DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
Sihol Village

Anand District

PREPARED BY

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A.D. PATEL INSTITUTE
OF TECHNOLOGY

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad – 382424 Gujarat

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न हि ज्ञानेन संदृशं पवित्रम् इह विद्यते ।
ISO 9001 : 2015

Year: 2020-21

Gujarat Technological University,
Chandkheda, Ahmedabad – 382424 Gujarat

CERTIFICATE

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

Detail Project Report for ,

VILLAGE: SIHOL

DISTRICT: ANAND

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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VY-Nodal Officer Name and Signature:	**Prof. Drashti Bhatt**
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College Name:	**A.D. PATEL INSTITUTE OF TECHNOLOGY**
College Stamp:	

ABSTRACT

Vishwakarma Yojana is formulated to provide "Design to Delivery" solution for development of villages in 'Rurban' areas. Rurban means a 'rural soul' with all urban amenities. The overall development of the village can be established by concentrating on important facilities such as Physical infrastructure such as Water supply, drainage line, storm water network, telecommunication etc; social infrastructure such as education, health centre; and Socio-cultural facilities such as Rainwater harvesting, solar street lights, biogas plant etc. Without affecting the essence of village culture and lifestyle, all the modern facilities and essentialities should be facilitated to the rural area. To fulfill this objective, detail survey and analysis needs to be carried out for the selected village and match the infrastructural facilities with ideal village and smart village; to formulate the gap or lack of facilities. And further design or formulate the deficient facilities with the engineering perspective.

Sihol village is located in Petlad Tehsil of Anand district in Gujarat, India. It is situated 8km away from sub-district headquarter Petlad and 18km away from district headquarter Anand. As per 2009 stats, Sihol village is also a gram panchayat.

The total geographical area of village is 769.03 hectares. Sihol has a total population of 6,051 peoples. There are about 1,245 houses in Sihol village. As per 2019 stats, Sihol villages comes under Petlad assembly & Anand parliamentary constituency.

We can design a Low Cost House, Public Toilet, Bus Stop, so that dwellers do not need to migrate to nearby villages for such facility. If proper education facilities are provided to children of village, literacy rate of the village will also increase. If recreation facilities are provided people don't have to go outside for recreation.

In Sihol village some physical and social facilities are better like underground drainage, cement concrete road, primary school, secondary school, and Aanganwadi. In the village lack of basic facilities like public toilet, post office, Bus stop, primary health center.

KEY WORDS

- Rural Survey
- Designing
- Estimating
- Cost Analysis
- Sustainable Development

ACKNOWLEDGEMENT

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

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ABBREVIATIONS

VY	Vishwakarma Yojana
TDO	Taluka Development Officer
DDO	District Development Officer
NH	National Highway
SH	State Highway
MDR	Major District Road
ODR	Ordinary District Road
VR	Village Road
AR	Approach Road
PCC	Plain Cement Concrete
RCC	Reinforced Cement Concrete
BM	Brick Masonry
UDPFI	Urban Development Plans Formulation And Implementation
SWOT	Strength Weakness Opportunity Threats
%	Percentage
M	Meter
Cm	Centimeter
Cum	Cubic Meter
SqM	Square Meter
NGO	Non-governmental organization
PHC	Public Health Centre.
CHC	Community health centre
APMC	Agricultural produce market committee
U/G	Underground sump
SC	Schedule caste
ST	Schedule Tribe
PMGSY	Pradhan Mantri Gram Sadak Yojana
RGGVY	Rajiv Gandhi Grameen Vidyutikaran Yojana
IAY	Indira Awash Yojana
PMAGY	Pradhan Mantri Adarsh Gram Yojana
NRHM	National Rural Health Mission
SSA	Sarva Siksha Abhiyan

Chapter: 1 Ideal Village Mogri (Anand)

1.1 Background & Study Area Location:

The Mogri is our Ideal Village. Mogri is located in urban area of Anand district of Gujarat, it is one among the 2 town areas of Anand Block of Anand district. As per the government records, 2the town area number of Mogri is 8025621. The town area has 2096 families. According -to Census 2011, Mogri's population is 9851. Out of this, 5194 are males and 4657 are females. This town area has 1169 children in the age group of 0-6 years. Out of this 608 are boys and 561 are girls.

Literacy rate in Mogri town area is 81%. 8073 out of total 9851 population is educated here. Among males the literacy rate is 85% as 4439 males out of total 5194 are educated while female literacy rate is 78% as 3634 out of total 4657 females are literate in this Town Area. The Negative part is that illiteracy rate of Mogri town area is 18%. Here 1778 out of total 9851 persons are illiterate. Male illiteracy rate here is 14% as 755 males out of total 5194 are illiterate. Among the females the illiteracy rate is 21% and 1023 out of total 4657 females are illiterate in this town area.

The number of employed people of Mogri town area is 3722 whereas 6129 are non-working. And out of 3722 occupied person 177 peoples are totally dependent on cultivation.

❖ Study Area Location

Mogri is located in the Anand District of Gujarat, India. Mogri's geo coordinate are 22.5265873 Latitude and 72.9305488 Longitude.

Place :	**Mogri**
PIN Code	**388345**
District :	**Anand**
Tehsil/ Taluka :	**Anand**
State :	**Gujarat**
Latitude :	**22.5265873**
Longitude :	**72.9305488**

(Table 1 Study Area Location)

(Fig 1: Location of ideal village)

1.2 Concept: Ideal Village & Normal Village:

Concept of an Ideal Village is a community village with a Self-Sustaining income producing projects, Independent electrification system generated from non-fuel based devices, clean water facilities for drinking and irrigation purpose, affordable quality housings, Schools, Medical facilities for human beings and animals both, proper sanitation System, Information Centre, bank, police station, retail outlet for household and agriculture needs, phone facility and connecting roads to nearby villages and towns.

One reason for the failure of rural development schemes has been the lack of a holistic focus on the village as a unit. Separate flagship schemes targeting different sectors such as health (NRHM), education (SSA) and livelihood (NREGA, NRLM) have been launched in the past, but met with limited success. The "Ideal Village" concept could address these challenges comprehensively. It can address resource deficits in each of these sectors, with adequate focus on the special needs of every village.

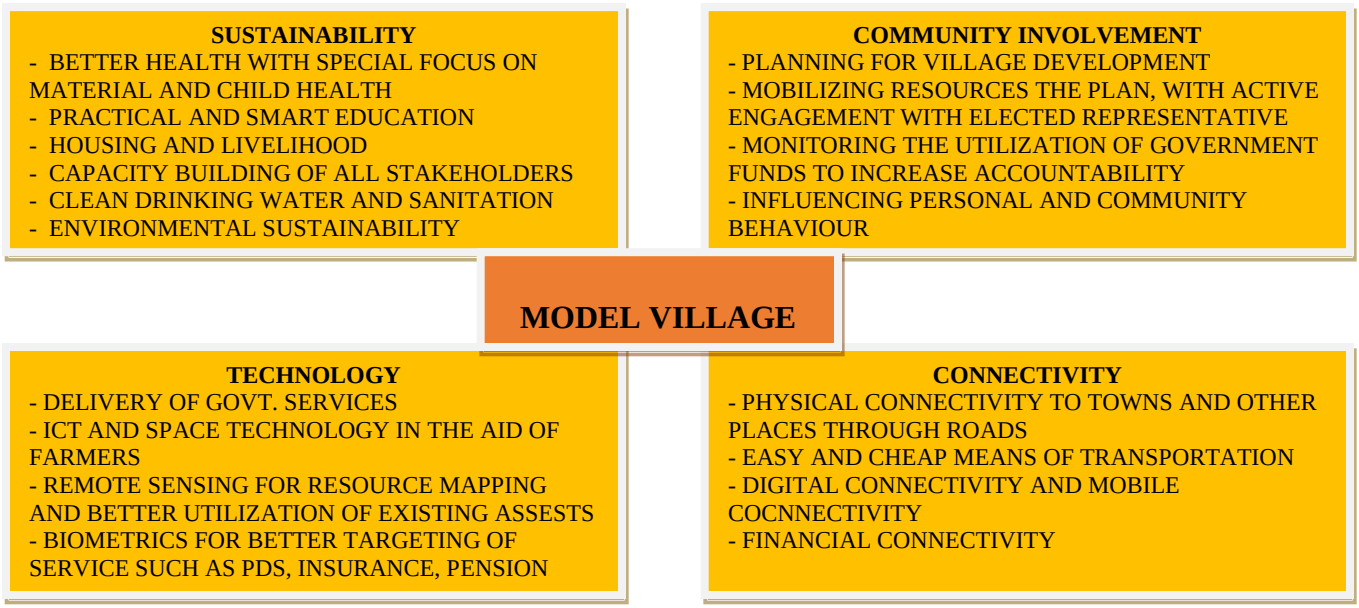
1.2.1 Objectives:

- Prevent distress migration from rural to urban areas, which is a common phenomenon in India's villages due to lack of opportunities and facilities that guarantee a decent standard of living.
- Make the model village a "hub" that could attract resources for the development of other villages in its vicinity.
- Provide easier, faster and cheaper access to urban markets for agricultural produce or other marketable commodities produced in such villages.
- Contribute towards social empowerment by engaging all sections of the community in the task of village development. Create and sustain a culture of cooperative living for inclusive and rapid development.

❖ Key elements of a model village:

- An intervention under one of these areas could have an effect across other areas as well. For example, technology could be used to improve the quality and delivery of other services such as health and education, which in turn contributes to sustainable development. Similarly, the use of renewable energy, apart from meeting energy needs, also contributes towards environmental sustainability.
- Village tree plantation drives could encourage community participation, benefit the environment, prevent soil erosion and benefit agriculture, conserve water, and finally contribute to the aesthetics of the village. A number of these initiatives have already been taken in different parts of the country, but most of them have been attempted in isolation.

❖ Key Elements of Ideal Village:



(Fig 2: Key elements of Ideal village)

❖ Resources:

- Drinking Water
- Drainage Network
- Irrigation Facilities
- Health Facilities
- Education Facilities
- Public Garden /Park/Playground
- GYM
- Bank
- Oil Petrol Pump
- 24/7 electricity and water supply
- E-Panchayat (self-developed and designed)

1.2.2 Example / Live Case studies of ideal village of India/Gujarat: - (Raysan Village)

1. Mala Gram Panchayat of Thrissur District in Kerala:

Mala Gram Panchayat is situated 40 kms away from the District Head Quarters. The village is equally represented by Hindu, Christian and Muslim community, having its main source of livelihood as agriculture

Since past 15 years Panchayat is working towards attaining "Open defecation" free status. The efforts have started way back in 1990's by Kerala Water Authority for construction of two pit latrines, also as part of decentralized planning with the introduction of the Panchayati Raj System between (1996 to 2003). On the launch of TSC programmed in the district in 2003, people from various walks of life came together including ward level representatives formed Health Promotion Team (HPT) to motivate people for construction of sanitary latrines. In order to sensitize general public about the necessity of sanitation, health and hygiene sound amplifier mounded vehicles were used to spread the message. Through medium of traditional folk media called as "Kalajatha" a form of street play were also performed to create awareness amongst general public on sanitation issue. Also since launch of the program participation of community based organizations such as SHG's, area based development societies and community development societies were ensured. Attractive dustbins are kept on roadsides for collection of garbage. At school level unique program, which targeted the adolescent girls, were under taken. Active involvement of Parent Teachers Association (PTA), for implementing school sanitation programme. To ensure the smooth functioning of the project, a committee at Panchayat level was formed and which monitored the progress at regular interval. Targets were also assigned to block level officers and District level officers for monitoring the construction activities. Besides the individual toilets, 15 schools and 27 Aanganwadi were provided with sanitation facilities. Three sanitary complexes were constructed under TSC. The authorities of Mala Grama strongly believes that change which they have come across is not overnight, it has come a long way after efforts of committed individuals and in order to sustain hygiene behavior change they formed SHG and school health clubs.

Sighting one example the Sarpanch proudly shares that construction of toilets has changed life of villagers. He gave e.g. of Mr. Swamy Kuttan, who was earning his livelihood as coconut climber, he got disabled after falling from coconut tree. He even needed assistance for responding to natures call. Since they had no toilets, family had to face many hardships. To look after her ailing husband his wife Suma cold not go for work and the family had landed in trouble. After constructing a sanitary latrine adjacent to their house, Mr. Swamy Kuttan could manage his personal needs himself and his wife could regularly go to work and earn a decent living

1.2.3 The Idea of a Model/Smart Village:

The smart village is made by providing dumping area facilities, covered drainage system, sewer line, drinking water treatment plant, 24 hours electricity, proper village road, bank and ATM facilities, bio gas plants, rain water harvesting, canal water for agriculture purpose and proper town planning.

1.2.4 Ancient History of Indian Village:

We define the term 'rural' as a region located on the outskirts. It refers to a small settlement, which is outside the boundaries of a city, commercial or industrial area. It may include, countryside areas, villages or hamlets, where there are natural vegetation and open spaces. There is a low density of population in such area. The primary source of income of the residents is agriculture and animal husbandry. Cottage Industries also form a chief source of income here. In India, a town whose population is below 15000 is considered as rural, as per the planning commission. Gram Panchayat is responsible for looking after such areas. Further, there is no municipal board, in the villages and maximum percentage of the male population are engaged in agriculture and related activities.

1.3 Detail Study of Ideal Village:

❖ Resources available in Ideal Village:

- Agriculture
- Schools
- College
- Hospital
- Substation
- Bank & ATMs

❖ Physical & Demographical Growth:

Today Mogri is a well developed village of Anand District of Gujarat. We can see all basic facilities like Hospital, School, Good Roads, Approach from all direction of the village, Banks, Lake, Proper water Facility, Electric Power Grid Substation, Public Transportation facility, clean atmosphere, etc.

Dwellers over here are of middle class and mature enough to understand the running scenario. As per the government records, the town has 2096 families and Mogri's population is 9851. Out of this, 5194 are males and 4657 are females. This town area has 1169 children in the age group of 0-6 years. Out of this 608 are boys and 561 are girls.

Literacy rate in Mogri town area is 81%. Among males the literacy rate is 85% while female literacy rate is 78%. The Negative part is that illiteracy rate of Mogri town area is 18%.

❖ Economic profile:

The number of employed people of Mogri town area is 3722 whereas 6129 are nonworking. And out of 3722 occupied person 177 peoples are totally dependent on cultivation. Total number of workers in the village are 1131 in which 628 are main workers (earns more than 6 months) and 503 are marginal workers (earning less than 6 months). Major 3 occupation in village are farmers, agriculture, labour and small private business.

❖ Infrastructure Facilities (all type):

Infrastructure of Mogri is having all primary and secondary needs for giving a better lifestyle to village people.

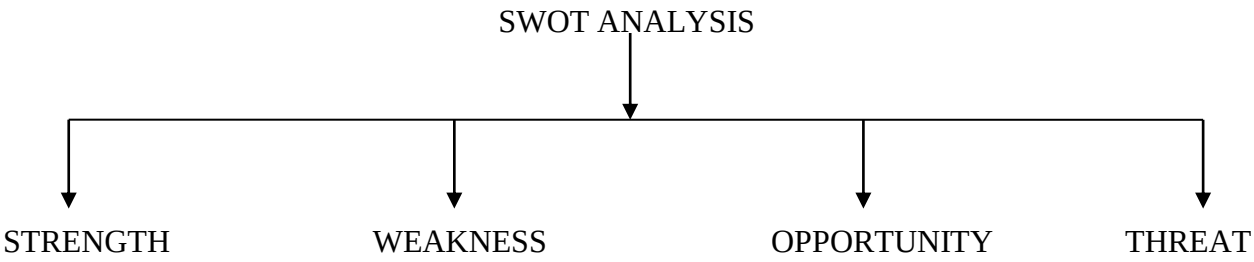
- **Primary Infrastructural need:**

  All primary infrastructure needs are fulfilled here. They have pukka houses, and necessary government buildings. All this are well developed and well maintained. Amongst this all buildings newly constructed houses are having proper wiring scheme and earthling, while in old constructed government building there is no proper earthling. Even roads over here are of good condition.

- **Secondary Infrastructural need:**

  Mogri have School and Anganwadi for better development of Children's also with midday meal facility. It also have a Hospital, so that people of mogri can get the treatment either very own village only.

1.4 SWOT Analysis of an Ideal Village:



- Strength:
  - Rural connectivity
  - Employment
  - Use of locally available material, so project cost is low.

- Weakness:
  - Wages paid are less.
  - Delay in project duration.
- Opportunity:
  - Lifestyle is improved.
  - Economic development of country.
- Threat:
  - Money sanctioned for the project is not efficiently utilized.

1.5 Future Prospects:

- In future they think to do installation of solar, biogas or any other renewable energy sources as per availability of sources in village and more suitable source for the particular area. If any other problems were occurs in future then try to solve that problem also.

1. Solar street light
2. Bio Gas Plant
3. Waste water treatment plant
4. Blood Bank
5. Water Meter

1.6 Benefits of the visits of Ideal village / Smart Village:

- Provided Proper response from the gram Panchayat and did the very healthy convection about the Ideal village feature.
- Can able to know different types of the facilities infrastructure likes Physical social; social cultural sustainable and repair and maintain ace related and also know about the basic facilities about the village which have to provide for every poor villages.
- With solid and liquid waste management system with proper treatment method provide proper solution such as recycle of recycling processes of waste management.
- More renewable energy source and providing village own sustainable infrastructure.

Chapter 2: Literature Review:

2.1 Introduction:

❖ Urban:

Urban is that area where the population density is more and new facilities are provided to the people. Urban area is the region surrounding a city. Most of inhabitants of urban areas have non-agricultural jobs. Urban areas have municipality, corporation, cantonment board or notified town area committee etc. According to census 2011, there are 7,935 towns, 4,041 statutory town and 3,894 census towns.

❖ Rural:

All the areas which are not characterized as urban area is called rural area. In which the population is very low compared to urban areas. Mainly they depend on agricultural activities. According to census 2011, there are 6, 40,867 villages in India. The area where more than 75% of male population is associated with agricultural activity is known as rural area.

2.2 Different Definitions of: Rural Area/ Village:

- Rural areas have low population density and large amount of undeveloped land. Agricultural activities are more in rural areas.
- Census rural refers to individuals living in the countryside outside centers of 1000 or more population.
- Rural and small town refers to individuals in towns or municipalities outside the commuting zone of larger urban centers. These individuals may disaggregated into zones according to the degree of a larger urban center.

2.3 Importance in rural context:

- Rural development is necessary not only for an over-whelming majority of the population living in villages but the development of rural activities is essential to accelerate the pace of overall economic development of the country. Rural development has assumed greater importance in India today than in the earlier period in the process of the development of the country. It is a strategy package seeking to achieve enhanced rural production and productivity, greater socio-economic equity, and aspiration, balance in social and economic development.

- The primary task is to mitigate the hunger of about 70 percent of the rural population, providing adequate and nutritious food. Then follow an adequate Provision of clothing and footwear, a clean house in a clean environment, medical care, recreational facility, education, transport and communication.

The need of the hour is that rural development should aim at:

- Removal of unemployment;
- Reduction in under-employment;
- Improve the standard of living;
- Adequate income for nutritious food;
- Sufficient clothes;
- Availability of soft drinking water;
- Hygienic living conditions;
- Satisfactory educational facilities for learning;
- Suitable medical facilities for treatment;
- Proper house to live in;
- Appropriate socio-cultural activities to enrich oneself;
- Adequate all-weather roads for better communication.

2.4 Scenario: Rural / Urban India & Gujarat as per census 2011 (population growth)

Agenda of census of India is to release of provisional population totals-Rural urban distribution.

Population (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 : Population of Rural and Urban areas as per census 2001 and 2011)

For the first in since independence, the absolute increase in population is more in urban areas that in rural areas.

Rural-Urban Distribution: 68.84% & 31.16

Level of urbanization increased from 27.81% in 2001 census to 31.16% in 2011.

Literacy rates (in %)

	2001	2011	DIFFERENCE
INDIA	64.8	74.0	+9.2
RURAL	58.7	68.0	+10.2
URBAN	79.9	85.0	+5.1

(Table: 3 Literacy Rates in Rural and Urban areas as per Census 2001 and 2011)

The improvement in literacy rate in rural area is two times that in urban areas.

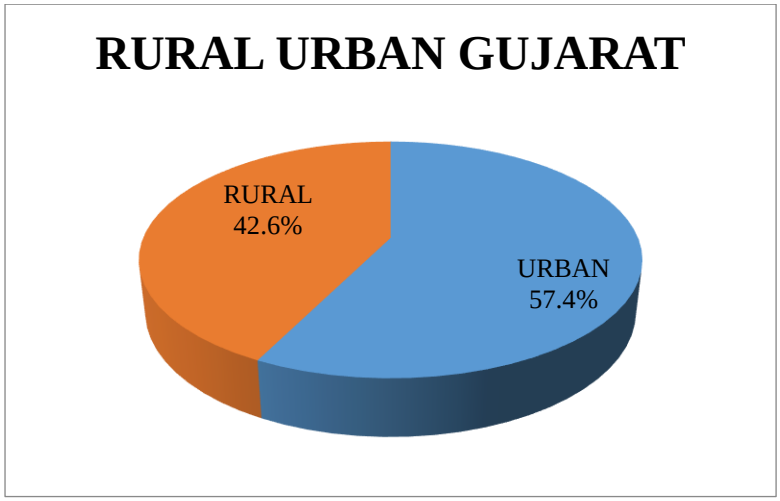
The rural urban literacy gap which was 21.2% points in 2001, has come down to 16.1% points in 2011

Literacy Rates (in %)

	2001	2011	DIFFERENCE
MALE			
INDIA	75.3	82.1	+6.8
RURAL	70.7	78.6	+7.9
URBAN	86.3	89.7	+3.4
FEMALE			
INDIA	53.7	65.5	+11.8
RURAL	46.1	58.8	+12.7
URBAN	72.9	79.9	+7.0

(Table: 4 Literacy Rates in Rural and Urban area as per the males and females)

Gujarat Census:



(Fig:3 Population of Gujarat in %)

Population of Gujarat:

POPULATION	2001	2011
MALE	26,385,577	31,491,260
FEMALE	24,285,440	28,498,432
TOTAL	50,671,017	60,439,692

(Table: 5 Population of Gujarat as per census 2001 and 2011)

2.5 Rural Development Issues and Concerns:

Following issues are concern with rural areas:

1. People are directly or indirectly dependent on agriculture and a large number of landowners have small and medium-sized landholding.
2. Economy of the people living in rural areas is low.
3. The price the farmers get for their produces is less in relation to the work they put in.
4. People have to migrate to the urban areas due to unavailability of education.
5. The other rural problems are due to the fact that since the rural people do not live in concentrated masses, the availability of specialized service to them is minimum.
6. Very less people are employed in the rural areas.
7. Lack of physical facilities in rural areas.
8. Lack of recreation facilities.
9. Farmers are not having market area for selling their goods directly to the market.

2.6 Various Measures for Rural Development:

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

1. To develop rural area as whole in terms of culture, society, economy, technology and health.
2. To develop living slandered of rural mass.
3. To develop rural youths, children and women.
4. To develop and empower human resource of rural area in terms of their psychology, skill, knowledge, attitude and other abilities.
5. To develop infrastructure facility of rural area.
6. To provide minimum facility to rural mass in terms of drinking water, education, transport, Electricity and communication.

7. To develop rural institutions like Panchayat, cooperatives, post, banking and credit.

8. To provide financial assist to develop the artisans in the rural areas, farmers and agrarian unskilled labor, small and big rural entrepreneurs to improve their economy.

9. To develop rural industries through the development of handicrafts, small scaled industries, village industries, rural crafts, cottage industries and other related economic operations in the rural sector.

10. To develop agriculture, animal husbandry and other agricultural related areas.

11. To restore uncultivated land, provide irrigation facilities and motivate farmers to adopt improved seed, fertilizers, package of practices of crop cultivation and soil conservation methods.

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

Facilities	Planning Commission/UDPFI Norms	Required as per norms
	Education	
Aanganwadi	Each Village	1
Primary School	Each Village	1
Secondary School	Per 7,500 Population	2
Higher secondary school	Per 15,000 Population	1
College	Per 125,000 Population	1
Tech. Training Institute	Per 100,000 Population	1
Agriculture Research	Per 100,000 Population	1
Centre		
	Medical Facility	
Gov./Panchayat	Each Village	1
Dispensary or PHC or		
Health Centre		
PHC & CHC	Per 20,000 Population	1
Child Welfare and	Per 10,000 Population	1
Maternity Home		

Hospital	Per 100,000 Population	1
	Transportation	
Pucca Village Approach	**Each Village**	
Road		
Bus/Auto stand provision	**All Villages connected by**	1
	PT (ST Bus or Auto)	
	Drinking Water	
Over Head Tank	**1/3 of Total Demand**	1.6 lac cap
U/G Sump	**2/3 of Total Demand**	3.2 lac cap
Public Latrines	**Each Village**	60
Cremation Ground	**Per 20,000 Population**	1
Post Office	**Per 10,000 Population**	1
Gram Panchayat Building	**Each individual/group**	1
	Panchayat	
Fire Station	**Per 100,000 Population**	1
Police Station	**Per 15,000 Population**	1
Community Hall	**Per 10,000 Population**	1

(Table 6 : Guidelines/Norms for Villages for the provisions of different infrastructure facilities)

2.8 Other Projects / Schemes:

1. Pradhan Mantri Adarsh Gram Sadak Yojana (PMAGSY):

- It focuses on integrated development of 100 villages with a 50 per cent population of SCs.

2. Bharat Nirman Yojana:

- It was launched in 2005 for building infrastructure and basic amenities in rural areas. It comprises of six components rural housing, irrigation, drinking water, rural roads, electrification and rural telephony.

3. Indira Awas Yojana:

- It is one of the six components of Bharat Nirman Yojana. It was introduced in 198586. It aims to help built or upgrade the households of people living under BPL.

4. Jawaharlal Nehru National Urban Renewal Mission (JNNURM):

- It was launched on 3rd December, 2005. The main objective of this scheme was fast track development of cities across the country. It was focused especially on developing efficient urban infrastructure service delivery mechanism, community participation and accountability of urban local bodies and other agencies towards citizen.

5. Rajiv Awas Yojana (RAY):

- This programmed was announced in June 2009 with an objective to make the country slum- free.

6. National Rural Health Mission:

- It was launched to make basic health care facilities accessible to the rural people.

7. National Rural Livelihood Mission:

- It is meant to eradicate poverty by 2014-15.

8. National Food Security Scheme:

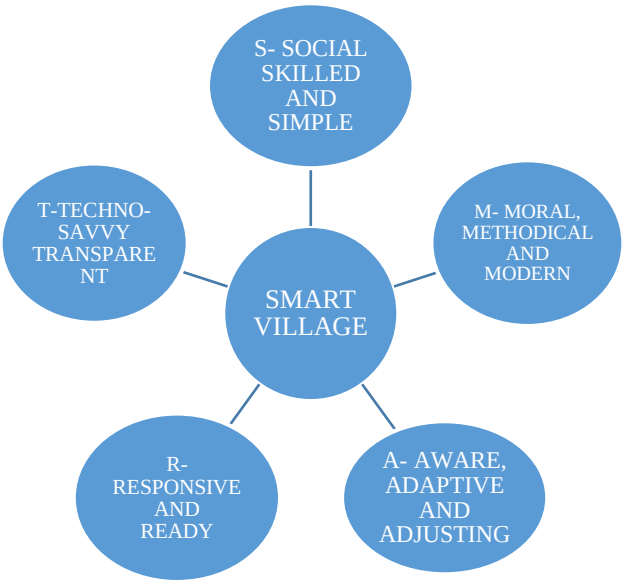
- On the pattern of MNREGS, the central government is trying hard to bring a bill in the monsoon session (2013) to provide guarantee for food to the poor people, although it has already issued an ordinance in this regard.

Chapter 3: Smart Village - Concept and Practices

3.1 Concepts, Definitions and Practices:

There is no universally accepted definition of a smart village. It means different things to different people. The conceptualization of Smart Village, therefore, varies from country to country, depending on the level of development, willingness to change and reform, resources and aspirations of the village residents. A smart village would have a different connotation in India than, say, Europe. Even in India, there is no one way of defining a smart village.

Smart village is an "Ideal Village with Technology". Ideal village deals with the proper availability of service to people to their means regardless of achieving their means while in smart village conceptualization it is needed to properly define role of technology for sustainable development for various achievement of goals for village development.



(Fig 4 : S.M.A.R.T Village)

Figure above shows various aspects in terms of S.M.A.R.T. village should follow in its planning and delivering of service.

3.2 Bench Marks-Vision-Goals, Standards and Performance Measurement Indicators:

- **Sewerage and Sanitation:**
  - 100% Household should have access to toilets.
  - 100% schools should have separate toilets for girls.

- **Solid waste management:**
  - 100% household are covered by daily door-to-door step Collection system
  - 100% collection of municipal solid waste.
  - 100% segregation of waste.
  - 100% recycling of solid waste.

- **Storm water drainage:**
  - 100% coverage of road network with storm water drainage Network.
  - Aggregate number of incidents of water logging reported.

- **Electricity:**
  - 100% household have electricity connection
  - 24X7 supply of electricity.
  - 100% metering of electricity supply.
  - 100% cost recovery.
  - Tariff slabs that work towards minimizing waste.

- **Telephone Connection**:
  - 100% households have a telephone connection including Mobile.

- **Wi-Fi connectivity:**
  - 100% of the city has Wi-Fi connectivity.
  - 100 Mbps internet speed.

- **Transportation:**
  - Maximum travel time 30 minutes in small and medium size.
  - Cities and 45 minutes in metropolitan area.
  - Access to Para-transit within 300m walking distance.

- **Spatial Planning:**
  - 175 persons per Hours along transit corridors.
  - At least 30% residential and 30% commercial/ institutional in every TOD zone within 800m of transit station.

3.3 Technological Options:

1. Smart Energy:

Both residential and commercial in the smart cities are more efficient using and the energy used is basically analyzed and data should be collected and therefore building get monitor their energy usage and report this data to utilities and reduce the cost Smart grid solution play important role in making smart cities from prepaid application to advanced metering there are several factor that is to enhance.

2. Smart Transportation:

It's considered smart parking, smart traffic light and smart multi transportation by making parking smarter, people spend less time looking for parking spots and circling city blocks and convent life. Traffic lights are particular based on the bus schedules so that less traffic and more freely during rush hours.

3. Smart Infrastructure:

The city have good infrastructure may move forward with other technologies and make meaningful changes in future city plan.

4. Smart Mobility:

It indicate both data and technology which travel across the technology needs more interoperable and perform to great expectations regardless of who made it or when it was made.

3.4 Road Map and Safe Guards:

A smart city road map consists of four/three (the first is a preliminary check) major components:

- To describe exactly what is the community: maybe that definition can condition what you are doing in the subsequent steps; it relates to geography, links between cities and flows

of people between them; that in some Countries the definition of City/community that is stated does not correspond effectively happens in the real life.

- Study Community: Before deciding to build a smart city, first we need to know that. This can be done by determining the benefits of such an initiative. Study the community to know the citizens, the business's needs – know the citizens and the community's unique attributes, such as the age of the citizens, their education, hobbies, and attractions of the city.
- Develop a Smart City Policy: Develop a policy to drive the initiatives, where roles, responsibilities, objective, and goals, can be defined. Create plans and strategies on how the goals will be achieved.
- People, Processes, and Technology (PPT) are the three principles of the success of a smart city initiative. Cities must study their citizens; know the processes, business drivers, create policies, and objectives to meet the citizens' needs.

3.5 Issues & Challenges:

1. Retrofitting existing legacy city infrastructure to make it smart:

There are a number of latent issues to consider when reviewing a smart city strategy. The most important is to determine the existing city's weak areas that need utmost consideration, e.g. 100-per-cent distribution of water supply and sanitation. The integration of formerly isolated legacy systems to achieve citywide efficiencies can be a significant challenge.

2. Financing smart cities:

The High Power Expert Committee (HPEC) on Investment Estimates in Urban Infrastructure has assessed a per-capita investment cost (PCIC) of Rs 43,386 for a 20-year period. Using an average figure of 1 million people in each of the 100 smart cities, the total estimate of investment requirements for the smart city comes to Rs 7 lakh crore over 20 years (with an annual escalation of 10 per cent from 2009-20 to 2014-15).

3. Availability of master plan or city development plan:

Most of our cities don't have master plans or a city development plan, which is the key to smart city planning and implementation and encapsulates all a city needs to improve and provide better opportunities to its citizens. Unfortunately 70-80 per cent of Indian cities don't have one.

4. Financial sustainability of ULBs:

Most ULBs are not financially self-sustainable and tariff levels fixed by the ULBs for providing services often do not mirror the cost of supplying the same. Even if additional investments are recovered in a phased manner, inadequate cost recovery will lead to continued financial losses.

5. Technical constraints of ULBs:

Most ULBs have limited technical capacity to ensure timely and cost-effective implementation and subsequent operations and maintenance owing to limited recruitment over a number of years along with inability of the ULBs to attract best of talent at market competitive compensation rates.

6. Three-tier governance:

Successful implementation of smart city solutions needs effective horizontal and vertical coordination between various institutions providing various municipal amenities as well as effective coordination between central government (MoUD), state government and local government agencies on various issues related to financing and sharing of best practices and service delivery processes.

3.6 Smart Infrastructure:

Smart infrastructure is the facilities and system serving a country city and other area. It typically characteristic technical structures such as roads, bridges, tunnels, water supply, sewers, electrical grids, telecommunications , and so forth, and can be defined as "the physical components of interrelated systems providing commodities and services essential to enable, sustain, or enhance living conditions. The installations that form the basis for any operation or system smart infrastructure are classifies into highways, streets, roads, and bridges; mass transit; airports and airways; water supply and water resources; wastewater management; solid waste treatment and disposal.

3.7 Cyber Security:

Cyber security in the context of Smart Cities is a hot topic. The objective of Smart Cities is to optimize the city in a dynamic way to offer a better quality of life to the citizens through the application of information and communication technology (ICT). The range of areas where cities can become smarter is extensive: it is an evolution of “Connected Cities” with the prevalence of data exchange at a larger scale. The study proposes good cyber security practices for IPT operators to protect against intentional attacks and accidental threats. The study then proposes key recommendations for stakeholders to enhance the level of cyber security in Smart Cities:

- Municipalities should support the development of a harmonized cyber security framework.
- The European Commission and Member States should foster knowledge exchange and collaboration in cyber security among industry, Member States and municipalities.
- IPT Operators should develop a clear definition of their security requirements.
- IPT Operators and Municipalities should allocate higher spending on cyber security.
- Manufacturers and solution vendors should integrate security in their products.

3.8 Green Building:

- Green building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle from sitting to design, construction, operation, maintenance, renovation and deconstruction.
- This practice expands and complements the classical building design concerns of economy, Utility, durability, and comfort.
- Green building is also known as a sustainable or high-performance building. Green buildings are designed to reduce the overall impact of the built environment on human health and the natural environment by: Efficiently using energy, water, and other resources.
- Protecting occupant health and improving employee productivity.

(Fig 5: Green Building)

3.9 Strategic Options for Fast Development:

- The strategic component of area based development in the smart cities mission are city improvement, city renewal and city extension plus pan city initiative in which smart solution are applied covering larger parts of the city.
- Below are given the Deion's of the three models of area based smart city development.

- Retrofitting will introduce planning in an existing built-up area to achieve smart city objectives, along with other objectives, to make the existing area more efficient and livable. Redevelopment will effect a replacement of the existing built-up environment and enable eco-creation of a new layout with enhanced infrastructure using mixed land use and increased density.
- The smart city proposal of each short listed city is expected to encapsulate either retrofitting or redevelopment or green filed development model, or a mix there of and apian city future with smart solution.

