DETAILED PROJECT REPORT

VISHWAKARMA YOJANA PHASE-VIII
AN APROCH TOWORD RE-URBNIZATION OF
HODA(PALANPUR)

2020-21

VISHWKARMA GOVERNMENT ENGINNERING COLLEGE

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Year: 2020-21

Gujarat Technological University,
Chandkheda, Ahmedabad – 382424 Gujarat

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ON

Vishwakarma Yojana: Phase VIII

AN APPROACH TOWARDS RURBANISATION

Hoda, Banaskantha

Prepared By

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CERTIFICATE

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

Detail Project Report for,

VILLAGE: HODA VILLAGE

DISTRICT: PALANPUR

Under

Vishwakarma Yojana: Phase-VIII

in partial fulfillment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

during the academic year 2020-21.

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

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ABSTRACT

Today world is growing rapidly and the **living standard** of society is improving due to development in each and every domain. Due to evolution of new affordable technologies world has become small and faster. Palanpur is among the most developed city of Gujarat and one of the fastest growing city in Guajarat. By this Vishwakarma yojana project government want technical solution of the problem of villages at the engineering point of view. In this project the common problem of village is solved by the engineering students that is discussed further.

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

Urbanization has become a common feature of Indian society. Growth of industries as a result of **industrialization**, people have started moving toward the industrial area in search employment. Vishwakarma Yojana is one of the initiatives towards Re-urbanization by Government of Gujarat. Which has selected as a real time situation type project provide Gujarat Technological University. This Yojana for development village by identifying the requirement of village. This yojana has main aim to covert rural to re-urbanization means to include city facilities in village. Under this scheme, the village are surveyed and development schemes are proposed and implemented. Our project is about development of appropriated facility and suggestion for up gradation of HODA. HODA is one of the village in BANASKANTHA district. So, it is essential to develop the village under the district for the growth of state and also for the country. Slow pace of development in village and pursuit of better life style has led to huge migration from village to cities. For most village on one hand some essential infrastructural facilities like children playground, public garden etc. have been over looked and on the other hand provide infrastructural facilities like drinking water, drainage etc. have become insufficient. As per the present scenario, the village has larger area but lack of infrastructure and facilities. There is no proper facilities of transportation and other basic needs. There are many facilities which are lack in this village like health centre proper road network, close drainage work, solid waste management plant, gram panchayat building and community hall. The coordination between villages is good. But there is lack of employment.

Key words

- Village Development
- Physical infrastructure facilities
- Social infrastructure
- Urbanization
- Reduce migration
- Rural soul
- Education facility
- Awareness
- Life style
- Socio-economics growth
- Connectivity

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We are exceptionally indented to **Gujarat Technological University**, Ahmedabad for giving us such chance to work under Vishwakarma Yojana to get genuine work insight and applying our specialized information in the advancement of Villages.

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We express our earnest gratitude to **Commissionerate of Technical Education, Gujarat State** for acknowledging and recognizing our work.

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ABBREVIATIONS

SHORT NAME / SYMBOL	Full name
VY	Vishwakarma yojana
PHC	Primary health center
CHC	Community health center
RCC	Reinforced concrete structure
WBM	Water Bound Macadam
BM	Brick Masonry
GDP	Gross Domestic Product
SAGY	Sansad Adarsh Gram Yojana
GHG	Green House Gas
NH	National Highway
SH	State Highway
ODR	Other district roads
MDR	Major district Road
SBA	Swachh Bharat Abhiyan
SC	Schedule Cast
ST	Schedule tribe
NGO	Non-Governmental Organization
SWOT	Strength, Weakness, Opportunity, Threats

SUMMARY OF VILLAGES

Village features	Allocated Village	Smart Village	Ideal Village
Village	Hoda	Punsari	Fadvel
Taluka	Palanpur	Talod	Chikhli
District	Banaskantha	Sabarkantha	Navsari
Sarpanch	Lalji bhai Judal	Sunandaben Patel	Hareshbhai H. Patel
Talati	Rajeshbhai Raghuvanshi	Sunilbhai Talati	Kantibhai patel
Distance (km)	15	20	15
Population(As per Census 2011)	2098	5100	2775
Pin code	385001	383307	396540
Surveys	Techno-economic Survey	Techno-economic Survey	Smart Village Survey
Facilities/ Key Features	Gram Panchayat, Road Network, Primary education, Anganwadi, O/H watertank, RO Waterplant, Post office, Sump, etc.	Gram Panchayat, Road Network, Outpost, Bus station, primary, sec. and hig. sec. education,Own RO - Plantl, O/H Watertank,Solar Canal SystemPost office, etc.	Gram Panchayat, Road Network, Bus station, primary and secondary education, PHC, , Post office, Village Pond, Recreational area, Gramin Bank, Private Hospita,Shpoing Complex Construction Underway etc.
Technology	Mobile and Internet connectivity etc.	Solar system, Mobile and Internet connectivity, WiFi, Online education, etc.	Solar system, Mobile and Internet connectivity, WiFi,24×7 Electricity Available, etc.
Drawbacks	Poor Maintenance	More people, traffic, etc.	Lack of services

CHAPTER – 1 IDEAL VILLAGE VISIT FROM DISTRICT OF GUJARAT STATE (CIVIL CONCEPT)

1.1 Background & Study Area Location Punsari Village:

What is an Ideal Village?

VILLAGE ECONOMY > PANCHAYAT RAJ > An Ideal Village.

A village is formed, governed and maintained by its villagers. The People of an ideal village should be **honest and hard-working**. They should possess qualities like tolerance to every faith and religion, brotherhood and unity. They should live like a large family and help one another in the hour of need.

We have selected the Ideal village as Fadvel. It is located in Chikhli taluka of district Navsari. We have visited the Fadvel Village.

Brief about Fadvel:-

According to Census 2011 information the location code or village code of Fadvel village is 523082. Fadvel village is located in Chikhli Tehsil of Navsari district in Gujarat, India. It is situated 15km away from sub-district headquarter Chikhli and 45km away from district headquarter Navsari. As per 2009 stats, Fadvel village is also a gram panchayat.

The total geographical area of village is 1281.65 hectares. Fadvel has a total population of 5,320 peoples. There are about 1,175 houses in Fadvel village. Chikhli is nearest town to Fadvel which is approximately 15km away.

FIG. 1.1.1 FADVEL MAP

FIG. 1.1.2 FADVEL SATELITE MAP

Fadvel is a Village in Chikhali Taluka in Navsari District of Gujarat State, India. It is located 40 KM towards East from District head quarters Navsari. 6 KM from Chikhli. 329 KM from State capital Gandhinagar Fadvel Pin code is 396540 and postal head office is Fadvel .

Other Village Near by Fadvel

Khudvel (3 KM) , Kanbhai (3 KM) , Kaliyari (4 KM) , Vandarvela (4 KM) , Donja (4 KM) are the nearby Villages to Fadvel. Fadvel is surrounded by Vansda Taluka towards East , Gandevi Taluka towards west , Mahuva Taluka towards North , Dharampur Taluka towards South .

We say the fdvel is an a smart/Model Village because of it fulfill all the requirements which is need to be a model/Smart Village.

The Village Consist Its own Gramin Bank, Panchayat, Post Office, PHC center, Lake, Drainage System, Temple, ATM, Higher Secondary High school, Primary School, Refreshment Places and many other structure which are construction is underway.

FADVEL POPULATION & FACTS

Census Parameter	Census Data
Total Population	**5320**
Total No of Houses	**1175**
Female Population %	**49.1%(2614)**
Total Literacy rate %	**71.9%(3824)**
Female Literacy rate	**32.7%(1742)**
Scheduled Tribes Population %	**85.2%(4533)**
Scheduled Caste Population %	**3.0%(160)**
Working Population %	**40.0%**
Child(0 -6) Population by 2011	**518**
Girl Child(0 -6) Population % by 2011	**46.9%(243)**

TABLE 1.1.1 FADVEL POPULATION & FACT

1.2 Concept: Ideal Village, Normal Village

An ideal Indian village will be constructed in such a manner that it will be able to lend itself perfect sanitation. It shall have cottages with sufficient light and ventilation built of material that can be obtained within a radius of five miles of it. The cottages shall 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 kind of avoidable dust. It shall have wells as per the need and demand. 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 Panchayats for settling disputes. It will produce its own grains, vegetables and fruit. It shall also have a gram panchayat as the governing body which may help in solving necessary disputes. The water storage is such that it fulfils the requirements of the village. The lanes are well illuminated at night. It also has proper drainage facilities and ideal ways to dispose-off waste properly. The ideal village has transportation facilities that enable efficient connectivity with nearby towns and villages.

1.2.1 Objectives:

➢ To prevent distress migration from rural to urban areas, which is a common phenomenon in India's villages due to lack of opportunities and facilities that guarantee a decent standard of living.

➢ To make the model village a "hub" that could attract resources for the development of other villages in its vicinity.

➢ To provide easier, faster and cheaper access to urban markets for agricultural produce or other marketable commodities produced in such villages.

➢ To contribute towards social empowerment by engaging all sections of the community in the task of village development.

➢ To create and sustain a culture of cooperative living for inclusive and rapid development.

➢ To creating models of local development which can be replicated in other villages.

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

A village is formed, governed and maintained by its villagers. The People of an ideal village should be honest and hard-working. They should possess qualities like tolerance to every faith and religion, brotherhood and unity. They should live like a large family and help one another in the hour of need.

FADVEL:

Locality Name :	Fadvel (ફડવેલ)
Taluka Name :	Chikhali
District :	Navsari
State :	Gujarat
Language :	Gujarati,Hindi, Dhodia, Kokani
Time zone:	IST (UTC+5:30)
Elevation / Altitude:	26 meters. Above Seal level
Telephone Code / Std Code	02634
Assembly constituency :	Bansda assembly constituency
Assembly MLA :	Anantkumar Hasmukhbhai patel
Lok Sabha constituency :	Valsad parliamentary constituency
Parliament MP :	Dr.K.C.PATEL
Serpanch Name :	Hareshbhai hirabhai patel
Pin Code :	396540

FIG 1.2.1 VILLAGE BOARD

FIG.1.2.2 PHC CENTER

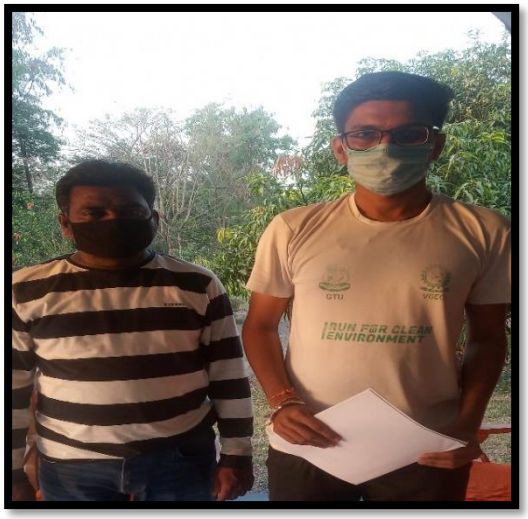


FIG 1.2.3 INTERACTION WITH SARPANCH

FIG.1.2.4 HIGH SCHOOL

1.2.2.1 Case Study of Model Village from the state of Maharashtra, HiwareBazar Village:

Introduction

In 1972 village Hiware Bazar was largely hit by drought and after that the condition of the village getting downwards day by day as the wells were dried and water scarcity took place. Situated in the rain shadow area of the Western Ghats, the village receives erratic and uneven rainfall of less than 400 mm. This resulted in the formation of uncultivated lands and there is hardly any source of income. The consequences of this was depression, alcohol addiction that results in low efficiency of workers, domestic violence, and migration. During 1989-90, less than 12% of the cultivable land was under cultivation. The wells of the village used to have water only during the rainy season. As there was huge unemployment the village habituated in making, drinking and selling country liquor. Every family of the village were suffering from these issues. Problems boost up as there was no support or governance in the village. Moreover the under-performing government officials were posted in the Hiware Bazar Village. Earlier there was a small school in the village with only two rooms and after 4th grade the students had to travel 7 kms for their study. Due to lack of proper sanitation and water, the health facilities were hardly available. Child mortality was a regular phenomenon in this village. As a result, most of the families fled to Pune, Mumbai and other nearby cities in search of new life. But at the end in 1989 one leader with his friends began to tackle the problems, along with his village people, systematically and energetically. Their target is to make the village fertile, prosperous, happy, well-endowed and beautiful village that everyone in India dreams of. One leader, working together with all others in the village, changed it back to a vibrant, lush, and green with well- supported community, and with all facilities and amenities.

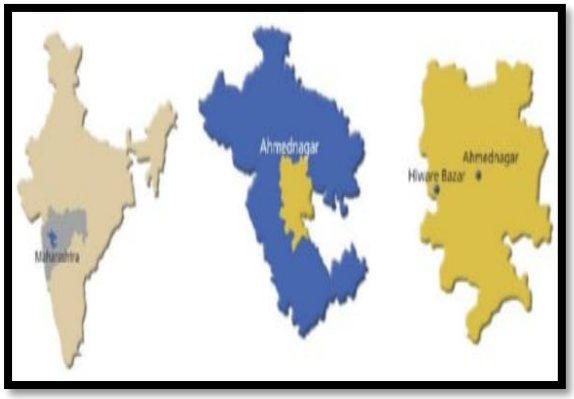
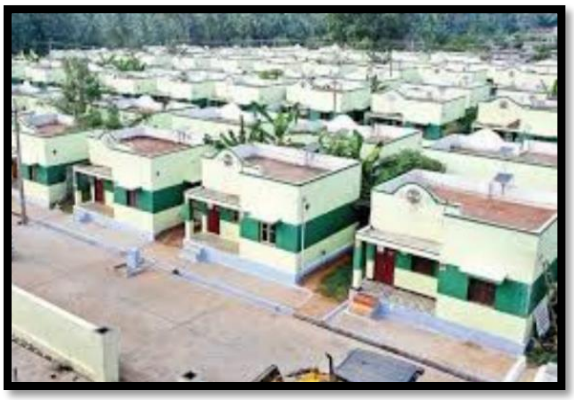


FIG.1.2.5 LOCATION OF HIWAREN BAZAR

FIG 1.2.6 ENTRANCE GATE



IG 1.2.4 FADVAL WATER STORAGE

FIG 1.2.9 PLANNED RAW HOUSES

Process of planning for village development:

The process of village development planning in Hiware Bazar involves identifying the current problems in the village and finding out some ways to solve them. It also involves identifying the future desired goals and systematic ways to achieve them. In general the process of village planning must be directed towards meeting the basic life needs of all the – safety and security of persons and their possessions, housing, water, sanitation, electricity, roads, transport and communication facilities, livelihoods, education and health facilities. The process of village development and planning is based on the successful processes of local self-governance, village planning and development by a number of Panchayats across the country. A postgraduate son of a village named Popatrao Pawar gave up his cricket career in Pune and came back in Hiware Bazar in 1989 to create positive transformation In the village.

Present condition of the village

In last 15 years the average income of the village has risen up to 20 times from Rs 832 to Rs 24000. Each village residents earns almost double the average income of the top ten percent of the rural population of India.In 1992 there were 180 families in the village standing below poverty line and surprisingly now there are no such families under B.P.L category according to the sarpanch of the village Popatrao Pawar. The village has potential to tackle any kind of challenge launched in their way by Nature or man-made. Slowly and steadily the village documented growth and prosperity which results in reverse Migration.

FIG.1.2.10 GRAM SADAN

Process of transformation of village

The process of transformation is not an immediate effect but a step by step effort of the whole community of the village and of course the sarpanch Popatrao Pawar. The journey begins when Popatrao came back to his village gave up his potential career in the city in 1989 and started to teach people the bad effects of liquor thereby boosting up the overall environment of the village. He tried and succeed with the help of local youth to stop vice and conflict among the villagers, liquor shops, gambling places. To tackle the chronic problem of water scarcity they works as voluntary unpaid labour to build 4, 20,000 back to back contour trenches on 70 ha forest area along the hill near to Hiware bazar with afforestation to execute the watershed development and afforestation programme.

The works which were undertaken in the programme are as follows:

Construction of deep Continuous Contour Trenches (CCT),

• Construction of percolation tanks

•Widening and deepening of drain beds

•Construction of cement storage tanks

• Plantation for soil and water conservation,

•Adoption of Chloride Mass Balance method

1.2.3 The Idea of a model/Smart Village :

Smart Village refers to a concept developed in rural area that provides solutions to problems 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 concep 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. 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.

1.2.4 Ancient History Civil concept about Indian Village / other Countries Perspective about village and its new Development

There is sufficient evidence to suggest that the village was one of the important settlements in ancient India. The Rig Veda talks about the gram to which various families owed their allegiance. Valmiki's Ramayana talks of two types of villages – the ghosh and the gram. The ghosh was smaller than the gram and was also known as vraja, or brij (signifying a cattle farm). Both types of villages had their officials, called the mahattar. There is also a reference to a senior official called gramani or gramik.

India:-

Mahatma Gandhi is often quoted as having said: "Real India lives in its villages." The fact that in the early decades of the 20th century, India's urban segment constituted only 11 per cent of the total population gave strength to his argument. It was the villages in which 89 per cent of the population lived. That made India an agricultural country.

Rural Development:-

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

• Rural improvement has customarily fixated on the abuse of land-concentrated characteristic assets, for example, horticulture and ranger service. In any case, changes in worldwide creation organizations and expanded urbanization have changed the personality of country zones. Progressively the travel industry, specialty makers, and entertainment have supplanted asset extraction and agribusiness as predominant monetary drivers.

•Rural advancement is likewise portrayed by its accentuation on privately delivered financial improvement strategies.

•Rather than metropolitan locales, which have numerous likenesses, provincial zones are profoundly unmistakable from each other. Consequently there are an enormous assortment of rustic advancement approaches utilized around the world.

1.3 Detail Study (Socio economic, physical, demographical and infrastructure details) of Ideal village Fadvel with photograph

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Job profile of Fadvel Village:-

In Fadvel village out of total population, 2130 were engaged in work activities. 88.12 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 11.88 % were involved in Marginal activity providing livelihood for less than 6 months. Of 2130 workers engaged in Main Work, 614 were cultivators (owner or co-owner) while 840 were Agricultural labourer.

Fadvel literacy:-

Fadvel village has higher literacy rate compared to Gujarat. In 2011, literacy rate of Fadvel village was 79.68 % compared to 78.03 % of Gujarat. In Fadvel Male literacy stands at 85.73 % while female literacy rate was 73.47 %.

Fadvel Infrastructures facilities (All Types):

Infrastructure and facilities	Details
1. PHC	1
2. Government Hospital	1
3. Private Hospital/ clinic	4
4.Anganwadi	1
5. Primary school (Eng. & Guj.)	2
6. Sec and high. Sec. school	1
7. Private Tuitions	5
8. Village pond	1
9. Handpump	20
10. Overhead tank	2
11. Assembly polling station	5
12. Post office	1
13. Panchayat building	1
14. College	3 Near By area
15. Mahila mandal	1
16. Dairy	1
17. veterinary hospital	1
18.Small scale industries	Near By 10
19. Recreational Centre	Lake, Temple, Play Ground
20. Bus station	2
21. Telephone exchange office	1
22. Electricity	24/7
23. Road network	CC,RCC and Paver Blocks
24. Shops Approximately	180
25. Bank	Gov. 1,Co op. 1
26. ATM	1
27. Local Transportation	Available
28. Multispec. Hospitals	Opening Soon..
29. U/G Drainage	Available
30.Goverment Hospital	3 Near By area

TABLE 1.3.1 FADVEL INFRASTRUCTURE FACILITY

FIG 1.3.1 PNB BANK

FIG 1.3.2 ANGANWADI

FIG 1.3.3 HANUMAN TAMPLE

FIG 1.3.4 CHECK DAM

FIG 1.3.5 WATER TANK

FIG 1.3.6 POST OFFICE

FIG 1.3.7 DAIRY FADVEL

FIG 1.3.8 REFRESHMENT LAKE

FIG 1.3.9 FADVEL SCHOOL

FIG 1.3.10 GRAM PANCHAYAT

1.4 SWOT analysis of Ideal village

SWOT analysis (or SWOT matrix) is a strategic planning technique used to help a person or organization identify strengths, weaknesses, opportunities, and threats related to business competition or project planning.

STRENGTHS

•Better natural resource base

•Organized men and women groups/ institutions in the village

•Availability of enough agricultural lands

•Basic infrastructure

•Good educational status of the villagers

•Strong will power of the villagers for village development.

WEAKNESS

•Few water sources are drying

•Poor health facilities

•Poor livelihoods opportunities and low technical low how

•Communication gap between government and villagers

•Rainfed agriculture, low productivity of the agriculture fields, traditional cropping and no concept in cash crops.

OPPORTUNITIES

•Use of modern techniques in agriculture, new cropping pattern and scope of irrigation in agriculture

•Development of cash crops and horticulture in the village

•Conservation of natural resources by villagers as well as different village institutions

•Development of wastelands, abandon lands and other village lands

•Promotion of different livelihoods opportunities in dairy, farming practices, horticulture, poultry, fisheries, candle making and other sectors.

THREATS

•Low rain fall and dry season for crops

•Lack of funds and technical knowledge in agricultural fields.

1.5 Future prospects of Development of the Ideal village

After succesfully interaction occur between sarpanch of village Hareshbhai patel, he give us some some possible future prospects of regarding to development of village. He works on the project of solar panel canal for fulfill the requirements of the villagers. He also told us that some implement occurs in village in short and time.

Possible future prospecs:-

•ITI college •Employment facility •Gas pipe line •Rain water harvesting

•Solar Street Lights etc.

1.6 Benefits of the visit of ideal village

Almost all the civil benefits such as, Water supply network, Pucca roads, LED Street lights, Drainage network, Water storage tanks, were observed in the village.

Apart from this, infrastructure facilities such as, schools, roads, post-office, banks, clinics, Public health center, bus stop, Public toilets, anganwadi, places of recreational interest etc. are also present.

By visiting the village we got an insight about:

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

1.7 Civil aspects required in Ideal village

When we think or say about ideal village it involved all type of facilities like,

•Proper Bus station •Proper sanitary System •RO – Plant •Solar Panel Canal System •Good Condition Houses. •Sufficient sources of potable water •Proper sanitation and drainage facilities

To fulfill all this requirement in village the civil engineers are paly important role in this type of infrastructure. The engineers are working on the proper design of planning of ideal village.They have designed above structures and play important role to grow a economy of the village as well as nation. Engineers suggest the design of house or existing structure which totally work with the solar system, they give information about various type of construction Skim(Yojana) which published by the government of the Gujarat.

CHAPTER 2: HODA VILLAGE LITERATURE REVIEW (CIVIL CONCEPT)

2.1 Introduction: Urban & Rural village Concept

2.1.1 Urban village concept:

In urban planning and design, an urban village is an urban development typically characterized by medium-density housing, mixed use zoning, good public transit and an emphasis on pedestrianization and public space. Contemporary urban village ideas are closely related to New Urbanism and smart growth ideas initiated in the United States.

A metropolitan region is the district encompassing a city. Mostoccupants of metropolitan regions have nonagricultural jobs. Metropolitan regions are very developed, which means there is a thickness of human structures, for example, houses, commercial structures, roads, extensions, and railroads.

- "Urban region" can allude to towns, urban areas, and rural areas. A metropolitan region incorporates the city itself, just as the encompassing regions. Numerous metropolitan zones are called metropolitan territories, or "more prominent," as in Greater New York or Greater London.
- When two or more metropolitan regions grow until they combine, the outcome might be known as a megalopolis.

2.1.2 Rural village concept:

- Rural zones are otherwise called the 'countryside' or a 'town' in india. It has a very low population thickness. In country regions, agriculture is the boss sources of business along with fishing cottage ventures, pottery and so on.
  The National Sampled Survey Organization (NSSO) characterizes 'provincial' as follows: An territory with a population thickness of up to 400 for each square kilometer. Villages with clear reviewed boundaries however no municipal board.
- A minimum of 75% of male working population involved in agriculture and unified activities.

2.2 Importance of the rural development

2.2.1 Rural Development introduction

Rural development is the process of improving the quality of life and economic well-being of people living in rural areas, often relatively isolated and sparsely populated areas.

Rural development has traditionally centered on the exploitation of land-intensive natural resources such as agriculture and forestry. However, changes in global production networks and increased urbanization have changed the character of rural areas. Increasingly tourism, niche manufacturers, and recreation have replaced resource extraction and agriculture as dominant economic drivers. The need for rural communities to approach development from a wider perspective has created more focus on a broad range of development goals rather than merely creating incentive for agricultural or resource based businesses. Education, entrepreneurship, physical infrastructure, and social infrastructure all play an important role in developing rural regions. Rural development is also characterized by its emphasis on locally produced economic development strategies. In contrast to urban regions, which have many similarities, rural areas are highly distinctive from one another. For this reason, there are a large variety of rural development approaches used globally.

2.2.2 Need for rural development in India

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.

4. Development of agriculture and allied activities are necessary for providing gainful employment in rural areas and improving overall food production.

5. The evils of brain-drain and rural-urban migration can be reduced if rural areas are developed.

2.3 Ancient villages / Different definition of rural urban villages

Rural area:

A rural area is a land outside the densely populated urban areas in a city or town. They have low population density, large open areas, lower standard of facilities etc. The primary industry in such area is agriculture.

Characteristics of the Rural area:

1. Size of the Community:

The village communities are smaller in area than the urban communities. As the village communities are small, the population is also low.

2. Density of Population:

As the density of population is low, the people have intimate relationships and face-to-face contacts with each other. In a village, everyone knows everyone.

3. Agriculture is the Main Occupation:

Agriculture is the fundamental occupa-tion of the rural people and forms the basis of rural economy. A farmer has to perform various agricultural activities for which he needs the cooperation of other members. Usually, these members are from his family. Thus, the mem-bers of the entire family share agricultural activities. That is the reason why Lowry Nelson has mentioned that farming is a family enterprise.

4. Close Contact with Nature:

The rural people are in close contact with nature as most of their daily activities revolve around the natural environment. This is the reason why a ruralite is more influenced by nature than an urbanite. The villagers consider land as their real mother as they depend on it for their food, clothing and shelter

5. Homogeneity of Population:

The village communities are homogenous in nature. Most of their inhabitants are connected with agriculture and its allied occupations, though there are people belonging to different castes, religions and classes.

6. Social Stratification:

In rural society, social stratification is a traditional characteristic, based on caste. The rural society is divided into various strata on the basis of caste.

7. Social Mobility:

In rural areas, mobility is rigid as all the occupations are based on caste. Shifting from one occupation to another is difficult as caste is determined by birth. Thus, caste hierarchy determines the social status of the rural people.

8.. Social Solidarity:

The degree of social solidarity is greater in villages as compared to urban areas. Common experience, purposes, customs and traditions form the basis of unity in the When two or more metropolitan regions grow until they combine, the outcome might be known as a megalopolis.

Village definition:

- Village is a clustered human settlement or a community, larger than a hamlet but smaller than a town, with a population ranging from a few undred to a few thousand.
- Villages are normally permanent with fixed dwellings.

Characteristics of village:

- Village have population between 500 and 10000.
- The villagers managed their own affairs through the traditional institution of Panchayat. The central government had neither inclination nor the means for interfering with the self- government of villages.
- Village has the atmosphere of simplicity, calmness and peace. There is no noise andlittle sophistication.
- Generally the women in villages are less educated and their social status is lower than that of their counterparts in the towns.
- Factors like prevalence of child marriage, joint family system, traditional ideals, oldvalues and lack of education among females are responsible for the low status of women.
- The poverty and illiteracy of the village people.

2.4 Scenario: Rural / Urban village of India population growth

Growth Rate of Population (in %) in India

The growth rate of population for India in the last decade was 17.64%. The growth rate of population in rural and urban areas was 12.18% and 31.80% respectively. Bihar (23.90%) exhibited the highest decadal growth rate in rural population.

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

Population comparison Rural / Urban of India (in crore)

	2001	2011	Difference
India	102.9	121.0	18.1
Rural	74.3	83.3	9.0
Urban	28.6	37.7	9.1

Table 2.4.1 Population comparison Rural / Urban of India

• **Rural – Urban distribution**: 68.84% & 31.16%

• **Level of urbanization** increased from 27.81% in 2001 Census to 31.16% in 2011 Census
• **The proportion of rural population declined** from 72.19% to 68.84%.

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

Table 2.4.2 Population of India in Rural / Urban area

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

Growth Rate of Population (in %):

	1991-2001	2001-2011	Difference
India	**21.5**	**17.6**	**-3. 9**
Rural	**18.1**	**12.2**	**-5. 9**
Urban	**31.5**	**31.8**	**+0.3**

Table 2.4.3 Growth Rate of Population (1991-2011)

Sex Rate:

	2001	2011	Difference
Overall			
India	**933**	**940**	**+7**
Rural	**946**	**947**	**+1**
Urban	**900**	**926**	**+26**
0-6 years			
India	**927**	**914**	**-13**
Rural	**934**	**919**	**-15**
Urban	**906**	**902**	**-4**

Table 2.4.4 Sex ratio

• The improvement in overall sex ratio is largely in urban areas
• Though the Urban Child sex ratio is far worse than in the rural areas, the fall in Child sex ratio in rural areas is around 4 times that in urban areas. In fact, the decline is more gradual in urban areas.
• There is a decline of 8.9 million children in Rural areas, while in Urban areas has shown increase of 3.9 million.

Literacy rate:

	2001	2011	Difference
Males			
India	**75.3**	**82.1**	**+6.8**
Rural	**70.7**	**78.6**	**+7.9**
Urban	**86.3**	**89.7**	**+3.4**
Females			
India	**53.7**	**65.5**	**+11.8**
Rural	**46.1**	**58.8**	**+12.7**
Urban	**72.9**	**79.9**	**+7.0**

Table 2.4.5 Litracy rate

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

As per projection, population of Gujarat in 2021 is 7.15 Crore.

Gujarat Urban Population 2011:

Descriptions	2011	2001
Approximate Population	**6.04 crores**	**5.07 crores**
Actual Population	**60,439,692**	**50,671,017**

Male	**31,491,260**	**26,385,577**
Female	**28,948,432**	**24,285,440**
Population growth	**19.18%**	**22.48%**
Percentage of total population	**4.99%**	**4.93%**
Sex ratio	**919**	**920**
Child sex ratio	**890**	**883**
Density/km2	**308**	**258**
Density/m2	**798**	**669**
Area (km2)	**196.244**	**196.024**
Area (m2)	**75,770**	**75,685**
Total child population (0-6 Age)	**7,777,262**	**7,532,404**
Male population (0-6 Age)	**4,115,384**	**4,000,148**
Female population (0- 6 Age)	**3,661,878**	**3,532,256**
Literacy	**78.03%**	**69.14%**
Male literacy	**85.75%**	**79.66%**
Female literacy	**69.68%**	**57.80%**
Total literacy	**41,093,358**	**29,827,750**
Male literate	**23,474,873**	**17,833,273**
Female literate	**17,618,485**	**11,994,477**

Table 2.5.1 Gujarat Urban population data 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 were 19,672,516.

Description	Rural	Urban
Population (%)	57.40%	42.60%
Total population	34,694,609	25,745,083
Male Population	17,799,159	13,692,101
Female population	16,895,450	12,052,982
Population growth	9.31%	36.00%
Sex ratio	949	880
Child sex ratio(0-6)	914	852
Child population (0-6)	4,824,903	2,952,359
Child percentage (0-6)	13.91%	11.47%
Literates	21,420,842	19,662,516
Average literacy	71.71%	86.31%
Male literacy	81.61%	90.98%
Female literacy	57.78%	70.26%

Table 2.5.2 Gujarat Urban / Rural population Comparison 2011

2.6 Rural development Issues – Concerns –measures:

Rural development Issues

1. Poverty:

Poverty is a state or condition in which a person or community lacks the financial resources and essentials for a minimum standard of living. Poverty means that the income level from employment is so low that basic human needs can't be met. Poverty-stricken people and families might go without proper housing, clean water, healthy food, and medical attention. Each nation

Fig. 2.6.1- Starvation

may have its own threshold that determines how many of its people are living in poverty.

As India is one of the fastest-growing economies in the world, poverty is on the decline in the country, with close to 18 Indians escaping extreme poverty every minute, as per the World Poverty Clock. India had 53.5 million people living in extreme poverty

which makes up 4% of its total population, according to the Brookings report. In May 2012, the World Bank reviewed and proposed revisions to their poverty calculation methodology and purchasing power parity basis for measuring poverty worldwideIt was a minimal 3.6% in terms of percentage. As of 2020, the incidence of multidimensional poverty has significantly reduced, declining from 54.7 percent in 2005 to 17 percent in 2020. Despite the pandemic its economy is healing.

2. **Water:**

Less than 50 per cent of the population in India has access to safely managed drinking water. ... Groundwater from over 30 million access points supplies 85 per cent of drinking water in rural areas and 48 per cent of water requirements in urban areas.

Fig.2.6.2- Scarcity of water

3. Caste System:

The caste system in India is the paradigmatic ethnographic example of caste. It has origins in ancient India, and was transformed by various ruling elites in medieval, early-modern, and modern India, especially the Mughal Empire and the British Raj.

It is today the basis of affirmative action programmes in India.The caste system as it exists today is thought to be the result of developments during the collapse of the Mughal era and the rise of the British

colonial government in India.

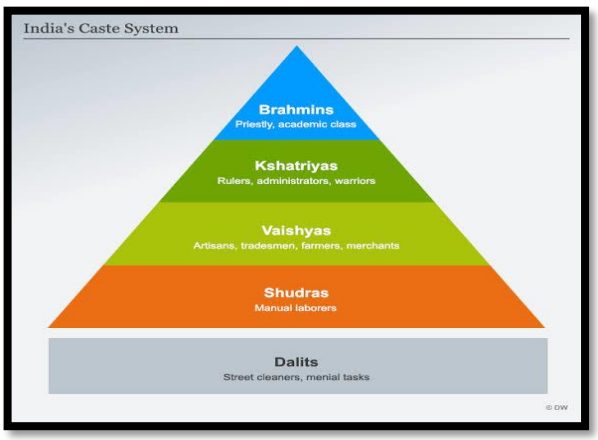


Fig.2.6.2- Rigid cast system

The collapse of the Mughal era saw the rise of powerful men who associated themselves with kings, priests and

ascetics, affirming the regal and martial form of the caste ideal, and it also reshaped many apparently casteless social groups into differentiated caste communities.The British Raj furthered this development, making rigid caste organisation a central mechanism of administration.

Fig.2.6.3- Female Feticide

Between 1860 and 1920, the British formulated the caste system into their system of governance, granting administrative jobs and senior appointments only to Christians and people belonging to certain castes.

Social unrest during the 1920s led to a change in this policy. From then on, the colonial administration began a policy of positive discrimi nation by reserving a certain percentage of government jobs for the lower castes. In 1948, negative discrimination on the basis of caste was banned by law and further enshrined in the Indian constitution; however, the system continues to be practiced in parts of India.

4. Education:

The school system in India has four levels: lower primary (age 6 to 10), upper primary (11 and 12), high (13 to 15) and higher secondary (17 and 18). The lower primary school is divided into five “standards”, upper primary school into two, high school into three and higher secondary into two.

5. Female Feticide:

Female foeticide is the process of finding out the sex of the foetus and undergoing abortion if it is a girl. Although it is illegal, many people

continue to practice it. Besides this, there are some communities which practice female infanticide - the practice of killing the girl child once she is born. This fact is highlighted by the findings of census 2001 which show that there are only 933 women in this country for every 1000 men. Besides this, Census (2011) data showed a significant declining trend in the Child Sex Ratio (CSR), calculated as number of girls for every 1000 boys between age group

of 0 - 6 years, with an all-time low of 918 in 2011 from 976 in 1961. This decline in sex ratio means that we are not just depriving girls of human rights, we are also depriving them of their right to live.

6. Child labor:

Facts and figures

Rural areas host 75 percent of the world's poor, with2.1 billion living on less than USD 2 a day, and 880million living on less than USD 1 a day.1 Child labour is mainly a rural issue. Out of 215 millionof child labourers worldwide, 129 millions are in agriculture alone.About 60 percent of child labourers aged between5-17 years work in agriculture, in contrast to 7 percent in industry and 26 percent in services.Agriculture is among the three most dangerous

sectorsto work in at any age, and even more dangerous for children. Data show that around 60 percent ofhazardous work of children is in agriculture.Only 1 in 5 child labourers are in paid employment the large majority are unpaid family workers.Rural children, particularly girls, tend to begin work at avery young age, sometimes when they are 5-7 years old.

Without considering household services, on average,boys make up 63 percent and girls 37 percent of child labour in agriculture in the age group 5-17 years.7 But92 percent of girl child labourers in the age group 5-14 also perform household chores, as compared with 67 percent of boys.

Fig.2.6.4- Child labour

Rural development Concern and measure:

The measures offer support for rural development, and can be categorised into three axis:

I Restructuring/Competitiveness
II Environment/Land management
III Rural Economy/Rural Communities

Investments in agricultural holdings AIMS:

Reduce production costs; improve production; increase quality; preserve the natural environment; implement hygiene and animal welfare standards; and promote diversification of farming activities. Some regions/Member states show increases in income and better use of factors of production as a result of this measure. Therefore labour prodructivity and farm profitability increased. Finland and Greece show a re-orientation of farming activities – diversification. But this in not a universal finding. This diversification has helped to create more jobs and maintain jobs. The extent of this is highly variable by region. For many regions/Member states investments have brought about more environmentally friendly farming.Improvements in working conditions and animal welfare have been seen, but are mainly due to indirect effects of the investment scheme.

Support for young farmers and Early Retirement AIMS:

To assist farm, transfer and thus reduce the average age of those in the sector. Support covers up to one third (in most cases half) of setting up costs. This has contributed to earlier transfer of farms, albeit marginally.There is a large deadweight loss as those most keen to join retirement scheme are those who were soon going to pass on their farm anyway. Early retirement support does not seem to have significantly changed farm structures.

Even at a mid-term stage it is possible to see some positive effects of the support. However, it is difficult to assess the extent to which the support provided influences the decisions of those involved.

Training:

In some regions/Member states training programmes have been tailored to meet specific needs and work well with other measures in the RDR programme. The skills acquired through training have been seen to help the trainees and agriculture in some regions/Member states with approximately three-quarters of trainees gaining qualifications or experience that have brought about job improvements. While training is important, it should not be confined to farm related skills.

2.7 Various infrastructure guideline with the norms for the provisions of different infrastructure facilities

Country framework

Infrastructure is the backbone of any nation. It assumes a significant part in supporting country's economic growth and the equivalent is the situation with India. In the event that we talk about provincial foundation in the country, at that point it is essential for agribusiness, agro-ventures and destitution mitigation in the rustic zones

1. Rural street foundation: It gives versatility and availability to individuals living in provincial regions. It likewise gives the genuinely necessary lift to rural exercises by making accessible water, seeds and other crude materials to the ranchers. By improving network, rustic streets additionally upgrade work open doors for the country individuals in non-farming division, accordingly, expanding occupation openings.

2. Rural zap framework: It fundamentally caters well to the prerequisites of horticulture and different exercises including water system siphon sets, little and medium ventures, khadi and town enterprises, cold stockpiling chains, medical care and education Basic foundation, for example, Distribution Transformer and Distribution lines are given in the occupied region just as the Dalit Basti village where it exists.

•Electricity is given to public spots like Schools, Panchayat Office, HealthCenters, Dispensaries, Community focuses and so forth.

• The number of families jolted ought to be at any rate 10% of the complete number of family units in the town.

3. Rustic water gracefully framework: It can prompt supportability of frameworks and sources and tackle the issue of water quality, along these lines, expanding great strength of individuals.

Rural Infrastructure in India: Scope and Importance:

Infrastructure is the backbone of any country. It plays a very important role in supporting nation's economic growth and the same is the case with India. If we talk about rural infrastructure in the country, then it is crucial for agriculture, agro-industries and poverty alleviation in the rural areas. Typically, rural infrastructure in the country encompasses rural roads, major dams and canal works for irrigation and drainage, rural housing, rural water supply, rural electrification and rural telecommunication connectivity.

Importance of rural infrastructure in India:

Basically, rural infrastructure has the potential to provide basic amenities to people that can improve their quality of life. To give an example, development of rural infrastructure can lead to improved access to market centers for the rural producers, better availability of inputs and raw materials at reduced prices and improved mobility.

Here is a look at how different sections of rural infrastructure play their role in improving the rural economy as well as life of the people.

1. **Rural road infrastructure:** It provides mobility and connectivity to people living in rural areas. It also provides the much needed boost to agricultural activities by making available water, seeds and other raw materials to the farmers. By improving connectivity, rural roads also enhance employment opportunities for the rural people in non-agriculture sector, thereby, increasing livelihood opportunities.

2. **Rural water supply system:** It can lead to sustainability of systems and sources and tackle the problem of water quality, thereby, increasing good health of people.

3. **Rural housing infrastructure:** It has the potential to improve living standard of the people. Overall and as per various studies, development of rural power, irrigation, water, sanitation and road infrastructure can increase productivity, savings, income and tourism and result in better jobs and health of rural people.

Other Facilities

- Janani Suraksha Yojana
- Kishori Shakti Yojana
- Balika Samriddhi Yojana
- Mid-day Meal Programme
- Intergrated Child Development Scheme (ICDS)
- Mahila Mandal Protsahan Yojana (MMPY)
- National Food for work Programme (NFFWP)
- National Social Assistance Programme
- Sanitation Programme (SP)
- Rajiv Gandhi National Drinking Water Mission
- Swarnjayanti Gram Swarozgar Yojana
- Minimum Needs Programme (MNP)

Sansad Adarsh Gram Yojana : The Main Objective of Sansad Adarsh Gram Yojana:

The main objectives of SAGY are:

To trigger processes which lead to holistic development of the identified Gram Panchayats.

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

- **Features of the Scheme**
- All the undeveloped villages will be developed by this scheme and transformed into Model Villages.
- This scheme will provide Safe Water Supply, Proper Electricity Supply, Proper Education System, Broadband connectivity including CCTVs in public areas, Basic health care facilities to all with the health card, medical examination, and total immunization and much more.

➢ **Funding Process**

- Funds from existing schemes, such as the Indira Awas Yojana, PradhanMantri – Gram Sadak Yojana, Mahatma Gandhi National Rural Employment Guarantee Scheme, and Backward Regions Grant Fund, etc.
- The member of Parliament Local Area Development Scheme (MPLADS)
- The gram panchayat's own revenue, Central and State Finance Commission Grants, and Corporate Social Responsibility funds.

Keeping these things in mind, government has taken various proactive steps to boost rural infrastructure. In the Union Budget 2017-2018, an allocation of Rs 19,000 crore has been made towards the Pradhan Mantri Gram Sadak Yojana (PMGSY) to connect far-flung habitats. The rural housing scheme has received more than Rs 9,000 crore and the allocation for rural electrification scheme has been increased by Rs 4,814 crore in the Union Budget 2017-2018. Under the Swachh Bharat Program, the government has taken up the task of construction of individual, cluster and community toilets. All these initiatives are good but still there is huge scope further in rural infrastructure development.

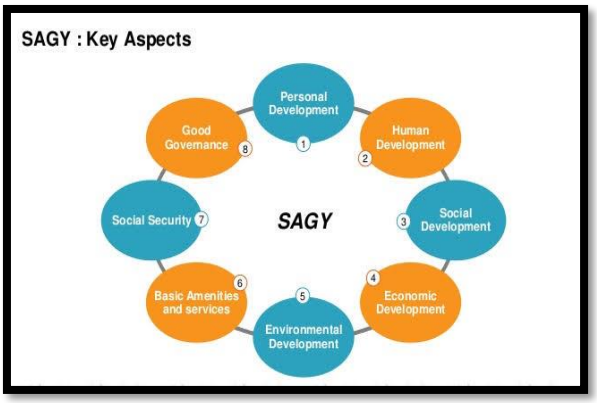


Fig.2.7.1 Holistic development through SAGY

2.8 Other Projects / Schemes of Gujarat / Indian Government:

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

1. Sarv Siksha Abhiyan
2. Sansad Adarsh Gram Yojana (SAGY)
3. National Social Assistance Programme
4. Pradhan Mantri Awaas Yojana (Gramin)/ Indira Awaas Yojana
5. Antyodaya Anna Yojana (AAY)
6. Provision of Urban Amenities In Rural Areas (PURA)
7. National Rural Employment Guarantee

CHAPTER 3: SMART (CITIES / VILLAGE) CONCEPT IDEA AND ITS VISIT

3.1 Introduction: Concepts, Definitions & Practices

We have selected the smart village **PUNSARI**. It is located in **TALOD** taluka of district **Sabarkanth**.

Brief introduction about Punsari

Punsari is a town situated in Sabarkantha locale in the territory of Gujarat, India. Punsari is considered as India's most intelligent town. The town is situated at about 80km from the state capital, Gandhinagar. Punsari is 20km from Parvati Hills. Parvati Hills is the biggest table top place where there is India. The town follows the Panchayati raj framework. The town degree is around 65 km.

The land being used of farming is 6 hectares. The fundamental non cultivating action is dairy in this town. The town has gone through a change under the panchayat. There has been utilization of new and trend setting innovation in training. This town has wi-fi association for all individuals. Endeavors have been made for the strengthening of ladies and expanding security in the town. A portion of the offices gave by the panchayat incorporate neighborhood mineral water gracefully, sewer and seepage venture, a medical care place, banking offices and complementary grievance gathering administration.

Census Parameter	Census Data
Total Population	5100
Total No of Houses	1109
Female Population %	48.0 % (2447)
Total Literacy rate %	70.4 % (3592)
Female Literacy rate	29.1 % (1485)
Scheduled Tribes Population %	0.1 % (5)
Scheduled Caste Population %	8.0 % (410)
Working Population %	56.5 %
Child(0 -6) Population by 2011	578
Girl Child(0 -6) Population % by 2011	47.8 % (276)

Fig.3.1.1 Holistic development through SAGY

Punsari Village	
Coordinates	
23°20′59.46″N 73°8′12.48″E	
Country	India
State	Gujarat
District	Sabar kantha
Taluka	Talod
Government Body	Punsari Gram panchayat
Elevation	111m from sea level
Population (2011)	5100
Languages	Gujarati, Hindi
Time zone	UTC +5.30 (IST)
PIN CODE	383307
Telephone code	02270
Lok Sabha constituency	Sabarkantha parliamentary constituency
Vidhan Sabha constituency	Punsari Assembly constituency
Civic agency	Punsari Gram panchayat
Website	Gujaratindia.com

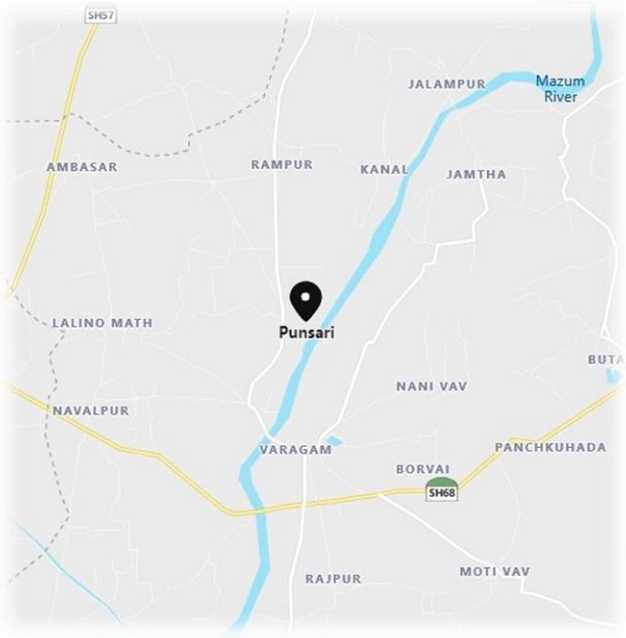


Fig:3.1.1 Punsari Map

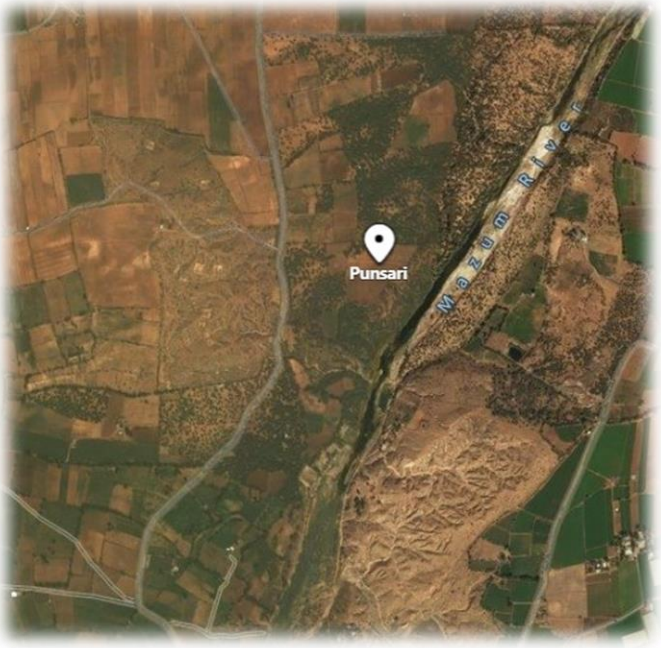


Fig 3.1.2 Punsari satellite map

We had meeting with innovation mind set “Mr. Himanshu patel” under guidance of “Prof.K L Timani”.

So the point we had learnt from this meeting is:

- Obtain/survey what local really needs
- Develop good relation understand their daily life style
- Try to emphasise their problem
- Obtain information about economical work
- Try to provide ease of living
- Enhance their productivity, Etc…

Punsari, Sabarkanth

Locality Name:	Punsari (પુંસરી)
Taluka Name:	Bayad
District:	Sabarkantha
State:	Gujarat
Language:	Gujarati, HIndi
Time zone:	UTC+ 5:30(IST)
Elevation / Altitude:	106 meters. Above Seal level
Std Code:	02779
Assembly constituency:	Prantij assembly constituency
Assembly MLA:	Parmar gajendrasinh udesinh
Lok Sabha constituency:	Sabarkantha parliamentary constituency
Parliament MP:	Rathod Dipsinh Sankarsinh
Sarpanch Name:	Himanshu patel
Pin Code:	383335
Post Office Name:	Gabat

Smart Village Concept:

First Stage:

•Innovative services in Smart Villages

•Villages can develop a wide range of creative solutions to overcome challenges Smart Villages innovate in various areas and in very diverse ways, depending on the opportunities and challenges stemming from their local contexts.

• Working arrangements are changing

One of the common features of Smart Village innovative services is that their design and implementation involves several people or organisations. These include locals (internal stakeholders) and supporting actors from outside (external stakeholders). In addition, the private sector can play an important role.

• Integrating services enhances efficiency

Combining services can go a long way to maximise the efficiency of service delivery. Small communities in rural areas face difficulties in finding specialised workers and mobilising financial resources. Therefore, creative solutions are necessary to ensure that such communities can benefit from a relatively wide range of services.

Second Stage

•Role and importance of digital technologies

Digital tools and connectivity are closely associated with the "smart" concept and innovation. Unsurprisingly, digital technologies are widely used within Smart Villages development, and "act as a lever that enables Smart Villages to become more agile, make better use of their resources and improve the attractiveness of rural areas and the quality of life of rural residents."

•Support should be adapted to the scale and level of development

Even when targeting larger areas, Smart Village strategies initially require relatively small-scale investments. Nonetheless, these can also be part of larger cooperative efforts which require a different financing model.

•The administrative setup should be simplified and streamlined

As small communities have limited resources, the relatively high level of administrative burden associated with European Structural Investment Funds (ESIF) puts severe constraints on their abilities to follow through on Smart Village initiatives. Funding schemes should consider this and should aim to reduce administrative complexity to a minimum. A potential solution would be the creation of a streamlined "one-stop-shop" solution.

•A network of Smart Village advisors could help relatively disadvantaged areas

Embarking on a Smart Village trajectory requires specialised knowledge and expertise. Being able to use experts active in local development and financing can help to unlock opportunities for those areas most in need of support. It can also speed up the exchange of experiences by providing a forum for sharing of best practices and enhancing cooperation between communities.

Smart Village Definitions:

Smart Village refers to a concept developed in rural area that provides solutions to problems 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.

3.2 Vision-Goals, Standards and Performance Measurement Indicators

Smart city development vision- Goals :

➢ Identify the transportation challenges and needs of the citizen and business community and demonstrate how advanced technologies can be used to address issues in safety, mobility, and climate change, now and into the future.

➢ Support and encourage cities to take the evolutionary and revolutionary steps to integrate advanced technologies – including connected and automated vehicle technologies – into the management and operations of the city, consistent with the USDOT vision elements.

