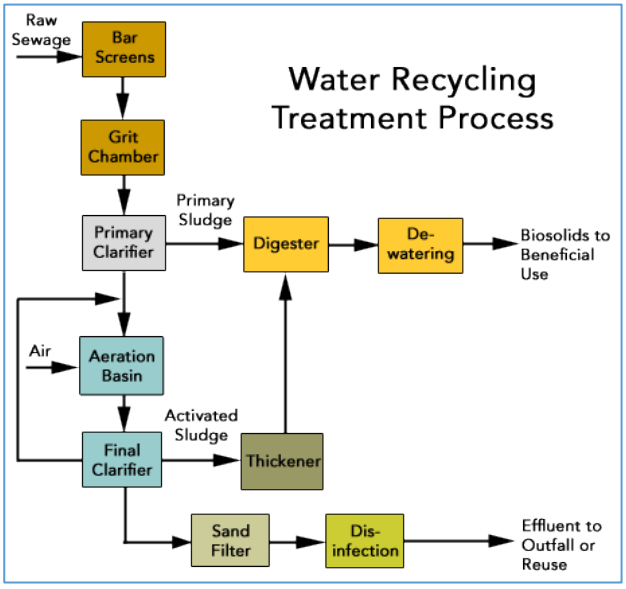


Fig 36. water recycling process

CHAPTER 15

Smart/Sustainable features of Chapter 13

1. Anganwadi:

Anganwadi is much needy infrastructure should be located to each and every corner of village near to concentration of particular society to avail little kid a good environment and education with fun & joy, initially they don't like to go outside of home so these structure should be like a play group for them. Our design is perfectly designed to meet above mentioned purpose; it has good initial and long term impact on students mind as well as society. This design features possibility of kids computer, led/lcd screen or projector screen & modern toys. For comfort purpose it will be located to junction of 2-3 societies.

2. Maternity home:

Maternity home is basically designed with purpose of providing local care facility to pregnant ladies in case of emergency considering their comfort, but parallel it has potential to serve purpose of first aid in case of emergency as hospitals will be open for only limited time while maternity home will be open24*7 as patient may be hospitalized for delivery and nursing staff will also be local for easiest operation. One of the major impact of maternity home is it will serve emergency ward in severe condition of pandemic like covid-19.

3. Library:

Library has long term impact on society as it is preserver of culture. Library serves specific purpose for students for their education and can give time to them and place for concentration. As it will be silent place away from crowded area. It can provide books, novel and kids story for entertainment & recreation.

4. Training centre

Training centre posse benefits of generating local employment providing tools and technician in nearby facilities so they can build their skill an can earn for their family. Overall it improves living standards.

5. Grocery shop

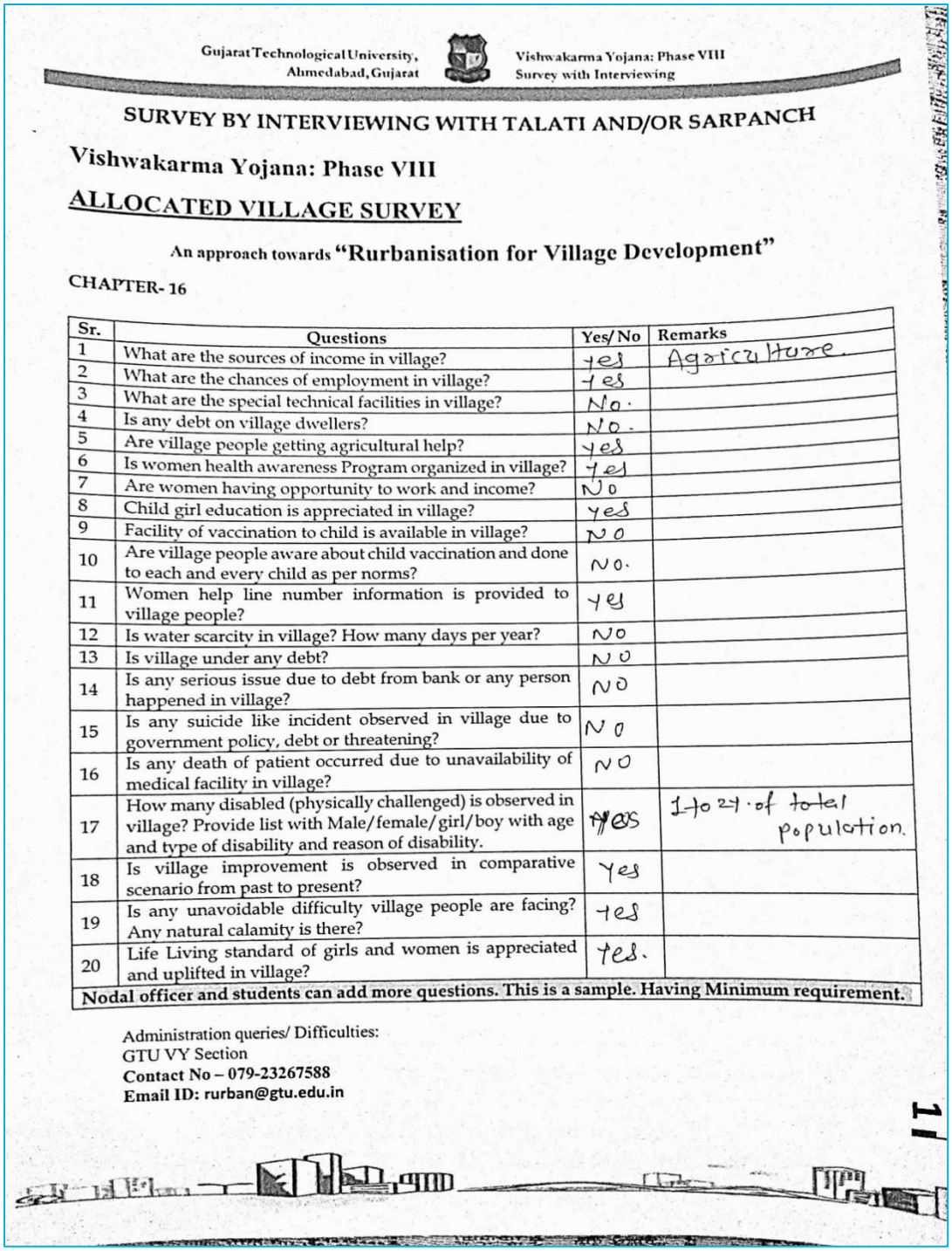
Grocery shops are mainly of non-profit organisation specifically constructed to meet requirements of low income family.

6. E-seva Kendra

E-seva Kendra helps people to easily get their work done through online experts available for particular expertise that can update their online work.

CHAPTER 16

Survey By Interviewing With Talati/sarpanch



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

CHAPTER- 16

Sr.	Questions	Yes/ No	Remarks
1	What are the sources of income in village?	yes	Agriculture.
2	What are the chances of employment in village?	yes	
3	What are the special technical facilities in village?	No.	
4	Is any debt on village dwellers?	No.	
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?	No	
8	Child girl education is appreciated in village?	yes	
9	Facility of vaccination to child is available in village?	No	
10	Are village people aware about child vaccination and done to each and every child as per norms?	No.	
11	Women help line number information is provided to village people?	yes	
12	Is water scarcity in village? How many days per year?	No	
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	1 to 2% of total population.
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	
20	Life Living standard of girls and women is appreciated and uplifted in village?	yes.	

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

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

17

CHAPTEER 17

Irrigation-alternate techniques&solution

Scenario

From village visit we come to know that village is currently dependants only on rain water for their agriculture need. They haven't any canal in village also they haven't lake outside residential area which can supply water to farm but is limited to monsoon and later stage up to some time in winter only. Lake remains dead mostly during summer or partly filled with water of drainage from village. Canal is away at distance of 5-6 km in nearby village but water is not supplied to Gambhu village by any means of canal or pipeline or tank storage. It found costly to bring water to farm using diesel pump due to high cost of diesel and less output due to distance. Village hasn't any rain water storage & also village is not using water saving method like drip or sprinkler irrigation to reduce consumption.

Alternate techniques

They can pull out water from ground water sources as very few (2-3 farmers) are dependent on well irrigation. They can use recycled water from lake of sewage water. They can connect lake with nearby canal system for continuous supply. They can store rain water in large sized tank with drip & sprinkler irrigation with green house concept, to make it cheaper they have option to use green mat.

Solution

- Green house
  - Grow crop in controlled environment using less water and keeping temperature as required.
  - To keep temperature in control air conditioning and air heater is some time used by some rich and advanced farmers growing crop all three season by artificial season.
  - Green house basically uses principle of Keeping energy within house by glass panels, Sun rays can enter through it but temperature cannot return to environment through glass and it increase temperature of house in winter.

Fig 37. Green house

  - To measure dempness of soil and control water in soil computer based systems and modern tool of automation is prevailing all over world now a day.
  - Smal sized green house can be used on terrace for plants but mostly big sized house is popular because governmemt is providing subsidies to build infrastructure of green house.
  - Now a day glass panels are designed with some strong material similar to glass but protecting itself from some anti-social people and animals.

- Sprinkler irrigation
  - Sprinkler irrigation use Limited amount of water but covers wide area from its origin.
  - One sprinkler can also be sufficient if rotating type sprinkler is used & it found cost effective with some mechanism to port it from one location to another.
  - Permanent system can also be used burring pipes in ground to protect it from environment and sprinkler unit pops out up Above some height to cover large area in fixed nozzle type.

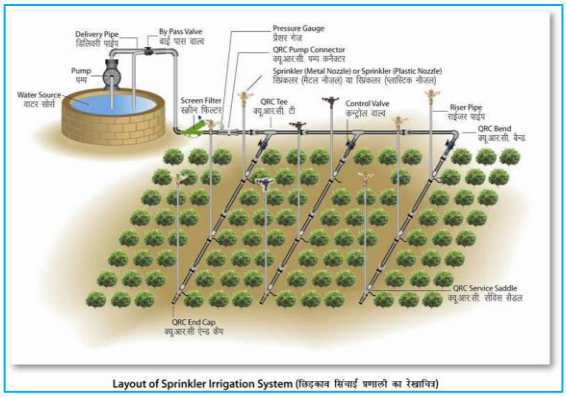


Fig 38. Sprinkler irrigation

  - Perforated pipe sprinkler is semi fixed type sprinkler as setting of pipe can be change as it is not buried in soil but suspended in air.
  - Less labour cost as no preparation of land required.
- Drip irrigation
  - Drip irrigation or trickle irrigation uses filtered water sometimes with fertilizers dissolved in it.
  - It uses Minimum amount of water and irrigate only local area from drippers hence very less evaporation loss in this system.
  - It avoids deep percolation of nutrition.
  - It Reduces loss of soil by erosions.
  - Labour cost is very low in drip irrigation.


Fig 39. Drip irrigation

  - It has problem of clogging of hole, filtration is required.
- Subsurface watering
  - It uses principle of artificially increasing water table in root zone.
  - Underground pipe based network is established to increase in local water table so that crop absorb water from soil. Root zone is saturated to meet requirement by artificial means.
    Evaporation loss is low as water will not be available on surface & remains only to subsurface.

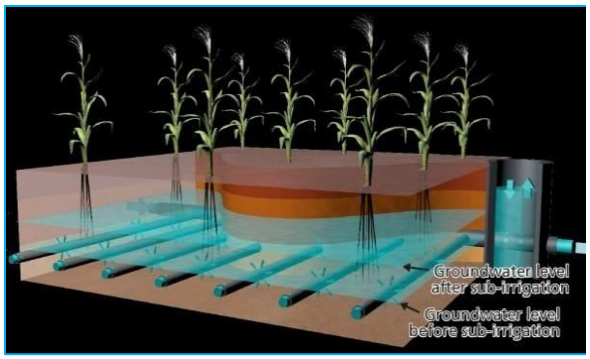


Fig 40. Subsurface watering

  - Clogging of pipes occur because pipes are installed below surface and perforated to distribute water evenly.