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

More than 90% of the population has access to drinking and 60 % of the population has access basic sanitation. The challenges faced by India urban water and sanitation are as Follow:

- Creating consensus on sector governance and institutional arrangements.
- Developing and testing service provider models that have characteristics of well Run public companies for different market segments Is the main challenges faced by India urban and sanitation.
- Improving financial sustainability of providers. Moderating the WSS sector.
- The first is that the data bank for people seeking to information.
- The documentation can be used for communities or individuals for payment for the transfer of technology.
- Data bank will serve an important function of establishing community knowledge firmly in the public domain.

3.11 Initiatives in village development by local self- government:

Initiatives for Urban Local Bodies:

- A Town Panchayats and city corporation requires regular energy audit supports.
- Technical support staff needs to be strengthened in each Urban Local Bodies and a dedicated Energy Conservation Unit need to place at least in bigger urban local bodies.
- The ULBs are the competent authorities to enforce all energy saving measures in their jurisdiction; they need an enforcement unit with statutory powers.
- DPCs can initiate more proactive measures in energy conservation. Adequate and specific budget provisions need to be created under the provisions of the KPR Act, 2003 for various energy conservation initiatives; PRIs can make their own byelaws also.

3.12 Smart Initiatives by District Municipal Corporation:

- **At Source Reduction & Reuse:** Waste minimization and sustainable use/multiuse of products (e.g. reuse of carry bags/package in jars)
- **Recycling:** Processing non-biodegradable waste to recover commercially valuable materials (e.g. plastic, paper, metal, glass and e-waste recycling
- **Composting:** Processing organic waste to recover compost(e.g. windrow composting, in-vessel composting, vermin composting)
- **Waste to Energy:** Recovering energy before final disposal of waste (e.g. RDF, biomethanation, compressing of combustible non-biodegradable dry fraction of MSW, incineration)
- **Landfills:** Safe disposal of inert residual waste at sanitary landfills

➢ Objective for an innovative and model solid waste management :

- To improve system of primary collection of waste.
- To improve the system of transportation of waste by ensuring “handling waste only once."
- Land to be acquired for other land fill disposal site.

- To have public partition.
- To do institutional strengthening.
- To ensure safe disposal of waste including biomedical waste.
- To reduce quantity of waste going to land fill site by adopting suitable technology.

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

❖ GIFT City:

GIFT city is located in an area 3.5 km and it has immense scope for development. The planning and Design of element of GIFT city is based on consideration of micro biology to be maintained in particular area. The city is built to green building Principle and structure aim to achieve highest standard efficiency in term of solid waste Management, energy and in term of material efficiency.

❖ Urban Governance:

1. It plays an important role of municipal government in implementation of urban poverty alleviation project.
2. It helps to increase responsibility for urban planning at the district level and state level.
3. To mobilize Greater Authority and using of resource.

❖ The goals constitute the long-term vision for the project. State the long-term social and/or economic (impact) benefits to which the project will contribute, and describe why the project is important for the beneficiaries and for the society. A management / systematic tool for designing, planning, implementing and monitoring and evaluating a project (or program).

- A tool for systematic thinking for relating inputs to the implementation of activities, activities to the production of outputs, outputs to the achievement of a defined purpose, and purpose to a high-level goal or impact.

- A tool for identifying and assessing risks by listing critical assumptions inherent in project design and implementation.
- A tool for measuring project progress through objectively verifiable indicators and means of verification.
- A tool for developing consensus and communicating a project's intent and strategy.

Chapter 4: Allocated Village: Sihol

4.1 Introduction:

4.1.1 Introduction about Sihol Village:

- According to Census 2011 information the location code or village code of Sihol village is 516964. Sihol village is located in Petlad Tehsil of Anand district in Gujarat, India. It is situated 8km away from sub-district headquarter Petlad and 18km away from district headquarter Anand. As per 2009 stats, Sihol village is also a gram panchayat.
- The total geographical area of village is 769.03 hectares. Sihol has a total population of 6,051 peoples. There are about 1,245 houses in Sihol village. As per 2019 stats, a Sihol village comes under Petlad assembly & Anand parliamentary constituency. Petlad is nearest town to Sihol which is approximately 8km away.
- Nearby Villages of sihol: Morad, Porda, Sunav, Vishnoli, Ardi, Palaj, etc.

4.1.2 Need of the study:

For development of village compare to the city area in the basic facility to needed for people and their amenities and to study whole village. For development the basic needed and their Requirement. It should have development of Bus Stop Stand, Water Tank, Road, Hospital, etc...

- To reduce migration from rural to 1urban areas.
- To provide basic and sustainable facilities to rural area to reduce the pressure on urban areas.
- Giving urban touch to the rural soul
- To uplift the living standard of rural people by providing facilities and better infrastructure.

4.1.3 Study Area:

Present status and techno-economic survey of villages in given District of the state in terms of basic and public amenities, essential commodities, other infrastructural facilities for the need of people and on the adequacy of the available resource with reference to the population of the village and growth of the area with the collection of Local revenue income and authorities, TDO and DDO the future need of the village keeping to mind the need of days, future targeted population growth, growth of surrounding town or Taluka places etc.

4.1.4 Objective of Study:

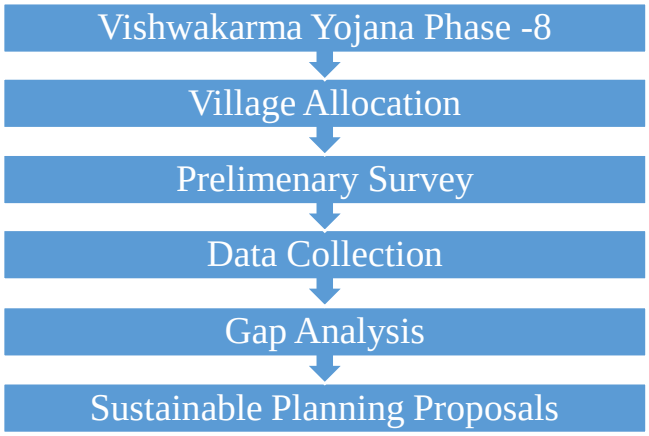
❖ Following are the various objective of study.

- Basic Social infrastructure –Health and Education facilities should be provided and ensure proper delivery of facilities to village dwellers.
- Water distribution system of village is in bed condition and needed to provide technical system.
- Internal roads and streets are better in better condition (95%) and other roads and streets are kuccha type (5%).
- Drainage system of village is well covered but outlet water is going in river which is waste of water.
- It should be needed proper maintenance of leakage in water supply.
- Village requires a Bus Stop because Villager phase problem in Rainy Day.
- Condition of village house is Good Pucca House (90%) and Kucha (10%).

4.1.5 Scope of Study:

- To provide some urban amenities to a village without affecting the soul of village.
- Due to providing urban facilities development of village will be possible.
- Most of people lived at village so first to developed the village as per the Rurbanisation term.

4.1.6 Methodology Frame Work for Development of Village:



(Fig 6: Flow Chart of Methodology)

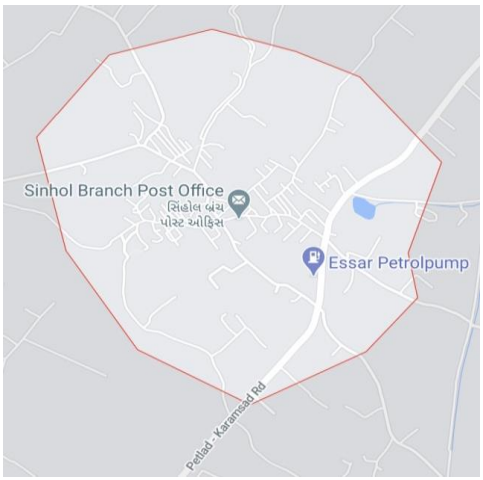
4.1.7 List of Objects Available Related To Civil Methodology:

- Gram Panchayat
- Temple
- Drainage System
- Overhead Water Tank
- R.C.C Roads
- Paver Blocks
- Medical Store
- Public Garden
- Post Office
- Aanganwadi
- School
- Primary health centre
- Electricity 24*7
- Milk Co-Operative Society.
- General Provision Street.
- Water Supply System
- Solid Waste Collection

4.2 Sihol Village Study Area Profile:

4.2.1 Study Area Location:

- Name of Village: Sihol
- Taluka name: Petlad
- District Name: Anand
- Pincode: 388130
- Feature Description: Village
- Population: 6051
- State & Country: Gujarat, India



(Fig 7: Google Map of Sihol Village)

4.2.2 Physical & Demographical Growth:

- Sihol is a large village located in Petlad Taluka of Anand district. The Sihol village has population of 6051 of which 3178 are males while 2873 are females as per Population Census,2011.

- In Sihol village population of children with age 0-6 is 731 which makes up 12.08 % of total population of village. Average Sex Ratio of Sihol village is 904 which is lower than Gujarat state average of 919. Child Sex Ratio for the Sihol as per census is 753, lower than Gujarat average of 890.

- Sihol village has higher literacy rate compared to Gujarat. In 2011, literacy rate of Sihol village was 81.28 % compared to 78.03 % of Gujarat.

4.2.3 Brief History:

- According to Census 2011 information the location code or village code of Sihol village is 516964. Sihol village is located in Petlad Tehsil of Anand district in Gujarat, India. It is situated 8km away from sub-district headquarter Petlad and 18km away from district headquarter Anand. As per 2009 stats, Sihol village is also a gram panchayat.

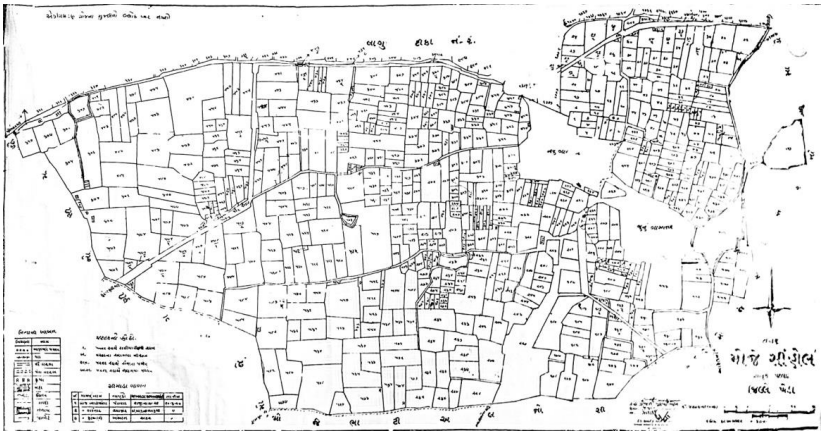
- The total geographical area of village is 769.03 hectares. Sihol has a total population of 6,051 peoples. There are about 1,245 houses in Sihol village. As per 2019 stats, Sihol

villages comes under Petlad assembly & Anand parliamentary constituency. Petlad is nearest town to Sihol which is approximately 8km away.

4.2.4 Economic Profile:

- In Sihol village out of total population, 2850 were engaged in work activities. 81.44 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 18.56 % were involved in Marginal activity providing livelihood for less than 6 months. Of 2850 workers engaged in Main Work, 293 were cultivators (owner or co-owner) while 1450 were Agricultural laborers.

4.2.5 Base Location Map, Land Map, Gram Tal Map:



(Fig 8: Land Location Map)

(Fig 9: Base Location Map)

4.2.6 Social scenario:

❖ Literacy rate of Sihol Village:

In Sihol Male literacy stands at 89.42 % while female literacy rate was 72.49 %. Schedule Caste (SC) constitutes 4.89 % while Schedule Tribe (ST) was 0.28 % of total population in Sihol village.

❖ Connectivity of Sihol Village:

Type	Status
Public Bus Service	Available within village
Private Bus Service	Available within 5-10 km Distance
Railway Station	Available within 5-10 km Distance

(Table 7: Connectivity of Sihol Village)

❖ Sihol Village Data:

SIHOL VILLAGE OVERVIEW	
Gram Panchayat :	Sihol
Block / Tehsil :	Petlad
District:	Anand
State:	Gujarat
Pincode:	388130
Area:	763.03 Hec.
Population:	6051
Households:	1245
Assembly Constituency:	Petlad
Parliament Constituency:	Anand
Nearest Town:	Petlad (8km)

(Table 8 : Sihol Village Overview)

4.3 Data Collection of Sihol Village:

4.3.1 Method of Data Collection:

Due to COVID-19 Pandemic Situation the Sarpanch and Talati of Village cannot give Permission to us for door to door collection just because there are some Covid Cases in Village. So we are collecting data of Sihol village Taluka Petlad, dist. Anand by following methods:

- Collection of Information from Talati Mantri, Sarpanch, Gram Sevak and School Principal.
- Techno- Economic survey of allotted village Sihol.
- Gap analysis and SWOT analysis as per collected data of both villages.
- From internet and Census 2001 & 2011 records.
- From self-exploration of village by doing survey.

4.3.2 Primary Survey Details:

Particulars	Total	Male	Female
Population	6051	3178	2873
Child (0-6)	731	417	314
Schedule Caste	296	152	144
Schedule Tribe	17	10	7
Literacy	81.28%	89.42%	72.49%
Total Workers	2850	1951	899
Main Worker	2321	-	-
Marginal Worker	529	176	353

(Table 9 : Village survey details)

4.3.3 No. of Human Being in One House:

- There is total 1245 household each of average 4-5 members are in one house.

4.3.4 Which Material used locally:

- For the house construction, they used mainly bricks, sands and wood. Concrete and RCC also used.

4.3.5 Out Scoured Material:

- All the Materials are supplied from Outside of village.

4.3.6 Occupational Details:

- Main occupation of village is agricultural, animal husbandry. Small house hold activities are also carried out in village.

4.3.7 Demographical Details:

Sr. no.	Census	Total Population	Male	Female
1	2001	5652	2979	2673
2	2011	6051	3178	2873

(Table 10 : Demographic Detail of Sihol Village)

4.3.8 Agricultural Details:

- The total agricultural land area in Sihol village is 672 hectares. Total 643 cultivators are dependent on agricultural farming. Main crops of Village are Tobacco, vegetables, etc.

4.3.9 Labors work Details:

- The workers working in wage based payment are paid an average of 300 Rs for Male workers and 250 for female workers.

4.3.10 Manufacturing HUB / Ware Houses:

- There is not any such infrastructure in the Village.

4.3.11 Tourism Cluster:

- There are no tourism cluster, no historical place are available.

4.3.12 Physical Infrastructure Facilities:

1. Primary, Secondary, Higher Sec. School
2. Overhead Water Tank
3. Electricity
4. Milk Co-Operative Society.
5. Anganwadi
6. Garden
7. Panchayat Building
8. Temple
9. Primary Healthcare

4.4 Infrastructure Details:

4.4.1 Drinking Facilities:

- In Sihol village there are 1 water tanks which have capacity of 75000 liters capacity.

4.4.2 Drainage Network & Sanitation Facilities:

- In Sihol village there is proper drainage facility available. Every house in Sihol Village has proper sanitation facilities but there are no public latrines in the village.

4.4.3 Transportation & Road Network:

- Transportation facility is easily available in the village but the internal street roads of some area are not proper and it requires repair works.

4.4.4 Housing condition:

- The housing condition in the Village is good. Majority of the houses in Sihol are pucca house.

(Fig 10: Transportation, Drainage and housing condition)

4.4.5 Social Infrastructure:

❖ Health Facilities:

- There is one primary health center in village which is running in a Bad Condition.

(Fig 11: Primary Health Centre)

- There is One Private Clinic Available in Sihol Village.

(Fig 12 : Private Clinic)

Community Hall:

- There is no community hall in village.

4.4.6 Technology Mobile/ wifi / Internet Usage Details :

- In Sihol village majority of users are using internet through their mobile network and there is personal wifi in the village. There is no wifi facility is available for public usage.

4.4.7 Sports Activity as Gram Panchayat:

- There is no sports activity in the village. Sometimes cricket match is organized by Gram Panchayat.

4.4.8 Socio Cultural Facilities:

- There is one Public Library
- There is one Public Garden.
- There is one village pond.

(Fig 13: Public Garden)

(Fig 14: Public Library)

4.4.9 Other Facilities:

(Medical Shop)

(BOB Bank)

(Post Office)

(Sihol School)

(Provisional Store)

(Anganwadi)

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

1. Maintenance of existing Public Infrastructures:

- It is required to maintain and repair the overhead water tank.
- Required to maintain the road for the agricultural land

2. Existing Condition of Panchayat Building:

- There is Panchayat building which has good condition.

(Fig 17: Panchayat Building)

4.5 Existing Institution like - Village Administration – Detail Profile:

4.5.1 Bachat mandali:

- There is no bachat mandali in village.

4.5.2 Dudh mandali:

- There is a Dudh mandali available and total dudh is supplied to the Amul.

(Fig 18: Dudh Mandali)

4.5.3 Plantation for air pollution:

- For reducing pollution panchayat has started planting trees over the areas on which plantation is possible

4.5.4 Rain water harvesting:

- Rainwater harvesting required in village.

Chapter: 5 Sustainable Technical Options with Case Studies

5.1 Civil Concept:

5.1.1 Concept of various type of method for transportation:

❖ Transport:

Transport (British English) or transportation (American English) is the movement of people and goods from one place to another. The term is derived from the Latin Trans ("across") and porter ("to carry").

❖ Modes of transport:

The means of transport are classified on the basis of the way, the vehicle and the motive power used and terminals.

Mode of transport	Typical usage	Advantages	Disadvantages
Road 	Door-to-door ideal for mixed cargo. Typically used for first and final leg.	Most flexible for door-to-door, cheap.	Limited to continental transport. Urban congestion. Damage to roads.
Rail 	For Domestic, Continental and inter-continental transport.	Ideal for heavy goods and long distances Environmental friendly.	Connection to rail system required. Complete trains requires large volumes (thus low frequency), otherwise handling in yards (low transport speed).
Air 	To ensure fast transport	Fast and safe.	Expensive limits for size and weight. Typically as part of multi modal transport.
Sea 	Bulk shipments, where long lead time is ok.	Ideal for bulky and heavy goods. Highly standardized sea containers worldwide. Less costly than air for inter-continental transports.	Inflexible routes. Long lead time. Inflexible timetables (Ship will not wait for missing container).

(Fig 19: Means of Transport)

❖ Land Transport:

1.Pathways:

In remote villages, forest and hilly areas pathways are still an important amongst the different modes of transport. It further be subdivided into Head loads (is also known as human transport. It is used in the hilly areas where even animals cannot reach) and Pack animals (is also known as animal transport. It is used in the backward areas.

2.Roadways:

Road Transport is one of the most important modes of transport. The history of Road Transport started from ancient civilizations. Gradually it becomes more and more popular means of transport. Road Transport further subdivided into Vehicular Transport (Cars, Trucks, Buses, Lorries, Auto rickshaw, Bullock Carts, Tonga's, and Hand Carts etc.) and Non-vehicular Transport (Hamals, Animals like Camel, Dogs, Elephant, Horse, Mules etc.)

3.Tramways:

Tramway is one of the cheaper, longer, quicker and safer modes of Land Transport which is suitable in large cities. However due to certain limitations like slowlyness, huge investment, inflexibility etc. gradually it replaced by other means of Land Transport.

4.Railways:

Railway has been the pioneer of modern mechanical transport. It has brought the greatest revolution in transport. It accelerated commercial and industrial development of various countries. Until the introduction of Motor Transport, Railway had the monopoly as the Land Transport. In India, it is the principal means of transport. It carries over 80 per cent of goods traffic and over 70 per cent of passenger traffic. It provides for more than 60000 kilometers of railways all over the country.

❖ Water Transport:

Water transport is the cheapest and the oldest form of transport for heavy goods and bulk cargoes. Waterways are the natural gifts, hence it does not required large amount of capital expenditure for the construction of road and railway tracks, except canal transport, as in the case of land transport. Water transport may be classified as under:

1. Inland Water ways:

- **River Transport:** Rivers are the water highways given by nature. River Transport is suitable for small boats and steamers. It was highly developed in the pre-railway

days. But with the development of railways, river transport was neglected and decayed gradually.

- **Canal Transport:** Canals are the artificial waterways constructed for the purpose of navigation and irrigation.

2. Ocean Transport:

- **Coastal Shipping:** Coastal shipping is a cheaper, speedy, flexible and economical form of transport for the movement of bulky and heavy cargoes. Usually coastal shipping trade is reserved for the national shipping.
- **Overseas Shipping:** On the basis of their working, overseas shipping may be divided into The Liner (those ships which follow defined routes with fixed places and fixed time table), The Tramps (those ships which have no set routes or fixed time table) and The Oil Tanker (special sea carriers of crude oil in very large quantity).

❖ Air Transport:

- Air transport is the gift of twentieth century to the world. It is the latest means of transport. The first flight in the air was made in 1903.only for twelve seconds. Successfully it was used as a means of transport after the First World War (1914-1918). The first air service was started in 1919 between London and Paris.

5.1.2 Various types of methods for Roads:

❖ Asphalt roads:

- One of the most popular types of construction ever since its inception in the early 1920s is asphalt paving. In this construction technique a layer of asphalt is laid on top of an equally thick layer gravel base. Advantages of this form of road construction are that the pavement produces relatively little noises, its relative low cost compared to other material, and that is relatively easy to repair and maintain as well.
- However, asphalt is known to be significantly less durable and strong than other choices, and isn't the best for the environment either.

(Fig 20: Asphalt Road)

❖ Concrete roads:

- Concrete is another popular choice for roadways, though it is typically only used for local roads and not for other types of construction.
- Concrete is more long lasting than asphalt and significantly stronger as well, but is quite expensive to lay and maintain.

(Fig 21: Concrete Road)

❖ Composite roads:

- Composite materials are often used in types of construction that are more related to maintenance, recycling and rehabilitation.
- Composite materials are combination of both asphalt and concrete, and are typically employed on one of two methods. Asphalt overlays literally are placed a damaged surface, or alternatively pavement may be cracked and seated instead, forming a true new surface.

(Fig 22 : Composite Road)

5.1.3 Various types of Environmental factors:

❖ Toward Development of Smart Villages:

- It is clear that the situations and challenges in developing urban and rural area are different due to the constraints and opportunities. Many researchers believe that the existing technologies developed for the smart city may be useful for the smart village concept. Researchers reported that the Smart village system can be developed on the lines of smart city model.

- **Economic Component**: This component will include local administration and economic factors. It will cover governance models, bandwidth, mobility, cloud computing, entrepreneurship etc.

- **Environmental Component:** This component will address the issues related to resources and infrastructures available at local level. It may covers cleaner technologies, public and alternative transportation, green spaces, smart growth, climate change etc.

- **Social Component:** This component may address issues related to community life, participatory democracy, social innovation, proximity services etc.

❖ Advantages of Proposed System:

- Economic growth to smart city.
- Sustainable electricity supplies.
- Availability of clean and efficient appliances for cooking.
- Energy management.
- Traffic management.
- Water management.

❖ Smart village ecosystem:

An Ecosystem comprises of networks of small and medium enterprises farmers, employees; local, state and central governments; other industrial, social and political organizations; infrastructure, logistics and Information Technology, communication services that connect the companies and the states to the external economic and social environment; and resources including natural, financial and skilled human resources with connections, knowledge of the industrial environment, interacting together with the Landscape (space or domain) and climate to provide the services for a village.

This Ecosystem approach integrates all the institutions that are responsible, resources needed, services to be rendered and the service delivery technologies and mechanisms.

- Parking management
- Smart education
- Smart utility
- Smart infrastructure
- Smart environment
- Smart business
- Smart healthcare

5.1.4 Latest technology from the GLOBS:

- During 2014, Russian space officials promised the launch of Luna Glob between 2017 and 2019. In October, the official TASS news agency quoted Deputy Designer General at NPO Lavochkin Maksim Martynov as saying that the company had been in processing of building a prototype of the spacecraft. A development mock-up of the probe's antenna had already been built, Martynov said.
- A series of tests were planned in 2015, followed by the officially planned launch at the end of 2017 or beginning of 2018, even though these dates were not considered realistic.

Chapter: 6 Swachh Bharat Abhiyan (Clean India)

6.1 Strategic technology option for Swachh Bharat Abhiyan (SBA) (Clean India) with photograph:

❖ Swachh Bharat Abhiyan:

- On October 2nd 2014, Prime Minister Shri. Narendra Modi officially launched the Swachh Bharat Abhiyan (SBA) at Rajpath, New Delhi, by taking up the broom to clean a road. The SBA was launched with eight core objectives. The principal objective was to ensure a healthy life for Indian citizens and to improve India's semblance globally.

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

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

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

(Fig 23: Swachh Bharat Abhiyan)

❖ Strategic:

- The focus of the Strategy is to move towards a 'Swachh Bharat' by providing flexibility to State Governments, as Sanitation is a state subject, to decide on their implementation policy and mechanisms, taking into account State specific requirements.
- It is suggested that Implementation Framework of each State be prepared with a road map of activities covering the 3 important phases necessary for the Programmer:
    1. Planning Phase
    2. Implementation Phase
    3. Sustainability Phase
- Each of these phases will have activities that need to be specifically catered for with concrete Plans of Action, which shall need specific preparation and planning.
- A schematic representation of the SBM Programmer Implementation Diagram is represented below as an illustrative model.
- A schematic representation of the SBM Programmed Implementation Diagram is represented below as an illustrative model.

6.2 Guidelines for the process of the implementation of SBA :

- Implementation of SBM (G) is proposed with 'District 'as the base unit, with the goal of creating ODF GPs.
- A project proposal shall be prepared by a District, and scrutinized and consolidated by the State Government into a State Plan.
- Funds are to be made available for these preliminary IEC works including for triggering behavior change. This will endeavor to reach every household in every community and shall disseminate information regarding the need for safe sanitation, and the ill effects of open defecation getting the population oriented towards satisfying their felt-needs.
- The proliferation of educational facilities in the rural areas provides the opportunity to utilize an approach that should essentially include an element that involves school and college children as potential agents of change in homes.
- The built-in flexibility in the menu of options is to give the poor and the disadvantaged families' opportunity for subsequent up gradation of their toilets depending upon their requirements and financial position.
- The provision of Incentives for individual household latrine units to the rural households is available to States which wish to provide the same this may also be used to maximize coverage so as to attain community outcomes.
- The Scheme shall aim to saturate coverage in the first instance the States/ Districts/ GPs in all major river basins of India e.g. Sutlej , Ravi, Beas, Ganga, Yamuna, Godavari, Narmada, Tapti, Kaveri, Brahmaputra. This will ensure the outcomes required for pollution free rivers, in addition to ODF communities.
- A robust Monitoring arrangement has to be put in place to monitor open defecation status of a village, the implementation of Solid and Liquid Waste Management projects as well as the construction and us of Household, Schools, Aaganwadi toilets and Community

Sanitary Complexes. The monitoring has inter-alia also to use a robust community led system, like Social Audit.

- To accelerate coverage in Gram Panchayat selected under the Sansad Adarsh Gram Yojana, these GPs may be selected on priority for coverage under the SBM.

Chapter 7: Village condition due to Covid-19

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

❖ Sihol Village existing situation:

- Village people can take precautions, such as physical distancing; Keep Social Distancing, Village people wearing a mask, especially when distancing cannot be maintained. There are few active Covid-19 cases are also in the village.

- We also taking Precautions will collect Village Data.

(Fig 24: Village Situation while Covid-19)

Chapter: 8 Sustainable Design Planning Proposal (Prototype Design) - Part- I

❖ Observation and Brief write up about the existing design:

- We visit the village under this project. First, we meet the T.D.O of the village and collect the data of the village. And doing their analysis after visits , Sarpanch, and Talati we take much information about the village. In addition, we visit the village and observe the present condition of the village. We saw that the village condition is good. However, it is required to develop at some extent.
- In the Physical infrastructure facility, we observed Main Source of Drinking Water, water tank facility, drainage facility, types of drainage, Road networks, Transportation facility, Electrical Distribution, Sanitation facility, irrigation facility and housing condition etc.
- In the Social Infrastructure Facility, we observed health facility, Education Facility and Social Cultural facility. In the village all the physical infrastructure facilities are very good but some facility not properly working condition.

8.1 Design Proposal:

As per our data collection and requirements of the villagers and the conditions of the village which need to be rectified and provide them with good amenities and services which can be advantageous for the villagers. The design proposal are :

- House
- Bus stop
- Overhead Water Tank
- Public Toilet
- PHC centre

8.2 Recommendations of the Design:

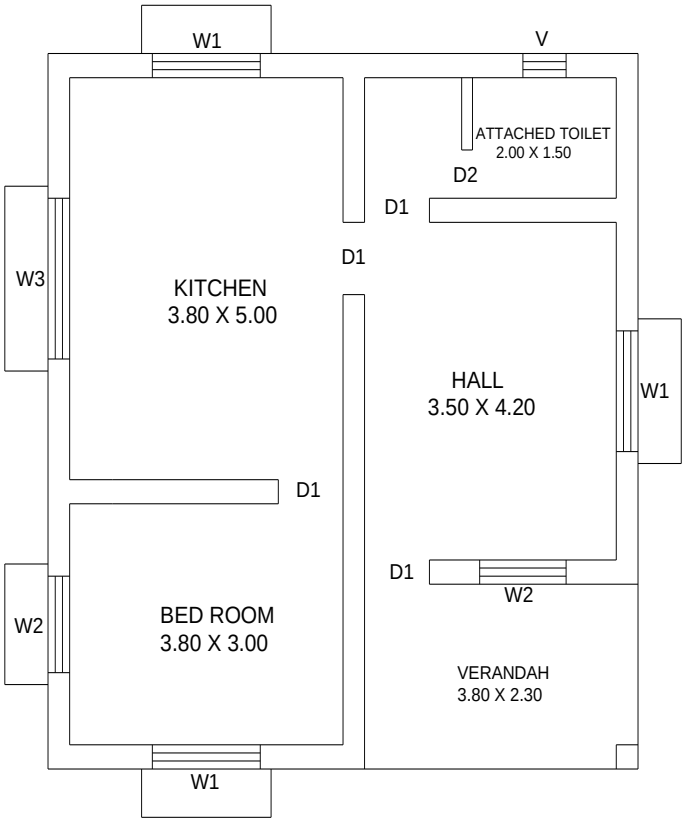
- In village for bus station not available, we are planning bus station in village.
- In village some houses are kutcha house. We are planning house in village.
- In village Water Tank is available but not in good condition. We are planning Overhead water tank.
- In village we are planning public toilet with low cost in village.
- In village health facility not good condition, we are planning PHC Centre.
- In village we are planning community hall in village in Part-2.
- In village for post office available but properly structure (Old Structure). We are deciding renovation post office in village in part-2.

8.3 Benefit of the villagers:

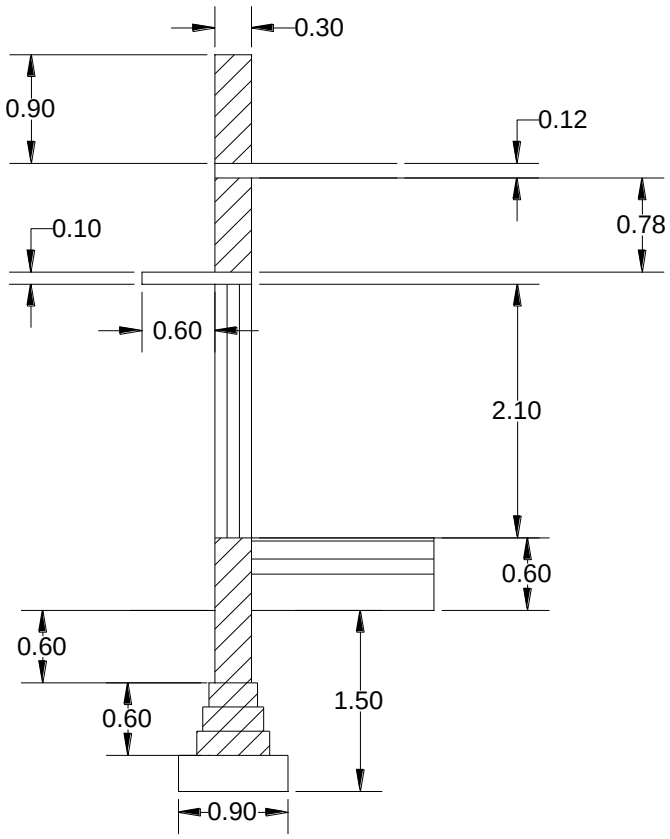
- The Bus stop is very useful for villagers in rainy days.
- Water tank is the think that village required because previous water tank is in bad condition.
- The house planning is for those villagers who house is kutccha and it is also a low cost house.
- Public Toilet help those families or peoples who does not have own toilets.
- PHC centre is useful villagers for primary health cares.