➢ Demonstrate, quantify, and evaluate the impact of these advanced technologies, strategies, and applications towards improved safety, efficiency, and sustainable movement of people and goods.

Smart Cities Performance Measurement Indicators:

Now that the services in smart villages are developed, they need to be assessed by measuring their performance. This includes measurement of individual services and the performance of the village as a whole. There must be standard parameters for success in reference to timeliness response and remedy of complaints, satisfaction to users, accessibility.

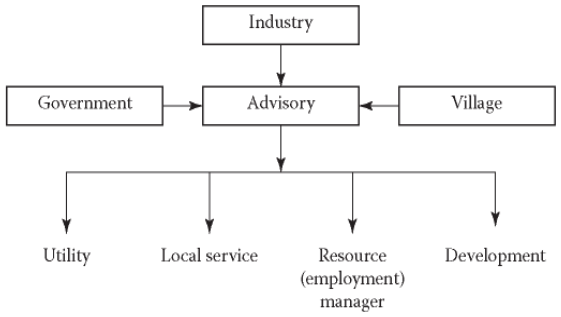


Fig 3.1.4 Smart Cities Performance and Measurements

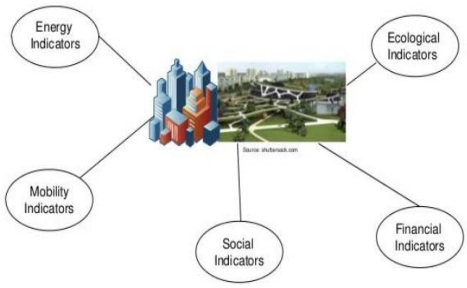


Fig 3.1.5 Measuring Cities performance

3.3 Technological Options

•Smart villages are needed for the welfare of rural people. Technologies are available to make a village smart but due to lack of appropriate strategies, lack of proper, integrated, implementable planning, lack of congenial monitoring, and above all lack of significant execution of activities, there has been failure.

•However, a framework comprising various factors, such as technological factors, social factors, legal and governance factors, and their measurements could be used for designing and developing smart villages in India. An ecosystem should be developed for these smart villages, focusing attention on its location as well as the investment opportunity.

•Here it is also suggested that in order to develop smart villages, the public-private partnership (PPP) model could be of great help. It would be compulsory for the companies taking part in the PPP model to develop these smart villages.

• It is expected that these concepts and recommendations can be applied in developing smart towns and semi-urban areas to develop smaller towns near the big cities of India. However, it should be kept in mind that the mere development of these smart villages may not suffice the purpose of betterment of living standards, but attention is to be focused holistically on the sustainability of these smart villages.

Technologies for developing smart villages :

Following various techniques can be promoted improving the life of people in villages and for actual development of smart villages.**•Services Required for the Smart Village:**

•Solar LED Street Lighting and Solar Home Lighting Systems.

•Development of Health Centres, Roads and school labs and kids plagrounds.

•Efficient public transportation Systems.

•Use of renewable energy.

•Safe Drinking Water Facility- RO Water Plants.

•Solid and liquid waste management.

•Improving sanitation conditions.

Fig 3.3.1 Welcome Gate of Punsari

Following are some technological facility available in Punsari village

Village with zero MMR & IMR

Most of the locals in Punsari subject to drain as the wellspring g of income which expected them to walk 2km consistently for transportation of the equivalent. For pregnant women that regularly prompted high MMR (Mother Mortality Rate) and IMR (Infant Mortality Rate) reason for this a lot of development.This issue was totally settled as the locals procured its own transportation office. Today, with a little badge of Rs2/ - smaller than expected transport drops these ladies to the milk banks and back to the home.

Fig.3.3.2 Punsari's own bus service

Gram Panchayat's Activities

On one side when there's a trend of migration taking place from villages to cities,

Punsari village in North Gujarat's Taloda Taluka stands Apart.

Fig.3.3.3-Solar panels on canal

Own RO-Plant

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

Fig.3.3.5- RO plant of Punsari

No School dropouts

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

Fig.3.3.4- Gram panchayat's activities

Announcement facilities and CCTV

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

Fig.3.3.6 - CCTV facility in Punsari

RCC roads

There are RCC roads covering entire village. Those who **pay tax get gifs**. The panchayat started with giving plastic dustbins as gifts. There's nearly 90% tax collection achieved.

Fig.3.3.7 – Door To Door collection

Helpline number 24*7

Toll free number to ask quarries from administer. If anyone some issue or problem related to local administration, he/she can dial toll free number 864 and talk to panchayat.

Own electricity Production:

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

Fig. 3.3.8 - Power station

Waste disposal/waste collection method

Door to door waste collection system. Tractor were visited to collect waste from each house.

Here In punsari, the local gram panchayat has provided many facilities to Villagers including an efficient School, Mineral water supply, Local bus service, Loud speaker covering entire village. Drainage facilities, Secure primary health care center, nearly about eight kinder garden schools, urban banking facility, toll free complain receiving phone service.

Moreover, every resident here is 100% Vaccinated with no issue of malnourishment.

3.4 Road Map & Safe Guards

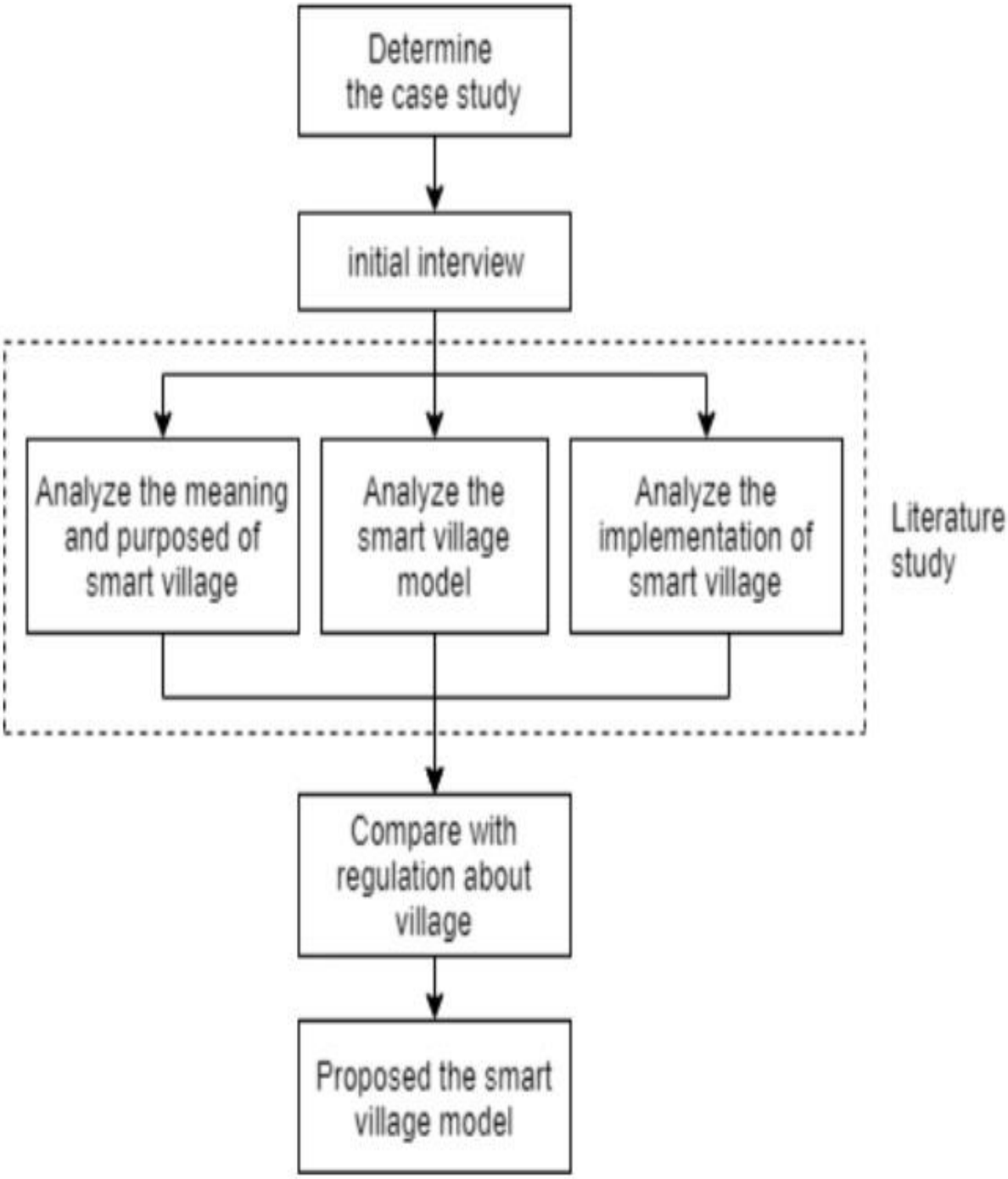


Fig 3.4.1 Road map

(1) Determine the Case study:

In this we research on a case study of village punsari and get some information about village facility.

(2) Intial Interview:

Then we meet the Ex. Sarpanch of the punsari village and get some idea about how they work on the village.

(3)

(I) Analyse the meaning and purpose of the smart village:-

In this we understand or analyse rhw meaning of the smart village.

(ii) Analyse the smart village model:-

In this we analyse the smart village model.

(iii) Analyse the implementaion in the smart village:-

In this we analyse what types of the he implementation occur int he punsari village. Like, Ro-Plant, Sloid waste disposal etc.

(4) Comapre with the regulation about Village:-

In this we compare all the regulation of the village punsari**.**

(5) Praposes the smart village model:-

After all the process complete we give a prpaosed a smart village model**.**

New avenues

Like any other field agriculture needs to be viewed with a new prism to make it economically rewarding. Most of the initiatives targeted to transform agriculture have always been seen as philanthropy gestures, not as a sustainable business model in India. The country is supporting start-up culture to give boost to entrepreneur skills among youngsters.

There must be some provision where government bodies support the idea of reviving agriculture through various transformative solutions like opening up of market for agriculture produce in strategically targeted locations for greater economic output, providing technical and financial support to the new ideas of marketing and innovation.

Government initiatives :-

Pradhan Mantri Gram Sadak Yojana (PMGSY) has proved to be a transformative scheme. Thousands of villages which were cut-off from the outside world were connected. The national rural road construction program has built paved roads to over 100,000 villages since its launch in 2000. A research report 'Market Access and Structural Transformation: Evidence from Rural Roads in India' by Sam Asher and Paul Novosad examines the labor market consequences of high rural transport costs by estimating the causal effects of a USD 37 billion rural road construction program, which has provided over 100,000 Indian villages with paved connections to the wider road network.

It states, "These effects are driven by villages close to large cities, where a new rural road represents a larger proportional decrease in total transportation costs to external demand for rural labor and production." Similarly the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has brought significant improvement in employment generation in rural India. The scheme that is termed the biggest poverty reduction scheme provides jobs to over 50 million households. However, the government needs to find out some innovative ways through which rural workforce can be provided skills and improve their employability in the evolving markets in rural India.

3.5 Issues & Challenges

•Illiteracy In villagers:-

Due to the poor literacy their is no mutual understanding pf the gov. Yojanas , skims etc. So this is the main issue occurred in the smart village.

•Less available space for further construction and development:-

Due to population increse their is increase need of the land as well as the house. So that day by day the land is decrease this is the main issue occurred in smart village.

•Less scope of green development in future.

If the development is increase in village then there is no scope available in green development in future.

•Unemployment

If village become a smart but if the youth of the villagers are not become self employed then it occurs major issue in the villages as well as our country.

• Poor Hygiene condition of villagres

Due to the poor hygiene condition maintained by rhe villageres then the village can't be a smart village.

• Reverse Migration

In mostly current situation generally the peoples who living in urban area they migrat towards to the villages because of in smart village there are some facility available like urban area. So that's why the reverse migration occur thos is the major issue occur in village.

3.6 Smart Infrastructure - Intelligent Traffic Management

Intelligent Traffic Management System for Smart Villages:

In present-day times, the number of vehicles has increased drastically, but in contrast, the capabilities of our roads and transportation systems still remain underdeveloped and as a result, fail to cope with this upsurge in the number of vehicles. As a consequence, traffic jamming, road accidents, increase in pollution levels are some of the common

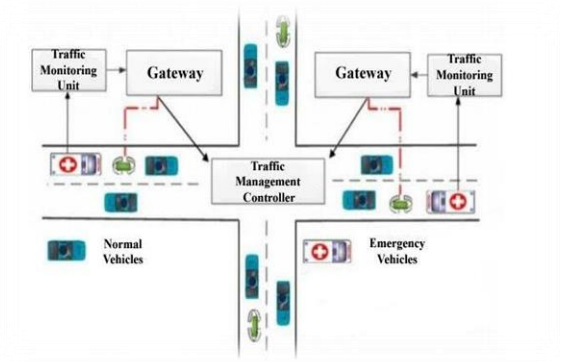


Fig. 3.6.1 Traffic Management

traits that can be observed in our new age cities. With the emergence of the Internet of Things and its applicability in Smart Cities, createsa perfect platform for addressing traffic-related issues, thus leading to the establishment of Intelligent Traffic Management Systems (ITMS). The work presented in this paper talks about an intelligent traffic management system that lays its foundation on computing, Internet of Things and Data Analytics.

Smart Infrastructure:

Transportation, Electricity, Rain Water harvesting, Rooftop Catchment, Repair and maintenance of the Road,Security System

Intelligent Traffic Management System for Smart Cities:

In present-day times, the number of vehicles has increased drastically, but in contrast, the capabilities of our roads and transportation systems still remain underdeveloped and as a result, fail to cope with this upsurge in the number of vehicles. As a consequence, traffic jamming, road accidents, increase in pollution levels are some of the common traits that can be observed in our new age cities.

3.7 Cyber Security

Securing smart cities is a not-for-profit global initiative which aims at solving the existing and future cyber security problems of smart cities through collaboration between companies, government, media outlets and individuals across the world. Over the past few years, Technology has begun to play an important role in our daily lives. Internet enabled gadgets have changed the way in which we work or do our daily chores. Digitization has an impact on personal lives, education, health, government and national security.

Due to increase in complexity of smart city systems and globally connected social, economic, political systems, etc. has increased vulnerability of security of a city. The cyber threats have amplified due to infinite supply of data. Smart surveillance technology or analytics to manage the crowd, traffic, cyber security, data privacy, building codes to manage natural/man-made disasters, etc. are some parameters that would make a city safe. Different challenges to our security and expectations of privacy have arrived due to innovations in IT. Humans are already interconnected via gadgets. Standards are evolved for all these potentially connected systems. This will lead improve in quality in life.

3.8 Retrofitting- Redevelopment- Greenfield Development District Cooling

Retrofitting refers to the addition of new technology or features to older systems, for example:

•Power plant retrofit, improving power plant efficiency / increasing output / reducing emissions

•Home energy retrofit, the improving of existing buildings with energy efficiency equipment

•Seismic retrofit, the process of strengthening older buildings in order to make them earthquake-resistant.

•Retrofitting techniques:-

(1) Global (2) Local

Redevelopment:

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.

Green field development:

Greenfield development will introduce most of the Smart Solutions in a previously vacant area (more than 250 acres) using innovative planning, plan financing and plan implementation tools (e.g. land pooling/ land reconstitution) with provision for affordable housing, especially for the poor. Greenfield developments are required around cities in order to address the needs of the expanding population. from a legal perspective, the challenges in obtaining timely, effective, and affordable approvals for Greenfield residential development. In particular, we focus on the constraints on Greenfield developments (not all green fields are equal); the need to integrate land use planning with the provision of infrastructure; and the opportunities provided by the Special Housing Area legislation. Greenfield areas are seen as the low hanging fruit in terms of providing land for urban expansion, however the reality is quite different. There will be no perfect sites where the conversion of land for urban use will have no effects; all areas will be constrained, and the conversion of any area will need to occur in the context of compromises HAVING been made. One of the most important issues with Greenfield developments is to ensure that the development area can be appropriately served with infrastructure.

District Cooling Systems - Integrated chilled water production system for efficient cooling of buildings in cities:

District Cooling Systems are positioned as an effective technology to mitigate the heat island effect exacerbated by conventional, stand-alone cooling system

Key features:

➢ 50% energy efficiency improvement while electricity consumption is decreased by 35%.

➢ 50% CO2 emissions savings and decrease of water usage by 65%.

➢ Architectural heritage preservation.

Profitability:

➢ This solution significantly reduces usage costs for end customers, compared to stand-alone units.

➢ The comparable reductions in cost relative to energy and water use.Categories of Application

➢ Advanced grid infrastructure

3.9 Strategic Options for Fast Development

(1) Increase Literacy

(2) Increase Agriculture

(3) Reduce Unemployment

(4) Increase Living Standard of people

(5) Increase infrastructure in village

(6) Increase Helth condition of villagers

(7) Providing ease of transportation

(8) Increase Daily facilities

(9) A good banking system

(10) Increase Financial growth

(11) Improve Condition of water

(12)Higher education

(13) Secure township

(14) Proper solid waste management

This are the some strategic option for the fast development of the village.

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

Urban Water Supply in India:-

This section provides an analysis of the current situation in urban water supply in India. It presents this analysis in three parts: household, water distribution and treatment systems, and water sources.

a. Household Arrangements and Access

Fig. shows the distribution of households according to the primary source of drinking water reported by Census 2011. Nearly 70 per cent households have access to tap water, out of which 62 per cent have access to treated tap water. Thus, nearly 40 per cent of urbanhouseholds have no access to public supply, and have to depend on other sources of water.Moreover, not all households that have access to public supply have access to it within the premise. Only 49 per cent of households have access to piped water supply within their premises.

b.Water Distribution Systems and Treatment

As highlighted in the earlier section, there is incomplete coverage by public supply. While there are several challenges with service standards, expansion of coverage remains a critical issue. This is especially a concern for smaller towns, many of which might not have any kind of infrastructure system in place. However,

given the general concerns with operations and maintenance, highlighted below, it is essential that adequate O & M systems are put in place to ensure sustainability of the new infrastructure being created.

Distribution Losses :-

The mere presence of infrastructure is no indicator of availability of water: most urban households do not receive adequate water. Often, non-availability of water or water scarcity is cited as a reason. However, the major challenge, at least among the bigger cities, is huge distribution losses which account for a significant chunk of the non-revenue water in Indian cities. These losses are both physical due to decrepit pipes and lack of maintenance, and also monetary losses, due to incomplete metering and billing. The physical losses occur in three main ways: leakages in distribution mains, leakages at storage tanks, or leakages at service connection point.

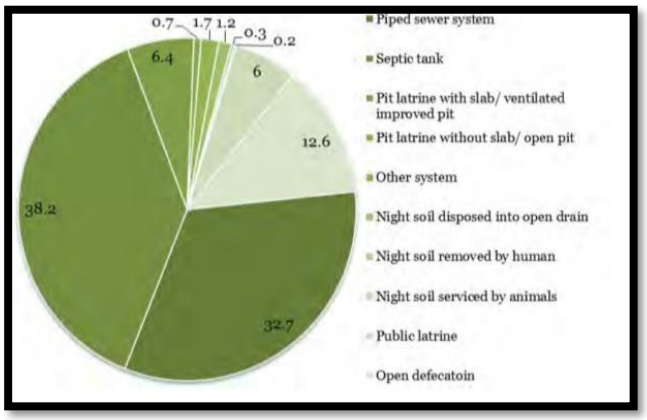


Fig 3.10.2 Graphical Distribution of water

Improper Operations and Maintenance:

T he water supply systems in urban India suffer from inadequate operations and maintenance. Lack of O & M is a major cause of distribution losses, and also affects the longevity of the system. Indian cities are currently trapped in a vicious circle of build, neglect and re-build.

Prevalence of Informal Supply Chains :-

In addition to public distribution systems, there are several informal supply chains in Indian cities. These typically include small to medium tanker operators, who source water from within the city or nearby areas, and supply to households.

Urban Sanitation in India :-

This section presents the analysis of urban sanitation in India, describing the whole wastewater cycle.

Household Level Arrangements and Access:-

Fig represents the distribution of urban households, according to the type of toilet facility (Census of India, 2011a).

Around 81 per cent of urban households have access facilities within the household premises, 6 per cent access public toilets, and 12 per cent are forced to resort to open defecation. Thus, nearly 10 million households still defecate in the open. Open defecation, and the lack of access to any kind of toilet facilities, individual or shared, is one of the biggest concerns and challenges for urban sanitation in India.

In addition, a small percentage of households that have to depend on insanitary installations like unimproved pit latrines, or toilets where waste is removed by humans, animals or drains. This often involves the practice of manual scavenging, which is unacceptable, and a serious breach of human dignity.7 Studies also indicate that the condition and type of toilets in urban areas is highly variable. Toilets, especially among poorer communities, are often dysfunctional: clogged toilets, leaking taps, broken floors or roofs (WSP-TARU, 2008). The problems faced by the poor in accessing toilet facilities, including community toilets, are highlighted later. Table shows the percentage of households with access to 'improved' sanitation over the past two decades. 8 Access to improved sanitation has increased over the past two decades (from 49 per cent in 1990 to 77 per cent in 2011). While the percentage of households without access to 'basic sanitation' has decreased from 32 per cent to 17 per cent over the same length of time, the number of households practising open defecation or having unimproved toilets, has reduced from 72 million to 64 million.

Year	Population in india	% Urban population	Improved%	Shared%	Unimproved%	Open Defecation%
1990	862	26	49	19	4	28
2000	1042	28	52	20	6	22
2008	1180	29	54	21	7	18
2011	1210	31	77	6	4	13

Fig 3.10.2 Graphical Distribution of water

Differential Access to Sanitation:

Access to sanitation is unequal across income groups, cities and states. The section below attempts to highlight the differential access to toilet facilities across different parameters. Across Income Groups Not surprisingly, access to toilet facilities is not distributed equally among households with varying economic status. While there are some differences in the categories for data collection in Census and National Sample Survey Organisation, an analysis of NSSO (2009) findings indicates a clear trend: the lower the MPCE quintile, the higher the possibility of lack of access to toilet facilities.

3.11 Initiatives in village development by local self-government

Punsari and its development model and prepare a project for creating model villages all over the country. The village has also been visited by "more than 300 officials" from all over India who want "to learn how they can replicate our model in their states", Mr Patel proudly claims that the village has public announcement systems, CCTV cameras to provide 24/7 security for

villagers, free WiFi connectivity at public gathering places, portable drinking water at affordable price, mobile library, two primary schools with WI Fi connection and projector facilities, gaming zones and internet café for students and children and other basic facilities like health , education drainage, are on par with urban standardsPunsari makes a perfect case study as the local self-governance model and this can be a role model for rural India with respective changes accordingly to the local demands. I would discuss the transformative challenges in convincing the villagers and bringing the best practice out of it and its impact on rural development.

3.12 Smart Initiatives by District Municipal Corporation

The initiatives taken by Sabarkantha Corporation are:

- Solar roof Panels
- Installation of CCTV Cameras
- Installation of public wi-fi
- Garden
- Recycling of waste like in composting
- Integrated command and control center.
- Installation of smart toilets
- Auditorium
- Biogas plant
- RO – Plant

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

Following projects Contributes working by the goverment in village area.

- Digi Locker
- eGram service
- National Scholarship Portal
- Digitize India Platform
- Dudh Mandali
- Mahila Forum
- Sustainable infrastructure facilities
- MyGov.in
- Swachh Bharat Mission mobile app
- Smart Data Center
- Aarogya setu application
- Bachat Mandali
- Social infrastructure facilities
- Socio-Cultural infrastructure facilities

Out of them one project is handled by the goverment in village area:- i khedut Portal

I - Khedut Portal:

Ikhedut portal gujarat has been launched by the Gujarat government. The main aim of this ikhedut Gujarat Portal is to provide benefit to the farmers of the state. The state starts various schemes for the farmers for farming such as horticulture, fisheries, water conservation, and many more.

•Through this scheme farmers can directly get information related to latest schemes.

•Under this Gujarat Ikhedut Farmer Scheme, farmers do not have to pay any fee to get any information regarding schemes related to agriculture.

•With the help of this Ikhedut Portal 2021, farmers will get information regarding weather, agricultural schemes launched by the government and the market price of the crops, and many more.

•Through this ikhedut portal online application, farmers can apply for tractors and the subsidy will be provided by the government under '' the scheme of khetiwadi'' i.e. Ikhedut Portal Gujarat Tractor Yojana.

List of the ikhedut portal gujarat schemes:

•The information of all government schemes for farmers will be accessible via the ikhedut portal gujarat.

(1)Underground pipe line – PVC scheme (2)Mb plau (hydraulic reverse) scheme

(3)Automated seed drill scheme (4)Mb plau (mechanical reversible scheme

(5)Automated seed low fertilizers planner scheme (6)Open pipeline scheme

(7)Cultivator scheme (8)Automated seed low fertilizers drill scheme

(9)Ground nut digger scheme (10)Charge cutter (engine / oil motor operated) scheme

(11)Power tiller scheme (12)Potato planter scheme

(13)Multi crop planter scheme (14)Post hall digger scheme

(15)Stable saver scheme

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

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 thelandscape. 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. Depending on geographical endowments, 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. It's not holistic in nature. However, the pressing need of hour is to have a Smart Village with all sorts of comprehensiveness in it.

For maintain the smart environment we adopt 3R's Theory:

(1) Reduce:-

Reduce the amount of materials and goods you consume. This might mean limiting the amount of purchases you make in the first place. Do you really need another bottle of nail polish, or another pair of black shoes? To determine your true needs and avoid impulse buys, try the three day rule: if you want to buy something non-essential, wait three days. If you're still thinking about it three days later, then you can buy it. More than likely, you will have forgotten about it.

There are other ways to reduce your consumption without limiting purchases. Buying foods in bulk often means less packaging waste. Buying in bulk is useful if you are sure you will need the full quantity you're buying. Otherwise, it could be wasteful if you can't use all of the goods before they expire.

Budgeting can also help you reduce resource consumption. If you are thinking about a new computer, but your old computer works well, save up your money little by little until you can afford a new one without using a credit card or payment plan. By the time you've gotten the money saved up, you may actually need the new computer, or you may have realized there's a better use for your saved-up money.

(2)Reuse:-

Reusing is the act of taking old items that you might consider throwing away and finding a new use for them.Get the most mileage out of the materials you encounter. Jars from grocery store foods can be used to store leftovers or to take lunch to work. Use old clothing as cleaning rags.

Sometimes materials can be reused by other people. Working computers and parts can often be donated to community centers or charitable organizations. Clothing can often be donated and given a second life.

(3)Recycle This is probably the most well-known and well-understood of the 3 Rs. If you have recycling pick-up services, you will be familiar with recycling paper, plastic and metal materials. These materials are carefully processed at TC Recycling. The separated and processed materials will later be processed into other goods.

Fig 3.14.1 Recycle, Reuse & Reduce

Buying recycled goods is another way to participate in this part of the 3 Rs. You may start to notice more and more products with a "Made From Recycled Material" stamp. These products are no different from standard goods; they're just helping to make the most of valuable resources.

Smart cities revolution to boost employment in India:

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

A key way of developing smart cities is by enabling using smart evolved technology for local area development in the cities. Such development will generate employment for a large segment of local population. Application of smart solutions will enable cities to use technology, information and data to improve their services. Integration of technology is a major challenge and implementation of technology across smart cities needs a lot of hand holding at the moment. To understand the dynamics of smart cities and to create a strong eco-system it is important that the workforce has advanced skill sets.

Smart cities have emerged as a potential job creator in the past few months. Many new-age profiles are likely to witness potential growth especially in the areas of ICT (Information Communication Technology), Data Management & Analytics and e-Governance. As there is a large pool of data being used in the building and management of smart cities, data monitoring and surveillance will become a crucial aspect. Whether the data is used for intelligence gathering, prevention of crime, public health, investigation or surveys; surveillance will hold a lot of importance for citizens.

It is important for us to understand that the existing workforce and the new workforce entering the labour market need to align their skill sets basis the requirements of smart cities. Each and every sector and job roles will need enhancement of knowledge, specialized skills training and continuous upskilling. People with varied skill sets will be needed to manage and monitor data across smart cities. 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.

Some of the prominent skills that are essential for smart cities are:

(1) Data Skills – Information gathering is a very essential part for any developmental projects. Right information at the right time with accuracy is a key factor for development of specialized projects. Based on the precision and reliability of the data, the decision can be made and presented to the clients for approval processes. Validated data can be a success factor for any project development.

(2) Business Skills – Planning capability is one of the most important skills required in project management. Planning of finance, resources, manpower are essential elements one needs to possess. Financial Management plays a very important role in project development. The skill to handle a problem and manage crisis during the execution phase, networking with different departments and sectors, negotiation with vendors, overall exhibiting the leadership qualities are the core skills of business.

(3) Product Development – Analysing needs is an important skill in product development. And pricing of the product and validating the quality of the product is a core skill factor. Knowing the market segment, understanding the technicalities of the product and evaluation of quality are the business needs in demand. Strategic thinking and skill prioritization is very important.

(4) Quantitative Skills – Skills that involve the ability to handle data systematically will be the need of the hour. Job seekers must have the ability to design surveys or experiments to assess situations and use the quantitative evidence for problem solving. Another key aspect in the sector is understanding and managing digital media, archives and open data. The ability to change according to the need and be more adaptive is crucial for project development. Flexibility is also an important trait of quantitative skills.

(5) Numerical Skills – Analytics, budgets and financials are the critical skills required for business development. Reviewing and reasoning provides the clarity for better decision making. The logical derivatives of the financial implications are crucial for any decisions in the development of smart cities.

(6) Communication Skills – Strong communication skills are always a boon in the workplace. The selling of your ideas and concepts through effective presentation are important.

Chapter 4: About Hoda, Village

4.1 Introduction

4.1.1 Introduction about Hoda Village

The village Hoda falls in Banas Kantha district situated in Gujarat state, with a population 2098. The male and female populations are 625 and 603 respectively. The size of the area is about 4.69 square kilometer.

According to Census 2011 information the location code or village code of Hoda village is 508197. Hoda village is located in Palanpur Tehsil of Banas Kantha district in Gujarat, India. It is situated 15km away from Palanpur, which is both district & sub-district headquarter of Hoda village. As per 2009 stats, Hoda village is also a gram panchayat.

The total geographical area of village is 387.41 hectares. Hoda has a total population of 2,098 peoples. There are about 383 houses in Hoda village. As per 2019 stats, Hoda villages comes under Vadgam assembly & Patan parliamentary constituency. Palanpur is nearest town to Hoda which is approximately 15km away.

Hoda Village Overview:-

Gram Panchayat	**Hoda**
Block/ Tehsil	**Palanpur**
District	**Banaskantha**
State	**Gujarat**
Pin code	**385001**
Area	**387.41 hectares**
Population	**2098**
Household	**383**
Assembly Constituency	**Vadgam**
Parliament Constituency	**Patan**
Nearest Town	**Palanpur**

Table 4.1.1 Hoda village overview

Caste Data as per Census 2011:-

Particulars	Total	Male	Female
Total Number of houses	383		
Population	2098	1068	1030
Child(0-6)	234	120	114

Schedule Cast	245	126	119
Schedule Tribe	0	0	0
Literacy	80.04%	93.67%	65.94%
Total workers	705	627	78
Male workers	694	-	-
Marginal Workers	11	9	2

Table 4.2.2 Caste data as per Census

4.1.2 Justification/ need of the study

If villages are developed then real ddevelopment occur our country. Here we select the hoda village in which their is no basic amenities available. As a civil engineer we study the village amenities by visit.

Then we will give a proper design of the praposed building which is increase the economic growth of the villagers ans well as country.

4.1.3 Study Area (Broadly define)

According to Census 2011 information the location code or village code of Hoda village is 508197. Hoda village is located in Palanpur Tehsil of Banas Kantha district in Gujarat, India. It is situated 15km away from Palanpur, which is both district & sub-district headquarters of Hoda village. As per 2009 stats, Hoda village is also a gram panchayat.The total geographical area of village is 387.41 hectares. Hoda has a total population of 2,098 peoples. There are about 383 houses in Hoda village. As per 2019 stats, Hoda villages comes under Vadgam assembly & Patan parliamentary constituency. Palanpur is nearest town to Hoda which is approximately 15km away.

Nearby Villages of Hoda:

• **Gadh**, **Talepura**, **Dalwada**, **Madana**, **Pipli**, **Lalawada**

4.1.4 Objectives of the study

Basic Social infrastructure – Health and Education facilities should be provided and ensure proper delivery of facilities to village dwellers. • 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.

•To create better lifestyle for village without changing its core soul • Economy generation is the key pillars that the concept hinges on which should be introduced to village.

4.1.5 Scope of the 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

4.1.6 Methodology Frame Work for development of your village

Through this project we study and analyse the village and give a proper design of such infrastructure which is increse the growth of the village.

- Physical infrastructure facility
- Social infrastructure facility
- Socio Cultural facility
- HI- Tech Solution

4.1.7 Available Methodology for development of related to Civil

Physical infrastructure facility

- Bus station
- RCC Blocks
- Nice Entrance

Social infrastructure facility

- Public Latrine blocks
- Public Health Centre
- Panchayat Building
- Public Banking System

Socio Cultural facility

- Public Library
- Higher level education
- Public Garden

HI-Tech Solution

- WIFI in town
- Computer classes(Skills)
- Announcement system in town
- Solar street light

4.2 Hoda Village Study Area Profile

According to Census 2011 information the location code or village code of Hoda village is 508197. Hoda village is located in Palanpur Tehsil of Banas Kantha district in Gujarat, India. It is situated 15km away from Palanpur, which is both district & sub-district headquarters of Hoda village. As per 2009 stats, Hoda village is also a gram panchayat.

Connectivity of Hoda

Type	Status
Public Bus Service	**-Available within village**
Private Bus Service	**-Available within 10+ km distance**
Railway Station	**- Available within 10+ km distance**

4.2.1 Study Area Location with brief History land use details

The total geographical area of village is 387.41 hectares. Hoda has a total population of 2,098 peoples. There are about 383 houses in Hoda village. As per 2019 stats, Hoda villages comes under Vadgam assembly & Patan parliamentary constituency. Palanpur is nearest town to Hoda which is approximately 15km away.

4.2.2 Base Location map, Land Map, Gram Tal Map

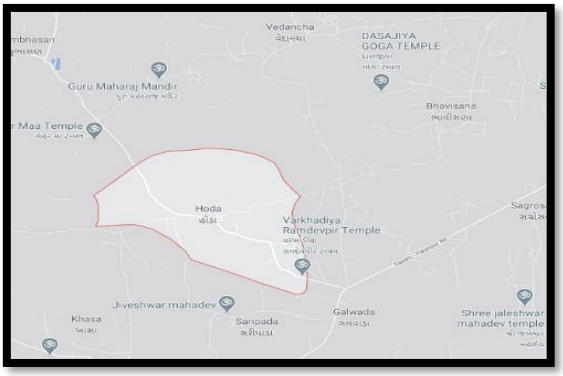


Fig. 4.2.1 Location man

Fig 4.2.2 Satellite map

4.2.3 Physical & Demographical Growth

Hoda village is surrounded by 5 physical lakes but all are below wilting point. Physically is possess quite good Quality and quantity of cultivating land. Moreover, with the time Demographical growth were noticed considerably in hoda village. Village have two big overhead water tank for Domestic water supply. It does not contain adequate drainage system in the town. Solid waste removing and each household have its own septic tank near the house.

4.2.4 Economic generation profile / Banks

The major sources of income are:

- Farming
- Animal Husbandry
- As Shopkeepers
- As workers in mills and factories.

Banks There are no banks but one ATM available in nearby Gadh area.

Post Office There is one Post Office in Hoda village.

Fig 4.3.3 Hoda gam tal map

Fig 4.3.4 Internal street map

4.2.5 Actual Problem faced by Villagers and smart solution

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

➢ There is a waterlogging problem during rainy season,

➢ There is no community hall available in the village

➢ There is no bank existing in the village,

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

Smart solutions:

➢ Community Hall	Pharmacy Store
➢ ATM	Cybercafe
➢Supermarket	Entrance Gate
➢ Rain water harvesting	Solar street lights and dustbins

4.2.6 Social scenario -Preservation of traditions, Festivals, Cuisine

Gujarat Social Scenario:

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.

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

4.2.7 Migration Reasons / Trends

Hoda Migration Reasons as per the data available in Village Profile & Taluka Planning Atlas:

Employment opportunities are the most common reason due to which people migrate. Except this, lack of opportunities, better education, construction of dams, globalization, natural disaster (flood and drought) and sometimes crop failure forced villagers to migrate to cities.

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 of Hoda Village (Photographs/Graphs/Charts/Table)

4.3.1 Describe Methods for data collection

The main methods for data collection are:

1) Individual interviews.

➢ Interviews can be conducted in person or over telephone. ➢ Interviews can be done formally or informally.

➢ Questions should be focused , clear , and encourage open ended responses. ➢ They should be qualitative in nature.

2) Focus groups

➢ A facilitated group interview with individual that has something in common. ➢ Gathers information about combined opinions.

➢ Responses are often coded in categories and analyzed .

3) Observations - Field trips

➢ Allows for the study of the dynamics of a situation , frequency counts of target behavior.

➢ Good source for providing extra information about a certain group , can use videography.

4) Questionary Survey

➢ Responses can be analyzed with quantitative methods by assigning numerical values to like type scales

➢ Results are generally easier to analyze.

➢ Other than this survey forms are prepared which are distributed to responders to record their opinions , data so that it can be analyzed.

4.3.2 Primary details of survey

•According to Census 2011 information the location code or village code of Hoda village is 508197. Hoda village is located in Palanpur Tehsil of Banas Kantha district in Gujarat, India.

•It is situated 15km away from Palanpur, which is both district & sub-district headquarters of Hoda village. As per 2009 stats, Hoda village is also a gram panchayat**.**

Observation/Analysis:

•Economical work: Most people doing work connected with farming (Agriculture), dairy product is doing small business like shop, etc.•Occupational DetailSince it is a town and it's not developed so mostly cultivating and milk creation are the essential occupation here, and working in close by enormous town like gadh and city like palanpur.

•Male/Female Details

The total population of male is 1068 and female is 1030 as per 2011 data.Physical

•Infrastructure Facilities

The Physical infrastructure like Water tank, Underground seepage, kachha road some basic facilities.

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

In Hoda the average size of the house is 4 × 8m.

Geo-Tagging: The process of tagging infrastructure with geographical information like Latitude, Longitude, Distance, place name, etc. It is connected to GPS which are monitored through computer internet networks. It can be used to locate important places like labs, dispensaries, milk center, etc.Geo Tagging is not implemented in Hoda village.

4.3.4 No of Human being in One House

Total number of population in Hoda is 2098 as per 2011 census.

There are different number of people in each house as there are nuclear families as well as joint families, but the average no of human beings in one house is 4.

Total number of houses: 383 (As per 2011)

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

The material oil, Wheat, Rice, Vegetables, Lime rock, etc. are easily available near by area.

4.3.6 Geographical Detail

The total geographical area of village is 377.41 hectares.

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

Total No. of houses:	383
Population:	2098 (Male : 1068 ; Female : 1030)
ST & SC:	245 & 0
Literacy:	80.04%
Total Workers:	705(Male : 694)
Marginal workers:	11

4.3.8 Occupational Detail - Occupation wise Details / Majority business :-

Major occupations are: Farming ; Service; Animal Husbandry ; Labor ; etc

Hoda has approx.705 population engaged in either main or marginal works. Out which 694 male Working.

4.3.9 Agricultural Details / Organic Farming / Fishery :

Majority of the population of hoda village are occupied in farming. The main crops grown in the village are: wheat, rice, etc. There are no any farmer or villager using organic farming or fishery.

4.3.10 Physical Infrastructure Facilities - Manufacturing HUB / Ware Houses :

1. Water Distribution Facilities

2. Sanitation Facilities

3. Social Infrastructure Facilities, Health, Education

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

In Hoda village there are no any tourism activities available for attracting the tourist.

4.4 Infrastructure Details (With Existing Village Photograph)

4.4.1 Water Distribution Facilities:

In Hoda village the main source of the water is from banas river and stored in the village overhead tank which is 1,65,000 lit. Through this water tank the water is distributed in the village with using underground pipe for the purpose of drinking and agriculture.

Fig 4.4.1 Water Tank

4.4.2 Sanitation Facilities:

n hoda village all the garbage are dumping out of village and other wastes are dumping at a corner the burn it by the villagers.

Fig 4.4.2 Sanitation Facilities

4.4.3 Transportation Road Facilities: Hoda village have a good quality of transportation facility from major city Palanpur.

4.4.4 Housing condition:

Fig 4.4.4 House of hoda Village

Fig 4.4.3 Road facilities

4.4.5 Social Infrastructure Facilities:

In hoda village there are 1 anganwadi, 1 primary school, 1 lake, 1 bank, 1 cattel feed shop are available. There are no available secondary and higher secondary school. Village do not have any public garden and public latrine.

Fig 4.4.5 Health and wellness center Hoda

Health Facilities:

In village there is 1 health and wellness center available in village but in village there is no CHC center & government hospital available.

Fig 4.4.6 School and play ground

Fig 4.4.7 Aanganwadi / Nandghar

Education Facilities:

Hoda Village have quite pleasant atmosphere inside the school. It has been renovated building of school, Wide playground, clean classrooms. Different type of clubs running in school which help to achieve overall development of students.

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

Fig 4.4.8 Gram panchayat and banas dairy

Fig 4.4.9 waste water disposal lake

Disposal of the waste water:

In hoda village all the waste material is dumping into lake. Around 500m away from residential area There is proper sanitation occur in the lake.

Community Hall:

In hoda village there is one community Hall is available in closed condition this Hall require proper maintenance.

4.4.7 Technology Mobile/ WIFI / Internet Usage Details:

Hoda Village have weak but usable quality of network strength. It has PCO, mobile computer and internet within itself.

4.4.8 Sports Activity as Gram Panchayat:

After interaction with sarpanch as well as villagers, we got the information that there is no sport structure or activates like club, tournament or championship program.

So, we proposed a design of play ground in chapter 8.

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

We saw that in village there were only one lack which is being used to dump waste water other than that there is no facilities of public garden parks or pond. For kids school have nice little playground.

4.5 Electrical concept

4.5.1 Renewable energy source planning particularly for villages

- Abstract-- India is one of the largest countries in the world, where the people's occupation is predominantly agriculture and most of the population lives in villages. Many of these villages are remotely located and their connectivity with the grid is very difficult resulting in their being not electrified at all or lack of continuous supply.

- Index Terms-- Biogas, Biomass, Energy Plan, Nonconventional, Renewable Energy, Solar, Survey, Sustainable, Village.

Biomass can be produced from agro waste, mainly paddy in the case of this village, and can be utilized to generate electricity in a biomass plant. The biomass plant has been proposed as a community plant where the excess electricity generated can be fed back to the grid.

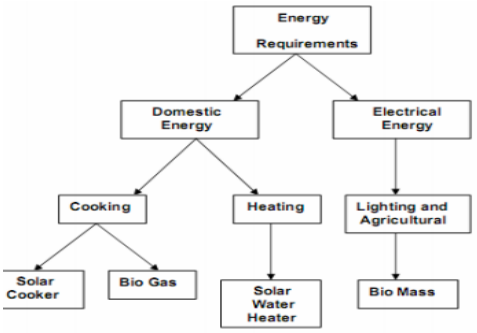


Fig. 4.5.1 Energy requirements chart

Biomass Plant:

Biomass is a vast renewable energy which still remains relatively untapped. Through energy conversion techniques like combustion and gasification, biomass can be converted to heat, fuel and electrical power. A gasifier is a reactor that converts biomass into clean gaseous fuel called producer gas having calorific value of the
order of 1000–1200 kilocalories per normalized cubic metre (cu.m) [12]. However, biomass burning has been characterized with energy inefficiency and environmental hazards.

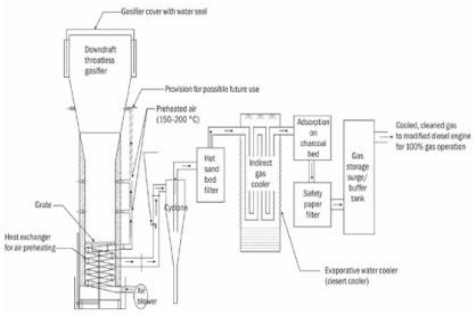


Fig. 4.5.2 Schematic of a biomass Gasifier plant

Feasibility of Plan:

The gasifier's design capacity depends upon the amount of agro waste available for the conversion and the electric demand. The agricultural produce is mainly paddy in the villages.

Solar Cooker:

Instead of depending on the shared biogas plant alone, each household can own a box type solar cooker very popular in India and for which a particular amount of subsidy is available from the government too. Box-type solar cooker consists of an insulated box, metallic cooking tray sat inside the box, double glass lid on the cooking tray, and a reflecting mirror fitted on the underside of the lid of the box,

Fig.5.4.3 Solar cooker

as shown in fig. . Up to four black painted vessels are placed inside the box. The heat is absorbed by the blackened surface and gets transferred to the food inside the pots to facilitate cooking. used supplements the gas needs of the villagers and avoids wood being used as a fuel.

Solar Power is an alternative source to biogas for cooking purposes in the form of solar cooker technology. The solar power is however proposed as an unopposed solution for the heating purposes. The solar heater and cooker are rated based on the amount of water usage for heating and average food needs for cooking, recipe

4.5.2 Irrigation Facilities

Abstract: There has been renewed interest during recent times in the impact of irrigation development on rural poverty.

Database and Methodology

Gujarat presents the proof that the "trickle-down" effect of economic growth does not happen in a hurry. In India's most rapidly industrializing state, according to a census of households below poverty line (BPL), one-third of the households were BPL, and more than half of the rural households were below the official poverty line in nearly 70 of the 177 predominantly rural talukas in 1997.

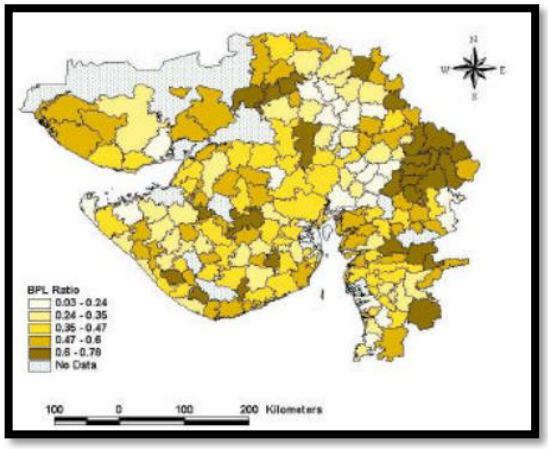


Fig.5.4.5 Gujarat BPL ratio (Colour chart)

Irrigation Access: Sufficient but not Necessary for Poverty Reduction

All evidence from rural Gujarat seems to suggest that access to irrigation is a sufficient condition for poverty reduction though not a necessary one. The Figure shows that over 50 of the 177 rural talukas of Gujarat have more than 50 percent of their net sown area under irrigation; of these only three have a BPL ratio higher than 50 percent (Quarter 2).

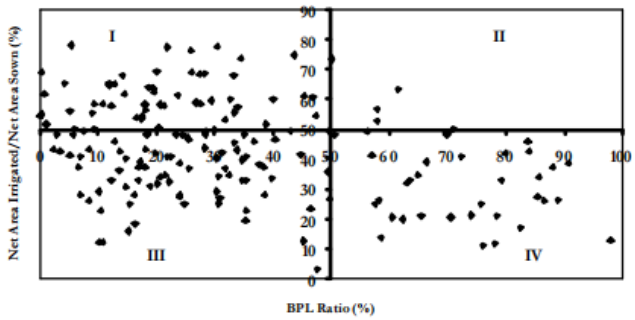


Fig.5.4.6 BPL ratio

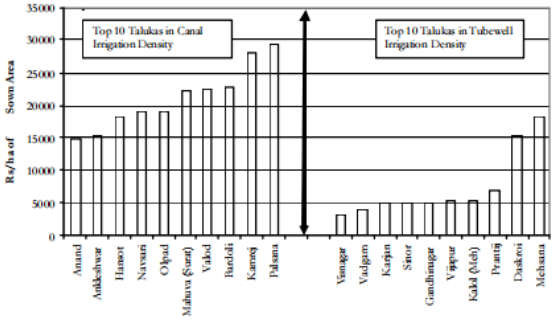


Fig. 5.4.7 Sown area

Differential Impact of Canal and Groundwater Irrigation

The above analysis suggests every hectare of farm land brought under canal irrigation experiences a substantially greater productivity increase than a hectare brought under groundwater irrigation. This is not surprising considering that most groundwater irrigation in the dry areas of Gujarat is more in the nature of supplemental, protective irrigation than production irrigation. However, at the level of the state, groundwater irrigation has a different scale, pattern of regional spread, and therefore, different impact on rural poverty compared to canal irrigation as suggested by Figures .

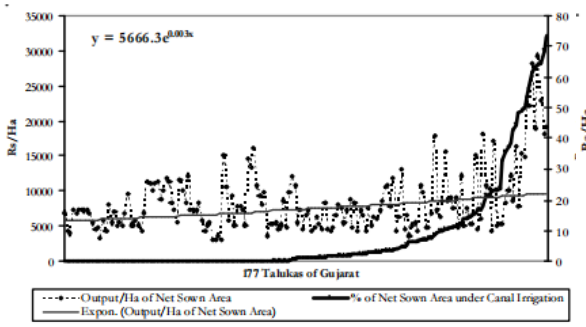


Fig. Land productivity under Canal Irrigation

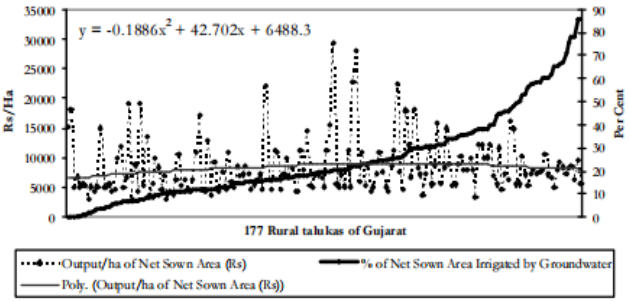


Fig Land Productivity and Groundwater Irrigation

4.5.3 Electricity Fecilities with Area

Non-grid sources such as solar home systems, rechargeable batteries, mini-grids, and diesel generators form an important part of the **rural electricity** mix. Sixteen percent of households and 40% of enterprises use non-grid sources.

RURAL ELECTRIFICATION

The key development objective of the power sector is supply of electricity to all areas including rural areas as mandated in section 6 of the Electricity Act. Both the central government and state governments would jointly endeavour to achieve this objective at the earliest. Consumers,

particularly those who are ready to pay a tariff which reflects efficient costs have the right to get uninterrupted twenty four hours supply of quality power. About 56% of rural households have not yet been electrified even though many of these households are willing to pay for electricity. Determined efforts should be made to ensure that the task of rural electrification for securing electricity access to all households and also ensuring that electricity reaches poor and marginal sections of the society at reasonable rates is completed within the next five years.

4.6 Existing Institution Like – Village Administration – Detail Profle

4.6.1 Dudh mandli:

There is one dudh mandali existing in hoda village.

4.6.2 Plantation for the Air Pollution:

Plantation of tree that kind of activities occur in the pprimary school.

4.6.3 Mahila Forum:-

There is one mahila forum active in angan wadi. Other than there is no any mahila forum existing in village.

Fig 4.6.1 Agriculture Development

4.6.4 Agriculture Development:-

There is no any agriculture office existing in village but if some issue occur regarding to agriculture all villagers are meet and take some decision.

CHAPTER 5: TECHNICAL OPTION 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:

Definition of Sustainable Construction:

Sustainable construction is the practice of creating a healthy environment that's based on ecological principles. According to Professor Charles J. Kibert, sustainable construction focuses on six principles: "conserve, reuse, recycle/renew, protect nature, create non-toxic and high quality."

The goal is to reduce the industry's impact on the environment by utilizing sustainable development practices, employing energy efficiency, and taking advantage of green technology.Although many different business sectors are doing what they can to be more sustainable, the construction sector is unique because it has the chance to significantly affect the way these practices are applied. This is because of the large amounts of materials and energy that the industry uses.