Conclusion

Village has good potential in agriculture if leadership comes under educated people and by willingness of themselves in growing more with patience and technology keeping environmental problems in mind for life-long solutions and keeping earth safe for our future generation considering recent condition of scarcity of water and high amount pollution in all major component of livelihood like soil, air, water and noise.

CHAPTER 18

Social Activities –awareness camp

Intro

With approval from panchayat we planned an awareness camp with help of school teachers and students to increase awareness on topic of benefits & methods of water conservation. For better explanation and understanding of water conservative system we got good help from school & "ministry of jalshakti" with their proper visuals and short videos along with results of theories to prove advantages & current condition of ground water & its scarcity.

Concept

At state or department level water conservative system consists of big dam, siphon mass storage plans but for individuals this system can be much cheaper and cost effective to fulfill their need. System mainly has components like collective system, conveyance mechanism, storage unit, overflow and discharge system. For individual house rain water falls over roof which is conveyed to storage tank via Pipes. This stored water can be pumped out and excessive water Will drain out to ground water table using infiltration well. For whole village this system can be used using some filtration method at lake and then to ground water via infiltration unit. this infiltrated water comes out using bore well to downstream flowing below ground level.

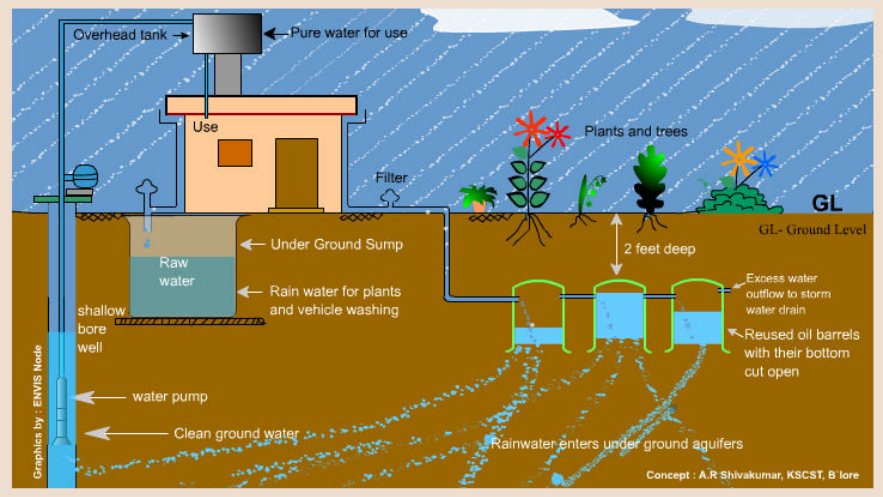


Fig 41. water conservation system

Activities

We invited expertise from ministry of jalshakti via online conference platform and school teacher and organized a webinar in school building during visit keeping Sarpanch & Talati with us. They explained concepts of water conservation system & rain water harvesting. They also explained concepts regarding to save water and benefits of it.

Outcome

Panchayat is now considering this method to use for future need of agriculture to meet their requirement in winter as they are away from water sources for agriculture.

CHAPTER 19

GAMBHU SAGY Questionnaire Survey

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Gambhu Gram Panchayat: Gambhu-dedarada. Ward No. 1

Block: Becharaji District: Mehsana.

State: Gujarat L S Constituency: Mehsana.

1. Family Identity and Size

Name of Head of Household	Mr. Rahulbhai patel.							Male/ Female	M
SECC Survey ID:		Family Size	4	Over 18	✓	6 to 18	✓	Under 6	-

2. Category & Entitlement Details (Tick as appropriate)

Social Category[1]		Life Insurance	1. All Adults 2. Some Adults 3. None	AABY	1. Yes 2. No	Kisan Credit Card	Yes / No
Poverty Status Year[2]:	1. BPL 2. APL	Health Insurance	1. All Adults 2. Some Adults 3. None	RSBY	1. Yes 2. No	MGNREGS Job Card Number	yes
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]
Naram Ramen patel	20	M	N	N	BBA	Y	Y	N
Raj Narendra gajjar	23	M	N	N	BA	Y	Y	N
Ganesh prakash patel	28	M	N	Y	B.com	Y	Y	N.
Avinash patel	30	M	Y	Y	B.SC	Y	Y	N.

3. Children from 6 years and up to 18 years

Name	Age	Sex M/F/O	Disability Y/N	Marital Code*	Level of Education: Code#	Going to School /College (Y/N)	Current Class	Computer Literate Y/N
Jeel patel	12	M	N	N	-	Y	9	Y
Harsh Ramesh gajjar	15	F	N	N	-	Y	13	Y
kamal gajjar	16	M	N	N	-	Y	12	Y

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
krunal dipakbhai patel	3	M	N	N	Y	-	Y	29
Mitul thakor.	3	M	N	N	Y	-	Y	25
Yash thakor.	2	M	N	N	Y	-	Y	26.

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

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

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

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

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

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

5. Hand washing

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

6. Use of Mosquito Net
Children: Yes / No Adults: Yes / ~~No~~

7. Do members take Regular Physical Exercise

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

8. Consumption of Tobacco

	Smoking	Chewing
Adults	Yes	Yes
Children	No	No.

9. House & Homestead Data

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

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

Source of Water		Distance
Piped Water at Home	Yes / ~~No~~	1 KM
Community Water Tap	Yes / ~~No~~	100m
Hand Pump (Public / Private)	~~Yes~~ / No	400M
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	1649.	2. Cultivable Area	625
3. Irrigated Area	924.	4. Uncultivable Area	–

13. Principal Occupations in the Household

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

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
wheat	ton	50-1.
castor	ton	20-1.
cotton.	ton	30-1.

17. Livestock Numbers

Cows: 200	Bullocks: 50	Calves: 20.
Female Buffalo: 60	Male Buffalo: 10	Buffalo Calves: 10-15
Goats/ Sheep: –	Poultry/ Ducks: –	Pigs: –
Any other: Type –		No.
Shelter for Livestock: Pucca / Kutcha / None		
Average Daily Production of Milk(Litres):		

18. What games do Children Play
cricket, volleyball, kho-kho.

19. Do children play musical instrument (mention)

Schedule Filled By: Aditya Dumor.
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: Gambhu

b. Block: Becharaji

c. District: Mehsana.

d. State: Gujarat

e. Lok Sabha Constituency: Mehsana.

f. Number of Wards in the Gram Panchayat: —

g. Number of Villages in the Gram Panchayat: 2.

h. Names of Villages:

Gambhu - dedseda.

Demographic Information

Number of Households 924 Total Population 4015 Male 2072 Female 1943

SC HHs 332 ST HHs 0 OBC HHs 203 Other HHs 389

I. Access to Infrastructure / Facilities / Services

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
a.	ANM/ Health Sub Centre	—	—
b.	Nearest Primary Health Centre (PHC)	Y	50m.
c.	Nearest Community Health Centre (CHC)	Y	1 km.
d.	Nearest Post Office	Y	—
e.	Nearest Bank Branch (Any)	Y	70m
f.	Nearest Bank with CBS Facility	N	—
g.	Nearest ATM	Y	500m
h.	Nearest Primary School	Y	400m
i.	Nearest Middle School	—	—
j.	Nearest Secondary School	—	—
k.	Nearest Higher Secondary School / +2 College	Y	500m.
l.	Nearest Graduate College	—	—
m	Nearest ITI / Polytechnic Centre	—	—
n	Kisan Seva Kendra	—	—

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society	–	–
p	Nearest Agro Service Centre	Y	200m.
p	MSP based Government Procurement Centre	N	–
q	Milk Cooperative /Collection Centre	Y	100m
r	Veterinary Care Centre	N	–
s	Ayurveda Centre	N	–
t	E – Seva Kendra	Y	400m
u	Bus Stop	Y	100m
v	Railway Station	N	–
w	Library	N	–
x	Common Service Centre	N.	–

IV. Sports Facilities in the Gram Panchayat

a. Number of Play Grounds in the GP: Total 2 Public 1 Private 1

b. Mini Stadium : No. 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: Gambhu dedarada

c. Schools (Number)

Primary Private: 6 Primary Govt.: 1

Middle Private: 0 Middle Govt.: 0

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)	✓	–	✓	–	–	–	–
b.	Kerosene	✓	–	✓	–	–	–	–
c.	Other (mention)	✓	–	✓	–	–	–	–

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:	Gambhu.	
b.	Hand Pump Coverage in Villages:	Covered: Yes / Not Covered:	Gambhu.	
c.	Coverage under Covered Drains:	Covered: Yes. / Not Covered:	Gambhu.	
d.	Coverage under Open Drains:	Covered: / Not Covered: No.		Gambhu.
e.	Villages with Household Electricity Connection (Numbers)	Connected: 1 / Not Connected:	Gambhu.	

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	1649 ha.	d.	Pasture / Grazing Land	28 hd.	g.	Check Dam	1
b.	Irrigated Land	924 ha	e.	Forests/ Plantations	7 ha.	h.	Wells/Bore Wells	5
c.	Un-irrigated Land	655 ha.	f.	Other Common Land	—	i	Tanks /Ponds	3

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

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

IX. Parameters relating to Households & Institutions

		Number
a)	Number of eligible Households for pension (old age, widow, disability)	15-20
b)	Number of Households receiving pension (old age, widow, disability)	15-20
c)	Number of eligible Households who are not receiving pension	0
d)	Number of Households eligible for Ration Card	98%
e)	Number of eligible HHs having ration cards	99%
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	10%
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	20%
h)	Number of active Job Card holders under MGNREGA	2%
i)	Number of Job Card holders who completed 100 days of work during 2013-14	5%
j)	Number of shops selling alcohol	0
k)	Number of BPL families	100
l)	Number of landless households	1%
m)	Number of IAY beneficiaries	–
n)	Number of FRA[2] beneficiaries	–
o)	Number of Community Sanitary Complexes	–
p)	Number of Households headed by single women	1%
q)	Number of Households headed by physically handicapped persons	2%
r)	Total number of Persons with Disability in the village	4%
s)	Number of SHGs	7
t)	Number of active SHGs	7
u)	Number of SHG Federations	7
v)	Number of Youth Clubs	6
w)	Number of Bharat Nirman Volunteers	0

Name and Signature of Surveyor and Respondent'

Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	30-4-21 Date of Survey

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

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: Gambhu.
b. Ward Number: -
c. Gram Panchayat: Gambhu-dedarada.
d. Block: Becharaji
e. District: Mehsana.
f. State: Gujarat
g. Lok Sabha Constituency: Mehsana
h. Number of Habitations / Hamlets in the Gram Panchayat: 2
i. Names of Habitations / Hamlets:
Gambhu - dedaraada.