8.4 Designs Prototypes:

DESIGN OF HOUSE



(Fig 25: House plan)



SECTION

(Table 11: Dimension of House)		
TYPE	**NOS.**	**SIZE**
D1	4	0.9 X 2.1
D2	1	0.6 X 2.1
W1	3	1.5 X 1.2
W2	2	1.2 X 1.2
W3	1	2.0 X 1.2
V	1	0.6 X 0.45

DESCRIPITION	NO	L (M)	B (M)	H (M)	QUANTITY
1. EXCAVATION OF FOUNDATION					
LONG WALL **L= 5+3+0.3+2x0.15+2x0.45** **= 9.5m**	3	9.5	0.9	1.5	38.48 M^3
SHORT WALL **TYPE-1** **L=3.8+2x0.15-2x0.45** **=3.2m**	3	3.2	0.9	1.5	12.96M^3
TYPE-2 **L= 3.5+2x0.15-2x0.45** **=2.9m**	4	2.9	0.9	1.5	15.56M^3
TOTAL EXCAVATION					67.10M^3
2. P.C.C. IN FOUNDATION IN 1:3:6					
LONG WALL	3	9.5	0.9	0.3	7.70
SHORT WALL **Type 1** **Type 2**	 3 4	 3.2 2.9	 0.9 0.9	 0.3 0.3	 2.60 3.13
P.C.C. TOTAL QUANTITY					13.43M^3
3.BRICK WORK IN FOUNDATION (UPTO PLINTH LEVEL)					
LONG WALL **FIRST STEP** **L=9.5-2x0.15** **= 9.2m**	3	9.2	0.6	0.2	3.31
SECOND STEP **L= 9.2-2x0.05** **= 9.1m**	3	9.1	0.5	0.2	2.73
THIRD STEP **L=9.1-2X0.05** **= 9.0m**	3	9.0	0.4	0.2	2.16
FOURTH STEP **L= 9.0-2X0.05** **= 8.9m**	3	8.9	0.3	1.2	9.61
SHORT WALL TYPE 1					

FIRST STEP L=3.2+2X0.15= 3.5m	3	3.5	0.6	0.2	1.26
SECOND STEP L=3.5+2X0.05 =3.6m	3	3.6	0.5	0.2	1.08
THIRD STEP L=3.6+2X0.05=3.7m	3	3.7	0.4	0.2	0.89
FOURTH STEP L=3.7+2X0.05=3.8m	3	3.8	0.3	1.2	4.10
SHORT WALL TYPE 2					
FIRST STEP L=2.9+2X0.15=3.2m	4	3.2	0.6	0.2	1.54
SECOND STEP L=3.2+2X0.05=3.3m	4	3.3	0.5	0.2	1.32
THIRD STEP L=3.3+2X0.05=3.4m	4	3.4	0.4	0.2	1.09
FOURTH STEP L=3.4+2X0.05=3.5m	4	3.5	0.3	1.2	5.04
TOTAL BRICK WORK					$\underline{34.13M^3}$
4.BRICKWORK IN SUPER STRUCTURE IN CEMENT MORTAR 1:4 (UPTO SLAB)					
LONG WALL L= 8.9m	2	8.9	0.3	3.0	16.02
LONG WALL L= 8.9-2.3= 6.6m	1	6.6	0.3	3.0	5.94
SHORT WALL-1 L= 3.8m	3	3.8	0.3	3.0	10.26
SHORT WALL-2 L= 3.5m	3	3.5	0.3	3.0	9.45
FOR PARAPET WALL					
LONG WALL	2	8.9	0.3	0.9	4.81
SHORT WALL	2	7.6	0.3	0.9	4.40
					$\underline{50.58\ m^3}$
DEDUCTION DOORS/WINDOW					
D1	4	0.9	0.3	2.1	2.268
D2	1	0.6	0.3	2.1	0.378
W1	3	1.5	0.3	1.2	1.62
W2	2	1.2	0.3	1.2	0.86
W3	1	2	0.3	1.2	0.72
V	1	0.6	0.3	0.45	0.08
				(-)	$\underline{5.926m^3}$

DEDUCTION FOR LINTEL BEARING					
D1	4	1.2	0.3	0.12	0.173
D2	1	0.9	0.3	0.12	0.032
W1	3	1.8	0.3	0.12	0.19
W2	2	1.5	0.3	0.12	0.11
W3	1	2.3	0.3	0.12	0.08
V	1	0.9	0.3	0.12	0.03
NET QUANTITY=50.58 -5.926 -0.615 =44.03m^3				(-)	0.615m^3
TOTAL BRICKWORK IN SUPERSTRUCTURE IN CEMENT MORTAR					44.03m^3
5. RCC WORK IN SLAB,CHAJJA,LINTEL					
RCC SLAB					
L=5+3+3X0.3=8.9m B=3.8+3.5+3X0.3=8.2m	1	8.9	8.2	0.12	8.76m^3
RCC CHAJJA W1 W2 W3	 3 1 1	 1.8 1.5 2.3	 0.6 0.6 0.6	 0.1 0.1 0.1	 0.324 0.09 0.14 0.554m^3
RCC LINTELS					0.615m^3
TOTAL					9.929m^3
6. 2CM THICK MARBLE FLOORING					
KITCHEN	1	3.8	5.0	-	19.0
HALL	1	3.5	4.2	-	14.70
BED ROOM	1	3.8	3.0	-	11.40
VERNDAH	1	3.8	2.3	-	8.74
DOOR SILLS D1	4	0.9	0.3	-	1.08
TOTAL					54.92m^2
7. EARTH FILLING IN PLINTH					
H= 0.6-0.075-0.025-0.02 = 0.48m					

KITCHEN	1	3.8	5.0	0.48	9.12
HALL	1	3.5	4.2	0.48	7.06
BED ROOM	1	3.8	3.0	0.48	5.47
VERNDAH	1	3.5	2.0	0.48	3.36
TOILET	1	3.5	1.5	0.48	2.52
TOTAL					$27.53m^3$
8. INSIDE PLASTER+CEILING AFTER DEDUCTION OF DOOR & WINDOW **KITCHEN= 47.86 m^2** **BED ROOM= 39.21m^2** **HALL= 34.17m^2** **TOILET= 29.76m^2**	-	-	-	-	$151m^2$
9.COLOUR WORK INSIDE & OUTSIDE AS PER PLASTER	1	-	-	-	$195.03m^3$

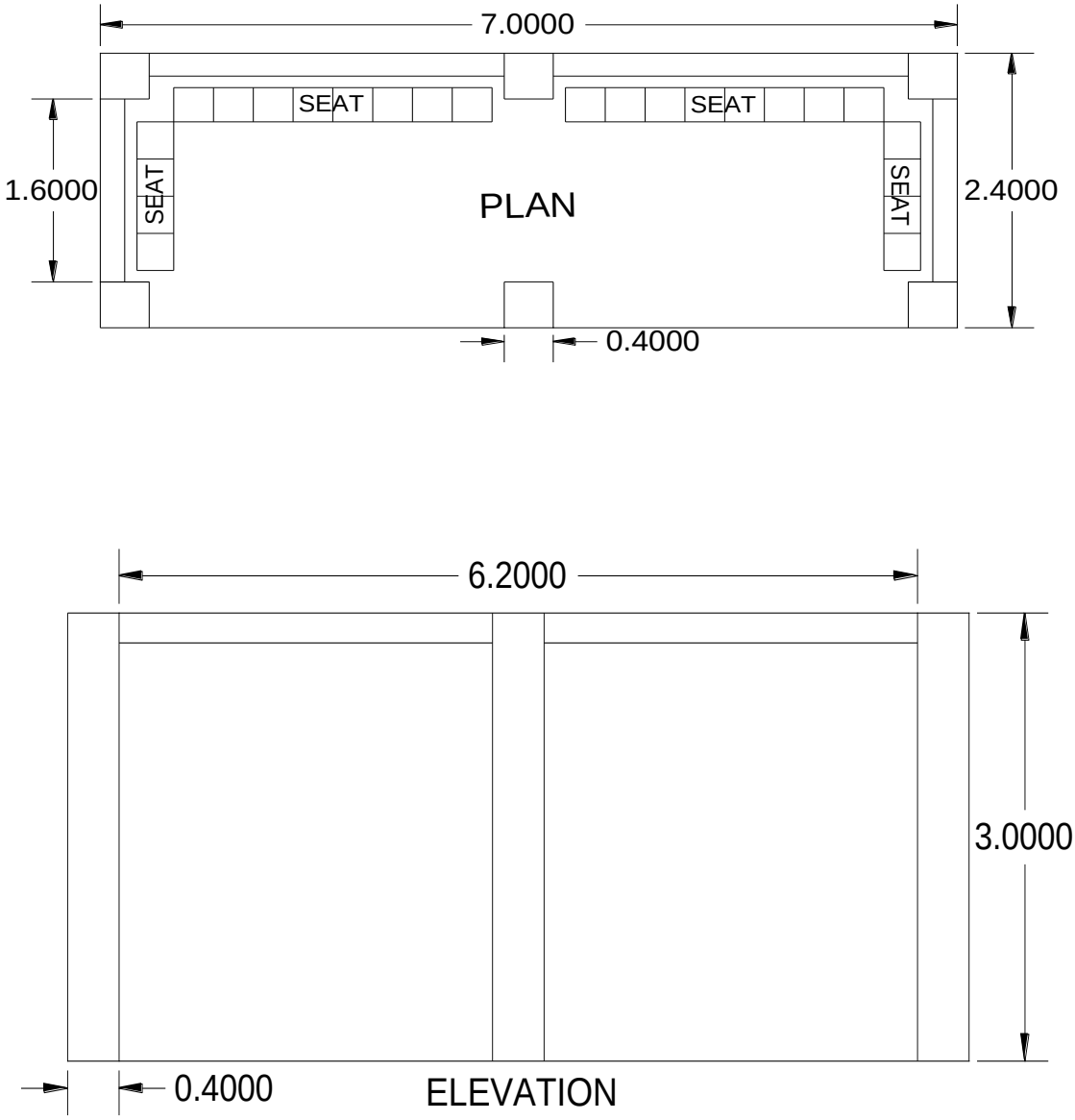
(Table 12: Measurement sheet of house)

ABSTRACT OF QUANTITIES:

ITEM DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
EXCAVATION IN FOUNDATION	67.10	200	M^3	13,420 RS
P.C.C. IN FOUNDATION	13.43	2300	M^3	30,889 RS
BRICK WORK IN FOUNDATION (UPTO PLINTH)	34.13	3500	M^3	1,19,455 RS
BRICKWORK FOR SUPER STRUCTURE (UPTO SLAB)	44.03	3500	M^3	1,54,105 RS
RCC WORK IN SLAB,CHAJJA,LINTEL	9.929	7500	M^3	74,467.5 RS
2 CM THICK MARBLE FLOORING	54.92	300	M^2	16,476 RS
EARTH FILLING IN PLINTH	27.53	80	M^3	2,202.4 RS
INSIDE PLASTER	151	250	M^2	37,750 RS
COLOUR WORK	195.03	150	M^2	29,254.5 RS
TOTAL CONSTRUCTION COST				**4,78,029.4 RS**
10% CONTRACTOR PROFIT				**47,802.94 RS**
5% PAINTER PROFIT				**23,901.47 RS**
OVERALL COST				**5,49,734 RS**

(Table 13 : Abstract sheet of house)

DESIGN OF BUS STOP



(Fig 26: Plan and elevation of Bus Stop)

SR. NO.	ITEM DESCRIPTION	NO	LENGTH (M)	WIDTH (M)	HEIGHT (M)	QUANTITY	TOTAL
1	EXCAVATION WORK FOR FOOTING	6	0.7	0.5	1.0	2.1 m^3	
	EXCAVATION WORK FOR WALL						9.62m^3
	LONG WALL	2	7	0.4	1.0	5.6 m^3	
	SHORT WALL	2	2.4	0.4	1.0	1.92m^3	
2	PCC IN FOUNDATION						
	LONG WALL	2	7	0.4	0.3	1.68m^3	2.25m^3
	SHORT WALL	2	2.4	0.4	0.3	0.57m^3	
3	RCC WORK						
	SLAB	1	7.6	3.0	0.11	2.51m^3	4.67m^3
	COLUMN	6	0.4	0.3	3.0	2.16 m^3	
4	BRICK WORK						
	LONG WALL	2	7.0	0.2	3.0	8.4m^3	
	SHORT WALL	2	2.4	0.2	3.0	2.88m3	
	SITTING MARBLE BASE	3	0.76	0.2	0.6	0.28m^3	
	PARAPET WALL						11.48m^3
	LONG WALL	2	7.6	0.2	0.6	1.824m^3	
	SHORT WALL	2	3	0.2	0.6	0.72m^3	
	DEDUCTION OF OPENING IN BRICK WORK						
	FRONT WALL	1	3.74	0.2	2.0	1.5m^3	
	BACK WALL	2	1.40	0.2	1.0	0.56m^3	
	SIDE WALL	2	1.40	0.2	1.0	0.56m^3	
5	PLASTERING INSIDE						
	LONG WALL	2	7.0	0	3.0	42m^2	
	SHORT WALL	2	2.4	0	3.0	14.4m^2	
	PARAPET WALL						

	LONG WALL	2	7.6	0	0.6	9.12m^2	124.56 m^3
	SHORT WALL	2	3	0	0.6	3.6m^2	
	DEDUCTION OF OPENING						
	FRONT WALL	1	3.74	0	2.0	2.48m^2	
	BACK WALL	2	1.40	0	1.0	2.8m^2	
	SIDE WALL	2	1.40	0	1.0	2.8m^2	
	PLASTERING ON CEILING	-	-	-	-	13.2m^2	
	PLASTERING OUTSIDE AS PER INSIDE AFTER DEDUCTED CEILING PLASTER	-	-	-	-	39.32m^3	
6	FLOORING TILES						
	DEDUCTION OF SITTING MARBLE BASE	3	0.76	0.2	0	13.2 m2 (-)0.456 m2	12.75m^2
7	SEATING MARBLE	1	0.76	0	6.6	5.02 m2	5.02 m^2
8	PAINTING AS PER PLASTERING	1	0	0	0	0	124.56 m^3

(Table 14: Measurement Sheet of bus stop)

SR. NO.	ITEM DESCRIPTION	QUANTITY	RATE(RS)	PER	AMOUNT (RS)
1	EXCAVATION WORK	9.62	200	M^3	1924 RS.
2	PCC IN FOUNDATON	2.25	2300	M^3	5175 RS.
3	RCC WORK	4.67	3500	M^3	16,345 RS.
4	BRICK WORK	11.48	3500	M^3	40,180 RS.
5	PLASTERING	124.56	250	M^2	31,140 RS.
6	FLOORING TILES	12.75	180	M^2	2295 RS.
7	SEATING MARBLE	5.02	300	M^2	1506 RS.
8	PAINTING	124.56	150	M^2	18,684 RS.
	TOTAL CONSTRUCTION WORK				**Rs. 1,17,249/-**
	10% CONTRACTOR PROFIT				**Rs. 11,724.9/-**
	5% PAINTER PROFIT				**Rs. 5862.45/-**
	OVERALL COST				**Rs. 1,34,837/-**

(Table 15: Abstract sheet of bus stop)

DESIGN OF OVERHEAD WATER TANK:

(Old Water Tank of Sihol)

As per NBC (National Building Code, 2005) standards,

Water required per person per day = 150 litres

Drinking water = 4 litres per person per day

Calculation for an overhead water tank for Sihol:

Total population of Sihol = 6051

We take approximate population: 6600

Water required for daily chores per person per day as per NBC norms;

10 x 6600 = 66000 litres

Drinking water required: 4 x 6600 = 26400 litres

Total quantity of water required = 66000+26400 = 92400 litres

Volume of water = 92400/1000 = 92.40 cubic meters

Dimensions for the overhead water tank:

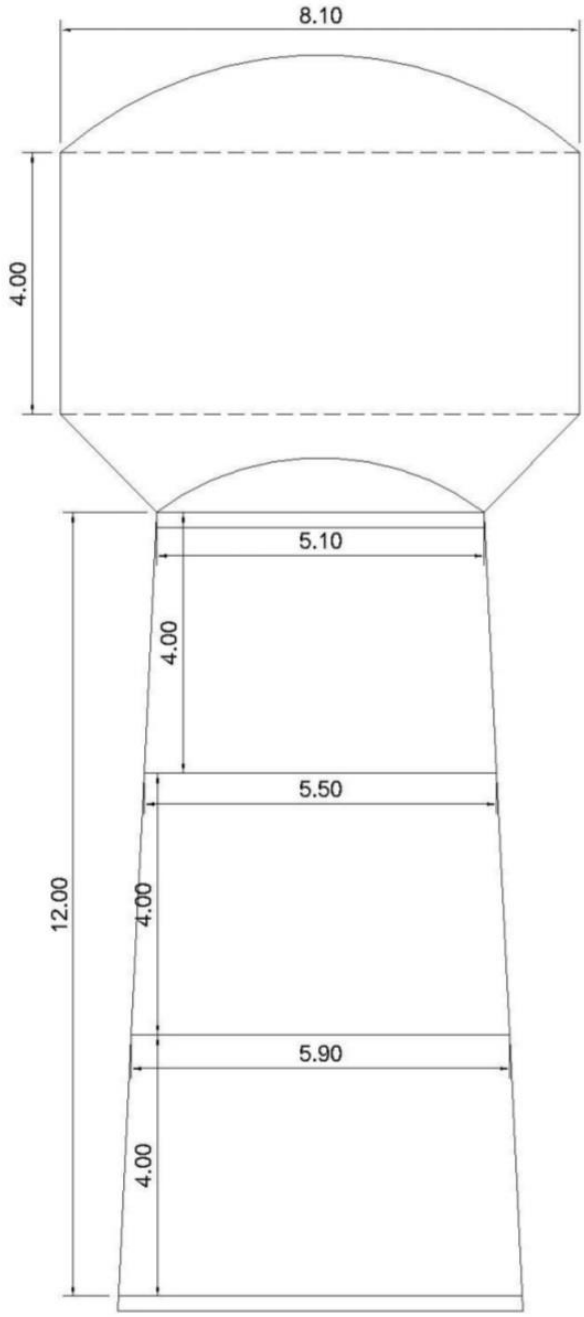
Diameter = 6.42m

Depth = 2.85m

Total Volume = $(\pi/4) \times D^2 \times \text{Depth}$

$= (\pi/4) \times (6.42)^2 \times 2.85$

$= 92.21$ cubic meters



(Fig 27: Overhead Water Tank)

Sr. No.	DECRIPTION OF WORK	No.	L (m)	B (m)	A $(m)^2$	D (m)	Quantity	Remarks
1	EARTH WORK IN EXCUVATION	1	-	-	64.32	2	128.64	L =2πR =2π*2.55 =16.022m R= 5.1/2 =2.55m
2	EARTH WORK IN FILLING	1	-	-	-	-	100.198	L =2πR =2π*3.75 =23.56m R= 7.5/2 =3.75m
3	RCC WORK IN FOUNDATION (1:1.5:3)	1	-	-	64.32	0.4	25.728	L =2πR =2π*3.75 =23.56m R= 7.5/2 =3.75m
4	RCC WORK IN COLOUMNS BELOW G.L (1:1.5:3)	6	-	-	0.282	1.6	2.714	Sa =2πhRc $=\pi(h^2 + r^2)$ $=\pi (1.5^2 + 5.4375^2)$ $=99.95m^2$ h =1.5m, r= 5.4375
5	RCC WORK IN COLOUMNS ABOVE G.L UPTO 4M HT (1:1.5:3)	6	-	-	0.282	4	6.785	Davg =(7.5+5.1)/2 = 6.3m, R=6.3/2 =3.15m Sa= πr(r+h) =π*3.15 (3.15+1.6) $=47.006 m^2$

6	COLOUMNS FROM 4M	6	-	-	0.282	4	6.785	R =3.3816m, Sa =2πhRc =π(h^2 + r^2) =π(0.950^2+ 3.3816^2) =38.760m^2
7	RCC WORK IN COLOUMNS FROM 8M	6	-	-	0.282	4	6.785	D = (0.23+0.2)/2 =0.215m Sa =2πRh =2π*3.75*5 =117.80m
8	TOTAL RCC WORK IN COLOUMNS (1:1.5:3)	-	-	-	-	-	23.069	QTY = 2x6x0.3x0.3x 0.6 =0.648m^3
9	RCC WORK IN BRACING AT 4m HT (1:1.5:3)	1	18.535	0.3	-	0.3	1.668	QTY = 23.609 x 0.648 =22.961m^3
10	RCC WORK IN BRACING AT 8m HT (1:1.5:3)	1	17.278	0.3	-	0.3	1.555	QTY = 25.728 +2.714 +3 x 6.785 +22.961 +1.668 +1.555 +3.675 +0.848 +9.995 +11.751 +7.752 +25.327 = 138.174 m^3

11	RCC WORK IN CIRCULAR GIRDER (1:1.5:3)	1	16.022	0.4	-	0.6	3.845	R=6.3/2 =3.15m Sa= πr(r+h) =π x 3.15 (3.15+1.6)
12	RCC WORK IN RING BEAM AT BOTTOM OF THE CL WALL (1:1.5:3)	1	23.56	0.3	-	0.52	2.675	R= 6.3/2+ 0.5 =3.65m, Sa= πr(r+h) =π x 3.65 (3.65+1.6) $=60.2m^2$
13	BEAM AT TOP OF THE CL WALL (1:1.5:3)	1	23.56	0.16	99.95	0.225	0.848	R =3.3816m Sa =2πhRc $=\pi(h^2 + r^2)$ $= \pi(0.950^2+$ $=38.760m^2$
14	RCC WORK IN DOMED ROOF(1:1.5:3)	1	-	-	-	0.1	9.995	Sa =2πhRc $= \pi(h^2 + r^2)$ $= \pi (1.5^2+$ $5.4375^2)$ $=99.95m^2$ H=1.5m r =5.4375
15	RCC WORK IN CONICAL SLAB (1:1.5:3)	1	-	-	47.06	0.25	11.751	Davg =(7.5+5.1) /2 =6.3m, R=6.3/2 =3.15m, Sa=πr(r+h) = π x 3.15 (3.15+1.6) $=47.006m^2$

16	RCC WORK IN CONICAL DOME (1:1.5:3)	1	-	-	38.76	0.2	7.752	R =3.3816m Sa =2πhRc $= \pi(h^2 + r^2)$ $=\pi(0.950^2 +3.3816^2)$ $=38.760m^2$
17	RCC WORK IN CYLINDRICAL WALL	1	-	0.215	117.8	5	126.35	D = (0.23+0.2)/2 =0.215m, Sa=2πRh 2π*3.75*5 =117.80m
18	DEDUCTIONS IN RCC WORK IN BRACINGS IN COLOUMNS	2*6	0.3	0.3	-	0.6	0.648	QTY = 2*6*0.3* 0.3*0.6 $=0.648m^3$
19	T0TAL RCC WORK IN COLOUMNS AFTER DEDUCTIONS	-	-	-	-	-	22.901	QTY = 23.609 - 0.648 $=22.961m^3$
20	TOTAL RCC WORK (1:1.5:3)	-	-	-	-	-	138.174	QTY = 25.728 +2.714 +3*6.785 +22.961 +1.668 +1.555 +3.845 +3.675 +0.848 +9.995 +11.751 +7.752 +25.327 =138.174 m^3

21	PLASTERING IN C M (1:2) FOR INNER SURFACE OF CONIVAL	1	-	-	47.06	-	47.06	R=6.3/2 =3.15m Sa= πr(r+h) = π*3.15 (3.15+1.6) =47.006m^2
22	PLASTERING IN C M (1:6) FOR OUTER SURFACE OF CONICAL SLAB (12MM)	-	-	-	60.2	-	60.2	R=6.3/2 +0.5 =3.65m, Sa= πr(r+h) =π*3.65 (3.65+1.6) =60.2m^2
23	PLASTERING IN C M (1:2) FOR INNER SURFACE OF CONICAL DOME (12MM)	1	-	-	38.76	-	38.76	R=3.3816m, Sa =2πhRc = π(h^2 + r^2) = π(0.950^2+ 3.3816^2) =38.760m^2
24	PLASTERING IN C M (1:6) FOR OUTER SURFACE OF CONICAL	-	-	-	43.135	-	43.135	R =3.3816+ 0.2 =3.5816m Sa =2πhRc = π(h^2+r^2) =π(0.950^2+ $3.3.5816^2$) =43.135m^2
25	PLASTERING IN C M (1:2) FOR INNER SURFACE OF CYLINDRICAL WALL (12MM)	-	-	-	117.8	-	117.8	R=(0.23+ 0.2)/2 = 0.215m, Sa=2πRh =2π*3.75* 5 =117.80 m

26	PLASTERING IN C M (1:6) FOR OUTER SURFACE OF CYLINDRICAL WALL (12MM)	-	-	-	125.03	-	125.03	D =(0.23+ 0.2)/2 =0.215m, R=(3.75+ 0.23) =3.98m, Sa =2πRh =2π*3.98*5 =125.03m
27	PLASTERING IN C M (1:2) FOR INNER SURFACE OF DOMED ROOF (12MM)	-	-	-	96.56	-	96.56	Sa =2πhRc =π(h^2 +r^2) =π(1.5^2+ 5.3375^2) =96.56m^2, h =1.5m, r=5.3375m
28	PLASTERING IN C M (1:6) FOR OUTER SURFACE OF DOMED ROOF (12MM)	-	-	-	99.95	-	99.95	Sa =2πhRc =π(h^2 +r^2) =π (1.5^2+ 5.4375^2) =99.95m^2, h= 1.5m, r=5.4375m
29	PLASTERING IN C M (1:6) FOR COLUMNS	6	-	-	45.23	-	271.433	P =2πRh =2π*.6*12 =45.23m^2
30	PLASTERING IN C M (1:6) FOR CIRCULAR GIRDER (12MM)	1	16.022	-	-	0.6	91.732	L =2πR =2π*2.55 =16.022m, R =5.1/2 =2.55m
31	PLASTERING IN C M (1:2) FOR RING BEAM AT TOP (12MM)	-	23.56	0.16	-	-	18.213	Sa=2*23.56 *0.225+ 2*0.225* 0.16+2*0.16 *23.56 =18.213m^2

32	PLASTERING IN C M (1:2) FOR RING BEAM AT BOTTOM (12MM)	-	23.56	0.3	-	0.225	38.95	Sa= 2*23.56 *0.52+2* 0.52*0.3+2 *0.3*23.56 =38.950m^2
33	PLASTERING IN C M (1:6) FOR BRACING AT 4M HT (12MM)	-	18.535	0.3	-	0.52	22.422	Sa= 2*18.535 *0.3+2* 0.3*0.3+2 *0.3* 18.535 =22.422m^2
34	PLASTERING IN C M (1:6) FOR BRACING AT 8M HT (12MM)	-	17.278	0.3	-	0.3	20.936	Sa=2* 17.278*0.3 + 2*0.3* 0.3 + 2*0.3* 17.278 =20.936m^2
35	TOTAL PLASTERING IN CM (1:2) 12MM THICK	-	-	-	-	0.3	357.289	QTY = 47.006 +38.76 +117.8 +96. 56 +18.213 +38.95 =357.289 m^2
36	TOTAL PLASTERING IN CM (1:6) 12MM	-	-	-	-	-	652.838	QTY = 95 +271.433 +9.732 +22.422 +20.936 =652.838m^2

37	THICK WATER PROOF CEMENT PAINTING FOR TANK PORTION	-	-	-	-	-	647.174	QTY= 47.006 +60.2 +38.76 +43. 135 +117.8 +125.03 +96.56 +99.95 +18.213 +0.52 =647.174m^2
38	WHITE WASHING FOR COLUMNS	6	-	-	45.23	-	271.433	P =2πRh =2π*.6*12 =45.23m^2
39	TOTAL WHITE WASHING	-	-	-	-	-	918.607	QTY = 647.174 +271.433 =918.607m^2

(Table 16: Measurement Sheet of Overhead Water Tank)

ABSRACT SHEET OF OVERHEAD WATER TANK

Sr. no.	Quantity	Description	per	Rate	Amount
1	25.728 cum	V.R.C.C (1:1 1/2 :3) 20mm size HBG, machine crushed chips including cost, seignorage and conveyance of all materials and labour charges such as Machine mixing, vibrating, curing etc., Foundation	1 cum	5538	1,42,482
2	23.069 cum	V.R.C.C (1:1 1/2 :3) 20mm size HBG, machine crushed chips including cost, seignorage and conveyance of all materials and labour charges such as Machine mixing, vibrating, curing etc., Columns	1 cum	7383.14	1,70,322
3	0.848 cum	V.R.C.C (1:1 1/2 :3) 20mm size HBG, machine crushed chips including cost, seignorage and conveyance of all materials and labour charges such as Machine mixing, vibrating, curing etc., Ring beam at top	1 cum	7450.37	6,318
4	9.995 cum	V.R.C.C (1:1 1/2 :3) 20mm size HBG, machine crushed chips including cost, seignorage and conveyance of all materials and labour charges such as Machine mixing, vibrating, curing etc., - Domical roof	1 cum	61,141	6,11,105
5	7.752 cum	V.R.C.C (1:1 1/2 :3) 20mm size HBG, machine crushed chips including cost, seignorage and conveyance of all materials and labour charges such as Machine mixing, vibrating, curing etc., Conical dome base slab	1 cum	25,035	1,94,072
6	126.635 cum	V.R.C.C (1:1 1/2 :3) 20mm size HBG, machine crushed chips including cost, seignorage and conveyance of all materials and labour charges such as Machine mixing, vibrating, curing etc., Cylindrical wall	1 cum	7249	9,17,978

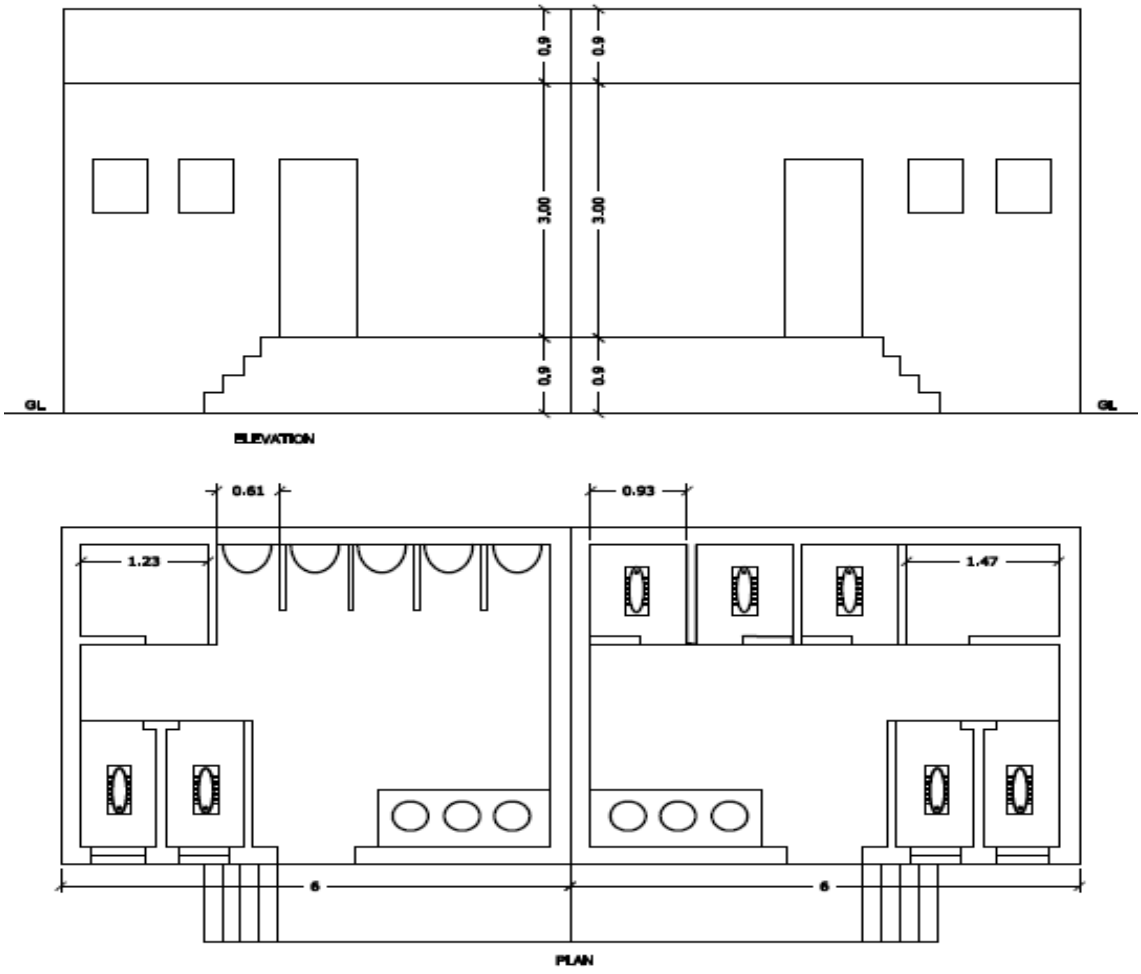
7	3.675 cum	V.R.C.C (1:1 1/2 :3) 20mm size HBG, machine crushed chips including cost, seignorage and conveyance of all materials and labour charges such as Machine mixing, vibrating, curing etc., Ring beam at bottom of cylindrical wall	1 cum	7854.63	28,866
8	3.845 cum	V.R.C.C (1:1 1/2 :3) 20mm size HBG, machine crushed chips including cost, seignorage and conveyance of all materials and labour charges such as Machine mixing, vibrating, curing etc., Circular girder	1 cum	6914	26,585
9	11.751 cum	V.R.C.C (1:1 1/2 :3) 20mm size HBG, machine crushed chips including cost seignorage and conveyance of all materials and labour charges such as Machine mixing, vibrating, curing etc., Inclined cone shaped slab	1 cum	25,035	2,94,187
10	1.668 cum	V.R.C.C (1:1 1/2 :3) 20mm size HBG, machine crushed chips including cost seignorage and conveyance of all materials and labour charges such as Machine mixing, vibrating, curing etc., Bracing at4m height	1 cum	7498	12,507
11	1.555 cum	V.R.C.C (1:1 1/2 :3) 20mm size HBG, machine crushed chips including cost seignorage and conveyance of all materials and labour charges such as Machine mixing, vibrating, curing etc., Bracing at 8m height	1 cum	7617	11,845
12	41.45 meter	Supplying, placing and fitting of HYSD bars reinforcement, complete as per drawings and technical specifications for bars below 36 mm diameter including over laps and wastage, where they are not Welded	1 meter	55,419	22,97,240

13	357.29 sqm	Plastering inside 12mm thick in single coat in cm (1:3) with finishing including of cost of conveyance of all materials and water to work site and all operational incidental labour charges such as scaffolding. Mixing mortar ,curing etc., complete for finished item of work	10 sqm	969	34,622
14	652.84 Sqm	Plastering outside 12mm thick in single coat in cm (1:6) with finishing including of cost of conveyance of all materials and water to work site and all operational incidental labour charges such as scaffolding. Mixing mortar ,curing etc., complete for finished item of work	10 sqm	766	50,000
15	647.174 Sqm	Painting to new outer walls with 2 coats of Epoxy primer for Hipbone floor & protective coatings : Procoat SNP2 or Zoriprime EFC 2 approved brand and shade over primary coat, after thoroughly brushing the surface removing of loose powdered materials and all operational incidental labour charges etc., completed for finished item of work	10 sqm	1660	10,431
16	271.433 Sqm	Lumps with 2 coats of water proof cement paint of approved brand and shade over a base coat of approved cement primer grade I making 3 coats in all to give an even shade after thoroughly brushing the surface to remove all dirt and remains of loose powdered materials, including cost and conveyance of all materials to work site and all operational, incidental, labour charges etc. completed for finished item of work.	10 sqm	1035	28,152

	Total construction cost	47,33,576 /-
	Earth work	12.336/-
	Overall cost	47,45,912/-
	10% contractor profit	4,74,591/-
	Overall construction cost	52,20,503/-

(Table 17: Abstract sheet of Overhead Water Tank)

DESIGN OF PUBLIC TOILET



(Fig 28: Public Toilet)

MEASUREMENT SHEET OF PUBLIC TOILET

SR. NO.	ITEM	NO	LENTH (M)	WIDTH (M)	HEIGHT (M)	QUANTITY (M)	TOTAL QUANTITY
1.	EXCAVATION IN FOUNDATION	1	33.2	0.9	1.1	32.86	50.78 m^3
2.	PCC IN FOUNDATION	2	33.2	0.9	0.3	17.92	
3.	BRICK MASONARY WORK FOR FOUNDATION UP TO PLINTH						
	FOR, 0.70m OFFSET	1	33.2	0.7	0.2	4.64	63.66 m^3
	0.60m OFFSET	1	33.2	0.6	0.2	3.98	
	0.50m OFFSET	1	33.2	0.5	0.2	3.32	
	0.40m OFFSET	1	33.2	0.4	0.2	2.65	
	0.30m OFFSET	1	33.2	0.3	0.6	5.97	
	DPC	1	33.2	0.3	0.1	0.99	
	EARTH FILLING	1	12.0	4.0	0.1	4.80	
	STEPS	6	0.9	0.3	0.22	0.35	
	WATER PROOFING	1	12.0	4.0	0.1	4.80	
4.	BM FOR SUPER STRUCTURE	1	33.2	0.3	3.0	29.88	
	PARAPET WALL	1	33.2	0.1	0.9	2.28	
5.	INSIDE PARTATION WALL						
	TOILET(1,2,3,4) WALL-1	4	1.5	0.2	3.0	3.6	12.95m^3
	WALL-2	4	0.9	0.2	3.0	2.16	
	TOILET-5 WALL-1	1	1.23	0.2	3.0	0.74	
	WALL-2	1	1.3	0.2	3.0	0.78	
	TOILET(6,7,8) WALL-1	3	0.93	0.2	3.0	1.67	
	WALL-2	3	1.3	0.2	3.0	2.34	
	TOILET (9) WALL-1	1	1.47	0.2	3.0	0.88	
	WALL-2	1	1.3	0.2	3.0	0.78	
	DEDUCTION						
	DOOR 1	2	0.9	0.3	2.1	1.14	4.13 m^3
	DOOR 2	9	0.75	0.2	2.1	2.83	
	VENTILATION	3	0.45	0.2	0.45	0.16	

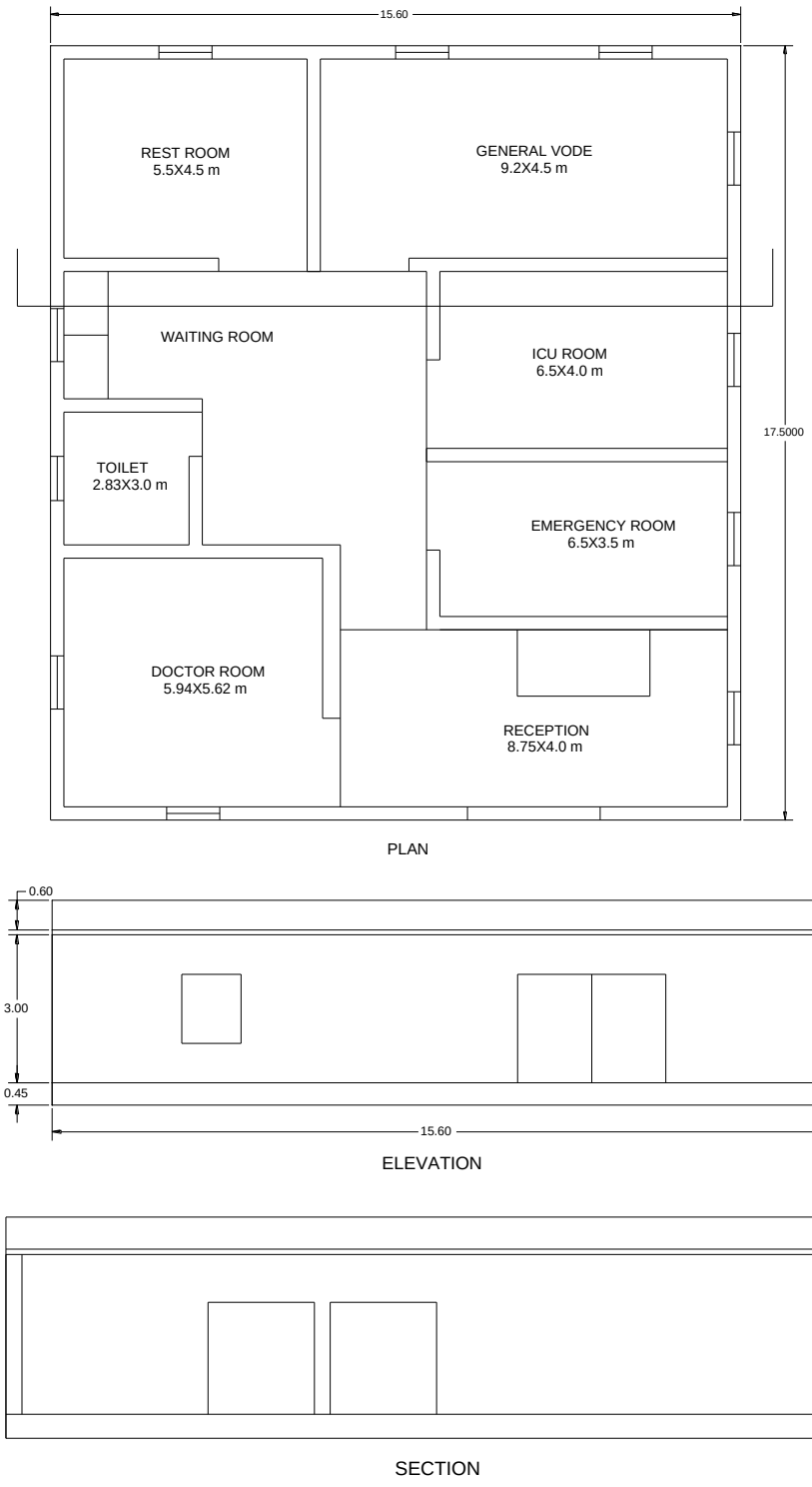
(Table 18: Measurement sheet of Public Toilet)

ABSTRACT SHEET OF PUBLIC TOILET:

SR.NO.	ITEM	QUANTITY	RATE	PER	AMOUNT
1	EXCAVATION WORK	32.86	350	m^3	11501 RS.
2	PCC IN FOUNDATION	17.92	2000	m^3	35840 RS.
3	CEMENT	400	380	m^3	152,000 RS.
4	SAND	19	800	Kg	15200 RS.
5	AGGREGATE	36	1000	m^3	36000 RS.
6	STEEL	2100	57	Kg	119,700 RS.
7	BRICK MASONARY	29.88	1150	m^3	34362 RS.
8	WATER PROOFING	4.8	450	m^3	2160 RS.
9	KAMODS	10	1100	Unit	11000 RS.
10	URINAL	11	1700	Unit	18700 RS.
11	BASIN	6	2500	Unit	15000 RS.
TOTAL CONSTRUCTION WORK					451,463 RS.
10% CONTRACTOR CHARGES					45,146.3 RS.
5% EXTRA COSTS					22,574 RS.
OVERALL COST					5,19,184 RS.