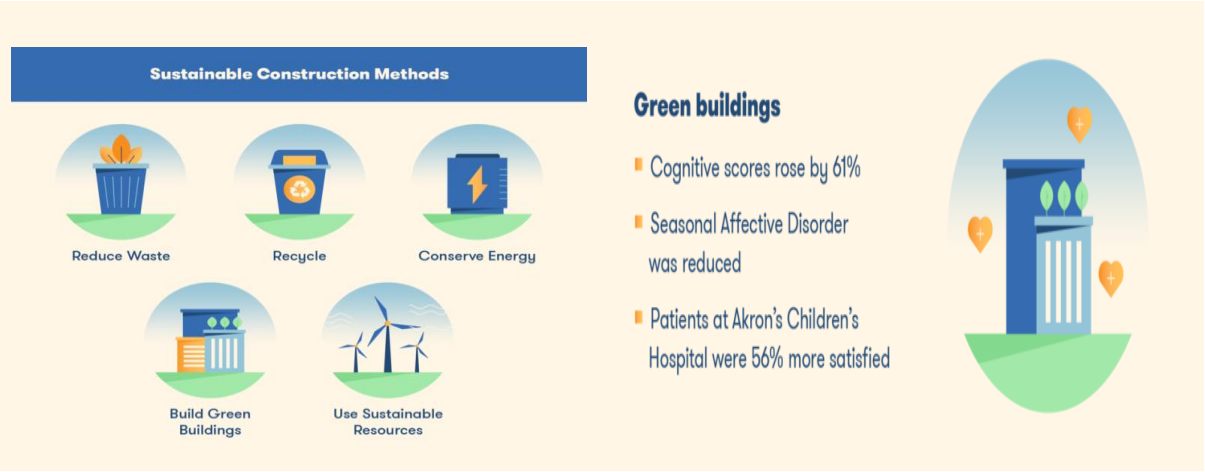
Different Types of Sustainable Construction:

Construction techniques, resources, and building practices have evolved over the years, and with the increased interest in sustainability and energy conservation, new methods of construction that focus on sustainability have been developed. There are two things that go into sustainable construction: the materials that are used and the methods that are utilized.

Materials:

One of the best ways to practice sustainability in construction is through the materials that are used. A new generation of stronger, lighter and more sustainable building materials can help solve many problems in the industry as well as push current practices to be more sustainable.

These materials have the added benefit of protecting the environment by reducing the carbon footprint of the buildings that use these materials. They promote a cleaner Earth and a future of stainability while also being aesthetically appealing and much more efficient.



5.1.1 Suistanable Building Materials	5.1.2 Green Building

Methods:

Sustainable construction isn't just about using the newest materials; it's also about using building methods that enhance renewable and sustainable efforts. Some of these methods include:

•Cutting materials precisely in order to reduce waste

•Controlling waste management, such as separating and recycling waste

•Constructing green buildings

•Adaptive reuse projects that transform old buildings

•Managing construction sites to improve the environment

•Examples include treating water on-site, no smoking, recycling food containers, etc.

•Conserving Energy

•Selecting sustainable and recycled materials

Benefits of Sustainable Construction:

Sustainable building isn't just good for the environment, although that is a fantastic reason to adopt sustainable practices. There are many benefits to adopting eco-friendly methods in the construction industry, such as:

Promotes Healthier Living:

Construction projects that develop green buildings aren't only beneficial to the environment; they also provide many psychological benefits to the people inside them. For example, in an office building, cognitive function scores rose by 61 percent. It was also reported that employees were 44 percent better at making decisions that achieve workplace goals. In green hospital buildings, 56 percent were satisfied with the cheerfulness of the hospital after the green renovations. Plus, Seasonal Affective Disorder was reduced.

Reduces Waste:

The reduction of construction waste is also a beneficial side effect in building more green buildings. By their nature, they already use fewer resources, relying on recycled and renewable materials along with more sustainable construction methods. The use of sustainable materials is also beneficial to overall human health as paint, industrial cleaning products and building materials can be dangerous for human health.

Boosts the Economy:

Sustainable construction can also provide many jobs and boost the economy. As climate change devastates the world, efforts to combat its effects have increased, resulting in an increased demand for construction workers and a hike in construction jobs. According to the USGBC, the green building industry contributed $134.3 billion of labor income to US workers, making it a major economic driver in the country.

Promotes Sustainability:

Sustainable construction also promotes sustainability and efficient energy use. With renewable energy construction on the rise, coupled with sustainable construction methods, more people are beginning to see the importance and efficiency of using sustainable methods. It also sends a clear message to the industry and everywhere else: sustainability is viable and important.

Challenges of Sustainable Construction:

Although the benefits to sustainable construction are present and obvious, transitioning isn't an overnight process. It takes time and preparation to utilize the best practices. Training needs to be implemented in order to start practicing sustainable methods, and that takes time and money.

Another obstacle that many companies may come across is the actual principal cost of sustainable construction. The general consensus is that sustainable construction comes at a premium and the cost is higher than what the demand actually is, despite the evidence to the contrary.

Nevertheless, as more interest in sustainability efforts continue to rise, more construction firms are making the switch to sustainable construction, with green building activity on the rise.

Importance of Sustainable Construction:

Whether it's the price tag for the materials, the training that goes behind it, or resistance to adapting to new methods (why fix if it ain't broke as the old saying goes), there is some pushback on green construction.

Despite that pushback, however, more owners and developers, both public and private, are turning to a greener and more sustainable form of construction. Especially since the effects of climate change can already be felt across the globe.

Sustainability is important for a variety of reasons, including a better quality of life and environmental quality. In order to have thriving and healthy communities, we need to have clean air, natural resources, and a non-toxic environment, and the construction industry can lead the way for greener projects.

Sustainable construction is developing each and every day, with more demand for cleaner and greener spaces. As the effects of climate change increase, sustainability becomes even more important. While there are challenges, the benefits involved with sustainable construction can create a pathway to a cleaner future.

Large construction companies aren't the only ones that can change their methods for the betterment of the environment. Regular people working on their own private projects can also focus on utilizing sustainable construction methods. Whether it's using the right equipment, implementing value engineering to determine sustainable material alternatives or simply doing your best to be energy efficient, anyone can help progress sustainability efforts.

5.1.2 Sustainable Construction Methods

5.1.5 Improvements on the Economy

5.1.6 Susitanbility is seen as visible

5.1.7 Importance of sustainable Construction

5.1.2 Soil Liquefaction:

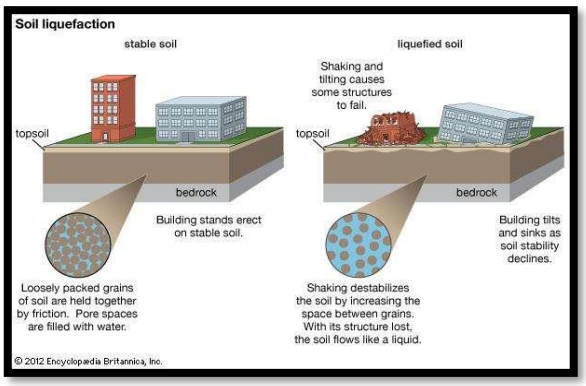
A Phenomenon whereby a saturated or partially saturated soil substantially loses strength and stiffness in response to an applied stress, usually earthquake shaking or other sudden change in stress condition, causing it to behave like a liquid" is called Soil Liquefaction (Hazen,1918).

There are two types of soil liquefaction.

1) Flow liquefaction,

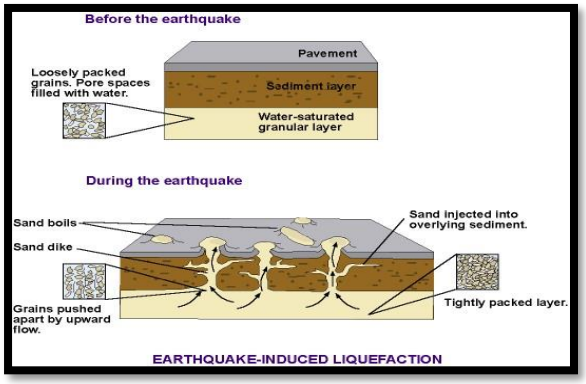
2) Cyclic Mobility

5.1.8 Effects Of soil liquefaction

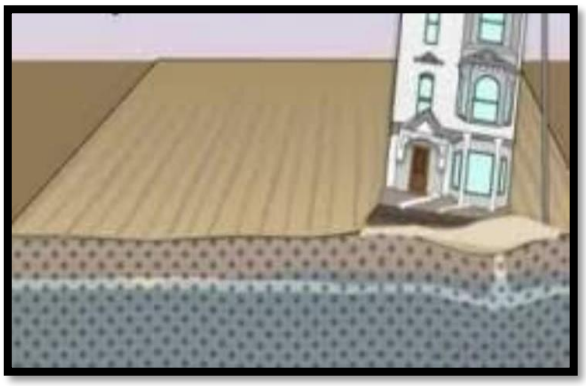


5.1.9 Soil liquefaction

The soil is a mixture of soil particles that stay connected together. These particles naturally rest upon each other due to gravity and form grids based on its properties. Each particle produces its own contact force by the surrounding particle. These contact forces together hold all the individual soil particles in their place. Soil liquefaction occurs due to sudden and rapid load on the soil particle. The sudden water pressure leads to soil losing its cohesive strength. Once the soil loses its cohesion, it gets softened, weak and loses its solid properties that are converted to liquid properties.



5.1.9 Liquefaction during seismic event



5.1.10 Effect of Liquefaction on building

Importance of soil liquefaction:

Earthquakes or seismic events cause number of disturbances in the ground which can harm or damage the structural stability which could turn fatal. Liquefaction causes a sudden movement shift that is out of sync with the rest of the structure. This might cause several structural damages to the property leading to casualties. Liquefaction in saturated soils generates a quicksand effect. This phenomenon occurs during liquefaction when the building or the foundation gets pulled into the diluted soil causing it to lean and eventually collapse. Construction of buildings near water bodies use retaining walls which are heavily dependent

on the strength and stiffness of the soil. Once the soil gets liquefied, the retaining wall collapses which could cause landslides.

Liquefaction during seismic event:

Seismic events affect ground conditions. Liquefaction of soil causes structural instability in buildings. This occurs due to various instances of structural failure. The liquefied ground cannot sustain the stresses of its load from the foundations. Foundations will sink into the sand deposit and cause the building to lean and eventually collapse. Soil liquefaction occurs only in areas which have saturated soils. Most of these areas are located near a water body such as lakes, ponds, rivers etc.

Buildings constructed in this zone must adhere strict codes and bylaws. The soil can sustain the ground forces in general conditions. But an earthquake or strong motion/vibrations in the ground, can cause water logging which increases the liquid consistency in the soil. The soil loses its rigidity and the ground cannot support the loads causing them to sink or collapse.

Effects of the liquefaction on the building:

Buckling of Piles: Pile foundations are embedded deep into the ground because of the soil support. But if the soil is not strong, the foundations buckle which lead to collapsing of the structure.

Spreading of ground: The soil starts to move in a downward direction due to the liquefaction. Slopes starting from an angle of 3 degrees are prone to lateral spreading.

The effects of soil liquefaction on the built environment can be extremely damaging. Buildings whose foundations stand directly on the sand, which liquefies, will experience a sudden loss of support. Where a thin crust of non-liquefied soil exists between building foundation and the liquefied soil, a ‘punching shear’ type foundation failure may occur. The irregular settlement of ground may also break underground utility lines. The upward pressure applied by the movement of liquefied soil through the crust layer can crack weak foundation slabs and enter buildings through service ducts, and may allow water to damage the building contents and electrical services.

Bridges and large buildings constructed on pile foundations may lose support from the adjacent soil and buckle or come to rest at a tilt after the earthquake induced shaking.

Methods to reduce e damage due to soil liquefaction:

(1) By avoiding construction on saturated soils. Soil study must be conducted before construction to check whether the soil is durable for construction. Soil mapping must be made mandatory.

(2) Liquefaction-proof structural system

(3) Improving Soil Conditions

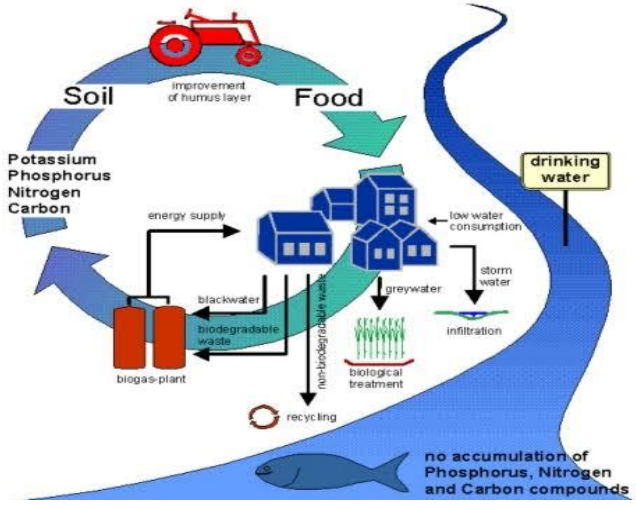
Methods to mitigate soil liquefaction have been designed to improve soil strength and quality. Methods such as Vibro compaction, dynamic compaction, and use of vibro stone columns are preferable.

5.1.3 Sustainable Sanitation:

Defination:

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.

Sustainable sanitation, a sanitation system has to be economically viable, socially acceptable, technically and institutionally appropriate, and protect the environment and natural resources



5.1.11 Effete of liquefaction on building

5.1.12Suistanable Sanitation

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 the context is such a core criterion for sustainable sanitation, there is no one-size-fits-all sanitation solution. However, taking into consideration the entire range of sustainability dimensions, it is important to observe some basic principles when planning and implementing a sanitation system.

Sustain believes that the following sustainability dimensions (or "criteria") should all be considered in the design or upgrade of a sanitation system**.**

Health and hygiene

Includes the risk of exposure to pathogens and hazardous substances that could affect public health at all points of the sanitation system, from the toilet via the collection and treatment system, to the point of reuse or disposal and downstream populations.

This dimension also includes hygiene aspects as well as possible impacts on nutrition and health resulting from the application of a certain sanitation system.

Environment and natural resources

Includes issues such as the water, energy and other natural resources required for construction, operation and maintenance of the system, as well as the potential emissions to the environment resulting from use. Also includes aspects of safe recycling and reuse of excreta (and any associated effects, for example reusing wastewater, returning nutrients and organic material to agriculture).

Furthermore, it includes effects on consumption of non-renewable resources (for example excreta-derived biogas replacing fossil fuel use).

Technology and operation

Incorporates the functionality of the system, and the extent to which the entire system – including collection, transport, treatment and reuse and/or final disposal – can be constructed, operated and monitored by the local community or the technical teams of the local utilities.

Furthermore, the robustness of the system, its vulnerability to power cuts, water shortages, floods, etc. are also included in this criterion. Finally, the flexibility and adaptability of its technical elements to the existing infrastructure, geology, and projected demographic and socio-economic developments should also be taken into account**.**

Financial and economic issues

This dimension includes the capacity of households and communities to finance the sanitation system, including the construction, operation, maintenance and necessary reinvestments in the system. In such calculations, direct benefits – for example income or savings from recycled products – and external costs and benefits have to be taken into account alongside such direct costs.

The external costs might include environmental pollution and health hazards. Benefits may include increased agricultural productivity and subsistence economy, employment creation, improved health and reduced environmental risks.

Socio-cultural and institutional aspects

The criteria in this category evaluate if the sanitation system is socio-culturally acceptable and appropriate for the users. Further considerations include the following aspects: Convenience, perceptions, gender issues, religious or cultural issues, impacts on human dignity, compliance with the legal framework, and stability of institutional settings.

Principles for planning and implementing sustainable sanitation systems:

The following principles for planning and implementing sanitation systems were developed by a group of experts and were endorsed by the Water Supply and Sanitation Collaborative Council as the "Bellagio Principles for Sustainable Sanitation" during its 5th Global Forum in November 2000:

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

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

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

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

5.1.4 Transport Infrastructure / system:

Transport infrastructure consists of the fixed installations necessary for transport and includes roads, railways, airways, waterways, and terminals.

Roads:

A road is a paved surface to facilitate the movement of people or goods with [Road transport] means, such as as automobiles, bicycles, buses, vans or trucks.

Roads in itself are not an interesting security target, but blocking a road will cause problems with the traffic flow and reachability of certain parts of the city or area. This can be prevented by designing a [Robustness robust road system] and to detect a disruption and minimize the consequences, using [Traffic monitoring monitoring] and [Traffic management]

Rails

Rails are the infrastructure for rail transport. A rail road which connects two locations is also called a rail line.

As for roads, rails on itself are not an interesting security target, but blocking a railroad will cause large problems with the rail transport.

5.1.13 Rail Transportation

Pedestrian / Bicycle paths

Delineated bicycle and pedestrian paths at roundabouts in The Netherlands

Pedestrian paths or sidewalks, curbs, pavements, footpaths or platforms are paths alongside a road designated for pedestrians. Bicycle paths comprises of several different forms of cycling infrastructure, from non-segregated pathways aligned next to the road to segregated cycle facilities.

5.1.14 Pedestrian / Bicycle paths

Urban waterways

Inter and intra urban transport over waterways such as canals, rivers or other waterways forms a smaller although still important aspect of the urban transport system. For port cities such as Rotterdam, Antwerp or Hamburg the waterway system is of vital importance for their economic development.

5.1.15 Road Transportation

Subway system

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.

5.1.16 Air Transportation

Bridges and fly-overs

A bridge is a structure built to span physical obstacles such as a body of water, valley, or road, for the purpose of providing passage over the obstacle. A flyover is a bridge, road, railway or similar structure that crosses over another road or railway forming a grade separation. Various different designs are possible depending on the length of the span and the conditions of the site.

Bridges and fly-overs form a vital and vulnerable element of a transport system since blocking can cause serious disruptions in the transportation system. Security risks are high since bridges and fly-overs are generally difficult to reach in case of emergencies.

Terminals

A terminal is any location where freight and passengers either originates, terminates, or is handled in the transportation process. Terminals are central and intermediate locations in the movements of passengers and freight. They often require specific facilities and equipment to accommodate the traffic they handle.

Terminals may be used both for interchange of passengers and cargo.

Examples of passenger terminals are airports, railway stations and bus stations.

Examples of terminals for cargo are warehouses, trucking terminals, refueling depots (including fueling docks and fuel stations), and seaports.

All terminals are important for security, since it is potential targets for terrorists. Damage will have a big impact, both economically, life danger of people and by hampering the transportation process heavily. Therefore, it is recommended to have an extensive and robust transportation system towards and from the terminal and to locate terminals outside urban areas.

Airports

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.

5.1.17 Transportation by sea

Train station

A train station, also called a railroad station (mainly in the United States) or railway station (mainly in the British Commonwealth) and often shortened to just 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.

5.1.17 Transportation by Metro

Metro station

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".

Freight terminal

A freight terminal is a processing node for freight. Most freight terminals are located at ports. They may include airports, seaports, railroad terminals, and trucking terminals. Freight is usually loaded onto and off the transport.

Sea port:

A sea port (or shortly 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 :

Fig 5.1.18 Vertical Farming

Vertical farming is the practice of growing crops in vertically stacked layers. It often incorporates controlled-environment agriculture, which aims to optimize plant growth, and soilless farming techniques such as hydroponics, aquaponics, and aeroponics.Some common choices of structures to house vertical farming systems include buildings, shipping containers, tunnels, and abandoned mine shafts.

As of 2020, there is the equivalent of about 30 ha (74 acres) of operational vertical farmland in the world.The modern concept of vertical farming was proposed in 1999 by Dickson Despommier, professor of Public and Environmental Health at Columbia University.

Fig 5.1.18 Vertical Farming

Despommier and his students came up with a design of a skyscraper farm that could feed 50,000 people.Although the design has not yet been built, it successfully popularized the idea of vertical farming. Current applications of vertical farmings coupled with other state-of-the-art technologies, such as specialized LED lights, have resulted in over 10 times the crop yield than would receive through traditional farming methods.

The main advantage of utilizing vertical farming technologies is the increased crop yield that comes with a smaller unit area of land requirement. The increased ability to cultivate a larger variety of crops at once because crops do not share the same plots of land while growing is another sought-after advantage.

Techniques of vertical farming:

Hydroponics:

Fig 5.1.20 Aquaponics

Hydroponics refers to the technique of growing plants without soil. In hydroponic systems, the roots of plants are submerged in liquid solutions containing macronutrients, such as nitrogen, phosphorus, sulphur, potassium, calcium, and magnesium, as well as trace elements, including iron, chlorine, manganese, boron, zinc, copper, and molybdenum. Additionally, inert (chemically inactive) mediums such as gravel, sand, and sawdust are used as soil substitutes to provide support for the roots.

Aquaponics:

Fig 5.1.21 Aeroponics

The term aquaponics is coined by combining two words: aquaculture, which refers to fish farming, and hydroponics—the technique of growing plants without soil. Aquaponics takes hydroponics one step further by integrating the production of terrestrial plants with the production of aquatic organisms in a closed-loop system that mimics nature itself. Nutrient-rich wastewater from the fish tanks is filtered by a solid removal unit and then led to a bio-filter, where toxic ammonia is converted to nutritious nitrate.While absorbing nutrients, the plants then purify the wastewater, which is recycled back to the fish tanks.

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

.**Mechanism of corrosion**:-

Corrosion is the deterioration of an exposed material (usually a metal) due to chemical, electrochemical, and other reactions with its surrounding environment. Numerous factors add complexity to the equation, it is, however, a controllable process.

Prevention:

There are several cost effective ways to prevent corrosion including:

•Use non-corrosive metals, such as stainless steel or aluminium

•Make sure the metal surface stays clean and dry

•Lay a layer of backfill, for example limestone, with underground piping

•Use a sacrificial anode to provide a cathodic protection system

5.1.7 Sewage treatment plant:

Sewage Treatment Plant

Sewage treatment plant India for municipal & government is a process of Sewage collection from city and other inhabited areas, through interconnected network of sewerage lines and disposalto centralize sewage treatment facility to protect public health.

Fig 5.1.22 Sewage treatment

Apart from public health and pollution norms, STP facilities has also becoming new source of water which can be used for irrigation, horticulture, industrial and many other non-potable purpose. Recycling of sewage treated water directly reduce consumption of fresh water and help to come out from water scarcity problem.

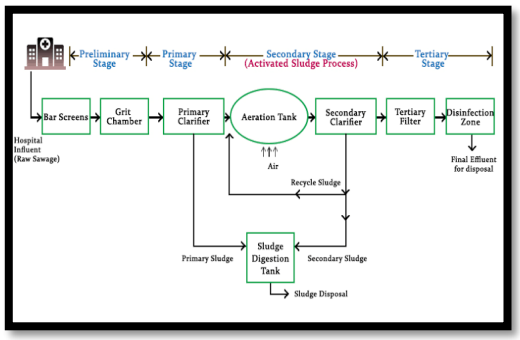


Fig 5.1.23 Flow chart – Sewage treatment

5.1.8 Technical Case Study On "Cable bridge Bharuch":

The New Narmada Bridge (or the 3rd Narmada Bridge) is an extra dosed bridge, constructed at Bharuch, India. It is a 1,344 m (4,409 ft) long bridge, built over river Narmada on NH-8. The four-lane bridge is a part of larger project involving six laning of a section of NH-8 between Vadodara and Surat. It runs parallel to Sardar Bridge. It is the extradosed bridge with the longest spans in India, 144 m (472 ft) long.

Some information about Cable Bridge:

Coordinates: 21.7149°N 73.0458°E

Crosses : Narmada River

Official Name: New Narmada Bridge

Characteristics:

Total Length: 1,344m(4, 409 ft)

Width: 22.8m(75 ft)

Longest Span: 144m(472 ft)

No. Of span: 10

Fig 5.1.24 New Narmada Bridge(Bharuch)

History:

Cable-stayed bridges date back to 1595, where designs were found in Machinae Novae, a book by Croatian-Venetian inventor Fausto Veranzio. Many early suspension bridges were cable-stayed construction, including the 1817 footbridge Dryburgh Abbey Bridge, James Dredge's patented Victoria Bridge, Bath (1836), and the later Albert Bridge (1872) and Brooklyn Bridge (1883).

Design:

There are four major classes of rigging on cable-stayed bridges: mono, harp, fan, and star.The mono design uses a single cable from its towers and is one of the lesser-used examples of the class.

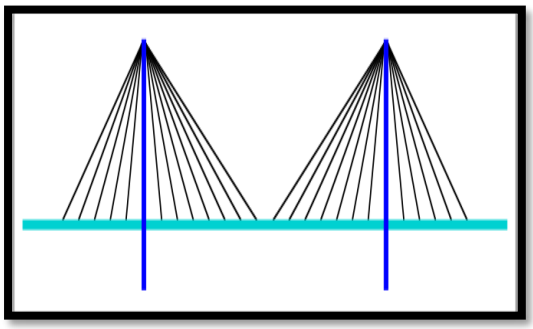
Difference between types of bridges:

There are also four arrangements for support columns: single, double, portal and A-shaped.

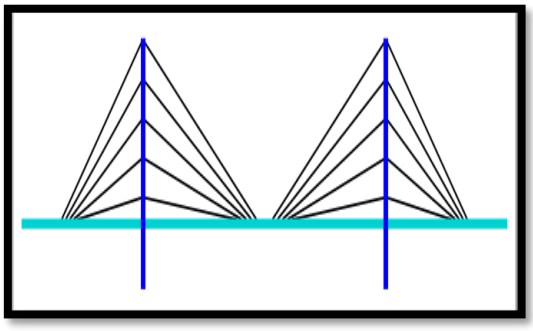
The A-shaped design is similar in concept to the portal but achieves the same goal by angling the two columns towards each other to meet at the top, eliminating the need for the third member. The inverted Y design combines the A-shaped on the bottom with the single on top.

Total Cost of the Narmada bridge:

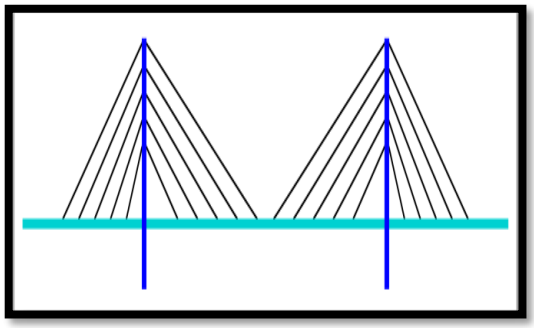
The estimated cost of bridge is ₹379 crore (equivalent to ₹428 crore or US$60 million in 2019). This bridge was inaugurated by Indian Prime Minister Narendra Modi on 7 March 2017.



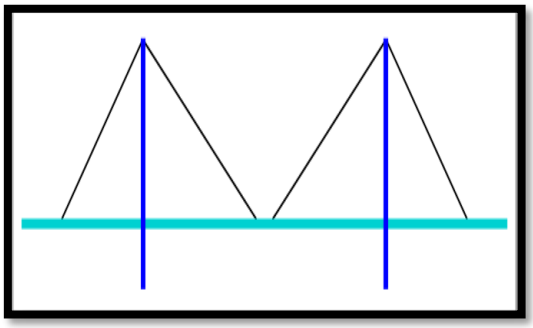
Different Parts of cable bridge



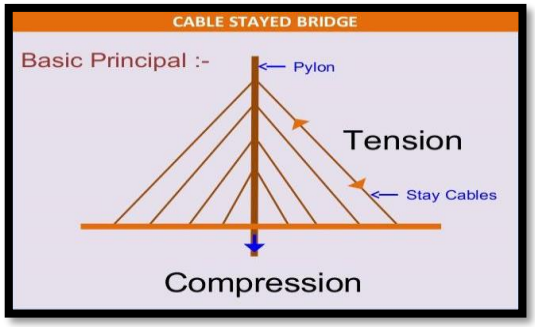
Principal of Cable bridge



Mono Design



Harp Design



Fan Design

Sharp Design

CHAPTER 6: SWACHH BHARAT ABHIYAN (CLEAN INDIA)

##Swachh Bharat Mission (SBM),Swachh Bharat Abhiyan(SBA),orClean India Mission##

The mission was split into two: rural and urban.

In rural areas "SBM - Gramin" was financed and monitored through the Ministry of Drinking Water and Sanitation; whereas "SBM - urban" was overseen by the Ministry of Housing and Urban Affairs.

As part of the campaign, volunteers, known as Swachhagrahis, or "Ambassadors of cleanliness", promoted indoor plumbing and community approaches to sanitation (CAS) at the village level.[5] Other activities included national real-time monitoring and updates from non-governmental organizations (NGOs) such as The Ugly Indian, Waste Warriors, and SWaCH Pune (Solid Waste Collection and Handling).

The government provided subsidy for construction of nearly 110 million toilets between 2014 and 2019,although some Indians especially in rural areas choose to not use them.The campaign was criticized for using coercive approaches to force people to use toilet.Some people were stopped from defecating in open and threatened with withdrawal from government benefits.

6.1 Swachhta needed in Hoda village – Existing Situation with Photograph

We have done one survey on existing condition of village regarding swachhta. The people are maintaining cleanliness of the village but in some streets there is no swachhata because there are animal and their waste , mud, etc. Other than due to the poor literacy the awareness regarding to the swatchhta is required. In village some of the roads are kuttcha road due to heavy rainfall there is erosion occur in road so there is lots of mud occur also village road are need to proper maintanance.

Fig 6.1.1 Existing Photos Of Swachhta

6.2 Guidelines - Implementation in Hoda village with Photograph:




Fig 6.1.2 Swachh Hoda streets

6.3 Activities Done by Students for Hoda village with Photograph :

•Firstly we took a permission from village Talati and Sarpanch for doing one Swachhta awareness camp and then we have done one activity of swachhta awareness in the village.

•Then we aware the people regarding swatchhta and give them information about swachhta abhiyan.

CHAPTER 7. VILLAGE CONDITION DUE TO COVID-19

The COVID-19 pandemic has brought the entire nation to a halt. Health officials and medical professionals are struggling with containing the disease, and testing and treating affected people. Last night, Prime Minister Narendra Modi announced a three-week, nation-wide, complete lockdown to contain the spread of this virus, as the number of reported positive cases in India crossed 500.

In light of this, it is pertinent to take stock of our rural areas.

The risk of spread in rural areas is heightened. This is due to a number of factors, including lack of awareness, a limited supply of clean water, low levels of nutrition, and most importantly, ill-equipped and insufficient public health centres and district hospitals.

7.1 Taken steps in Hoda village related to existing situation with photograph :

•After interaction with sarpanch of the hoda, we got information about what situation occur of the village during pandemic. During pandemic there is home quarantine facility available as well as proper social distance maintain by the villagers.

•Proper sanitation done in the village. Due to this are the precautions there is no any positive case occur in the village.

Fig 7.1.1 Hoda quarantine Centers

7.2 Activities Done By students for Hoda village with Photograph:

•During visit we have distributed the mask as well as sanitizer.

•Also we give information about "Arogya Setu" Application to the villagers.

•Also we aware the villagers regarding to sanitation and social distance to prevent the spreading of the corona virus.

These are the activities we have done.

Fig 7.2.1 Distribution of Mask & Give information about "Arogya Setu Application"

7.3 Any other steps taken by the students/ Villagers:

During interaction with sarpanch and talati he gave us some information during lock down. He gave us some information about quarantine center as well as cleaning, fogging and sanitation done in the Village.

CHAPTER-8 SUSTAINABLE DESIGN PLANNING PROPSAL (PROTYPE DESIGN) PART -1

Design Proposals: Observation and brief write up about each design from 8.1.1 to 8.1.6

Here we have designed the library for our **Hoda** village. The population of Hoda Village is 20978 as per 2011 census. So it is required to have one Library in the village. The villagers have to go in **Gadh** village for cash requirement so that we have decided and finalized the design of Library.

Physical design: Gram Panchayat

Gram panchayat of Hoda, Village is combined with banas bank and have no separate building. It is located at first floor of Bank and people are facing. There was a strong need of Gram panchayat building. So,We suggested a new separate design of gram panchayat.

Social Design: Bus station

Hoda, village have old bus station and have Vary bad condition. Hoda, Village need new renovated design of bus station which we suggested in this report. With 3D model. And design plan.

Sustainable Design: Public toilet

In Hoda, village there were no public toilet in function. So, we suggested design of public toilet in sustainable design. It increases the hygiene condition of surrounding.

Smart Village Design : Khel vikas ground – multiple play ground

Hoda village have no gram panchayat sport activates. More over people around that region are healthy and greedy for sport activities that's why here we tried to provide a ground for some games such as cricket, football, volleyball. basketball, etc at low cost this one is may considered as smart village design because at this stage no village have such a facility for sports.

Heritage Village Design : Entrance Gate

The Hoda village has no main entrance gate at the village approach road. So that we have designed the village entrance gate as heritage village design.

All the drawings ,of proposed designs like plan, elevation, section and 3D model , have been added at the end of report.

8.1.1 Socio – cultural: Public Library

Scenario :

We start to think in a new dimension altogether. Since the environment at the school library is peaceful, students can study at the library without any disturbances. Library is an appreciable place for studies and mental development. In schools, students are often given tasks to finish after school hours. Librarians are highly-trained professionals who can offer guidance to students, job-seekers and others conducting research on almost any topic imaginable.

Existing Situation in Hoda:

In the Hoda village there were not any service of Public library. So we have designed a Library as socio-cultural design or structure of the village. Library a self-service shop offering a wide variety of books, Inspiration, knowledge and learning material organized into sections. There were not any service of library in hoda village.

Sustainability of the design:

Public Toilet as an important tool:

Design Utilized by,

All the people living in the village of even outsiders from nearby villages and relatives of the villagers can use or utilize a Library for their different Purpose.

Needs:

Students Reading area, Librarian office, Racks for books, Computer.

Public Library Design :

Length: 15.15m

Width : 17.33m

Height : 3.8m

Carpet area : 20.8 m^2

Proposed Design Of Public library in Auto cad and Sketch-up:

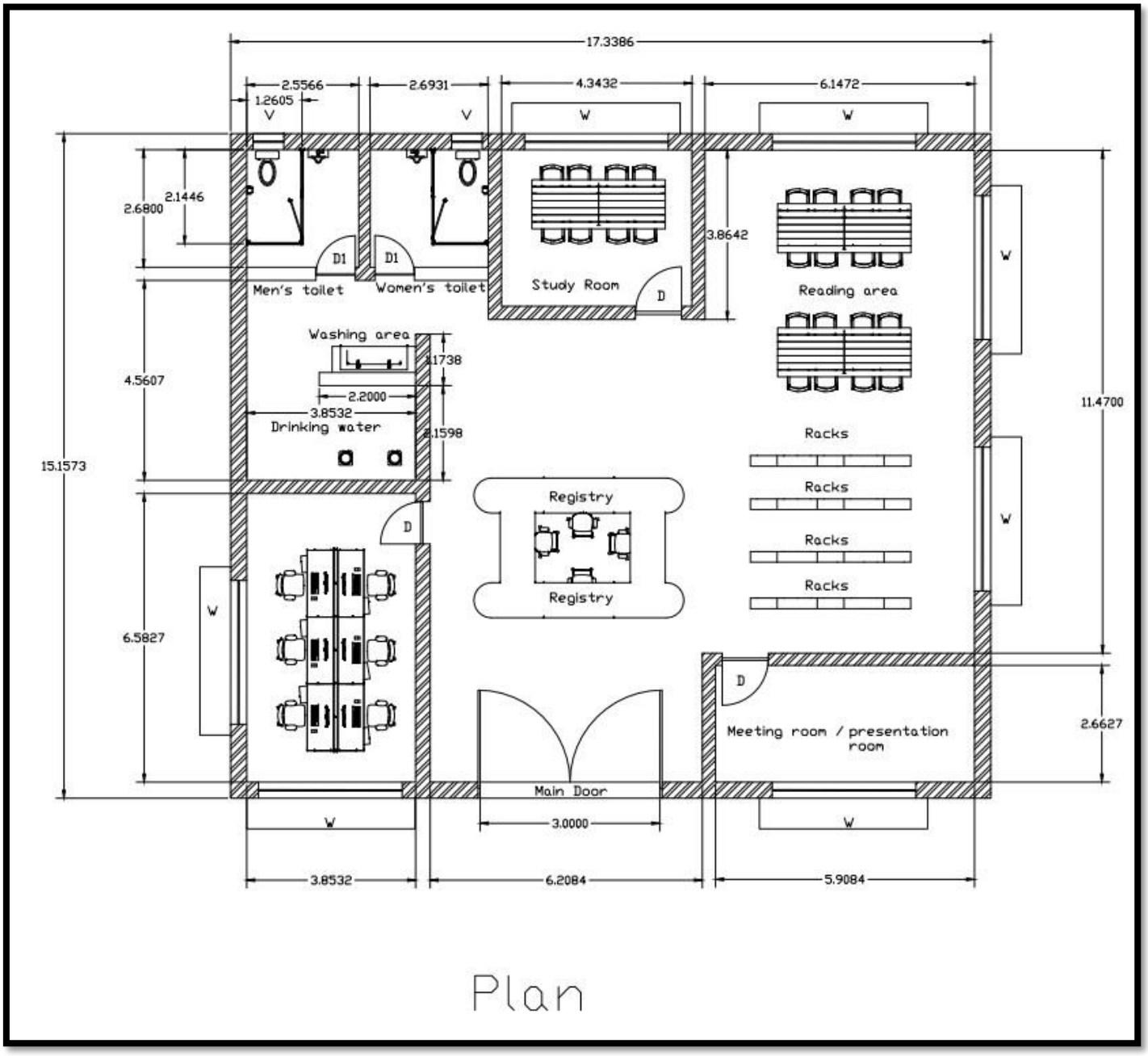


Fig 8.1.1 PLAN Public Library Plan (AUTO-CAD)

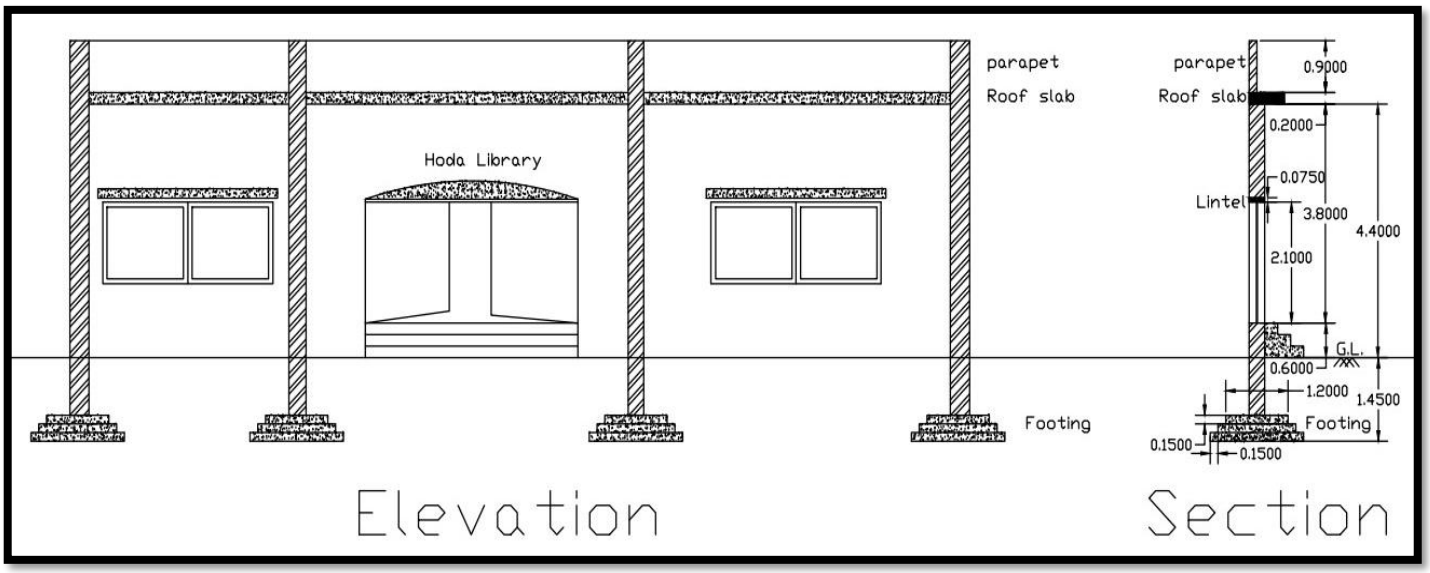


Fig 8.1.2 ELEVATION & SECTION of Public library (Hoda)

Fig 8.1.3 3D top view of public library in hoda (Sketch – Up))

MEASUREMENT SHEET FOR PUBLIC LIBRARY (Table 8.1.1)

Item	No	L	B	H	Quantity
Total Center Line Lengh=102.87m					
Excavation		102.87	1.80	1.45	268.51m3
PCC		102.87	1.8	0.15	27.77m3
Brick Work Up to Plinth					
(1) 1st		94.62	1.5	0.15	21.28
(2) 2nd		96.27	1.2	0.15	17.32
(3) 3rd		101.22	0.3	1.6	48.58
Steps					
1st		1	0.3	0.15	0.135
2nd		1	0.6	0.15	0.09
3rd		1	0.9	0.15	0.045
					Sum of total Quantity= 87.47
*Brick Work in superstructure		101.22	0.3	5.45	165.49
Deductions					
Door	5	1	0.3	2.1	3.15
Window	7	3.25	0.3	1.2	8.19
Ventilator	2	0.9	0.3	0.6	0.324
Main door	1	3.0	0.3	2.1	1.89
Lintel		1.2	0.3	2.62	0.9432
					Total Brick work in superstructure= (Brick work in superstructure) -(Deduction) = **151.00m3**
RCC work		17.33	15.15	0.15	39.38

ABSTRACT SHEET FOR PUBLIC LIBRARY (Table 8.1.2)

Item	Quantity(m3)	Rate	Per	Amount
Excavation	268.51	90/-	M3	24165.9
PCC Work	27.77	3000/-	M3	83310
RCC Work	39.38	8800/-	M3	346544
Brick Work	238.47	3300/-	M3	786951

Total Cost =12,40,970 + 5% water charge (62048.5) +5*Door (2500/piece)+1*Main door(3000) +7 * window (1500/piece) = **13,29,019/-**

8.1.2 Physical design: Gram Panchayat

Scenario:

In hoda village, Gram panchayat building is old and above the bank building. There is no separate building.Gram panchayat is one of the busiest building in town every type of "Yojana and services" are provided in Gram panchayat. There for we need new and separate Building of gram panchayat

Existing Situation in Hoda:

In the Hoda village there is improper office of gram panchayat. So we have designed a Gram panchayat as Physical design design or structure of the village. Supermarket is a self-service shop offering a wide variety of food, beverages, and household products, organized into sections. It is larger and has a wider selection than earlier grocery stores.

Sustainability of the design:

Gram panchayat as an important tool:

Design Utilized by,

All the people living in the village of even outsiders from nearby villages and relatives of the villagers can use or utilize a Gram panchayat for their different uses.

Needs:

Sarpanch's Office, Computers room, And store room

Gram panchayat office

Length: 11m; Width: 7m

Height : 3m Carpet area : 40 m^2

Proposed Design of Gram panchayat in Auto CAD and Sketch-up:

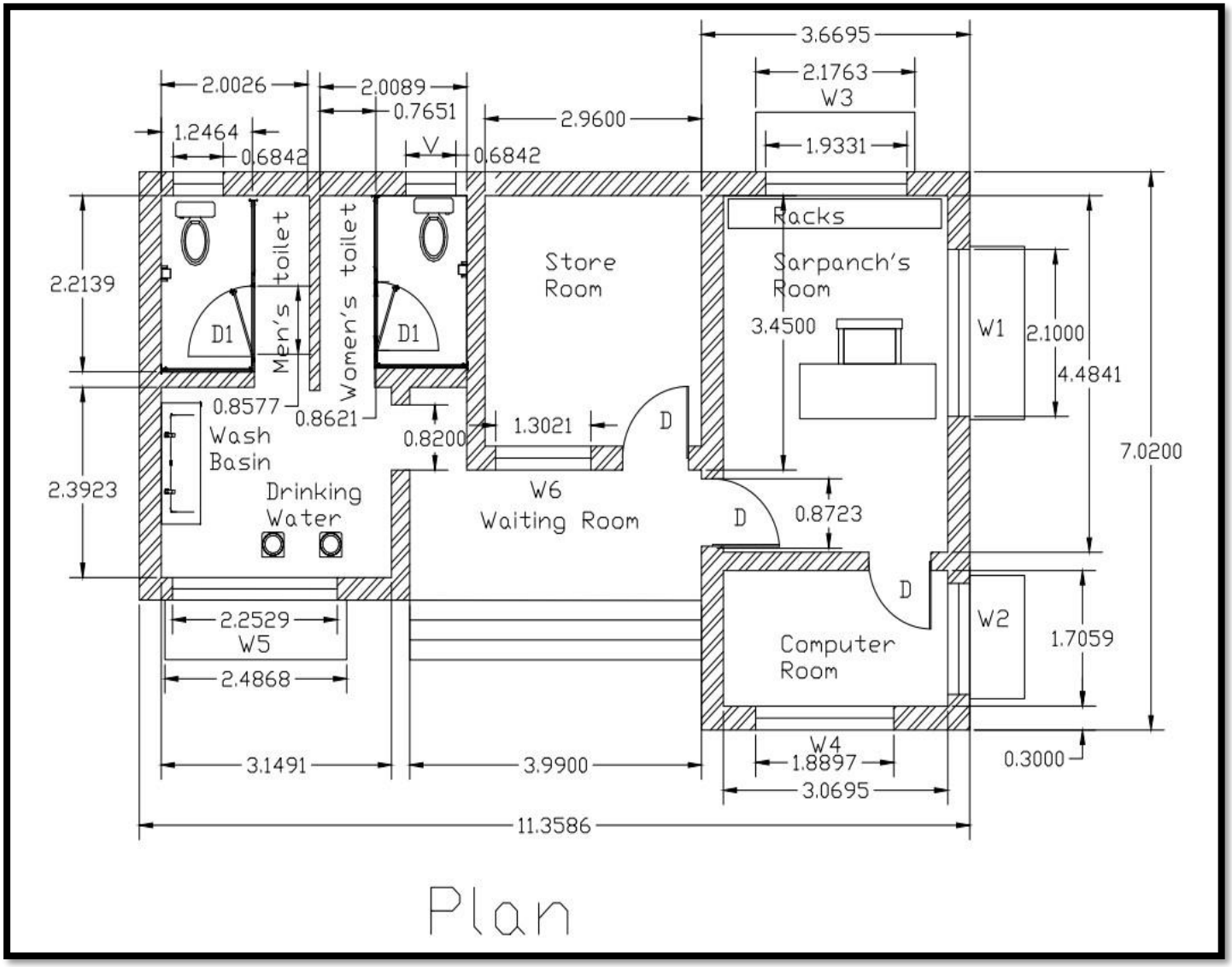


Fig 8.1.4 PLAN Hoda Gram Panchayat Plan (AUTO-CAD)

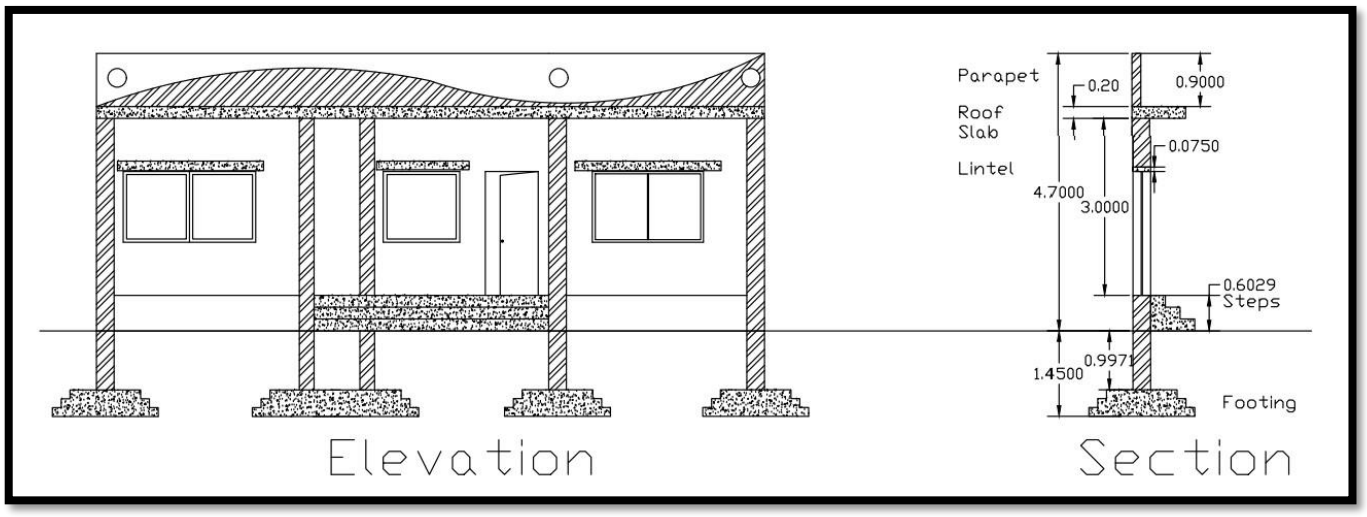


Fig 8.1.5 ELEVATION & SECTION Hoda Gram Panchayat Elevation (Auto-CAD)

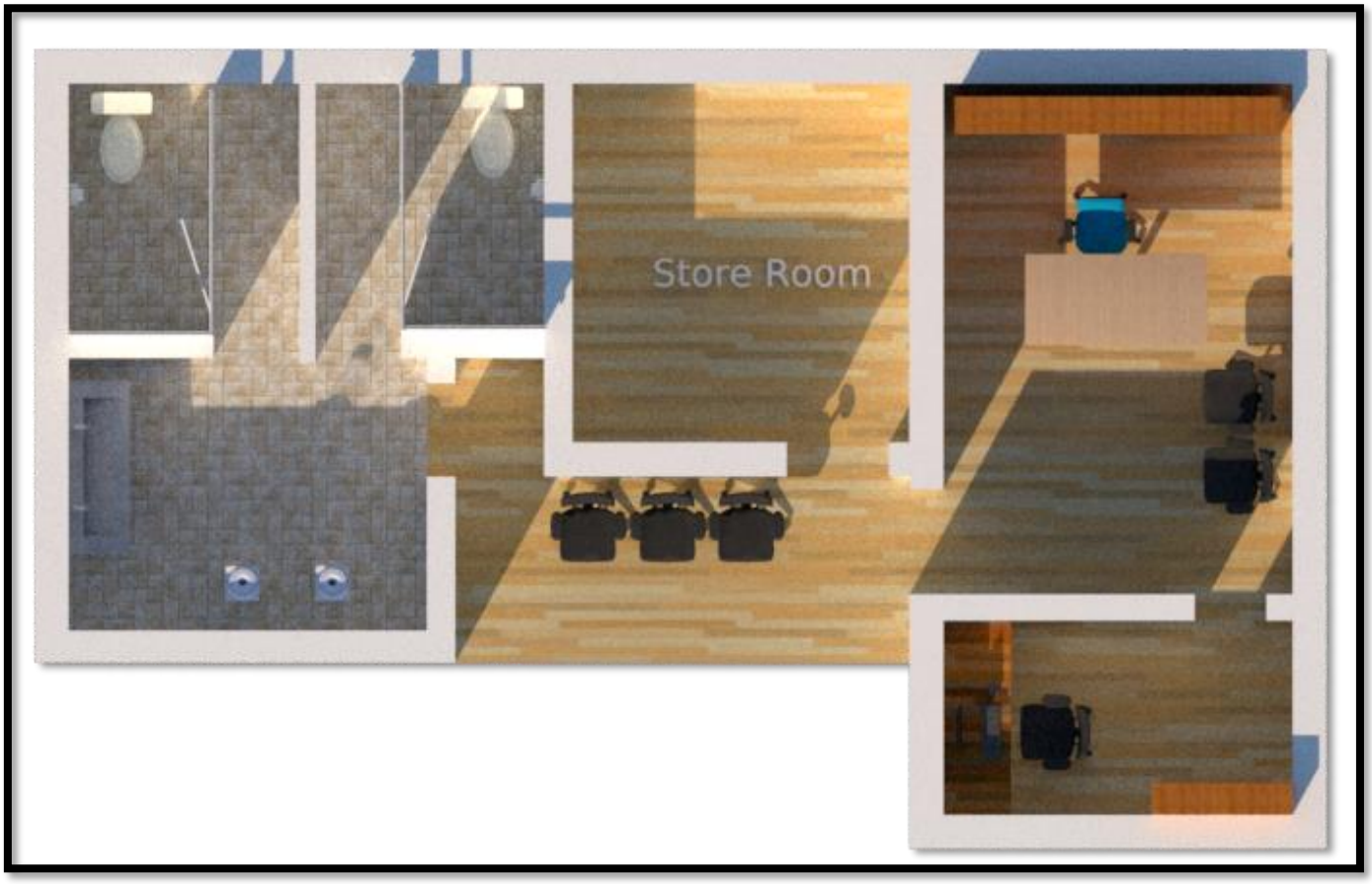


Fig 8.1.6 3D- Hoda Gram Panchayat (Sketch up)

MEASUREMENT SHEET FOR GRAM PANCHAYT (Table 8.1.3)

Item	No	L	B	H	Quantity(m3)
Total Center Line Lengh=55.27m					
Excavation		47.62	1.7	1.45	117.38m3
PCC		47.62	1.7	0.15	12.14m3
Brick Work Up to Plinth					
In Foundation		47.62	1.7	0.15	12.14
(1) (1.4) width		48.97	1.4	0.15	10.28
(2) (1.1) width		50.32	1.1	0.15	8.30
(3) (0.3) width		53.92	0.3	1.59	25.71
Steps					
1st		1.0	0.2	0.15	0.03
2nd		1.0	0.4	0.30	0.12
3rd		1.0	0.6	0.45	0.27
					Sum of total Quantity=56.85m3
*Brick Work in superstructure		53.92	0.3	4.1	66.32
Deduction					
Door(D)	1	1.0	0.2	1.0	0.2
Door(D1)	2	0.7	0.1	1.0	0.14
Ventilator	2	1.24	0.3	0.4	0.29
Window					
W1		2.10	0.3	0.7	0.44
W2		1.70	0.3	0.7	0.35
W3		1.93	0.3	0.7	0.40
W4		1.88	0.3	0.7	0.39
Lintel		0.3	0.075	1.0	0.0225
					Total Brick work in superstar.= (Brick work in superstar.) - (Deduction) =**63.34m3**
*RCC work		11.35	7.02	0.20	15.93

ABSTRACT SHEET FOR GRAM PANCHAYT (Table 8.1.4)

Item	Quantity(m3)	Rate	Per	Amount
Excavation	117.38	90/-	M3	10564.2
PCC Work	12.14	3000/-	M3	36420
RCC Work	15.93	8800/-	M3	140184
Brick Work	120.19	3300/-	M3	396627
				Sum=5,83, 795/-

Total Cost= 5,83,795+ 5% water charge (29,189) = **6,12,984/-**

8.1.3 Social Design – Bus station

Scenario :

In hoda village, Bus station building is old. Bus station is one of the busiest building in town so, we provided in New Renovated bus station design here.