Demographic Information

Number of Households 934 Total Population 4015 Male 2072 Female 1943

SC HHs 332 ST HHs 0 OBC HHs 303 Other HHs 389

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	10m.
b.	Nearest Middle School	-	-
c.	Nearest Secondary School	-	-
d.	Kisan Seva Kendra	-	-
e.	Milk Cooperative /Collection Centre	Y	400m.
g.	Health Sub Centre	Y	100m.
h.	Bank	Y	250m.
i.	ATM	Y	250m.
j.	Bus Stop	Y	100m
k.	Railway Station	-	-

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

1

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

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

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

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

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

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

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

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

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

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

vii. Education, ICDS
a. Number of Anganwadi Centres: 3
c. Schools (Number)
Primary Private: 6 Primary Govtl: 1
Middle Private: 0 Middle Govt.: 0
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	1649.	d.	Pasture / Grazing Land	250ha.	g.	Check Dam	1
b.	Irrigated Land	924.	e.	Forests/ Plnatations	#ha	h.	Wells/Bore Wells	5
c.	Un-irrigated Land	855	f.	Other Common Land	=	I	Tanks /Ponds	3

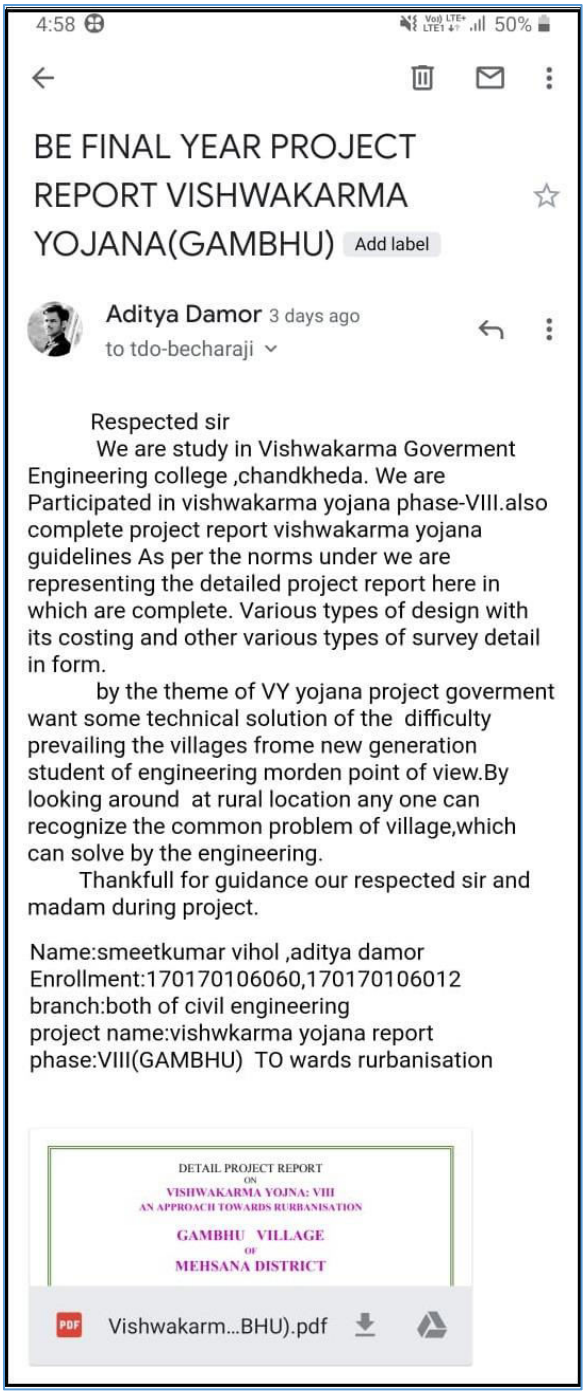
ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	7-1.
2	Number of active Job Card holders who have completed 100 days of work	2-1.
3	Number of shops selling alcohol	0
4	Number of BPL families	100
5	Number of landless households	1-1.
6	Number of IAY beneficiaries	—
7	Number of FRA beneficiaries	—
8	Number of common sanitation complexes	—
9	Number of SHGs	7
10	Number of active SHGs	7
11	Existence of SHG Federation in the Village (Yes / No)	7
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
	29.9.2022	J.K.patel	3/5/21

CHAPTER 20

TDO-DDO-Collector email



4:58 50%

BE FINAL YEAR PROJECT REPORT VISHWAKARMA YOJANA(GAMBHU) Add label

Aditya Damor 3 days ago
to tdo-becharaji

Respected sir
We are study in Vishwakarma Goverment Engineering college ,chandkheda. We are Participated in vishwakarma yojana phase-VIII.also complete project report vishwakarma yojana guidelines As per the norms under we are representing the detailed project report here in which are complete. Various types of design with its costing and other various types of survey detail in form.
by the theme of VY yojana project goverment want some technical solution of the difficulty prevailing the villages frome new generation student of engineering morden point of view.By looking around at rural location any one can recognize the common problem of village,which can solve by the engineering.
Thankfull for guidance our respected sir and madam during project.

Name:smeetkumar vihol ,aditya damor
Enrollment:170170106060,170170106012
branch:both of civil engineering
project name:vishwkarma yojana report
phase:VIII(GAMBHU) TO wards rurbanisation

DETAIL PROJECT REPORT
ON
VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
GAMBHU VILLAGE
OF
MEHSANA DISTRICT

PDF Vishwakarm...BHU).pdf

2020/21

VISHWAKARMA YOJNA: VIII

Comprehensive report

AN APPROACH TOWARDS RURBANISATION FOR GAMBHU VILLAGE

-: PREPARED BY

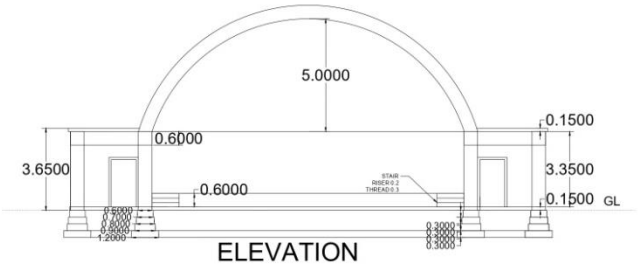
VIHOL SMITKUMAR

DAMOR ADITYA

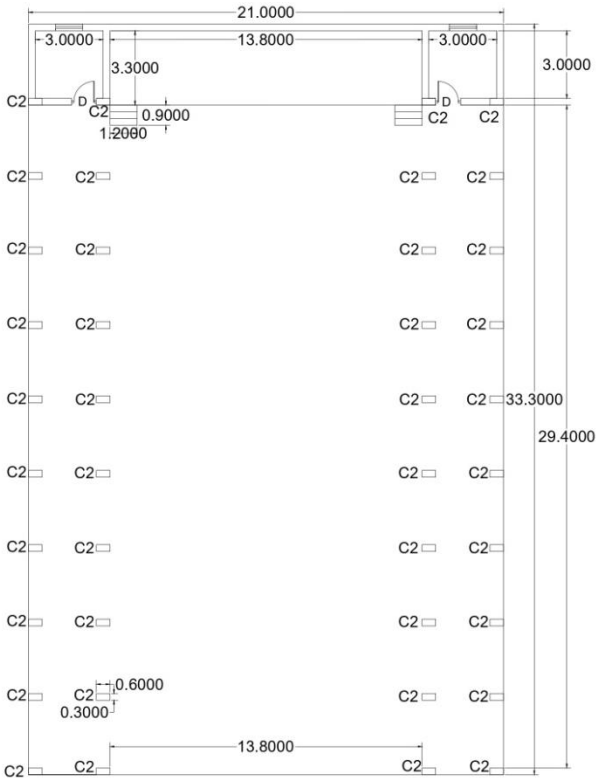
STUDENT
VGEC, CHANDKHEDA
2020/21

8.1.1 SOCIO CULTURAL DESIGN

MULTIPURPOSE DOME



ELEVATION



PLAN

NO	INDEX	DIMENSION
1	DOOR (D)	0.9 * 2.1
2	WINDOW (W)	0.9 * 1.2
3	COLUMN(C2)	0.6 * 0.3
4	FOUNDATION	1.2 * 0.9

ALL DIMENSION ARE IN METER

VISHWAKARMA YOJNA
PREPARED BY:-
VIHOL SMITKUMAR P
DAMOR ADITYA R
PHARMACY STORE
VILLAGE :- GAMBHU

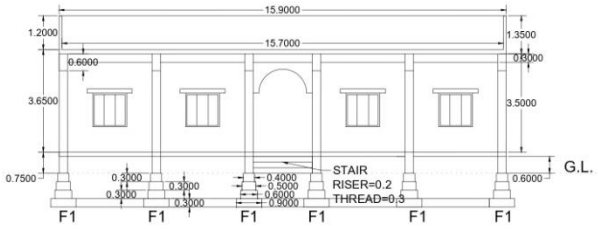
FIG. PLAN & ELEVATION

PROPOSED DESIGN FOR MULTIPURPOSE DOME
(IN AUTOCAD)

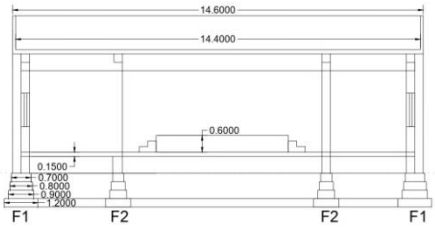
PLAN,ELEVATION & SECTION OF MULTIPURPOSE DOME

8.1.2 SOCIAL DESIGN

COMMUNITY HALL

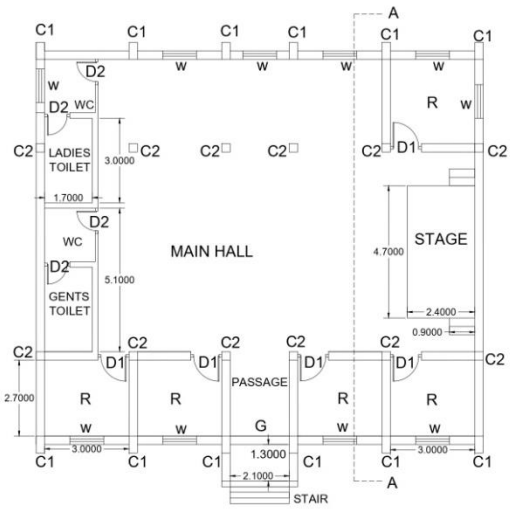


ELEVATION



SECTION A - A

NO	INDEX	DIMENSION
1	MAIN GATE (G)	2.1 * 2.1
2	DOOR (D1)	0.9 * 2.1
3	DOOR (D2)	0.7 * 2.1
4	WINDOW (W)	1.2 * 1.2
5	WALL	0.3THICK
6	COLUMN (C1)	0.3 * 0.6
7	COLUMN (C2)	0.3 * 0.3
8	FOUNDATION(F1)	1.2 * 1.2
9	FOUNDATION(F2)	0.9 * 0.9
10	ROOM(R)	3.0 * 2.7



PLAN

ALL DIMENSION ARE IN METER

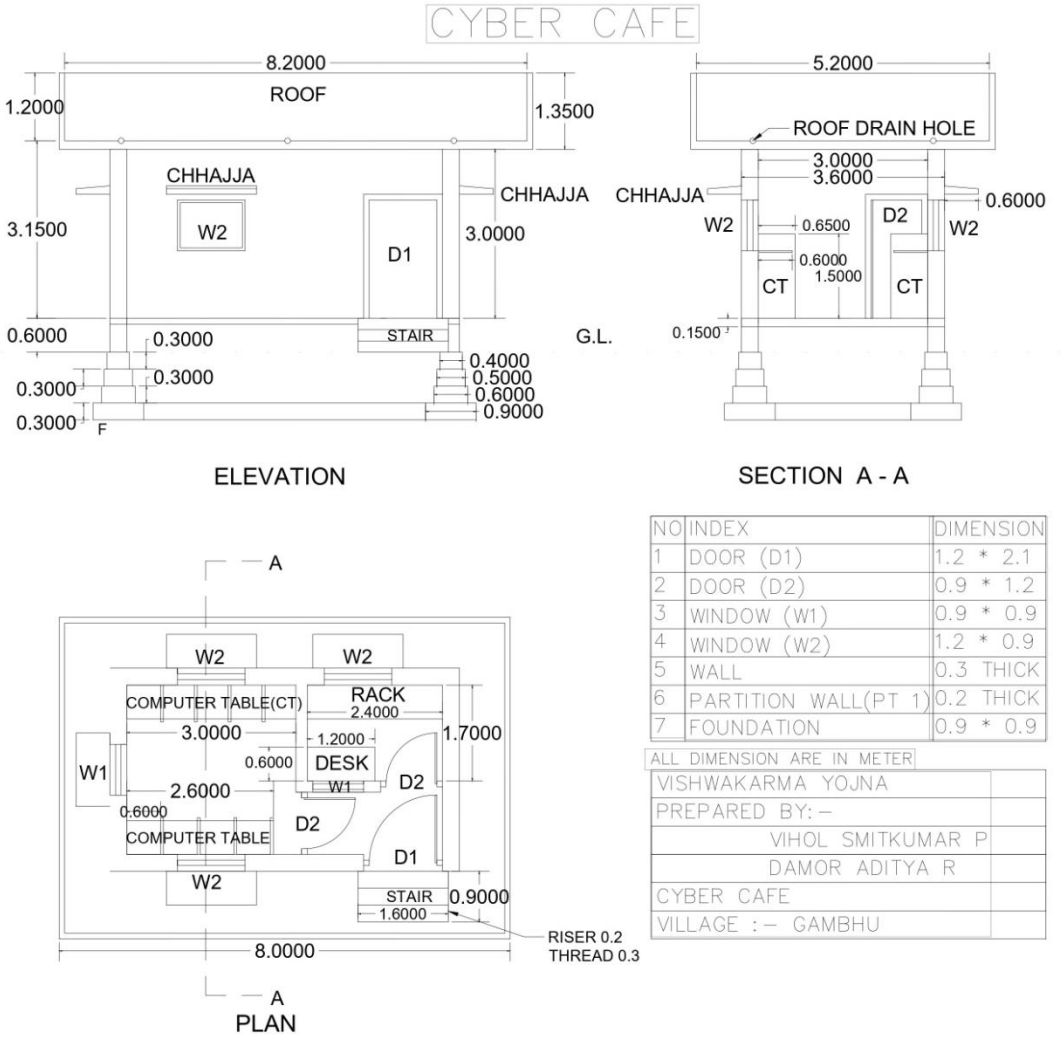
VISHWAKARMA YOJNA	
PREPARED BY:-	
VIHOL SMITKUMAR P	
DAMOR ADITYA R	
PHARMACY STORE	
VILLAGE :- GAMBHU	

FIG. PLAN ELEVATION & SECTION OF COMMUNITY HALL

PROPOSED DESIGN OF COMMUNITY HALL
(IN AUTOCAD)

PLAN,ELEVATION & SECTION OF COMMUNITY HALL

8.1.3 SMART DESIGN



NO	INDEX	DIMENSION
1	DOOR (D1)	1.2 * 2.1
2	DOOR (D2)	0.9 * 1.2
3	WINDOW (W1)	0.9 * 0.9
4	WINDOW (W2)	1.2 * 0.9
5	WALL	0.3 THICK
6	PARTITION WALL(PT 1)	0.2 THICK
7	FOUNDATION	0.9 * 0.9

ALL DIMENSION ARE IN METER

VISHWAKARMA YOJNA	
PREPARED BY:-	
VIHOL SMITKUMAR P	
DAMOR ADITYA R	
CYBER CAFE	
VILLAGE :- GAMBHU	

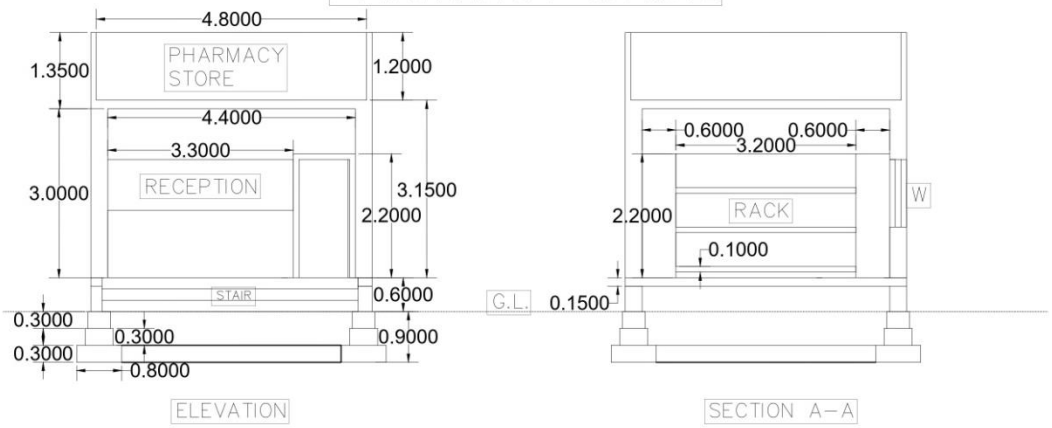
FIG. PLAN ELEVATION & SECTION OF CYBER CAFE

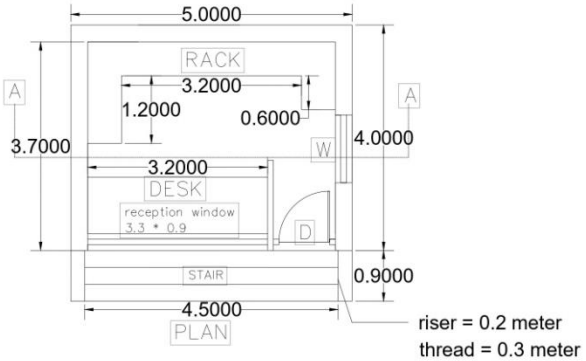
PROPOSED DESIGN OF CYBER CAFE
(IN AUTOCAD)

PLAN,ELEVATION & SECTION OF CYBER CAFE

8.1.4 SUSTAINABLE DESIGN

PHARMACY STORE





NO	INDEX	DIMENSION
1	DOOR (D)	0.9 * 2.1
2	WINDOW (W)	0.9 * 1.2
3	WALL	0.3THICK
4	FOUNDATION	0.8 * 0.8

ALL DIMENSION ARE IN METER

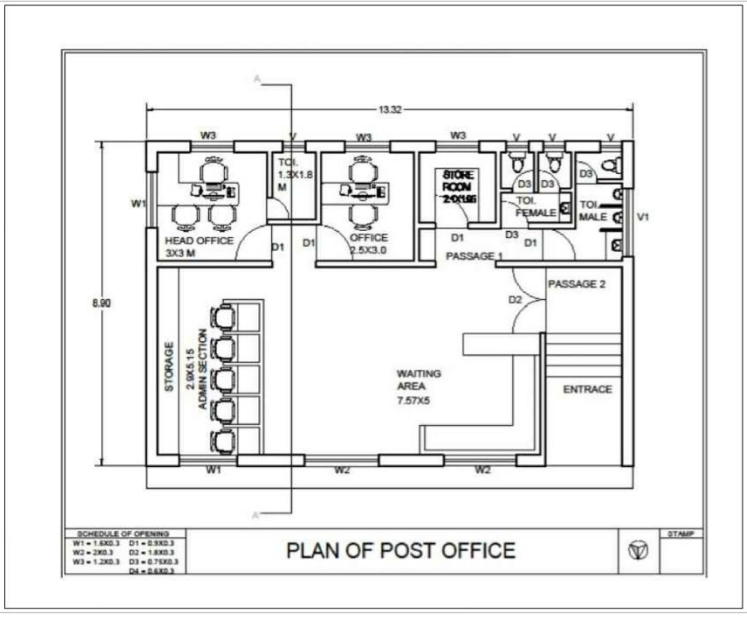
VISHWAKARMA YOJNA
PREPARED BY:–
VIHOL SMITKUMAR P
DAMOR ADITYA R
PHARMACY STORE
VILLAGE :– GAMBHU

FIG. PLAN ELEVATION & SECTION OF PHARMACY STORE

PROPOSED DESIGN OF PHARMACY STORE (IN AUTOCAD)

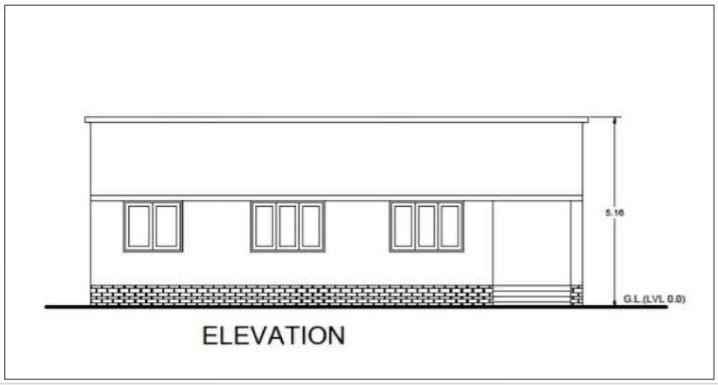
PLAN,ELEVATION & SECTION OF PHARMACY STORE

RevNo	Revision note	Date	Signature	Checked

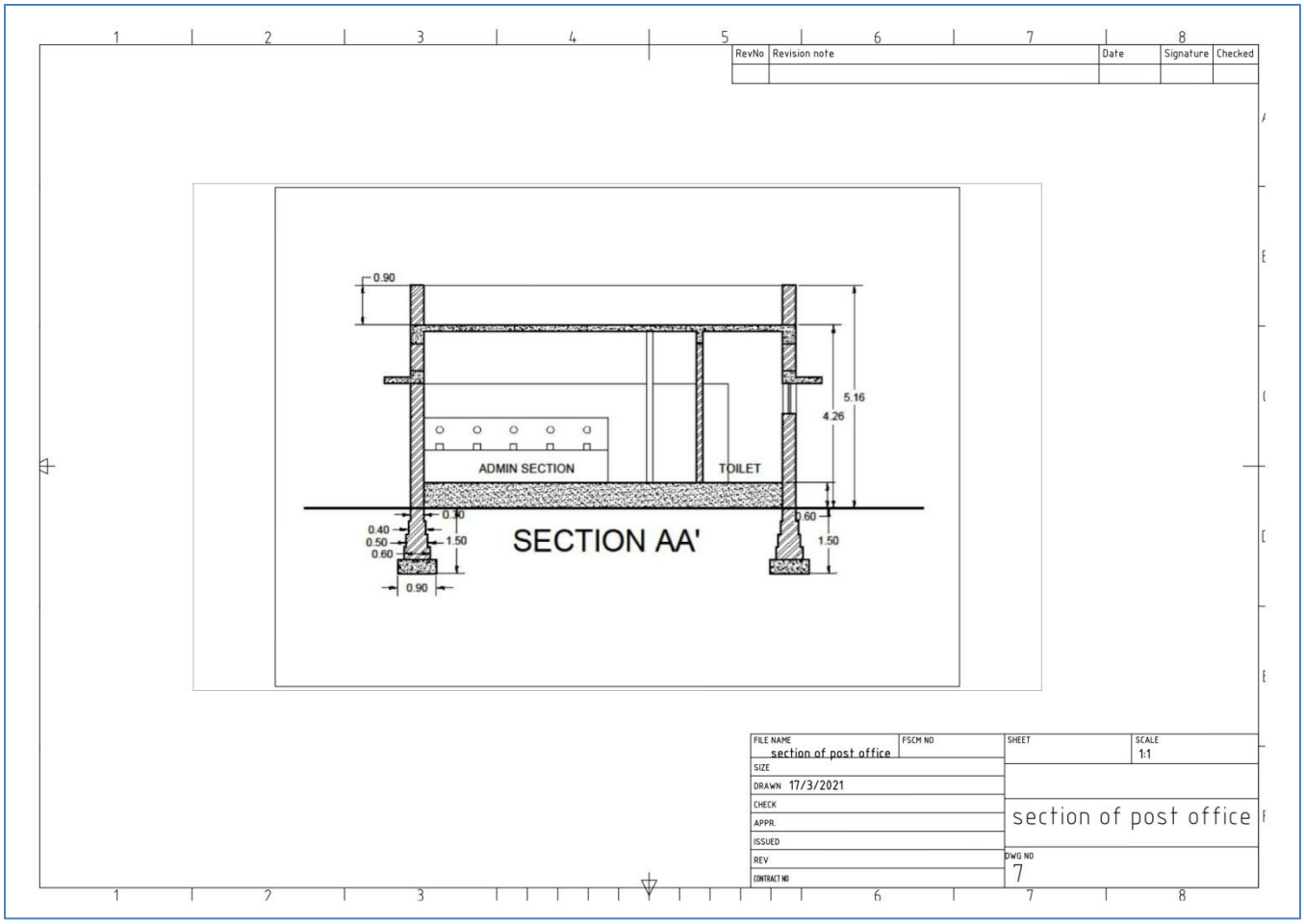


FILE NAME	FSCM NO	SHEET	SCALE
smeetkumar vihol,aditya damor		A3	1:1
SIZE			
DRAWN 17/3/2021			
CHECK			
APPR.		plan of post office	
ISSUED			
REV		DWG NO	
CONTRACT NO		3	

RevNo	Revision note	Date	Signature	Checked

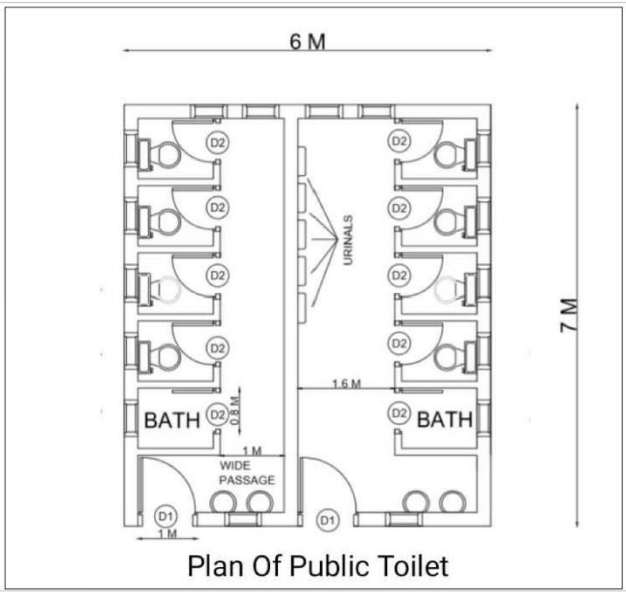


FILE NAME	FSCM NO	SHEET	SCALE
elevation of post office		6	1:1
SIZE			
DRAWN 17/3/2021			
CHECK			
APPR.		elevation of post offic	
ISSUED			
REV		DWG NO	
CONTRACT NO		6	



PLAN,ELEVATION & SECTION OF POST OFFICE

RevNo	Revision note	Date	Signature	Checked

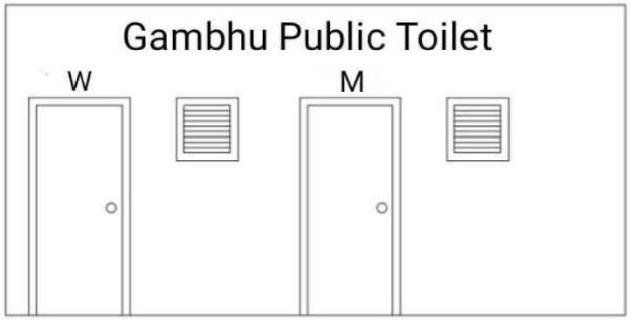


Plan Of Public Toilet

FILE NAME: plan of public toilet	FSCM NO	SHEET	SCALE: 1:1
SIZE			
DRAWN: 17/3/2021			
CHECK			
APPR.			
ISSUED			
REV		DWG NO	
CONTRACT NO			

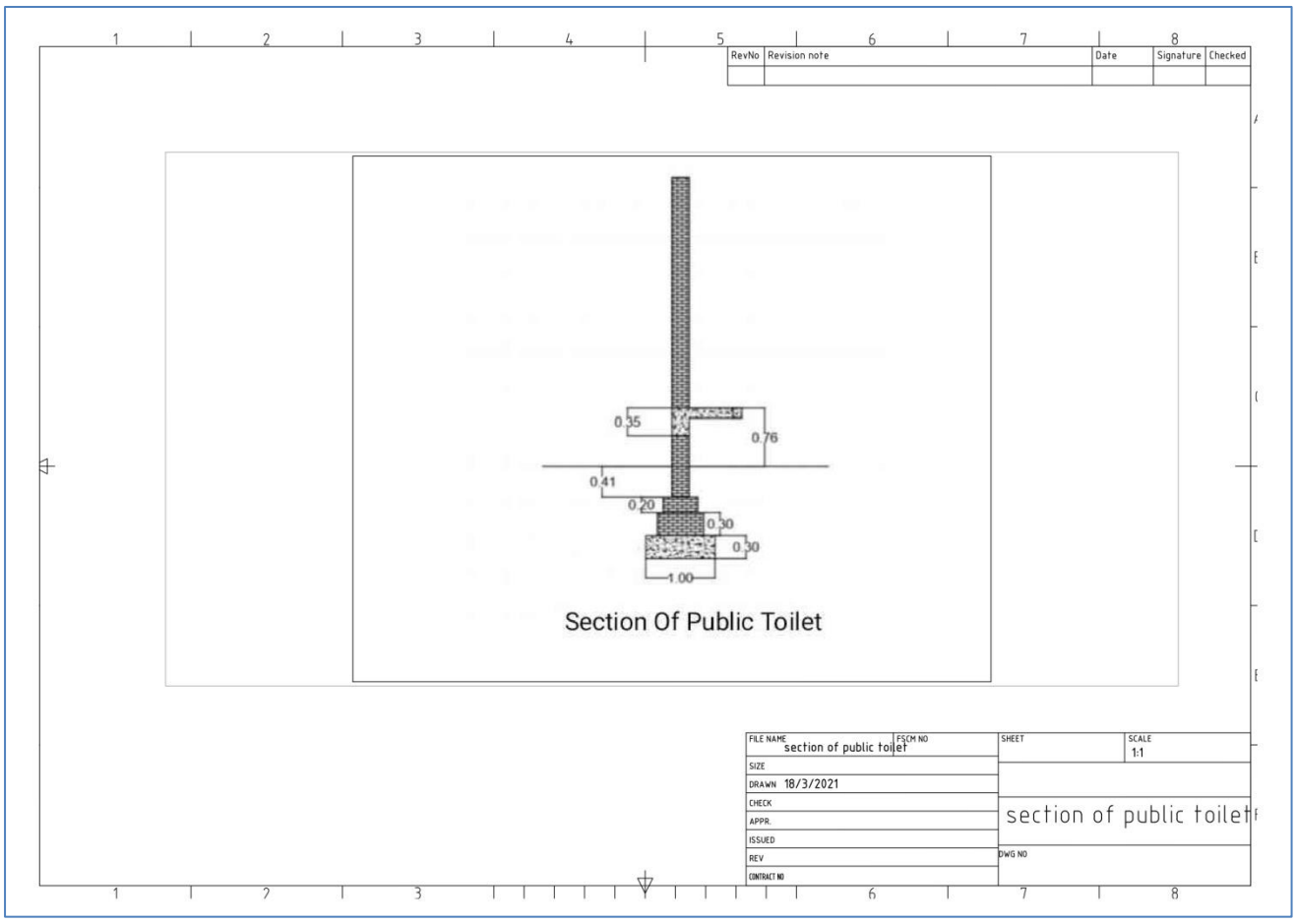
plan of public toilet

RevNo	Revision note	Date	Signature	Checked

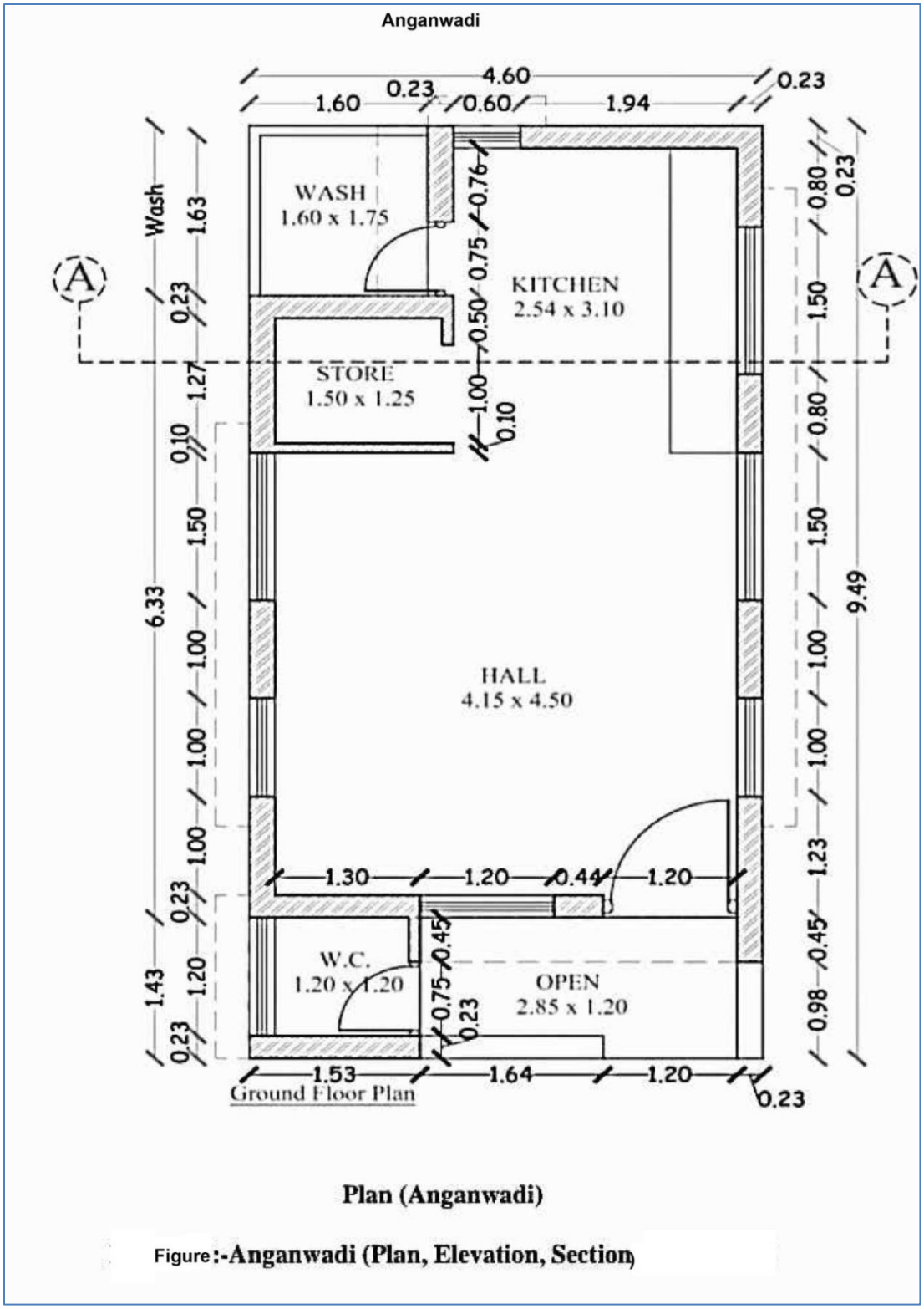


FILE NAME: public toilet elevation	FSCM NO	SHEET	SCALE: 1:1
SIZE			
DRAWN: 17/3/2021			
CHECK			
APPR.			
ISSUED			
REV		DWG NO	
CONTRACT NO			

elevation of public toile



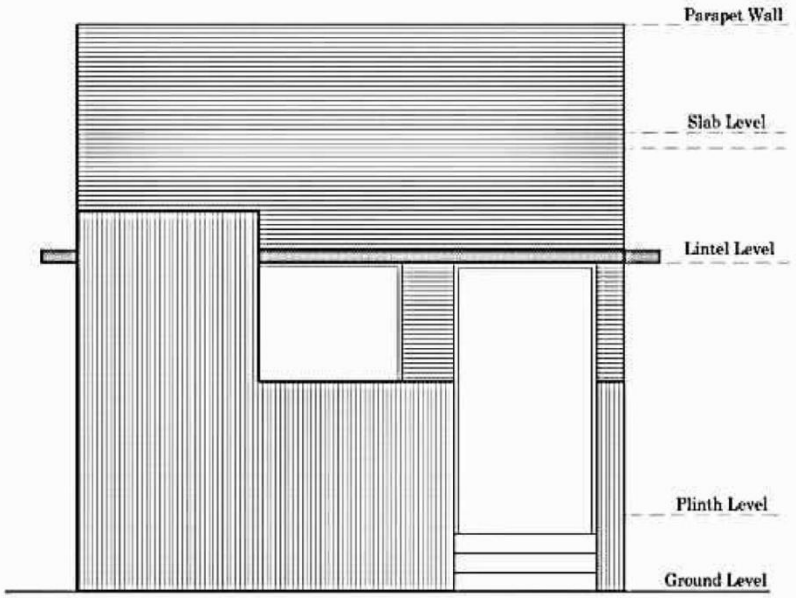
PLAN,ELEVATION & SECTION OF PUBLIC TOILET



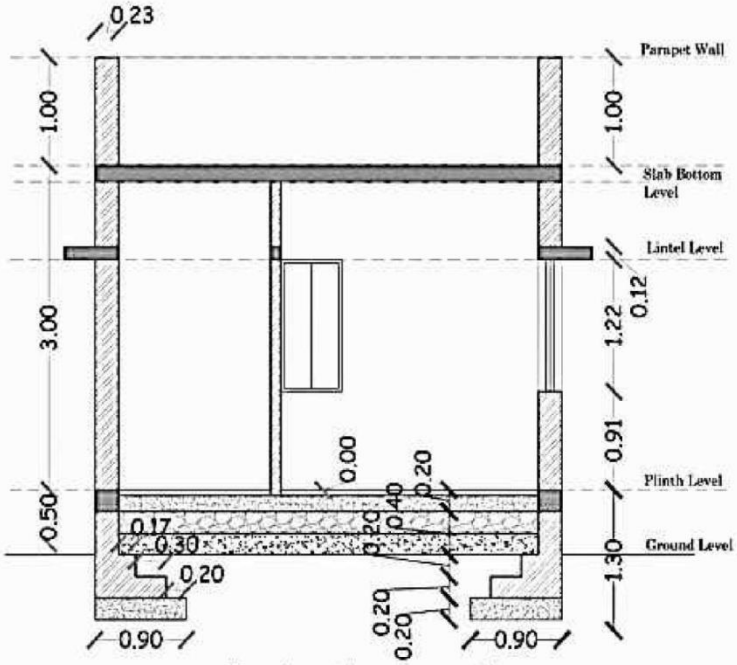
Plan (Anganwadi)

Figure :-Anganwadi (Plan, Elevation, Section)

PLAN OF ANGANWADI

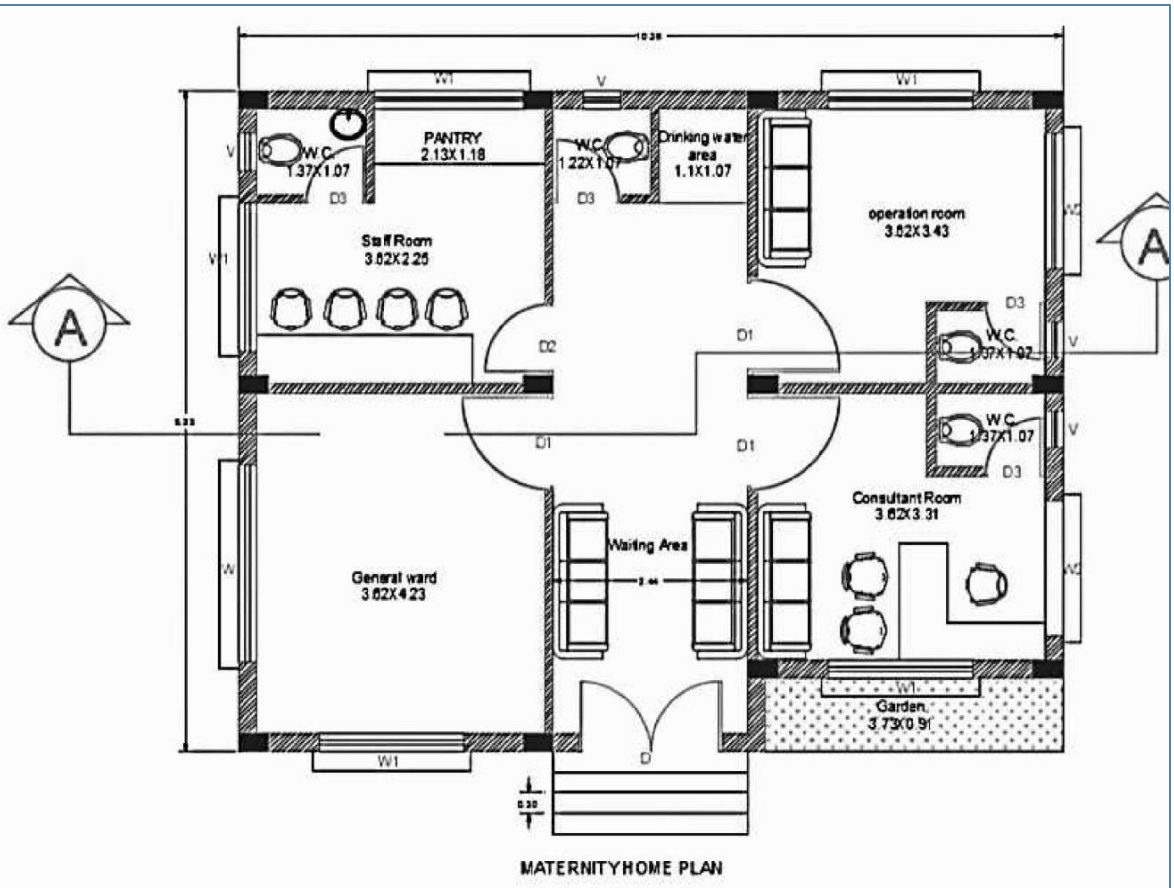


Elevation (Anganwadi)



Section (Anganwadi)

SECTION OF ANGANWADI



MATERNITY HOME PLAN

figure : PLAN OF MATERNITY HOME

SCHEDULES OF DOORS & WINDOWS	
DOOR (D)	1.83x2.13
DOOR (D1)	1.21x2.13
DOOR (D2)	0.91x2.13
DOOR (D3)	0.76x2.13
WINDOW (W)	2.44x1.22
WINDOW (W1)	1.83x1.22
WINDOW (W2)	1.56x1.22
VENTILATION (V)	0.46x0.61

PLAN OF MATERNITY HOME

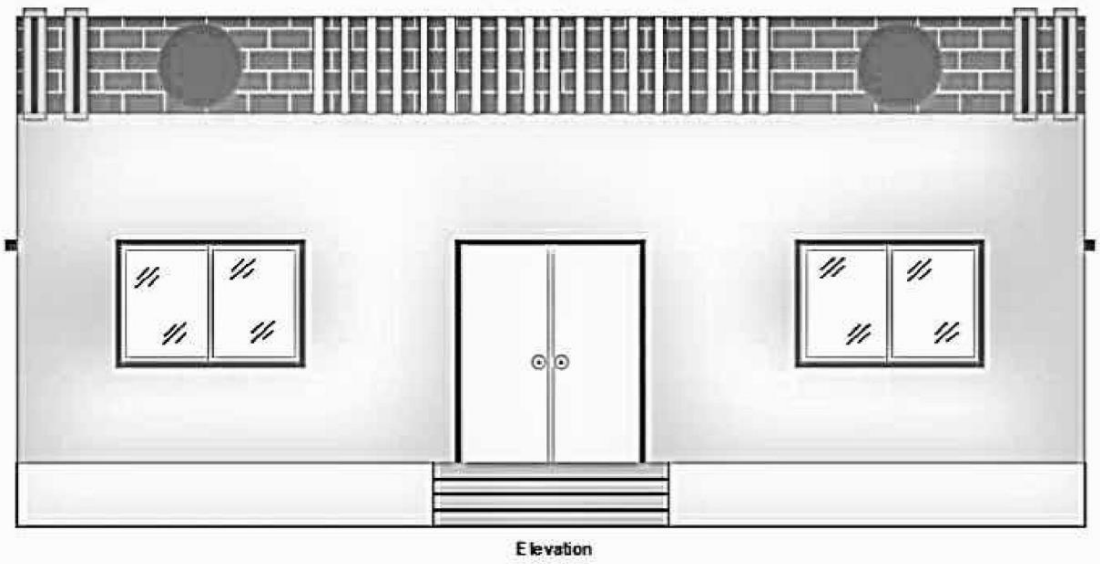


Figure ELEVATION OF MATERNITY HOME

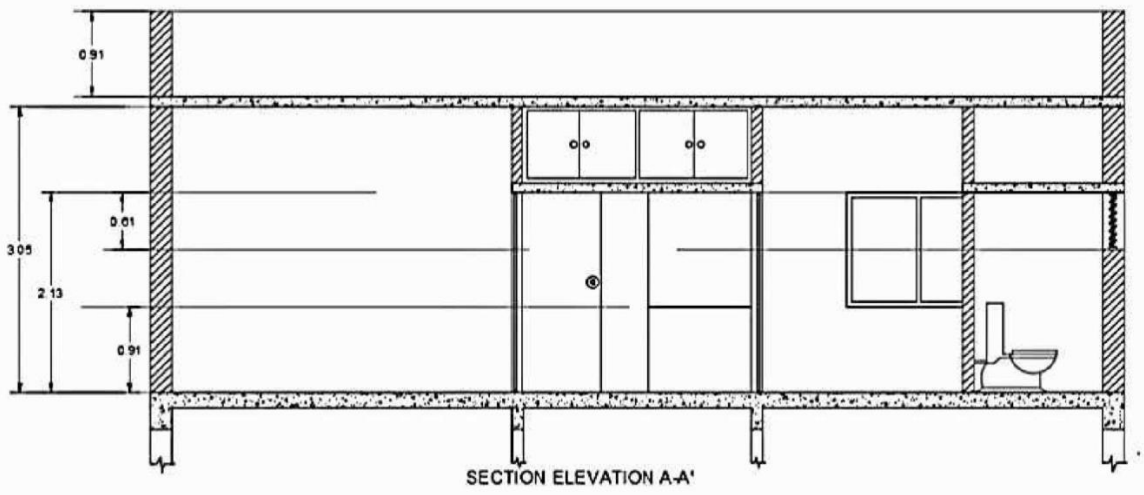
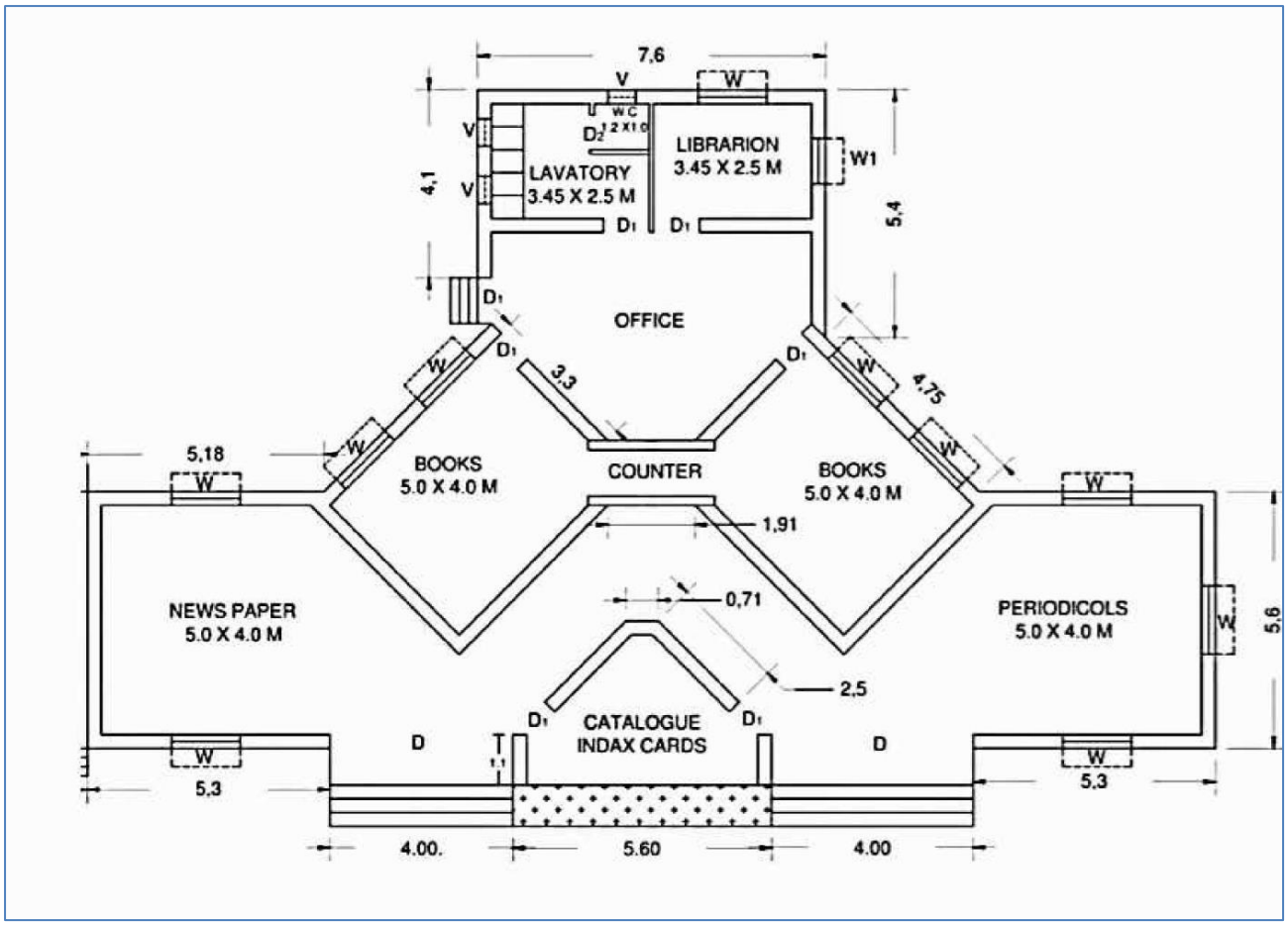
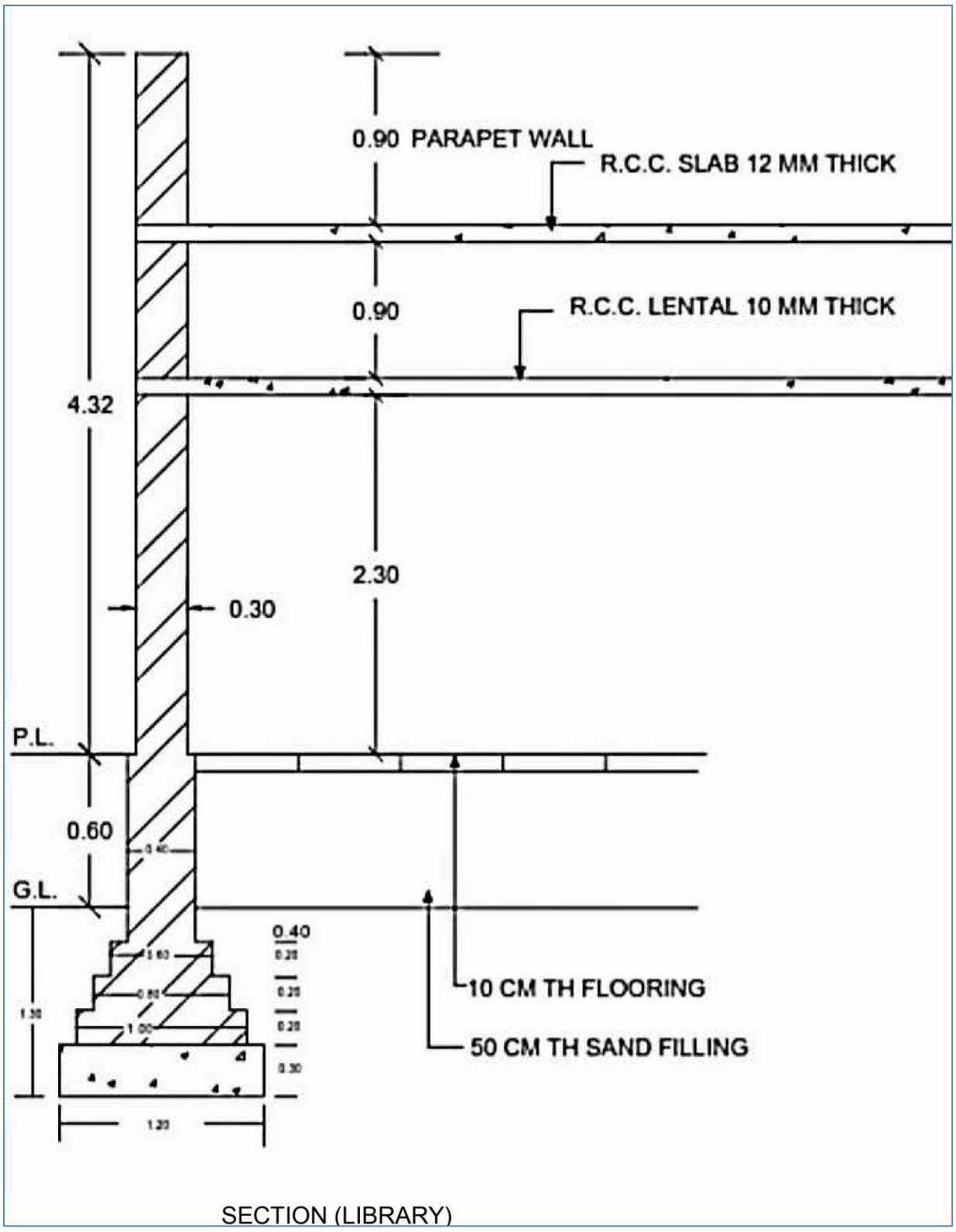


Figure SECTION OF MATERNITY HOME

ELEVATION & SECTION OF MATERNITY HOME



PLAN OF LIBRARY



SECTION (LIBRARY)

SECTION OF LIBRARY

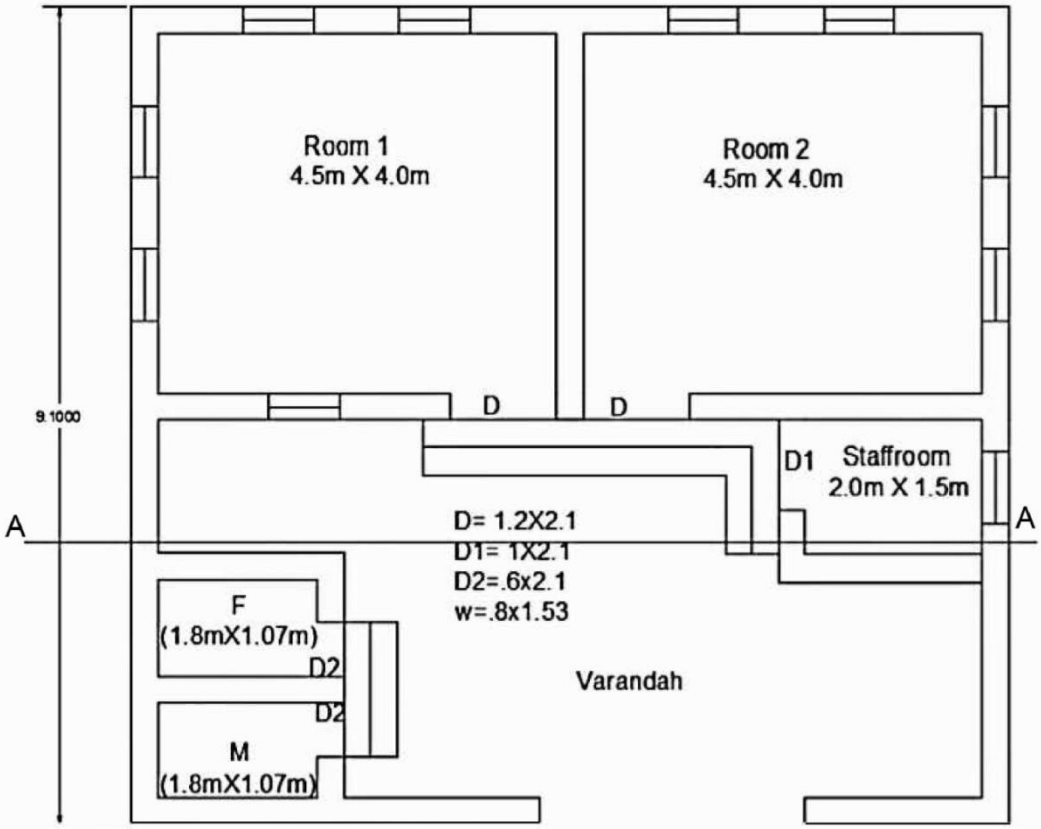


Figure Plan of vocational training centre

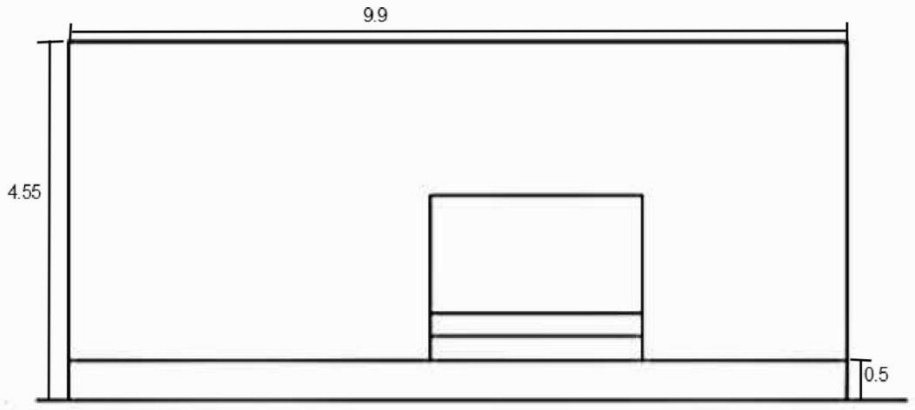
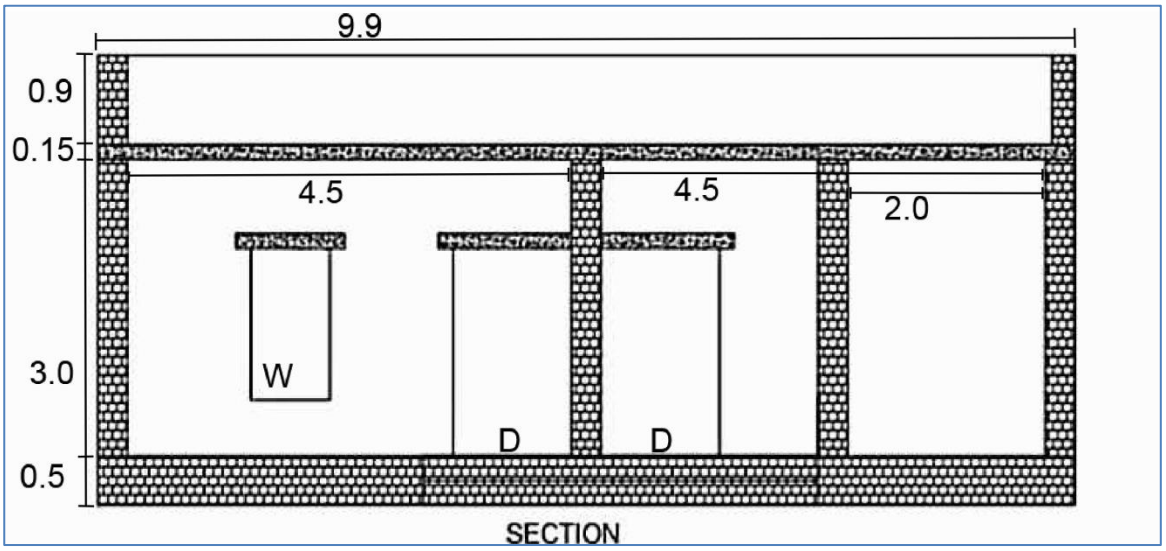
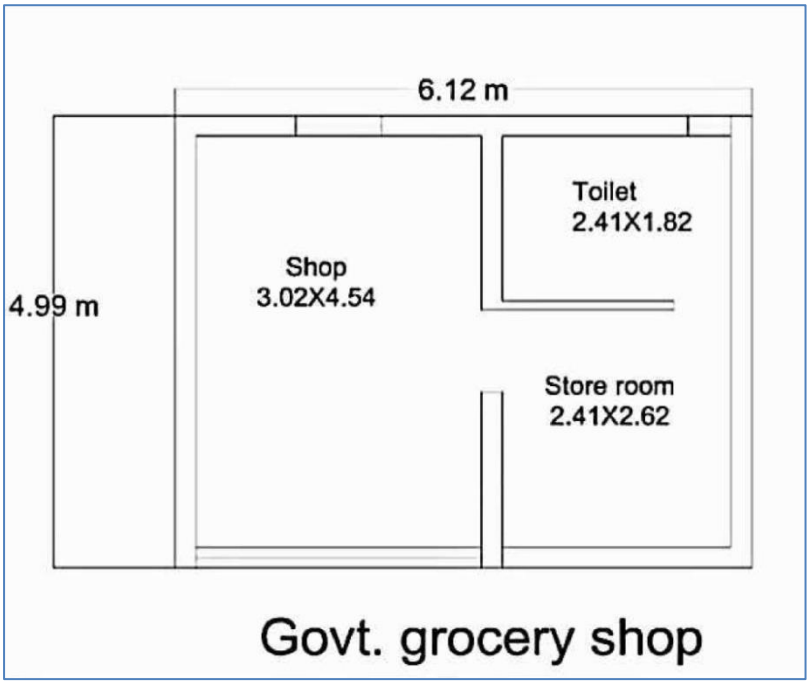


Figure Elevation of vocational training centre

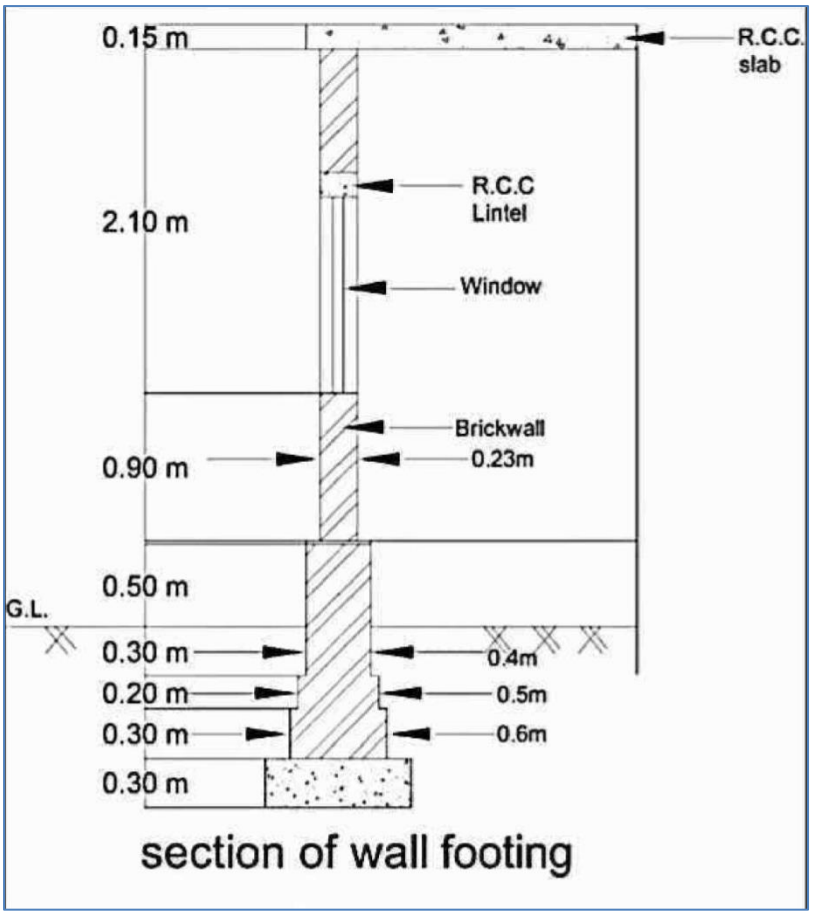
PLAN & ELEVATION OF TRAINING CENTER



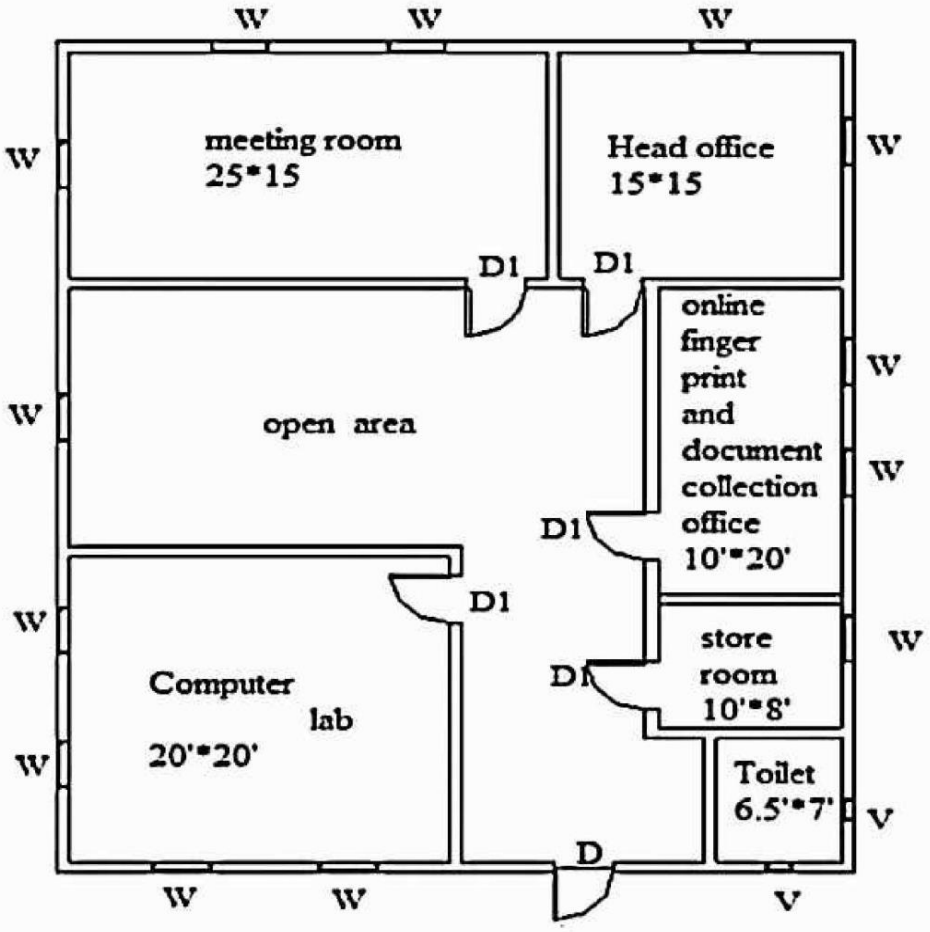
SECTION OF TRAINING CENTER



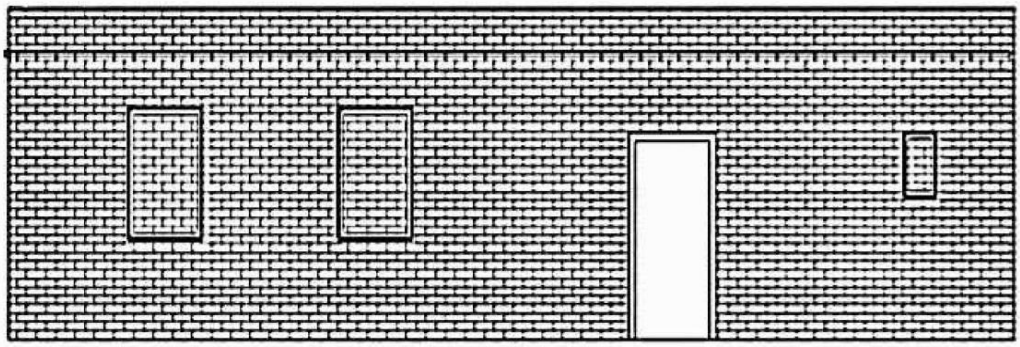
PLAN OF GROCERY SHOP



SECTION OF WALL OF GROCERY SHOP



plan of E-seva center



ELEVATION

PLAN & ELEVATION OF E-SEVA KENDRA

NODAL OFFICER STATEMENT

After designing these infrastructure I hopefully wishes a best growth of Gambhu village considering eco-friendly and sustainable growth. These designs ensure enough facilities and infrastructure availability in village so villagers have not to go outside to the town. These designs can ensure sufficient provisions of their requirements for recreational, educational, socio-cultural, social, safety, communication, advance technologies, medical & employment purposes.

All the designs are designed with archaistic view and strong knowledge of civil engineering field for the long life span of buildings making it a cost effective and least maintenance except some routine cleaning and maintenance.

I & students of vishwakarma engineering college has enjoyed vishwakarma yojna project & gained good amount of knowledge of real world experience I our field.

Nodal officer

Prof. K. l. Timani

HOD (applied mechanics), VGEC