(Table 19 : Abstract Sheet of Public Toilet)

DESIGN OF PHC CENTRE



(Fig 29 : PHC Centre)

MEASUREMENT SHEET OF PHC CENTRE

SR. NO.	ITEM	NOS.	L (M)	B (M)	H (M)	Qty.
1	Excavation For Foundation	1	57.91	0.8	1.1	50.96 m^2
2	DPC in Foundation	1	57.91	0.8	0.1	4.63 m^2
3	Brick Masonry Work in Foundation					
	1st Step (0.60)	1	57.71	0.6	0.2	6.92 m^2
	2nd Step (0.40)	1	55.11	0.4	0.2	4.4 m^2
	3rd Step (0.30)	1	55.81	0.3	0.6	10.045 m^2
	4th Step (0.30)	1	55.81	0.3	0.55	9.2 m^2
4	Earth Filling in Plinth level					
	Bed Room	1	5.5	4.5	0.45	11.13 m^2
	General vode	1	9.2	4.5	0.45	18.63 m^2
	Emergency	1	6.5	4	0.45	11.7 m^2
	Toilet	1	2.83	3	0.45	3.82 m^2
	Doctor Consultation	1	5.94	5.62	0.45	15.02 m^2
	Reception	1	8.75	4.06	0.45	15.98 m^2
5	D.P.C	1	55.81	0.3	–	16.74 m^2
6	Brick Masonry Work in Super Structure	1	55.81	0.3	3	50.22 m^2
	Deduction					
	D (2.0X2.1)	6	2	0.3	2.1	7.56 m^2
	D1 (1.0X2.1)	1	1	0.3	2.1	0.63 m^2
	Window					
	W (1.2X1.4)	9	1.2	0.3	1.4	0.5 m^2
	W1 (0.90X1.4)	1	0.9	0.3	1.4	0.37 m^2
7	Plastering (12mm thick plaster)					
	Bed Room	1	5.5	–	3	16.5 m^2
	General vode	1	9.2	–	3	27.6 m^2
	ICU	1	6.5	–	3	19.5 m^2
	Emergency	1	6.5	–	3	19.5 m^2
	Doctor Consultation	1	5.94	–	3	17.92 m^2

(Table 20 : Measurement sheet of PHC centre)

ABSTRACT SHEET OF PHC CENTRE

SR. NO.	PARTICULAR	QTY.	RATE	PER	AMOUNT
1	EXCAVATION FOR FOUNDATION	50.96 m^2	160	M^2	8,153.6/-
2	DPC IN FOUNDATION	4.63 m^2	160	M^2	740.8/-
3	BRICK MASONRY WORK IN FOUNDATION	30.56m^2	1900	M^2	58,073/-
4	EARTH FILLING IN PLINTH LEVEL	93.02 m^2	950	M^2	88,369/-
5	BRICK MASONRY WORK IN SUPER STRUCTURE	59.28 m^2	2800	M^2	1,65,984/-
6	PLASTERING (12MM THICK PLASTER)	101.02 m^2	180	M^2	18,183.6/-
7	DOOR	6 Nos.	700	Nos.	4,200/-
8	WINDOW	9 Nos.	400	Nos.	3600/-
TOTAL CONSTRUCTION COST					3,47,304/-
10% CONTRACTOR PROFIT					34,730.4/-
5% EXTRA COST					17,365.2/-
OVERALL COST					3,99,400/-

(Table 21: Abstract Sheet of PHC centre)

Chapter: 9 Proposing designs for Future Development of the Village (Part-2 Design):

- The study is aimed to know the basic scenario of village through techno economic survey and gap analysis form.
- Our design proposal shows that we are interested to provide economical services and facilities to the villagers.
- In next part we will design Post office, Skill Development center, Community Hall and some maintenance work.
- Also our focus will be making of sustainable or green village to Sihol.
- In new designs proposed by as, we should focus on regular maintenance of these facilities. Because due to lack of maintenance peoples will avoid to use and hence it become obsolete.
- For maintenance purpose we should provide a maintenance plan which is economical and effective. It can be done by villagers them self.

Chapter: 10 Conclusion:

Vishwakarma Yojana is a Gujarat government project allocated to GTU in which we the students of GTU who were involved in this project were allocated with a village in our district for rurbanisation. We made physical visits & Surveys at Sihol, Mogri & Dharmaj and did the SWOT analysis, which helped us to know our strengths, weaknesses, opportunities & threats. From this we analyzed problems and requirement of our allocated village and started finding the solution. From various thinking's, research and group discussions we decided to prepare some design solutions. And at the end of semester we were ready with these designs for the proposal.

Chapter: 11 References:

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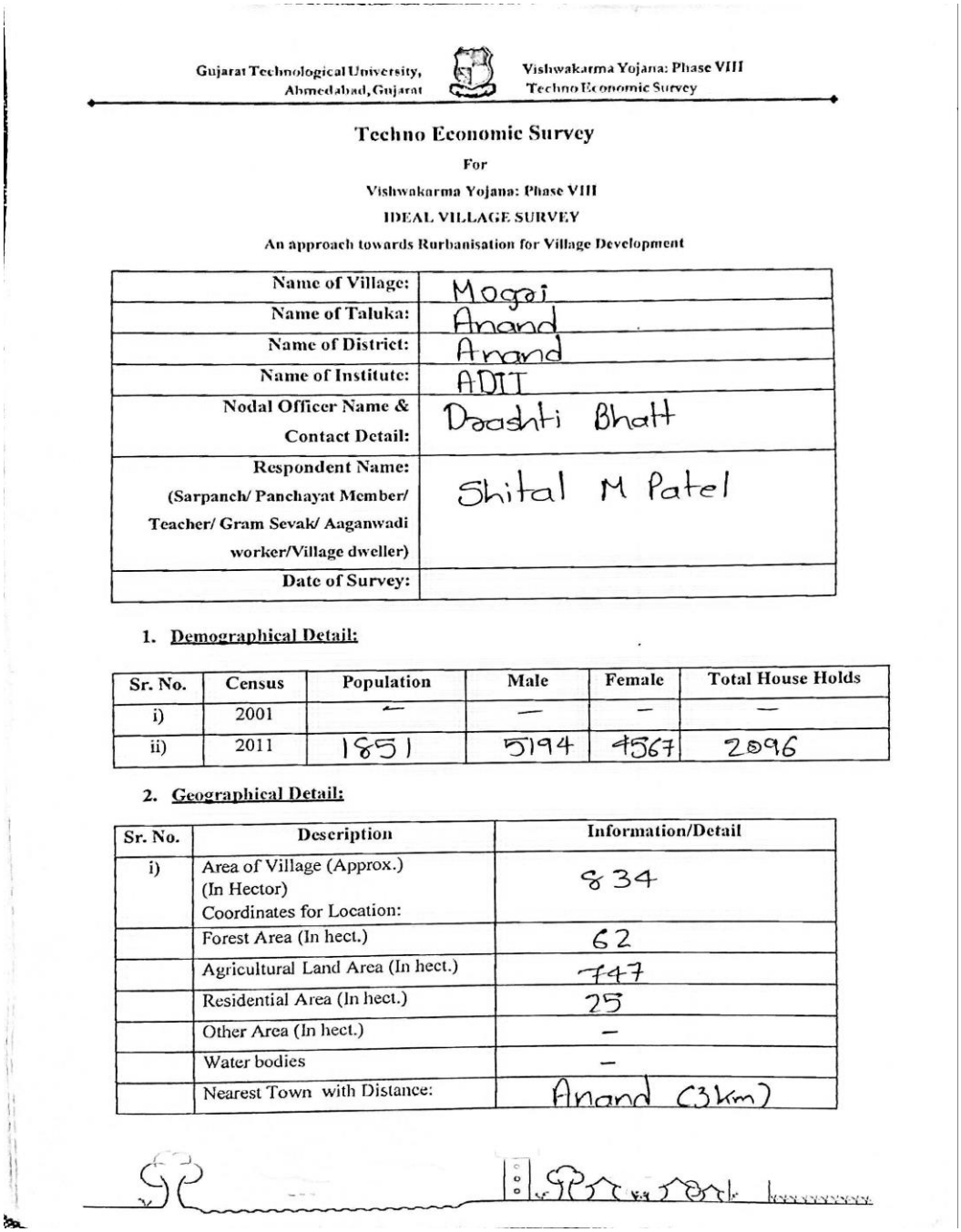
Chapter: 12 Annexure

12.1 Survey form of Ideal village "Mogri"

(Fig 30: Techno economic survey- Mogri)



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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	Mogri
Name of Taluka:	Anand
Name of District:	Anand
Name of Institute:	ADIT
Nodal Officer Name & Contact Detail:	Daashti Bhatt
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Shital M Patel
Date of Survey:	

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	–	–	–	–
ii)	2011	1851	5194	4567	2096

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	834
	Forest Area (In hect.)	62
	Agricultural Land Area (In hect.)	747
	Residential Area (In hect.)	25
	Other Area (In hect.)	–
	Water bodies	–
	Nearest Town with Distance:	Anand (3km)

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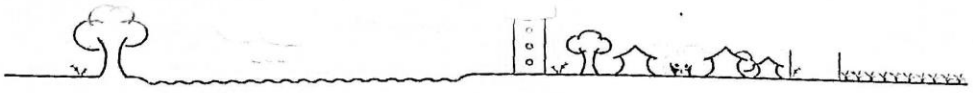
3. Occupational Details:

Name of Three Major Occupation groups in Village	1. Animal husbandry 2. Small scale industry 3. Job work

4. Physical Infrastructure Facilities:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated)	treated			1
	• RO Water	Yes			
	• Well (Covered/ Uncovered)	Uncovered			2
	• Hand pumps	Yes			4
	• Tube well/ Borehole	Yes			3
	• River/ Canal/ Spring/ Lake/ Pond	Yes			
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:			3
	Underground Sump	Capacity:	—	—	—
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	Yes			
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	Closed			
	If Open than Pucca / Kutchcha	Pucca			
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	water bodies			
Suggestions if any:					



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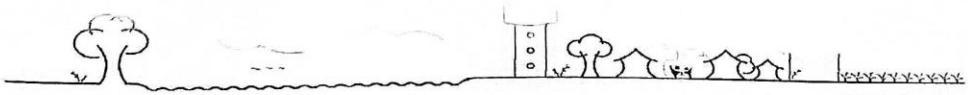
E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	No	Kutchha		1
	Main road	Yes	Bituminus		3
	Internal streets	Yes	Cement concrete		4
	Nearest NH/SH/MDR/ODR Dist. in kms.				
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No Anand			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Bus Private			
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes			
	Power supply for Domestic Use	Yes			
	Power supply for Agricultural Use	Yes			
	Power supply for Commercial Use	Yes			
	Road/ Street Lights	Yes			



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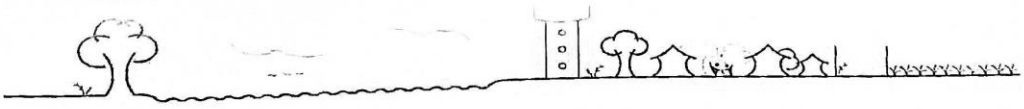
	Electrification in Government Buildings/ Schools/ Hospitals	Yes			
	Renewable Energy Source Facilities (Y/ N)	No			
	LED Facilities				
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	No			
	Location Condition				
	Community Toilet (With bath/ without 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)	Canal well tubewell			
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Pucca 1300			

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks



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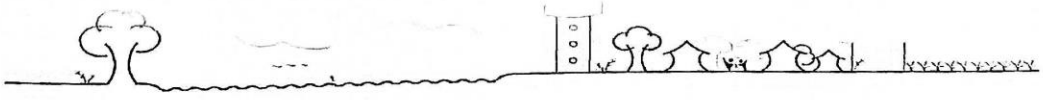
K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	No			
	Private Clinic/Private Hospital/ Nursing Home	Yes			
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
L.	**Education Facilities:**				
	Aaganwadi/ Play group	Anganwadi			6
	Primary School	Yes			1
	Secondary school	Yes			1
	Higher sec. School	Yes			3
	ITI college/ vocational Training Center	—			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	—			
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	No			



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

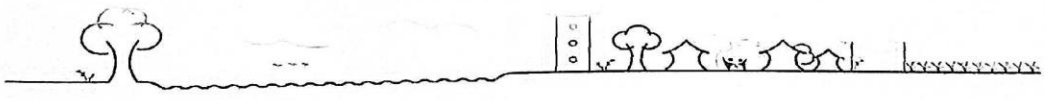
	General Market	Yes			
	Shops (Public Distribution System)	Yes			
	Panchayat Building	Yes			
	Pharmacy/Medical Shop	Yes			
	Bank & ATM Facility	Yes			
	Agriculture Co-operative Society	No			
	Milk Co-operative Soc.	No			
	Small Scale Industries	Yes			
	Internet Cafes/ Common Service Center/Wi Fi	No		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

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

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

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	



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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.	Solid waste Disposal plant.		

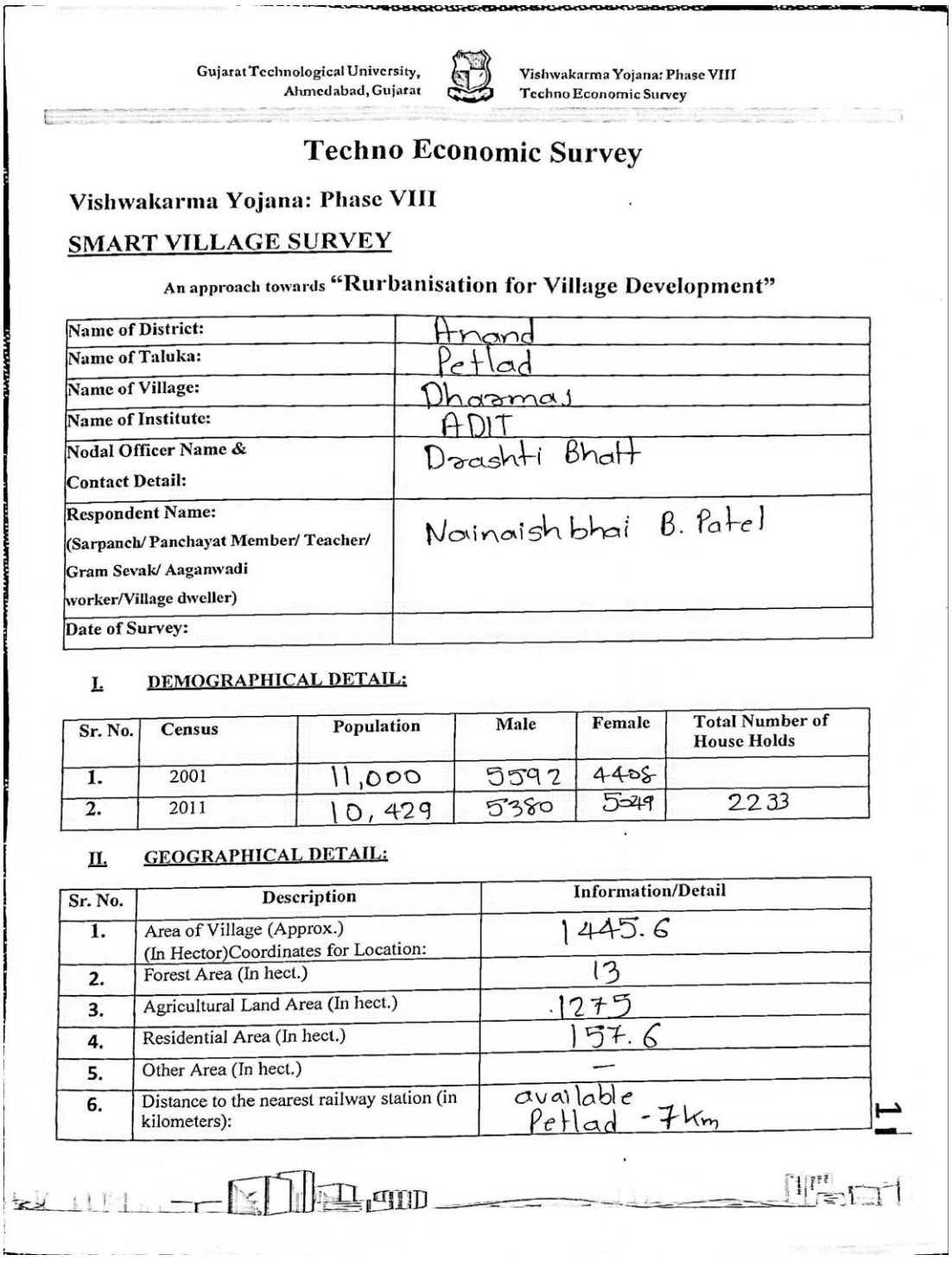
Note: Photographs/ Video/ Drawings of all existing Infrastructure facilities & conditions should be taken by students of respective villages for their record and information.

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

સરપંચ
ગ્રામ પંચાયત શીહોલ
તા. જી. આણંદ

12.2 Survey form of smart village 'Dharmaj'

(Fig 31: Techno economic survey-Dharmaj)



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Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

Name of District:	Anand
Name of Taluka:	Petlad
Name of Village:	Dharmaj
Name of Institute:	ADIT
Nodal Officer Name & Contact Detail:	Drashti Bhatt
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Nainaish bhai B. Patel
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	11,000	5592	4408	
2.	2011	10,429	5380	5049	2233

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1445.6
2.	Forest Area (In hect.)	13
3.	Agricultural Land Area (In hect.)	.1275
4.	Residential Area (In hect.)	157.6
5.	Other Area (In hect.)	—
6.	Distance to the nearest railway station (in kilometers):	available Petlad - 7km

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7.	Name of Nearest Town with Distance:	Petlad - 7km
8.	Distance to the nearest bus station (in kilometers):	Available in village
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. tabacco Processing 3. textile
Major crops grown in the village:	1. Tobacco 2. Rice 3. Millets

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
1.	**PIPED WATER**				
	Piped Into Dwelling	✓			
	Piped To Yard/Plot		✓		
	Public Tap/Standpipe	✓			
	Tube Well Or Bore Well				
2.	**DUG WELL**				
	Protected Well	Protected	✓		5-10
	Un Protected Well				
3.	**WATER FROM SPRING**				
	Protected Spring				
	Unprotected Spring				
	Rainwater	✓			
	Tanker Truck				
	Cart With Small Tank				
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/**				
	Irrigation Channel	✓			
	Bottled Water				14
	Hand Pump	✓			
	Other(Specify)**Lake/ Pond**	✓			

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Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 7 Lac	✓		
	Underground Sump	Capacity: 5 Lac	✓		
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C OPEN WITHOUT OUTLET	✓ ✓		✓ ✓	
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	✓	✓		BTP
	Main road	✓	✓		BTP
	Internal streets	✓	✓		BTP
	Nearest NH/SH/MDR/ODR Dist. in kms.		✓		
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Yes Petlad-7km	—	—	Not working Condition
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	—	—	
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	—	—	—	Available
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes Govt.			More than 6 hrs.

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	Power supply for Domestic Use		✓		
	Power supply for Agricultural Use		✓		
	Power supply for Commercial Use		✓		
	Road/ Street Lights		✓		
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	Yes		✓	Solar Panel 10 Kw
	LED Facilities	Yes			
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	3			Urinal
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	—	—	—	—
	Solid & liquid waste Disposal system available	Yes	✓	—	—
	Any facility for Waste collection from road	Yes	✓	—	Door to Door
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND	Yes	✓	—	14
	STREAM/RIVER	—			
	CANAL	Yes		—	7
	WELL	Yes		—	3
	TUBE WELL	Yes		—	70
	OTHER (SPECIFY)				
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Pucca 90 %	✓	—	—

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	✓			12
	Sub-Centre	✓			5-7
	PHC	✓			
	BLOCK PHC				
	CHC/RH	✓			
	District/ Govt. Hospital				
	Govt. Dispensary				
	Private Clinic				
	Private Hospital/ Nursing Home	✓			Jalaram hospital
	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	14			
	Primary School	4			2 - Govt 2 - Semi Govt.
	Secondary school				
	Higher sec. School	3			
	ITI college/ vocational Training Center	1			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	1			Sanskrutik Seva Charitable
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				

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Suggestions if any:

L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)			✓	
	Public Library (With daily newspaper supply: Y/N)	3		✓	
	Public Garden	3		✓	
	Village Pond	14		✓	
	Recreation Center	Amusment Part		✓	
	Cinema/ Video Hall	1		✓	
	Assembly Polling Station	8		✓	
	Birth & Death Registration	—		✓	

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

Suggestions if any:

M.	Other Facilities	Condition	Location	Available (YES)	Available (NO)
	Post-office 1			✓	
	Telecommunication Network/ STD booth 2-4			✓	
	General Market 1			✓	
	Shops (Public Distribution System) 100-150			✓	
	Panchayat Building 1			✓	
	Pharmacy/Medical Shop 4			✓	
	Bank & ATM Facility			✓	
	Agriculture Co-operative Society 2			✓	
	Milk Co-operative Soc. 1			✓	
	Small Scale Industries 30			✓	
	Internet Cafes/ Common Service Center/Wi Fi 2			✓	
	Youth Club 3-4			✓	
	Mahila Mandal 2			✓	

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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? 2. Are there any beneficiaries in the village from the following programme? 3. Janani Suraksha Yojana 4. Kishori Shakti Yojana 5. Balika Samriddhi Yojana 6. Mid-day Meal Programme 7. Intergrated Child Development Scheme (ICDS) 8. Mahila Mandal Protsahan Yojana (MMPY) 9. National Food for work Programme (NFFWP) 10. National Social Assistance Programme 11. Sanitation Programme (SP) 12. Rajiv Gandhi National Drinking Water Mission 13. Swarnjayanti Gram Swarozgar Yojana 14. Minimum Needs Programme (MNP) 15. National Rural Employment Programme 16. Employee Guarantee Scheme (EGS) 17. Prime Minister Rojgar Yojana (PMRY) 18. Jawahar Rozgar Yojana (JRY) 19. Indira Awas Yaojna (IAY) 20. Samagra Awas Yojana (SAY) 21. Sanjay Gandhi Niradhar Yojana (SGNY) 22. Jawahar Gram Samridhi Yojana (JGSY) 23. Other (SPECIFY)				

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

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1.	**Repair & Maintenance of Existing Public Infrastructure facilities,** **School Building** **Health Center** **Panchayat Building** **Public Toilets & any other**	NO	—
2.	**Additional Information/ Requirement**		
3.	**During the last six months how many times** **CLEANING** ..... Regular ..... **FOGGING**.....2 time / year ..... **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 ?	No, this is well developed village but one problem is lacking of road maintenance & repair.	

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

VILLAGE PANCHAYAT-DHARMAJ TA. PETLAD, DI. ANAND

B. D. Rohit
Sarpanch
Village Panchayat-Dharmaj
Ta. Petlad, Di. Anand

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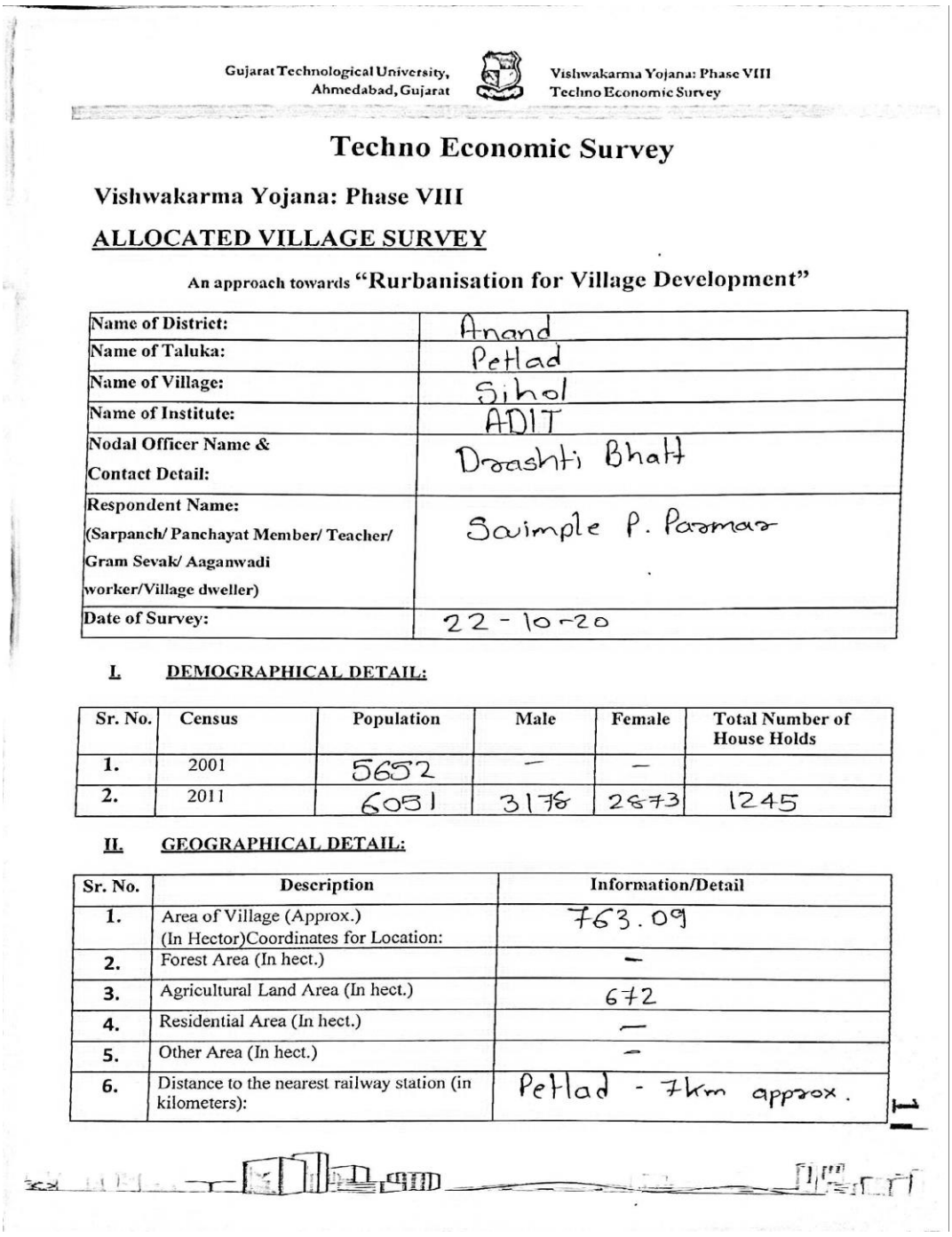
12.3 Survey Form of Allocated Village "Sihol"

(Fig 32: Techno economic Survey- 'Sihol')



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ALLOCATED VILLAGE SURVEY

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

Name of District:	Anand
Name of Taluka:	Petlad
Name of Village:	Sihol
Name of Institute:	ADIT
Nodal Officer Name & Contact Detail:	Draashti Bhatt
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Saimple P. Parmar
Date of Survey:	22-10-20

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	5652	–	–	
2.	2011	6031	3178	2873	1245

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	763.09
2.	Forest Area (In hect.)	–
3.	Agricultural Land Area (In hect.)	672
4.	Residential Area (In hect.)	–
5.	Other Area (In hect.)	–
6.	Distance to the nearest railway station (in kilometers):	Petlad - 7km approx.

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7.	Name of Nearest Town with Distance:	Anand
8.	Distance to the nearest bus station (in kilometers):	Available within 5-10km
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.	Farming
	2.	Animal Husbandry
	3.	Job work

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

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

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	Other(Specify)Lake/ Pond	1 Pond			
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:			1
	Underground Sump	Capacity:	—	—	—
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1	Yes Closed			
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Petlad			
	Main road	Petlad			
	Internal streets	Bituminous RCC			
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH			
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Petlad			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Private & Public available within 5-10km			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Bus Auto			
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)				

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	Power supply for Domestic Use				
	Power supply for Agricultural Use				
	Power supply for Commercial Use				
	Road/ Street Lights				
	Electrification in Government Buildings/ Schools/ Hospitals				
	Renewable Energy Source Facilities (Y/ N)				
	LED Facilities				

Suggestions if any:

G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	No			
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	No			
	Solid & liquid waste Disposal system available	No			
	Any facility for Waste collection from road	door to door			

Suggestions if any:

H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	Well Canal Pond			

Suggestions if any:

I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	90%. Pucca	10%. Kutcha		

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	8			
	Sub-Centre	—			
	PHC	1			
	BLOCK PHC	—			
	CHC/RH	—			
	District/ Govt. Hospital	—			
	Govt. Dispensary	—			
	Private Clinic	1			
	Private Hospital/	—			
	Nursing Home	—			
	AYUSH Health Facility	—			
	sonography /ultrasound facility				
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	Anganwadi-8			
	Primary School	Yes - 6			
	Secondary school	Yes - 1			
	Higher sec. School	Yes - 1			
	ITI college/ vocational Training Center	—			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	—			

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	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
L.	**Socio- Culture Facilities**	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)	Good	–	Yes	
	Public Library (With daily newspaper supply: Y/N)	Good	-	Yes	
	Public Garden	Good	-	Yes	
	Village Pond	Good	-	Yes	
	Recreation Center	–	–	–	No
	Cinema/ Video Hall	–	–	–	No
	Assembly Polling Station	–	–	Yes	
	Birth & Death Registration Office	–	–	Yes	
If any of the above Facility is not available in village than approx. distance from village: .....kms.					
Suggestions if any:					
M.	**Other Facilities**	Condition	Location	Available (YES)	Available (NO)
	Post-office	Avg.	Sihol	Yes	
	Telecommunication Network/ STD booth	–	–	No	
	General Market	–	–	Yes	
	Shops (Public Distribution System)	30	-	Yes	
	Panchayat Building	1		Yes	
	Pharmacy/Medical Shop	1		Yes	
	Bank & ATM Facility	1		Yes	
	Agriculture Co-operative Society			Yes	
	Milk Co-operative Soc.	1		Yes	
	Small Scale Industries	1		Yes	
	Internet Cafes/ Common Service Center/Wi Fi	–	-	-	No
	Youth Club	–	–		No
	Mahila Mandal	–	–		No

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

Suggestions if any:

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

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources				
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	× ✓ ✓			
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				Photo copy
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		No
2.	Additional Information/ Requirement	Regular same maintenance	
3.	During the last six months how many times CLEANING .....Every day..... 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 ?	Renewable energy uses require	

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

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

તલાટી કમ મંત્રી
સિંહોલ ગામ પંચાયત
તા. પેટલાદ. જી. આણંદ.