Existing Situation in Hoda:

In the Hoda village there is no any service of Bus station. So we have designed a Bus station as social design or structure of the village. Old Bus station structure is unsafe for sitting and holding purpose.

Sustainability of the design

Design Utilized by,

All the people living in the village of even outsiders from nearby villages and relatives of the villagers can use or utilize a Bus station for their different uses.

Needs:

Sitting Arrangement, Stop sign for bus, renovated / New structure.

Bus station office

Length: 65 m ; Width : 35m :

Height : 4m Carpet area : 55 m^2

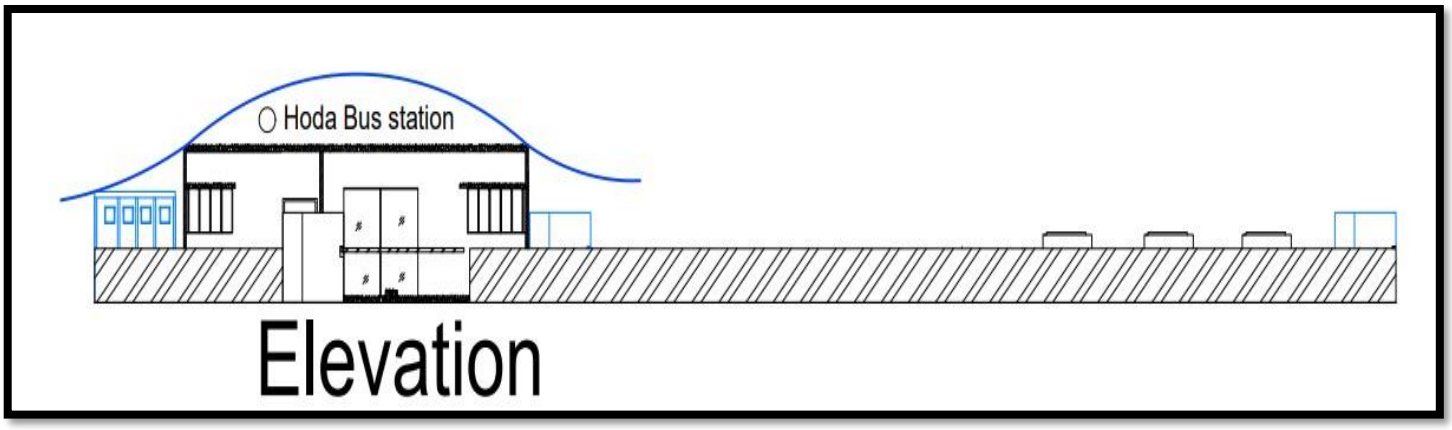
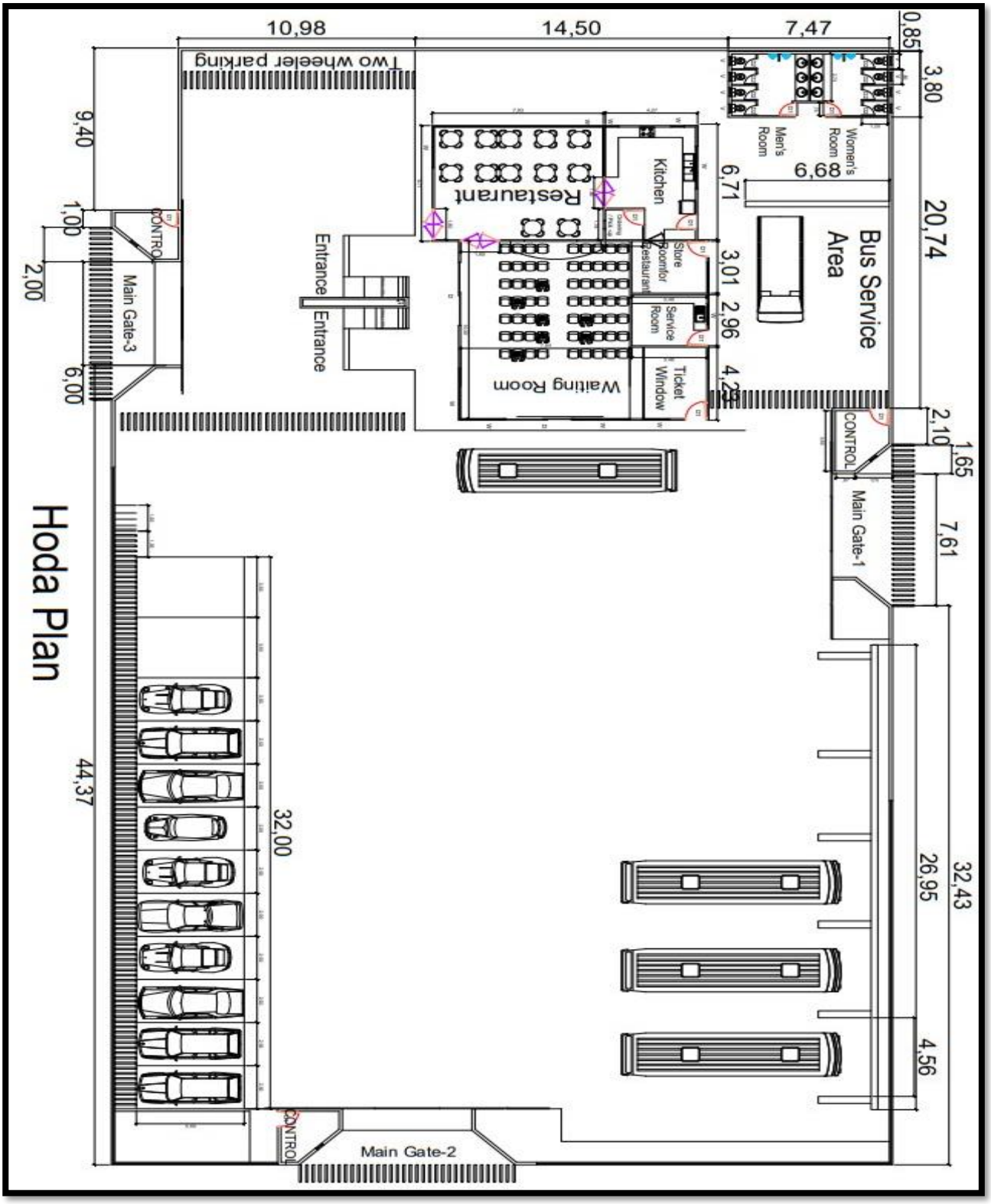


Fig 8.1.7 HODA Gam Bus station elevation (AUTO-CAD)

Proposed Design of Bus station in Auto cad and Sketch-up:

Fig 8.1.8 HODA Gam Bus station Section (AUTO-CAD)



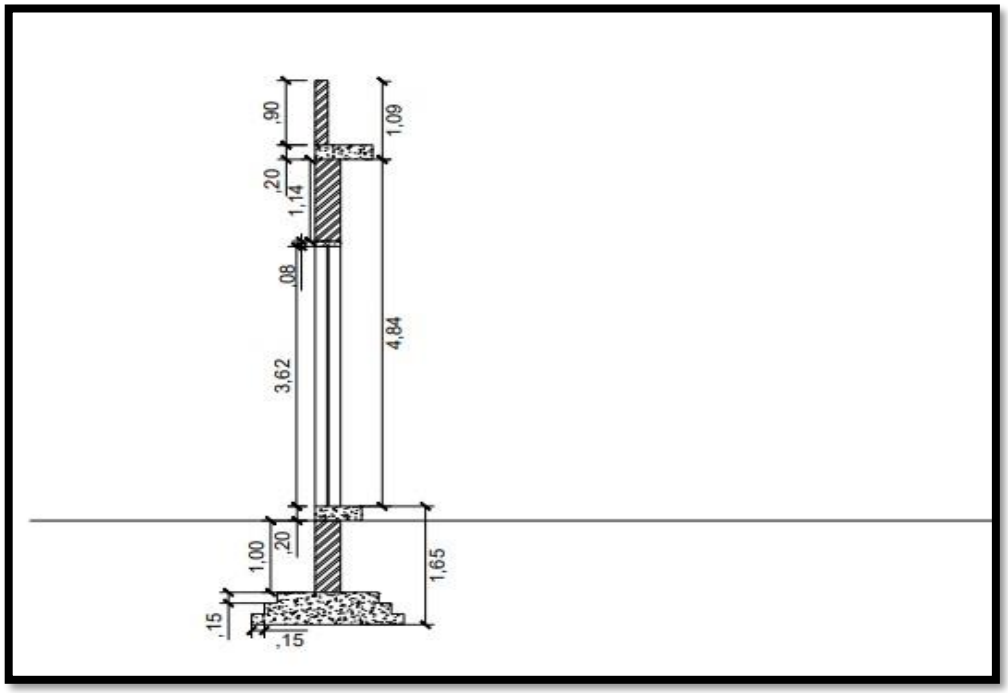


Fig 8.1.9 HODA Gam Bus station Section (AUTO-CAD)

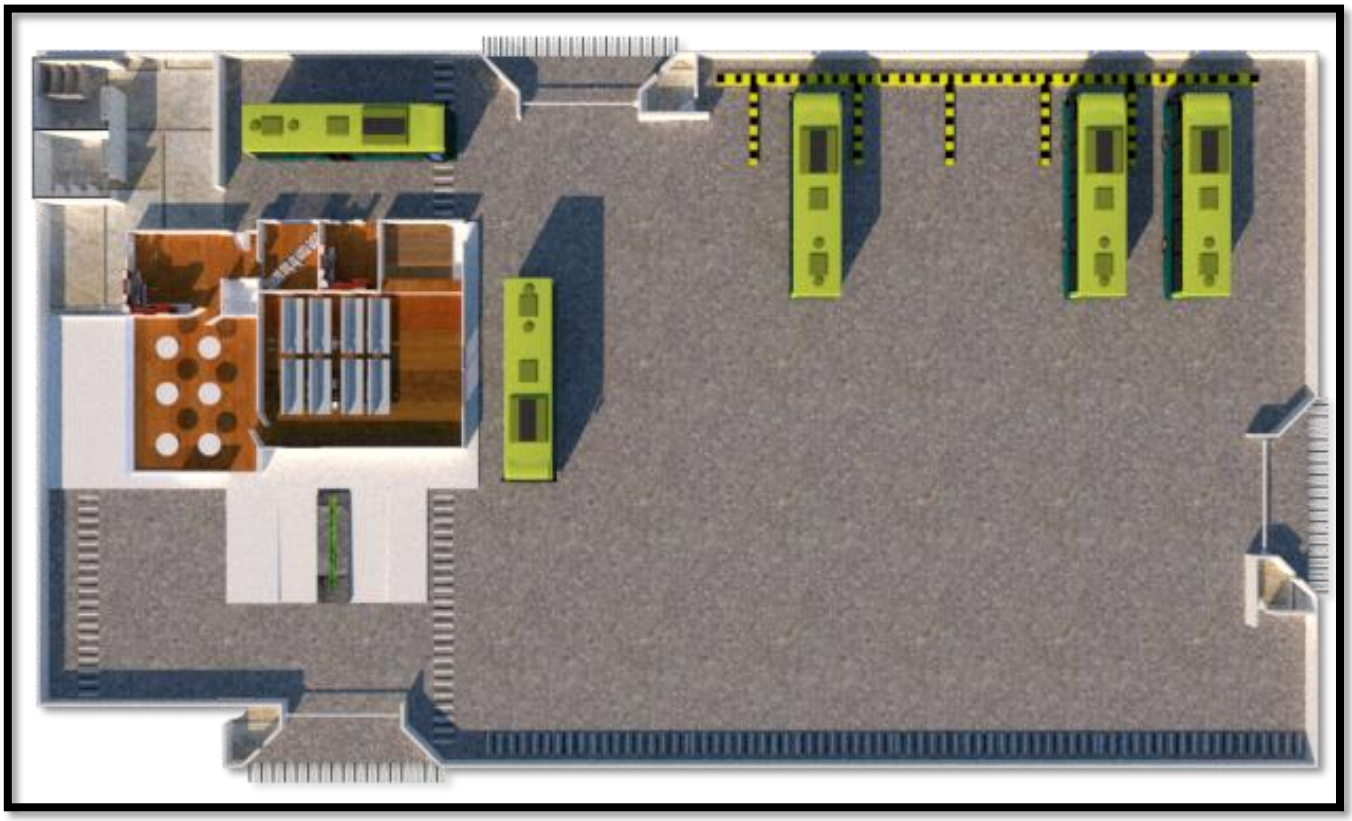


Fig 8.1.10 HODA Gam Bus station (Sketch -Up)

MEASUREMENT SHEET FOR BUS STATION (Table 8.1.5)

Item	No.	L	B	H	Quantity
Total center line=167.4					
Excavation	-	155.5	1.7	1.45	383.30
PCC		155.5	1.7	0.15	39.65
Brick upto plinth level					
(1) Foundatio		155.5	1.7	0.15	39.65
(2) 1.4 width		157.6	1.4	0.15	33.09
(3) 1.1 width		159.7	1.1	0.15	26.35
(4) 0.3 width		165.3	0.3	0.15	7.43
					Sum=106.52m3
Bricks in superstructure		165.3	0.3	6.13	303.98
Deduction					
(1) D1	9	1.0	0.3	1.2	3.24
(2) D	3	3.0	0.3	3.62	9.77
(3) D2	4	0.7	0.3	1.1	0.924
(4) W1		7.93	0.3	0.7	1.66
(5) W2	3	1.0	0.3	0.7	0.63
(6) W3	2	1.2	0.3	0.7	4.45
(7) W4		0.7	0.3	0.7	0.147
(8) W5		0.6	0.3	0.7	0.126
(9) W6	2	0.4	0.3	0.7	5.544
Ventilation	8	0.4	0.3	0.3	0.288
Lintel	1		0.3	0.8	0.288
					Total Brick work in superstructure=(Net Brick work) - (Deduction) =276.91m3
Compond wall		143.09	0.3	2.0	85.85
Four Wheeler Parking Shed		32	5.0		160m2
Two Wheeler Parking Shed		10.98	1.9		20.86m2
Bus Parking		26.95	4.56		122.89m2
RCC(Main Area)		12.2	16.91	0.2	41.26
•RCC(Toilet)		7.47	3.80	0.2	5.67
RCC(Control room)		3.50	2.57	0.2	1.79
					Sum=48.72

ABSTRACT SHEET FOR BUS STATION (Table 8.1.6)

Item	Quantity(m3)	Rate	Per	Amount
Excavation	383.30	90/-	M3	34497
PCC Work	39.65	3000/-	M3	118950
RCC Work	48.72	8800/-	M3	428736
Brick Work	383.43	3300/-	M3	1265319
Compound wall	85.85	200/-	M3	17170
Parking shed	180.86	180/-	M2	32555
Brick Work in(Bus parking)	122.89	190	M2	11060
				Sum=1908287

Total Cost = 1908287+ 5% water charge (95414.35)

=**2003701.35**

8.1.4 Sustainable Design: Public toilet

Scenario :

In hoda village, there were no public toilet. It is important for environment and surrounding to have at least one public toilet in town. There for we provided public toilet here.

Sustainability of the design:

Public toilet as an important tool:

Design Utilized by,

All the people living in the village of even outsiders from nearby villages and relatives of the villagers can use or utilize a supermarket for their different uses.

Needs:

Sitting Arrangement , Bus stop, Bag holders

Public toilet office

Length: 10m ; Width : 5m

Built up: 50m^2

Height : 3m Carpet area : 35 m^2

Proposed Design of Public toilet in Auto cad and Sketch-up:

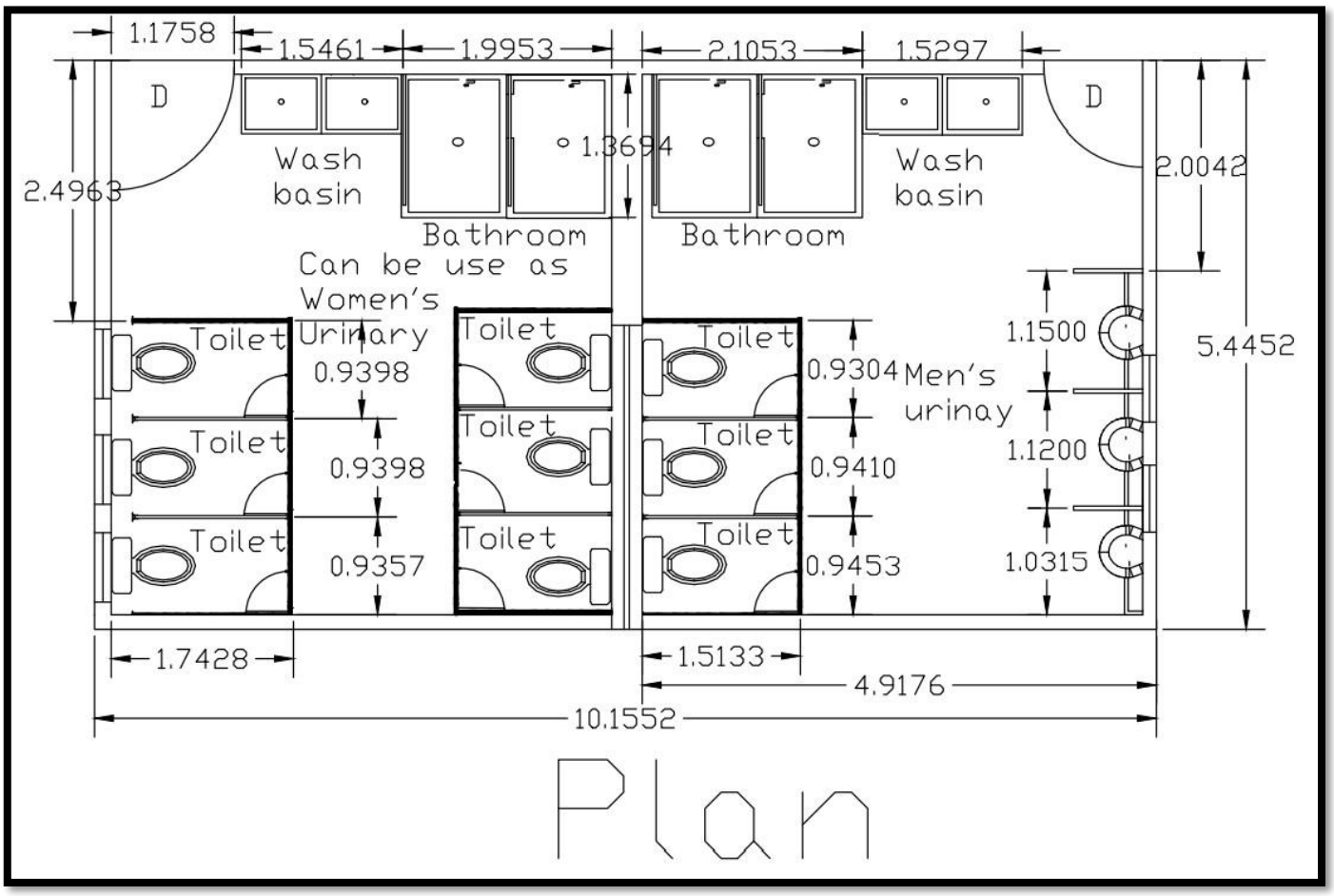


Fig 8.1.11 PLAN Public Toilet in Hoda gam Plan (Auto-CAD)

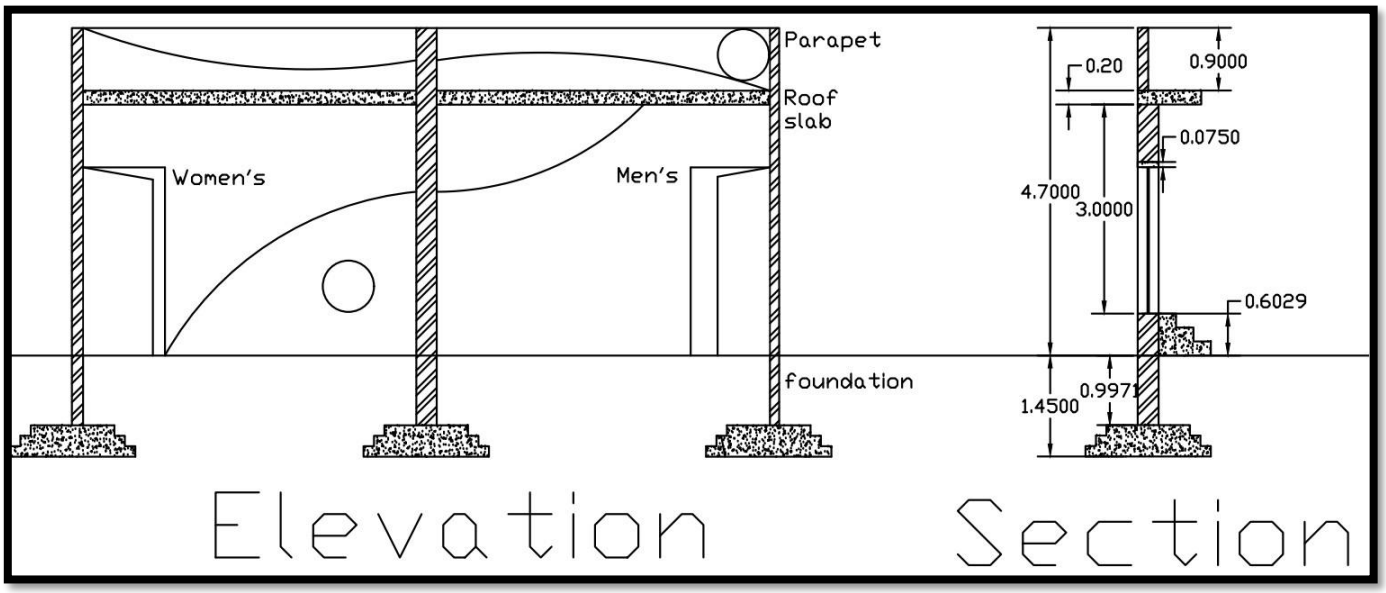


Fig 8.1.12 ELEVATION & SECTION Public Toilet in Hoda gram (Sketch- Up)

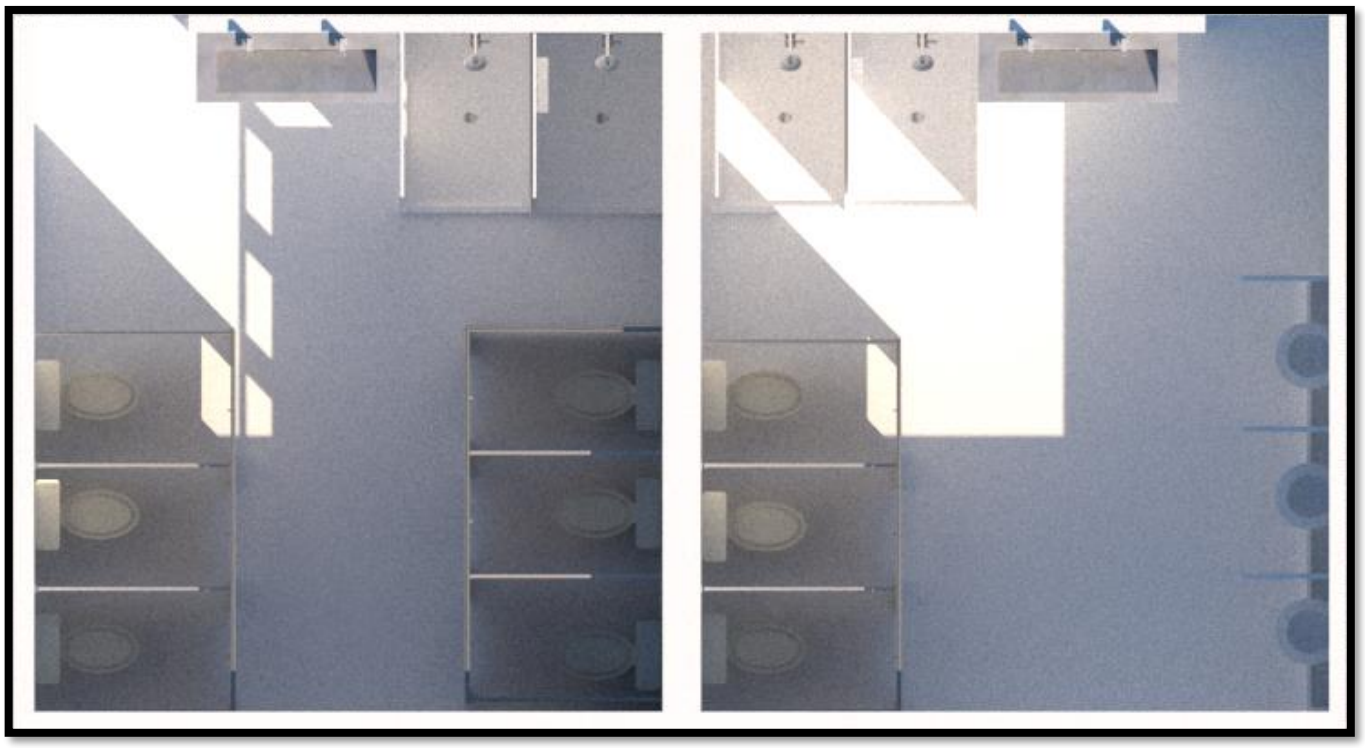


Fig 8.1.13 3D view of hoda public toilet (sketch-UP)

MEASUREMENT SHEET OF PUBLIC TOILET (Table 8.1.7)

Item	No	L	B	H	Quantity(m3)
Total Center Line Lengh=69.49m					
Excavation		51.49	1.2	1.45	89.59m3
PCC		51.49	1.2	0.15	9.26m3
Brick Work Up to Plinth					
In Foundation		51.49	1.2	0.15	9.26
(1) (0.9) width		55.99	0.9	0.15	7.55
(2) (0.6) width		60.49	0.6	0.15	5.11
(3) (0.2) width		66.49	0.2	1.06	14.09
Steps					
1st		1.0	0.2	0.17	0.034
2nd		1.0	0.4	0.17	0.068
3rd		1.0	0.6	0.17	0.102

					Sum of total Quantity=36.54m3
Brick Work in superstructure		66.49	0.2	4.1	54.52
Deduction					
Door	13	0.5	0.1	1.0	0.65
Ventilator	5	0.5	0.1	0.4	0.1
Main door	2	1.17	0.2	1.1	0.25
Lintel		0.2	0.075	1.9	0.0285
					Total Brick work in superstructure= (Brick work in superstructure) - (Deduction) =**53.49m3**
RCC work		10.15	5.44	0.20	11.04

ABSTRACT SHEET OF PUBLIC TOILET (Table 8.1.8)

Item	**Quantity(m3)**	**Rate**	**Per**	**Amount**
Excavation	89.59	90/-	M3	8063
PCC Work	9.29	3000/-	M3	27870
RCC Work	11.04	8800/-	M3	97152
Brick Work	90.03	3300/-	M3	297990
				Sum=4,31, 075

Total Cost = 4,31,075+ 5% water charge (21,553)

= **452628**

8.1.5 Smart Village Design : Modern all in one sports ground

Scenario : Hoda and surrounding Villages do not have any facilities for playing sports . Sports is part of life and exercise should be habit. With that moto we should provide khel vikas ground.t is made of steel or iron and can be treat as many as ground possible.as discussed below it can be football ground , tennis court, basketball ground, cricket practice pitch volleyball ground skating ring etc.

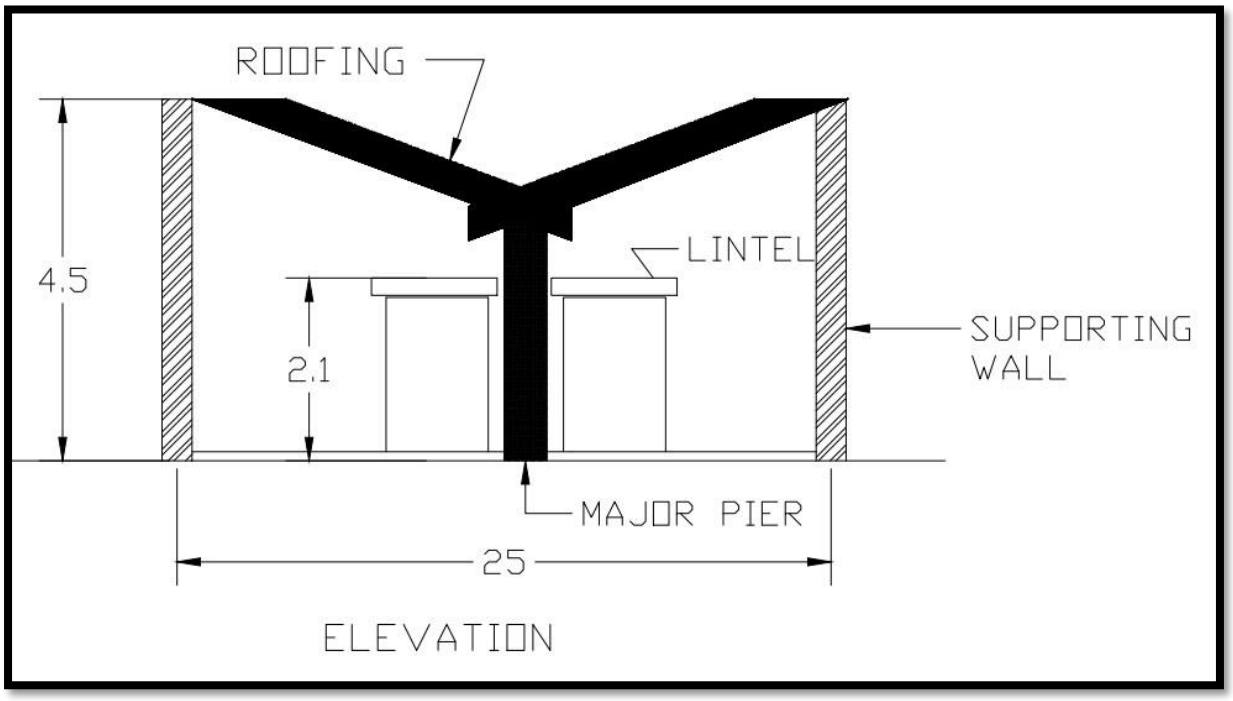


Fig 8.1.14 ELEVATION view of Sports complex (Auto-cad)

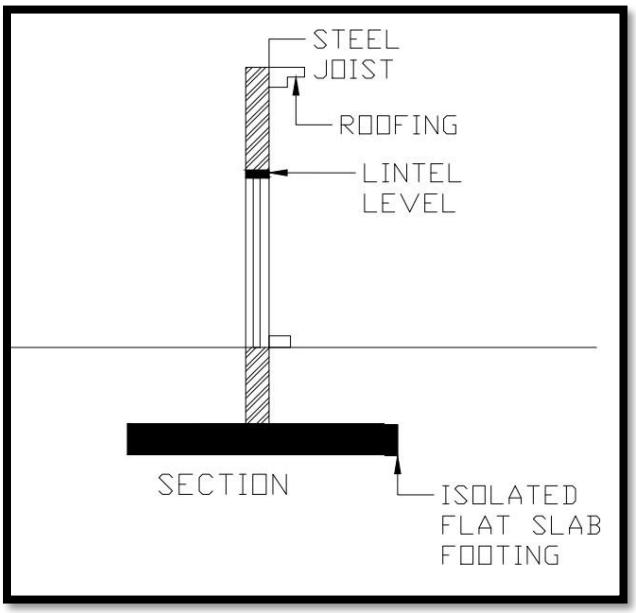


Fig 8.1.15 SECTION view of Sports complex (Auto-cad)

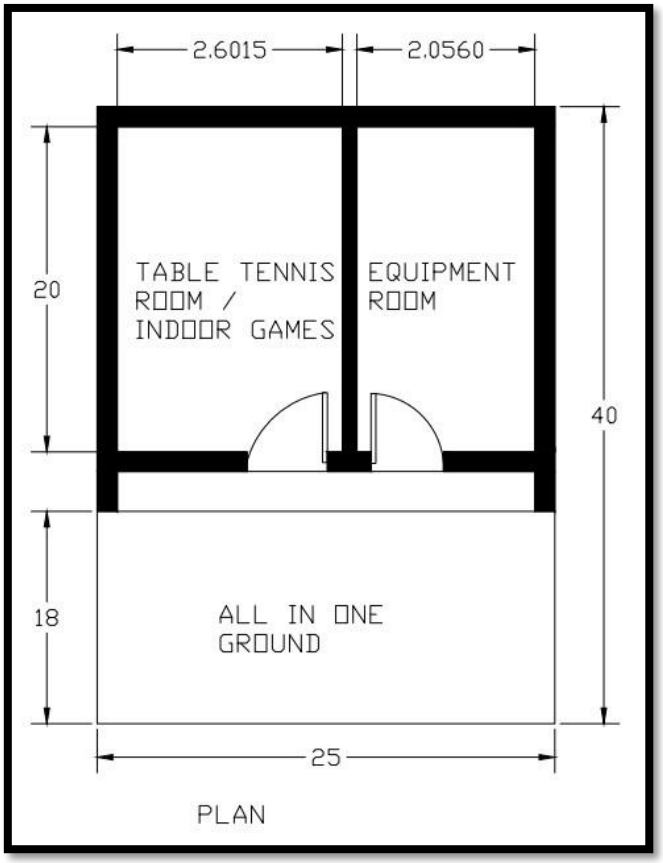
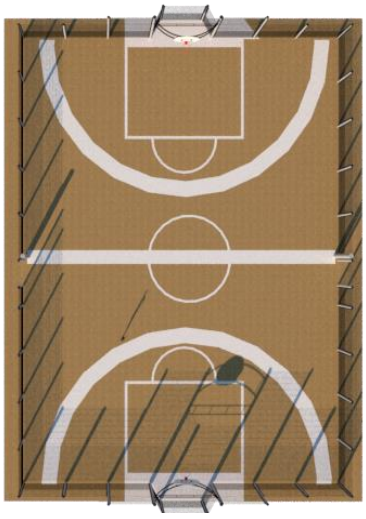


Fig 8.1.16 PLAN view of Sports complex (Auto-cad)

One ground has this following sub grounds such as: (ALL-IN-ONE GROUND)



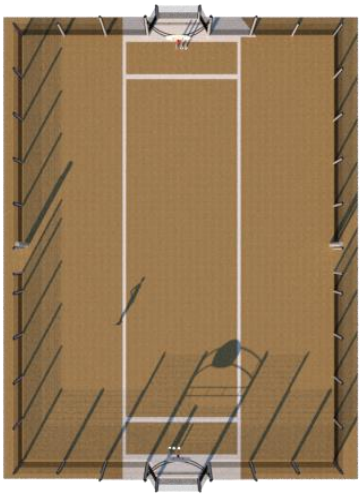


Fig 8.1.17 Football ground Fig 8.1.18 Basketball Ground Fig 8.1.19 Cricket pitch

Fig 8.1.20 Skating ring Fig 8.1.21 Volleyball Fig 8.1.22 tennis court

MEASUREMENT SHEET PLAY GROUND (Table 8.1.9)

Item	No	L	B	H	Quantity(m3)
RCC	3	25.12	18.60		467.23 m^3
Excavation	-	40	1	0.7	28
Brick work	3	22	0.3	4.5	89.1
	2	25	0.3	4.5	67.5
Deductions					
Windows	5	2.1	0.9	1.5	14.175
Door	2	1.2	0.9	2.1	4.536
Lintels	2	1.5	0.9	0.75	2.025
Compound work					
Steel support		87.44m			87.44runing Meter
Steel mesh		87.44m			87.44runing Meter

ABSTRACT SHEET FOR PLAY GROUND (Table 8.1.10)

Item	Quantity(m)	Rate	Per	Amount
RCC Work	467.23m2	1500/-	M3	70085/-
Fixing Of steel support	87.44Runing Meter	70/-	runing meter	6120/-
Bricks	157	800/-	M3	125600/-
Door	2			5000/-

Window	5	-	-	15000/-
Roofing material	2 sloped roof	-	-	25000/-
Ventilators	2	-	-	50000/-
Sports Equipments	-	-	-	10000/-
				Sum= 306805/-

Total Cost= 306805 + 5% water charge (15340)

= **3,22,146**/-

8.1.6 Heritage Village Design : Entrance Gate

Scenario :

In hoda village, there were no Entrance Gate. It is important for environment and surrounding to have at least one Entrance gate in town. There for we provided Entrance gate.

Sustainability of the design:

Entrance gate as an architectural :

Design Utilized by,

All the people living in the village of even outsiders from nearby villages and relatives of the villagers can use or utilize a supermarket for their different uses.

Hoda entrance gate

Length: 5m ; Width : 1.5m :

Height : 6.5m

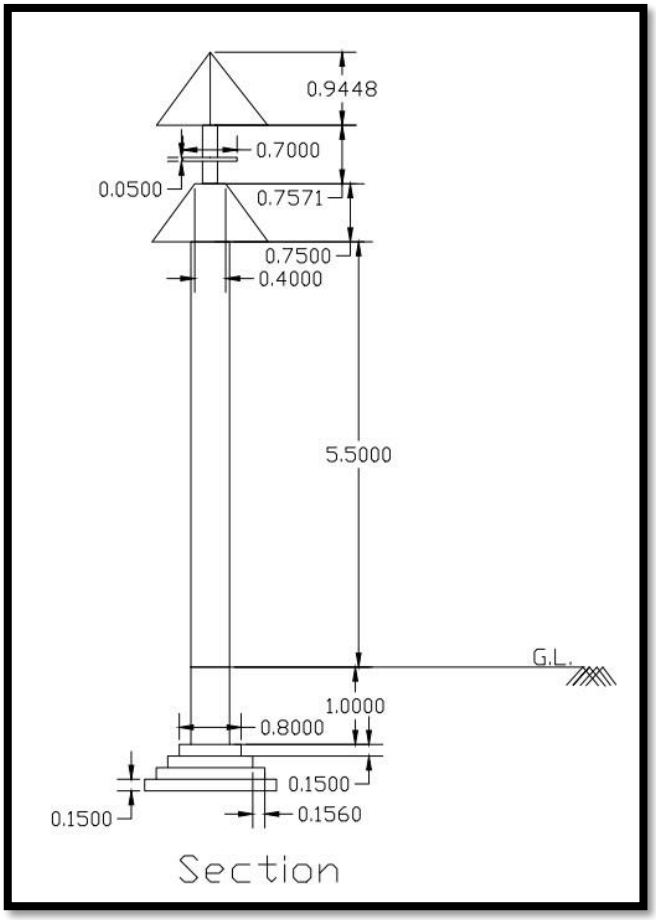


Fig 8.1.22 Hoda Village gate SECTION

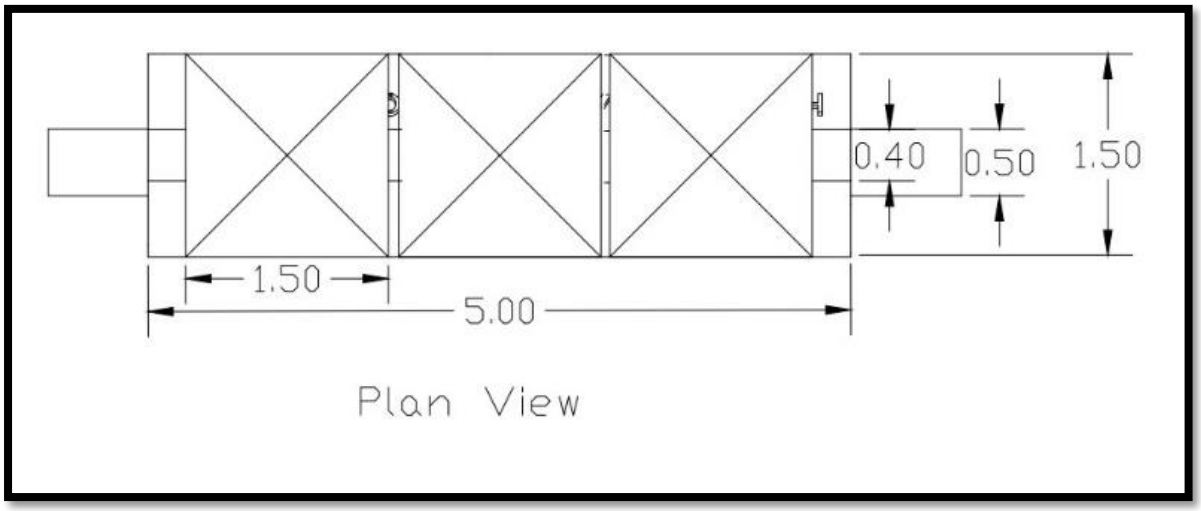


Fig 8.1.23 HODA Village gate PLAN

Fig 8.1.24 Hoda Village gate ELEVATION & 3D (Sketch-up)

MEASUREMENT SHEET OF ENTRANCE GATE (Table 8.1.11)

Item	**No.**	**L (m)**	**W (m)**	**D (m)**	**Quantity (m^3)**
Excavation		7	1	2	14
Large Column (Brick work)	2	0.75	0.5	5.5	2.062
Circular Column (Brick work)	2	0.45	0.45	5.5	0.87
Trapezoidal beam (RCC)	1	5	1.5	0.75	5.5
Top Circular column (Brick work)	1	0.35	0.35	0.70	0.096
Pyramid (Brick work)	3	1.2	1.2	1	0.48

ABSTRACT SHEET OF PUBLIC ENTRANCE GATE (Table 8.1.12)

Item	**Quantity**	**Rate**	**per**	**Amount**
Excavation	14	90/-	m^3	1260/-
PCC Work	-	-	-	-
RCC work	5.5	8000/-	m^3	44000/-
Brick Work	3.5	3500/-	m^3	12250/-

Total Cost= 57,510 + 5% water charge (2875.5) = **60,385.5/-**

8.2 Reason for Students Recommending this Design :

- ***Socio – cultural: Public Library***

Increases literacy, people's life style, Knowledge building, Awareness about new technological detail

- ***Physical design: Gram Panchayat***

Increases utility, it is the first structure of town and create different impact, it has storage unit for panchayat which is usable for ration storing or cycle or any other product. More over different structure helps staff to work in peace full manner.

- ***Social Design: Bus station***

It creates first impression on arrival person so there is strong need of nice bus station old station is not in proper condition.

- ***Sustainable Design: Public toilet***

It is essential to have at least one public toilet in town, for sanitation and hygiene condition of people.

- ***Smart Village Design: Khel viksa ground- multiple play grounds***

Hoda and surrounding Villages do not have any facilities for playing sports. Sports is part of life and exercise should be habit. With that moto we should provide khel vikas ground.

- ***Heritage Village Design: Entrance Gate***

We are providing Entrance gate in hoda Village for the better aesthetic of the village main entrance.

8.3 About designs Suggestions / Benefit of the villagers

- ***Socio – cultural: Public Library***

Hoda village have more than 500 students and 2098 people in town. So it is essential to provide public library.

- ***Physical design: Gram Panchayat***

Increases utility, it is the first structure of town and create different impact, it has storage unit for panchayat which is usable for ration storing or cycle or any other product. More over different structure helps staff to work in peace full manner.

- ***Social Design: Bus station***

It creates first impression on arrival person so there is strong need of nice bus station old station is not in proper condition.

- ***Sustainable Design: Public toilet***

It is essential to have at least one public toilet in town, for sanitation and hygiene condition of people.

- ***Smart Village Design: Khel viksa ground- multiple play grounds***

Hoda and surrounding Villages do not have any facilities for playing sports. Sports is part of life and exercise should be habit. With that moto we should provide khel vikas ground.

- ***Heritage Village Design: Entrance Gate***

The Hoda village has no main entrance gate at the village approach road. So that we have designed the village entrance gate as heritage village design.

8.4 About Maintenance

Maintenance can help:

- Prevent the process of decay and degradation.
- Maintain structural stability and safety.
- Prevent unnecessary damage from the weather or from general usage.
- Optimise performance.
- Determine the causes of defects and so help prevent re-occurrence or repetition.
- Ensure continued compliance with statutory requirements.

For maintenance to be most effective, it should be organized through a programme of cyclical maintenance. At the most basic level this includes daily routines, and works upwards to periodic programmes of weekly, monthly, semi-annual, annual, quinquennial and so on routines.

Common maintenance tasks include:

- Exterior painting and plastering.
- Landscaping and gardening.
- Paving repairs.
- Window and door repairs.
- Debris/rubbish removal and clearance.
- Jet washing with chemical cleaning agents to remove fungal stain or mould.
- Gutter clearance and repair.
- Carpentry.
- Lighting repairs.
- Re-plastering and plaster repairs.
- Tiling.
- Carpeting and flooring.
- Plumbing.
- Repairing cracking or leaning walls.

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

For the future development we will provide estimation of each design given above and following:

Heritage village design : Public Garden

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

Physical design : Bank

Currently, In hoda village bank, gram panchayat and a dairy in one building. It is quite confusing for new users and totally inappropriate according to design. So in next part we are going to submit BANK Design.

Social design : Over bridge (Gam tal to para)

Hoda village is divided in two major regions one the most populated is Gam tal of hoda and other is Para region. Foot over bridge is quite uneconomical for village but we feel it will help our villagers to move their Cattels and heavy meal in one go.

Socio-Cultural design : Skill Development Center

There is no any child development or maternity home or skill development center in the Hoda village but for the better development of students and children there should be one skill development center in the village.

Smart village design: Green house

For the smart development of the Hoda village we have proposed the smart concepts as Computer lab and Student can learn from best teacher that's why wifi is essential.

Physical Design: Swimming Pool

For living in rural area swimming pool and refreshment arena will be attractive thing. Swimming pool will be much more relaxing and it will motivate swimming as a sport too.

Chapter 10. Conclusion of the Entire Village Activities of the Project

• Through this project we have tried to develop Rural area(Undeveloped) area.

•The main solution of development of the rural area is increase Employment because employment is the key point which is increase the living standard of the people.

•As a civil engineer student our main focus in this project is data collection and visit allocated as well as ideal village.

• Through visit we have seen what type of actual problems faces by the villagers. Then we analyse that data and give proper design of the structure as well as some basic amenities which is increse the living standard of the villagers.

•The main solution of development of the rural area is increase Employment because employment is the key point which is increse the living standard of the people.

•As well as increase basic primary amenities which is required for the development of the village as well as development living standard of the people.

•As a civil engineer student our main focus in this project is data collection and visit allocated as well as ideal village.

• Through visit we have seen what type of actual problems faces by the villagers. Then we analyse that data and give proper design of the structure as well as some basic amenities which is increse the living standard of the villagers.

•In a hoda village there are housing condition of the villagers are well but there are no available of,

(1) Bus station	**(2) Public Garden**	**(3) Public Toilet**
(4) Gram Panchayat	**(5) Khel vikas ground**	**(6) Hoda entrance gate**

So, through visit and analyse the data , compare with the smart and ideal village we give these design which is hepls to improve the living standard of the people.

•After interaction with sarpanch Or talati we get information about available grants for the development of the village and we give these design.

•Vishwakarma yojana project give us the practical knowledge of the some existing structure as well as it also give brief information about, what are the procedures carry out when we construct any existing structure.

• So this project is very helpful for our in present time as well as in future time.

Chapter 11.References refereed for this Project

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- **www.onefivenine.com**
- **www.censusgujarat.gov.in**
- **www.census2011.com**
- **www.indikosh.com**
- **www.wikipedia.com**
- **GTU guidelines and briefings**
- **URDPFI norms**
- **www.censusindia.gov.in**
- **www.researchgate.net**
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- **https://sarkariyojana.com/gujarat/**
- **https://statueofunity.in/**
- **http://www.larsentoubro.com/corporate/products-and-services/sardar-patel/the- statue-of- unity/**

CHAPTER 12. ANNEXURE ATTACHMENT

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

Gujarat Technological University, Ahmedabad, Gujarat — Vishwakarma Yojana: Phase VIII Techno Economic Survey

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	Fadvel
Name of Taluka:	Chikhli
Name of District:	Navsari
Name of Institute:	Vishwakarma Government Engineering College, Chandkheda
Nodal Officer Name & Contact Detail:	Prof. Ketan L. Tirmani sir
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Hareshbhai Patel - Sarpanch (Fadvel)
Date of Survey:	

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	4789	2467	2322	—
ii)	2011	5320	2706	2614	1175

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	1281.65 ha. 20.7447°N 73.1763°E
	Forest Area (In hect.)	—
	Agricultural Land Area (In hect.)	1065 ha.
	Residential Area (In hect.)	Approx 216 ha.
	Other Area (In hect.)	Non Agricultural land - 15 ha.
	Water bodies	Tube & Borewell, Watertank
	Nearest Town with Distance:	Chikhli 15 km

3. Occupational Details:

Name of Three Major Occupation groups in Village	1. Agriculture Farming 2. Dairy, Animal Husbandry 3. Shopkeeping

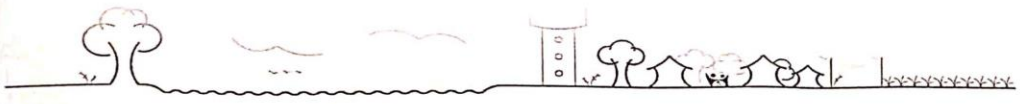
4. Physical Infrastructure Facilities:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated)	Yes			—
	• RO Water	NO			—
	• Well (Covered/ Uncovered)	Yes	✓		4
	• Hand pumps	Yes		✓	6
	• Tube well/ Borehole	Yes	✓		3
	• River/ Canal/ Spring/ Lake/ Pond	Yes	✓		2
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: Max. 1.5lac.	✓		2
	Underground Sump	Capacity: Max. 1.01ac.	✓		2
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	Yes	✓		—
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	60 % closed	✓		—
	If Open than Pucca / Kutchcha	Kutchcha			-
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	Yes	✓		-
Suggestions if any:					

	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		-
	Renewable Energy Source Facilities (Y/ N)	No			-
	LED Facilities	No			-
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	No	-		-
	Location Condition	-			
	Community Toilet (With bath/ without bath facilities)	No			
	Solid & liquid waste Disposal system available	No			
	Any facility for Waste collection from road	No	-		-
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Watertank, Tubewell, Boring	✓		-
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	90% Pucca 10% Kutchha	-		-

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks



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Vishwakarma Yojana: Phase VIII
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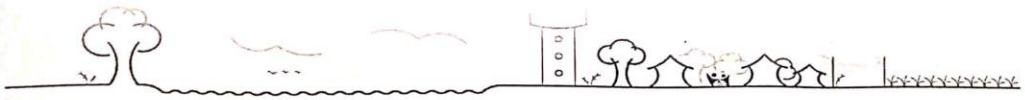
K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	PHC NO	✓ -		- -
	Private Clinic/Private Hospital/ Nursing Home	All available	✓		-
	If any of the above Facility is not available in village than approx. distance from village: ..15.....kms.				
Suggestions if any: Requirement OF Govt. Hospital.					
L.	**Education Facilities:**				
	Aaganwadi/ Play group	Yes	✓		2
	Primary School	Yes	✓		3
	Secondary school	Yes	✓		1
	Higher sec. School	Yes	✓		1
	ITI college/ vocational Training Center	NO			-
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	NO			-
	If any of the above Facility is not available in village than approx. distance from village: ..12...kms.				
Suggestions if any:					
M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	NO	-		-



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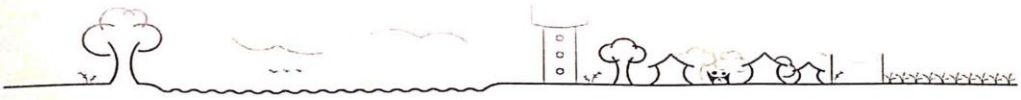
	Condition:	–			–
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	NO	–		–
	Public Garden Location: Condition:	Yes	✓		–
	Village Pond Location: Condition:	Yes	✓		–
	Recreation Center Location: Condition:	Yes	✓		–
	Cinema/ Video Hall Location: Condition:	NO			
	Assembly Polling Station Location: Condition:	Yes primary school	✓		–
	Birth & Death Registration Office Location: Condition:	Yes panchayat office	✓		–
If any of the above Facility is not available in village than approx. distance from village: ..15...kms.					
Suggestions if any: Requirement of Library.					
N.	**Other Facilities**				
	Post-office	Yes	✓		–
	Telecommunication Network/ STD booth	Yes	✓		–



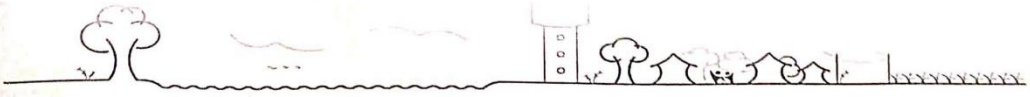
	General Market	Yes	✓		–
	Shops (Public Distribution System)	Yes	✓		–
	Panchayat Building	Yes	✓		–
	Pharmacy/Medical Shop	Yes	✓		–
	Bank & ATM Facility	Yes	✓		–
	Agriculture Co-operative Society	No			–
	Milk Co-operative Soc.	Yes	✓		–
	Small Scale Industries	No	–		–
	Internet Cafes/ Common Service Center/Wi 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	No private solar system is need	-	–	–
P.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	No No No	-	–	–
Q.	Any Other	–	–	–	–

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	Not available in the panchayat office.



Recent Projects going on for Development of Village	No
Any NGO working for village development	No

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 Existing structures are in good condition.	–
2.	Additional Information/ Requirement	No other information requirement	–
		–	–
		–	–

9. **Smart Village Proposal Design**

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Pubic Toilets, Rainwater harvesting	Possible Development	–

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

ગ્રામ પંચાયત ફડવેલ તા. ચીખલી જિ. નવસારી

સરપચશ્રી,
ગ્રામ પંચાયત ફડવેલ
ચીખલી. જી નવસારી

12.2 Survey Form of Smart Village Scanned Copy Attachment In Report For Part -I

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	Sabar Kantha
Name of Taluka:	Talod
Name of Village:	Punsari
Name of Institute:	VGEC- Chandkheda
Nodal Officer Name & Contact Detail:	Prof. K.L. Timani
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sarpanch: Sunandaben Patel
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	4400	2288	2112	980
2.	2011	5100	2653	2447	1109

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	506 ha
2.	Forest Area (In hect.)	211.8
3.	Agricultural Land Area (In hect.)	6 ha
4.	Residential Area (In hect.)	600 ha
5.	Other Area (In hect.)	106 ha
6.	Distance to the nearest railway station (in kilometers):	Talod: 14 Km

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Suggestions if any:

B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	1,50,000/-	-	-
	Underground Sump	Capacity:	No	-	-

Suggestions if any:

C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	- ✓			Remarks: open with outlet

Suggestions if any:

D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Yes	✓		Pucca
	Main road	Yes	✓		Pucca
	Internal streets	Yes	✓		Pucca WBM
	Nearest NH/SH/MDR/ODR Dist. in kms.	Yes (6-Km)	✓		Pucca

Suggestions if any:

E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No			Taluka 9th Km
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes			within village
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes			Jeep, private vehicle, Bus (available)

Suggestions if any:

F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	more than 6 hours)			PGVCL - Electricity

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

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

	Power supply for Domestic Use	Yes	✓		
	Power supply for Agricultural Use	Yes	✓		
	Power supply for Commercial Use	Yes	✓		
	Road/ Street Lights	Yes	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	No			
	LED Facilities	No			
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	Yes			
	Location Condition	Nice			
	Community Toilet (With bath/ without bath facilities)	Yes			
	Solid & liquid waste Disposal system available	Yes			
	Any facility for Waste collection from road	Yes			Door to Door Collection System
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND	Yes	✓		
	STREAM/RIVER	No			
	CANAL	No			
	WELL	Yes	✓		
	TUBE WELL.	Yes	✓		
	OTHER (SPECIFY)	Yes	✓		
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Both			Pucca - 65% Kutcha - 35%

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

Suggestions if any:

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

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:

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

If any of the above Facility is not available in village than approx. distance from village: 20....kms.

Suggestions if any:

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

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	Punsri- adopted Bio-plant for generation of electricity	✓	-	-
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	Bio-gas Solar-lights CCTV	✓	-	-
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	-	✓	-	available
2.	Recent Projects going on for Development of Village	-	✓	-	-
3.	Any NGO working for village development	-	-	-	a village with good leadership
4.	Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY)	-	-	-	Not yet

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

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

8. Additional Information/ Requirement:

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

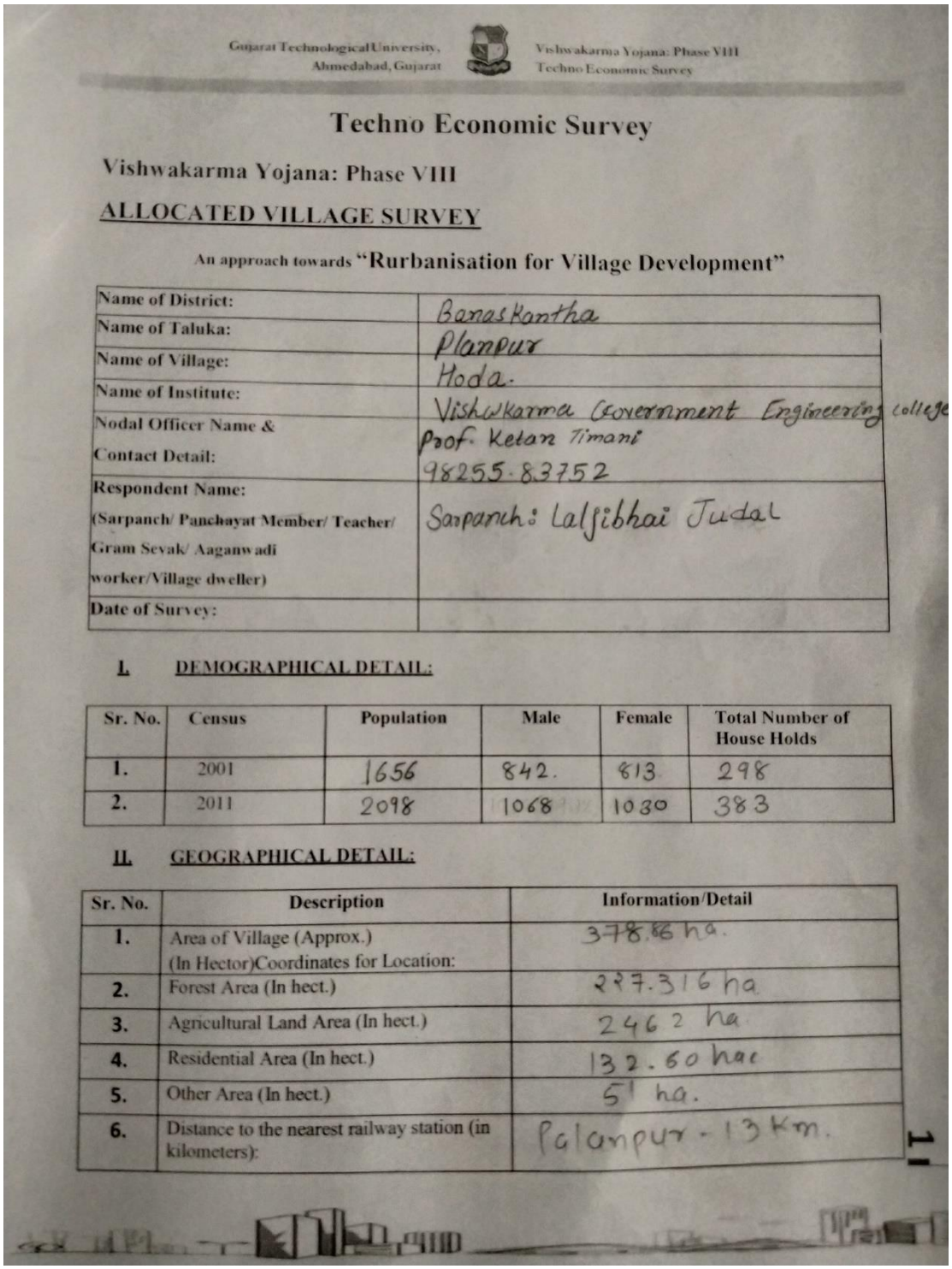
9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

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

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

12.3 Survey Form of Allocated Village Scanned Copy Attachment In the Report



Gujarat Technological University, Ahmedabad, Gujarat

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:	Banaskantha
Name of Taluka:	Palanpur
Name of Village:	Hoda.
Name of Institute:	Vishwkarma Government Engineering college
Nodal Officer Name & Contact Detail:	Prof. Ketan Timani 98255-83752
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sarpanch: Lalsibhai Judal
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	1656	842.	813	298
2.	2011	2098	1068	1030	383

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	378.86 ha.
2.	Forest Area (In hect.)	227.316 ha
3.	Agricultural Land Area (In hect.)	246.2 ha.
4.	Residential Area (In hect.)	132.60 hac
5.	Other Area (In hect.)	51 ha.
6.	Distance to the nearest railway station (in kilometers):	Palanpur - 13 Km.

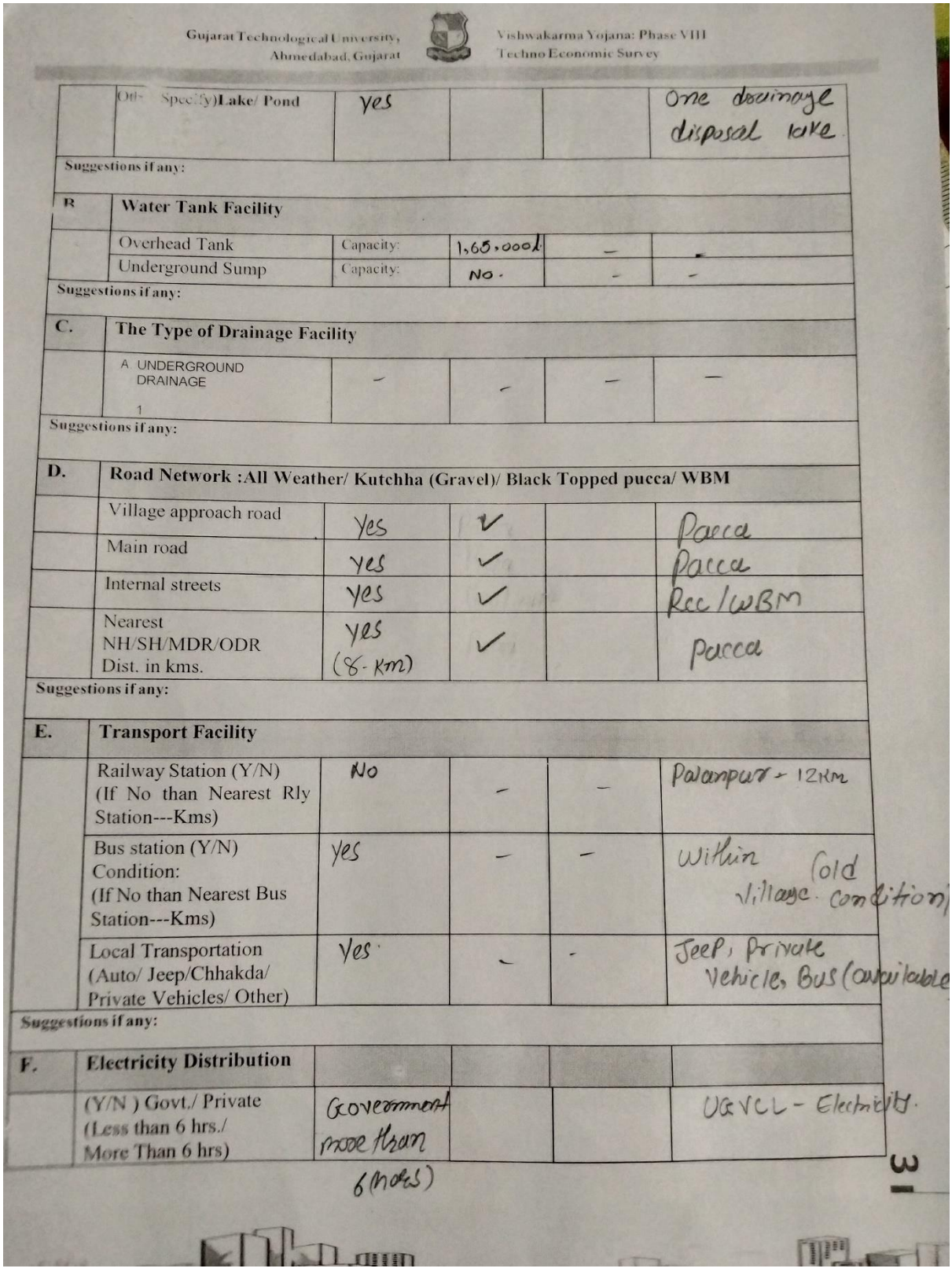
7.	Name of Nearest Town with Distance:	Palanpur - 10 km
8.	Distance to the nearest bus station (in kilometers):	palanpur. 12 km
9.	Whether village is connected to all road for the any facility or town or City?	yes.

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. Agriculture 2. Animal husbandry 3. Some people are connected with industry and handcraft
Major crops grown in the village:	1. bajra 2. Groundnuts 3. Castor, etc...

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
1.	**PIPED WATER** Piped Into Dwelling Piped To Yard/Plot Public Tap/Standpipe Tube Well Or Bore Well	Yes	✓	–	Sufficient Volume of Water Poovided to Villageos.
2.	**DUG WELL** Protected Well Un Protected Well	Yes	✓	–	–
3.	**WATER FROM SPRING** Protected Spring Unprotected Spring	No	–	–	–
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water Hand Pump	Yes	–	✓	(5-dead lacks) lakes were formed geologically but water couldn't Sustain in any season



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	Oth- Specify) Lake/ Pond	Yes			One drainage disposal lake

Suggestions if any:

B	Water Tank Facility				
	Overhead Tank	Capacity:	1,65,000L	–	–
	Underground Sump	Capacity:	No.	–	–

Suggestions if any:

C.	The Type of Drainage Facility				
	A UNDERGROUND DRAINAGE 1	–	–	–	–

Suggestions if any:

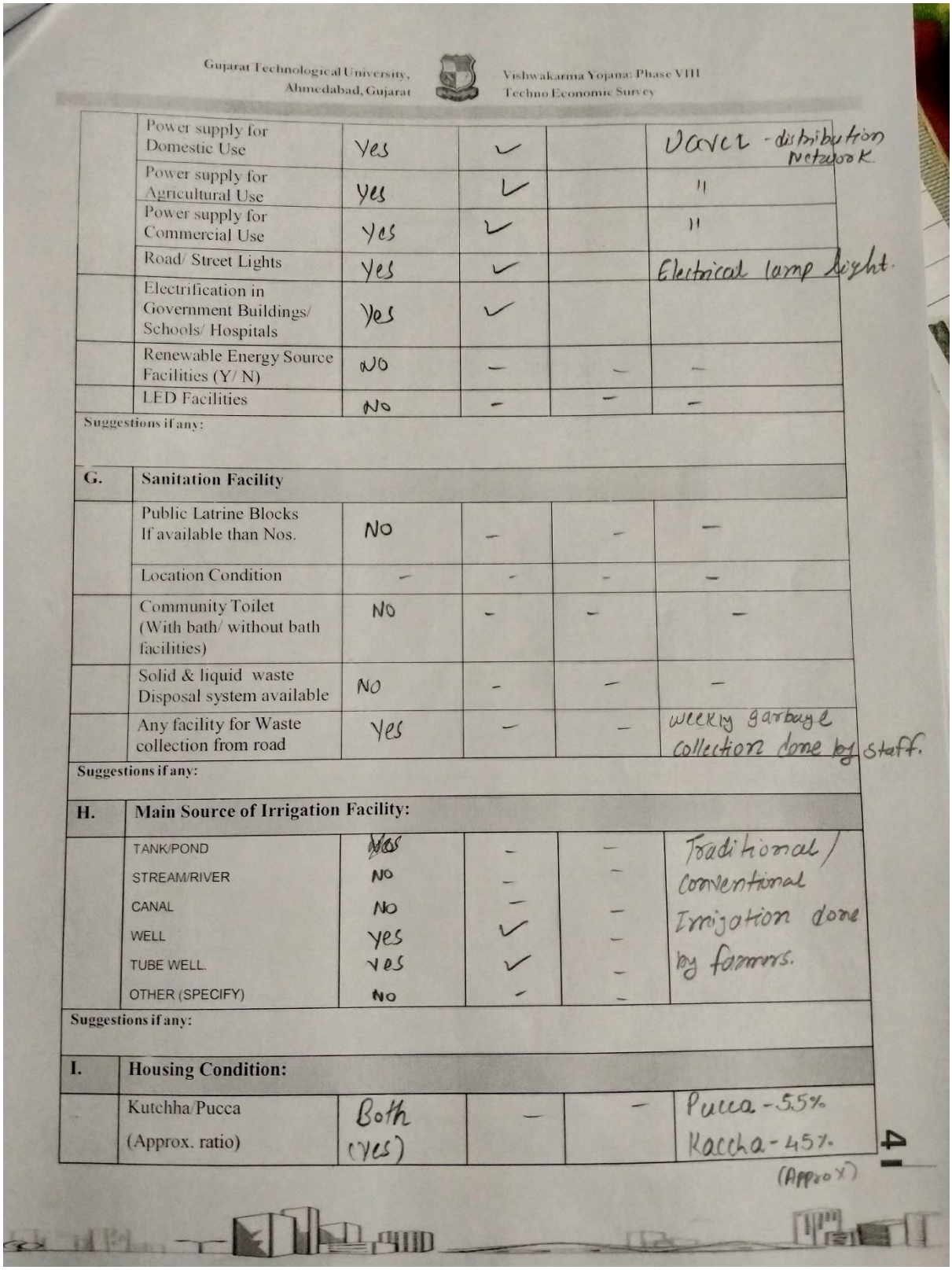
D.	Road Network : All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	Yes	✓		Pacca
	Main road	Yes	✓		Pacca
	Internal streets	Yes	✓		Rec/WBM
	Nearest NH/SH/MDR/ODR Dist. in kms.	Yes (8-Km)	✓		Pacca

Suggestions if any:

E.	Transport Facility				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No	–	–	Palanpur - 12Km
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	–	–	Within village (old condition)
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes	–	–	Jeep, Private Vehicle, Bus (available

Suggestions if any:

F.	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Government more than 6 hours)			UGVCL - Electricity.



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	Power supply for Domestic Use	Yes	✓		Power - distribution Network
	Power supply for Agricultural Use	Yes	✓		"
	Power supply for Commercial Use	Yes	✓		"
	Road/ Street Lights	Yes	✓		Electrical lamp light.
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	NO	–	–	–
	LED Facilities	No	–	–	–

Suggestions if any:

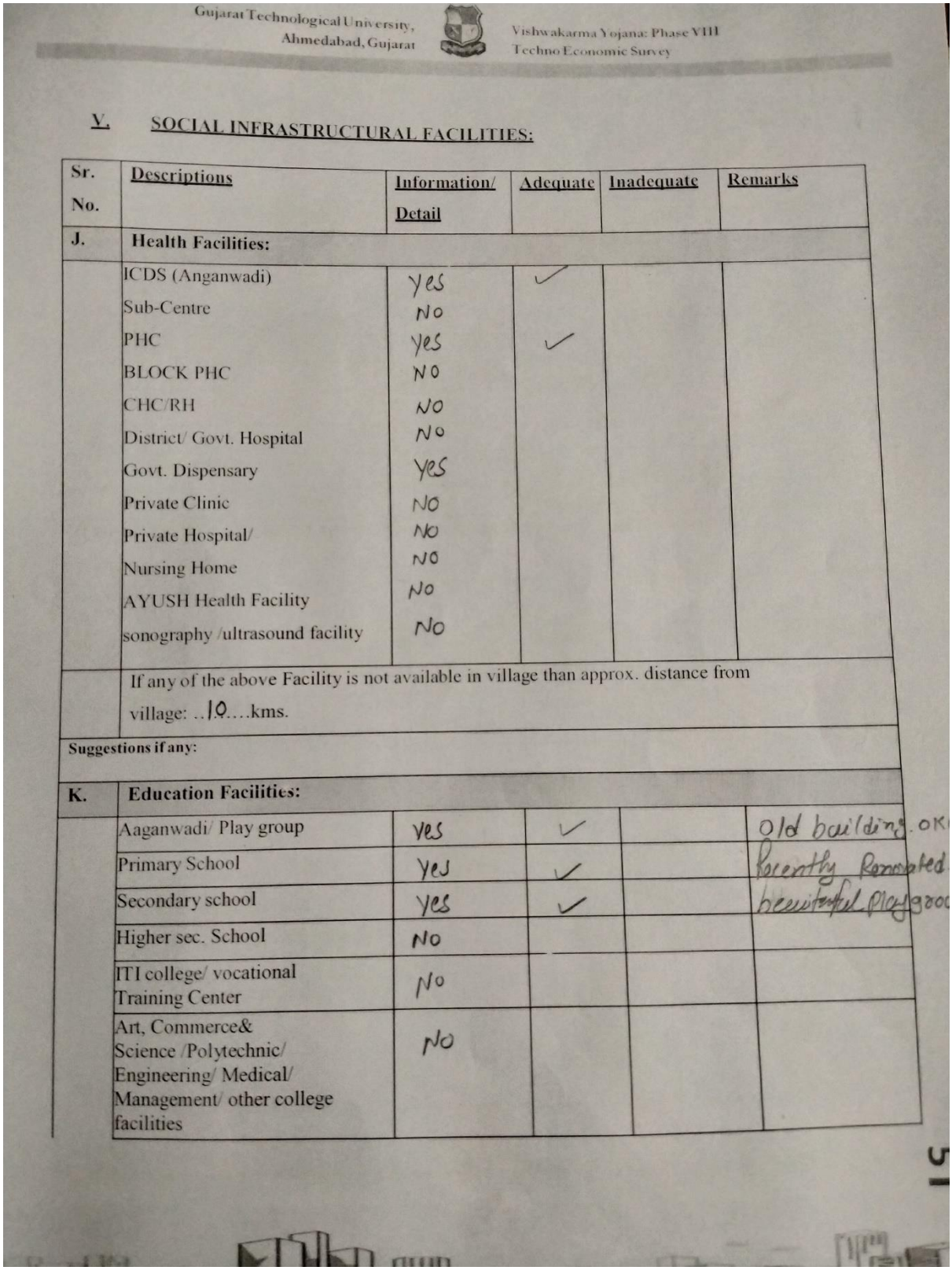
G.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.	No	–	–	–
	Location Condition	–	–	–	–
	Community Toilet (With bath/ without bath facilities)	No	–	–	–
	Solid & liquid waste Disposal system available	No	–	–	–
	Any facility for Waste collection from road	Yes	–	–	weekly garbage collection done by staff.

Suggestions if any:

H.	Main Source of Irrigation Facility:				
	TANK/POND	~~Yes~~	–	–	Traditional / conventional Irrigation done by farmers.
	STREAM/RIVER	No	–	–	
	CANAL	No	–	–	
	WELL	Yes	✓	–	
	TUBE WELL.	Yes	✓	–	
	OTHER (SPECIFY)	No	–	–	

Suggestions if any:

I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	Both (Yes)	–	–	Pucca - 55% Kaccha - 45% (Approx)



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Vishwakarma Yojana: Phase VIII
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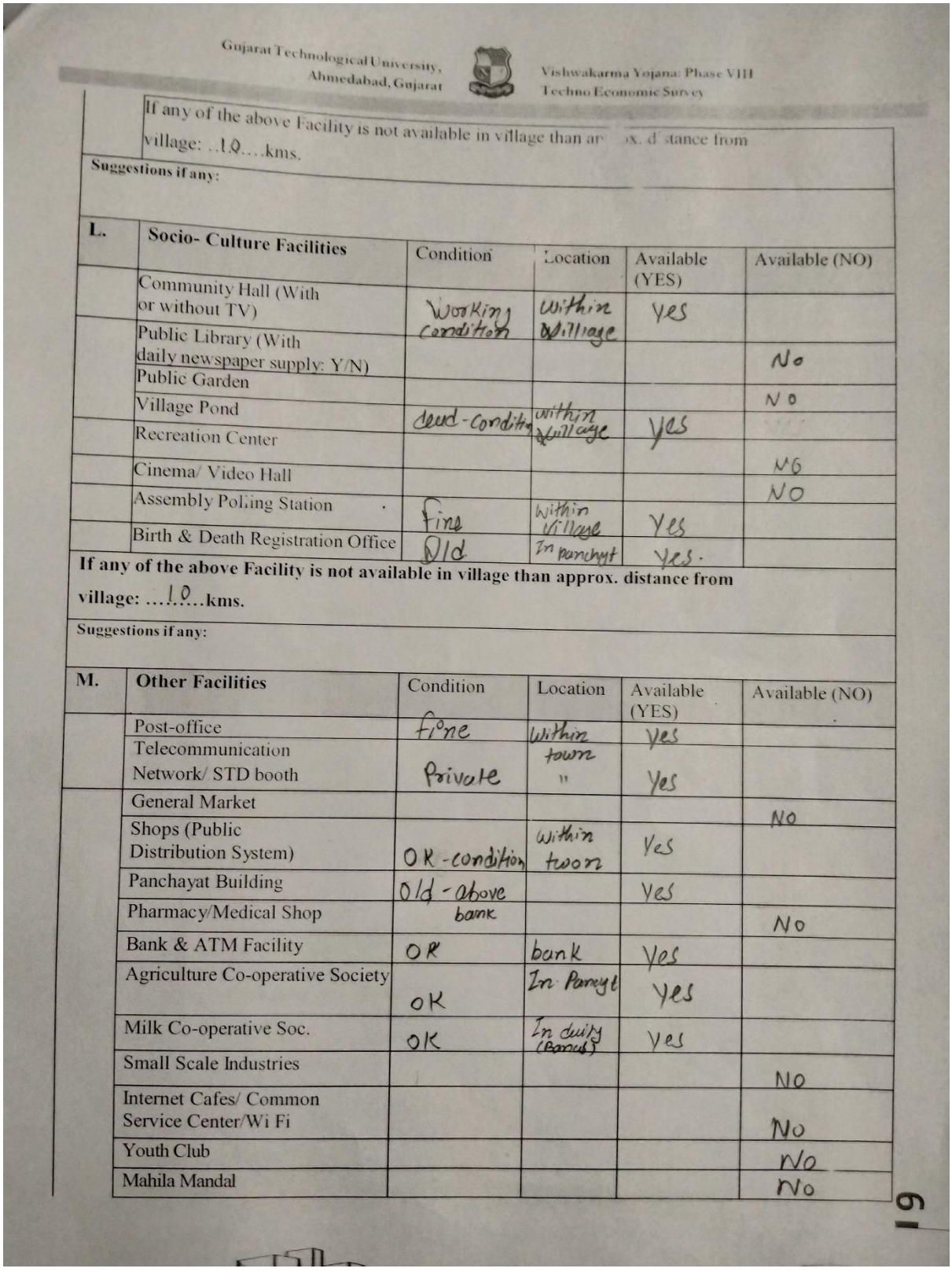
V. SOCIAL INFRASTRUCTURAL FACILITIES:

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



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If any of the above Facility is not available in village than ar[illegible]x. d[illegible]stance from village: ..1.0....kms.

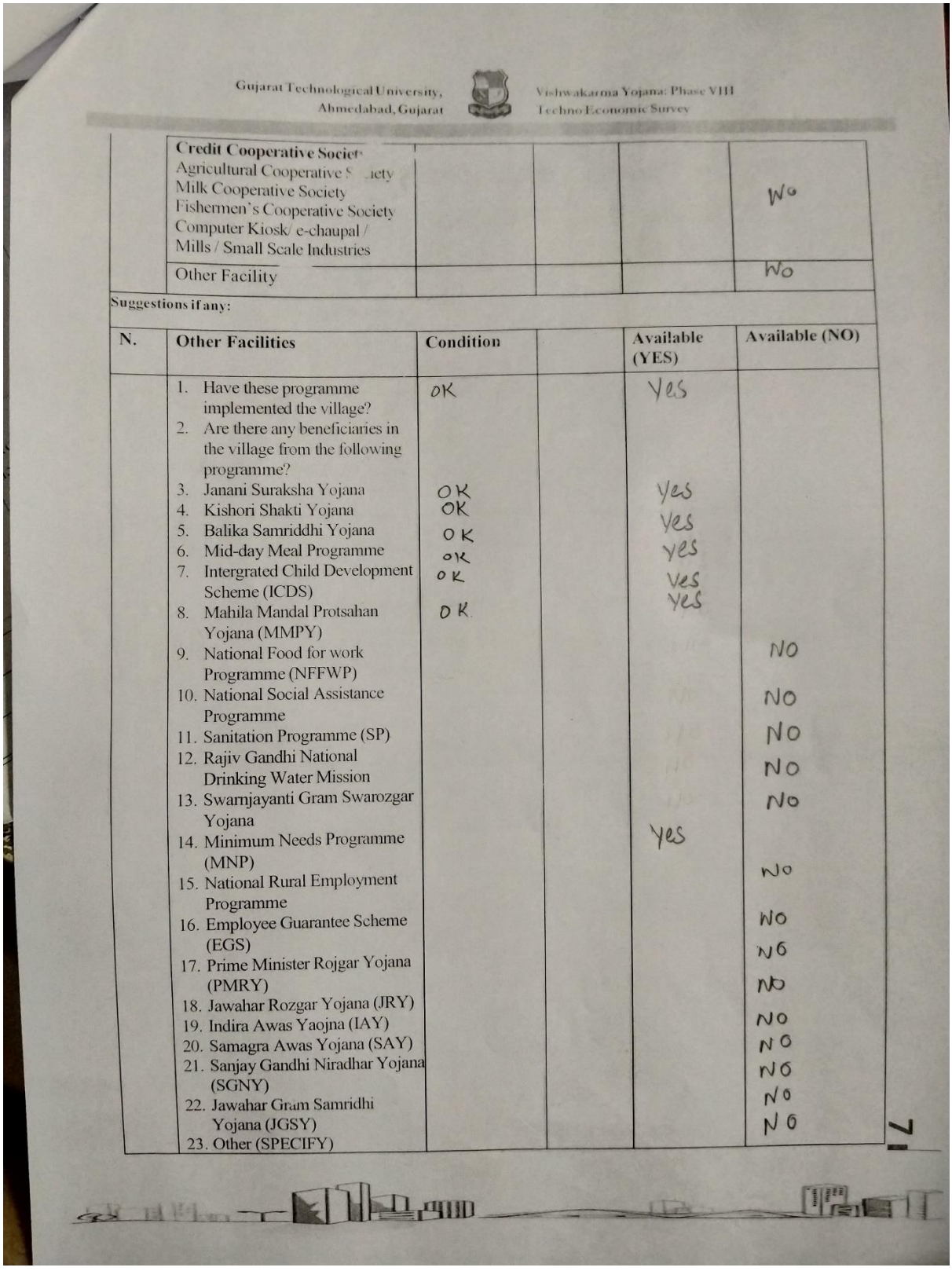
Suggestions if any:

L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)	Working condition	Within village	Yes	
	Public Library (With daily newspaper supply: Y/N)				No
	Public Garden				No
	Village Pond	dead-condition	within village	Yes	
	Recreation Center				No
	Cinema/ Video Hall				No
	Assembly Polling Station	Fine	Within village	Yes	
	Birth & Death Registration Office	Old	In panchyat	Yes.	

If any of the above Facility is not available in village than approx. distance from village: ...1.0...kms.

Suggestions if any:

M.	Other Facilities	Condition	Location	Available (YES)	Available (NO)
	Post-office	fine	Within town	Yes	
	Telecommunication Network/ STD booth	Private	"	Yes	
	General Market				No
	Shops (Public Distribution System)	OK-condition	within town	Yes	
	Panchayat Building	Old-above bank		Yes	
	Pharmacy/Medical Shop				No
	Bank & ATM Facility	OK	bank	Yes	
	Agriculture Co-operative Society	OK	In Panyt	Yes	
	Milk Co-operative Soc.	OK	In dairy (Banas)	Yes	
	Small Scale Industries				No
	Internet Cafes/ Common Service Center/Wi Fi				No
	Youth Club				No
	Mahila Mandal				No



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

Suggestions if any:

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

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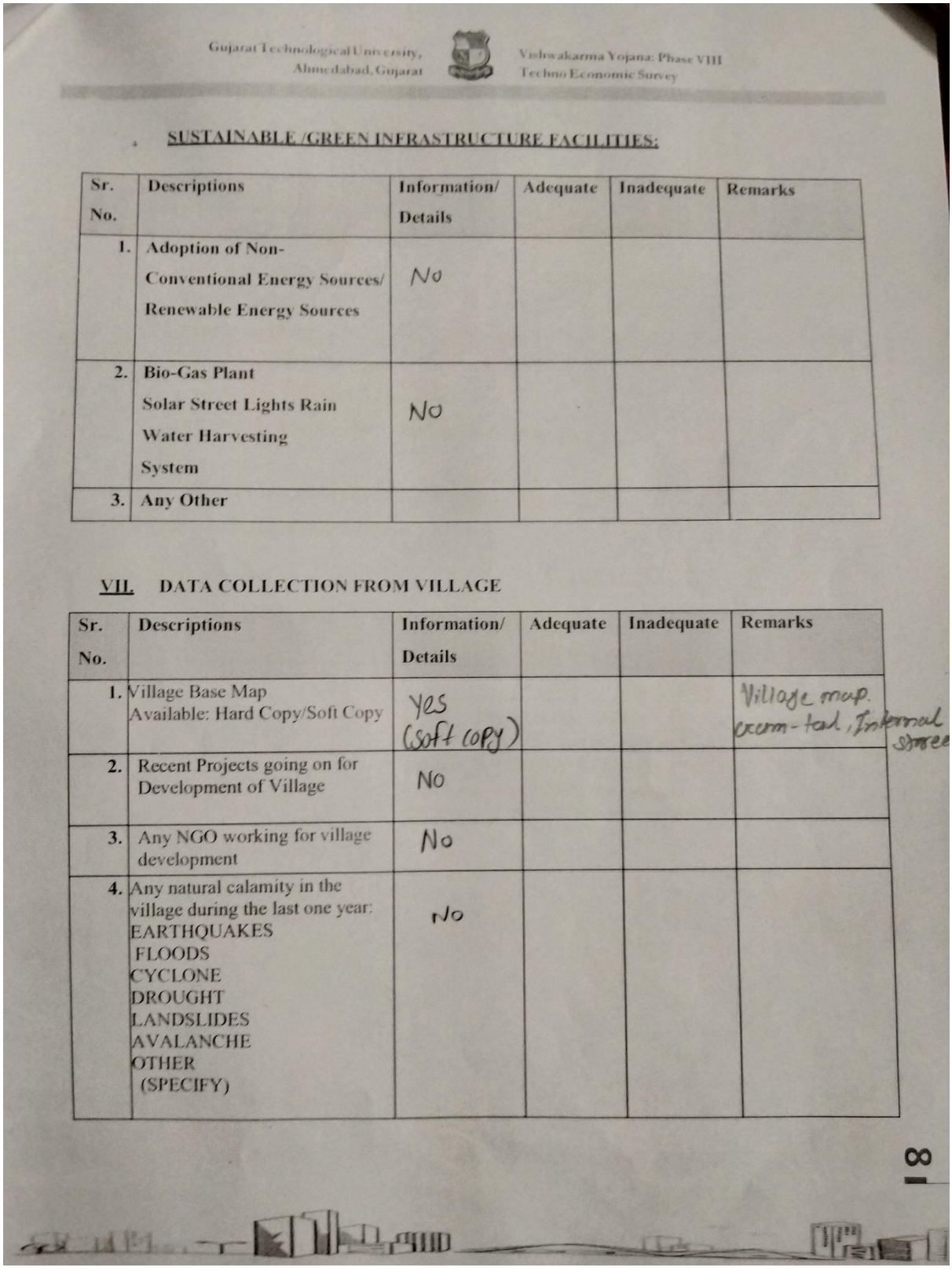

SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

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VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	- New Health Center - New Renovated Scool building	- Bus Station - Gram - Panchayt - Anganwadi
2.	Additional Information/ Requirement		No
3.	During the last six months how many times CLEANING …………………………….. FOGGING……………………………….. Drive was undertaken in the village?		

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ? yes	- New Infrastructure - Better irrigation - Water harvesting	- New gram-Panchyt - Renovation of Bus Station - lack filling.

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

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

સરપંચ
હોડા ગ્રામ પંચાયત
તા. પાલનપુર. જી. બ કાં

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

VILLAGE GAP Analysis					
Village Facilities	**Planning Commission/ UDPFI Norms**	**Village Name:**	**Hoda** (Palanpur Banaskanth)		
		Population:2098			
		Existing	**Required as per Norms**	**Existing**	**Required as per Norms**
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	2	1	-	+ 1
Primary School	Each Per 2500 population	1	1	-	0
Secondary School	Per 7,500 population	0	0	-	0
Higher Secondary School	Per 15,000 Population	0	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	1	0	-	+ 1
Skill Development Center	Per 100000 Population	1	0	-	+ 1
Health Facility					-
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	0	1	-	-1
Primary Health & Child Health Center	Per 20,000 population	0	0	-	0
Child Welfare and Maternity Home	Per 10,000 population	0	0	-	0
Multispeciality Hospital	Per 100000 Population	0	0	-	0
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutcha	0	1	-	-1

	house)				
Physical Infrastructure Facilities					
Transportation		**Adequate**	-	-	-
Pucca Village ApproachRoad	Each village	**Adequate**	-	2 km approach road	-
Bus/Auto Stand provision	All Villages connected by PT(ST Bus or Auto)	**Inadequate**	**1**	1	0
Drinking Water (Minimum 70 lpcd)		**Adequate**	-		-
Over Head Tank	1/3 of Total Demand	**Adequate**	2	1	+1
U/G Sump	2/3 of Total Demand	**Adequate**	-	12	+12
Drainage Network - Open		**Inadequate**	-	1	-1
Drainage Network - Cover		**Inadequate**	-	-	-
Waste Management System		**Inadequate**	-	1	-1
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	0	1	-	0
Community hall andPublic Library	Per 15000 Population	0	1	-	-1
Cremation Ground	Per 20,000 population	0	1	-	-1
Post Office	Per 10,000 population	1	1	-	0
Gram Panchayat Building	Each individual/group panchayat	1	1	-	0
APMC	Per 100000 Population	0	0	-	0
Fire Station	Per 100000 Population	0	1	-	-1
Public Garden	Per village	0	1	-	-1
Police post	Per 40,000Population	0	0	-	0
Shopping Mall : Small Shops are available in the village					
Electrical Design					
Electricity Network		**Inadequate**	-	-	-
Any Smart VillageFacility					
Technology		-	ESR CAP : NA	Sump CAP : 6200 Liters	Lat: NA

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

Sr.No.	Village Name	Discipline	Part-I	Part-II
1.	Hoda	Civil	Bus Station	Skill Development Center
			Gram panchayat	Bank
			Public toilet	Public garden
	HODA		Library	Over bridge
			Gate	Green house
			Play ground	Swimming pool
2.	Fadvel	Civil	Post Office	School
			PHC	Shamshan Gruh
			Public toilet	Youth Club
	KHASA		Village bank	Chabutaro
			Cyber café	Supermarket
			Public library	Agro centre
3.	Punsari	Civil	Multipurpose dome	Anganwadi
			Community hall	Maternity home
			Cyber café	Library
	GAMBHU		Pharmacy Store	Training centre
			Post office	Grocery shop
			Public toilet	E-Seva kendra

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•Summary Of Photographs Of Hoda Village – Allocated Village

- Summary of allocated village photographs

- Summary of Smart village photographs

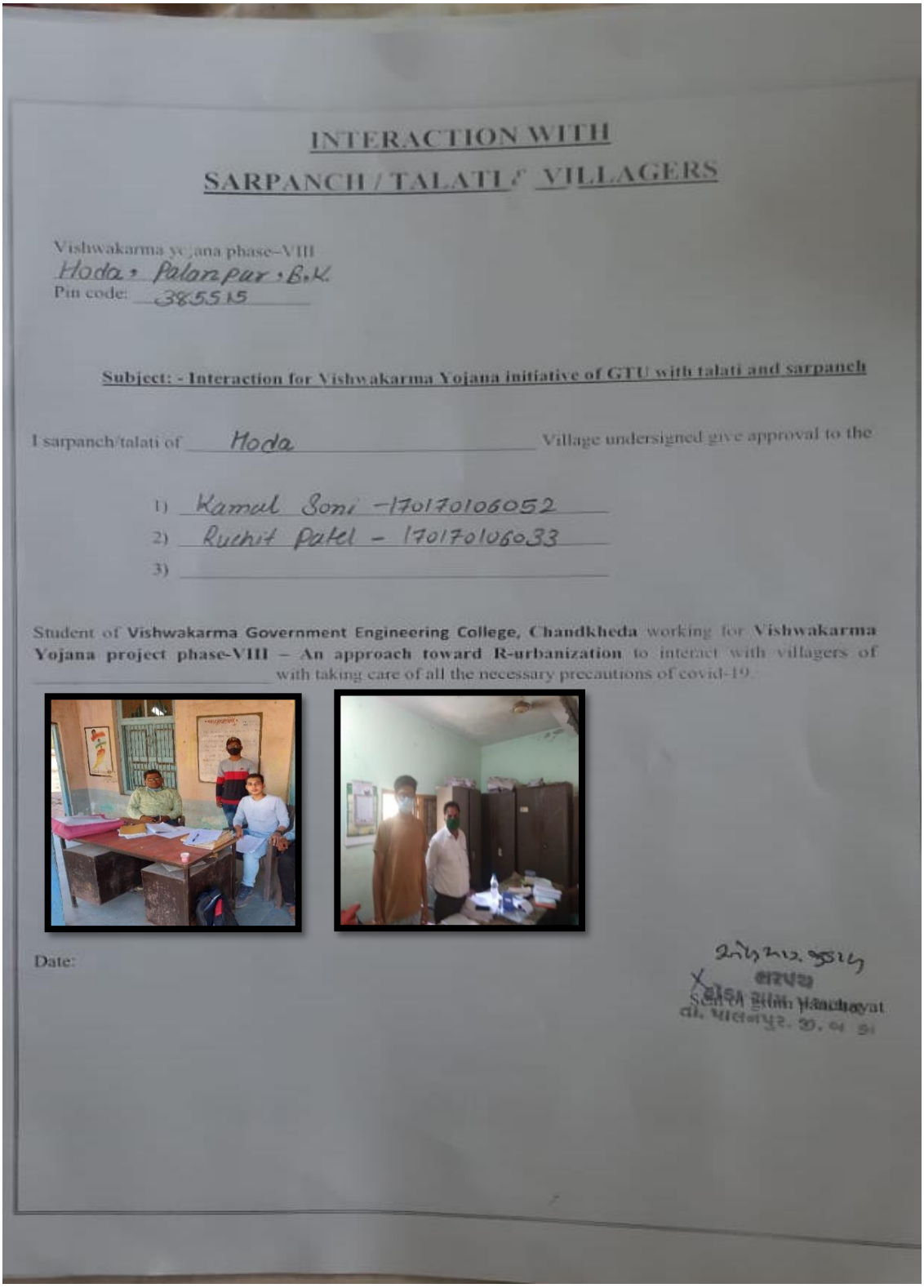





- Summary of Ideal village photographs

- Additional photos of Smart village photographs

12.8 Village Interaction with Sarpanch/Talati Report with the Photograph:



INTERACTION WITH
SARPANCH / TALATI / VILLAGERS

Vishwakarma yojana phase-VIII
Hoda, Palanpur, B.K.
Pin code: 385515

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

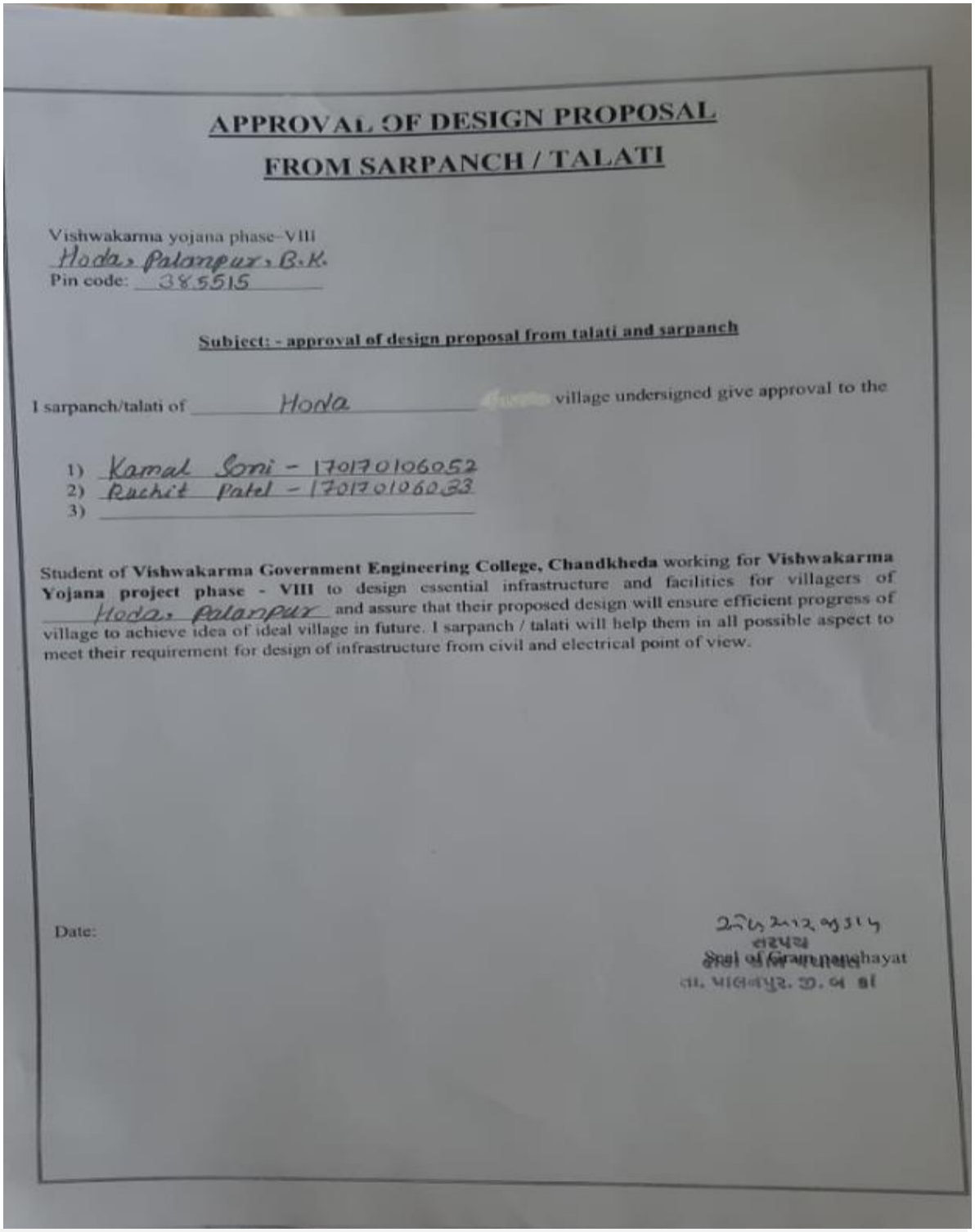
I sarpanch/talati of Hoda Village undersigned give approval to the

1) Kamal Soni -170170106052
2) Ruchit Patel - 170170106033
3)

Student of **Vishwakarma Government Engineering College, Chandkheda** working for **Vishwakarma Yojana project phase-VIII – An approach toward R-urbanization** to interact with villagers of with taking care of all the necessary precautions of covid-19.

Date:

12.9 Sarpanch Letter Giving Information About the village development:-



APPROVAL OF DESIGN PROPOSAL

FROM SARPANCH / TALATI

Vishwakarma yojana phase-VIII
Hoda, Palanpur, B.K.
Pin code: 385515

Subject: - approval of design proposal from talati and sarpanch

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

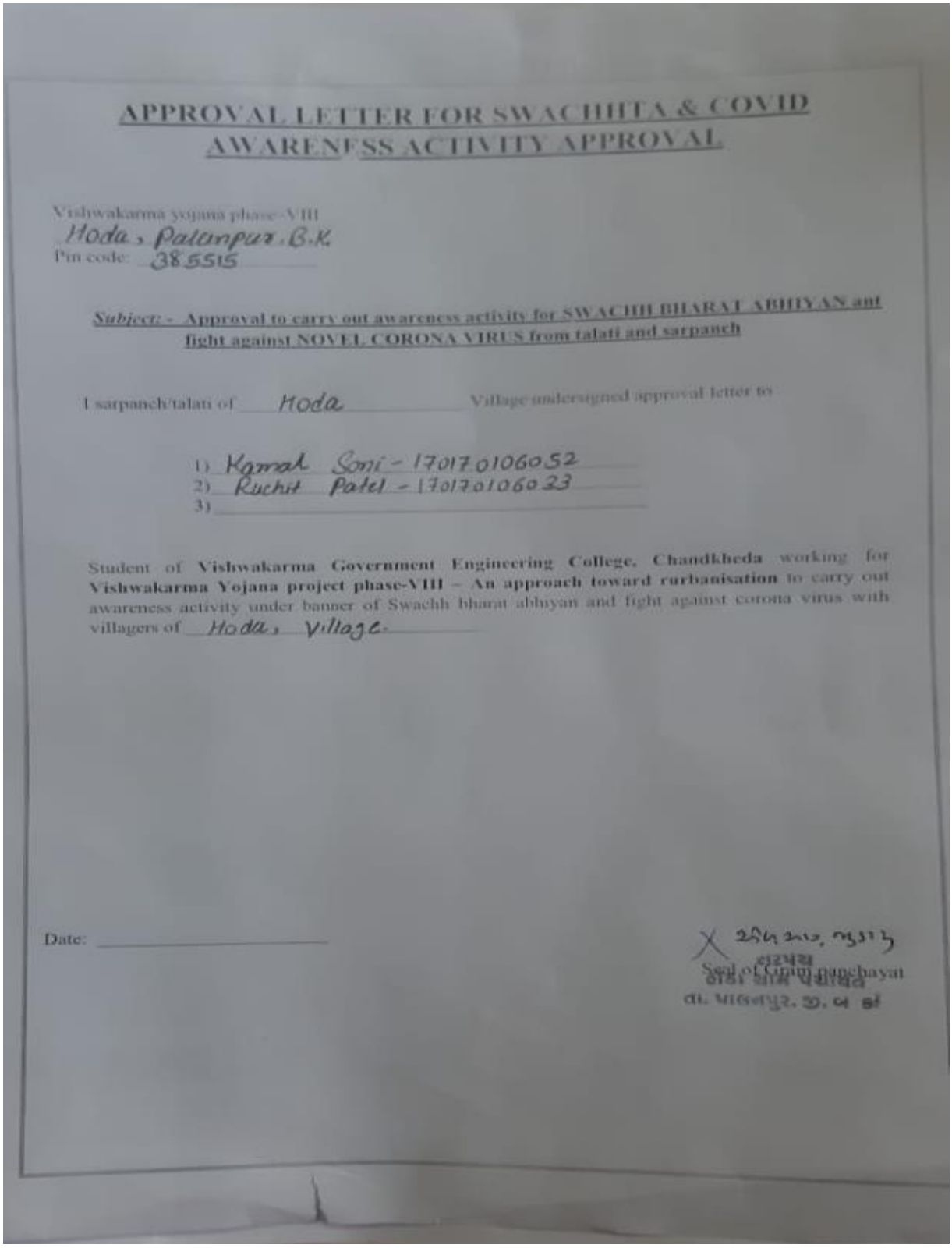
1) Kamal Soni - 170170106052
2) Ruchit Patel - 170170106023
3)

Student of **Vishwakarma Government Engineering College, Chandkheda** working for **Vishwakarma Yojana project phase - VIII** to design essential infrastructure and facilities for villagers of Hoda, Palanpur 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.