12.4 Gap Analysis:

(Table 22: Gap Analysis)

Facilities	Planning Commission/UDPFI Norms	Village Name:	Sihol	
		Population:		6051 (2011)
		Existing	Required as per Norms	Gap
Social Infrastructure Facilities				
Education				
Anganwadi	Each or Per 2500 population	8	1	**0**
Primary School	Each Per 2500 population	6	1	**0**
Secondary School	Per 7,500 population	1	1	**0**
Higher Secondary School	Per 15,000 Population	1	1	**0**
College	Per 125,000 Population	0	1	**0**
Tech. Training Institute	Per 100000 Population	0	1	**0**
Agriculture Research Centre	Per 100000 Population	0	1	**0**
Health Facility				
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	1	1	**0**
PHC & CHC	Per 20,000 population	1	1	**0**
Child Welfare and Maternity Home	Per 10,000 population	0	1	**0**
Hospital	Per 100000 Population	0	1	**0**
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutcha house)	Available in school	25	**25**
Physical Infrastructure Facilities				
Transportation		**Adequate**	**Inadequate**	
Pucca Village Approach Road	Each village	Adequate	-	
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	-	Inadequate	
Drinking Water (Minimum 70 lpcd)		**Adequate**	**Inadequate**	

Over Head Tank	1/3 of Total Demand	Adequate	-	-
U/G Sump	2/3 of Total Demand	-	Inadequate	-
Drainage Network		**Adequate**	**Inadequate**	
Open		-	-	-
Cover		adequate	-	-
Waste Management System		**Adequate**	**Inadequate**	Adequate (Door to Door)
Electricity Network		**Adequate**	**Inadequate**	Adequate (24x7)
Socio- Cultural Infrastructure Facilities				
Community Hall	Per 10000 Population	0	0	**0**
community hall cum Public Library	Per 15000 Population	1	1	**0**
Cremation Ground	Per 20,000 population	0	1	**0**
Post Office	Per 10,000 population	1	1	**0**
Gram Panchayat Building	Each individual/group panchayat	1	1	**0**
APMC	Per 100000 Population	0	1	**0**
Fire Station	Per 100000 Population	0	1	**0**
Public Garden	Per village	1	1	**0**
Police post	Per 40,000Population	0	1	**0**

12.5 Summary details of all the village designs in table form:

SR. NO.	VILLAGES	DISCIPLINE	PART-1
1	SANJAYA	CIVIL	DESIGN OF PAVER BLOCK PAVEMENT
			BANK
			PUBLIC TOILET
			GRAM PANCHAYAT
			COMMUNITY HALL
			BUS STOP
		ELECTRICAL	MODERN GRAM PANHAYAT
			SMART ANGANWADI AUTOMATION
			WATER QUALITY MANAGEMENT
2.	BAMROLI	CIVIL	GRAM PANCHAYAT BULDING
			PUBLIC TOILET
			R.C.C. ROAD
			PUBLIC GARDEN
			BUS STOP
			-
3	SIHOL	CIVIL	BUS STOP
			LOW COST HOUSE
			OVER HEAD WATER TANK
			PUBLIC TOILET
			PUBLIC HEALTH CENTRE
			-
4	BORIYA	CIVIL	PANCHAYAT BUILDING
			PUBLIC GARDEN
			PUBLIC LIBRABRY
			SKILL DEVELOPMENT CENTRE
			-
			-
		ELECTRICAL	SMART GREEN HOUSE USING ANDROID APPLICATION
			SMART CLASSROOM IN BORIYA
			AUTOMATIC RAILWAY GATE CONTROL
5	RANGAIPURA	CIVIL	COMMUNITY HALL
			POST OFFICE
			PUBLIC GARDEN
			PUBLIC TOILET
			-
			-

12.6 Summary of Good Photograph:

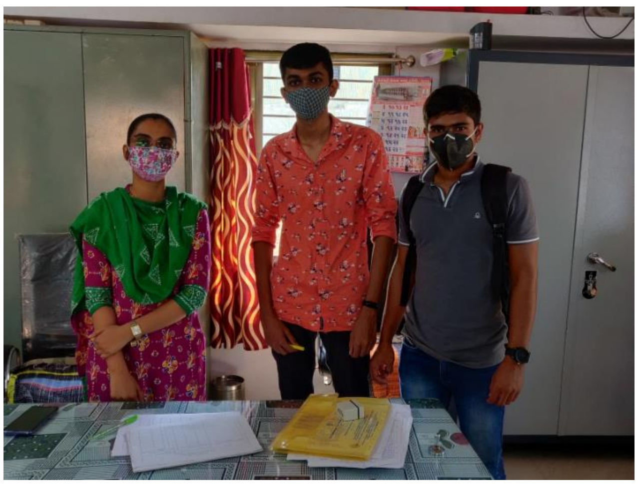
(Fig 33: Sihol Village Photographs)

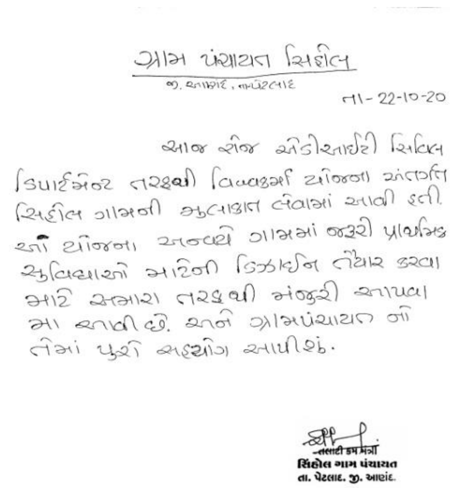
(Fig 34: Mogri Village Photographs)

(Fig 35: Dharmaj Village Photographs)

12.7 Village Interaction Report with the photographs:

- We have visit Sihol village and interact with various authorities of village. We have explained what is Vishwakarma Yojana and main aim of Vishwakarma project. Then we conduct techno-economic survey of village to identify various existing facilities available in village.
- We have also visited various places like gram-panchayat, temples, village schools, anganwadi and other amenities. The Existing condition of various amenities as well as various infrastructures was examined by us like. Road condition, housing condition, drainage system, condition of public infrastructures, etc.





ગ્રામ પંચાયત સિહોલ

જી. આણંદ, તા. પેટલાદ

તા- 22-10-20

આજ રોજ એડીઆઈટી સિવિલ ડિપાર્ટમેન્ટ તરફથી વિશ્વકર્મા યોજના અંતર્ગત સિહોલ ગામની મુલાકાત લેવામાં આવી હતી. આ યોજના અન્વયે ગામમાં જરૂરી પ્રાથમિક સુવિધાઓ માટેની ડિઝાઈન તૈયાર કરવા માટે અમારા તરફથી મંજૂરી આપવામાં આવી છે. અને ગ્રામપંચાયત નો તેમાં પૂરો સહયોગ આપીશું.

તલાટી કમ મંત્રી

સિહોલ ગામ પંચાયત

તા. પેટલાદ. જી. આણંદ.

(Fig 36: Interaction with Village Talati)

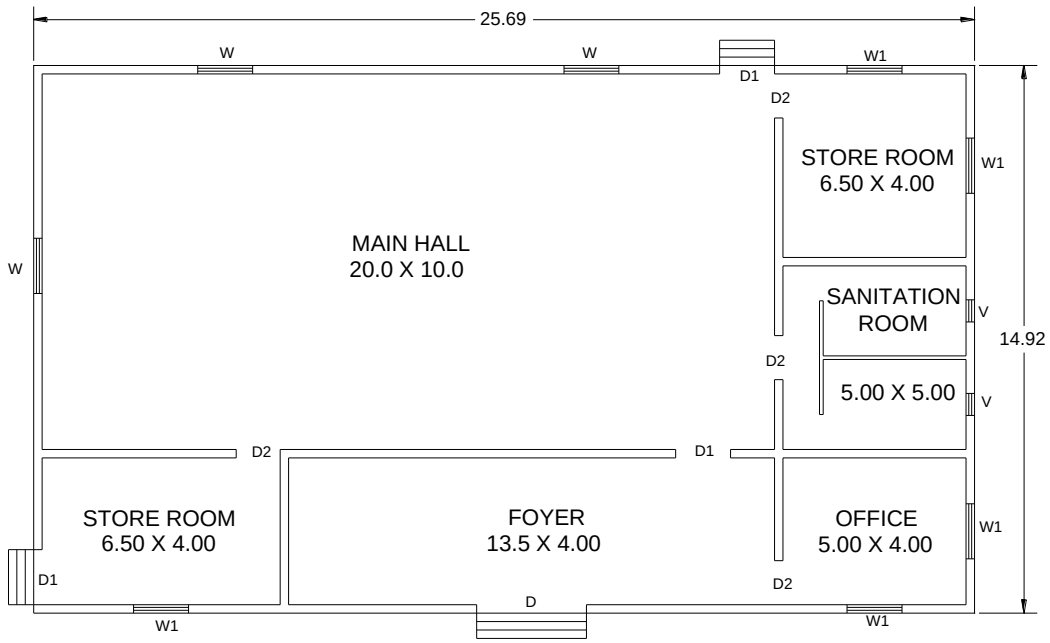
13. Future Development of the Village detail implementation of the future scope of work Sustainable Design Planning Proposal (Prototype Design) - Part- II

13.1 Design Proposal

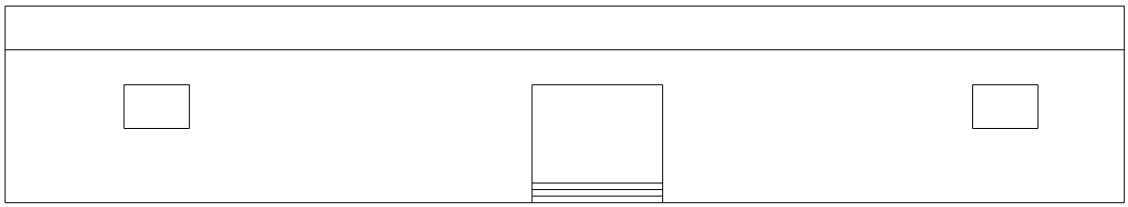
In the Vishwakarma Yojana Phase-VIII Part – II we have given total seven design according to the village need and useful for the villagers.
The design proposals are:

- Community Hall
- Post office
- Skill development center
- Lake/Pond Recreation
- Public Drinking Water Tank
- Rain Water Harvesting
- Chabutro
- Medical shop
- Underground water tank

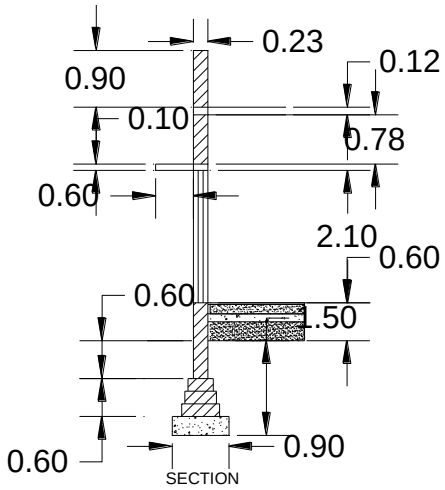
13.1.1 Community Hall:



PLAN



ELEVATION



W	1.5 X 1.0 M
W1	1.2 X 1.0 M
V	0.6 X 0.4 M
D	3 X 2.25 M
D1	1.5 X 2.25 M
D2	1.2 X 2.25 M

(fig 37: Design of Community Hall)

MEASUREMENT SHEET:

Item No.	Item	No.	L (M)	B (M)	H (M)	QTY	TOTAL
1	Excavation for foundation in all sorts of soil including Black cotton, sandy and gravelly soil, soft murrum including depositing the excavated stuff as and where directed including back filling the tranches with suitable excavated stuff etc. complete for lead up to 50 and lift as under.(Manually without dewatering) (a) Lift upto 4.0 meter.						
1A	Up to 1.5 meter	20	1.6	1.4	1.5	67.2 m^3	67.2 m^3
1B	Up to 3 meter	20	1.6	1.4	1.5	67.2 m^3	67.2 m^3
1C	Up to 4 meter	20	1.6	1.4	1	44.8 m^3	44.8 m^3
2	Providing and laying Plain/Reinforced cement concrete of cement, sand and metal (above 12mm & upto 20mm size) in following proportion laid in situ including centering, shuttering, temping, smooth finishing, curing etc. complete as directed for all leads and lifts (iii)1:1.5:3 for pcc footing						
		20	1.6	1.4	0.15	6.72m^3	6.72 m^3
3	Providing and laying ordinary cement concrete 1:2:4(1 cement:2coare sand:4 graded stone aggregates 20 mm nominal size) and finishing smooth with curing etc.. complete including the cost of form work but excluding the cost of reinforcement for R.C.C. works for foundation						
	Box	20	1.1	1.3	0.15	4.29 m^3	
	Trapezoidal	20	1.43	0.18	0.51	2.63 m^3	6.91 m^3
4	Providing and laying ordinary cement concrete 1:2:4(1 cement:2coare sand:4 graded stone aggregates 20 mm nominal size) and finishing smooth with curing etc.. complete including the cost of form work but excluding the cost of reinforcement for R.C.C. works						
4A	Columns (considering Avg. ht.)	20	0.32	0.23	3	4.42 m^3	
	Up To Plinth	20	0.23	0.46	0.6	1.27 m^3	5.69 m^3
4B	Plinth Beam PB1,PB4,PB5,PB6,PB7,PB8,PB9, PB12,PB13,PB14,PB15,PB16,PB	22	5	0.23	0.32	8.10 m^3	12.51 m^3

	17,PB18,PB21,PB22,PB23,PB24, PB25,PB26,PB27,PB30						
	PB2,PB3,PB10,PB11,PB19,PB20 ,PB28,PB29	8	7.5	0.23	0.32	4.42 m³	
4C	Ground Beam						
	PB1,PB4,PB5,PB6,PB7,PB8,PB9, PB12,PB13,PB14,PB15,PB16,PB 17,PB18,PB21,PB22,PB23,PB24, PB25,PB26,PB27,PB30	22	5	0.23	0.32	8.10 m³	12.51 m³
	PB2,PB3,PB10,PB11,PB19,PB20 ,PB28,PB29	8	7.5	0.23	0.32	4.42 m³	
	Net Quantity of plaster						30.71 m³
5	Providing TMT FE-415 bar reinforcement for R.C.C.works including bending & placing in position complete up to floor one level.						
	up to G.B./P.B.						
	Footings		5.69	60		360	
	Columns		5.69	250		1500	
	Beams		12.5	200			
	Ground floor						20755.5 KG
	Footings		7.87	250		1967.5	
	Columns		13	200		2600	
	Beams		56	70		3920	
	Ceiling						
	Footings		5.15	250		1288	
	Columns		13	200		2600	
	Beams		56	70		3920	
6	Brick work using Common Burnt clay building brick having crushing strength not less than 35 kg/ Sq.cm in foundation and plinth in cement mortar 1:5(B) Conventional						
	Outer Wall	4	4.77	0.23	0.32	1.4 m³	9.11 m³
		4	7.27	0.23	0.32	2.14 m³	
		6	4.68	0.23	0.32	2.07 m³	
	Inner Wall	3	4.77	0.23	0.32	1.4 m³	
		2	7.27	0.23	0.32	2.14 m³	
		4	4.68	0.23	0.32	2.07 m³	

7	Filling in foundation and plinth with murrum or selected soil in layers of 20 cm. thickness including watering, ramming and consolidation etc. comp. Pro. & Filling in plinth with selected soil						
	Main Hall	1	17.2	6.16	0.35	35.17 m^3	
	Kitchen	1	4.08	3.72	0.35	5.31 m^3	
	Sanitary system	1	4.08	3.72	0.35	5.31 m^3	
	Office	1	4.08	3.72	0.35	5.31 m^3	
	Foyer	1	13.6	3.08	0.35	14.68 m^3	
	Store room	1	4.08	3.72	0.35	5.31 m^3	73.1 m^3
8	Providing cement plaster in 20 mm thick and proportion 1:3 cement mortar including smooth finishing, curing, scaffolding etc. complete for all leads and lifts as under.						
	Ground floor						
	Periphery of outer wall	4	4.77		0.45	8.59 m^2	
		4	7.27		0.45	13.09 m^2	
		6	4.68		0.45	12.64 m^2	34.1 m^2
Work above plinth level							
9	Providing laying controlled cement concrete M-20 and curing complete excluding the cost of form work and reinforcement of reinforced concrete work in (D) Columns Pillars, posts, and strut, up to floor two level for column						
		20	0.23	0.32	3.5	5.15 m^3	5.15 m^3
10	Providing laying controlled cement concrete M-20 and curing complete excluding the cost of form work and reinforcement of reinforced concrete work in (C) Slabs Landings, Shelves, Balconies Lintels, Beams Girders, and Cantilever up to floor level for beam						
	Ground Beam						
	B1,B4,B5,B6,B7,B8,B9,B12,B13, B14,B15,B16,B17,B18,B21,B22,B 23,B24,B25,B26,B27,B30	20	5	0.23	0.32	8.1 m^3	

	B2,B3,B10,B11,B19,B20,B28,B29	8	7.5	0.23	0.32	4.42 m^3	12.51 m^3
	First floor(Same as Ground floor beams)					12.51 m^3	25 m^3
11	Providing laying controlled cement concrete M-20 and curing complete excluding the cost of form work and reinforcement of reinforced concrete work in (C) Slabs Landings, Shelves, Balconies Lintels, Beams Girders, and Cantilever up to floor two level						
	Ground floor Slab						
	Main Hall	1	20	10	0.15	30 m^3	
	Kitchen	1	5	5	0.15	3.75 m^3	
	Sanitary system	1	5	5	0.15	3.75 m^3	
	Office	1	5	5	0.15	3.75 m^3	
	Foyer	1	5	5	0.15	11.75 m^3	
	Store room	1	5	5	0.15	3.75 m^3	56 m^3
	First floor(Same as Ground floor Slab)					56 m^3	112 m^3
12	15mm thick cement plaster in single coat on brick/concrete walls for plastering up to floor level and finished even and smooth in.						
	Main Hall	1	20	10		200 m^2	
	Kitchen	1	5	5		25 m^2	
	Sanitary system	1	5	5		25 m^2	
	Office	1	5	5		25 m^2	
	Foyer	1	5	5		25 m^2	
	Store room	1	5	5		25 m^2	375 m^2
13	Providing 20 mm thick cement plaster in single coat on single or half brick interior plastering up to floor level finished even and smooth in 1:6 (cement : sand)						

	Ground floor	10	4.68		3.5	163.8 m^2	
		13	4.77		3.5	217.04 m^2	380.84 m^2
	Deduction for opening						
	W	3	1.5		1	4.5 m^2	11.7 m^2
	W1	6	1.2		1	7.2 m^2	
	Net Quantity of plaster						369.14 m^2
14	Providing and Laying Polished Kota tiles 8mm to 10mm thick in flooring, treads of steps and landing laid on a bed of 12mm thick CM 1:8 (1 CEMENT : 8 Coarse Sand) finished with flush painting in white or coloured cement size 600 x 600 mm						375 m^2
	Main Hall	1	20	10		200 m^2	
	Kitchen	1	5	5		25 m^2	
	Sanitary system	1	5	5		25 m^2	
	Office	1	5	5		25 m^2	
	Foyer	1	15	5		75 m^2	
	Store room	1	5	5		25 m^2	
15	Providing and Laying Polished kota tiles 8mm to 10mm thick in Skirting, riser of steps and dedo laid on a bed of 10mm thick CM 1:4 (1 CEMENT : 4 Coarse Sand) finished with flush pinting in white or coloured cement size 600 x 600 mm						5.5 m^2
	Main Hall	1	20		0.1	2 m^2	
	Kitchen	1	5		0.1	0.5m^2	
	Sanitary System	1	5		0.1	0.5m^2	
	Office	1	5		0.1	0.5 m^2	
	Foyer	1	15		0.1	1.5 m^2	
	Store room	1	5		0.1	0.5 m^2	

16	Providing and laying polished kota stone slab 25mm thick in riser of steps,dedo and pillars laid on 10mm thick cement mortar 1:3 (1cement : 3 coarse sand) and joined with grey cement slurry including rubbing and polishing etc. complete.						
	Tread	3	3	0.28		2.52 m^2	
	Riser	3	3		0.15	1.35 m^2	
	Tread	6	3	0.28		5.04 m^2	
	Riser	6	3		0.15	2.7 m^2	11.61 m^2
17	Providing and fixing 35 mm thick shutters for doors including indian teak wood frames of size 10 cm x 7 cm . Including anodized aluminum fixtures and fastening include. primer coat of approved quality and two coat of oil painting etc.						
	D1 - Shutter door	5	1.5		2.25	16.88 m^2	
	D1 - Shutter door	2	1.2		2.25	5.4 m^2	
	D3- Panel double leaf door	1	3		2.25	6.75 m^2	29 m^2
18	Providing & Fixing Aluminum Windows having three track section 92mm x 31.55mm (weight bottom section 1.070 Kg/mt., top section 0.765 Kg/mt. shutter section 40mm x 18mm (weight of handle section 0.417 Kg/ mt., top, bottom 0.464 Kg/mt.) mounted on bearing to slide on tracks colour anodized in 20 micron in approved shade including 5mm clear plate glass, PVC track gasket, EPDM rubber gasket on glass of weather tightening along with locks, handle including sealing gap with marble surfaces with silicon sealants making it water proof in al manner etc. comp. as per architect's details at all floor levels.(powder coated)						12.18 m^2
	W	3	1.5		1	4.50 m^2	
	W1	6	1.2		1	7.20 m^2	
	V	2	0.6		0.4	0.48 m^2	

19	Providing and Fixing M.S. Grill of required pattern to wooden frames of window etc. with M.S. plate at required paing and frame all-round, square or round bar with rounded headed bolts and nuts or by screw (A)Plain grill						
	W	3	1.5		1	4.50 m^2	
	W1	6	1.2		1	7.20 m^2	
	V	2	0.6		0.4	0.48 m^2	12.18 m^2
20	Providing & Fixing aluminum louvered glass ventilators of adjustable type incl. with frames having section 50mm x 25mm (weight 0.096 Kg/mt.) with colour anodized 20 micron and fixing 4 mm thick bajari/ clear galss etc.						
	V	2	0.6		0.4	0.48 m^2	0.48 m^2
21	Distempering with dry distemper of approved brand and manufacture (three coats) and of required shade on wall surface to give and even shade, over and including a priming coat of whiting after thoroughly brooming the surface free from mortar dropping and other foreign metter.						
	Main Hall	1	60		4	240 m^2	
	Kitchen	1	20		4	80 m^2	
	Sanitary system	1	40		4	160 m^2	
	Office	1	20		4	80 m^2	
	Foyer	1	20		4	80 m^2	
	Store room	1	25	15		375 m^2	931 m^2
	Deduction for opening					42 m^2	42 m^2
	Net Quantity of plaster					973 m^2	973 m^2

22	Finishing wall with water proofing cement paint on wall surface (two coats) to give an approved brand and manufacture and in required shape even shade after thoroughly brushing the surface to remove all dirt, dust and remains of loose powdered material				375 m^2	375 m^2
23	Applying Priming coat over new steel and other metal surface after over and including preparing the surface by thoroughly cleaning oil, grease dirt and other foreign matter and scoured with brushes fine steel wool, scrapers and sand paper with ready mixed priming paint brushing red lead.				12.18 m^2	12.18 m^2
24	Painting two coats (excluding priming two coat) on new steel and other metal surfaces with enamel paint brushing, interior to give an even shade including cleaning the surface of all dirt, dust, and other foreign matter.				12.18 m^2	12.18 m^2
WATER SUPPLY & SANITARY ITEMS						
25	Pro. & fixing W.C pan	4			4 No.	
26	Pro. & Fixing wash basins	2			2 No.	
27	Pro. & Fixing CI nahni traps	8			8 No.	
28	Pro. & Fixing S.W. Gully trap	4			4 No.	
29	Pro. & Fixing BOWL TYPE URINALS	3			3 No.	
30	Pro. & fixing bib cocks	8			8 No.	
31	Pro. & Fixing CP brass flush cocks A 25 mm dia	8			8 No.	
32	Providing & fixing Overhead PVC tank	1			1 No.	
33	(A) Providing and fixing 5 courses water treatment with bitumen felt consisting of second and fourth course of bitumen and residual bitumen applied hot at 1.2 kg/sq.M of area for each course anf first course with fiber based bitumen saturated under lay type land third course with fiber based self finished felt type 2 grade 1 fifth and final course of stone grit 6mm and down size or pea size gravel spread at 0.008 cu.M per sq.M including preparation of surface excluding grading complete of ceiling area					
		1	25	15	375 m^2	375 m^2
Electrification						

34	Point wiring for Light Primary point with 2-1.5mm & earth wire of 1.5 Sq mm (green) both are os ISI marked 1.1 kv grade FRLS PVC insulated multistoried copper wires, in following type pipe to be erected concealed in / flushed on wall/ ceiling, complete with 6A Tissino Type ISI Marked flush type switch/ Bell push and accessories erected on Metal / PVC box covered with 3mm thick PC/ Acrylic sheet with necessary lamp holder/ ceiling rose/ HD connector as desired (A) with medium class Rigid PVC pipe and accessories					
	Main hall	13			13 No.	
	Kitchen	2			2 No.	
	Sanitary area	3			3 No.	
	Office	2			2 No.	
	Foyer	2			2 No.	
	Store room	1			1No.	23 No.
35	Providing the approved make fluorescent tube 120 cms. 36/40 watt erected cat-I					
	Main hall	7			7 No.	
	Kitchen	1			1No.	
	Office	1			1 No.	
	Foyer	2			2 No.	
	Store room	1			1 No.	12 No.
36	Providing the 15 watt CFL					
	Sanitary area	3			3 No.	3 No.
37	Switches					32 No.
	Main hall	17			17No.	
	Kitchen	4			4 No.	
	Sanitary area	3			3 No.	
	Office	4			4 No.	

	Foyer	3			3 No.	
	Store room	1			1 No.	
38	Socket					9 No.
	Main hall	4			4 No.	
	Kitchen	2			2 No.	
	Office	2			2 No.	
	Foyer	1			1 No.	
39	Providing & erecting Approved make Ceiling Fan with double ball bearing ISI mark with Condenser 230 volt A.C.50 Hz 1200 mm sweep complete having 3 blades aluminium body and blade sets having ornamental design shanks , canopy & 30 cms. down rod erected with 24/0.2, 3 core flexible wire with earthing.	8			8 No.	8 No.

(Table 24 : measurement sheet of community hall)

ABSTRACT SHEET:

Qty	Per	Item No.	Item	Rate.	Unit	Amount in Rs.
67.2	m^3	1A	Excavation for foundation in all sorts of soil including loose and soft soil, hard murrum including depositing the excavated stuff as and where directed including back filling the tranches with suitable excavated stuff etc. complete for lead up to 50 and lift as under.(Machinery without dewatering) (a) Lift upto 1.5 meter.	67.3	m^3	4,522.56
67.2	m^3	1B	Excavation for foundation in all sorts of soil including loose and soft soil, hard murrum including depositing the excavated stuff as and where directed including back filling the tranches with suitable excavated stuff etc. complete for lead up to 50 and lift as under.(Machinery without dewatering) (a) Lift upto 1.5 to 3 meter	74.6	m^3	5,013.12
44.8	m^3	1C	Excavation for foundation in all sorts of soil including loose and soft soil, hard murrum including depositing the excavated stuff as and where directed including back filling the tranches with suitable excavated stuff etc. complete for lead up to 50 and lift as under.(Machinery without dewatering) (a) Lift upto 1.5 to 3 meter	81.80	m^3	3,664.64

6.72	m^3	2	Providing and laying Plain/Reinforced cement concrete of cement, sand and metal (above 12mm & upto 20mm size) in following proportion laid in situ including centering, shuttering, temping, smooth finishing, curing etc. complete as directed for all leads and lifts (iii)1:3:6 (A) P.C.C. For footing	2402	m^3	16,141.44
6.91	m^3	3	Providing and laying ordinary cement concrete 1:2:4(1 cement:2coare sand:4 gradd stone aggregates 20 mm nominal size) and finishing smooth with curing etc.. complete including the cost of form work but excluding the cost of reinforcement for R.C.C. works (B) Columns (i) having cross sectional area 0.05 to 0.08 sq.mt (A) foundation, footing, base of columns and mass concrete	7275	m^3	50,270.25
		4	Providing and laying ordinary cement concrete 1:2:4(1 cement:2coare sand:4 graded stone aggregates 20 mm nominal size) and finishing smooth with curing etc.. complete including the cost of form work but excluding the cost of reinforcement for R.C.C. Works (B) Columns (i) having cross sectional area 0.05 to 0.08 sq.mt			

5.69	m^3		(A) COLUMNS	7272	m^3	42,832.08
12.51	m^3		(B) Beams	6001	m^3	75,072.51
12.51	m^3		(C) Ground Beams	6001	m^3	75,072.51
20756	Kg	5	Providing TMT FE-415 bar reinforcement for R.C.C.works including bending & placing in position complete up to floor two Level	57.7	Kg	11,93,441.25
9.11	m^3	6	Brick work using common burnt clay building brick having crushing strength no less than 35 Kg/Sq.cm in foundation and plinth in cement mortar 1:5 (B) conventional	3004	m^3	27,366.44

73.31	m^3	7A	Filling in plinth and floors excavated trenches with approved excavated materials from foundation in 15 cm to 20 cm layer including watering and compaction etc.complete	79	m^3	5,791.49
73.31	m^3	7B	Filling in foundation and plinth with murrum or selected soil in layers of 20 cm. thickness including watering, ramming and consolidation etc. comp.	252	m^3	18,474.12
34.1	m^2	8	Providing cement plaster in 20 mm thick and proportion 1:3 cement mortar including smooth finishing, curing, scaffolding etc. complete for all leads and lifts as under.	152	m^2	51,832.00

Work above Plinth level						
5.15	C.M	9	Providing laying controlled cement concrete M-20 and curing complete excluding the cost of form work and reinforcement of reinforced concrete work in (D) Columns Pillars, posts, and strut, up to floor two level for column	3926	C.M	20,218.90
25	C.M	10	Providing laying controlled cement concrete M-20 and curing complete excluding the cost of form work and reinforcement of reinforced concrete work in	7575	C.M	1,89,375.0

112	C.M	11	Providing laying controlled cement concrete M-20 and curing complete excluding the cost of form work and reinforcement of reinforced concrete work in (C) Slabs Landings, Shelves, Balconies Lintels, Beams Girders, and Cantilever up to floor two level	3864	C.M	4,32,768.00
375	m^2	12	15mm thick cement plaster in single coat on brick/concrete walls for plastering up to floor level and finished even and smooth in.	106	m^2	39,750.00
369.14	m^2	13	Providing 20 mm thick cement plaster in single coat on single or half brick interior plastering up to floor level finished even and smooth in 1:6 (cement : sand)	106	m^2	39,128.84

375	m^2	14	Providing and Laying Polished Kota tiles 8mm to 10mm thick in flooring, treads of steps and landing laid on a bed of 12mm thick CM 1:8 (1 CEMENT : 8 Coarse Sand) finished with flush painting in white or colored cement size 600 x 600 mm	116	m^2	43,500.00
5.5	m^2	15	Providing and Laying Polished kota tiles 8mm to 10mm thick in Skirting, riser of steps and dedo laid on a bed of 10mm thick CM 1:4 (1 CEMENT : 4 Coarse Sand) finished with flush pinting in white or coloured cement size 600 x 600 mm	665	m^2	3657.50

11.61	m^2	16	Providing and laying polished kota stone slab 25mm thick in riser of steps, dedo and pillars laid on 10mm thick cement mortar 1:3 (1cement : 3 coarse sand) and joined with grey cement slurry including rubbing and polishing etc. complete.	665	m^2	7720.65
29	m^2	17	Providing and fixing 35 mm thick shutters for doors including Indian teak wood frames of size 10 cm x 7 cm . Including anodized aluminum fixtures and fastening include. primer coat of approved quality and two coat of oil painting etc.	2570	m^2	1,32,530
12.18	m^2	18	Providing & Fixing Aluminum Windows having three track section 92mm x 31.55mm (weight bottom section 1.070 Kg/mt., top section 0.765 Kg/mt. shutter section 40mm x 18mm (weight of handle section 0.417 Kg/ mt., top, bottom 0.464 Kg/mt.) mounted on bearing to slide on tracks colour anodized in 20 micron in approved shade including 5mm clear plate glass,	1717.5	m^2	20,919.15

			PVC track gasket, EPDM rubber gasket on glass of weather tightening along with locks, handle including sealing gap with marble surfaces with silicon sealants making it water proof in a manner etc.			