Date:

Sarpanch
Gram Panchayat

•Approved Letter From Proposed Design Approval



APPROVAL LETTER FOR SWACHHTA & COVID AWARENESS ACTIVITY APPROVAL

Vishwakarma yojana phase-VIII
Hoda, Palanpur. B.K.
Pin code: 385515

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

I sarpanch/talati of Hoda Village undersigned approval letter to

1) Kamal Soni - 170170106052
2) Ruchit Patel - 170170106023
3)

Student of **Vishwakarma Government Engineering College, Chandkheda** working for **Vishwakarma Yojana project phase-VIII – An approach toward rurbanisation** to carry out awareness activity under banner of Swachh bharat abhiyan and fight against corona virus with villagers of Hoda, Village.

Date:

Seal of Gram panchayat

•Approved Letter from Swachhta & Covid Awareness Activity Approval

CHAPTER-13 PROPOSING DESIGN FOR FUTURE DEVELOPMENT OF THE VILLAGE FOR THE PART -2

13.1 Design proposal

13.1.1 Civil Design – 1 Hoda Public Garden

Scenario :

We start to think in a new dimension altogether. Since the environment at the Hoda Gam is peaceful, students can study at the library without any disturbances. Library is an appreciable place for studies and mental development. For much better aesthetic and feasibility of people we are going to suggest public garden which will defiantly create some peaceful and refreshing environment to people.

Existing Situation in Hoda:

In the Hoda village there were not any service of Public Garden. There were only around 3000sq feel barrel land with one tree at corner. We are going to Convert a small part in front of school including a tree in our design to a public garden.

Sustainability of the design:

Public Garden as an important tool:

Design Utilized by,

All the people living in the village of even outsiders from nearby villages and relatives of the villagers can use or utilize a Public garden for their different Purpose.

Needs:

Good qulity stones, tiles, landscaping

Advantages of the design:

- Can be used as cultural hall
- Includes Stage to perform
- Includes senior citizen area
- Includes a small playground for kids
- Includes Water garden and a bunch of flowers and plantation for tree lover

Length: 15.00m

Width : 20.00m

Height of compound wall : 2m

(to protect cattle entry)

Total area : 300 m^2

Proposed Design Of Public Garden in Auto cad and Sketch-up:

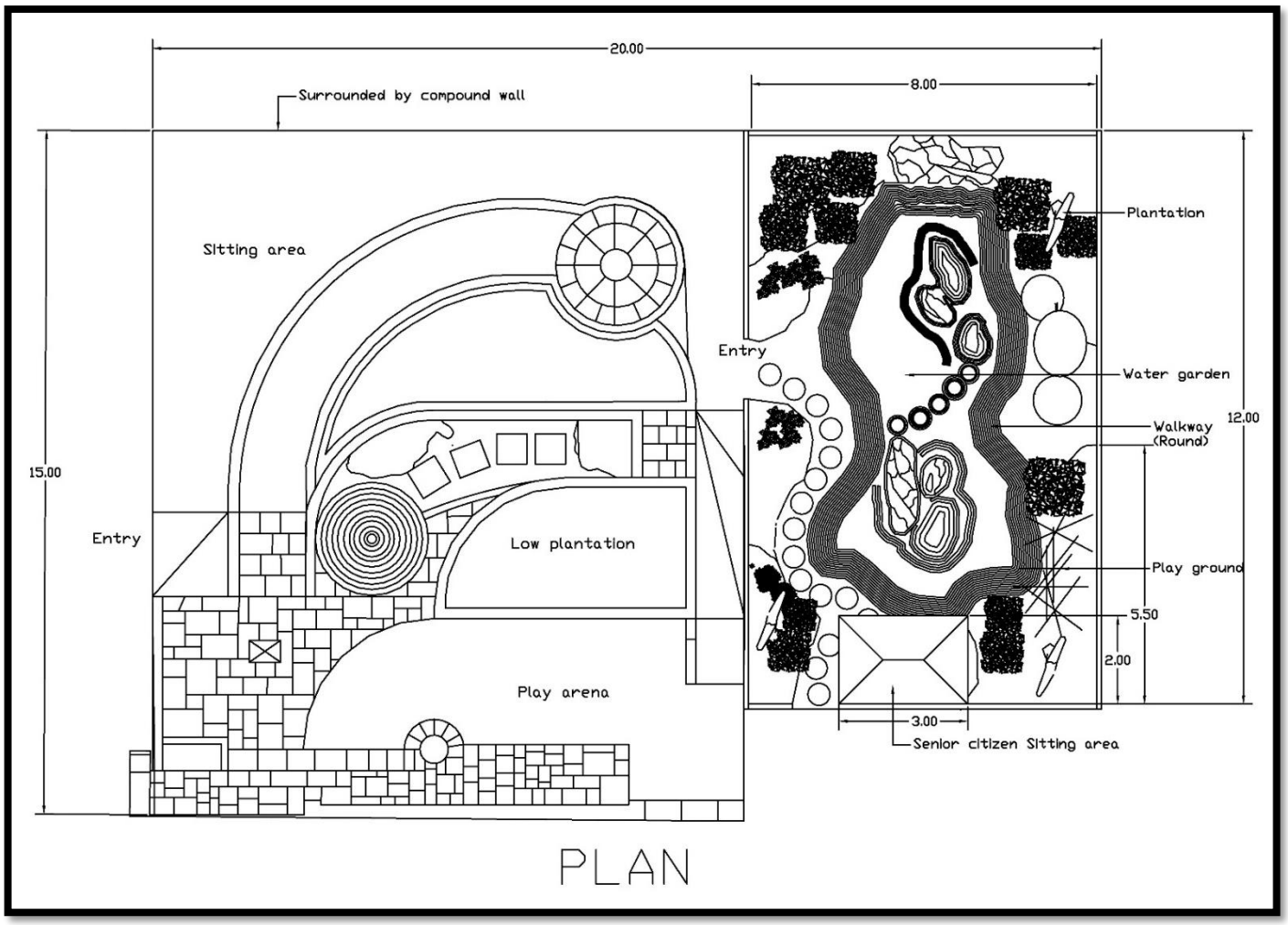


Fig 13.1.1 Public Garden Plan (AUTO-CAD)

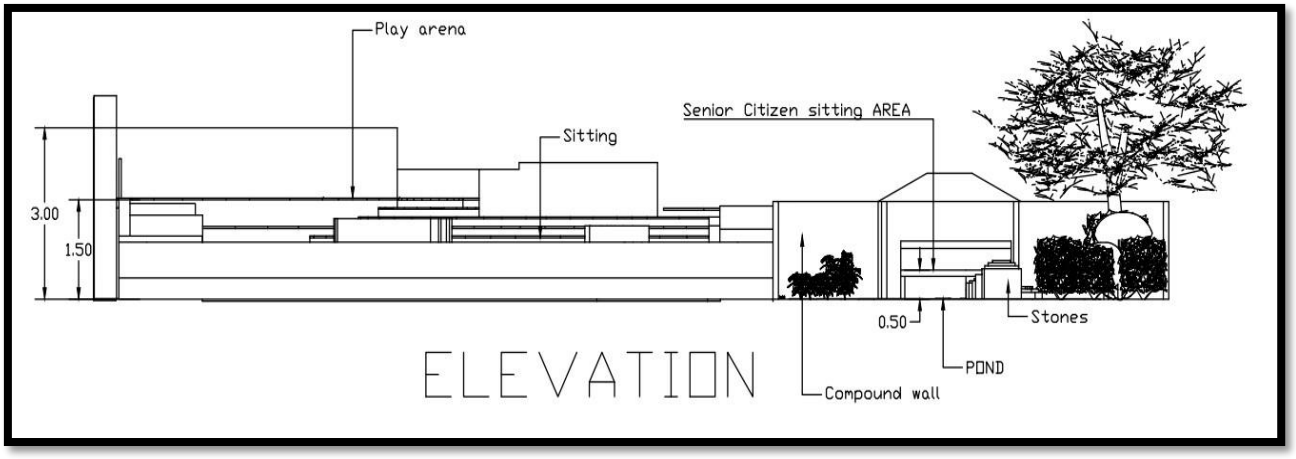


Fig 13.1.2 Elevation & Section of Public Garden (Hoda)

Hight of stage: 1.50m

Hight of sitting: 0.50m

Hight of each steps:0.20m

Hight of compound wall: 2m

Note (3m lenth of equevelent width behind water garden is already occupied)

Fig 13.1.3 3D top view of public library in hoda (Sketch – Up))

MEASUREMENT SHEET FOR PUBLIC GARDEN (Table 13.1.1)

Item	No	L	B	H	Quantity(m3)
For Senior citizens seating arrangement					
(1) Steel roof sheets	4	3.0	2.0	-	24.0m2
(2) Pre-cast RCC Pole	6	-	0.2	1.5	1.8m2
Paver block for walk way		6.7	5.8		38.86m2
Compound work					
Steel support		35m	-	-	35runing Meter
Steel Mesh		35m	-	-	35runing Meter

ABSTRACT SHEET FOR PUBLIC GARDEN (Table 13.1.2)

Item	Quantity(m)	Rate	Per	Amount
Fixing Of steel support and binding steel wire/tar	35Runing Meter	70/-	Running meter	2450
Fixing of steel roof sheet and Pre-cast RCC pole	6 (in terms of no.)	200/-	In terms of no.	1200
Paver Block for walk way	38.86m2	290/-	M2	11270
				Sum=14920

Total Cost = 14920+ 5% water charge (746)

= 15666/-

13.1.2 Civil Design -2 Hoda Bank

Scenario :

We start to think in a new dimension altogether. Since the environment at the Hoda Gam is peaceful, at hode village there were one building for bank, dairy and gram panchayat in one building so we have decided to provide separate building of bank.

Existing Situation in Hoda:

In the Hoda village there were not any service of Public Garden. There were only around 3000sq feel barrel land with one tree at corner. We are going to Convert a small part in front of school including a tree in our design to a public garden.

Sustainability of the design:

Public Toilet as an important tool:

Design Utilized by,

All the people living in the village of even outsiders from nearby villages and relatives of the villagers can use or utilize a Public garden for their different Purpose.

Needs:

Good qulity stones, tiles, Planning and execution of design, brick, cement , steel, furnishing etc

Public Library Design :

Length: 15.00m

Width : 20.60m

Total area : 309 m^2

Advantages:

- Separate bank building
- Locker room
- Conference room
- Increase financial stability in town
- All the financial schemas of bank will be available for villages at their door steps

Proposed Design Of Bank in Auto cad and Sketch-up:

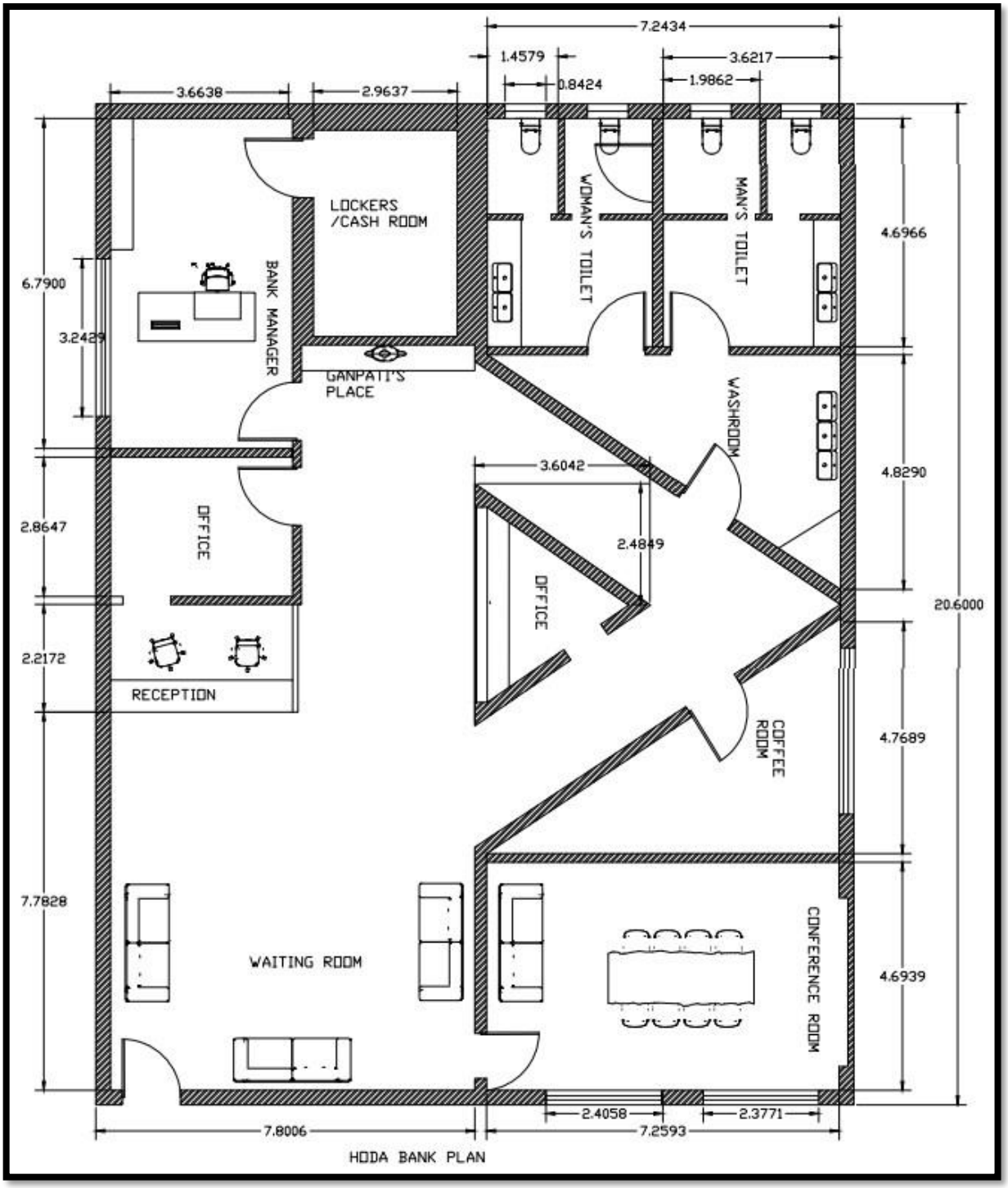


Fig 13.1.4 Hoda Bank PLAN

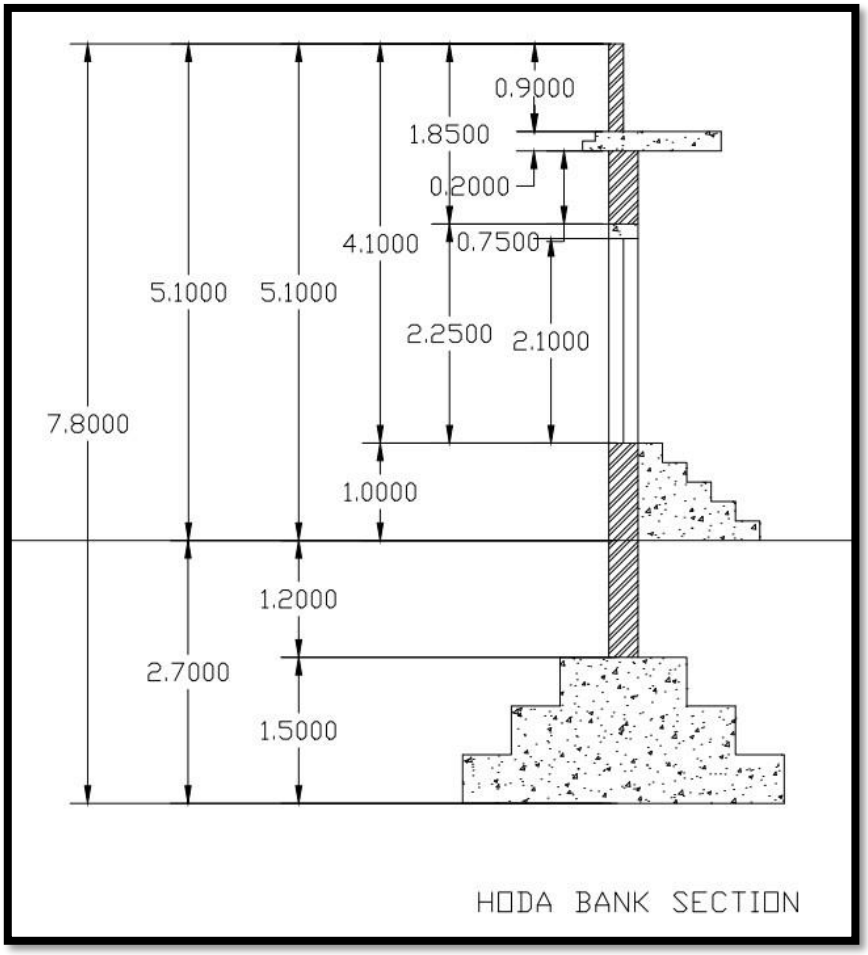


Fig 13.1.5 Hoda Bank SECTION

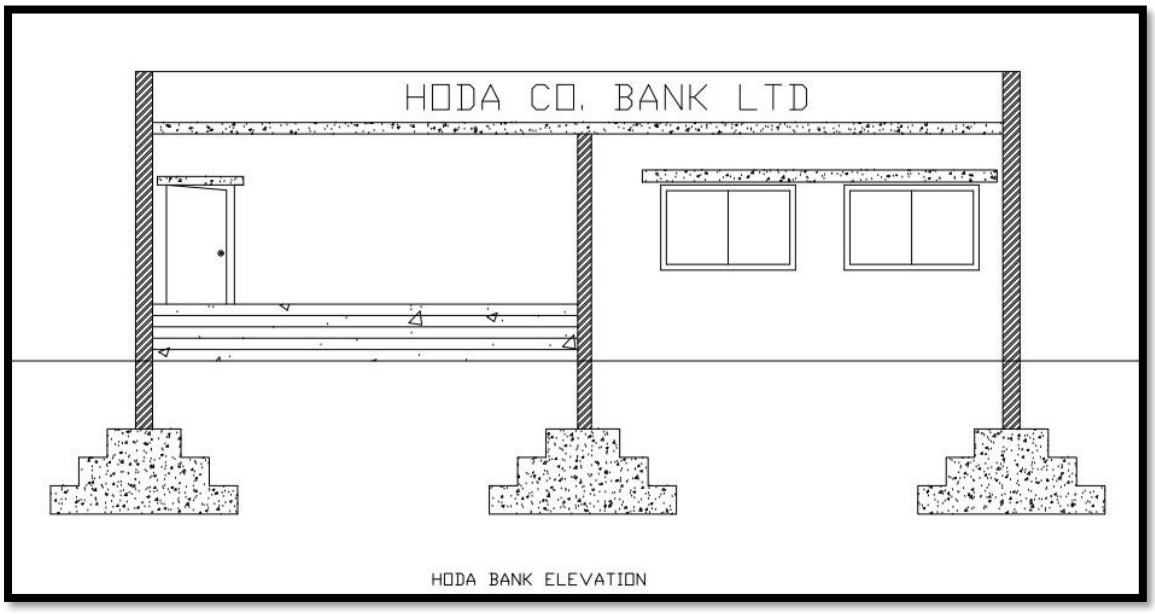


Fig 13.1.6 Hoda Bank ELEVATION

Fig 13.1.7 Hoda Bank 3D

MEASUREMENT SHEET FOR BANK (Table 13.1.3)

Item	No	L	B	H	Quantity(m3)
Total Center Line Lengh=119.41m					
Excavation		114.46	0.9	2.7	278.13m3
PCC		114.46	0.9	0.3	30.90m3
Brick Work Up to Plinth					
In Foundation		114.46	0.9	0.3	30.90
(1) (0.7) width		115.56	0.7	0.3	24.26
(2) (0.5) width		116.66	0.5	0.3	17.49
(3) (0.3) width		117.76	0.3	0.3	10.59
Steps					
1st		1.0	0.2	0.15	0.03
2nd		1.0	0.4	0.30	0.12

3rd		1.0	0.6	0.45	0.27
4th		1.0	0.8	0.60	0.48
5th		1.0	1.0	0.75	**0.75**
					Sum of total Quantity=84.89m3
Brick Work in superstructure		117.76	0.3	5.10	180.17
Deduction					
Door(D)	9	1.0	0.3	2.1	5.67
Door(D1)	1	2.0	0.6	2.1	2.52
Ventilation	4	1.4	0.3	0.2	0.336
Window					
W	2	3.2	0.3	1.0	1.92
W1	2	2.4	0.3	1.0	1.44
Lintel		1.6	0.3	0.075	0.036
					Total Brick work in superstructure= (Brick work in superstructure) - (Deduction) =168.24**m3**
RCC work		20.60	15.05	0.20	62.00

ABSTRACT SHEET FOR BANK (Table 13.1.4)

Item	Quantity(m3)	Rate	Per	Amount
Excavation	278.13	90/-	M3	25031.7
PCC Work	40.90	3000/-	M3	1,22,700
RCC Work	62.0	8800/-	M3	5,45,600
Brick Work	253.13	3300/-	M3	8,35,329
				SUM= 15,28,666/-

Total Cost = 1528666 + 5% water charge (76433)

= 16, 05,099

13.1.3 Civil Design-3 Public Swimming Pool

Scenario :

We start to think in a new dimension altogether. Since the environment at the Hoda Gam is peaceful, For refreshment and we thought it is essential to have Swimming pool in a village.

Sustainability of the design

All the people living in the village of even outsiders from nearby villages and relatives of the villagers can use or utilize a Public garden for their different Purpose.

Public Library Design :

Length: 10.5m

Width : 21.00m

Height of compound wall : 2m (to protect cattle entry)

Total area : 220.5m^2

Proposed Design Of Swimming pool in Auto cad and Sketch-up:

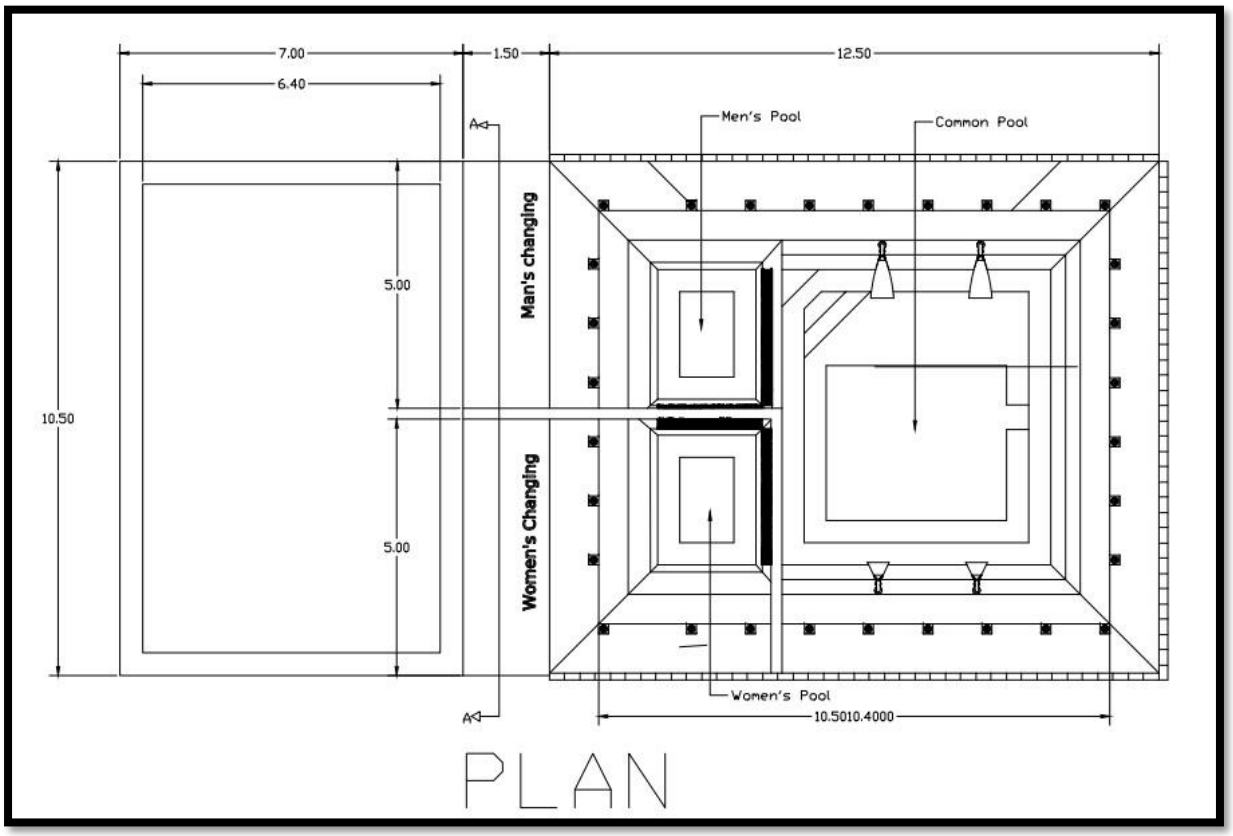


Fig 13.1.8 Hoda Swimming pool PLAN

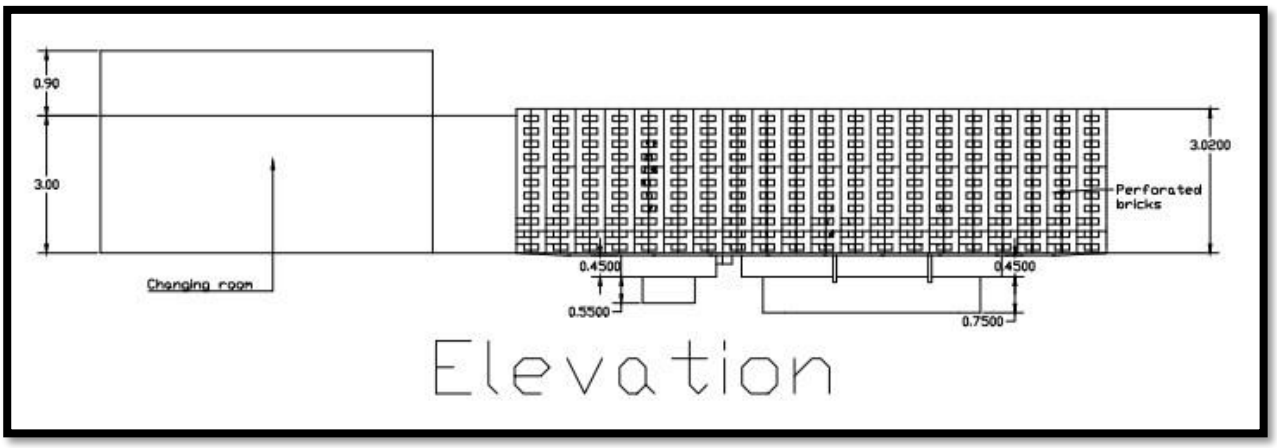


Fig 13.1.9 Hoda Pool ELEVATION

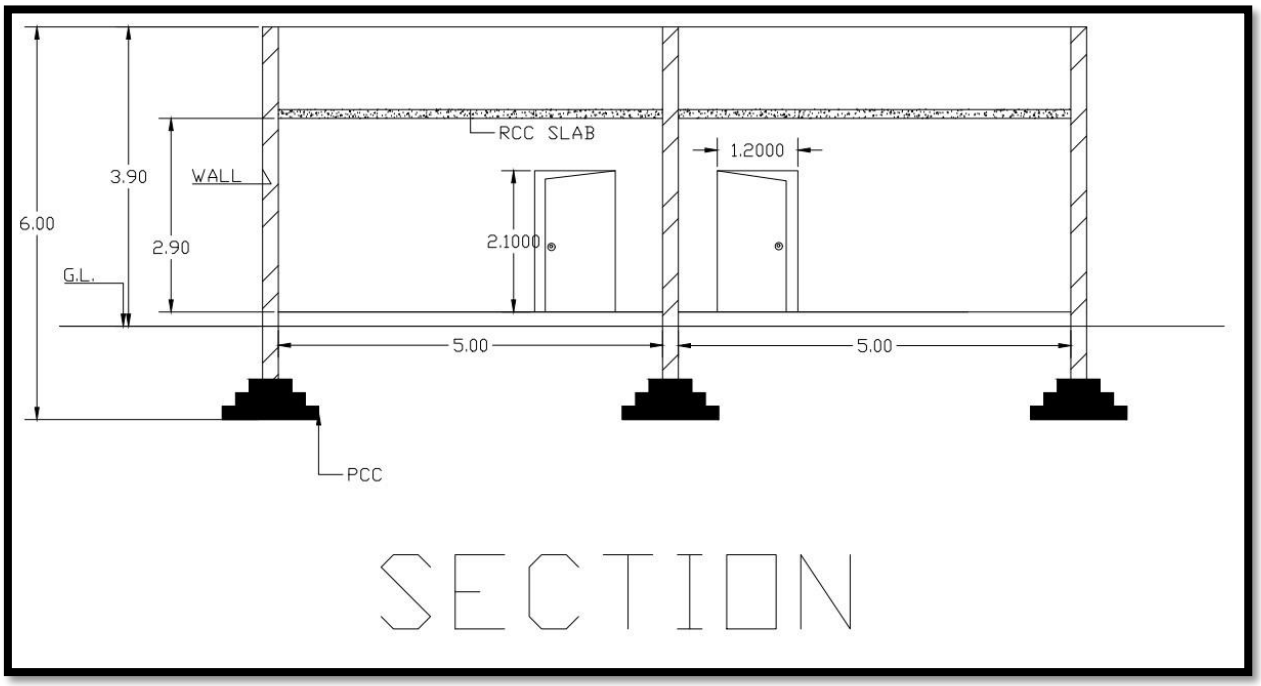


Fig 13.1.10 Hoda Pool SECTION

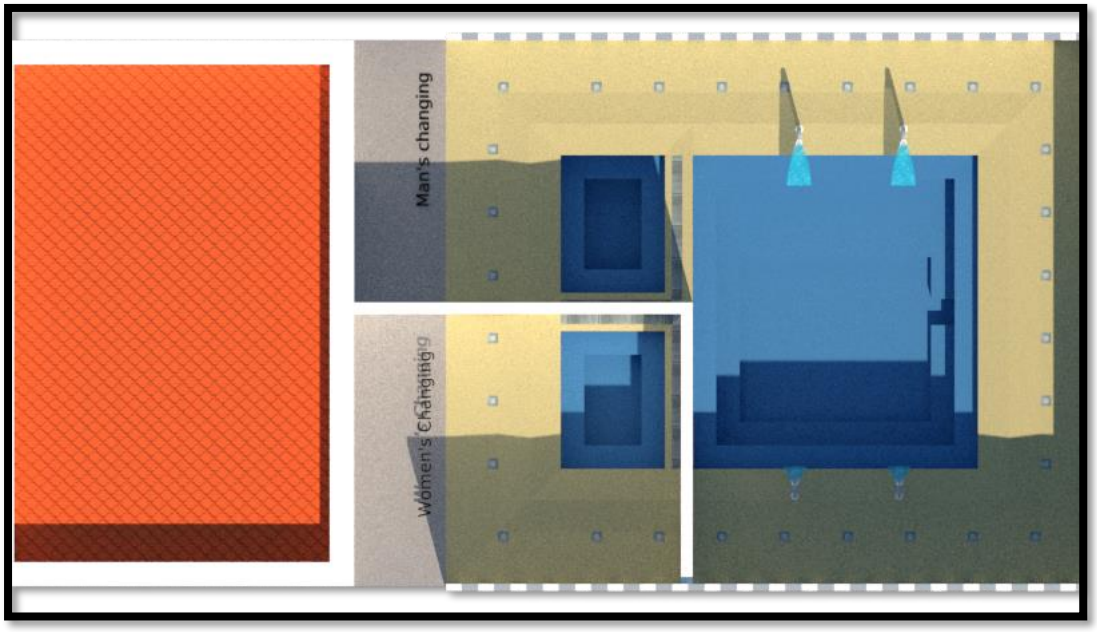


Fig 13.1.11 Hoda Pool Plan

MEASUREMENT SHEET FOR SWIMMING POOL (Table 13.1.5)

Item	**No**	**L**	**B**	**H**	**Quantity(m3)**
Total Center Line Lengh=74.5m					
Excavation		71.8	0.9	1.5	96.93m3
PCC		71.8	0.9	0.3	19.38m3
Brick Work in Periphery		63	0.3	2.5	47.25
Tile work		11.50			11.50running meter
Changing room for men and women					
(1) Brick work in foundation		73.0	0.5	0.3	10.95m3
0.4 width		73.3	0.4	0.3	8.79m3
0.3 width		73.6	0.3	0.3	6.62m3
Brick work in superstructure		73.6	0.3	2.5	55.2m3
Deduction					
D	1	1.0	0.3	1.0	0.3
W	1	1.0	0.3	0.7	0.21
L		0.3	0.075	1.0	0.0225
					Total Quantity=54.66m3

ABSTRACT SHEET FOR SWIMMING POOL (Table 13.1.6)

Item	Quantity(m3)	Rate	Per	Amount
Excavation	96.93	90/-	M3	8723
PCC Work	19.38	3000/-	M3	58140
Brick Work	101.91	3300/-	M3	336303
Tile work	11.50	660/-	M2	7590
				Sum=410756/-

Total Cost = 410756+ 5% water charge (20537)

= 431293/-

13.1.4 Civil Design – 4 Overbridge

Scenario :

We start to think in a new dimension altogether. Since the environment at the Hoda Gam is peaceful, but hoda Is majorly divided in two regions one is hoda gam and another is para region. In between this region there is two major structure on Is bus station and anther is internal para part. We are going to connect this by an over bridge.

Sustainability of the design

Over bridge as an important tool:

Design Utilized by,

All the people living in the village of even outsiders from nearby villages and relatives of the villagers can use or utilize a Public garden for their different Purpose.

Needs:

Good qulity stones, tiles, landscaping ,water, cement,, steel, bridge engineer

Public Library Design :

Length: 90m

Width: 3.0 m

Height of piers: 8m

Proposed Design Of Overbridge in Auto cad; and Sketch-up:

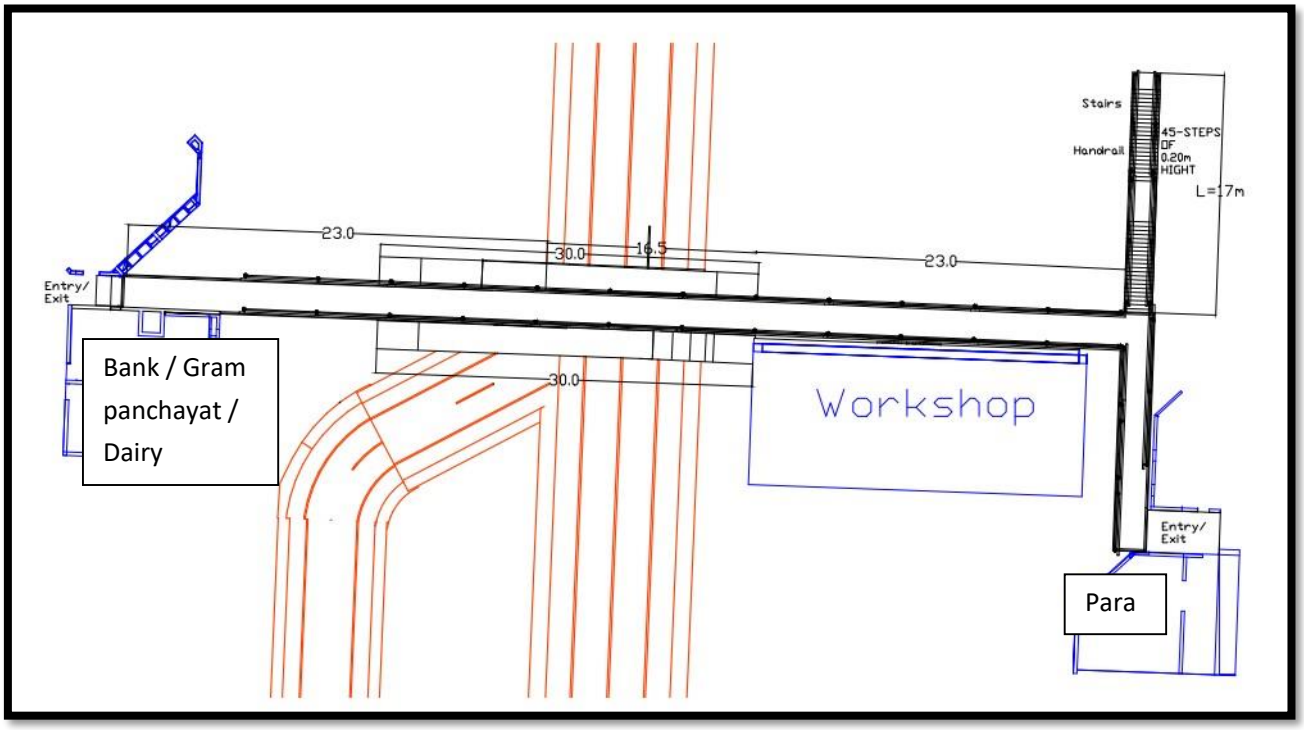


Fig 13.1.13 Hoda Pool PLAN

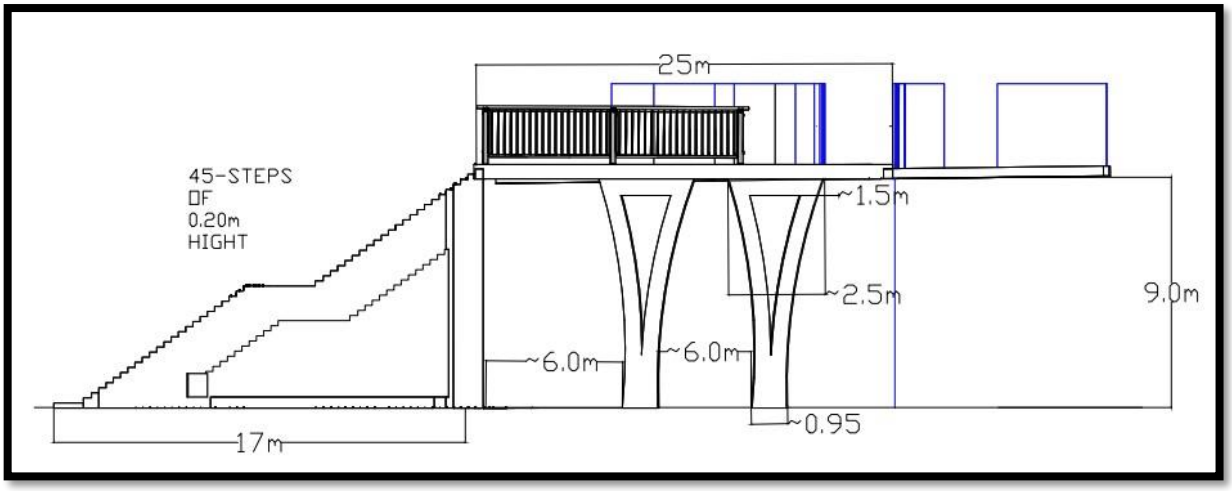


Fig 13.1.14 Hoda overbridged SECTION

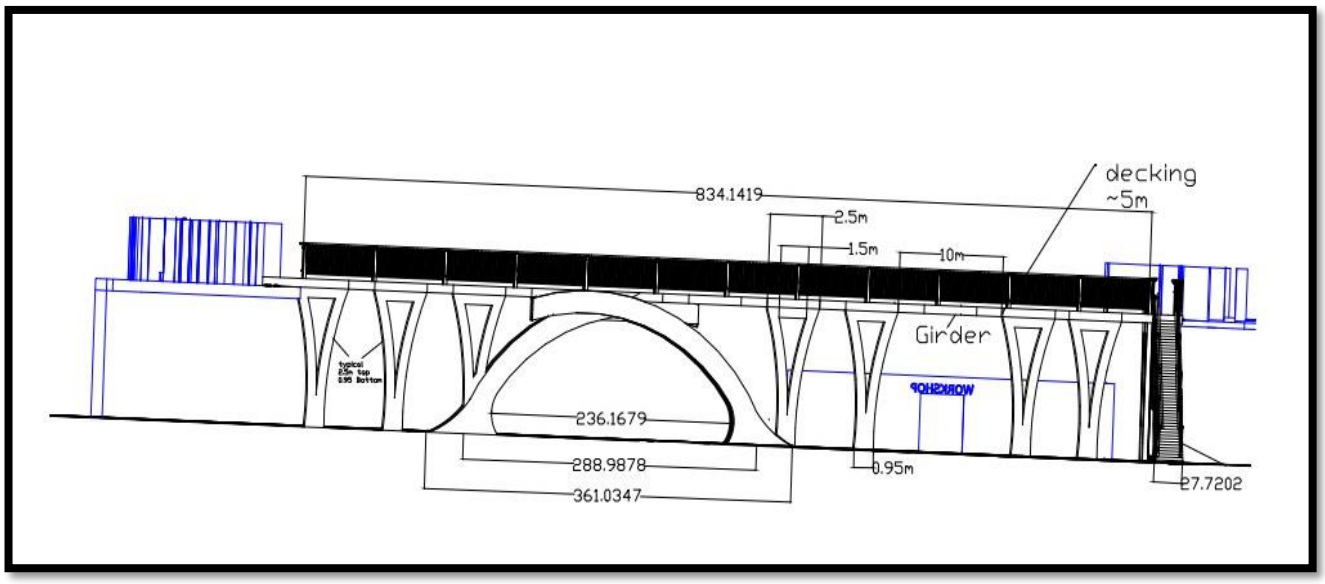


Fig 13.1.14 Hoda over bridge ELEVATION

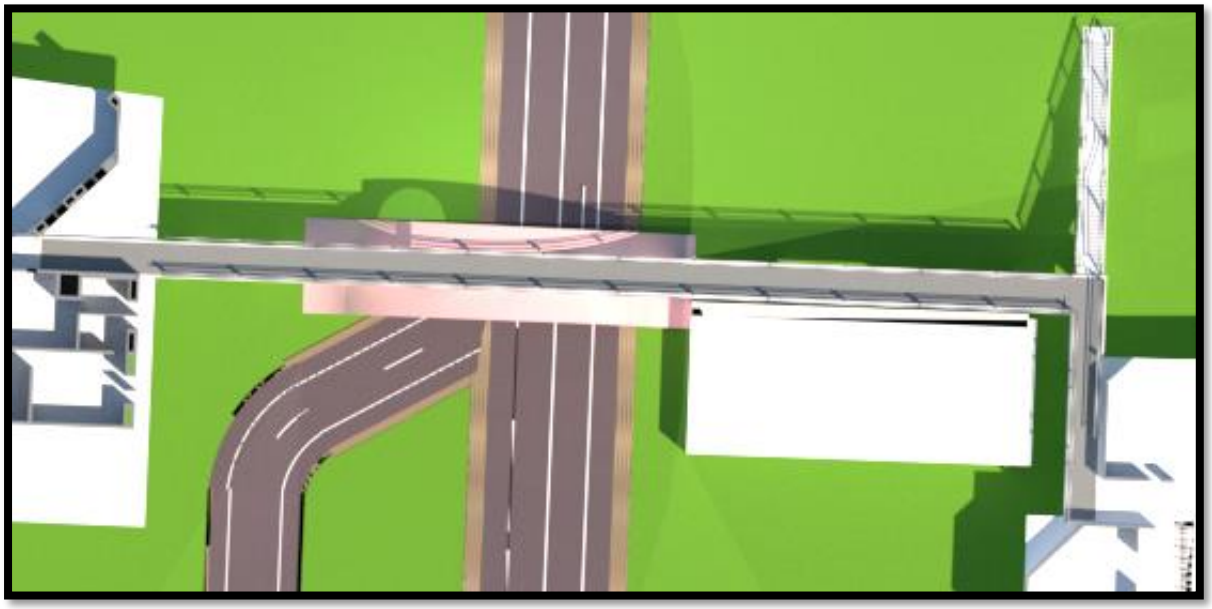


Fig 13.1.15 Hoda Pool 3D

MEASUREMENT SHEET FOR OVERBRIDGE (Table13.1.7)

Item	No	L	B	H	Quantity(m3)
Total Center Line Lengh=90m					
Excavation		90	3	1.5	405
PCC		90	0.9	0.3	24.3
Brick Work in Periphery		186	0.3	2.5	139.5
Pavement work		90			90 running meter
Changing room for men and women					
(1) Brick work in foundation		90	0.5	0.3	10.95m3
0.4 width		90	0.4	0.3	8.79m3
0.3 width		90	0.3	0.3	6.62m3
Brick work in superstructure		90	0.3	2.5	55.2m3
Deduction					
D	1	1.0	0.3	1.0	0.3
W	1	1.0	0.3	0.7	0.21
L		0.3	0.075	1.0	0.0225
					Total Quantity=54.66m3

ABSTRACT SHEET FOR OVERBRIDE (Table 13.1.8)

Item	Quantity(m3)	Rate	Per	Amount
Excavation	405	90/-	M3	36,450
PCC Work	24.3	3000/-	M3	72,900
Brick Work	139.5	3300/-	M3	460,350
Pavement work	90 running meter	1000/-	M2	90,000
				Sum=410756/-

Total Cost = 659700+ 5% water charge (32985)

= 692685/-

13.1.5 Civil Design – 5 skill development Centre

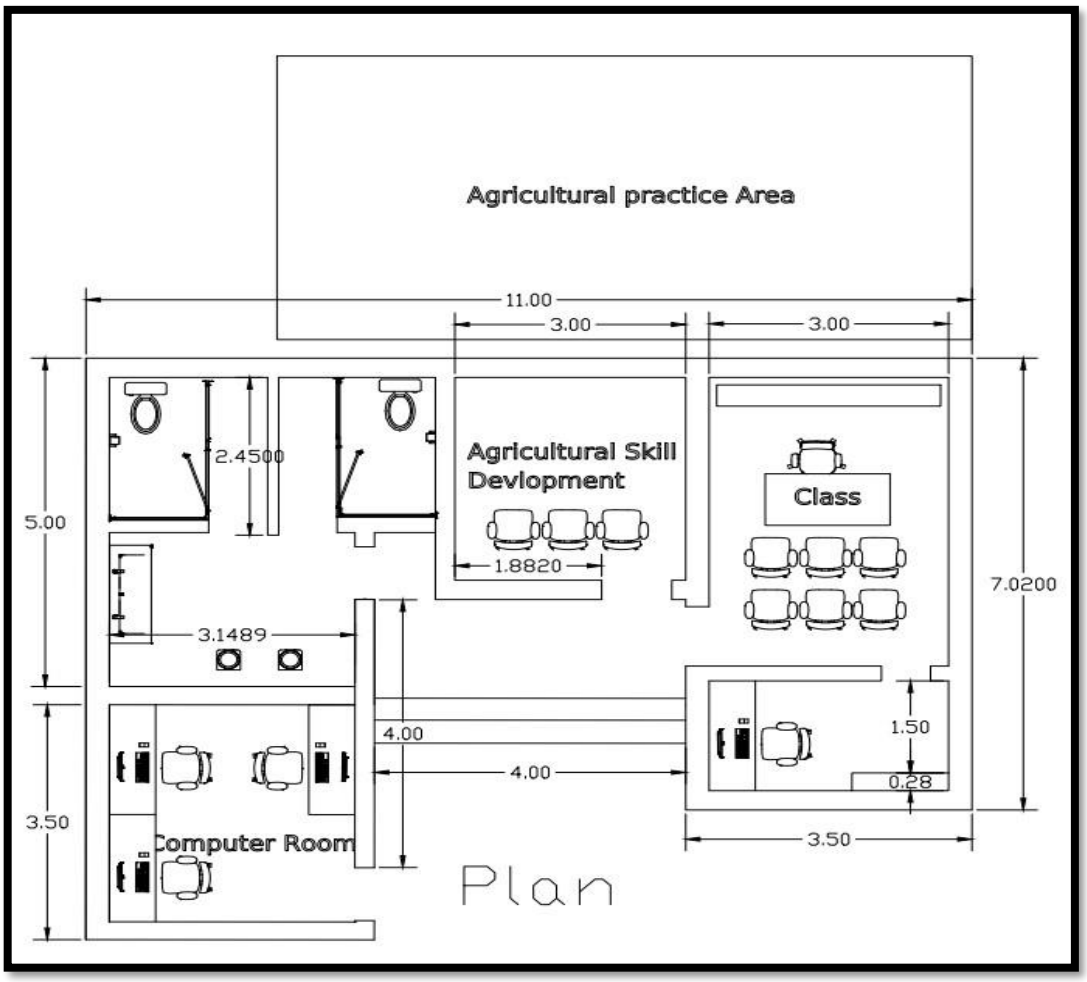


Fig 13.1.16 Hoda Pool PLAN

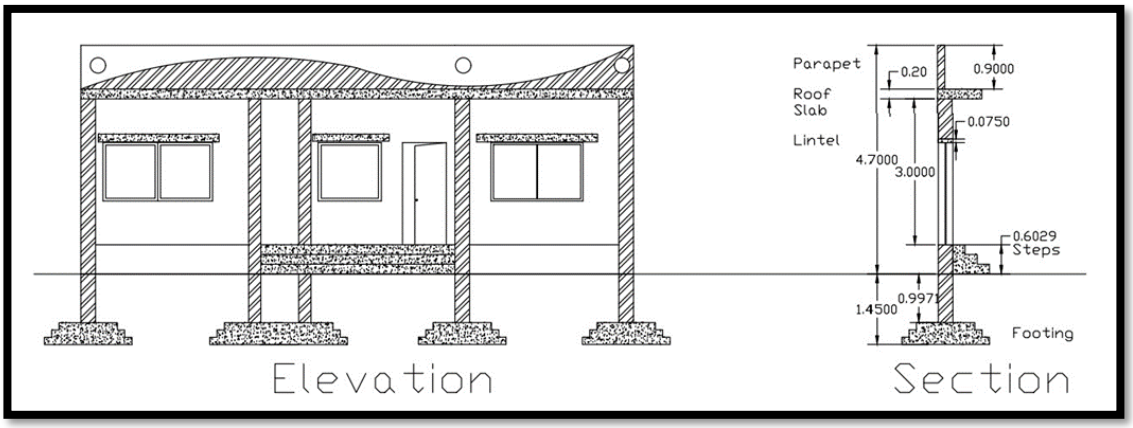


Fig 13.1.17 Hoda Pool ELEVATION & SECTION

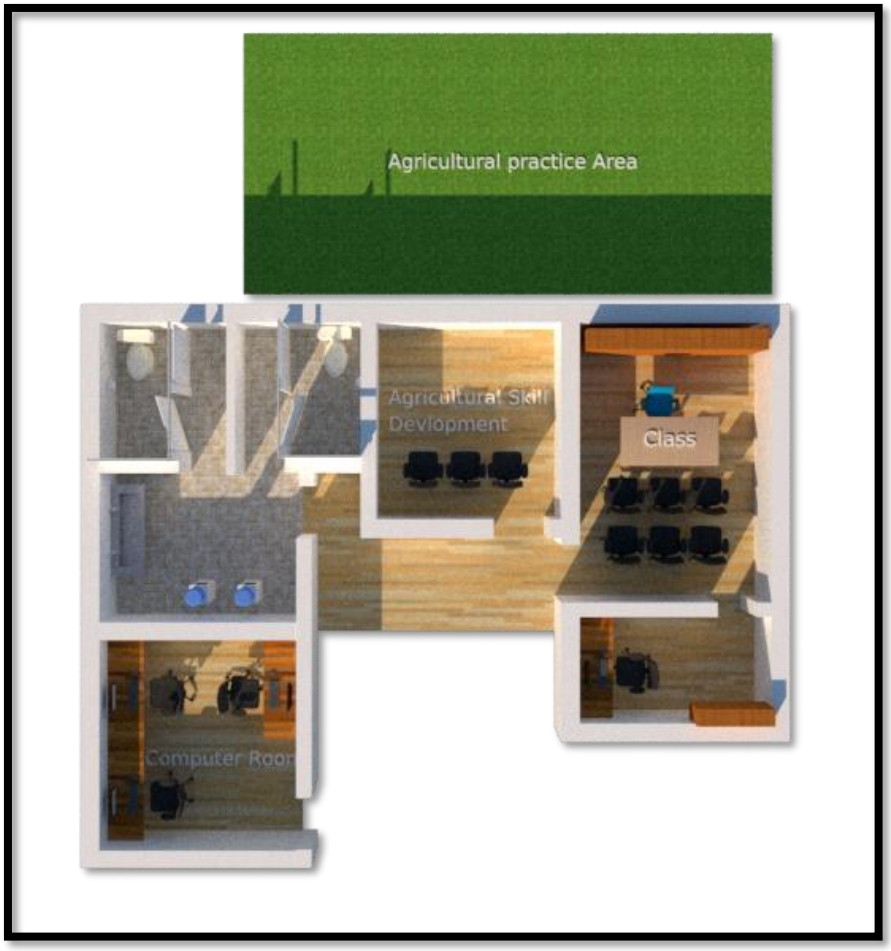


Fig 13.1.18 Hoda Pool - 3D

MEASUREMENT SHEET FOR SKILL DEVOLPMENT CENTER (Table 13.1.9)

Item	No	L	B	H	Quantity(m3)
Total Center Line Lengh=51.49m					
Excavation		46.99	0.9	1.45	61.32m3
PCC		46.99	0.9	0.3	12.68m3
Brick Work Up to Plinth					
In Foundation		46.99	0.9	0.3	12.68
(1) (0.7) width		47.99	0.7	0.3	10.07
(2) (0.5) width		48.99	0.5	0.3	7.34
(3) (0.3) width		49.99	0.3	0.9	13.49
Steps					
1st		1.0	0.2	0.6	0.12
2nd		1.0	0.4	0.4	0.16
3rd		1.0	0.6	0.2	**0.12**

					Sum of total Quantity=43.98m3
Brick Work in superstructure		49.99	0.3	4.7	70.48
Deduction					
Door(D)	4	1.0	0.3	2.2	2.64
Ventilator	2	1.4	0.3	0.2	0.168
Window					
W	4	3.2	0.3	1.0	1.84
Lintel		1.6	0.3	0.075	0.035
					Total Brick work in superstructure= (Brick work in superstructure) - (Deduction) =65.79**m3**
*RCC work		11.0	8.8	0.2	19.36

ABSTRACT SHEET FOR SKILL DEVOLPMENT CENTER (Table 13.1.10)

Item	Quantity(m3)	Rate	Per	Amount
Excavation	61.32	90/-	M3	5518.8
PCC Work	12.68	3000/-	M3	38040
RCC Work	19.36	8800/-	M3	170368
Brick Work	109.77	3300/-	M3	362141
				Sum=576067/-

Total Cost= 576067+ 5% water charge (28803) =604870

13.1.6 Civil Design – Portable Greenhouse designed with Glass panels

Scenario :

We start to think in a new dimension altogether. Since the environment at the Hoda Gam is peaceful, but hoda Is majorly divided in two regions one is hoda gam and another is para region. In between this region there is two major structure on Is bus station and anther is internal para part. We are going to connect this by an over bridge.

Sustainability of the design

Over bridge as an important tool:

Needs:

Good qulity stones, tiles, landscaping ,water, cement,, steel, bridge engineer

Proposed Design Of Green house in Auto cad and Sketch-up:

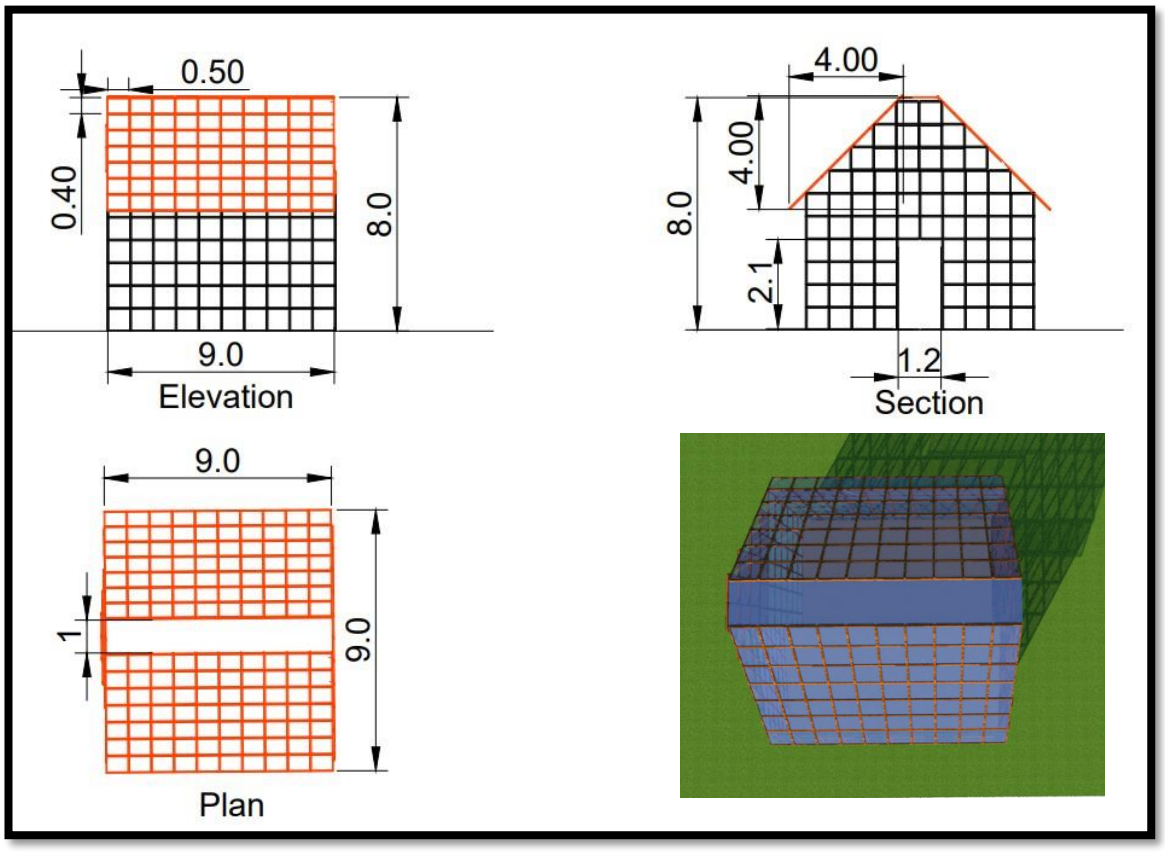


Fig 13.1.19 Hoda Green house ELEVATION – SECTION – PLAN – 3D

MEASUREMENT SHEET FOR GREEN HOUSE (Table 13.1.11)

Item	No	L	B	H	Quantity(m2)
Steel rod	4	8.0			8.0m
Stell brace		8.0	9.0		72
glass panel	120	0.50	0.40		30

ABSTRACT SHEET FOR GREEN HOUSE (Table 13.1.12)

Item	Quantity(m)	Rate	Per	Amount
stell rod	8.0m	470	M	3760
Stell braces	72m2	130	M	4680
Glass panel	30m2	500	M2	15000
				Sum=23440/-

Total cost = 23440/-

13.2 Reason for Students Recommending this Design :

Socio – cultural: Public Garden

Hoda village is very peaceful community, it is important to have a peaceful place too in this community, so we come up with public garden design. Public garden going to create healthy and stable mental condition in people living there in hoda village. More over a garden will contain several component as playground, walking area a small pond etc.In our case it will have one performance structure too.

Physical design: Bank

We are suggesting bank design because in hoda village, there were no separate building for bank. Bank structure is combined with dairy and gram panchayat. So, there is strong requirement of bank structure.

Social Design: Swimming pool

Swimming is the best exercise we all know, Hoda village is located in aired zone, which quite near to katch and in northern Gujarat as we know it is hot climatic condition most of the time. Feature like swimming pool defiantly attract people and they can have their fun time. Everyone have rights to be happy and good infrastructure is the first step.

Sustainable Design: Over bridge

We know that over-bridge is hard to imagine in town but what if overbridge is made of local material and it enhance the beauty of town. If we want to stop people's migration to city, first let's bring infrastructure of city in town and provide them all the facility they can have in city rest people can grow anywhere.

Smart Village Design: Green house

Green house is not a new concept, green house always helps in agricultural production but people can use this green house at ground level, we don't have strong foundation for green house rather we have designed this in form of attachable/removable glass panels so that they can create their desired size green house.

Development Design: Skill centre

Skill centre is must for every town/city/locality. People can have best infrastructure best technologies but if they don't have skills to use it this all will be useless. Plus, everyday new innovations are taking place in this dynamic world. It is important to train farmers, students and females to improve their quality of living.

13.3 About designs Suggestions / Benefit of the villagers

- **Socio – cultural: Public Garden**
  Hoda village is about 3000 people in a town and around 800 are kids and students they required organized garden and playground moreover our garden will have one performance area, we observed people love the play/natak and in organized way it will be having better aesthetics as compared to street.
- **Physical design: Bank**
  Bank is important structure for any town. As Hoda village is having 3000 population bank is somewhat essential feature a town should have. We designed our bank in rectangular orientation and triangular interior. Which is having locker room, conference room, and other common facilities a bank should have.
- **Social Design: Swimming pool**
  We designed our swimming pool in 3major one is general, one for females, which is totally covered with partitions, other one is for kids/male which is connected with general.
- **Sustainable Design: Over bridge**
  We designed bridge in 90m length and 3meter wide, we are going to connect two regions of hoda with this bridge. One is para and other is main gam tal. We haven't performed any analysis for economic situation.
- **Smart Village Design: Green house**
  Green house is not a new concept, green house always helps in agricultural production but people can use this green house at ground level, we don't have strong foundation for green house rather we have designed this in form of attachable/removable glass panels so that they can create their desired size green house.
- **Development Design: Skill centre**
  Our skill centre has features such as computer room, agricultural practice field, more over it have class room and washroom facility too. Skill centre is extremely important for every human being we believe.

CHAPTER-14 TECHNICAL OPTIONS WITH CASE STUDIES

14.1 Civil Engineering

14.1.1 Advanced Earthquake Resistant

INTRODUCTION

An Earthquake is Earth's Shaking or in other words release of energy due to the movement of tectonic plates. This can be destructive enough to kill thousands of people and bring huge economic loss. This natural disaster has many adverse effects on earth like ground shaking, landslides, rock falls from cliffs, liquefaction, fire, tsunami etc.

In order to analyse a tall structure many analysis procedures are valid like,

a) Equivalent static analysis, b) Response spectrum analysis, c) Linear dynamic analysis,

d) Nonlinear static analysis or nonlinear pushover analysis and e) Nonlinear dynamic analysis

Soil structure interaction analysis is also essential to be considered. After identifying the soil type analysing procedure is selected to do the detailed analysis of the interaction between soil and structure. To reduce the seismic effects on tall buildings several equipment is used like dampers or base isolation process. In dampers viscous damper, friction damper, yielding damper, magneto rheological fluid dampers tuned mass damper or harmonic absorber can be used. In base isolator magneto rheological elastomer, elastomeric bearing system, sliding system can be used.

ANALYSIS METHODS

Types of analysis methods

(1) Equivalent Static Analysis .

Equivalent static analysis is a kind of response spectrum of seismic design. It can also be defined as the forces which act on building and it represents the ground motion effect due to earthquake. In this procedure it is considered that the building responds with fundamental mode. For happening this, the building should be shorter and it should not twist significantly when movement of ground occurs. This type of analysis is used for estimating displacements of structures. The earthquake load will be assumed as an equivalent force which is static and horizontal and applied to the individual frames. The given force will be same as the multiplication of acceleration response spectrum and its weight.Yielding effects of structure are analysed by applying force reduction modification factors that reduce the design forces also.

(2) Response Spectrum Analysis .

Response spectrum analysis is a kind of statistical analysis which is linear-dynamic. It measures the mode of vibration and indicates the maximum seismic response of elastic structure. It depends on the theory of structural dynamics and derived from basic principles. This analysis gives acuteness into dynamic behaviour with the help of velocity, acceleration, displacement, measurement as a structural period function for a given damping level and time history. As Response spectrum analysis relates type selection of structure to dynamic performance, this is very useful for decision-making in design. To pick out the response of linear system resulting plot can be used. This analysis includes the multiple modes of response of a building except very simple and very complex structures. This analysis is required in many buildings codes. The response of a structure is also prescribed as a summation of many special modes that in a vibrating string correlate with the "harmonics".

There are some limitations of response spectra. These are widely applicable for linear systems only. Response spectra can be originated for the non-linear systems, but these are only relevant to systems which have same non-linearity, though endeavours have been made for developing non-linear seismic spectra in design with broad structural application. But the outcome cannot be linked right away for multi-mode response.

(3) Linear Dynamic Analysis .

For lower seismic effects, static analysis Procedure is appropriate but for higher seismic effects, higher buildings, buildings with irregularities or non-orthogonal systems, dynamic analysis procedure is used. In this process of linear dynamic analysis, the structure is analysed as a multiple degree of freedom system with viscous damping matrix and elastic stiffness matrix. Time history analysis and modal special analysis are used when analysing the seismic effects. In this analysis the reaction of the structure's ground motion is deliberated in the domain time and all the phase information is sustained. Only linear properties are taken up. In the analysis the modal decomposition can be used for decreasing the degrees of freedom.

(4) Nonlinear Static Analysis: .

Nonlinear static analysis, known as pushover analysis is an analysis which is under everlasting vertical loads and thinly rising lateral loads. The forces induced by earthquake are described by static lateral loads. A sketch of displacement versus total base shear in a structure is acquired by this analysis. It would specify any weakness and failure. This analysis is performed up to failure, thus it allows determining the ductility capacity and collapse load. Nonlinear static analysis is controlled by force and displacement. The combination of full load is attached in the pushover procedure which is controlled by force. This procedure is applied for the known loads.

(5) Nonlinear Dynamic Analysis .

Nonlinear dynamic analysis gives the results with low unpredictability. It is because this analysis exploits the summation of ground motion records with the details of structural model. In this analysis the structural model estimates the deformation for all the degrees of freedom. It is considered that the properties of this analysis are portion of domain of time analysis. According to building codes this analysis is meticulous and necessary for important configuration. The response calculation can be sensorial to the ground's motion and it is used as a input of earthquake. Various analyses are necessary to calculate the records of ground's motion and for estimating the structural response distribution. As the characteristics of seismic response based on intensity and earth shaking, an extensive measurement is required to describe different earthquake.

Conclusion

Earthquake is of serious concern in the construction field. There are some very complex design procedures which are very important. These are used not only in the foundation as a base isolation but also in the whole structure with protective elements of earthquake. Using different analysis methods very large and complex buildings can be modelled. The vibration of tall buildings with symmetrical or asymmetrical configuration is simulated for both harmonic loadings and real earthquake loadings. The mass asymmetrical tall building suffers more

FIG 14.1.1 EARTHQUAKE RESISTANCE BUILDING AND SCHEMATIC REPRESENTATION OF EARTHQUAKE FAULT

damages than the corresponding symmetrical buildings. It shows that the asymmetrical building is less seismic resistant than a symmetrical building during an earthquake. If the damping is underestimated and the stiffness is overestimated then the assumption about higher buildings on an undone soil structure interaction rigid base does not represent the earthquake response.

14.1.2 Seismic Retrofitting of Buildings:

INTRODUCTION:

Seismic retrofitting of constructions vulnerable to earthquakes is a current problem of great political and social relevance. Most of the Italian building stock is vulnerable to seismic action even if located in areas that have long been considered of high seismic hazard. During the past thirty years moderate to severe earthquakes have occurred in Italy at intervals of 5 to 10 years.

SEISMIC ACTION:

Seismic vulnerability is not an absolute concept but is strongly related to the event being considered. The same construction may not be vulnerable to one class of earthquakes and yet be vulnerable to another. Therefore, before attempting a seismic vulnerability evaluation of a given construction, the seismic action that will affect that construction must be fully specified.

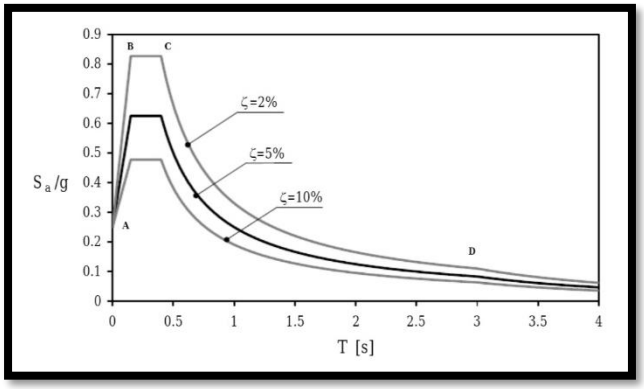


FIG 14.1.2.1 ELASTIC DESIGN SPECTRUM, SOILTYPEA

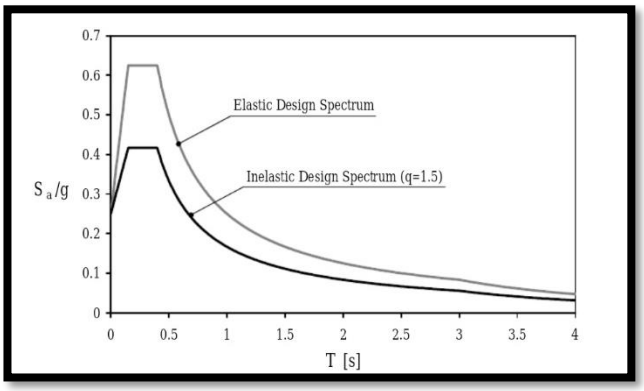


FIG 14.1.2.2 ELASTIC AND INELASTIC DESIGN SPECTRUM, SOULTYPEA

SEISMIC RESISTANCE AND VULNERABILITY

Because it is necessary to retrofit only constructions vulnerable to the design earthquake, a vulnerability evaluation is obviously needed before attempting any seismic retrofitting.

If a structure exhibits seismic resistance larger than that required by the design earthquake, it obviously possesses an over-resistance and therefore is not vulnerable. This is the case shown by the longer ordinate in Figure 3. In this second case the structure can only withstand an earthquake with an anchoring acceleration smaller than the design one. It is, therefore, necessary to retrofit the structure to allow for the satisfaction of the design inequality:

Capacity > Demand

TRADITIONAL METHODS OF SEISMIC RETROFITTING

Traditional methods of seismic retrofitting fall essentially into two categories, one based on the classical principles of structural design which requires an increase of strength and stiffness, and the other based on mass reduction. Thus the first one tends to satisfy the design inequality by an increase of the capacity while the second one achieves the same result by a reduction of the demand. Since seismic design is different from ordinary design, both techniques may turn out to be quite ineffective as is shown in the following.

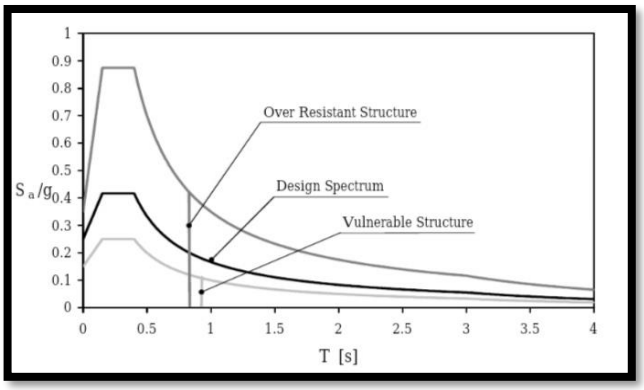


FIG 1.14.2.3 COMPARISON OF SESMIC RESISTANCE

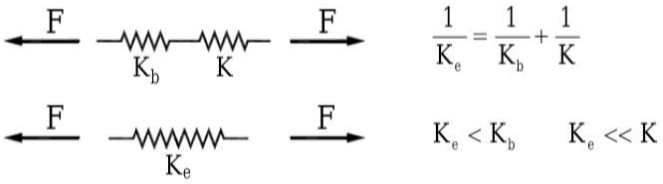
INNOVATIVE APPROACHES TO SEISMIC RETROFITTING

The main innovative methods of seismic retrofitting may be grouped into the following classes**:**

- **Stiffness reduction**
- **Ductility increase**
- **Damage controlled structures**

- **Composite materials**
- **Any suitable combination of the above methods**
- **Active control**

For equal mass the 'stiffness reduction' produces a period elongation and a consequent reduction of the seismic action and therefore of the seismic strength demand. The stiffness reduction may be achieved by the principle of springs in series whereby the equivalent stiffness of two springs in series is smaller than either of the single springs as shown in Figure.



One of the most important developments to surface in earthquake engineering in the last 10 years is the introduction of the concept of designing.

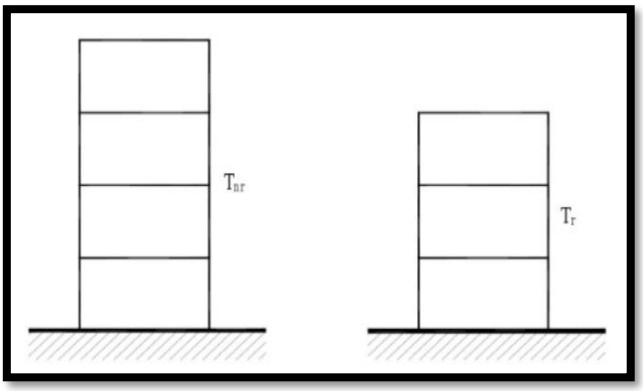


FIG 14.1.2.4 SEISMIC RETROFITTING BY MASS REDUCTION

Retrofitting Strategies for RC Buildings

The need for retrofitting or strengthening of earthquake damaged or earthquake vulnerable buildings in India have been tremendously increased during recent years after the devastating Bhuj earthquake with an alarming awakening for sufficient preparedness in anticipation to face future earthquakes. Many professional engineers are accustomed to the designing of new building but they may find themselves not fully equipped to face the challenges posed at the time of strengthening the existing buildings with a view to improving their seismic performance. This section presents the most common devices for retrofitting of reinforced concrete buildings with technical details, constructional details and limitations.

Structural Level (or Global) Retrofit Methods

Two approaches are used for structure-level retrofitting, first is conventional approach based on increasing the seismic resistance of existing structure, and second is non - conventional approach based on reduction of seismic demands.

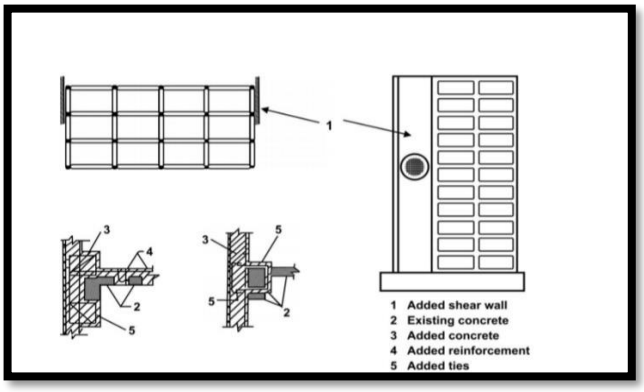
Conventional Methods

Conventional methods of retrofitting are used to enhance the seismic resistance of existing structures by eliminating or reducing the adverse effects of design or construction. The methods include adding of shear wall, infill walls, steel braces.

Adding New Shear Walls into/onto the Existing Frames

One of the most common methods to increase the lateral strength of thereinforced concrete buildings is to make a provision for additional shear walls,Figure 6 (CEB, 1997).

FIG 14.1.2.5 GLOBAL AND LOCAL RETROFIT TECHNIQUES



The technique of infilling/adding new shear walls is oftentaken as the best and simple solution for improving seismic performance.Therefore, it is frequently used for retrofitting of non-ductile reinforced concrete frame buildings. The added elements can be either cast in place or pre-cast concrete elements. New elements preferably be placed at the exterior of the building, however it may cause alteration in the appearance and window layouts. Placing of shear walls in the interior of the structure is not preferred in order to avoid interior mouldings.

Adding Steel Bracing into/onto the Existing Frame

Another method of strengthening having similar advantages is the use of steel bracing. The structural details of connection between bracing and column are shown in Figure .(Jara et. al., 1989). The installation of steel bracing members can be an effective solution when large openings are required. This scheme of the use of steel bracing has a potential advantage over other schemes for the following reasons;

- **Higher strength and stiffness can be proved**
- **Opening for natural light can be made easilly**
- **Amount of work is less since foundation cost may be minimized**
- **The bracing system adds much less weight to the existing structure**

Most of the retrofitting work can be performed with prefabricated elements and disturbance to the occupants may be minimized

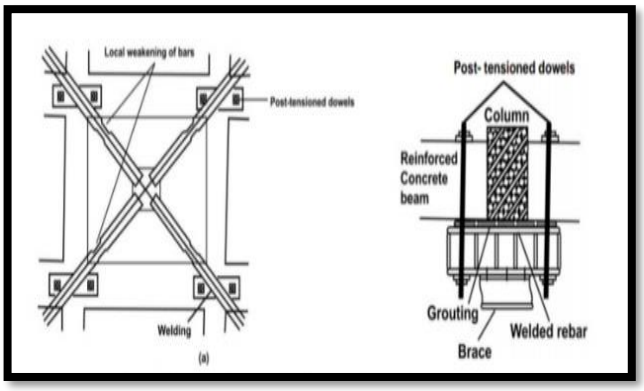


FIG 14.1.2.7 BUILDING RETROFITTING WITH STEEL BRACING AND ITS CONNECTION DETAIL

Adding Infill Walls into/onto the Existing Frames:-

Strengthening of existing reinforced mome nt resisting frames often involves addition of infill walls. It is an effective and economical method for improving strength and reducing drift of existing frames. But a relatively strong masonry infill may result in a failure of the columns of existing frame; Figure.

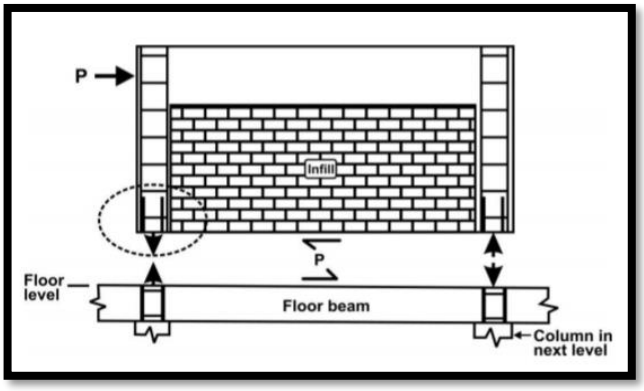


FIG 14.1.2.8 COLUMN LAP SLICES SUBJECTED TO LARGE AXIAL FORCE FUE TO FRAME WALL ACTION

By proper selection of the infill masonry strength along with prevention of its premature separation from the columns, a more desirable failure mode can be achieved. Anchorage of the masonry to the frame is a critical factor in determining an overall performance. With proper anchorage, it should be possible to force failure in the masonry and prevent a premature shear/flexure column failure.

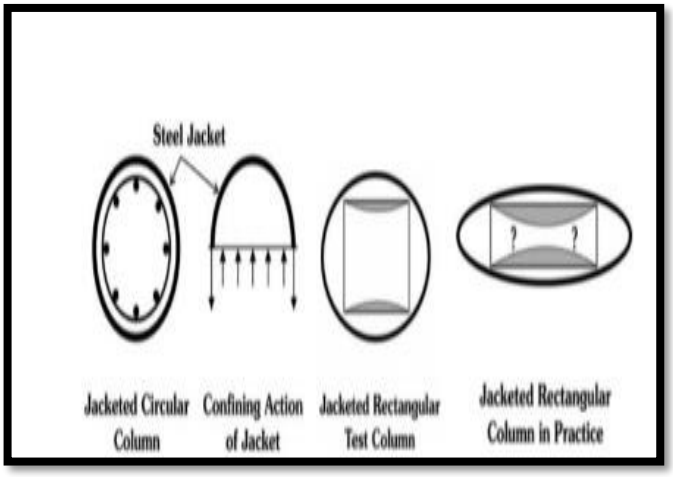
Local Retrofit Methods

The member-level retrofit or local retrofit approach is to upgrade the strength of the members, which are seismically deficient. This approach is more cost effective as compared to structural level retrofit. The most common method of enhancing the individual member strength is jacketing. It includes the addition of concrete, steel, or fiber reinforced polymer (FRP) jackets for use in confining reinforced concrete columns, beams, joints and foundation. A brief discussion of jacketing and its application on various members are discussed below.

Jacketing/ Confinement

Jacketing is the most oftenly used and one of the most popular methods for strengthening of building columns. The most common types of jackets are steel jacket, reinforced concrete jacket, fiber reinforced polymer composite jacket,jacket with high tension materials like carbon fiber, glass fiber etc. The main purposes of jacketing are: (i) to increase concrete confinement by transverse fiber/ reinforcement, especially for circular cross-sectional columns, (ii) to increase shear strength by transverse fiber/ reinforcement, (iii) to increase flexural strength by longitudinal fiber/ reinforcement provided they are well anchored at critical sections. Transverse fiber should be wrapped all around the entire circumference of the members possessing close loops sufficiently overlapped or welded in order to increase concrete confinement and shear strength. This is how members with circular cross-section will get better confinement than member with rectangular cross-section. Where square or rectangular cross-sections are to be jacketed, circular/oval/elliptical jackets are most oftenly used and the space between the jacket and column is filled with concrete. Such types of multi-shaped jackets provide a high degree of confinement by virtue of their shape to the splice region proving to be more effective. Rectangular jackets typically lack the flexural stiffness needed to fully confine the concrete. However, circular and oval jackets may be less desirable due to (i) need of large space in the building potential difficulties of fitting in the jackets with existing partition walls, exterior cladding, and non structural elements, (ii) where an oval or elliptical jacket has sufficient stiffness to confine the concrete along the long dimension of the cross-section is open to question, Figure.The longitudinal fibers similar to longitudinal reinforcement can be effective in increasing the flexural strength of member although they can not effectively increase the flexural capacity of building frames because the critical moments are located at beam column ends where most of the longitudinal fibers are difficult to pierce through to get sufficient anchorage.

FIG 14.1.2.9 VARIOUS SHAPES OF RETROFITTING JACKETS



Jacketing of different members of the structure/building

- acketing of column
- Jacketing of beam
- Beam - column joint jacketing

Comparative Analysis of Methods of Retrofitting

Typical lateral load-displacement relationships of different strengthening techniques are presented in Figure.It may be observed that the strengthening techniques significantly increase the lateral strength and stiffness in comparison to unstrengthened frame however it is only a qualitative indication. Table 6 presents a comparison of different aspects involved in retrofitting. It is based on the author's experimental study of one-bay, one-storey simple frame, which was strengthened by different techniques.

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

Introduction

To understand all how and about of super performing construction materials we must study materials according to their use from very root to tip. By that way we can easily conclude and infer about the application, implementation and feasibility of that particular construction material. Elements of construction where these smart materials and techniques shall be implemented are:-

Foundation, Plinth, Beam, Column, Sill, Window, Door, Roof, Wall, Parapet, Finishing work, Skylights

Construction materials are said to be super performing when they,

(1) High Performance Concrete

FIG 14.1.3.1 HIGH PERFORMANCE CONCRETE

Lafarge has developed a whole new family of concretes called Ductal. These concretes have high compressive and flexural strength, and their special characteristics enable the achievement of outstanding architectural feats. Ductal concrete incorporates strengthening fibers and opens the horizon to ultra-high performance due to its special composition which provides it with outstanding strength, six to eight times greater than traditional concrete (under compression).“Fiber-reinforced” means that it contains metal fibers which make it a ductile material.

(2) Light Transmitting Concrete:- The days of dull, grey concrete could be about to end. A Hungarian architect has combined the world’s most popular building material with optical fiber from Schott to create a new type of concrete that transmits light.

FIG 14.1.3.2 LIGHT TRANSMITTING CONCRETE

A wall made of “LitraCon” allegedly has the strength of traditional concrete but thanks to an embedded array of glass fibers can display a view of the outside world, such as the silhouette of a tree.

(3) Pervious Concrete:-

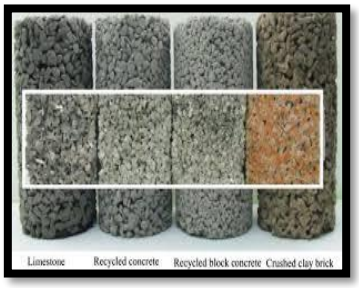


FIG 14.1.3.3 PERVIOUS CONCRETE

Pervious pavement is a cement-based concrete product that has a porous structure which allows rainwater to pass directly through the pavement and into the soil naturally.

Once dried, the pavement has a porous texture that allows water to drain through it at the rate of 8 to 12 gallons per minute per square foot. Tests conclude that a square foot of Bahia sod drains at the rate of 2 1/2 to 3 gallons per minute. According to the manufacturer, this rapid flow-through ratio inspired the phrase “the pavement that drinks water

(4) Floating Concrete:-

FIG 14.1.3.4 FLOATION CONCRETE

Foamed Aluminum:-

"Light-as-air, stronger-than-steel materials are just beginning to shape our world. Foamed aluminum first emerged from the lab in the frame of a 1998 Karman concept car. Ten times stronger than traditional aluminum at just one tenth the weight, the material allows a more fuel-efficient vehicle.

(5)Aerogel:-

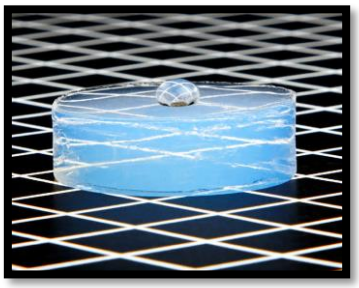


FIG 14.1.3.5 AEROGEL

Aerogel or "Air glass" is a transparent material that looks like glass, insulates better than mineral wool and is more heat resistant than aluminum. The material has many interesting properties and possible applications such as insulation in windows and solar collectors, windows in firewalls, a component in air-conditioning equipment, etc. Aerogel is molded, giving the possibility of getting different shapes: cylinders, cubes, plates of varying thickness etc. Chemically, Aerogel is composed of quartz and a great deal of air, making it fragile. The grains of quartz are small compared to the wavelength of light, giving Aerogel good transparency properties. At around 750°C (1380°F), it starts to shrink and slowly collapses to a piece of ordinary quartz. Aerogel can be cut with a band saw and holes can be drilled with a metal drill. It should be noted that Aerogel is non-flammable and non-toxic.

Different types of Construction techniques:-

(1) 3D Volumetric Construction

Using this modular construction technology, 3D units are produced in controlled factory settings using needful construction and building materials.

Finished units are transported to site in various modules, basic structural blocks or final touched up units with all amenities installed, for assembly. Blocks can be erected rapidly at site and properties of concrete like fire retardant, sound resistivity, thermal mass etc. are retained.

FIG 14.1.3.6 3D CONSTRUCTION

(2) Precast Flat Panel Modules

These are primarily wall and floor modules which are manufactured away from the actual site and then transported to site for erection. Load bearing components like decorative cladding and insulation panels can also be produced.

FIG 14.1.3.7 PRECAST FLAT PANEL MODULES

Also called cross-wall construction, the technology has gained momentum due to seamless adherence to specifications and ease as well as swiftness of construction.

FIG 14.1.3.8 TUNNEL FORMWORK

(3) Tunnel Formwork System

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

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

FIG 14.1.3.9 PRE-CAST FOUNDATION TECHNIQUE

(4) Pre-cast Foundation Technique

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

FIG 14.1.3.10 HYBRID CONCRETE BUILDING TECHNIQUE

(5) Hybrid Concrete Building Technique

This technique expedites construction turnaround time by blending the advantages of concrete pre-casting with the in-situ building. Quality improves, whereas the cost of construction plummets.

FIG 14.1.3.11 THIN JOINT MASONARY TECHNIQUE

Hybrid concrete structures are easy to build, competitive in nature and perform consistently.

(6) Thin Joint Masonry Technique

Utilization of this technique leads to the reduction of the quantum of mortar applied by slashing it depth from 10mm to lesser than 3mm. Consequently, mortar can be laid swiftly with enhanced productivity on the longer wall panels.

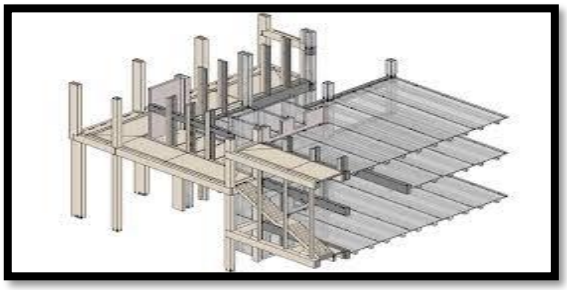


FIG 14.1.3.12 INSULTING CONCRETE FORMWORK

With large sized concrete blocks, higher construction efficiency along with significant cost reduction can be achieved. Within a single day, the number of mortar courses laid is higher as curing of mortar takes place quickly without compromising on bonding strength resulting in the elimination of floating problem.

(7) Insulating Concrete Formwork (ICF) Technique

ICF technique employs polystyrene blocks that feature twin walls and can be rapidly put together for creating building wall formwork. The formwork is then pumped in with high quality, ready mixed, factory-made concrete.

The building construction process becomes fool-proof and the resultant structure has a high level of sound and thermal insulation.

Modern Constitution Equipment

CLASSIFICATION OF EQUIPMENTS

Various equipment involved in construction works are:

1. Excavating Equipment a) Power Shovel b) Hoe
c) Dragline

2. Hauling Equipment

3. Earth-moving Equipment

4. Hoisting Equipment

a) Mobile Cranes b) Tower Cranes c) Crawler Mounted Cranes

d) Passenger Hoist e) Builders Hoist

5. Dredging Equipment

6. Conveying Equipment **7. Compacting Equipment** **8. Pumping Equipment**

9. Pile Driving Equipment **10. Material Testing Equipment** **11. Drilling Equipment**

12. Aggregate, concrete and HMA (Hot Mix Asphalt) production Equipment.

Excavating Equipment

These equipment are commonly used for digging, excavating and placing earth materials to a distant place, to remove snow, lifting pipes, grading the ground, etc. It consists of a long bucket arm attached to a cabin where the operator operates and can rotate by 3600 This is a large piece of equipment which is used for big jobs and it runs on tracks. It can also be used with different attachments, such as a clamshell attachment to pick up dirt and debris.

Power Shovel– It is a bucket-equipped machine, usually electrically powered, used for digging, loading fragmented rock or earth and for extract ion of minerals. Main parts includes the track system, cables, rack, stick, boom foot-pin, saddle block, boom, boom point sheaves, bucket and cabin.

FIG 14.1.3.13 POWER SHOWEL

Hoe– It is also known as back shovel or pull shovel. It is used to excavate beneath the natural surface on which it rests. It is used for works like excavating trenches, digging pitsforbasements, and it is also used forgradingworkswhich needs precision in case of controlofdepths. Here the basic parts include boom, jackboom, boomfootdrum, boomsheave, sticksheave, bucket, bucketsheave and stick.

FIG 14.1.3.14 DRAGLINE

Dragline– It is so named as its prominent operation involves dragging the bucket against the material to be dug. It consists of long light crane boom where the bucket is loosely attached to the boom through cables.

Earth Moving Equipment-These equipment include excavators, loaders, motor graders, trenchers, backhoes and bulldozers. They are used to shift large amounts of dig foundations,landscape areas and dirt.

FIG 14.1.3.15 EARTH MOVING

Hoisting Equipment– Hoisting refers to the lifting of a weight from one location to another location at a reasonabledistance. These include jacks, winches, cranes and chain hoists.Crane is the only single piece machine capable of providing three-dimensional movement of a weight.

Mobile Cranes– Such type of cranes is mounted on mobile units which is either of wheel type or crawler type. Truck cranes are such having high mobility whereas the crawler mounted cranes move quite slowly. Crawler mounted cranes can move on rough terrain.

FIG 14.1.3.16 MOBILE CRANES

Tower Cranes– These cranes are derrick crane mounted on a steel tower. They are used for industrial and high-rise residential buildings especially for assembly of industrial plants consisting of steel structures. Such cranes resemble truss structures which are made by welding of steel bars and channel sections. Basic parts include carriage, slewing platform, jibs and tower with operator's cabin.

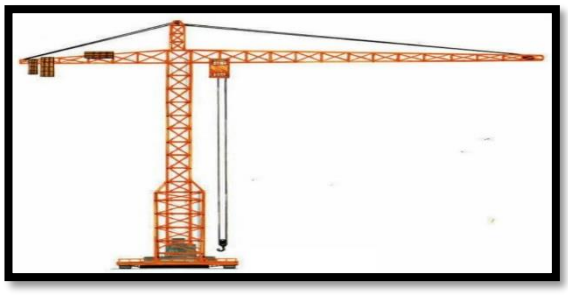


FIG 14.1.3.17 TOWER CRANES

Passenger Hoist– It is a lifting system very often used at construction sites to lift materials to upper levels of unfinished buildings. Basic part consists of a cage in which people stand during transport, and there is a track that is mounted to the building. The cage travels along this track by means of a pinion drive system and rack, and the car can be stopped at many locations along the track. This allows to load or unload at any floor along the length of the track.

FIG 14.1.3.18 PASSENGER HOIST

Builders Hoist– These are available in various different configurations, sizes and budgets to suit different applications starting from small domestic gin wheel or wire rope hoists and professional scaffold hoists to gantry hoists as well as rack and pinion hoists for material transportation up the side of a high-rise building.

FIG 14.1.3.19 BUILDER HOIST

Dredging Equipment– The choice of the dredging equipment for executing a dredging operation depends on conditions such as the weather, accessibility to the site and wave conditions, anchoring conditions, required accuracy and many more.

FIG 14.1.3.20 DREDGING EQUIPMENT

Compacting Equipment– They can be of type such as smooth-wheel rollers, sheep-foot rollers and pneumatic type rollers. Such equipmentare used to expel air from a soil mass so as to achieve a high density. Smooth-wheel rollers are suitable for gravels and sand. Pneumatic-tired rollers are suitable for clays with reasonably high moisture content.And sheepsfoot rollers are the suitable for clays with low moisture content.

FIG 14.1.3.21 COMPACTING EQUIPMENT

Pumping Equipment– Pumping equipment are used to remove water from a volume of liquid, solid material or soil. Pumps remove liquid from a volume of liquid. They can be used for keeping water out of foundations, pits, tunnels, and other excavations and many more.

FIG 14.1.3.22 PUMPING EQUIPMENT

Pile Driving Equipment– Such equipment units involve lifting the piles from ground while taking in position to a specified depth. Here driving is accomplished by hammer on pile top. Equipment are so designed so as to remain economic while driving. Major pile driving equipment includes pile driving rigs and pile driving hammers**.**

FIG 14.1.3.23 PILE DRIVING EQUIPMENT

Material Testing Equipment– It is frequently used in the quality control processes which are related with the analysis of soil, concrete, asphalt, bitumen, cement, mortar, steel, aggregates, and other materials used in construction. The mechanism in which the equipment performs analysis varies according to the material to be analysed.These testing instruments are capable of analysing the hardness, moisture content, permeability and other mechanical properties.

14.1.4 Engineering Aspects Of Soil mechanics - Environmental Impact Assessment

Introduction:

Soil mechanics is the branch of civil engineering that concerns the application of the principles of hydraulics, mechanics and chemistry to engineering problems related to soils.

Objective:

Soil may be grouped under three basic types: Coarse-grained, fine grained and organic soils. Coarse grained soils are granular or cohesionless soils. Gravel and sands constitute coarse grained soils while fine grained soils which are predominantly made of particles not visible to naked eye include silts and clays. Silts may have little or no cohesion but clays possess plasticity and cohesion. The particle size according to I.S.CODE 1498 shown below.

Clay	Silt		Sand		Gravels	
		Coarse	Medium	Fine	Coarse	Fine
< 0.002mm	0.002-0.075mm	2-4.75mm	0.425-2mm	0.075-0.425mm	20-80mm	4.75-20mm

TABLE 14.1.4 Engineering aspect of soil mechanics environment impact assessment

Particle size (Sieve and Sedimentation/Pipette analysis) would enable to determine percentage of various fractions, determining grading and classifying coarse grained soils. To study hydraulic aspects of soil are most essential before predicting its behavior when soil comes in contact with water (water adversely affects cohesive soils by reducing its cohesion by softening) or behavior of soil under submerged conditions. The knowledge of permeability (in horizontal and vertical directions), void ratio, porosity 'η', degree of saturation 'Sr', specific surface 'S', critical hydraulic grad ient 'Ic' etc is a pre requisite to assess d raining characteristics of soil, well water supply, construction dewatering and further to assess conditions of bulking and possibility of liquefaction in cohesionless soil below W.T.

Classified Soil Data:

The next step will be to undertake classified lab tests such as consolidation (primary and secondary) tests to estimate deformation and probable settlement, Direct Shesr Test to determine shear strength parameters (C and Ø) of specially coarse grained soils, Triaxial compression test (confined/unconfined and with or without pore pressure measurements) to determine shear strength parameters (C and Ø) of

coarse and fine grained soils both along with stress-strain modulus, shear modulus, Poisson's ratio).

$$qs = 1/F\ (CNc+YD\ (Nq-1)\ +0.5YBNr)+YD$$

Seepage:

The structure of soil particles within our two-phase continuum is considered to be Where the constant k is the coefficient of permeability (sometimes called the hydraulic conductivity) and has the dimensions of a velocity.

Excess Pore-pressure:

A simple apparatus for investigating the one-dimensional flow of water through a soil is the permeameter. The apparatus consists of a perspex cylinder containinga soil specimen, in this case saturated sand, supported by a gauze mesh with suitable size of aperture. De-aired water is supplied from a source at a constant head higher than the top of the permeameter, so that water is forced to flow upwards through the sand specimen.

$$V = ki$$

Darcy's Law:-

Darcy's law states that there is a linear relationship between hydraulic gradient and velocity for any given soil (representing a case of steady laminar flow at low Reynolds number.

Control of Seepage :-

The technical possibilities could be to insert a porous tipped pipe and cause local spherical flow, or to insert a porous-walled pipe and cause local radial flow, or to place or insert a porous-faced layer and cause local parallel flow. These three possibilities correspond to more simple solutions than the two-dimensional problem.

Conclusion:

Lack of understanding and optimistic considerations of the nature of subsoil by the engineer without making thorough assessment of the soil properties such as gravimetric volumetric data, strength parameters, compressibility indexes and permeability of various soils stretches and without investigating/evaluating suitability of various subsoil stratums falling particularly within the critical stress distribution zone of the pressure bulb to support the incoming loads safety and without risk of either shear failure or excessive settlements, would only compromise with the safety /stability the structure.

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

Water supply system

Water supply is the provision of water by public utilities, commercial organisations, community endeavors or by individuals, usually via a system of pumps and pipes. Aspects of service quality include continuity of supply, water quality and water pressure. The institutional responsibility for water supply is arranged differently in different countries and regions (urban versus rural). It usually includes issues surrounding policy and regulation, service provision and standardization.

Categorization of Water Supply: Table

"Improved"	**Household connection**
	Public standpipe
	Borehole
	Protected dug well
	Protected spring
"Not Improved"	**Unprotected spring**
	Unprotected well
	Bottled water
	Vendor-provided water
	Tanker truck-provided water

Key Factors Influencing the Choice of Water Supply Options

A long range of improved water supply options exists, from dug wells to piped water system with water treatment. Water supply technologies are often divided into two main categories of sys-tems:

1. Non-piped water supply system (decentralised systems); and
2. Piped water supply systems (centralised systems).

Non-piped system means single system for one a few households where the water tap is at the production facility. Non-piped systems such as dug wells, handpumps, and protected spring are easy to maintain and capital cost is often affordable for most rural households if water source is nearby. These technolo-gies are significantly cheaper than the technologies for piped water, and are particularly suitable for low density areas and/or for consumers with a very lim-ited budget for water services.

Piped systems are more advanced systems with distribution pipes conveying water from water sources or production units to points of water use. For piped water supply this

document operates with three possible service level options: Household Connection (HC), Yard Taps (YT) and Standpipes (SP).

The selection of water supply technologies is influenced by a large number of factors.

The key factors are:

• Availability of water source (quantity and quality wise) close to the com-munity/end users;

• Topography;

• Population density in town/village/settlement;

• Service level adopted (water demand, connection type etc.) depending on the willingness to pay and affordability; and

• Institutional factors, in particular the issue of responsibilities.

- **Availability of water resources**
- **Topography**
- **Population density in town/village/settlement**
- **Service level adopted**
- **Water Supply Options**

Water supply techniques

(1) Roof Rainwater Collection/Harvesting

Introduction

Rooftop harvesting gather rainwater caught on the roof of a house, school, etc. using gutters and down pipes (made of local wood, galvanized iron or PVC) and lead it to one or more storage containers/tanks ranging from simple pots to large storage tanks.

Experience

There will be situations (depending on rainfall in the area and the roof area) where rainwater tanks will not supply water at a sufficient level of security normally expected in houses connected to other supplies. Under these circum-stances, compromises may be needed. These could include a reduced standard of water supply or availability of our supplies.

Expected lifetime

The average expected life time of good material and proper construction is 15 years.

Operation and Maintenance

All operation and maintenance activities can normally be executed by the users of the system. Major repairs, such as a broken roof or tank, can usually be exe-cuted by a local craftsman using locally available tools and materials. Recurrent costs for materials and spare parts are very low. In most cases these costs are even considered negligible, but corrosion of metal roofs, gutters, etc. may take place.

Cost

The major cost of a rainwater harvesting system is the storage tank and the vol-ume required is depending on the rainfall and demand needed. Ferro-cement tanks in Africa can cost from 30-50 Euro per m3 volume. The cost is for a household of 6 people.

Cost Components	Capital Cost in EUR	Annual O&M Cost in EUR/year	Replacement Cost in EUR/year
Total Cost	300	6	20
Cost per Capita	50	1	3.3

17.1.1 Statewide Irrigation Coverage and Productivity

$$\text{Peak Factor} = M = \frac{Q_{max}}{Q_{avg}} = 1 + \left(\frac{14}{4+\sqrt{P}}\right)$$

Conclusion

Rainwater harvesting is a relative cheap technology but is very much depending on the availability of rain, and may be seen as a supplement to other supplies.

(2) Boreholes with Hand pumps

Introduction

A Hand pumps provides a basic service level, but has the advantage over a pro-tected spring, that within certain limits it can be established where it is conven-ient for the users.

This technology typically comprises the structure as follows

- A borehole - mechanical drilled or hand augered (or a well with handpump;
- A Hand pumps and a platform;
- Related site works.

The technology has two variants, where the difference lies in the structure for water abstraction:

(1) Hand pumps on a hand augered well;

(2) Hand pumps on a borehole.

(1) Hand Augered Well

Hand augered wells are often constructed to depths up to approx. 20 m depend-ing on the tools applied for drilling. The completed well is equipped with a screen in the water bearing soil layers and with plain casing on the rest of the depth.

(2) Borehole

The depth of a borehole is normally between 30 m and 130 m, most frequently in the range of 60 to 100 m. The completed well typically has plain casing on the upper section through loose or low yielding upper soil layers, and is left with filter/screen in the water bearing aquifers.

(3) Handpumps

There are a large number of handpumps available worldwide. The most com-mon types are

• The low lift pumps (restricted to water tables less than 7 metres below ground),

• Direct action pumps (suitable for lifts up to about 25 metres); and

• Deep well reciprocating pumps (suitable down to 45 metres or more).

(4) Related Site Works

The Hand pumps area is fenced to keep out animals. Up to a distance of 3 m from the well the ground must slope away from the well in all directions, and this requirement may necessitate filling up of the area around the well to a suitable level.

(5) Experience

Handpumps are relatively cheap options to provide rural areas with improved water. However, the construction of the borehole and the selection and mainte-nance of the handpumps are crucial for the recurrent and replacement cost. Also the availability of spare parts is very important especially for the rising pipe and pump cylinders.

(6) O&M

The O&M of Hand pumps options mainly depends on the institutional set-up. For village based or community based Hand pumps supplying a number of house-holds are often lacking the required responsibility to maintain the facilities. On the other hand, in household-managed systems, the responsibility for O&M of privately owned on-plot facilities rests with the owner or plot-holder and there-fore an incentive to good maintenance.

(7) Expected lifetime

The expected lifetime of the entire system components are 15-30 years, but life-time of the main components may be:

• Borehole: 30 years;

• Hand pump: 15 years;

v• Platform: 20 years; and

• Related site works: 20 years.

Cost for mechanical drilled borehole:-
In the table below is shown the estimated capital and recurrent cost of the men-tioned Hand pumps technological options.