12.18	m^2	19	Providing and Fixing M.S. Grill of required pattern to wooden frames of window etc. with M.S. plate at required paing and frame all- round, square or round bar with rounded haeded bolts and nuts or by screw (A)Plain grill	65.5	m^2	797.99
0.48	m^2	20	Providing & Fixing aluminum louvered glass ventilators of adjustable type incl. with frames having section 50mm x 25mm (weight 0.096 Kg/mt.) with colour anodized 20 micron and fixing 4 mm thick bajari/ clear glass etc.	1375	m^2	660.00
973	m^2	21	Distempering with dry distemper of approved brand and manufacture (three coats) and of required shade on wall surface to give and even shade, over and including a priming coat of whiting after thoroughly brooming the surface free from mortar dropping and other foreign matter.	32.9	m^2	32,011.70
375	m^2	22	Finishing wall with water proofing cement paint on wall surface (two coats) to give an approved brand and manufacture and in required shape even shade after thoroughly brushing the surface to remove all dirt, dust and remains of loose powdered materials	36.9	m^2	13,837.50

12.18	m^2	23	Applying Priming coat over new steel and other metal surface after over and including preparing the surface by thoroughly cleaning oil, grease dirt and other foreign matter and scoured with brushes fine steel wool, scrapers and sand paper with ready mixed priming paint brushing red lead. S.O.R.2015-16,Item code 19005	22	m^2	267.96
12.18	m^2	24	Painting two coats (excluding priming two coat) on new steel and other metal surfaces with enamel paint brushing, interior to give an even shade including cleaning the surface of all dirt, dust, and other foreign matter. S.O.R.2015-16,Item code 19005	45	m^2	584.10
WATER SUPPLY & SANITARY ITEMS						
4	No.	25	Pro. & fixing W.C pan	7000	No.	28,000.00
2	No.	26	Pro. & Fixing wash basins	3000	No.	6,000.00
8	No.	27	Pro. & Fixing CI nahni traps	240	No.	1,920.00
4	No.	28	Pro. & Fixing S.W. Gully trap	120	No.	480.00
3	No.	29	Pro. & Fixing BOWL TYPE URINALS	1700	No.	5,100.00
8	No.	30	Pro. & fixing bib cocks	500	No.	4,000.00
8	No.	31	Pro. & Fixing CP brass flush cocks A 25 mm dia	500	No.	4,000.00
5000	Lt	32	Providing & fixing Overhead PVC tank	20000	Lt	20,000.00
375	m^2	33	(A) Providing and fixing 5 courses	347	m^2	1,30,125.0

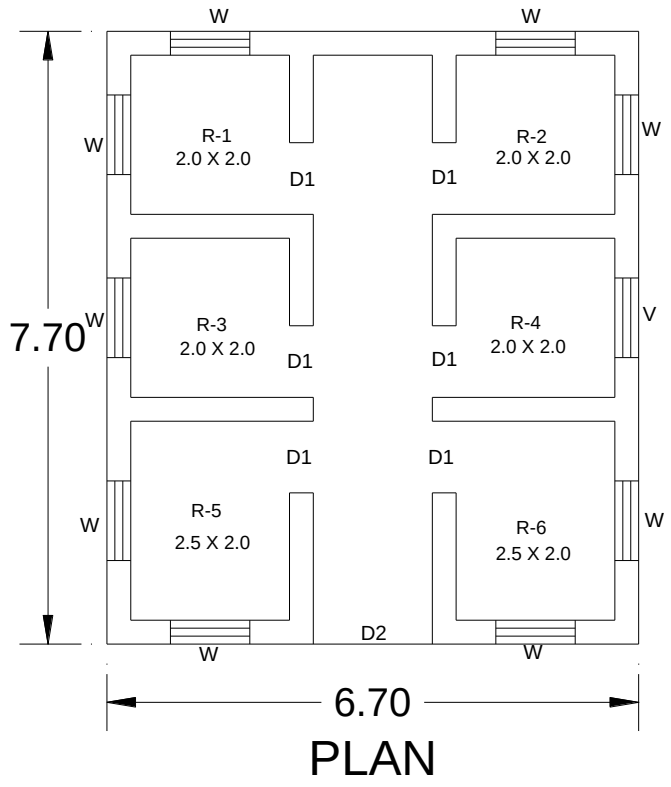
			water treatment with bitumen felt consisting of second and fourth course of bitumen and residual bitumen applied hot at 1.2 kg/sq.M of area for each course anf first course with fibre based bitumen saturated under lay type land third course with fibre based self finished felt type 2 grade 1 fifth and final course of stone grit 6mm and down size or pea size gravel spread at 0.008 cu.M per sq.M including preparation of surface excluding grading complete of ceiling area			
Electrification						
23	Pt.	34	Point wiring for Light Primary point with 2-1.5mm & earth wire of 1.5 Sq mm (green) both are os ISI marked 1.1 kv grade FRLS PVC insulated multistoried copper wires, in following type pipe to be erected concealed in / flushed on wall/ ceiling, complete with 6A Tissino Type ISI Marked flush type switch/ Bell push and accessories erected on Metal / PVC box covered with 3mm thick PC/ Acrylic sheet with necessary lamp holder/ ceiling rose/ HD connector as desired (A) with medium class Rigid PVC pipe and accessories	270	Pt.	6,210.00
12	No.	35	Providing the approved make fluorescent tube 120 cms. 36/40 watt erected cat-I	50.50	No.	606.00
3	No.	36	Providing the 15 watt CFL	185	No.	555.00
32	No.	37	Switches	67	No.	2,144.00
9	No.	38	Socket	80	No.	640.00

8	No.	38	Providing & erecting Approved make Ceiling Fan with double ball bearing ISI mark with Condenser 230 volt A.C.50 Hz 1200 mm sweep complete having 3 blades aluminium body and blade sets having ornamental design shanks , canopy & 30 cms. down rod erected with 24/0.2, 3 core flexible wire with earthing.	2400	No.	19,200.00
			TOTAL Estimated Cost			27,76,201.70

Sr. No.	Particulars	Amount
1.	Total cost of civil works	27,76,201.70
2.	Add 5% water supply and sanitary charges	1,38,810.09
3.	Add 5% contingency charges	1,38,810.09
4.	Add 2% work charge establishment	55,524.03
5.	Add 7% electrification	1,94,334.12
6.	Add 1.5% cent age charges	41,643.03
	Total	33,45,323.06
	Say	**33,45,350.00**

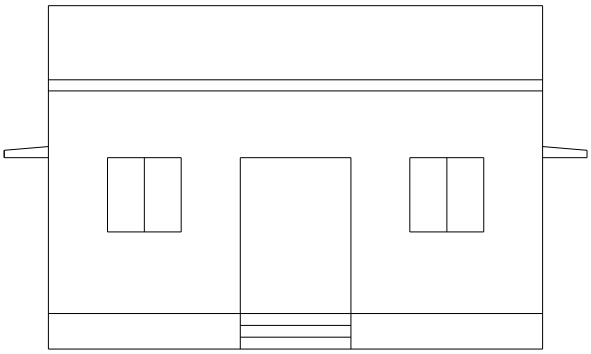
(Table 25: Abstract sheet of community Hall)

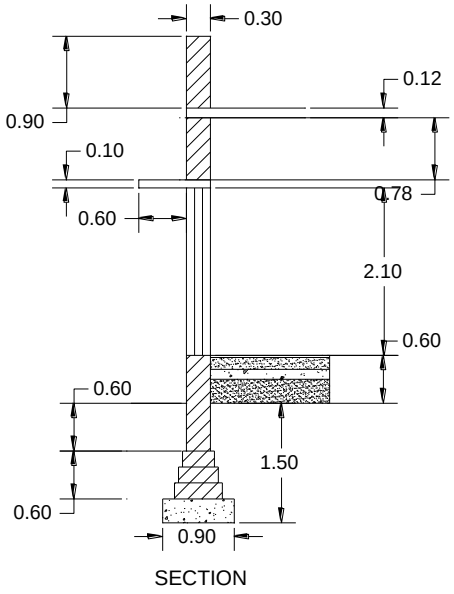
13.1.2 Post Office:



DOOR 1	0.9 X 2.1 M
DOOR 2	1.5 X 2.1 M
WINDOW	1M X 1M

ROOM 1	OFFICE
ROOM 2	WC
ROOM 3	POST MASTER
ROOM 4	TREASURY ROOM
ROOM 5	COUNTER
ROOM 6	WAITING





(Fig 38: Design of Post Office)

MEASUREMENT SHEET:

(Table 26: Measurement sheet of Post Office)

Item No.	Item Description	No	Length L M	Breadth B M	Height H m	Quantity
1.	Excavation for Foundation in Ordinary soil Total center line length = 55.2m No. of junction = 10 • L = 55.2 – ½*0.9*10 = 50.7m	1	50.7	0.9	1.10	50.193
2.	B.B.C.C for Foundation (1:4:8) for Foundation or PCC (1:4:8)	1	50.7	0.9	0.2	9.126
3.	Brick masonry up to plinth in C.M 1:6 First step: L = 55.2 – ½*0.5*10 = 52.7m	1	52.7	0.5	0.3	7.905
	Second step: L = 55.2 – ½*0.4*10 = 53.2m	1	53.2	0.4	0.3	6.384
	Third step: L = 55.2 – ½*0.3*10 = 53.7m	1	53.7	0.3	0.9	14.50
	Steps: First step Second step Third step	1 1 1	1.5 1.5 1.5	0.9 0.6 0.3	0.15 0.15 0.15	0.2025 0.135 0.0675
	For step L = Door = 1.5m				**Total**	**29.194**
4.	Brick masonry above plinth up to slab Level in C:M 1:6 L = 55.2 – ½*0.3*10 = 53.7m	1	53.7	0.3	3	48.33
	Deduction for Door and window Door D1 D2 Window	 6 1 10	 0.9 1.5 1	 0.3 0.3 0.3	 2.1 2.1 1	 3.402 0.945 3
	Deduction Net Quantity					**7.347** **40 Cum**

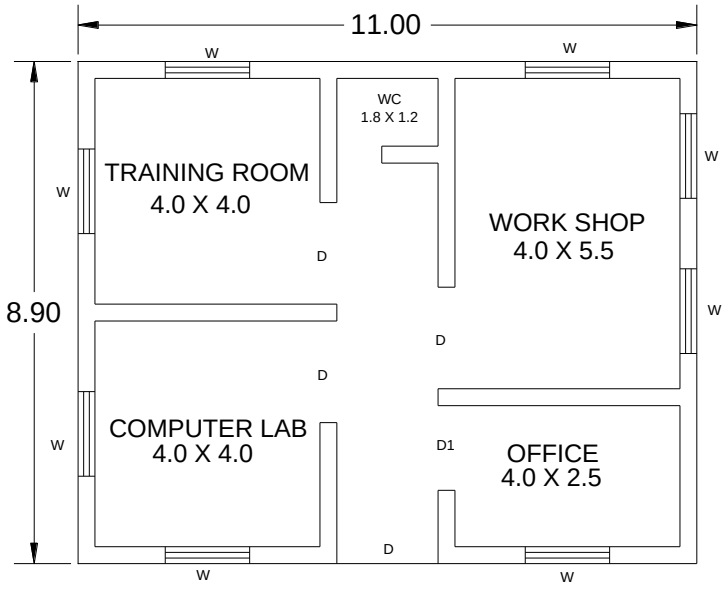
5.	Smooth Plaster inside the Room and Ceiling					
	Plaster of Walls:					
	Office Room	4	2	-	3	24
	Post master Room	4	2	-	3	24
	Treasury & strong room	4	2	-	3	24
	Delivery & shorting room	4	2	-	3	24
	Counter	4	2.5	-	3	30
	Waiting Room	4	2.5	-	3	30
	Ceiling					
	For Room 1 to 4	4	2	2	-	16
	For Room 5 to 6	2	2.5	2	-	10
					Total	**182**
	Deduction of Door & Window					
	Door					
	D1	3	0.9	-	2.1	5.67
	D2	0.5	1.5	-	2.1	1.575
	Window					
	W	5	1	-	1	5
					Total	**12.245**
					Net	**170**
6.	Earth filling in Plinth					
	H = 0.6-0.075-0.025-0.02 = 0.48					
	Room 1 to 4	4	2	2	0.48	7.68
	Room 5 to 6	2	2.5	2	0.48	4.8
						12.48
7.	2cm thick marble flooring					
	Room 1 to 4	4	2	2	-	16
	Room 5 to 6	2	2.5	2	-	10
						26
8.	R.C.C work for Chhajja, Lintel and Slab					
	Chajja	10	1.3	0.6	0.10	0.78
	Lintel	-	-	-	-	0.99
	Slab	1	7.7	6.7	0.15	7.74
						9.51
9.	Parapet wall					
	Long wall	2	7.7	0.3	0.9	4.16
	Short wall	2	6.7	0.3	0.9	3.61
						7.78
10.	Woodwork					
	D1	6	0.9		2.1	11.34
	D2	1	1.5		2.1	3.15
	W	10	1		1	10
						24.49

ABSTRACT SHEET:

No.	Item Description	Quantity	Rate	Per	Amount Rs.
1.	Excavation work for foundation	50.193	85	Cubic meter	4266
2.	Plain cement concrete(1:3:6)	9.126	3200	Cubic meter	29204
3.	Brick work in foundation(1:6)	29.194	3200	Cubic meter	93421
4.	Brick masonry in superstructure	40	3500	Cubic meter	140000
5.	Plaster work C:M 1:3	170	150	Square meter	25500
6.	R.C.C. work in slab, chajja and lintel	9.51	8800	Cubic meter	83688
7.	Earth filling in plinth level	12.48	50	Cubic meter	624
8.	Brick work for parapet wall	7.78	3500	Cubic meter	27230
9.	Wood Work for Door and Window	24.49	7800	Square meter	191022
10.	2cm thick Marble Flooring	26	500	Square meter	1300
Total construction cost					596255
10 % contractor profit					59625.5
5% other cost					29812.75
Overall cost					685694/-

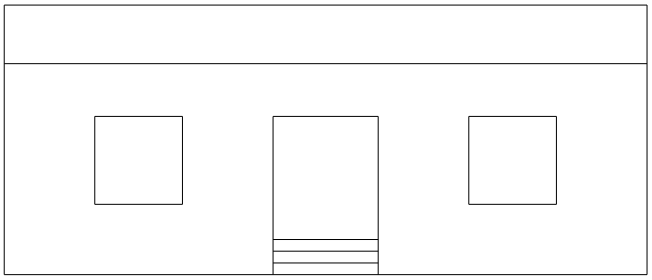
(Table 27: Abstract sheet of Post Office)

13.1.3 Skill Development Center

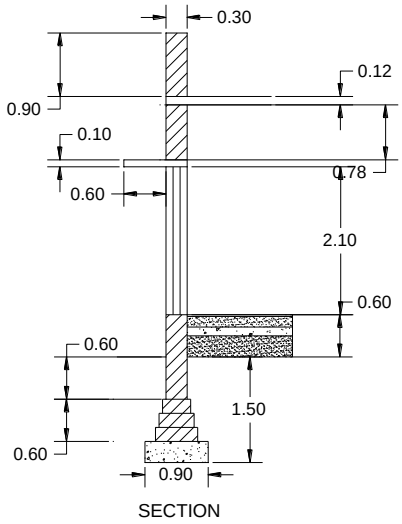


PLAN

DOOR	1.8 X 2.1 M
DOOR 1	1.5 X 2.1 M
WINDOW	1.5 X 1.5 M



ELEVATION



SECTION

(FIG 39: Design of Skill Development Center)

MEASUREMENT SHEET:

(Table 28: Measurement sheet of Skill Development Center)

Item No.	Item Description	No	Length L M	Breadth B M	Height H m	Quantity
1.	Excavation for Foundation in Ordinary soil Total center line length = 66.5m No. of junction = 7 L = 66.5 – ½*0.9*7 = 63.35m	1	63.35	0.9	1.10	62.717 cum
2.	B.B.C.C for Foundation (1:4:8) for Foundation or PCC (1:4:8)	1	63.35	0.9	0.2	11.403 cum
3.	Brick masonry up to plinth in C.M 1:6 First step: L = 66.5 – ½*0.5*7 = 64.75m	1	64.75	0.5	0.3	9.713
	Second step: L = 66.5 – ½*0.4*7 = 65.1m	1	65.1	0.4	0.3	7.812
	Third step: L = 66.5 – ½*0.3*7 = 65.45m	1	65.45	0.3	0.9	17.672
	Steps: First step Second step Third step	1 1 1	1.8 1.8 1.8	0.9 0.6 0.3	0.15 0.15 0.15	0.243 0.162 0.081
	For step L = Door = 1.8m				**Total**	**35.683 cum**
4.	Brick masonry above plinth up to slab Level in C:M 1:6 L = 66.5 – ½*0.3*7 = 65.45m	1	65.45	0.3	3	58.905
	Deduction for Door and window Door D1 D2 Window	 4 1 8	 1.8 1.5 1.5	 0.3 0.3 0.3	 2.1 2.1 1.5	 4.536 0.945 5.4
	Deduction					**10.881**
	Net Quantity				**Total**	**48.024 cum**

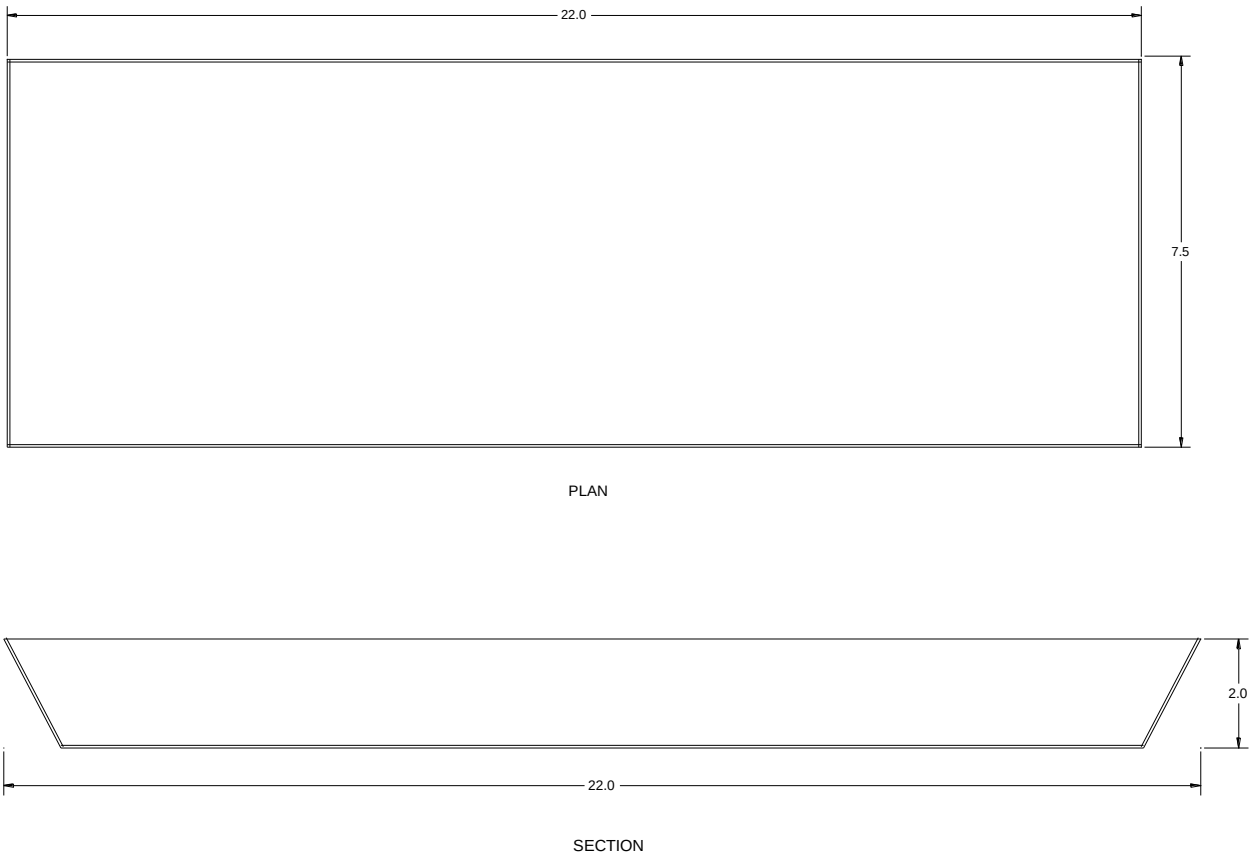
5.	Smooth Plaster inside the Room and Ceiling					
	Plaster of Walls:					
	Training Room	4	4	-	3	48
	Lab Room	4	4	-	3	48
	Workshop	2	4	-	3	24
		2	5.5	-	3	33
	Office	2	4	-	3	24
		2	2.5	-	3	15
	Lobby	1	1.8	-	3	5.4
	Ceiling	-	-	-	-	64
					Total	**275.8 sqm**
	Deduction of Door & Window					
	Door					
	D1	2	1.8	-	2.1	7.56
	D2	0.5	1.5	-	2.1	1.575
	Window					
	W	4	1.5	-	1.5	9
					Net	**257.665**
6.	Earth filling in Plinth					
	Room 1 & 2	2	4	4	0.48	15.36
	Room 3	1	4	5.5	0.48	10.56
	Room 4	1	4	2.5	0.48	4.8
						30.72 cum
7.	2cm thick marble flooring					
	Room 1 & 2	2	4	4	-	32
	Room 3	1	4	5.5	-	22
	Room 4	1	4	2.5	-	10
						64 sqm
8.	R.C.C work for Chhajja,Lintel and Slab					
	Chajja	8	1.8	0.6	0.10	0.864
	Lintel	-	-	-	-	0.648
	Slab	1	11	8.9	0.15	14.685
						16.197 cum
9.	Parapet wall					
	Long wall	2	11	0.3	0.9	5.94
	Short wall	2	8.9	0.3	0.9	4.806
						10.75 cum
10.	Woodwork					
	D1	4	1.8		2.1	15.12
	D2	1	1.5		2.1	3.15
	W	8	1.5		1.5	18
						36.27 sqm

ABSTRACT SHEET:

No.	Item Description	Quantity	Rate	Per	Amount Rs.
1.	Excavation work for foundation	62.717	85	Cubic meter	5331
2.	Plain cement concrete(1:3:6)	11.403	3200	Cubic meter	36490
3.	Brick work in foundation(1:6)	35.683	3200	Cubic meter	114186
4.	Brick masonry in superstructure	48.024	3500	Cubic meter	168084
5.	Plaster work C:M 1:3	257.665	150	Square meter	38650
6.	R.C.C. work in slab, chajja and lintel	16.197	8800	Cubic meter	142534
7.	Earth filling in plinth level	30.72	50	Cubic meter	1536
8.	Brick work for parapet wall	10.75	3500	Cubic meter	37611
9.	Wood Work for Door and Window	36.27	7800	Square meter	282906
10.	2cm thick Marble Flooring	64	500	Square meter	32000
Total Construction Cost					8,59,328
10% Contractor Profit					85932.8
5% Other Cost					42966.4
Overall Cost					988228/-

(Table 29: Abstract sheet of Skill Development Center)

13.1.4 Lake Recreation



(Fig 40: Design of Lake)

MEASUREMENT SHEET:

SR. NO.	Particular of work	No.	Length	Breadth	Height	Quantity
1	Excavation of Earthwork					
	Pond-1	1	5.8	20	2	232 cum
	Pond-2	1	6.8	20	2	272 cum
	Pond-3	1	7.5	22	2	330 cum
	Pond-4	1	7.5	22	2	330 cum

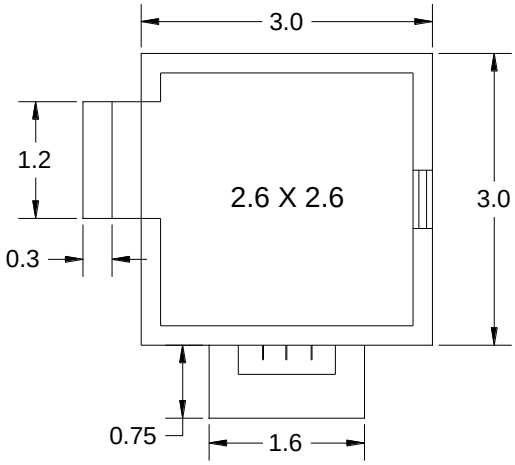
(Table 30: Measurement sheet of Lake)

ABSTRACT SHEET:

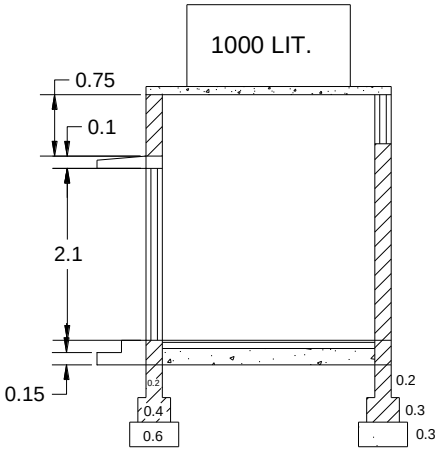
SR. NO.	Particular of work	Quantity	Unit	Rate	Cost
1	Excavation of Earthwork	1164	Cu. M	15/ m^3	23,280/-
2	Pump	4 Nos.	Nos.	9000 Nos.	36,000/-
3	Bar Screening	2 Nos.	Nos.	-	2500/-
4	Pipe (10cm@25ft)	6 Nos.	Nos.	100/ft.	15,000/-
Total Construction Cost					76,780/-
10% Contractor profit					7678/-
5% Other Charges					3839/-
Overall Cost					88,297/-

(Table 31: Abstract Sheet of Lake)

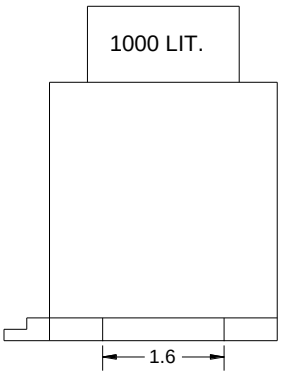
13.1.5 Public Drinking Water Tank



PLAN



SECTION



ELEVATION

(Fig 41: Design of Drinking Water Tank)

MEASUREMENT SHEET:

	Description of item	No	Length L (m)	Breadth B (m)	Height (m)	Qty.
1	Excavation for foundation					
	L= 2.6+0.2×4 L= 11.2	1	11.2	0.6	1	6.72 m3
2	P.C.C. in Foundation					
	(1 : 3 : 6)	1	11.2	0.6	0.3	2.01 m3
3	Brick work in Foundation					
	Step : 1					
	L= 11.2	1	11.2	0.4	0.3	1.34 m3
	Step : 2					
	L=11.2	1	11.2	0.4	0.4	0.89 m3
	Total Brickwork in Foundation					2.23 m3
4	Brick work in super structure					
	L= 11.2	1	11.2	0.2	3	6.72 m3
	Deduction					
	Door	1	1.2	0.2	2.1	0.50 m3
	Lintel	1	1.5	0.2	0.15	0.04 m3
	Total Brick work in Super Structure					6.18 m3

5	R.C.C. Slab	1	3	3	0.10	0.9 m3
6	R.C.C. Step					
	Step : 1	1	1.2	0.6	0.15	0.11 m3
	Step : 2	1	1.2	0.3	0.15	0.05 m3
7	R.C.C. Lintel	1	1.5	0.2	0.15	0.04 m3
	Total RCC Work					1.1 m3
8	Earth filling plinth Room					
	H= 0.30-0.075-0.025					
	H = 0.20	1	2.6	2.6	0.20	1.35 m3
9	Plaster work					
	1 : Outside plaster					
	L = 3	4	3	-	3	36 m2
	2: Inside plaster					
	L= 2.6	4	2.6	-	3	31.2 m2
	3: Ceiling plaster	1	2.6	2.6	-	6.67 m2
	4 : Steps plaster					
	Rise	2	1.2	-	0.15	0.36 m2
	Trade	2	1.2	-	0.30	0.72 m2
	5 : Side steps plaster					
	Step :1	2	0.6	-	0.15	1.8 m2
	Step : 2	2	0.3	-	0.15	0.9 m2

	6 : G.L to plinth plaster	1	11.6	-	0.30	3.34 m2
	Deduction Plaster					
	Door	1/2	1.2	2.1	-	2.52 m2
	Total Plaster Work					76.13 m2
10	Marble Flooring					
	Room	1	2.6	2.6	-	6.76 m2
11	Stag calculation					
	Side wall	1	2.9	0.10	0.30	0.08 m3
	Earth filling	1	1.4	0.75	0.20	0.21 m3
	Plaster work	1	2.9	-	0.30	0.87 m2
	Marble Flooring	1	1.6	0.75	-	1.2 m2

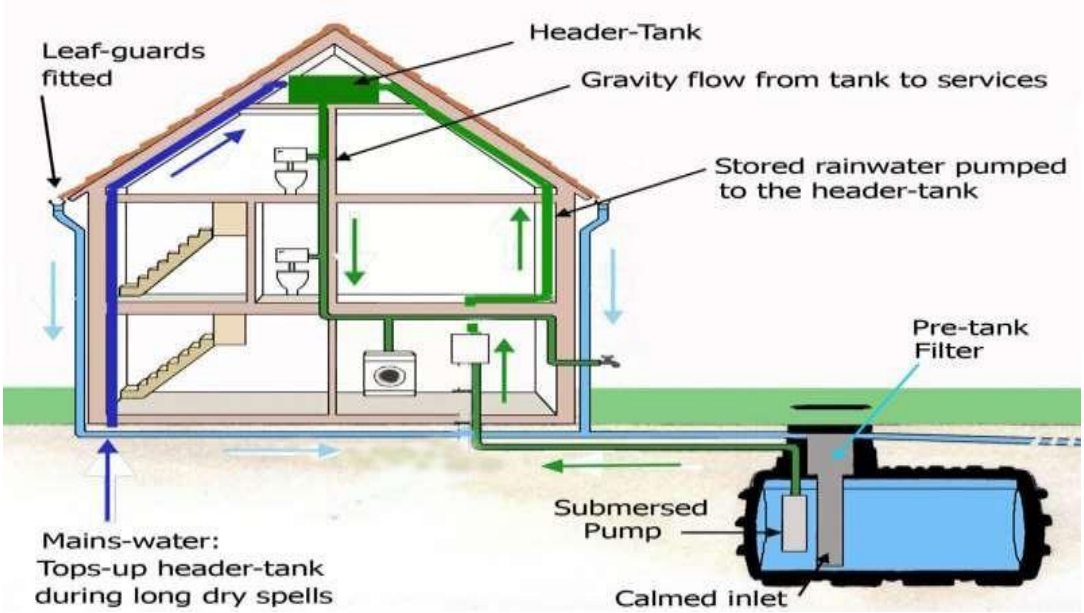
(Table 32: Measurement Sheet of Public drinking water tank)

ABSTRACT SHEET:

	Qty	unit	Description of item	Rate		Per	Estimated cost	
				Rs.	Ps.		Rs.	Ps.
1	6.72	m3	Excavation in foundation	85	00	m3	571	00
2	2.01	m3	P.C.C. Foundation	3200	00	m3	6432	00
3	2.23	m3	Brick work foundation	3200	00	m3	7136	00
4	6.18	m3	Brick work in super structure	3500	00	m3	21630	00
5	1.1	m3	R.C.C. work in slab , steps ,					
			And lintel	8800	00	m3	9680	00
6	7.96	m2	2 cm thick marble flooring	500	00	m2	3980	00
7	1.56	m3	Earth filling in plinth	50	00	m3	78	00
8	77.0	m2	Plaster	150	00	m2	11500	00
Total Cost							61007 /-	
10% Contractor Profit							6100 /-	
5% Other Charges							3050 /-	
Overall cost							70157 /-	

(Table 33: Abstract sheet of Public drinking water tank)

13.1.6 Rainwater Harvesting System:



(Fig 42: Rain water Harvesting System)

3D Model of Rain water Harvesting:

(Fig 43: 3D Model of Rain Water Harvesting)

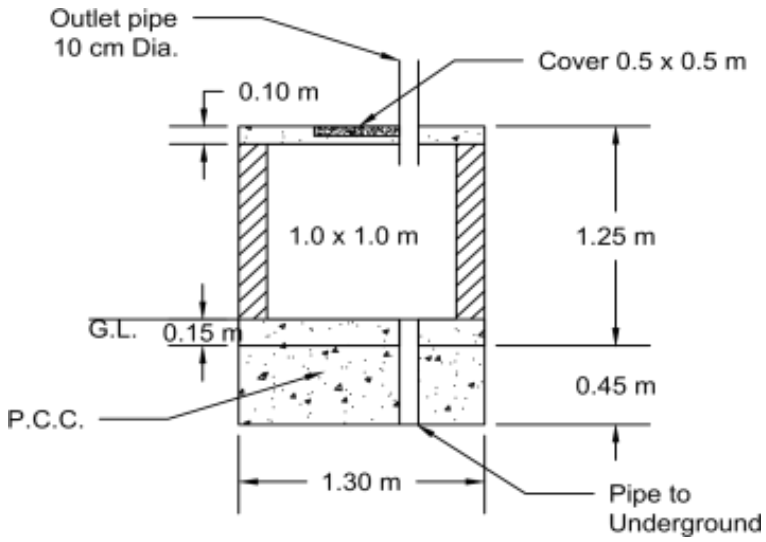
DESIGN CONCEPT OF RAIN WATER HARVESTING SYSTEM:

Calculation:

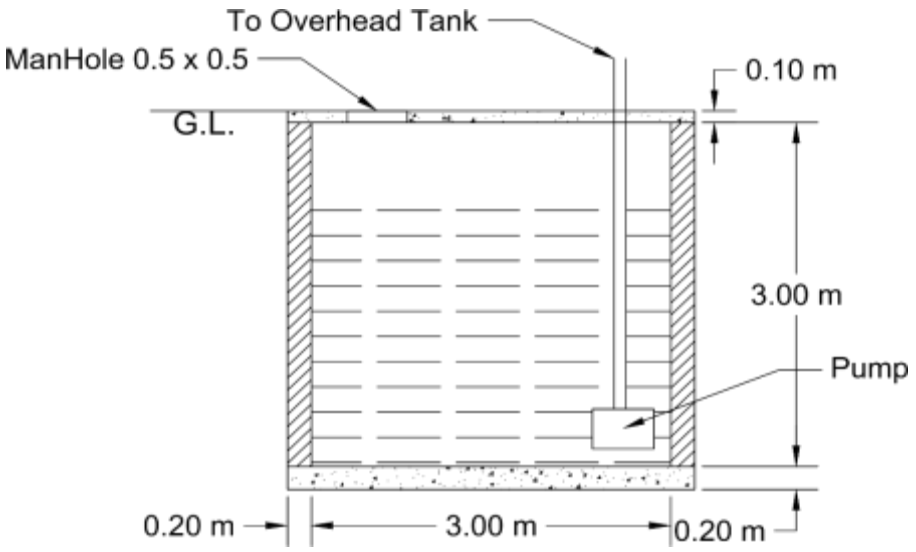
The construction of a Rain-Water Harvesting system is determined by several Critical technical factors:

- Availability of an area of at least 1 m2 near each house for constructing a storage tank
- Water consumption rate (number of users and types of uses) and storage capacityRequired
- Availability of other water sources, either ground water or surface water that can be used
- Availability of required, suitable local construction material and labour.

SIHOL village it is locate into petlad Taluka. Rainfall is fall down in to petlad is near about 819 mm in 2015. Based on rainfall data can be calculate the total quantity of collection water in any place, any structure into Sihol village. So follow the any structure in to this system based on given below example,



(Fig: Section Plan of Filter Tank)



(Fig: Section Plan of Underground Tank)

Underground water Tank and Filter Tank of Dimension:

Sr. No	Description	Width (m)	Length (m)	Height (m)
1	Filter Tank			
		1.3	1.3	1.25
2	Underground water Tank – 1			
		1.6	3.4	3.3
3	Underground water Tank – 1			
		1.3	1.3	1.25

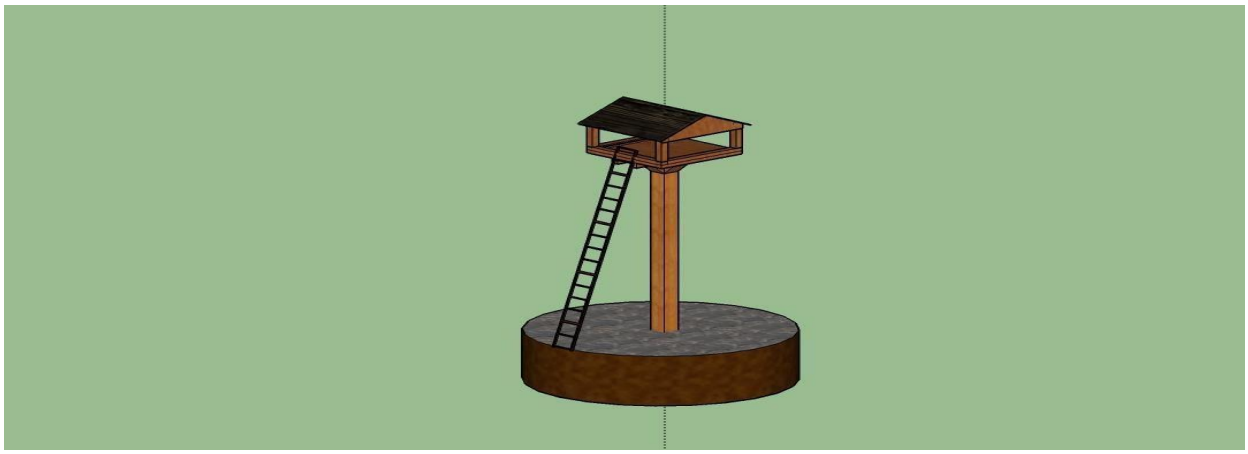
MEASUREMENT SHEET

Sr. No	Description	Nos.	L (m)	B (m)	H (m)	Volume (m^3)
1	Filter Tank					
			-	-	-	0
2	Underground water Tank – 1					
			3.4	1.6	3.3	17.952
3	Underground water Tank – 1					
			1.3	1.3	1.25	2.11
4	Filter Tank					
	Bottom Slab	1	1.3	1.3	0.15	0.25
	Side wall	4	1.3	1.3	0.15	1.01
	Top slab	1	1.3	1.3	0.1	0.16
5	Underground water Tank – 1					
	Bottom Slab	1	3.4	1.6	0.2	1.08
	Side wall	2	3.4	3	0.2	4.08
	Side wall	2	3.3	1.2	0.2	1.58
	Top slab	1	3.4	1.6	0.1	0.54
	Deduction					
	Opening Cover	3	0.5	0.5	0.1	-0.075
6	Underground water Tank – 1					
	Bottom slab	1	1.3	1.3	0.15	0.25
	Side wall	4	1.3	1.3	0.15	1.01
	Top slab	1	1.3	1.3	0.1	0.16
Total Quantity = 10.05						

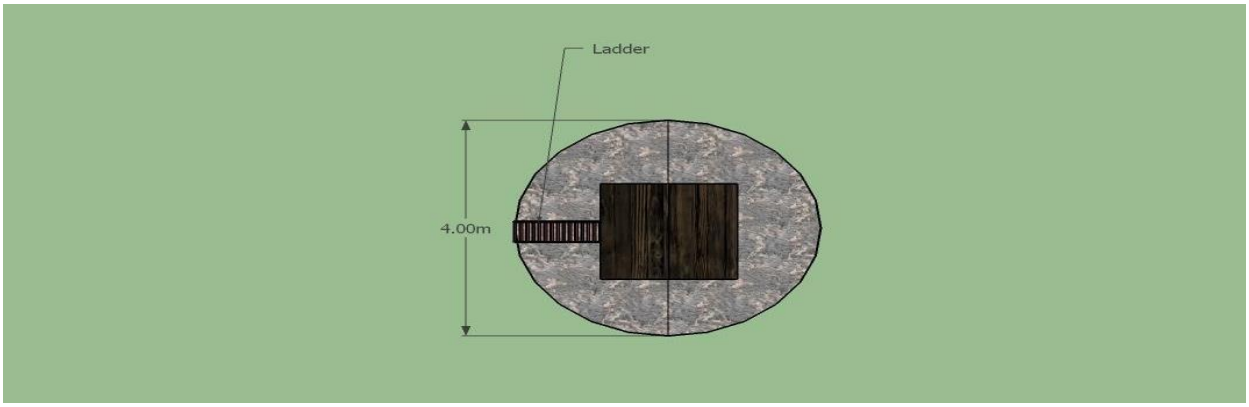
ABSTRACT SHEET:

Sr. No	Description	Unit	Rate Rs	Quantity	Amount Rs
1	Excavation in soils				
		Cum.	120	20.06	2407.2
2	Reinforced cement concrete (1:2:4) Including steel bars, Shuttering etc.				
		Cum.	5000	10.05	50250
3	PVC pipe - 100 mm diameter				
		m	180	11	1980
4	PVC roof cover				
		Sqm	7200	0.075	540
Amount Rs.55,177.20 10% contractor profit Rs.5517.72 **Total Amount Rs.60694.9**					

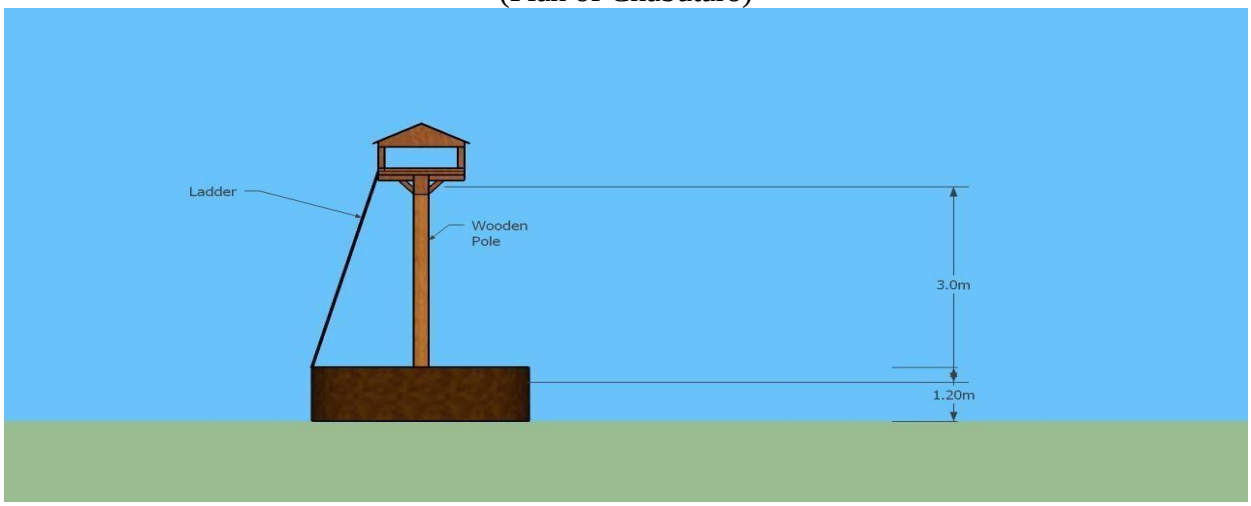
13.1.7 Heritage Design- Chabutaro



(3D Model of Chabutaro)



(Plan of Chabutaro)



(Elevation of Chabutaro)

(Fig 44: Design of Chabutaro)

MEASUREMENT SHEET:

SR.NO	DESCRIPTION	LENGH (L) M	WIDTH (B) M	HEIGHT (H) M	QUATITY
1	Brickwork				
	L=2πr=2π*1=6.28m	6.28	0.2	1	1.256 m3
2	Earth filling inside	A= πr^2=π(0.8)^2= 2 m2		1	2 m3
3	Top layer of BW	A= πr^2=π(1)^2=3.14 m2		0.2	0.63 m3
4	Wooden Pole	0.1	0.1	3	1 Nos.
5	Wooden Shelter	-	-	-	1 Nos.
6	Ladder	-	-	-	1 Nos.

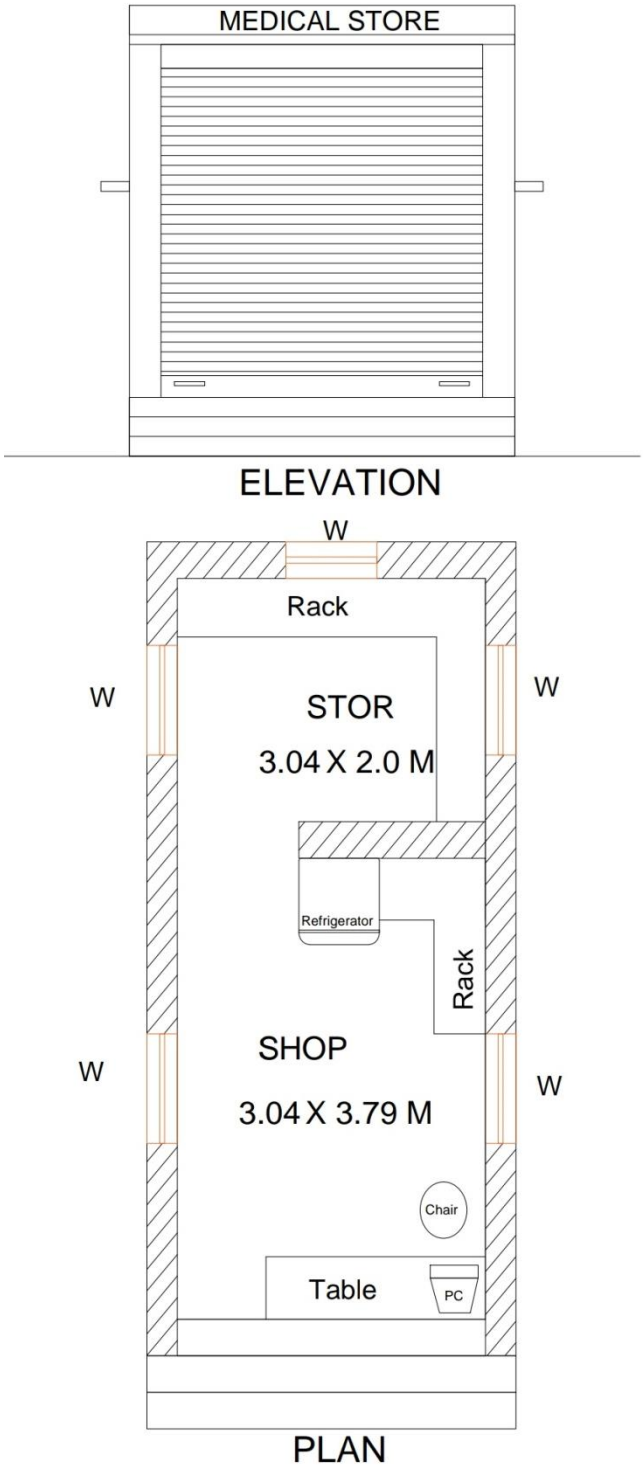
(Table 35: Measurement Sheet of Chabutaro)

ABSTRACT SHEET:

SR.NO	DESCRIPTION	QTY.	RATE	PER	AMOUNT
1	Brickwork	1.256	3500	m3	4396
2	Earth filling inside	2	85	m3	170
3	Top layer of BW	0.63	3500	m3	2205
4	Wooden Pole	1	4000	L.S.	4000
5	Wooden Shelter	1	1500	L.S.	1500
6	Ladder	1	2000	L.S.	2000
TOTAL CONSTRUCTION COST					**14271 /-**

(Table 36: Abstract Sheet of Chabutaro)

13.1.8 Medical Shop



(Fig : Medical Shop)

MEASUREMENT SHEET

Item NO.	Item description	Nos.	Length (m)	Width (m)	Height (m)	Quantity
1	Excavation for Foundation					
	Long Wall	2	6.24	0.80	1.4	13.98
	Short Wall	3	2.44	0.80	1.4	8.20
	Below Steps	1	3.64	0.6	0.2	0.44
						20.62 m3
2	P.C.C. in Foundation (1:4:8)					
	Long Wall	2	6.24	0.80	0.20	2.00
	Short Wall	3	2.44	0.80	0.20	1.17
	Below Steps	1	3.64	0.9	0.20	0.66
						3.83 m3
3	Brick Masonry in Foundation					
	Long Wall					
	Step – 1	2	6.14	0.5	0.40	2.46
	Step – 2	2	6.04	0.4	0.40	1.93
	Step – 3	2	5.94	0.3	0.75	2.67
	Short Wall					
	Step – 1	3	2.34	0.5	0.40	1.40
	Step – 2	3	2.24	0.4	0.40	1.08
	Step – 3	3	2.14	0.3	0.75	1.44
						3.92 m3
4	Brickwork in Super Structure					
	Long Wall	2	5.94	0.20	3.6	8.55
	Short Wall	3	2.14	0.20	3.6	4.62
	Parapet Wall					
	Long Wall	2	5.94	0.20	0.3	0.71

	Short Wall	2	2.14	0.20	0.3	0.26
						14.14 m3
	Deduction for Door and Window					
	D	1	1.1	0.2	2.1	1.85
	W	5	0.9	0.2	1.2	1.08
	Shutter	1	3.64	0.2	3.6	2.62
						5.55 m3
	Deduction for Lintel					
	D	1	1.1	0.2	0.15	0.033
	W	5	0.9	0.2	0.15	0.135
	Shutter	1	3.64	0.2	0.15	0.109
						0.277 m3
	Nate Quantity = 14.14 – 5.55 – 0.277 =8.31 m3					
5	Deduction for Door and Window					
	D	1	1.1	0.2	2.1	0.46
	W	5	0.9	0.2	1.2	1.08
	Shutter	1	3.64	0.2	3.6	2.62
						4.16 m3
	Deduction for Lintel					
	D	1	1.1	0.2	0.15	0.033
	W	5	0.9	0.2	0.15	0.135
	Shutter	1	3.64	0.2	0.15	0.109
						0.277 m3
6	Inside Plaster (1:4) 12mm thick					
	Store	2	3.04		3.6	21.89
		2	2.00		3.6	14.40
	Shop	1	3.04		3.6	10.94
		2	3.79		3.6	27.29
	Ceiling plaster					

	Store	1	3.04	2.00		6.08
	Shop	1	3.04	3.79		11.52
						Total quantity = 92.12 m2
	Deduction					
	D	1	1.1		2.1	2.31
	W	5	0.9		1.2	5.40
						Deduction = 7.71 m2
	Net Quantity=92.12 – 7.71 = 84.41 m2					

7	Outside plaster (1:6) 20mm thick					
	Long wall	2	6.09		4.6	56.03
	Short wall	2	3.04		4.6	27.97
						Total quantity = 84.00 m2
	Deduction					
	W	5	0.9		1.2	5.40
	Shutter	1	3.64		3.6	13.10
						Deduction = 18.50 m2
	Net Quantity=84.00 – 18.50 = 65.50 m2					

(Table 36: Measurement Sheet of Medical Shop)

ABSTRACT SHEET:

1. Earthwork in excavation up to 1.5m depth					
Nos.	Particular	Quantity/Number	Rate(Rs.)	Per	Amount(Rs.)
1.	Labour				
	Male Coolie	3	200	Day	600
	Female Coolie	3	180	Day	540
	Sundries				20
				Total cost Rs.1160	
2. Sand filling in foundation and plinth					
Nos.	Particular	Quantity/Number	Rate(Rs.)	Per	Amount(Rs.)
1.	Materials				
	Sand	8	800	m3	6400
	Sundries				20
				Material cost Rs.6420	
2.	Labour				
	Male coolie	2	200	Day	560
	Female coolie	1	180	Day	180
	Bhistie	0.5	200	Day	100
	Sundries				20
				Labour cost Rs.860 Total cost Rs.7280	
3. P.C.C. (1:4:8) in Foundation					
Nos.	Particular	Quantity/Number	Rate(Rs.)	Per	Amount(Rs.)

1.	Materials				
	Cement	8	280	Bag	2240
	Sand	1.18	800	m3	942
	Aggregate	2.36	1000	m3	2357
	Sundries				50
				Material cost Rs.5589	
2.	Labour				
	Mistry	0.5	400	Day	200
	Mason	0.5	300	Day	150
	Male coolie	3	200	Day	600
	Female coolie	4	180	Day	720
	Bhistie	1	200	Day	200
	Sundries				50
				Labour cost Rs.1920 Total cost Rs. 7509	

4. Brick masonry in foundation

Nos.	Particular	Quantity/Number	Rate(Rs.)	Per	Amount(Rs.)
1.	Materials				
	Brick (19cmx9cmx9cm)	1960	4	Nos.	78401
	Cement	5	280	Bag	1400
	Sand	1.11	800	m3	892

	Sundries				50
				Material cost Rs. 10182	
2.	Labour				
	Mason	0.25	300	Day	75
	Male coolie	2	200	Day	400
	Female coolie	3	180	Day	540
	Bhistie	1	200	Day	200
	Sundries				50
				Labour cost Rs.779 Total cost Rs.10961	
5. Brickwork in superstructure (1:6)					
Nos.	Particular	Quantity/Number	Rate(Rs.)	Per	Amount(Rs.)
1.	Materials				
	Brick (19cmx9cmx9cm)	4160	4	Nos.	16640
	Cement	11	280	m3	3080
	Sand	2.36	800	m3	1886
	Sundries			Day	50
				Material cost Rs. 21656	
2.	Labour				
	Mistry	0.5	400	Day	200
	Mason	6	300	Day	1800

	Male coolie	7	200	Day	1400
	Female coolie	4	180	Day	720
	Bhistie	1	200	Day	200
	Sundries				50
				Labour cost Rs. 4370 Total cost Rs. 26026	
6. 12 mm thick cement plaster in C.M. 1:4					
Nos.	Particular	Quantity/Number	Rate(Rs.)	Per	Amount(Rs.)
1.	Materials				
	Cement	8	280	Bag	2240
	Sand	1.2	800	m3	960
	Sundries				50
				Material cost Rs. 3250	
2.	Labour				
	Mistry	0.25	400	Day	100
	Mason	9	300	Day	2700
	Male coolie	10	200	Day	2000
	Female coolie	8	180	Day	1440
	Bhistie	1	200	Day	200
	Sundries				50
				Labour cost Rs. 6490 Total cost Rs. 9740	

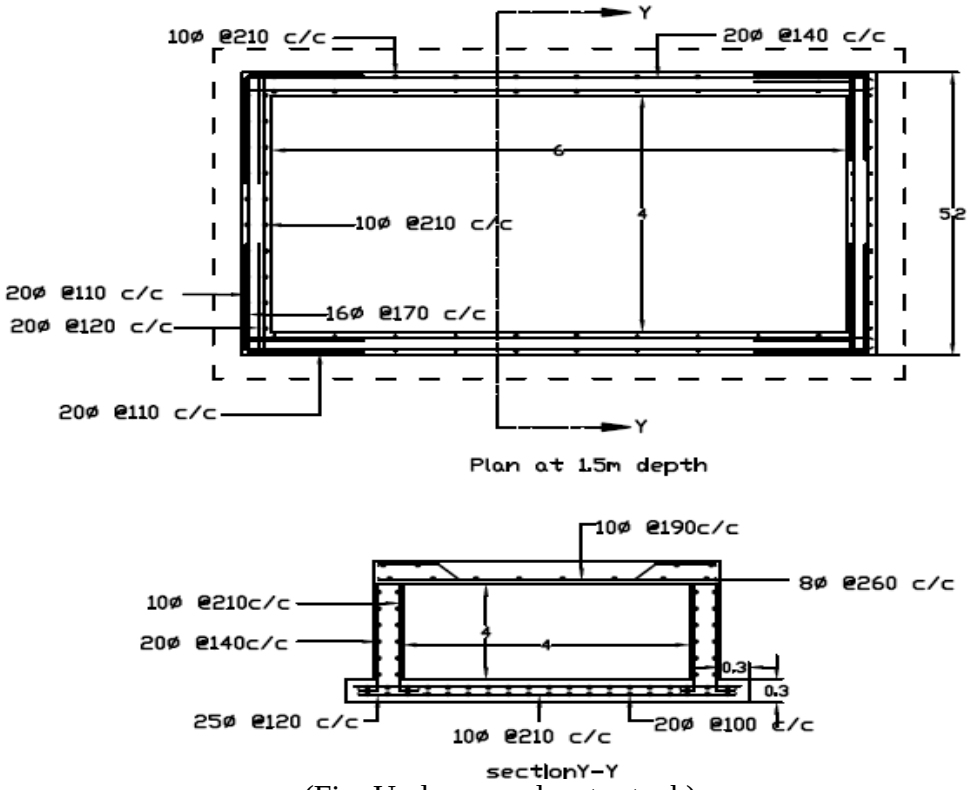
7. 20 mm thick plaster in C.M. 1:6					
Nos.	Particular	Quantity/Number	Rate(Rs.)	Per	Amount(Rs.)
1.	Materials				
	Cement	11	280	Bag	3080
	Sand	1.6	800	m3	1280
	Sundries				50
				Material cost Rs. 4410	
2.	Labour				
	Mistry	0.25	400	Day	100
	Mason	11	300	Day	3300
	Male coolie	10	200	Day	2000
	Female coolie	9	180	Day	1620
	Bhistie	1	200	Day	200
	Sundries				50
				Labour cost Rs. 7270 Total cost Rs. 11680	
8. R.C.C. work for slab and lintel (1:1.5:3)					
Nos.	Particular	Quantity/Number	Rate(Rs.)	Per	Amount(Rs.)
1.	Materials				
	Cement	12	280	Bag	3360
	Sand	0.67	800	m3	533
	Aggregate	1.33	1000	m3	1331

	Steel (1%)	192	45	Kg	8640
	Binding wire	2	50	Kg	100
	Sundries				50
				Material cost Rs. 14014	
2	Labour				
	Labour for mixing, Transporting and Placing concrete including curing	4.3	300	m3	1290
	Cost of hiring mixture and vibrator			L.S.	1000
	Labour for Bending Cutting and Placing reinforcement steel	192	5	Kg	975
	Labour for centring and shuttering			L.S.	3000
	Sundries				50
				Labour cost Rs. 6315 Total cost Rs. 20329	
Item					
	Shutter	1	2500	Nos.	2500
Total Cost Rs. 257185 1.5% Water Charge Rs. 3858 10% Contractor's Profit Rs. 25718 **Total Cost of Medical Store Rs. 2,86,761**					

(Table 37: Abstract Sheet of Medical shop)

13.1.9 Underground Water Tank:

Where space is limited, underground tanks can be placed under driveways or lawns. Water stored underground is safe from vandals and tampering, especially important where civil unrest may occur. Underground tanks are protected from fires and other natural disasters such as hurricanes.



(Fig: Underground water tank)

MEASUREMENT SHEET

SR. NO.	PARTICULAR OF WORK	NO.	LENGTH	BREADTH	HEIGHT	QUANTITY
1	EARTH WORK IN EXCAVATION	1	7.2	5.2	4.6	172.22
2	CONCRETE WORK IN WATER TANK	Inside volume=6x4x4=96m³ Net concrete volume=outside volume-inside volume Net concrete volume=172.22-96=76.23m³				
3	QUANTITY OF STEEL IN WATER TANK (ASSUME 2% STEEL)	76.23x0.02x7850=11968.11 kg				
4	MAN HOLE COVER (45x45CM)	2	-	-	-	2

(Table 38: Measurement sheet for Underground Water Tank)

ABSTRACT SHEET

SR. NO.	PARTICULAR OF WORK	QUANTITY	PER	RATE	COST
1	EARTH WORK IN EXCAVATION	172.22	M^3	200	14638.7 RS.
2	CONCRETE WORK IN WATER TANK	76.23	M^2	3500	2,66,805 RS.
3	QUANTITY OF STEEL IN WATER TANK	11968.11	KG	50	5,98,405.5RS.
4	MAN HOLE COVER	100	KG	80	8000 RS.
	TOTAL CONSTRUCTION COST				**8,87,849.2 RS**
	10% CONTRACTOR CHARGES				**88,784.92 RS**
	5 % EXTRA CHARGES LIKE PAINTERS, LABOUR CHARGES				**44,392.46 RS**
	OVERALL COST				**10,21,027 RS**

(Table 39: Abstract sheet for Underground Water Tank)

13.2 Recommendations of the Design

- Community hall is not available in village.
- Post office is available in village but the structure is old.
- Skill Development Center we observed that in our village the peoples relaxing and time pass place is not available in village so the lake front should be made in the village.
- Pond is not available in village.
- Public drinking water is only available in school so we have design it for village.
- There is no Rain Water Harvesting system available in village so we plan for Community Hall.
- There is no chabutro available in village so we have design it.

13.3 Suggestions/Benefits of the Design

1. Community hall:

- India is the vast land of many festivals and functions like diwali, dusshera, vasant panchami, ram navmi, eid-ul-fitr, guru nank jayanti, Christmas etc where people meet gather at one place called Community centre.

2. Post Office:

- In village, we observed that the sustainable infrastructure facilities like post office are not in Good Condition (Old Structure) in village.

3. Skill development Centre:

- To aware the farmers of village about research in agricultural field and explain them new methods of farming and irrigation and also aware them about new government schemes. Also skill development centre will have women empowerment

4. Lake Renovation:

- The village pond is a place of recreation and rainwater harvest & recharge structure.

5. Public Drinking Water:

- Public drinking water is helping the people and labours of village in summer conditions.

6. Rain Water Harvesting:

- In present scenario management and distribution of water has become centralized. People depend on government system, which has resulted in disruption of community participation in water management and collapse of traditional water harvesting system.

7. Chabutro:

- Chabutro is a structure mostly found in the village of Gujarat. It is use for feeding various birds.

14. Civil Technical Options with Case Studies:

14.1.1 Advanced Earthquake Resistant:

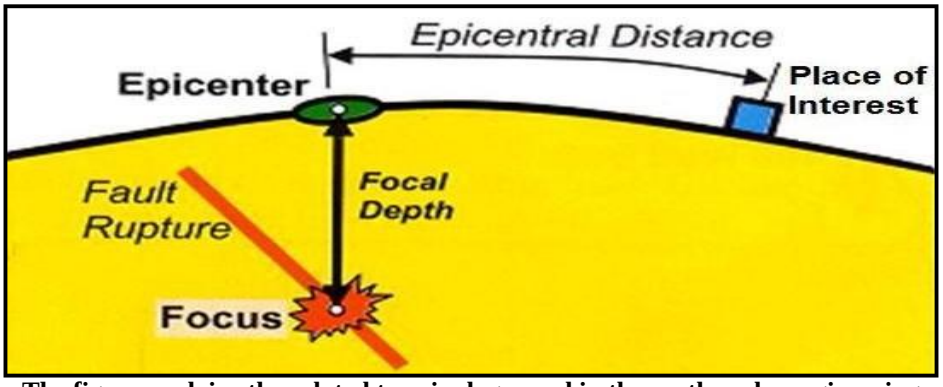
1. INTRODUCTION:

Disasters are unexpected events which have adversely affected humans since the dawn of our existence. In response to such events, there have been attempts to mitigate devastating effects of these disasters. Results of such attempts are very encouraging in developed countries but unfortunately and miserably poor in developing countries including ours. Earthquakes are one of the nature's greatest hazards on our planet which have taken heavy toll on human life and property since ancient times . The sudden and unexpected nature of the earthquake event makes it even worse on psychological level and shakes the moral of the people. Man looks upon the mother earth for safety and stability under his feet and when it itself trembles, the shock he receives is indeed unnerving. Mitigation of the devastating damage caused by earthquakes is of prime requirements in many parts of the world. Since earthquakes are so far unpreventable and unpredictable, the only option with us is to design and build the structures which are earthquake resistant. Accordingly attempts have been made in this direction all over the world. Results of such attempts are very encouraging in developed countries but miserably poor in developing countries including our country India. This is proved by minimal damage generally without any loss of life when moderate to severe earthquake strikes developed countries, where as even a moderate earthquake cause's wide spread devastation in developing countries as has been observed in recent earthquakes. It is not the earthquake which kills the people but it is the unsafe buildings which is responsible for the wide spread devastation. Keeping in view the huge loss of life and property in recent earthquakes, it has become a hot topic worldwide and lot of research is going on to understand the reasons of such failures and learning useful lessons to mitigate the repetition of such devastation. If buildings are built earthquake resistant at its first place (as is being done in developed countries like USA, Japan etc) the devastation caused by earthquakes will be mitigated most effectively. The professionals involved in the design/construction of such structures are structural/civil engineers, who are responsible for building earthquake resistant structures and keep the society at large in a safe environment.

UNDERSTANDING OF EARTHQUAKE AND BASIC TERMINOLOGY

Earthquake is defined as a sudden ground shaking caused by the release of huge stored strain energy at the interface of the tectonic plates

Epicenter:-It is the point on the free surface of the earth vertically above the place of origin of an earthquake.
Focus:-It is the point within the earth from where the seismic waves originate.
Focal Depth:-It is the vertical distance between the Focus and the epicenter.

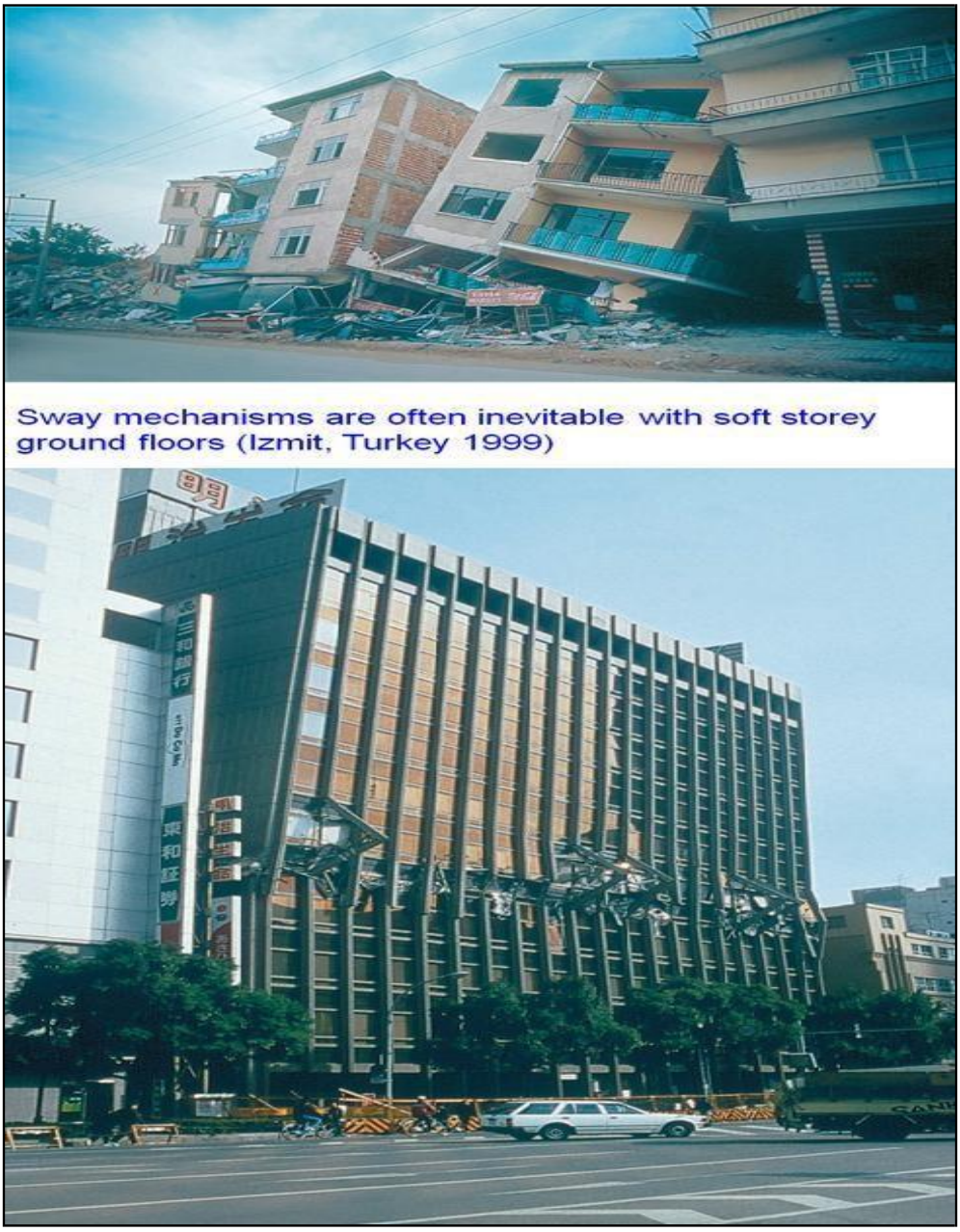


The figure explains the related terminology used in the earthquake engineering

Glimpses of some of the earthquake related failures

Collapsing a building

A total collapse of a

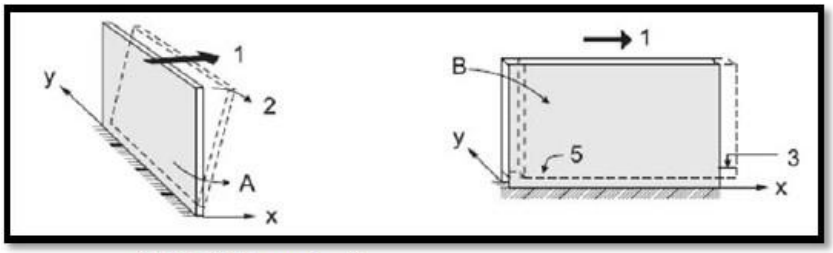


Soft Storey Failure

2. BEHAVIOUR OF MASONRY BUILDINGS TO GROUND MOTION

Ground vibrations during earthquakes cause inertia forces at locations of mass in the building. These forces travel through the roof and walls to the foundation. The main emphasis is on ensuring that these forces reach the ground without causing major damage or collapse. Of the three components of a masonry building (roof, wall and foundation) (Figure (a), the walls are most vulnerable to damage caused by horizontal forces due to earthquake. A wall topples down easily if pushed horizontally at the top in a direction perpendicular to its plane (termed weak

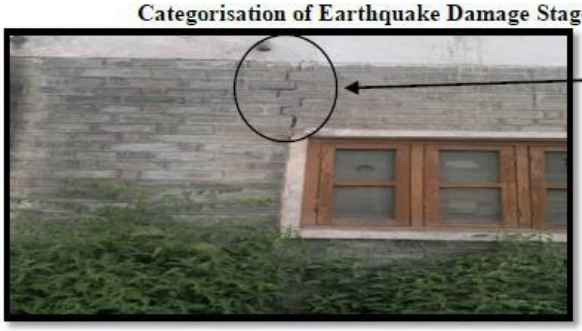
direction), but offers much greater resistance if pushed along its length (termed strong direction) [Figure (b)].



1 - Earthquake force
2 - Overturning
3 - Sliding

FIG. (a) Flexural wall **FIG. (b) Shear wall**

Categorisation of Earthquake Damage Stages In Load Bearing Masonry Walls



Diagonal crack from the corner opening.

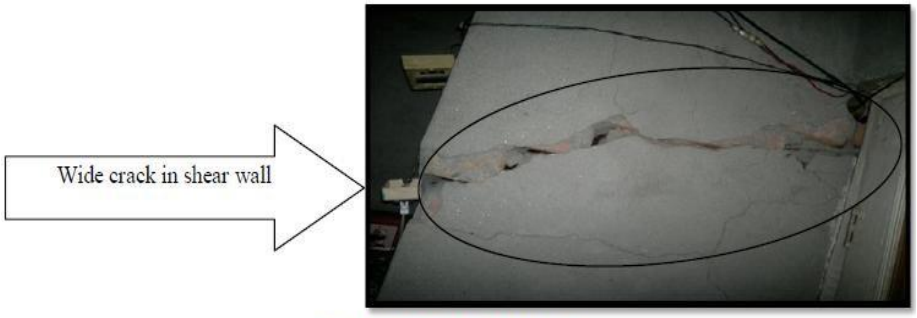
Stage I of Earthquake. damage

Stage I of Earthquake. Damage

Minor damage at the Roof base.

Crack more than 10mm.

Stage II of Earthquake. Damage



Stage II of Earthquake. Damage

Stage III of Earthquake. Damage

Stage III of Earthquake. Damage

Stage IV of Earthquake. Damage

3. ROLE & RESPONSIBILITIES OF CIVIL ENGINEERS

It is not the earthquake which kills the people but it is the unsafe buildings which is responsible for the devastation. Keeping in view the huge loss of life and property in recent earthquakes, it has become a hot topic and worldwide lot of research is going on to understand the reasons of such failures and learning useful lessons to mitigate the repetition of such devastation. If buildings are built earthquake resistant at its first place (as is being done in developed countries like USA, Japan etc) we will be most effectively mitigating the earthquake disasters. The professionals involved in the design and construction of such structures are civil engineers. Who are responsible for building earthquake resistant structures and keep the society at large in a safe environment? It is we the civil engineers who shoulder this responsibility for noble and social cause.

4. GUIDELINES FOR EARTHQUAKE RESISTANT CONSTRUCTION

In addition to the main earthquake design code 1893 the BIS(Bureau of Indian Standards)has published other relevant earthquake design codes for earthquake resistant construction Masonry structures (IS-13828 1993)

- Horizontal bands should be provided at plinth ,lintel and roof levels as per code
- Providing vertical reinforcement at important locations such as corners, internal and external wall junctions as per code.
- Grade of mortar should be as per codes specified for different earthquake zones.
- Irregular shapes should be avoided both in plan and vertical configuration.
- Quality assurance and proper workmanship must be ensured at all cost without any compromise. In RCC framed structures (IS-13920)
- In RCC framed structures the spacing of lateral ties should be kept closer as per the code
- The hook in the ties should be at 135 degree instead of 90 degree for better anchoragement.
- The arrangement of lateral ties in the columns should be as per code and must be continued through the joint as well.
- Whenever laps are to be provided, the lateral ties (stirrups for beams) should be at closer spacing as per code.

14.1.2 Seismic Retrofitting of Buildings

Introduction

- Earthquake creates great devastation in terms of life, money and failures of structures.
- Earthquake Mitigation is an important field of study from a long time now.
- Seismic Retrofitting is a collection mitigation techniques for Earthquake Engineering.
- It is of utmost importance for historic monuments, areas prone to severe earthquakes and tall or expensive structures.

Seismic Retrofitting

Definition

- It is the modification of existing structures to make them more resistant to seismic activity, ground motion, or soilfailure due to earthquakes.
- The retrofit techniques are also applicable for other natural hazards such as tropical cyclones, tornadoes, and severe winds from thunderstorms.

When is Seismic Retrofitting Needed?

The two circumstances are:-

- Earthquake damaged buildings, and
- Earthquake-vulnerable buildings(with no exposure to severe earthquakes)

Need of Retrofitting in Existing Earthquake Vulnerable Buildings

- Buildings have been designed according to a seismic code, but the code has been upgraded in later years;
- Buildings designed to meet the modern seismic codes, but deficiencies exist in the design and/or construction;
- Essential buildings must be strengthened like hospitals, historical monuments and architectural buildings;
- Important buildings whose services are assumed to be essential just after an earthquake like hospitals;
- Buildings, the use of which has changed through the years;
- Buildings that are expanded, renovated or rebuilt.

Basic Concept of Retrofitting

The aim is at (CEB1997):-

- ❖ Up gradation of lateral strength of the structure;
- ❖ Increase in the ductility of the structure
- ❖ Increase in strength and ductility

Earthquake Design Philosophy

- ➢ Under **minor but frequent shaking**, the **main members** of the building that carry vertical and horizontal forces **should not be damaged**; however building parts that do not carry load may sustain repairable damage;

- ➢ Under **moderate but occasional shaking**, the **main members** may sustain **repairable damage**, while the other parts of the building may be damaged such that they may even have to be replaced after the earthquake; and

- ➢ Under **strong but rare shaking**, the **main members** may sustain **severe** (even irreparable) **damage**, but the **building should not collapse**.

❖ Classification of Retrofitting Techniques

Retrofitting Techniques

Global –	**Local –**
1.Adding Shear Wall	1.Jacketting of Beams
2.Adding Infill Wall	2.Jacketting of Columns
3.Adding Bracing	3.Jacketting of Beam-Columns Joints
4.Adding Wing Wall	4.Strengthening of Individual Footings
5.Wall Thickning	
6.Mass Reduction	
7.Base Isolation	
8.Mass Dampers	

Some Conventional Approaches

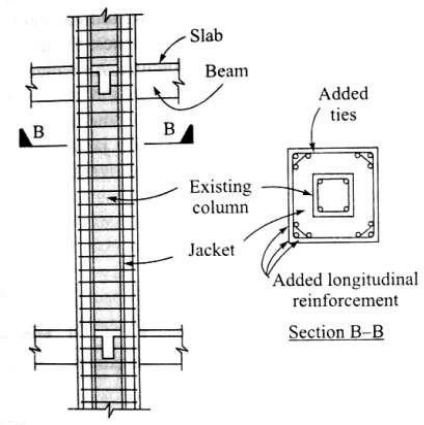
Adding New Shear Walls

- Frequently used for retrofitting of non ductile reinforced concrete frame buildings.
- The added elements can be either cast-in-place or precast concrete elements.
- New elements preferably be placed at the exterior of the building.
- Not preferred in the interior of the structure to avoid interior moldings.

Adding Steel Bracings

- An effective solution when large openings are required.
- Potential advantages for the following reasons:
  - higher strength and stiffness,
  - opening for natural light,
  - amount of work is less since foundation cost may be minimized
  - adds much less weight to the existing structure

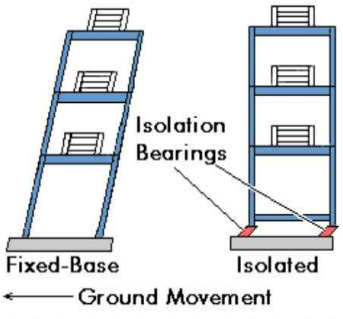
Jacketing (Local Retrofitting Technique)



- Most popular method for strengthening of building columns
  Types-1. Steel jacket,
  2. Reinforced Concrete jacket ,
  3.Fibre Reinforced Polymer Composite(FRPC) jacket

- Purpose for jacketing:
  - To increase concrete confinement
  - To increase shear strength
  - To increase flexural strength

Base Isolation (or Seismic Isolation)



- Isolation of superstructure from the foundation is known as base isolation.
- It is the most powerful tool for passive structural vibration control technique.

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

❖ **Modern Construction Technology**

- Modern Construction Technology is the process of preparing for and forming buildings and building systems.
- The process of building large structures with the minimum use of cost , time and environment.
- Construction starts with planning, design, and financing and continues until the structure is ready for occupancy.

❖ **Concrete walls and floors**

- Concrete walls is an eclectic category with options for everything like seat walls; decorative interior or exterior finishes; sound walls that abut a freeway; retaining walls to hold back the earth; to the very walls that comprise the exterior.
- Concrete has become the new flooring material of the latest technology.
- Whether it's acid-stained, painted, overlays, micro toppings, radiant floors, or a unique personal floor, concrete floors offer a range unlike any other material
- Concrete flooring, sometimes referred to as cement flooring.
- One of the major benefits of concrete floors is their affordability compared to other flooring options.
- Concrete flooring is ease of maintenance.
- When properly sealed concrete floors can be cleaned with a quick pass of a dust mop.

❖ **Precast cladding panels**

- Cladding is the application of one material over another to provide skin or layer intended to control the infiltration of weather elements, or for aesthetic purposes
- Cladding does not necessarily have to provide a waterproof condition but is instead a control element.
- This control element may only serve to safely direct

water or wind in order to control runoff and prevent infiltration into the building structure.

❖ **Precast flat panel system**

- Floor and wall units are produced off-site in a factory and erected on-site to form robust structures, ideal for all repetitive cellular projects.
- Panels can include services, windows, doors and finishes.
- Building envelope panels with factory fitted insulation and decorative cladding can also be used as load-bearing elements. (Fig: Precast Flat Panal)

❖ **Twin wall Technology**

- Twin wall construction is a walling system that combines the speed of erection and quality of precast concrete with the structural integrity of in-situ concrete to provide a hybrid solution.
- Twin wall is an adaptable wall system that provides the speed and quality of precast concrete with the structural and waterproof reliability .
- The prefabricated panels comprise two slabs separated and connected by cast-in lattice girders.
- The units are placed, temporarily propped, then joined by reinforcing and concreting the cavity on site.
- Twin wall is usually employed in association with precast flooring systems.

❖ **Thin Joint Masonry**

- Thin joint block work (thin joint masonry) is a fast, clean, accurate system for construction using autoclaved aerated concrete blocks of close dimensional tolerance with 2mm-3mm mortar joints.
- Thin layer mortar is a pre-mixed cement based product that only requires the addition of water to make an easily applied mortar.
- The benefits offered by thin layer mortars are provided by a system with many of the characteristics of traditional block work construction.
- This means that familiarity with the build process and flexibility are also inherent in the system.

(Fig 45: Thin Joint Masonary)

❖ **Insulating Concrete Formwork**

- Insulating Concrete Formwork (ICF) systems consist of twinwalled, expanded polystyrene panels or blocks that are quickly built up to create formwork for the walls of a building.
- This formwork is then filled with factory produced, quality assured, ready-mixed concrete to create a robust structure.
- The expanded polystyrene blocks remain to provide high levels of thermal insulation and the concrete core provides robustness and good levels of sound insulation.

(Fig 46:Insulating Concrete F.W)

Precast Concrete Foundation

- Precast concrete systems can be used to rapidly construct foundations.
- The elements are usually to a bespoke design and cast in a factory environment, giving assured quality for the finished product.
- The foundations are often supported by concrete piles and connected together.
- These systems improve productivity, especially in adverse weather conditions, and reduces the amount of excavation required – particularly advantageous when dealing with contaminated ground.

(Fig 47: Precast Concrete Foundation)

14.1.4 Engineering Aspects of Soil mechanics - Environmental Impact Assessment

❖ **Origin of Soils**

- Soils are formed by weathering of rocks due to mechanical disintegration or chemical decomposition.
- Exposed rocks are eroded and degraded by various physical and chemical processes.
- The products of erosion are picked up and transported to some other place by wind water etc.
- This shifting of material disturbs the equilibrium of forces on the earth and causes large scale movements and upheavals.

❖ **Types of Soils**

1. **Glacial soils**: formed by transportation and deposition of glaciers.

2. **Alluvial soils**: transported by running water and deposited along streams.

3. **Lacustrine soils**: formed by deposition in quiet lakes (e.g. soils in Taipei basin).

4. **Marine soils**: formed by deposition in the seas (Hong Kong).

5. **Aeolian soils**: transported and deposited by the wind (e.g. soils in the loess plateau, China).

6. **Colloidal soils**: formed by movement of soil from its original place by gravity, such as during landslide (*Hong Kong*).

❖ **Three Phases in Soils**

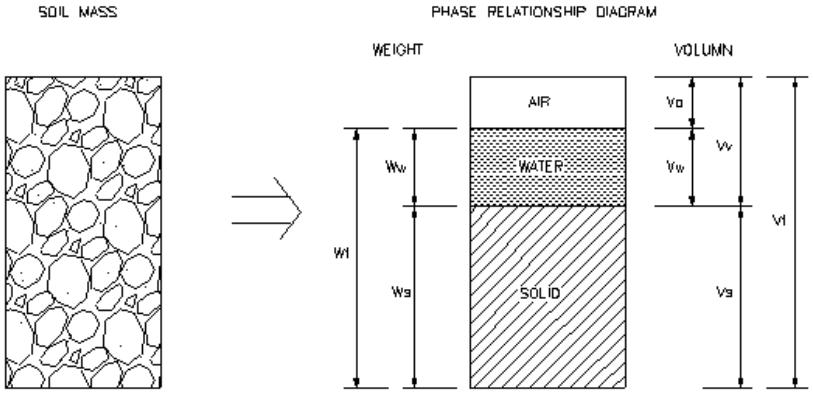
S : Solid Soil particle

W: Liquid Water (electrolytes)

A: Air Air

❖ **PHASE DIAGRAM**

- For purpose of study and analysis, it is convenient to represent the soil by a PHASE DIAGRAM, with part of the diagram representing the solid particles, part representing water or liquid, and another part air or other gas.



(Fig 48: Phase Diagram)

❖ **Relationships Between Various Physical Properties**

- All the weight- volume relationships needed in soil mechanics can be derived from appropriate combinations of six fundamental definitions.
- They are:

1. Void ratio
2. Porosity
3. Degree of saturation
4. Water content
5. Unit weight
6. Specific gravity

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

WASTE WATER

- Wastewater is any water that has been affected in quality. It can be described as contaminated water or “sick Water”.
- Wastewater can originate from homes, industrial and factory waste, commercial or farming activities, surface runoff or storm water.
- Surface run off can include anything from harmful substances that wash off from roads, parking lots or rooftops.
- Wastewater is harmful to human health if not treated properly after being disposed into the environment.

- Sewage is usually treated at a wastewater treatment plant.
- Wastewater begins from toilets, shower room, laundry room and kitchen sinks.
- Also, water used for washing and cleaning purposes such as for gardens, swimming pools, washing machine and storm water is included in wastewater but not specifically sewage water.

❖ **Wastewaters can be categorized as**

DOMESTIC WASTEWATER:

Used water discharged from the residential, commercial and industrial area of a city and collected though the sewage system.

INDUSTRIAL WASTEWATER:

Generated from medium to large scale industries manufacturing industries produce a large volume of wastewaters

(Fig 49: Waste Waters)

WASTEWATER MANAGEMENT

- Water is one of the most important natural resources that we have on Earth. Water is used for not only homes, but also for businesses, institutions and industries and many more.
- The increase in human population and boom in industry all over the world means the discharge of wastewater is also increasing at a rapid level
- Therefore the management of wastewater should be more sustainable and efficient.
- Effective wastewater management means to reduce the level of pollutants in wastewater before it is being discharged into the environment without harming human health or to the natural environment
- In rural settings, water is discharged naturally by the sun, vegetation and soils
- In urban settings water needs to be discharged by appropriate technology because of natures inability to handle large volumes of wastewater

❖ **Types of Wastewater collection**

There are two types:

Centralized System:

Centralized system is a large scale water collection system that collects water from many types of users for treatment at one or multiple sites.

Decentralized System:

Decentralized system is an on-site system which collects wastewater from individual users or small groups of users from neighborhoods or residential areas.

SUSTAINABILITY

- A sustainable approach gives many benefits to not only the environment but also improve food security, health and a country's economy as a whole
- A sustainable way to manage wastewater is to recycle and re-use water.
- For eg: waste water can be used over and over again for a cooling plant, also recycled wastewater can be used for construction and concrete mixing.

❖ PROCESS OF SUSTAINABLE WASTEWATER TREATMENT

Treatment system

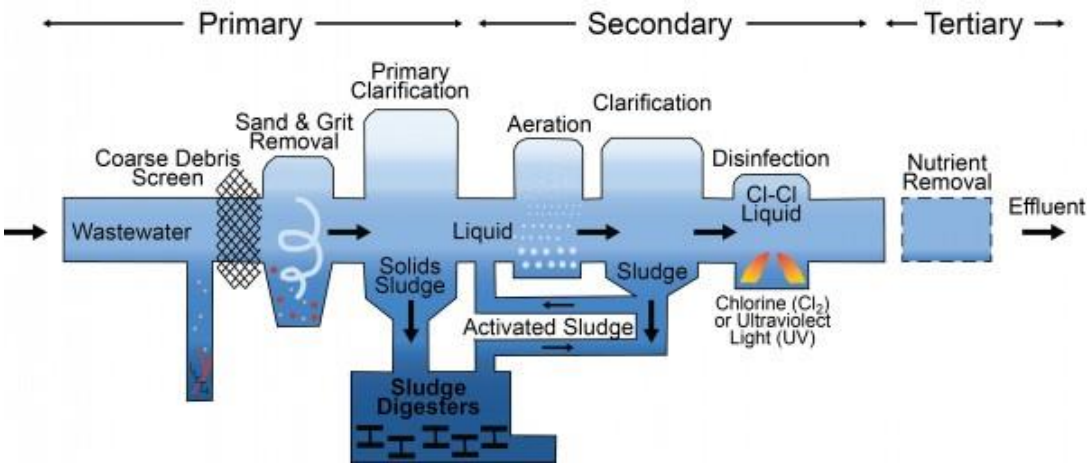
Normally, a wastewater treatment plant is designed for either,

• Preliminary Treatment System

• Primary Treatment System

• Secondary Treatment System

• Tertiary Treatment system



(Fig 50: Treatment System)

1. Preliminary Treatment System

• To remove any floating materials and large inorganic particulate matters

• This treatment is also known as pretreatment in common treatment system.

• **Approach channel:** Convey and dampen the flow of wastewater pumped to the treatment plant

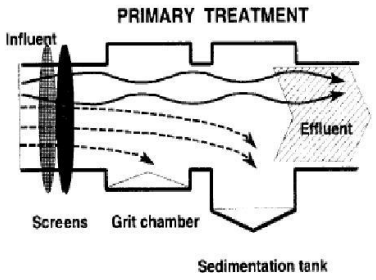
Screen chamber : Removes large size of floating materials

Grit chamber : To remove suspended settle able solid

Skimming tank : Remove excessive oil and grease

Sump and pump unit : Waste water is collected in a sump and pumped into higher level of treatment.

2. Primary Treatment System



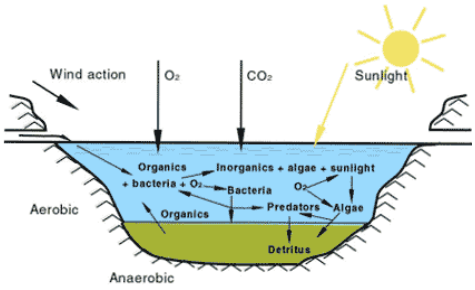
• Removes solid and organic material

• **Screen chamber** : Removes most of large floating material

Grit chamber : Separate most of heavy suspended solids

Primary sedimentation : Reduce 60%-70% of fine settle able suspended solids

3. Secondary treatment system



• Secondary treatment is also known as a **biological treatment** because biological process take place in this treatment

• By the use of microorganism, primary bacteria to covert biodegradable organic matter contained in wastewater

• The oxygen level in the wastewater will be changed in order to produce **aerobic and anaerobic** environment

• The common type used in our country is **oxidation pond.**

4. Tertiary treatment system

• Tertiary treatment is also known as an **advance treatment system**

• The main purpose in this treatment is to **reduce nitrogen** and **phosphates** which can cause **problems** when they get into water body by **enhancing the growth of algae blooms**

This treatment is provided when:

1. Quality of standard treated waste water (secondary) is inappropriate for final disposal requirement

2. The concentration of leftover organic material or suspended solids require further removal of specific reuse of wastewater

3. Concentration of nutrient is high for final disposal

15. Smart and/or Sustainable features of Chapter 8 & 13 designs, Impact on society.

SR.NO.	DESIGN NAME	PERIOD	AMOUNT EXPENDITURE	BENEFITS
1	Low Cost House	2 Months	5,62,396 Rs.	Provide For kutcha house holders and provide good living standard for villagers.
2	Bus Stop Stand	2 Months	1,34,837 Rs.	Easy for villagers Transportation
3	PHC	5-6 Months	3,99,400 Rs.	Near for villagers for their medical facility
4	Public Toilet	2 months	5,19,184 Rs.	-As a part of Swatch Bharat -Increase hygiene and reduce dirtiness.
5	Overhead Water Tank	7 Months	52,20,503 Rs.	To Provide daily water need of village.
6	Community Hall	1 Year	33,45,350 Rs.	Community halls are public locations where members of a community tend to gather for group activities, social support, public information, and other purposes.
7	Post Office	4 Months	6,85,694 Rs.	-Easy to excess post or courier. -No need to travel.
8	Skill Development Center	3 Months	9,88,228 Rs.	To Learn various courses for develop skills
9	Lake Recreation	4 Months	88,297 Rs.	To provide water for farmers for farming
10	Public Drinking Water Tank	2 Months	70,157 Rs.	Provide drinking water for villagers and labours
11	Rain Water Harvesting System	5 Months	60,694.9 Rs.	-Increase ground water level -Water can be used during scarcity ofwater.
12	Chabutaro	1 Months	14,271 Rs.	Provide feeding for Birds
13	Medical Shop	3 Months	2,86,761 Rs.	Provide for medicine facility
14	Underground Watertank	5 Months	10,21,027 Rs.	Provide for School Previous structure is damage

(Table 37: Sustainable features of Chapter 8 & 13 designs)

16. Survey By Interviewing With Talati 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	FARMING
2	What are the chances of employment in village?	NO	-
3	What are the special technical facilities in village?	NO	-
4	Is any debt on village dwellers?		
5	Are village people getting agricultural help?	YES	-
6	Is women health awareness Program organized in village?	YES	
7	Are women having opportunity to work and income?	NO	-
8	Child girl education is appreciated in village?	NO	-
9	Facility of vaccination to child is available in village?	NO	-
10	Are village people aware about child vaccination and done to each and every child as per norms?	YES	
11	Women help line number information is provided to village people?	YES	
12	Is water scarcity in village? How many days per year?	YES	
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	35. M-15, F-10
18	Is village improvement is observed in comparative scenario from past to present?	YES	
19	Is any unavoidable difficulty village people are facing? Any natural calamity is there?	NO	-
20	Life Living standard of girls and women is appreciated and uplifted in village?	YES	

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

Administration queries/ Difficulties:
GTU VY Section
Contact No – 079-23267588

તલાટી કમ મંત્રી
સિહોલ ગામ પંચાયત
તા. પેટલાદ. જી. આણંદ.

(Fig 51: Survey By Interviewing With Talati Or Sarpanch)

17. Irrigation / Agriculture Activites And Agro Industry, Altenate Technics And Solution

❖ What is Irrigation?

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

❖ Types of Irrigation:

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

- **Surface Irrigation**
  In this system, no irrigation pump is involved. Here, water is distributed across the land bygravity.
- **Localized Irrigation**
  In this system, water is applied to each plant through a network of pipes under low pressure.
- **Sprinkler Irrigation**
  Water is distributed from a central location by overhead high-pressure sprinklers or fromsprinklers from the moving platform.
- **Drip Irrigation**
  In this type, drops of water are delivered near the roots of the plants. This type of irrigation israrely used as it requires more maintenance.
- **Centre Pivot Irrigation**
  In this, the water is distributed by a sprinkler system moving in a circular pattern.
- **Sub Irrigation**
  Water is distributed through a system of pumping stations gates, ditches and canals by raisingthe water table.
- **Manual Irrigation**

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

❖ Methods of Irrigation:

1. Traditional Methods
2. Modern Methods
3. Sprinkler System
4. Drip System

1. Traditional Methods of Irrigation

- In this method, irrigation is done manually. Here, a farmer pulls out water from wells or canals by himself or using cattle and carries to farming fields. This method can vary in different regions.
- The main advantage of this method is that it is cheap. But its efficiency is poor because of the uneven distribution of water. Also, the chances of water loss are very high.
- Some examples of the traditional system are pulley system, lever system, chain pump.Among these, the pump system is the most common and used widely.

2. Modern Methods of Irrigation

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

3. Sprinkler system

- As its name suggests, sprinkles water over the crop and helps in an even distribution of water. This method is much advisable in areas facing water scarcity. Here a pump is connected to pipes which generate pressure and water is sprinkled throughnozzles of pipes.

4. Drip System

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

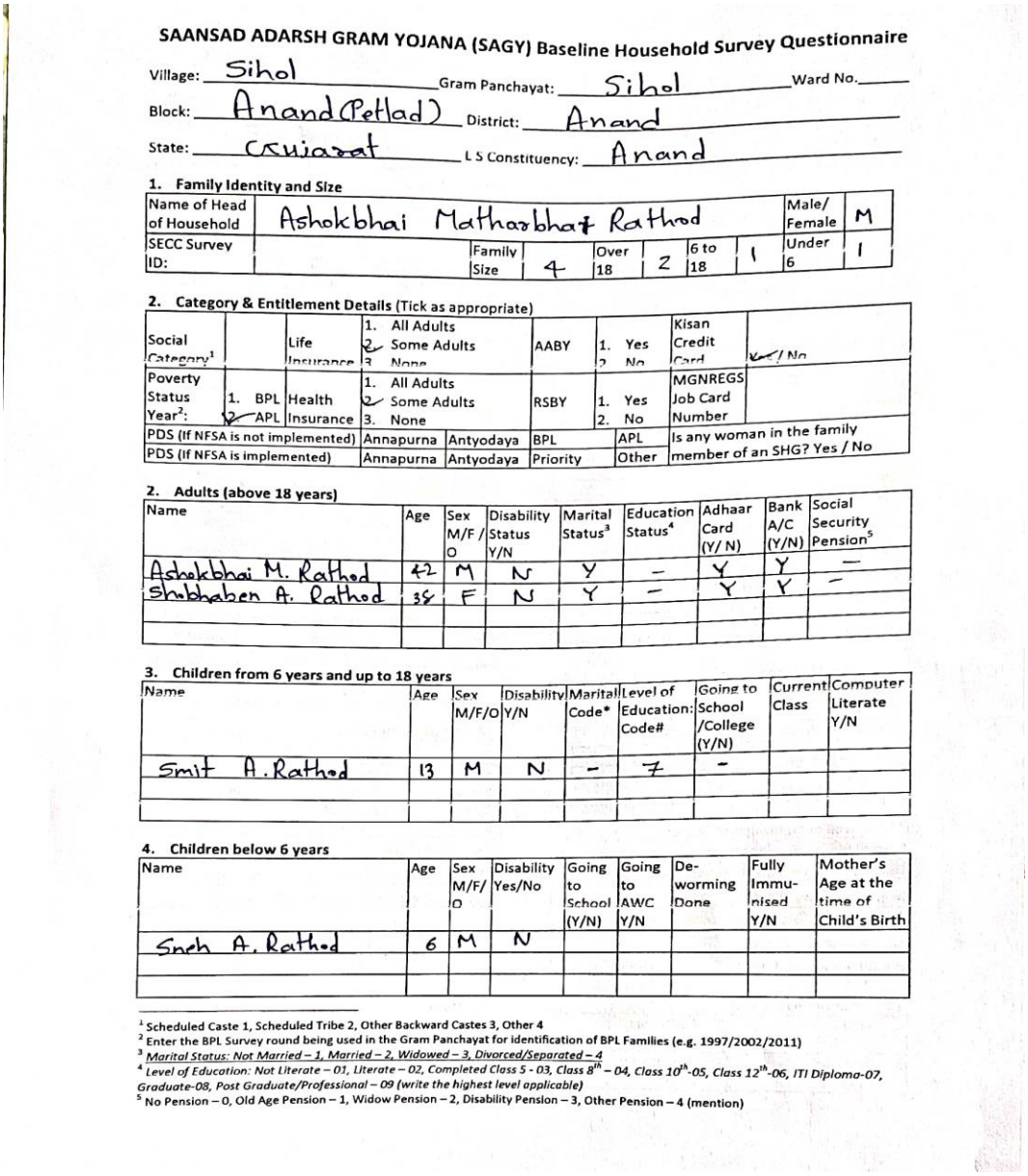
❖ Importance of Irrigation

- Insufficient and uncertain rainfall adversely affects agriculture. Droughts and famines are caused due to low rainfall. Irrigation helps to increase productivity even in low rainfall.
- The productivity on irrigated land is higher as compared to the un-irrigated land.
- Multiple cropping is not possible in India because the rainy season is specific in most of the regions. However, the climate supports cultivation throughout the year. Irrigation facilities make it possible to grow more than one crop in most of the areas of the country,
- Irrigation increases the availability of water supply, which in turn increases the income of thefarmers.
- Irrigation should be optimum because even over-irrigation can spoil the crop production. Excess water leads to water logging, hinder germination, increased salt concentration and uprooting because roots can't withstand standing water. Thus the proper method is to be used for the best cultivation.

18.Social Activities :Any Activates Planned By Students

- Trees contribute to their environment over long periods of time by providing oxygen, improving air quality, climate amelioration, conserving water, preserving soil, and supporting wildlife. Because trees remove carbon dioxide from the air as they grow, tree planting can be used as a geo engineering technique to remove.
- In our village we are planning for planting trees in village but unfortunately because of second covid-19 wave we can't fulfill it but we talk to sarpanch about our plan and she give a promise to us that they do a tree plantation program on some special day or any festival celebration day.

19. SAGY Questionnaire Survey form with the Sarpanch:



SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Sihol Gram Panchayat: Sihol Ward No.

Block: Anand (Petlad) District: Anand

State: Gujarat L S Constituency: Anand

1. Family Identity and Size

Name of Head of Household	Ashokbhai Matharbhai Rathod						Male/ Female	M
SECC Survey ID:		Family Size	4	Over 18	2	6 to 18	1	Under 6	1

2. Category & Entitlement Details (Tick as appropriate)

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

2. Adults (above 18 years)

Name	Age	Sex M/F / O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/ N)	Bank A/C (Y/N)	Social Security Pension[5]
Ashokbhai M. Rathod	42	M	N	Y	–	Y	Y	–
Shobhaben A. Rathod	38	F	N	Y	–	Y	Y	–

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
Smit A. Rathod	13	M	N	–	7	–		

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
Snch A. Rathod	6	M	N					

[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	—	—
Children	—	—

9. House & Homestead Data

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

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

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

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

13. Principal Occupations in the Household

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

14. Migration Status
Does any member of the household migrate for Work: Yes / No. If Yes Entire Year / Seasonal
Does anyone below 18 years migrate for work: Y/N

15. Agriculture Inputs

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

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

Name	Unit	Quantity

17. Livestock Numbers

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

18. What games do Children Play
Cricket, Marbals, Kabbdi, etc.

19. Do children play musical instrument (mention)

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: Sihol
b. Block: Petlad
c. District: Anand
d. State: Gujarat
e. Lok Sabha Constituency: Anand
f. Number of Wards in the Gram Panchayat: _____
g. Number of Villages in the Gram Panchayat: None
h. Names of Villages: Sihol

Demographic Information

Number of Households 1245 Total Population 6051 Male 3178 Female 2873

SC HHs_____ ST HHs_____ OBC HHs_____ Other HHs_____

I. Access to Infrastructure / Facilities / Services

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

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

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

IV. Sports Facilities in the Gram Panchavat

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

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 8

b. Number of villages without Angan Wadi Centres _____

Names of such villages: _____

c. Schools (Number)

Primary Private: ____ Primary Govt.: 6

Middle Private: ____ Middle Govt.: 1

Secondary Private: ____ Secondary Govt.: 1

Higher Secondary Private: ____ 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

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

VII. Coverage of Villages under different Facilities & Services

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

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	672	d.	Pasture / Grazing Land		g.	Check Dam	
b.	Irrigated Land		e.	Forests/ Plantations		h.	Wells/Bore Wells	
c.	Un-irrigated Land		f.	Other Common Land		i	Tanks /Ponds	

Sihol

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

3

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

IX. Parameters relating to Households & Institutions

		Number
a)	Number of eligible Households for pension (old age, widow, disability)	20 %
b)	Number of Households receiving pension (old age, widow, disability)	
c)	Number of eligible Households who are not receiving pension	
d)	Number of Households eligible for Ration Card	
e)	Number of eligible HHs having ration cards	90 %
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	
h)	Number of active Job Card holders under MGNREGA	
i)	Number of Job Card holders who completed 100 days of work during 2013-14	
j)	Number of shops selling alcohol	
k)	Number of BPL families	10 %
l)	Number of landless households	40 %
m)	Number of IAY beneficiaries	
n)	Number of FRA[2] beneficiaries	
o)	Number of Community Sanitary Complexes	
p)	Number of Households headed by single women	5-10%
q)	Number of Households headed by physically handicapped persons	—
r)	Total number of Persons with Disability in the village	
s)	Number of SHGs	5 %
t)	Number of active SHGs	
u)	Number of SHG Federations	
v)	Number of Youth Clubs	
w)	Number of Bharat Nirman Volunteers	

Name and Signature of Surveyor and Respondent'

Bhumit Bhumit Patel Surveyor	તલાટી કમ મંત્રી સિહોલ ગામ પંચાયત તા. પેટલાદ. જી. આણંદ. PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey

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

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: Sihol
b. Ward Number: _____
c. Gram Panchayat: Sihol
d. Block: Petlad
e. District: Anand
f. State: Gujarat
g. Lok Sabha Constituency: Anand
h. Number of Habitations / Hamlets in the Gram Panchayat: _____

i. Names of Habitations / Hamlets:

Demographic Information

Number of Households 1245 Total Population 6051 Male 3178 Female 2873

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

II. Access to Infrastructure/Amenities etc.

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
a.	Nearest Primary School	Y	in village
b.	Nearest Middle School	Y	〃
c.	Nearest Secondary School		
d.	Kisan Seva Kendra	Y	〃
e.	Milk Cooperative /Collection Centre	Y	〃
g.	Health Sub Centre	N	
h.	Bank	Y	in village
i.	ATM	Y	〃
j.	Bus Stop	N	
k.	Railway Station	Y	5-10 km away from village

[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	Y	in village
m	Common Service Centre	N	
n	Veterinary Care Centre	N	

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

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

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

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

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

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

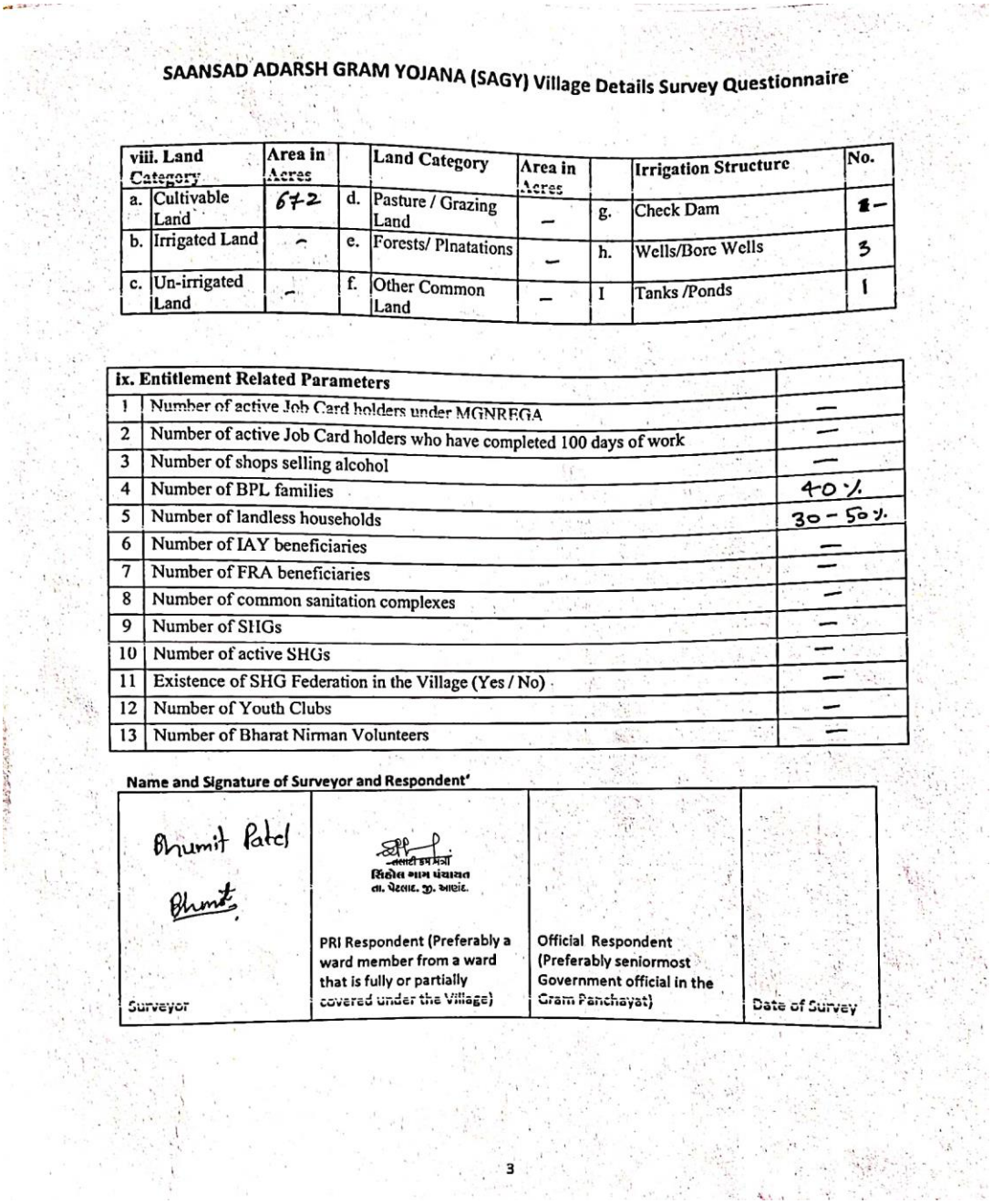
v. Coverage of Habitations under Electrification
a. Coverage under Household Connections: (*1-All 2-None 3-Some*)
If 3 mention the name of the habitations not covered: 1

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): 3
b.Mini Stadium : N Yes(Y) /No (N)

vii. Education, ICDS
a. Number of Anganwadi Centres: 5
c. Schools (Number)
Primary Private: ____ Primary Govt.: 6
Middle Private: ____ Middle Govt.: 1
Secondary Private: ____ Secondary Govt.: 1
Higher Secondary Private: ____ Higher Secondary Govt: 1

2



SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

viii. Land Category		Area in Acres		Land Category	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	672	d.	Pasture / Grazing Land	–	g.	Check Dam	1 –
b.	Irrigated Land	–	e.	Forests/ Plnatations	–	h.	Wells/Bore Wells	3
c.	Un-irrigated Land	–	f.	Other Common Land	–	I	Tanks /Ponds	1

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	–
2	Number of active Job Card holders who have completed 100 days of work	–
3	Number of shops selling alcohol	–
4	Number of BPL families	40 %
5	Number of landless households	30 – 50 %
6	Number of IAY beneficiaries	–
7	Number of FRA beneficiaries	–
8	Number of common sanitation complexes	–
9	Number of SHGs	–
10	Number of active SHGs	–
11	Existence of SHG Federation in the Village (Yes / No)	–
12	Number of Youth Clubs	–
13	Number of Bharat Nirman Volunteers	–

Name and Signature of Surveyor and Respondent'

Bhumit Patel Bhumit	સિહોલ ગ્રામ પંચાયત તા. પેટલાદ. જી. આણંદ.		
Surveyor	PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey

3

(Fig 52: SAGY village details survey questionnaire)

20. TDO-DDO-COLLECTOR Email sending Softcopy:

5/20/2021 A.D.Patel Institute of Technology Mail - Respected Sir/Madamwe are the students of A D PATEL INSTITUTE OF TECHNOLOGY ,KARA...

18-10 BHUMIT PATEL <18ce.bhumitpatel@adit.ac.in>

Respected Sir/Madamwe are the students of A D PATEL INSTITUTE OF TECHNOLOGY ,KARAMSAD, ANAND. Affiliated to Gujarat Technological University(GTU). GTU has been assigned to VISHWAKARMA YOJANA PHASE-8 in which students survey village facilities and design various amenities to deliver it to them ideal for living better life as per requirements and village problem statements. As part of VISHWAKARMA YOJANA guidelines. We have been asked to inform all the respected officers about the project in which we will shortly notify about work for SIHOL VILLAGE with its benefits and estimated cost which is as below.

1 message

18-10 BHUMIT PATEL <18ce.bhumitpatel@adit.ac.in> Thu, May 20, 2021 at 12:22 PM
To: ddo-and@gujarat.gov.in, tdo-petlad@gujarat.gov.in, collector-and@gujarat.gov.in

VISHWARKARMA YOJANA DEVELOPMENT SCENERIO OF SIHOL VILLAGE.pdf
19K

https://mail.google.com/mail/u/0?ik=f1a6229b06&view=pt&search=all&permthid=thread-a%3Ar-7803316633279207379&simpl=msg-a%3Ar-18938950... 1/1

SIHOL VILLAGE DOCUMENTARY FILM VIDEO LINK

https://youtu.be/ruVzQb8FJh4