Cost Components	Capital Cost in EUR	Annual O&M Cost in EUR/year	Replacement Cost in EUR/year
Total Cost	14875	279	744
Cost per 3ec4v Capita	149	3	7

Table: 14.5.1 Cost components

Conclusion

Handpumps are a relative affordable and well tested decentralised water supply options for improving rural water supply. Consumer's responsiveness and in-volvement iscrucial for community based handpumps to ensure ownership and responsibility for operation and maintenance.

Sewerage System

Introduction

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

Difference between sewage and sewer:

Sewage:

It is Liquid Waste or Waste Water produce as a result of water use.

Sewer:

It is the pipe or conduit for carrying sewage. It is generally closed and flow takes place undr gravity (Atmospheric Pressure).

Sewerage:

Sewerage is the system of collection of waste water and conveying it to a point of final disposal with or without treatment.

The sewerage systems are of the following three types:

(1) Separate system:-

•It is the system in which storm water is carried separately from domestic and industrial waste water. This system is preferred when,

•There is an immediate need for collection of sanitary sewage but not for storm water

•When sanitary sewage needs treatment but the storm water does not.

(2) Combined system:-

•It is the type of system in which sewer carries both the sanitary and storm water. Combined system is favored when,

•Combined sewage can be disposed off without treatment

•Both sanitary and storm water need treatment

•Streets are narrow and two separate sewers can not be laid.

Types of Sewers:-

(1) Sanitary Sewers

It carries sanitary sewage i.e. waste water from municipality including Domestic and Industrial waste waters.

(2) Storm Sewer

It carries storm sewage including Surface Runoff and Street Wash.

Waste water

What is wastewater, and why treat it?

If the term "wastewater treatment" is confusing to you, you might think of it as "sewage treatment." Nature has an amazing ability to cope with small amounts of water wastes and pollution, but it would be overwhelmed if we didn't treat the billions of gallons of wastewater and sewage produced every day before releasing it back to the environment. Treatment plants reduce pollutants in wastewater to a level nature can handle.

Wastewater also includes **storm runoff**. Although some people assume that the rain that runs down the street during a storm is fairly clean, it isn't. Harmful substances that wash off **roads, parking lots**, and rooftops can harm our **rivers and lakes**.

FIG 14.1.5 WATER TREATMENT PLANT

Treatment:

The major aim of wastewater treatment is to

remove as much of the suspended solids as possible before the remaining water, called effluent, is discharged back to the environment. As solid material decays, it uses up oxygen, which is needed by the plants and animals living in the water.

Sustainable development techniques

Plastic Roads

As a response to massive local waste and plastic pollution within their country, India's government began experimenting with plastic roads during the early 2000s, with waste plastic being used as a construction material. An early report by India's Central Pollution Control Board discovered that even after four years of use,

Green Roof Systems

The Environmental Protection Agency defines a green roof as a "vegetative layer grown on a rooftop." Today, green roof systems have become popular all over the world, not only for their beauty, but also for the benefits they provide toward environmental sustainability. Civil engineers are responsible for ensuring that the green roof's supportive infrastructure—for instance, a comprehensive watering system—is engineered to consistently deliver an appropriate amount of resources, and the roof itself must be designed to effectively provide working improvements to environmental sustainability.

- Enhanced Urban Biodiversity: Green roofs accommodate new flora, which may act as new habitats for different species of plants and animals.
- Cooling of Buildings: The vegetation on the roof acts as thermal insulation, storing excess heat and decreasing peak temperatures within the building. This means less energy must be consumed to heat the building, resulting in decreased energy costs and lower pollutant emissions.
- Reduced Runoff Quantity: On average, green roofs retain 40-60% of total rainfall. Storing this rainwater as it falls has been shown to result in runoff reduction of 34% between September and February, and 67% between March and August. By reducing runoff, civil engineers that design green roof systems can limit strain on sewage systems and mitigate the costs of roof damage.
- Pollution Control: Green roofs are composed of plants that absorb nitrogen, lead, zinc, and airborne pollutants like carbon dioxide. This absorption also reduces the negative effects of acid rain by raising the pH values of acid rainwater before it becomes runoff water.

Eco Floating Homes Affordable housing and overcrowding in cities are putting pressure on urban populations to make changes. To combat these issues, civil engineers are designing floating homes—practical living spaces that sit upon the water.

Vertical Farming Using multistory high-rises to grow food is known as "vertical farming," and The Association for Vertical Farming has found that, when compared with traditional agricultural methods, growing food indoors uses 98 percent less water and 70 percent less fertilizer on average. To generate the amount of light and water necessary to keep plants healthy, while remaining as cost-effective as possible, vertical farmers use a combination of energy efficient LED lights and hydroponic technology (plumbing, irrigation, filtration).

Rainwater Harvesting

Harvesting rainwater is a climate adaptation strategy that has been used in many ancient and modern societies. The antiquated rainwater harvesting techniques of the past were attempts to cope with severe climate conditions by storing the water as it fell, allowing populations to drink the water or prevent oversaturation of the land during extreme precipitation. Modern rainwater harvesting is fundamentally the same in theory, but advancements in science and engineering have introduced sophisticated filtration and rain-capturing technologies that boost the efficiency of the process.

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

Impact on society (Part-1 Civil design)

Socio – cultural: Public Library

A. Immediately

- Students can read bunch of books from the time of inauguration
- They can access reading room
- A community can borrow a book or can donate a book to library

B. Within 1 year

- Well functioned library will be available for villagers
- A set of community will be well furnished and saturation of supplement
- Students/ reader can access or order great number of books
- Librarian will be well aware of community and types of function hoda library required

C. Long term (3-5 years)

- In long term a well-educated society will contribute to development of town
- Students will get better exposure as per their skills and knowledge
- We believe learning leads to awareness, so this will improve sanitation and living standards too.

D. Sources of funding

- School authority
- Public funding
- Village grants

Physical design: Gram Panchayat

A. Immediately

- Sarpanch and talati will get separate office from bank and dairy building
- Better allocation of work
- Extra store room for storage of things being used for welfare of town
- People will have better connection with Gram panchayat

B. Within 1 year

- In no time Gram panchayat member will get better work place and this is going to improve their productivity
- Sarpanch and talati will set up essential connection and gram panchayat will start functioning on its full potential

C. Long term (3-5 years)

- In long run they can use gram panchayat new office as a hub of implementations of new schemes

  For example, (distribution of cycle) is new scheme and this office storage room can be used for the storage of cycle, office or computer room can be used as registration desk and every operation will be quite smooth.

E. Sources of funding

- Gram panchayat's fund
- Government Grants

Social Design: Bus station

A. Immediately

- In no time bus station will start functioning as soon as construction get over
- People will get new modified structure rather than that risky building they were using that before.
- Now only 2 bus are coming cost, current bus station don't have capacity to hole more buses per day, new bus station will improve this.

B. Within 1 year

- Within one-year bus station will start working in organized manner
- As new bus station is quite large it will increase employability and tourism.
- In mean time number of buses coming hoda will definitely increase
- As bus station is quite big surrounding villagers will attract toward this place and more number of buses will visit their destiny via hoda

C. Long term (3-5 years)

- In long run number of buses will increase
- Tourism will increase this will lead to increase in employment of people too.

D. Sources of funding

- Gram panchayat's fund
- Government Grants

Sustainable Design: Public toilet

A. Immediately

- As soon as construction get over it is going to start functioning.
- It will serve people from day one and going to improve sanitation.

B. Within 1 year

- In no time this feature is going to improve sanitation of the town

C. Long term (3-5 years)

- This facility comes with improve consumption of water so water will be more used
- In long run it will improve sanitation and health

D. Sources of funding

- Swachta abhiyan funding
- Gram panchayat's fund
- Government Grants

Smart Village Design: Khel viksa ground- multiple play grounds

A. Immediately

- Player can play their games which are available in ground
- In immediate time they can play Basketball, Volleyball, tennis, cricket, pitch, football etc.

B. Within 1 year

- Within one year they can build their coach a professional player
- They can bring more tools and equipment
- They can shoot their skills and improve teaching or learning process via internet

C. Long term (3-5 years)

- In long run they can participate in many tournaments and can organise the tournament in that ground.

D. Sources of funding

- Khelega india funding
- Khel kumbh funding
- Gram panchayat's fund
- Government Grants

Heritage Village Design: Entrance Gate

A. Immediately

- Immediately this is going to enhance the beauty of the town
- Entrance gate is going to affect somewhat in physiological feeling of entry and exit

B. Sources of funding

- Gram panchayat's fund
- Government Grants

Impact on society (Part-2 Civil design)

Socio – cultural: Public Garden

A. Immediately

- Public Garden going to refresh the mind of the people, as soon as it gets to access
- Public garden is going to improve air quality more over it will provide a great organized way for sitting and wondering of the people

B. Within 1 year

- In one-year public garden and play arena will be fully developed with all the plantation, trees and flowers will be fully grown.
- In one year there will be many performances which already being played so they can make organization committee to organise any play in better manner
- In mean time a culture development will start

C. Long term (3-5 years)

- In long run public garden will have lots of flowers and plantation

D. Sources of funding

- Gram panchayat's fund
- Government Grants

Physical design: Bank

A. Immediately

- Bank will get separate building and no longer operated in gram panchayat and dairy building
- As soon as different building staff will get better work places and this is going to improve their productivity.
- Locker room will be extra add-on
- Conference room will start functioning

B. Within 1 year

- Within one-year bank will work on its full potential and every feature will start growing, such as locker room, load and financial help, FD ppf or investment guide etc.
- In mean time people will understand this organization and managers will get to known the population

C. Long term (3-5 years)

- In long run everyone will get benefited as farmers, students can borrow money from bank.
- Investors can get better interest & locker room going to improve their safety for jewels

D. Sources of funding

- Private bank authority
- Co-op banks
- Public bank by villagers

Social Design: Swimming pool

A. Immediately

- No offence, swimming is great fun and exercise
- Enjoyment
- Happiness and it's the biggest reason to create it
- Health and sanitation

D. Sources of funding

- Membership plan
- Contribution of users
- Gram panchayat's extra fund

Sustainable Design: Over bridge

A. Immediately

- This bridge is going to connect two town regions into one great village
- Local transportation
- Dairy transportation
- Going to Enhance town's overall image

C. Long term (3-5 years)

- In so long term they can donate this road to state or any authority and further modification can be result in number of traffic and this town will be great hub for tourists, in nutshell this is going to attract people if proper care is taken.
- This bridge can be used as vertical gardening and we can make it more symbolic.

D. Sources of funding

- District or state transportation department
- Private organization

Smart Village Design: Green house

A. Immediately

- Our green house is made of specific size panels, so it is totally removable this will create big difference for farmers to create any size of green house
- Also greenhouse effect helps us in agriculture overall growth

D. Sources of funding

- Individual owner
- Group of farmers
- Gram panchayat

Development Design: Skill centre

A. Immediately

- As soon as construction get done skill centre can be used by students or learners
- Computer room will be centre of attraction if anyone want to learn from internet
- Agriculture classes will start
- And we think it is the time when town will really start thinking about new technologies and they will improve and accept new techniques from education agriculture

B. Within 1 year

- In one as one set of course work is completed people will be more attracted toward skill centre as it is going to improve their productivity and life style both

C. Long term (3-5 years)

- In long run our skill centre will improve with all the new technologies as farmers will learnt and they will see the results, on this basis next generation will came out better and much more versatile and interested towards farming or agriculture
- Farmers from this village will get better output and exposure
- With the help of computer and software they will be well touched with the world and new trends
- Over life will be improved

D. Sources of funding

- PM sarva sikha sbhiyan
- School authorities
- Private organisation
- Gram panchayat funding

CHAPTER-16 Survey by Interviewing with Talati and/or Sarpanch

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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, Animal husbandry
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	govt. organized seminar.
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?	Yes	
10	Are village people aware about child vaccination and done to each and every child as per norms?	No	
11	Women help line number information is provided to village people?	No	
12	Is water scarcity in village? How many days per year?	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	2 - 5% 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

સરપંચ
હોડા ગામ પંચાયત
તા. પાલનપુર. જી. બ

CHAPTER-17 Irrigation / Agriculture Activates and Agro Industry, alternate technics and solutions

Irrigation Activities

•Irrigation helps to grow agricultural crops, maintain landscapes, and revegetate disturbed soils in dry areas and during periods of less than average rainfall. Irrigation also has other uses in crop production, including frost protection, suppressing weed growth in grain fields and preventing soil consolidation.

Types of irrigation system:-

•There are many different types of irrigation systems, depending on how the water is distributed throughout the field. Some common types of irrigation systems include:

(1) Surface irrigation

•Water is distributed over and across land by gravity, no mechanical pump involved.

(2) Localized irrigation

•Water is distributed under low pressure, through a piped network and applied to each plant.

Fig 17.1 Drip Irrigation

(3) Drip irrigation

•A type of localized irrigation in which drops of water are delivered at or near the root of plants. In this type of irrigation, evaporation and runoff are minimized.

(4) Sprinkler irrigation

•Water is distributed by overhead high-pressure sprinklers or guns from a central location in the field or from sprinklers on moving platforms.

FIG 17.2 Sprinkler Irrigation

(5) Center pivot irrigation

•Water is distributed by a system of sprinklers that move on wheeled towers in a circular pattern. This system is common in flat areas of the United States.

(6) Lateral move irrigation

•Water is distributed through a series of pipes, each with a wheel and a set of sprinklers, which are rotated either by hand or with a purpose-built mechanism. The sprinklers move a certain distance across the field and then need to have the water hose reconnected for the next distance. This system tends to be less expensive but requires more labor than others.

(7) Sub-irrigation

•Water is distributed across land by raising the water table, through a system of pumping stations, canals, gates, and ditches. This type of irrigation is most effective in areas with high water tables.

(8)Manual irrigation

•Water is distributed across land through manual labor and watering cans. This system is very labor intensive.

Irrigation In India

•Irrigation in India includes a network of major and minor canals from Indian rivers, groundwater well based systems, tanks, and other rainwater harvesting projects for agricultural activities. Of these groundwater system is the largest. In 2013-14, only about 36.7% of total agricultural land in India was reliably irrigated, and remaining 2/3rd cultivated land in India is dependent on monsoons. 65% of the irrigation in India is from groundwater. Currently about 51% of the agricultural area cultivating food grains is covered by irrigation. The rest of the area is dependent on rainfall which is most of the times unreliable and unpredictable.

Indian govt launched a demand side water management plan costing INR6000 crore or USD854 million across 8,350 water stressed villages of 78 districts in 7 states - Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh - over five years from 2021-2022 to 2026-27, with the view to harvest rainwater, enhance water table, water recharge rate with village panchayat level water management plans.Most of the canal irrigation is in the canal network of Ganges-Yamuna basin mainly in the states of Punjab, Haryana, and Uttar Pradesh and somewhat in Rajasthan and Bihar, while small local canal networks also exist in the south in Tamil Nadu, Karnataka, and Kerala, etc.The largest canal in India is Indira Gandhi Canal, which is about 650 km long. India has an ambitious river linking national project to enhance the coverage of canal irrigated area, reduce floods and water shortage.

Statewise Irrigation Coverage and Productivity (Table 17.1)

State	Agricultural Production (Million Tonnes)	Percentage of total Production	Productivity (tonnes per hectare)	Percent of cultivated area under irrigation
Punjab	27.3	11.6	4.2	98.1
Haryana	15.6	6.6	3.3	87.6
Uttar Pradesh	46.7	19.9	2.3	75.9
Andhrapradesh	20.4	8.7	2.7	63.9
Bihar	12.2	5.2	1.7	63.4
Tamil nadu	7.1	3.0	2.2	63.1
West Bengal	16.3	6.9	2.4	48.2
Gujarat	6.4	2.7	1.5	44.7
Madhya pradesh	13.9	5.9	1.1	44.5
Uttrakhand	1.7	6.7	1.7	42.9
Orissa	7.4	3.1	1.3	33.6
Karnataka	11.2	4.8	1.5	28.5
Chhattisgarh	5.1	2.2	1.0	27.6
Rajasthan	16.6	7.1	1.2	26.4
Maharashtra	11.4	4.8	1.0	16.8
Jharkhand	1.7	0.7	1.7	5.4
Assam	4.1	1.7	1.5	4.9

Environmental Impact of irrigation:-

•The environmental impacts of irrigation relate to the changes in quantity and quality of soil and water as a result of irrigation and the effects on natural and social conditions in river basins and downstream of an irrigation scheme. The impacts stem from the altered hydrological conditions caused by the installation and operation of the irrigation scheme.

Two types of major effect:

(1) Direct

(2) Indirect

(1) Direct Effects:

•An irrigation scheme draws water from groundwater, rivers, lakes or overland flow, and distributes it over an area. Hydrological, or direct, effects of doing this include reduction in downstream river flow, increased evaporation in the irrigated area, increased level in the water table as groundwater recharge in the area is increased and flow increased in the irrigated area. Likewise, irrigation has immediate effects on the provision of moisture to the atmosphere, inducing atmospheric instabilities and increasing downwind rainfall,or in other cases modifies the atmospheric circulation, delivering rain to different downwind areas.Increases or decreases in irrigation are a key area of concern in precipitationshed studies, that examine how significant modifications to the delivery of evaporation to the atmosphere can alter downwind rainfall.

(2) Indirect Effects:

•Indirect effects are those that have consequences that take longer to develop and may also be longer-lasting. The indirect effects of irrigation include the following:

•Waterlogging

•Soil salination

•Ecological damage

•Socioeconomic impacts

The indirect effects of waterlogging and soil salination occur directly on the land being irrigated. The ecological and socioeconomic consequences take longer to happen but can be more far-reaching.

Some irrigation schemes use water wells for irrigation. As a result, the overall water level decreases. This may cause water mining, land/soil subsidence, and, along the coast, saltwater intrusion.

Irrigated land area worldwide occupies about 16% of the total agricultural area and the crop yield of irrigated land is roughly 40% of the total yield.[5] In other words, irrigated land produces 2.5 times more product than non-irrigated land. This article will discuss some of the environmental and socioeconomic impacts of irrigation.

Agro Industries

Agro-based industries are industries that use plant and animal-based agricultural output as their raw material.

Importance of Agro-based industries in India:

All branches of agro-based industry are important because:

(i) help in increasing industrial production.

(ii) provide employment to landless agricultural labor and tribal population from rural and backward areas.

(iii) ensure the development and stability of rural economy through diversification and reduced dependence on agriculture.

(iv) ensure the alleviation of poverty by providing steady sources of income and livelihood.

(v) earn much required foreign exchange for the country.

(vi) improve the standard of living in rural areas.

(vii) help in reducing the extreme inequalities in the distribution of income and wealth.

(viii) are easy to establish.

(ix) support balanced growth between agriculture and industry, and

(x) help in avoiding wastage of perishable agricultural products.

Scenario and Scope of Agro-based industries in India:-

The scope of agro-based industries in India is pretty high because of the fact that the country is predominantly dependent on agriculture. According to the statistical data for the year 2020, the agriculture sector in India contributes about 18% to India's GDP. Also, approximately 42% of the Indian population is employed in the agricultural sector alone. The share of the population employed in the agriculture sector has been declining year after year because of various reasons. However, it still remains the largest sector employing the majority of the population.

Types of Agro-based industries in India

Agro-based industries in India can be broadly classified into the following types:Types of Agro-based industries in India

1.Agro-produce processing units – These units are not involved in manufacturing and mainly deal with the preservation of perishable products and utilization of by-products for other uses. Rice and Dal processing mills are perfect examples of these kinds of units.

2.Agro-produce manufacturing units – These units engage in the manufacturing of new products where the finished goods are entirely different from the raw materials used. Sugar factories, solvent extraction units and textile mills are some of the examples of these kinds of units.

3.Agro-inputs manufacturing units – These units are engaged in the manufacturing of products, either for the mechanization of agriculture or for increasing agricultural productivity. Some examples of these units include agricultural implements, seed, fertilizer and pesticide manufacturing units.

4.Agro Service Centres – Agro service centres are workshops and service centres, which are engaged in the repairing and servicing of pump sets, diesel engines, tractors and other types of farm equipment.

Other types of agro based industries

Textile Industry

Fig 17.3 Textile industry

The textile industry is concerned with the design, production, distribution or marketing of yarn, fabrics, or ready made clothing. It consists of units manufacturing cotton textiles, woollen textiles, silk textiles, synthetic fibers and jute textiles. The industry plays an important role in India's economy because it is the biggest employer in the country after agriculture.

(2) Sugar Industry

Fig 17.4 Sugar cane industry

India produced 28.9 million metric tonnes of sugar, which is roughly 17% of the world's total sugar production of 166.18 million metric tonnes.

The GOI has undertaken several initiatives to improve the financial health of the sugar industry, some of which include (i) de-regulation of the sugar sector, (ii) Ethanol Blended Petrol Program (EBP), (iii) Scheme for extending financial assistance to sugar undertakings (SEFASU-2014), (iv) soft loans to sugar mills to facilitate clearance of cane price arrears, (v) Minimum indicative Export Quotas (MIEQ), (vi) production subsidy and (vii) imposition of stock holding limits on sugar mills.

(3) Vegetable Oil Industry

The Indian vegetable oil industry accounts for about 5% of the world's vegetable oil production. India is the largest consumer of edible oils in the world. The estimated domestic demand for vegetable oil is over 23 million tonnes, which is predominantly met by imports. Also, India is currently the biggest importer of edible oils in the world with an import of 15 million tonnes annually, which is about 14% of the world's total vegetable oil imports.

Fig 17.5 Vegetable oil Industry

(4) Tea Industry

Tea is the second most consumed liquid in the world after water. Between 2014-18, the global tea production increased at a CAGR of 2.97%. As of 2019, India was the second-largest tea producer in the world with a total production of 1,339.70 million kgs. Also, India is one of the world's largest consumers of tea, with about three-fourths of the total production consumed locally. The tea industry holds a special place in the Indian economy because it employs a total workforce of over 2 million people.

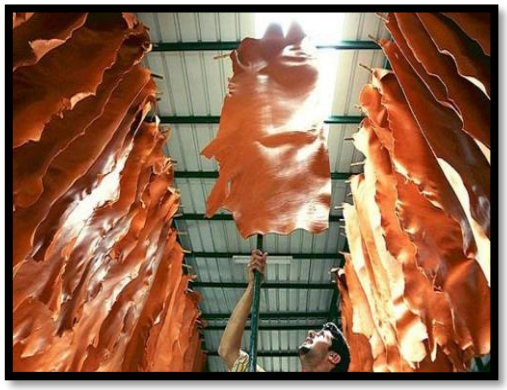
Fig 17.6 Tea Industry

(5) Coffee Industry

India has always been a tea-loving country, however, over the last two decades, we have witnessed an unprecedented rise in the number of coffee lovers because of a number of reasons such as (i) increase in disposable incomes (coffee is considered more expensive than tea), (ii) global exposure, (iii) digital media penetrations and (iv) lifestyle changes among others. The increase in coffee consumption ignited a cafe culture in India and saw major brands like outlets across the country.

17.8 Coffee industry

(6) Leather Goods Industr



17.8 Leather goods industry

Leather is one of the most widely traded commodities globally. The demand for leather is driven by the fashion, furniture, interior design and automotive industries. The Indian Leather industry accounts for around 12.93% of the world's leather production of hides/skins. Also, the total exports of leather and leather products from India stood at USD 5.07 billion in 2019-20.

Some of these measures include:

(i) provide placement linked skill development training to unemployed youth.

(ii) providing assistance for the establishment of two new branches of Footwear Design and Development Institute (FDDI) at Banur (Punjab) and Ankleshwar (Gujrat) to augment institutional infrastructure.

(iii) providing approval for setting up Mega Leather Cluster (MLC) at Nellore- Andhra Pradesh

(iv) allowing duty free imports of hides and skins from anywhere in the world.

Problems Faced by Agro-based Industries in India

Small Landholdings – Small landholdings make it difficult for farmers to achieve economies of scale because of which farmers are forced to rely on subsistence farming.

Seasonal nature – This means that the farmers have a very small window to reap the benefits of their hard labor. In recent times, climate change has affected weather patterns because of which there has been an adverse effect on agricultural production.

Perishable nature of products – Agricultural products are perishable in nature because of which they require huge infrastructure in the form of cold storage, excellent road connectivity. India suffers on both accounts, forward and backward linkages.

Variability – Agro-based industries involve variability in the quantity and quality of raw materials. Quantity of raw materials suffer because of fluctuations in weather and soil conditions. The quality suffers because of lack of standardization.

Limited Knowledge – The absence of information, lack of awareness and limited knowledge about opportunities, technology and production systems is also a major hurdle.

Competition – India is increasingly facing competition from other countries in the region such as Bangladesh, which offer similar advantages in terms of low labor costs and soil fertility.

Types of agriculture

Primitive Subsistence Farming

Commercial Agriculture

Dry farming

Wet farming

Shifting Agriculture

Intensive agriculture

Plantation Agriculture

Mixed & Multiple Agriculture

Vertical farming

CHAPTER-18 Social Activities – Any activity planned by Student

Activities Done by students for Hoda village with Photograph:

- During visit we have distributed the mask as well as sanitizer.
- Also we give information about "Arogya Setu" Application to the villagers.
- Also we aware the villagers regarding to sanitation and social distance to prevent the spreading of the corona virus.

Fig 18.1 Distribution of Mask & Give information about "Arogya Setu Application"

- As we shared little time in school, we shared wonderful knowledge of new ideas, new techniques in teaching and new era of software in teaching.
- We shared some useful techniques in teaching such as trackpad details, White board and some video editing software.

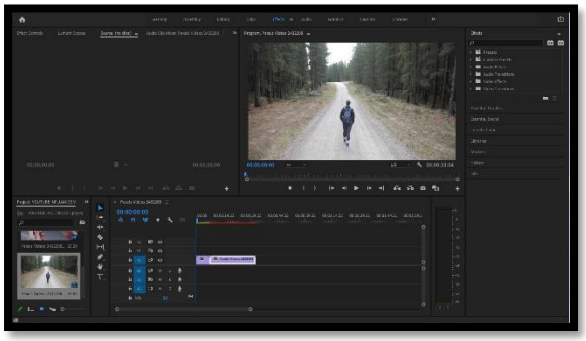


Fig 18.2 Sharing to technologies and thoughts

Fig 18.3 I tried to explain fast multiplication techniques with dust

- In school we enjoyed a lot, while talking to teachers we inspired students towards new technics in agriculture, physics and Software capabilities.
- Moreover, we talk with one “Patel family” he seems delightful to see us thinking about town’s development and he bring us to his farm of Aniseed. Where we talked about new irrigation tetchiness and why some techniques are costly at ground.

Fig 18.4 farm of Aniseed

CHAPTER-19 Hoda SAGY Questionnaire Survey form

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: HODA Gram Panchayat: HODA Ward No. 1

Block: palanpur District: BANASKANTHA

State: GUJARAT LS Constituency: patan

1. Family Identity and Size

Name of Head of Household	Devabhai 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]
Mukesh patel	19	M	N	N	B.com	Y	Y	N
Asha patel	20	F	N	N	B.com	Y	Y	N
Muliben patel	35	F	N	N	BA	Y	N	N
Devabhai patel	37	M	N	Y	BA	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
Bholu patel	9	M	N	N	-	Y	3	Y
Ronak patel	12	M	N	N	-	Y	5	Y
Geeta patel	14	F	N	N	-	Y	9	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
Snehika patel	3	M	N	N	Y	-	Y	23
Aravi Patel	3	F	N	N	Y	-	Y	24
Ajiety patel	2	F	N	N	Y	-	Y	22

[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	4 KM
Community Water Tap	Yes / No	300M
Hand Pump (Public / Private)	Yes / No	500M
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	917ha.	2. Cultivable Area	600ha.
3. Irrigated Area	450ha.	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	✓
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 for job
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
Bajara.	~~Kental~~	900/4
Groundnut	tonns	120/4
Acuster	tonnes	80/4

17. Livestock Numbers

Cows: 180	Bullocks: 50	Calves: 20
Female Buffalo: 95	Male Buffalo: 25	Buffalo Calves: 0
Goats/ Sheep: —	Poultry/ Ducks: —	Pigs: —
Any other: Type —		No. —
Shelter for Livestock: Pucca / Kutcha / None		
Average Daily Production of Milk(Litres): 3000		

18. What games do Children Play
- cricket, kho-kho, Hide & seek

19. Do children play musical instrument (mention) No

Schedule Filled By:
Principal Respondent:
Date of Survey:

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

I. Basic Information

a. Gram Panchayat: HODA

b. Block: palanpur.

c. District: Banaskatha.

d. State: Gujarat

e. Lok Sabha Constituency: patan.

f. Number of Wards in the Gram Panchayat: 2

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages:

Hoda.

Demographic Information

Number of Households 383 Total Population 2098 Male 1068 Female 1030

SC HHs 245 ST HHs 0 OBC HHs 500 Other HHs 1353

I. Access to Infrastructure / Facilities / Services

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

1

Sansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society	N	13km.
p	Nearest Agro Service Centre	N	13km
p	MSP based Government Procurement Centre	N	13km.
q	Milk Cooperative /Collection Centre	Y	-
r	Veterinary Care Centre	N	13km.
s	Ayurveda Centre	N	10km
t	E – Seva Kendra	N	11km
u	Bus Stop	Y	13km
v	Railway Station	N.	13km
w	Library	N	13km
x	Common Service Centre	N	13km.

IV. Sports Facilities in the Gram Panchayat

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

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 1

b. Number of villages without Angan Wadi Centres 0

Names of such villages: _____

c. Schools (Number)

Primary Private: 0 Primary Govt.: 1

Middle Private: 0 Middle Govt.: 0

Secondary Private: 0 Secondary Govt.: 0

Higher Secondary Private: 0 Higher Secondary Govt: 1

VI. Public Distribution System

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

2

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

Yojana (SAGY) Panchayat Details Survey Questionnaire

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	Hoda	
b.	Hand Pump Coverage in Villages:	Covered yes / Not Covered	Hoda	
c.	Coverage under Covered Drains:	Covered / Not Covered yes	Hoda.	Hoda.
d.	Coverage under Open Drains:	Covered yes / Not Covered	Hoda	
e.	Villages with Household Electricity Connection (Numbers)	Connected yes / Not Connected	Hoda.	

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	650ha.	d.	Pasture / Grazing Land	71ha.	g.	Check Dam	0
b.	Irrigated Land	450ha.	e.	Forests/ Plantations	200ha.	h.	Wells/Bore Wells	12
c.	Un-irrigated Land	150ha.	f.	Other Common Land	29ha.	i	Tanks /Ponds	5 dry

[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)	10-12
b)	Number of Households receiving pension (old age, widow, disability)	10-12
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)	20%
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	20%
h)	Number of active Job Card holders under MGNREGA	7%
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	100-200
l)	Number of landless households	20%
m)	Number of IAY beneficiaries	–
n)	Number of FRA[2] beneficiaries	–
o)	Number of Community Sanitary Complexes	0
p)	Number of Households headed by single women	3%
q)	Number of Households headed by physically handicapped persons	0
r)	Total number of Persons with Disability in the village	4%
s)	Number of SHGs	6
t)	Number of active SHGs	6
u)	Number of SHG Federations	6
v)	Number of Youth Clubs	0
w)	Number of Bharat Nirman Volunteers	0

Name and Signature of Surveyor and Respondent'

Rachit patel Kamal Soni Surveyor	વસંતભાઈ પટેલ PRI Respondent (Preferably Gram Panchayat Chairperson)	સરપંચ હોડા ગ્રામ પંચાયત તા. પાલનપુર. જી. બ. કાં Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	6/6/21 Date of Survey

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

4

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: Hoda.
b. Ward Number:
c. Gram Panchayat: Hoda.
d. Block: palanpur.
e. District: Banaskatha.
f. State: Gujarat
g. Lok Sabha Constituency: patan.
h. Number of Habitations / Hamlets in the Gram Panchayat: 1
i. Names of Habitations / Hamlets:
Hoda.

Demographic Information

Number of Households 383 Total Population 2098 Male 1068 Female 1030
SC HHs 245 ST HHs 0 OBC HHs 100 Other HHs 135.

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	400m
b.	Nearest Middle School	-	-
c.	Nearest Secondary School	Y	5 km
d.	Kisan Seva Kendra	-	-
e.	Milk Cooperative /Collection Centre	Y	500m
g.	Health Sub Centre	Y	1 km
h.	Bank	Y	2 km
i.	ATM	Y	3 km
j.	Bus Stop	Y	1 km
k.	Railway Station	N	0

[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: 1

iii. Drinking Water Facilities

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

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

iv. Coverage of Habitations under Waste Management System

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

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

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

v. Coverage of Habitations under Electrification

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

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

vi. Sports Facilities in the Village

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 1

c. Schools (Number)

Primary Private: 0 Primary Govt.: 1 ,
Middle Private: 0 Middle Govt.: 0
Secondary Private: 0 Secondary Govt.: 0
Higher Secondary Private: 0 Higher Secondary Govt: 1

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

viii. Land Category		Area in Acres		Land Category	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land		d.	Pasture / Grazing Land	7 ha.	g.	Check Dam	0
b.	Irrigated Land	450 ha.	e.	Forests/ Plnatations	200 ha.	h.	Wells/Bore Wells	12
c.	Un-irrigated Land	150 ha	f.	Other Common Land	29 ha.	I	Tanks /Ponds	5

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	6-1.
3	Number of shops selling alcohol	0
4	Number of BPL families	100-200
5	Number of landless households	300/-
6	Number of IAY beneficiaries	–
7	Number of FRA beneficiaries	–
8	Number of common sanitation complexes	0
9	Number of SHGs	6
10	Number of active SHGs	5
11	Existence of SHG Federation in the Village (Yes / No)	Yes
12	Number of Youth Clubs	0
13	Number of Bharat Nirman Volunteers	0

Name and Signature of Surveyor and Respondent'

Ruchit patel Kamal soni Surveyor	પ્રતિનિધિ સરપંચ PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	સરપંચ હોડા ગ્રામ પંચાયત તા. પાલનપુર. જી. બ કાં Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	6/6/21 Date of Survey

CHAPTER-20 TDO-DDO-COLLECTOR EMAIL SENDING SOFT COPY ATTACHMENT IN THE REPORT

Gmail kamal soni <kamalsoni3839@gmail.com>

Development scenario of Khasa Village, Palanpur- Banaskantha
1 message

kamal soni <kamalsoni3839@gmail.com> Thu, Aug 19, 2021 at 8:00 AM
To: tdo-palanpur@gujarat.gov.in, ddo-ban@gujarat.gov.in

Respected Sir/ ma'am,

We are students of Vishwakarma Government Engineering College (VGEC), Ahmedabad affiliated with Gujarat Technological University (GTU). GTU has been assigned to Vishwakarma Yojana-VY in which students survey the allocated village and then give a needful solution in the form of providing designs of the amenities which are lacking by the village. As a part of vy yojana.

we are asked to inform you about the project as below:
Hoda is a small but beautiful village in Kankrej Taluka in Banas Kantha District, Gujarat. It comes under Khasa Panchayath. It is located 67 KM towards the west of District headquartersPalanpur&135 KM from the State capital Gandhinagar. After visiting and collecting data from the allocated village Khasa, it can be concluded that the Wage's infrastructure should be redeveloped such as school building, panchayat house, etc. The village has no public toilet, bank library, and such facilities so it is required to build these basic facilities in the village.

In this project first of all the survey would be conducted to collect the information about existing facilities and the development of village could undertake as per IEed or in particulars includes physical, social, cultural, renewable infrastructure,

The 12 designs given by us are as follows:

SR. No	Design	Period	Amount
1	Public library	3 to 4 months	13,29,019/-
2	Gram panchayat	3 to 4 months	6,12,984/-
3	Bus station	6 to 8months	20,03,701/-
4	Public toilet	2 months	4,31,075/-
5	Khel vikas ground	1 month	1,00,000/-
6	Village Entrance gate	1 month	80,000/-
7	Bank	3 to 4 month	6,05,099/-
8	Overbridge	8 month	16,92,685/-
9	Public garden	2 to 3 month	60,000/-
10	Swimming pool	1 month	4.31,293/-
11	Skill center	2 month	6,04,870/-
12	Portable greenhouse	1 month	25,000/-

Also, please find the DPR in the attachment.
Thank You.

Regards,
Kamal Soni
Civil engineer
VGEC (2017-2021)

DETAILED PROJECT REPORT.pdf
20639K

CHAPTER-21 COMPREHENSIVE REPORT FOR ENTIRE VILLAGE

While working on this project our main motive was to provide "value" to the people living in town, increase their ease of living and life style to reduce migration of people.

1. Learning from punsari and fadvel (Ideal and smart):

For providing "Value" in the town, we have to first understand the value of ideal or smart town. So we visited punsari and fadvel and talked to ex.sarpanch of punsari Mr.Himanshu patel in brief and we concluded this points

- **Transportation increases ease of habitation and business**
- **One scheme cannot apply on every town**
- **Ideal towns are self-dependent town economically**
- **Sanitation leads to good health**
- **Organization and management needed everywhere from Gram panchayat to life of individual**
- **Improve existing things rather than creating from scratch**
- **Infrastructure is essential key component for the overall growth**

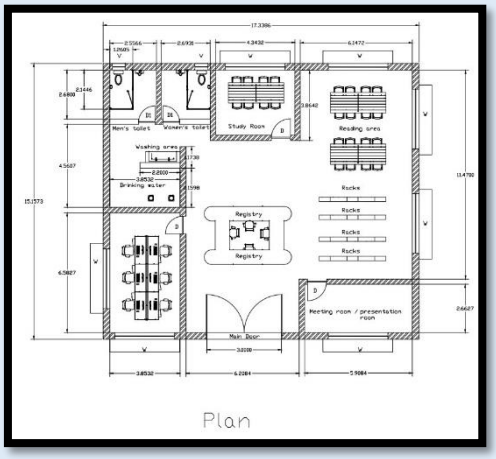
2. Thought process for the development of hoda village:

After understanding many things and essential stuff for the growth of the people and from case study of hiwari bazar, we understood that we cannot apply similar approach to hoda for the overall growth. So we visited Hoda village quite of times and surrounding and understood, what is missing here? What authorities want and what people want? On that basis we suggested our design.

3. Conclusion:

Development of any community is totally on the hand of them, but if we can offer them great infrastructure with all the facilities similar to city maybe community will grow the potential and that region will have activities which will be similar with city results in low migration and "value" addition.

Civil Design-1 Public library

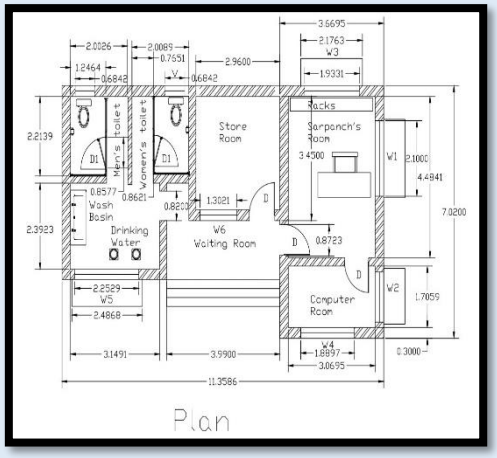


Plan

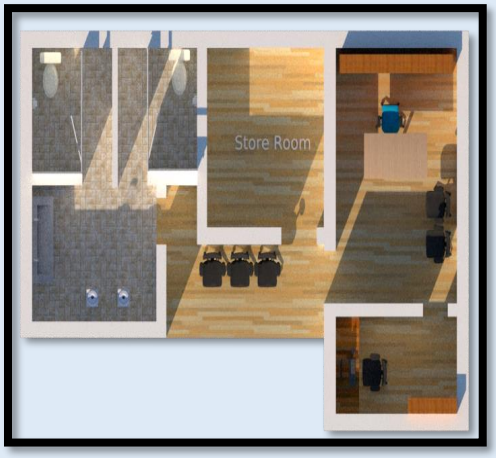
3D-View

Public library is designed to serve the learning community

Civil Design-2 Gram panchayat



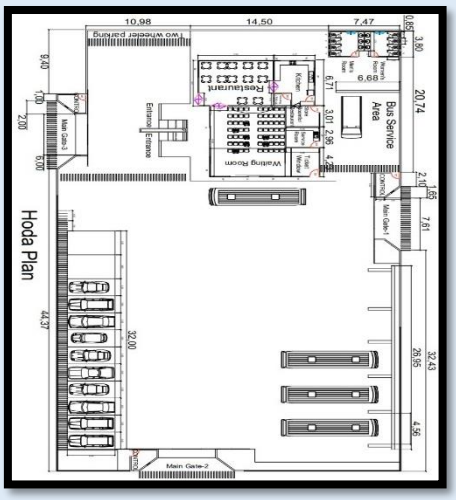
Plan



3D-View

Bank, Banas dairy and Gram panchayat office are in one building in current scenario which quite confusing that's why suggested this separate

Civil Design-3 Bus station

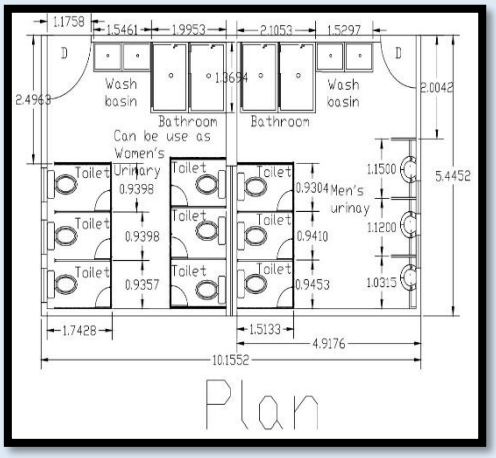


Plan

3D-View

For the ease of transportation and right now the bus station structure is extremely unsafe

Civil Design-4 Public toilet

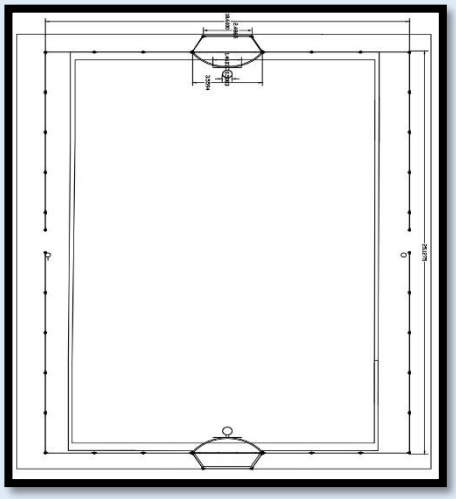


Plan

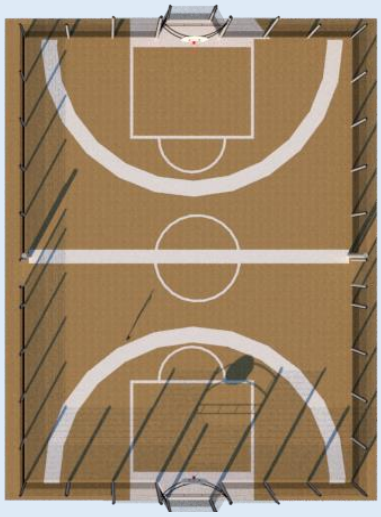
3D-View

for better sanitation and health.

Civil Design-5 Khel vikas ground



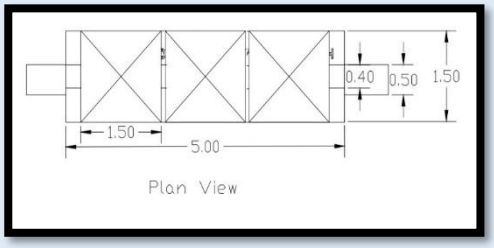
Plan



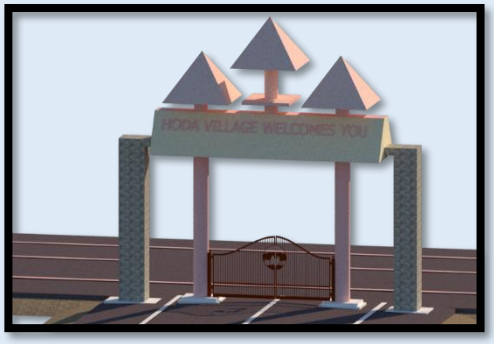
3D-View

in this ground plyers can play more than 6 out-door premium games with the help of little modification in field .

Civil Design-6 Village Entrance gate



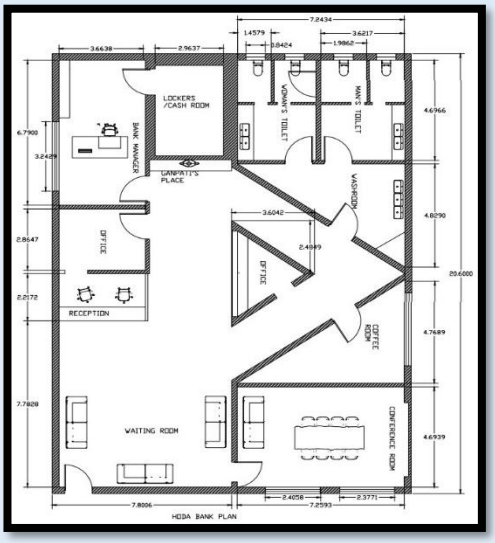
Plan



3D-View

for aesthetic we have provided entrance gate.

Civil Design-7 Bank

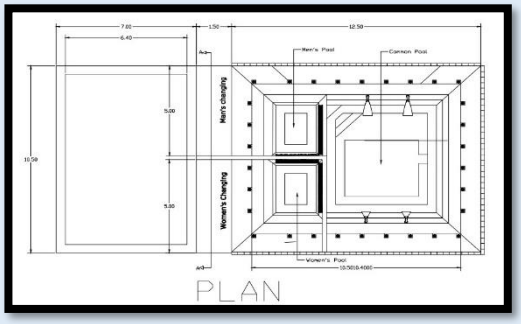


Plan

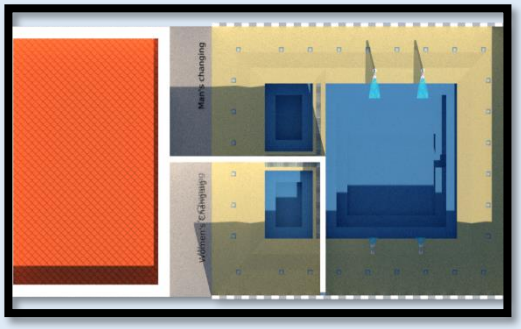
3D-View

We really required this for the implementation of financial support for farmers, enterprises and students.

Civil Design-8 Swimming pool



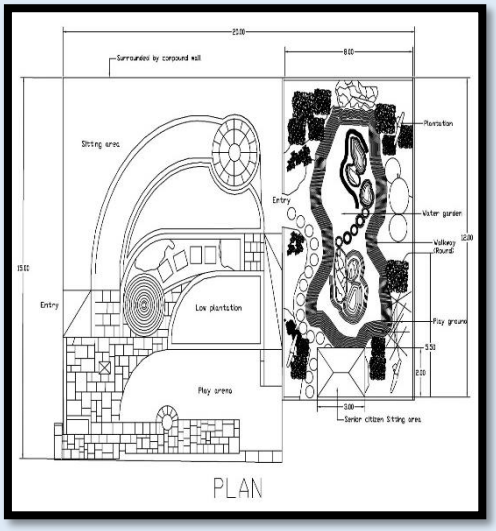
Plan



3D-View

for the refreshment and fun of the people moreover this will attract people.

Civil Design-9 Public garden

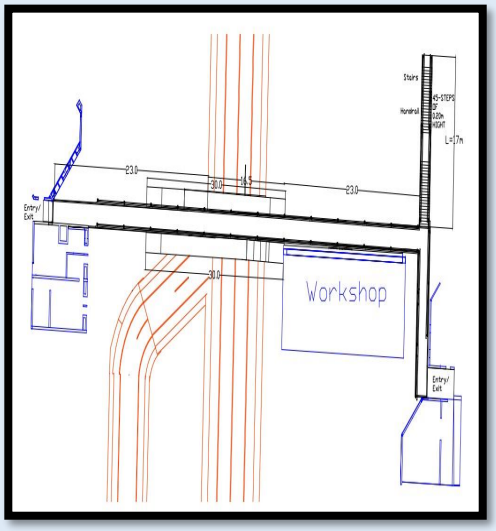


Plan

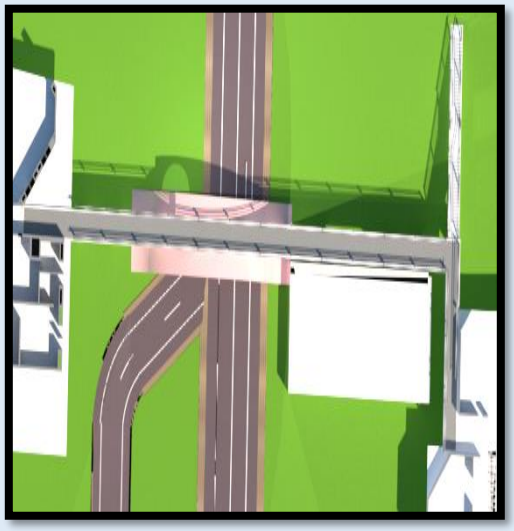
3D-View

organized plantation-flowers and performance arena for play.

Civil Design-10 Over bridge



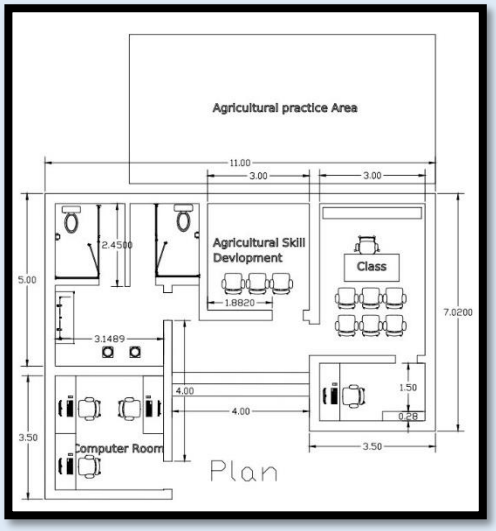
Plan



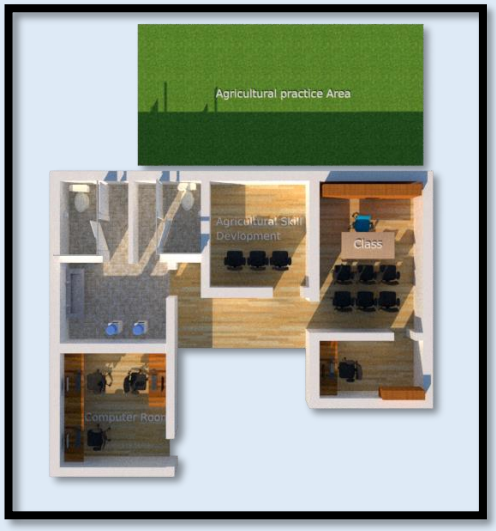
3D-View

To obtain heavy traffic and increase tourism, we required major road.

Civil Design-11 Skill centre



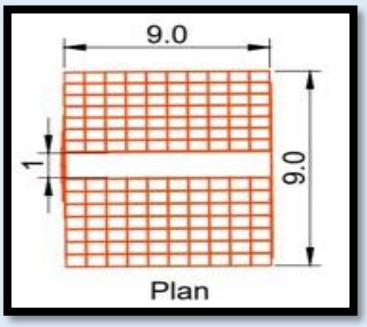
Plan



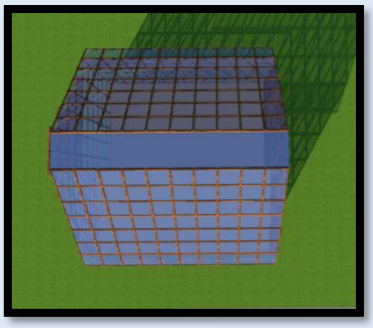
3D-View

Skill centre with computer lab and farming classes going to boost up farming skills and technical knowledge of the villagers.

Civil Design-12 Portable greenhouse made with glass panels



Plan



3D-View

Portable green house is defiantly going to increase production for sure.

NODAL OFFICER STATEMENT

After designing these infrastructure, I hopefully wish 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

Vishwakarma Government Engineering College

	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		-
	Renewable Energy Source Facilities (Y/ N)	No			-
	LED Facilities	No			-
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	No	-		-
	Location Condition	-			
	Community Toilet (With bath/ without bath facilities)	No			
	Solid & liquid waste Disposal system available	No			
	Any facility for Waste collection from road	No	-		-
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Watertank, Tubewell, Boring	✓		-
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	90% Pucca 10% Kutchha	-		-

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks