DETAIL PROJECT REPORT

VISHWAKARMA YOJANA PHASE – VIII

AN APPROACH TOWARDS RURBANISATION

TALANGPUR, Village
SURAT, District

PREPARED BY

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(LECTURER)
NODAL OFFICER

Year: 2020-21

Gujarat Technological University,
Chandkheda,Ahmedabad– 382424 Gujarat

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CERTIFICATE

This is certify to that the following students of Diploma Engineering successfully submitted **Detail Project Report for,**

VILLAGE - TALANGPUR
DISTRICT- SURAT

Under

Vishwakarma Yojana: phase – VIII

in partial fulfillment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA
During the academic year 2020-21.

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

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College Stamp :	

ABSTRACT

About 70% of India's population, or 750 million, live its 600,000 villages. The average village has 200-250 households, and occupies an area of 5 sq.km. Most of this is farmland, and it is typical to find all the house in one or two clusters. Villages are thus spread out in all directions from the market towns. the government of Gujarat has Launched Vishwakarma Yojana (Scheme) for Development of villages (rural area) by identifying the requirements of Village. Under this Scheme, the Villages are surveyed and this problem was identified and selected for implementation for this project we have opportunity to survey village & defined problems & give solution for better village or smart village.

"developing village with a 'rural soul' but with all urban amenities that city have"

We have selected Talangpur Village in Surat district for development.Talangpur population is around 18000& very fast growing with various facilities. so, we have decided to took Talangpur village as developing village or allocated village to provide smart facilities for growth of village.

Village is very fast developing from other villages but some factors like, land pollution, Flooding during Monsoon while heavy rain coming and also people awareness so these problems are major problem in Talangpur.

For the design purpose of the village we decided some smart facilities and other basic amenities like Smart Street Lights, Solid waste management, smart design for recreational park, smart digital board for proper guidance, CCTV camera for whole village & drinking water, drainage etc. if village's people will get proper awareness and guidance so village's future is very bright and also contribute for smart village and other things.

Further future scope purpose is reduce migration due to lack of basic facilities and other activities.

Key words: development, problem, awareness, facilities, rural

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1.1 BACKGROUND AND STUDY AREA LOCATION:

Ideal village is a concept adopted by national, state and local governments of India, as an focused on holistic rural development, derived from Mahatma Gandhi's vision of Adarsh Gram (ideal village). It is very unfortunate that villages which have so many things to offer are still very backward. Poverty, lack of education and lack of even the basic needs are washing away the charm, of the villages.

We selected Bhatha as Ideal Village. Bhatha is 3 km from Pal RTO Towards Hazira. People coming from Surat Railway Station can reach Bhatha via AdajanPatia Or Gujarat Gas circle by rickshaw or bus. The village is on the bank of the river Tapi.

Fig.1.1.1 Bhatha village Image

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.

1.2.1 OBJECTIVES

- To Provide better employment like Trade Centre, Skill development Centre, etc.
- To provide basic physical facilities- water supply, drainage, Road, transport facilities, solid waste management, sewage treatment should be provided.
- To provide social infrastructure like education, health facilities, etc.
- Reduce migration from rural to urban areas due to lack of basic facilities and services or economic activities in rural areas.
- Electricity connection like street lightning that is energy efficient and eco friendly and also for CCTV cameras and smart communication.
- Identification of sanitation facilities that need improvement for better working.
- To provide smart facilities and improvement technologies.
- To promote development of rural areas with provision of quality house & better connectivity

1.2.2 EXAMPLE / LIVE CASE STUDIES OF ANY OTHER IDEAL VILLAGE OF INDIA/ GUJARAT

1.Punsari (Gujarat): Punsari, located in Gujarat, barely 100 km from Ahmedabad, Closed-circuit cameras, water purifying plants, biogas plants, air conditioned schools, Wi-Fi, biometric machines – the village has it all. And all of it was done in a matter of eight years, at a cost of 16 crore. The man behind the transformation is its young tech savvy sarpanch 33 years old Himanshu Patel who proudly states that his villages offers “the amenities of a city but the spirit of a village.”

Others Ideal Villages of Gujarat

- Aena(Surat)
- Moviya(Rajkot)
- ThamnaPunsari(Sabarkatha)
- Dharmaj(Anand)
- Baben(Surat)
- Laxmanpura(Banaskantha)

Fig. 1.2.2.1Punsari village image

1.3 DETAIL STUDY OF IDEAL VILLAGE/ SMART VILLAGE WITH PHOTOGRAPHS

Village Location: Bhatha is a village located in the outskirts Of Surat. Pal is the closest place to Bhatha which has recorded highest Development since 2010.

Fig.1.1 Map Of Bhatha Village

- **Electricity: -**

  Electricity in Bhatha village is supply by GEB. Under Jyotigram yojana electricity is Provided 24 hour in domestic use. But for agricultural use electricity is available only 8 hour. Government and school building are also well electrified. Electricity for road Streetlight are fulfill by GEB. There is Roof Top solar panels is renewable energy source are available to Produce electricity.

Fig.1.2 Overhead Transmission Line.

Fig.1.3 house's with Rooftop Solar Panel

➢ Road Network :-

In Village all road are connected in one main road and all are in a good condition. so there is no requirement of maintenance. Most of the road in bhata village are made up of bituminous and Cement Concrete and that are in very well no holes no patches no scratches etc.

Fig. 1.4 Road lines.

Fig.1.5 Road network

➢ Houses :-

The house of an ideal village is very neat and clean. The owners of these houses look to the House sanitation and house-drainage. The houses have sufficient windows to let in air and Light.

Most of the houses in Bhathaare constructed in pure Parsi architecture. There here is Fire temple "Agiyari" in Bhatha which as per Parsi Calendar was constructed in the year 1912. There are houses in Bhatha which were constructedin the era of 1800. The houses are very well constructed, airy and have peaceful atmosphere.

Fig.1.6 House's

Fig. 1.7 Buildings

- **Drainage System**

- The Bhatha drainage zone is come under the waste drain zone of Surat. In the west zone of drainage Seventy Five percent of the area of the zone is provided with an underground sewage network.

Fig.1.8 drainage system

The sewerage network in Adajan and Rander area was commissioned long back in 1990s, whereas the network of Jahangirpura, Jahangirabad, Pisad, Pal and Palanpore are recently completed. According to the sewerage scheme of this zone, there will be a sewage treatment plant at Bhesan and Asarma, with an ultimate capacity of 160 MLD and 31 MLD, Six sewage pumping stations, transmission lines from each pumping station to sewage the treatment plant and a sewerage network of NP-3/NP-4 class RCC pipes.

- **Water System:-**

There Are High capacity of water tank have to available. So a water requirements are fulfilled by water tank. In a bid to maintain water flow in Tapi river throughout the year and ensure uninterrupted water supply in Surat, the Surat Municipal Corporation (SMC) has initiated work to build a conventional barrage on the river joining Rundh and Bhatha villages at a cost of Rs 500 crore. The river is a lifeline to a population of around 65 lakhs in Surat city. During summer and winter, the water flow in the river reduces, depriving drinking water to parts of the city. The barrage will help maintain the flow throughout the year, according to SMC sources.

Sourcessaid that a flyover will also be made on the barrage connecting both Rundh and Bhatha villages.

Fig 1.9 Over head tank

Fig. 1.10 Water Tank

Fig. 1.11 Under ground Tank

- **Land Detail**: -

People of an ideal village are good farmers. They grow food and vegetables and seasonal crops etc. Now a day, they have improved method of farming for more production of crops.

BHATHA-1

Zone	Rate of Developed Land per Sq.Mt.	Rate of Land + Constuction in Rs. Per Sq.Mt					
		Residential	Office	Shop	Ind.	Agricultural	
					Open Land	Irrg.	N.Irrg.
8/1	4000	8000	8800	9600	4000	3000	2000
Description : East - Boundary of Pal Village, West - Khadi, Bhatha Hazira Road, North - Boundary of Ichchhapor, Palnpor Villages, National Haighway No.8 Right side and Left side, Nagar Faliyu, Dhudhiya Faliyu, Parsi Vad, Sai Mandir, Shmasan Bhumi							
Block No. : 1 to 30, 35 to 107, 109 to 126, 128 to 171, 252 to 257, 261 to 308 and all other plots included in Zone boundary except Government plots.							
8/2	3500	7500	8300	9000	3500	2500	1700
Description : East - Khadi, Bhatha Hazira Road, West - Boundary of Bhatpor Village, North - Boundary of Bhata Bhatpor Village, South - Boundary of Bhatpor Village, Navapura, Halpativas, Aaganvadi, Temple, Jaldevi Mata temple, Animal Treatment Cemtre, Telephone Exchange							
Block No. : 309 to 384 and all other plots included in Zone boundary except Government plots.							
8/3	3500	7500	8300	9000	3500	2500	1700
Description : East - Khadi, Hazira Road, West - Boundary of Ichchhapor Bhatpor Village, North - Boundary of Ichchhapor Village, South - Boundary of Bhatpor to Bhatha Village, Talchhadavada Faliyu							
Block No. : 386 to 421, 429 to 450, 458 to 469, 474 to 488 and all other plots included in Zone boundary except Government plots.							
8/4	3500	7500	8300	9000	3500	2500	1700
Description : East - Boundary of Pal Village, West - Khadi and Hazira Road, North - Boundary of Pal Village, South - Ichchhapor, Palanpor							
Block No. : 172 to 207, 209 to 251 and all other plots included in Zone boundary except Government plots.							

➢ **Waste Collection**:-

There is door to door waste collection facilities is available. In village a tempo type vehicle of nagarpalika is collected the waste from door to door. Due to this work, there is no any dry waste in village. The agency which works on West zone of Surat is Western Imaginary Transcon Pvt. Ltd. There are total eight transfer station for collecting solid waste one the from these station is in pal which is near to Bhata. The facilities of transfer station is to all the primary collecting vehicles from Door to Door Garbage collection and sweeping activity reaches to transfer station from where secondary transportation vehicles are loaded for the purpose of transferring it to disposal site.

1.4 SWOT ANALYSIS OF IDEAL VILLAGE

STRENGTH	SahkariMandali
Basic Amenities	Petrol pump
Water supply	All types shop available
Drainage line	Police station
Transport facilities	Hospital
Solid waste collection	Heritage place
Tele-communication	
Electricity	**WEAKNESSES**
Basic social infrastructure	Flooding
Health center (CHC)	Garden
Education Facility	Tourist place
Community Hall	Hotel
Recreational facilities	Restaurant
Other	
Better connectivity	**OPPORTUNITY**
Street Lightening	WIFI Free Zone
CCTV camera	Modern Technology for Sewage Treatment
ATM Facilities	Better Use of Solid waste
Shopping Mall	
Vegetable Market	**THREATS**
108 Resting Room	Solid waste management
Post office	Sewage treatment
Better Housing	
Court	
SevaSadan (Mamlatdar office)	
Well	
Temples	
Mosque	
Taluka Panchayat	
S.T. Bus depot	
Library	

1.5 Future prospects of development of Ideal village

For future Prospect of the Bhatha village, village's Panchayat can provide Modern technology for Solid waste management & Sewage treatment plant. For next generation village can use to provide Wi-Fi free zone for village's people. Panchayat also provide More Gardens for tourist purposes.

1.6 Benefits of the visit of Ideal village

By the visit of Bhatha village, we got Knowledge about Ideal village (Normal village). We also Knew some things that how it works. We also got idea about the ideal village and which kind of technology use for future purpose and which kind of facilities we can use for the Allocated village.

1.7 Electrical/ civil aspects required in Ideal village

There are many areas within the ideal villages vision that will be sharpened and refined through a Series of workshops to be held around the world under the current Ideal Villages Initiative. With The immense potential benefits that it can bring to rural communities, is not just aspirational but can be realized with the engagement and wholehearted commitment of all stakeholders, from the Inventors of new energy-provision technologies to indispensable village leaders as role models.

For the Electrical aspect village needs to increase in the CCTV cameras no. of junction for the safety purpose. Village also change the electricity line to the underground for smart village view point.

For the Civil aspect village needs to improvement in irrigation technologies. Village also need to provide resting room or hotels for the tourist or people of another village. Village also need to improve sewage treatment and solid waste management.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction: Urban & Rural village concept

Urban: Urban is that area where the Population density is more than the village population density. In urban area new facilities are also provided more compare to the village because population of urban area is more and no. facilities are also required more. In urban area condition of road and drainage is better compare to the village. In urban area agriculture area is less compare to the rural area. Urban areas have municipality, corporation, cantonment board or notified town area committee etc. According to 2001 and 2011 no of towns (more than 10,00,000 population) in all classes is 5,161 & 7,935 statutory towns is 3,799 & 4,041 census towns is 1,362 & 3,894.

Rural: All the area which are not come in urban area is called rural area. In which population is very low compared to the urban area. Mainly they depend on agriculture activities & less no. of people doing job or business. According to census 201, there are 6,40,867 villages in India. The area where more than 755 of male population is associated with agricultural activity is known as rural area.

2.2 Importance of rural development

Rural development is important not only for the majority of the population residing in a rural area but the growth of rural activities is necessary to simulate the speed of over all economic expansion of the nation. Rural development is pretended to be noticeable important in the country today than in the olden day in the process of the evolution of the nation. It is a strategy trying to obtain improved rural creation and productivity, higher socio-economic equality, and ambition, stability in social and economic development.

The primitive task is to decrease the famine roughly about 70 percent of the rural population, implement sufficient and healthy food. Later, serve fair equipment of clothing and house, medical attention, recreational provision, education, transport, and communication.

2.3 Different definition of rural urban villages

Rural areas have low population density and large underdeveloped land. Agricultural activities are more in rural areas.

Census rural refers to the individuals living in the countryside outside centers of 100 population.

Rural and small towns refer to individuals in towns or municipalities outside the commuting zone of larger urban centers. These individuals may disaggregate into zones according to the degree of a larger urban center.

A rural area is an open swath of land that has few homes or other building and not many people.

2.4 Scenario: Rural/ Urban village of India population growth

Growth rate of population

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

Table 2.4.1 Growth rate of population

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

Number of urban area units- India

	2001	2011	Increase
Towns	5,161	7,935	2,774
Statutory town	3,799	4,041	242
Census towns	1,362	3,894	2,532

Table 2.4.2 number of urban area units

- Rural areas: Number of Rural units in India.
-

1. Census 2001 6,38,588
2. Census 2011 6,40,867 Increase: 2,279
3.

Rural/ Urban population in states

Rural population in states		
Top three states	**Absolute**	**Share***
Utter Pradesh	155.11 million	18.6%
Bihar	92.07 million	11.1%
West Bengal	67.21 million	7.5%
Bottom three states	Absolute	Share*
Sikkim	0.45 million	0.1%
Mizoram	0.52 million	0.1%
Goa	0.55 million	0.1%
Urban population in states		
Top three states	Absolute	Share*
Maharashtra	50.8 million	13.5%
Utter Pradesh	44.4 million	11.8%
Tamil Nadu	34.9 million	9.3%
Bottom three states	Absolute	Share*
Sikkim	0.15 million	Negligible
Arunachal Pradesh	0.31 million	0.1%
Mizoram	0.56 million	0.1%

Table 2.4.3 Rural/ Urban population in state

Trends in Rural Urban Distribution of population-India (In %)
(1901, 1951, 2011)

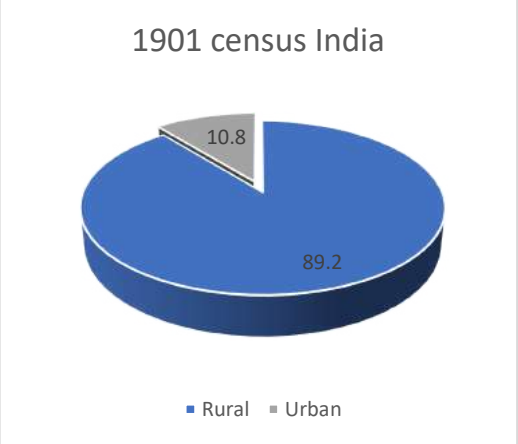


Fig. 2.4.1 1901 census

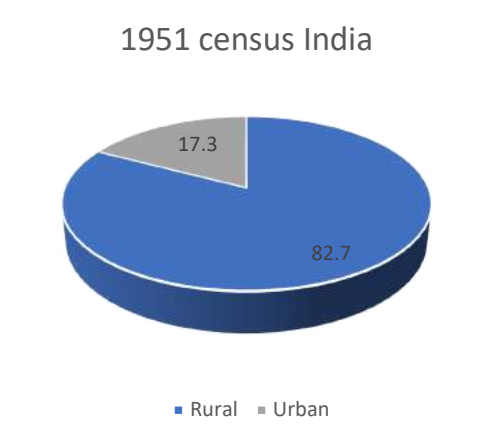


Fig. 2.4.2 1951 census

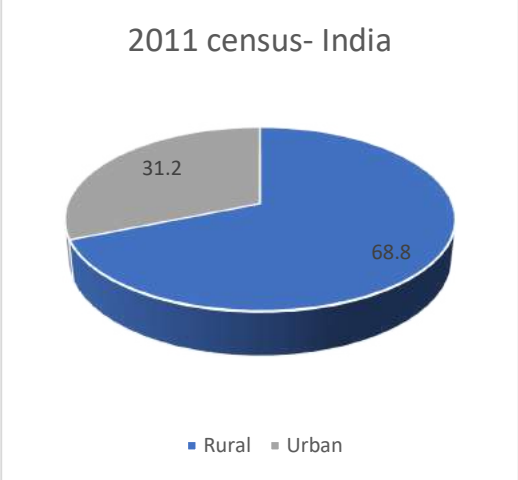


Fig. 2.4.3 2011 census

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

Table 2.4.4 Population of Rural and Urban as per Census 2001 & 2011

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

Population of Gujarat: With a population of 71,521,926 Gujarat is the 10th largest state in terms of population in India. Gujarat is one of the most industrialized states of India and thus attracts people from all over India both in terms of investment and jobs. From a small figure of 50,671,017 in 2001, Population growth has gone to 60,383,282 in 2011. Population growth in Gujarat has witnessed an increase of 19.17 in this decade.

Population of Gujarat (2001, 2011, 2020)

Population	2001	2011	2020
Male	26,385,577	31,491,260	37,284,380
Female	24,285,440	28,498,432	34,237,546
Total	50,671,017	60,439,692	71,521,926

Table 2.5.1 Population of Gujarat

Growth of population in Gujarat

Census	Population	%
1951	16,263,000	-
1961	20,633,000	26.9%
1971	26,697,000	29.4%
1981	34,086,000	27.7%
1991	41,310,000	21.2%
2001	50,671,000	22.7%
2011	60,383,628	19.2%

Table 2.5.2 Growth of population in Gujarat

Gujarat Urban population 2011: Out of total population of Gujarat, 42.60% people live in Urban regions. The total figure of populating living in urban areas is 25,745,083 of which 13,692,101 are males and while remaining 12,052,982 are females. The urban population in the last 10 years has increased by 42.60 percent.
Sex ratio in urban regions of Gujarat was 880 females per 1000 males. For child (0-6) sex ratio the figure for urban region stood at 852 girls per 1000 boys. Total

children (0-6 age) living in urban areas of Gujarat were 2,952,359. Of total population in urban region, 11.47% were children (0-6).

Average Literacy rate in Gujarat for Urban regions was 86.31 Percent in which males were 90.98% literate while female literacy stood at 70.26%. Total literate in urban region of Gujarat were 19,672,516.

Gujarat Rural population 2011: Of the total population of Gujarat state, around 57.40 percent live in the villages of rural areas. In actual numbers, males and female were 17,799,159 and 16,895,450 respectively. Total population of rural areas of Gujarat state was 34,694,609. The population growth rate recorded for this decade (2001-2011) was 57.40%.

In rural regions of Gujrat state, female sex ratio per 1000 males was 949 while same for the child (0-6) was 914 girls per 1000 boys. In Gujarat, 4,824,903 children (0-6) live in rural areas. Child population forms 13.91 percent of total rural population.

In rural areas of Gujarat, literacy rate for males and females stood at 81.61% and 57.785. Average literacy rate in Gujarat for rural areas was 71.71 percent. Total literates in rural areas were 21,420,842.

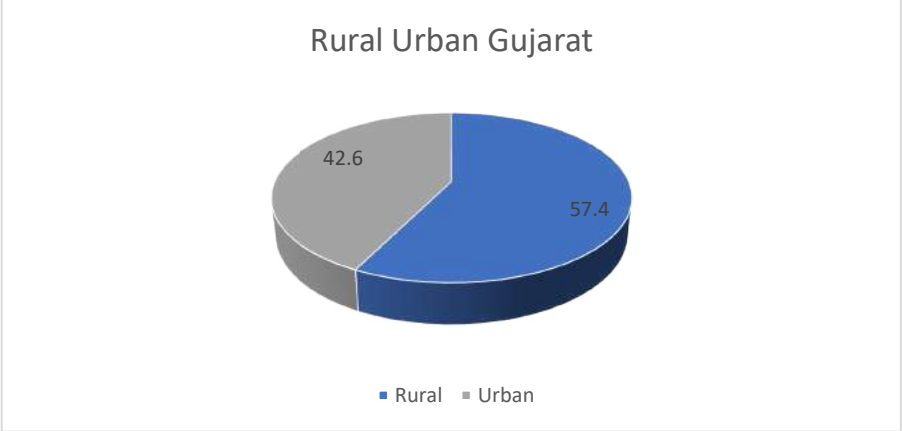


Fig. 2.5.1 Population of Gujarat in %

2.6 Rural development Issues- Concerns- Measures

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

- **Measures for rural development:**

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

2.7 Various Infrastructure guidelines with norms for villages for the provisions of different infrastructure facilities

1. **SOCIAL INFRASTRUCTURE:** The quality of life in any urban center depends upon the availability of and accessibility to quality social Infrastructure. These include the following infrastructure:

1) Education Facilities

Pre-primary to Secondary Education

Sr. No.	Category	Student Strength	Population served per unit	Area required	Other controls
1.	Pre-Primary nursery school	--	2500	0.08 ha	To be located near a park
2.	Primary School (class I to V)	500	5000 (NBC, 2005)	Area per School = 0.40 Ha School building area=0.20Ha Playfield Area=0.20Ha	Playfield area with a minimum of 18mx36mto be ensured for effective play
3.	Senior secondary school (VI to XII)	1000	7500	Area per School=1.80Ha (NBC, 2005) School building area=0.60Ha Playfield Area=1.00Ha Parking Area=0.20Ha	Playfield area with a minimum of 68mx126m to be ensured for effective play
4.	Integrated school	1500	90,000–1lakh	Area per School = 3.50 Ha	To be located near as port

	without hostel facility (Class 1-XII)			School building area=0.70Ha Playfield Area=2.50Ha Parking Area=0.30Ha	facility
5..	Integrated School with hostel facility (Class I - XII)	1500(NBC, 2005)	90,000–1lakh	Area per School = 3.90 Ha School building area = 0.70Ha Playfield Area=2.50Ha Residential Hostel Area=0.40 Ha ParkingArea=0.30Ha	To be located near as port facility
6.	School for Physically Challenged	400	45,000	Area per school	To be located near a park or sport facilities
7.	School for Mentally Challenged	-	10 lakh	0.20 Ha	No noise zone

Table 2.7.1 Norms for Pre- Primary to secondary Education

1) Healthcare Facilities:

Sr. No	Category	No. of beds	Population served per	Area requirement

.			unit	
1.	Dispensary	--	15000	0.08 to 0.12 Ha
2.	Nursing home, child welfare and maternity Centre	25 to 30 beds	45000 to 1 lakh	0.20 to 0.30 Ha
3.	Polyclinic	Some observation beds	1 lakh	0.20 to 0.30 Ha
4.	Intermediate Hospital (CategoryB)	80 beds Initially may be for 50 beds including 20 maternity beds	1 lakh	Total Area = 1.00 Ha Area for Hospital =0.60Ha Area for residential Accommodation=0.40 Ha
5.	Intermediate Hospital (CategoryA)	200 beds Initially the provision may be for 100 beds	1 lakh	Total Area=3.70Ha Area for hospital = 2.70Ha Area for residential Accommodation=1.00 Ha
6.	Multi-Specialty Hospital (NBC)	200 beds Initially the provision may be for100beds	1 lakh	TotalArea=9.00Ha Area for hospital=6.00Ha Area for residential accommodation=3.00 Ha
7.	Specialty Hospital(NBC)	200beds Initially the provision may be for	1 lakh	Total Area=3.70Ha Area for hospital =2.70Ha Area for residential accommodation=1.00

		100beds		Ha
8.	General Hospital (NBC)	500 Initially the provision maybe for 300 beds	2.5 lakh	Total Area = 6.00 Ha Area for hospital =4.00Ha Area for residential Accommodation=2.00Ha
9.	Family Welfare Centre	As per requirement	50,000	Total area = 500 sqm 800 sqm
10.	Diagnostic Centre	--	50,000	Total area = 500 sqm 800 sqm
11.	Veterinary Hospital for pets and animals	--	5 lakh	Total area = 2000 sqm
12.	Dispensary for pet animals and birds	--	1 lakh	Total area = 300 sqm
13.	Rehabilitation centers			As per requirement

Table 2.7.3 Health Care facilities (Norms)

3) socio-cultural

Sr. No.	category	Population served per unit	Land Area Requirement
1.	Anganwadi - Housing area/ cluster	5000	200-300 sqm
2.	Community Room	5000	750 sqm (NBC)
3.	Community hall, mangal karyayala, barat ghar/ library	15000	2000 sqm
4.	Music, dance and drama Centre	1 lakh	1000 sqm
5.	Music, dance and drama Centre	1 lakh	5000 sqm
6.	Recreational Club	1 lakh	10,000 sqm

7.	Old age home	5 lakh	Max.1000sqm,subjecttoavailabilityof land
8.	Religious Facilities		
8a.	At neighborhood / housing cluster level	5000	400 sqm
8b.	At sub city level in urban extension	10 lakh	4.00 Ha
9.	Other Facilities		
9a.	Orphanage/ Children's Centre (One each)	10 lakh	Max.1000 sqm, subject to availability of land
9b.	Care Centre for physically /mentally challenged	10 lakh	Max.1000 sqm, subject to availability of land
9c.	Working women – men hostel	10 lakh	Max.1000 sqm, subject to availability of land
9d.	Adult education Centre	10 lakh	Max.1000 sqm, subject to availability of land
9e.	Night Shelter	10 lakh	Max.1000 sqm, subject to availability of land
10.	Socio – Cultural Centre/ Exhibition cum fair ground	10 lakh	15 Ha (NBC)
11.	Science Centre	10 lakh	As per requirement
12.	International Convention Centre	City level	As per requirement

Table 2.7.4 Norms for Socio-Cultural Facilities

4) Organized Green for Plain Areas

Sr. No.	Category	Population served per unit	Area Requirement (Ha)
1.	Housing Area Park	5000	0.50
2.	Neighborhood Park	15000	1.00
3.	Community Park	1 Lakh	50..
4.	District Park	5 Lakh	25.00
5.	Sub city Park	10 lakh	100.00

Table 2.7.5 Norms for Organized green for Plain Areas

5) Organized Green for Hilly Areas

Sr. No.	Category	Population served per unit	Area Requirement (Ha)
1.	Housing Area Park	5000	0.50 to 1.00
2.	Neighborhood park	10000	1.20 to 2.00
3.	City Parks/ playgrounds/ maidan/ exhibition grounds/ cultural gathering grounds	For entire town at one or more sites, depending upon design and space availability	--
4.	Botanical Garden	1 for every town	10.00 to 20.00
5.	Recreational complex including zoo	1for every settlement with tourist potential	10.00 to 12.00

Table 2.7.6 Norms for Organized Green for Hilly Areas

6) Norms for Multipurpose ground

Sr. No.	Category	Population served per unit	Area Requirement (Ha)
1.	Sub city level multipurpose ground	10 Lakh	8
2.	District level multipurpose ground	5 Lakh	4
3.	Community level Multipurpose ground	1 lakh	2

Table 2.7.7 Norms for Multipurpose ground

7) Norms for Sports Facilities

Sr. No.	Category	Population served per unit	Area Requirement (Ha)
1.	Residential unit play area	5,000	5000 sqm
2.	Neighborhood Play area	15,000	1.50 Ha

3.	District Sports Centre	1 Lakh	8.00 Ha
4.	Divisional Sports Centre	10 lakh	20.00 Ha

Table 2.7.8 Norms for Sports Facilities

8) Distribution Services

Sr. No.	Category	Population served per unit	Land Area Requirement		Other Controls
			Type of facility	Area requirement	
1.	**Petrol/ Diesel filling and Service Centre**				
	1. Central District 2. Sub central District 3. District Centers 4. Community Centre (Only Filling Station) 5. Residential & Industrial Use Zone in Urban Areas 6. Along National and State Highways 7. Villages identified as growth centers 8. Freight Complex 9. Proposed major roads		1.Onlyfilingstation 2. Filling cum service station 3. Filling cum service station cum workshop 4.Filling station only for two and three wheelers	30mx17m 36mx30m 45 m x 36m 18m x15m	1.Shall not be located on road having Right of Way less than 30m. 2. Special cases in old city areas may be considered based on the approval by statutory authorities. 3. Shall be approved by the explosive/fire department.

	10. Police/ security force services(for captive use only)				
2.	**Compressed Natural Gas (CNG)/ filling Centre**				
	1.All use zones (except in Regional Parks and Developed District Parks) 2. Along National and State Highways 3. Villages identified as growth centers 4.Freight Complex 5.Proposed major roads		CNG mother station (Including building component – control room/ office/ dispensing room/store, pantry and W.C.)	1080 sqm (36mx30m)	1. Shall not be located on road having Right of Way less than 30m. 2. Shall be approved by the explosive/ fire department.
3.	**LPG Go-down / Gas go-down**	40,000 to 50,000	Capacity = 500 cylinders or 8000 kg of LPG Area (inclusive of guard room)	520 sqm (26mx20m)	The major concern for its storage and distribution is the location, which shall be away from the residential areas and shall have open spaces all around as per the ExplosiveRules.
4.	**Milk Distribution**	5000	Area inclusive of service area	150 sqm	--

Table 2.7.9 Norms for Distribution Services

9) Police, Civil Defense and Home Guards

Sr. No.	Category	Population Served per unit	Land area Requirement
1.	Police Post	40,000 – 50,000 (Area not served by Police Station)	0.16 Ha (Area inclusive of residential accommodation)
2.	Police Station	90,000	1.50Ha(Area inclusive of essential residential accommodation) 0.05Ha additional to be provided for civil defense and home guards.
3.	Traffic and Police Control Room	--	As per requirement
4.	District office and battalion	10 lakh	Total area = 4.80 Ha Area for district office=0.80Ha Area for battalion=4.00Ha
5.	Police line	20 lakh	4.00 to 6.00 Ha
6.	District Jail	10 lakh	10.00 Ha
7.	Civil defense and home guards	10 lakh	2.00 Ha
8.	Police Training Institute/ College	City level (to be located in fringe areas)	5 Ha
9.	Police Firing Range	City level (to be located in fringe areas)	Up to 10 Ha
10.	Police camp including Central Police Organization/ Security Forces (Including Central Security Forces)		Up to 10 Ha
11.	Police Booth (at major road	--	10-12sqm(to be provided

	intersections)		by transport planners)

Table 2.7.10 Norms for Police Facilities

10) Safety Management

Sr. No.	Category	Population Served per unit	Area Requirement
1.	Subfirestation / FirePost	Within 3-4kmradius	0.6Ha(with essential residential accommodation)
2.	Fire Station	2 lakh population or 5-7 km radius	1 Ha with residential accommodation
3.	Disaster Management Centre	One in each administrative zone	1 Ha along with suitable open Area. 2Haifsoftparking,temporary shelter, parade ground etc. included.
4.	Fire Training Institute/College	City level (one site in Urban extension)	3 Ha

Table 2.7.11 Norms for Safety facilities

- **Guidelines for Locating fire stations and other firefighting facilities:**

- Fire stations should be located so that the fire tenders are able to reach any disastersitewithin3-5minutes
- Fire stations should be located on corner plots as far as possible and on main roads with minimum two entries.
- In the new layouts, concept of underground pipelines for fire hydrants on the periphery exclusively for fire fighting services should be considered.

- Necessary provisions for laying underground / over ground fire fighting measures, waterlines, hydrants etc. may be kept wherever provision of fire station is not possible.
- The concerned agencies shall take approval from Fire Department for fire fighting measures while laying the services for an area.

11) Norms for Commercial Centers

Sr. No.	Category	Population served per unit	Land area requirement
1.	Convenience Shopping	5,000	1,500 sum
2.	Local shopping including service Centre	15,000	4,600 sum
3.	Community Centre with service Centre	1,00,000	5 Ha
4.	District Centre	1 at District level / 5,00,000 population	40 Ha
5.	Sub-city Centre (UDPFI)	25 laky to 50 laky	As per requirement
6.	City Centre (UDPFI)	50 laky	As per requirement
7.	Local Wholesale Market/ Mandy	10 laky	10.00 Ha
8.	Weekly Markets	1to2locationsforevery1lakh	Area per location = 0.40 Ha

2.8 Ancient/ Existing Electrical concept study as a literature review for village development

Rural electrification

Rural electrification is the process of bringing electrical power to rural and remote areas. Rural communities are suffering from colossal market failures as the national grids fall short of their demand for electricity. As of 2017, over 1 billion people worldwide lack household electric power – 14% of the global population. Electrification typically begins in cities and towns and gradually extends to rural areas, however, this process often runs into obstacles in developing nations. Expanding the national grid is expensive and countries lack the capital to grow their

current infrastructure. Additionally, amortizing capital costs to reduce the unit cost of each hook-up is harder to do in lightly populated areas. if countries are able to overcome these obstacles and reach nationwide electrification, rural communities will be able to reap considerable amounts of economic and social development.

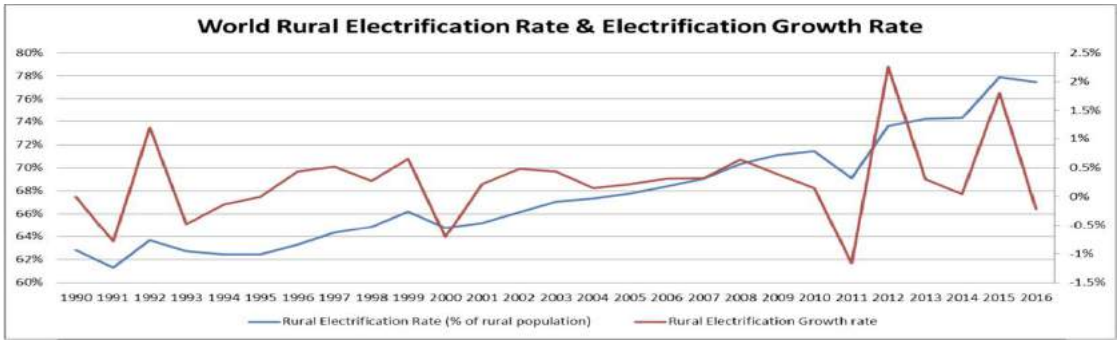


Fig 2.8.1 world rural electrification rate & growth rate

Social and economic benefits:

Education: Access to electricity facilitates sustainable economic and social growth. First, through an increase in educational achievement. Students who were previously forced to study when the sun was shining are now able to study by the light of LEDs early in the morning or late into the night. In Kenya for example, interviews with school teachers revealed that access to light has allowed for extra hours of teaching earlier and later in the day to cover material not adequately reviewed during normal hours. Additionally, schools with access to electricity are able to recruit higher quality teachers and have seen improvements on test scores and graduation rates, raising the human capital entering the labor force in the future.

Job creation: When expanding the electrical grid, there is a demand for thousands of jobs ranging from business development to construction. Projects to spread electricity create a wealth of job opportunities and help to alleviate poverty. For example, India set a target of 175GW of clean energy to be installed by 2022 to increase electrification throughout the country. An estimated 300,000 jobs will need to be created in order to reach these lofty goals.

Healthcare improvements: The availability of electricity can drastically increase the quality of healthcare provided. Improved lighting increases the time patients can come and get treatment. Refrigerators can be used to conserve incredibly valuable vaccines and blood. Sterilization measures will be improved and the implementation of high-tech machines such as x-rays or ultrasound scanners can provide doctors and

nurses the tools they need to perform. In DiaryRhashalpool, a cluster of villages on the river Ganges, 140 households are without power. The locals are forced to travel 2–3 hours across the river for treatment or access to vaccines. With access to electricity, treatment would be far more accessible to the local population.

Additional Benefits:
Reduce isolation and marginalization through telephone lines and Television.
Improve safety with the implementation of street lighting, lit road signs.
Reduce expenses on expensive fossil fuel lamps i.e. kerosene.

Technology: Renewable off-grid enterprises have emerged in many areas to meet the demand for electricity in rural communities. Due to their geographical location and relatively low aggregate demand, expanding the nationwide grid to rural areas is expensive and challenging. Renewable energy based mini grids are less dependent on larger-scale infrastructure and can be implemented faster and cheaper. Where an electric power distribution grid can be set up single wire earth return is often used. The following technologies are used extensively:

- Photo voltaic
- Wind mechanical water pumps
- Small wind electric
- Diesel solar hybrid power systems: especially for telecommunications worldwide. Fully commercial and the preferred option for remote telecommunications, commercially evolving for village power.
- Bio energy
- Micro hydro is very widely implemented in Nepal, Vietnam, and China.

Hybrid power is also widely used where a number of different technologies are combined to provide a single power source

2.9 Other projects/ schemes of Gujarat/ Indian Government

1) Adarsh Gam Yojana:

Adarsh Gam Yojana, a rural development programme launched by Prime Minister Shri Narendra Modi in October 2014 has seen only 40 Map's so far adopted ideal villages in the second phase.

Even after the 31st January deadline to adopt the villages, only 33 Look Sabha MP's and 7 Rajya Sabha MP's have adopted villages to be developed as model villages (Adarsh Gams). In the first phase as well, only 499 out of 543 MP's in Lok Sabha and 199 out of 252 MP's in Rajya Sabha adopted villages. 44 Lok Sabha members and 53 Rajya Sabha members are yet to take up the villages to be developed as the Adarsh grams.

2) Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA):

MGNREGA Launched on 2nd February 2006 as a momentous initiative towards pro-poor growth. For the first time, rural communities have been given not just a development programmer but also a regime of rights. The National Rural Employment Guarantee Act, 2005 (NREGA) guarantees100daysofemploymentinafinancialyeartoanyruralhouseholdwhoseadultmembers are willing to do unskilled manual work.

3) Pradhan Mantri Gram Sadak Yojana (PMGSY):

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

According to latest figures made available by the State Governments under a survey to identify Core Network as part of the PMGSY programme, about 1.67 lakh Unconnected Habitations are eligible for coverage under the programme. This involves construction of about 3.71 lakh km. of roads for New Connectivity and 3.68 lakh km. under upgradation.

4) Indira Awas Yojana (IAY):

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

CHAPTER 3: SMART VILLAGE CONCEPT IDEA AND ITS VISIT(CIVIL & ELECTRICAL CONCEPT)

3.1 Understanding Smart Cities/Village (Concepts, Definitions and Practices)

Concept of smart village is a community village with a self-sustaining income producing Projects, independent electrification system generated from non-fuel based device, clean water Facility for drinking including water for irrigation, quality but affordable housings, school, Medical facilities for human beings and animals, proper sanitation system, information center ,bank police station, retail outlet for house hold and agriculture needs, phone facility, connecting Roads to nearby villages and towns, legal councilor.

3.2 Bench Marks-Vision-Goals, Standards and Performance

Measurement Indicators An important pillar in informing and crystallizing the ingredients of the smart city success over Long time frames is the commitment to evaluate the quality and cost of services provided. To Achieve this, cities need standardized metrics to benchmark their performance in all urban Dimensions.

To address the issues for a city to become a smart city, The Smart City Advisory Group Recommended the development of the following standards and publications:

- The development of a standard on Smart city terminology (PAS 180)
- The development of a Smart city framework standard (PAS 181)
- The development of a Data concept model for smart cities (PAS 182)
- A Smart city overview document (PD 8100)
- A Smart city planning guidelines document (PD 8101)

3.3 Technological Options for smart village

Renewable Energy Sources and Energy:

Traditional sources of energy like wood, coal, diesel, petrol, oil, natural gas, etc. are now on the verge of ending. Also, excessive use of these sources is polluting earth's environment and is responsible for remarkable adverse effects, like abrupt climate change, drought and food situation, green house effects, melting of ice caps on poles, de-thickening of ozone layer in atmosphere collectively known as global warming. Due to fast growing development of urban civilization, forests are reducing with greater rate. By the 1990s, the excess use of traditional sources in developing countries was marked as a leading environmental threat, with negative impacts linked with deforestation, desertification and widespread soil erosion. Thus, to save our earth from the threat of global warming, alternative energy sources which burns less carbon are required to be invented and solar energy source can play vital role to overcome these global environmental effects.

3.4 Road map & Safe Guard

A smart city roadmap consists of four/three (the first is a preliminary check) major
Components:

I. Define 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 countryside and Flows of people between them; maybe – even – that in some Countries the definition of City/community that is stated does not correspond effectively to what – in fact – happens in the Real life.

II. Study the Community: Before deciding to build a smart city, first we need to know why. 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.

III. 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.

IV. Engage The Citizens: This can be done by engaging the citizens through the use achieve e -Government initiatives, open data, sport events, etc**.**

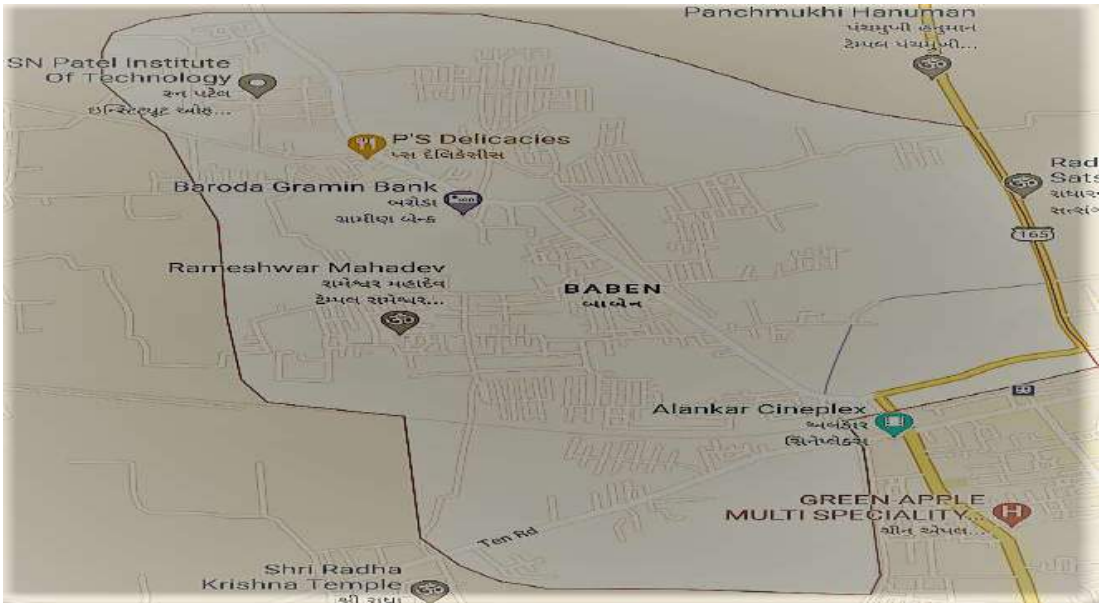


Fig 3.4.1 Village road map google

3.5 Issues & Challenges

The most common smart city projects include smart lighting, intelligent transport systems and Smart utility metering for electricity and water. These technologies and integrations are based on Sensor-centered collection and analysis of data. They offer cost-effective and innovative solutions To the growing number of challenges faced by municipalities.

However, despite the countless benefits of smart city projects, many challenges remain when it Comes to deployment, due to unique city requirements and differing interpretations of Deployment concepts. These variations can be categorised into the following dimensions:

- Technology challenges with coverage and capacity.
- Digital security.
- Legislation and policies.
- Lack of confidence or reluctance shown by citizens (lack of clarity around benefits).

- Funding and business models.
- Interoperability.
- Existing infrastructure for energy, water and transportation systems.

Technology innovation is the enabler that improves the possibilities and efficiencies of each Smart city project. Each new technology brings with it an immense pool of new possibilities. Since every city has its own culture and infrastructure and funding policies, technology adoption Can vary in diverse ways. However, that means it is is not always possible to rely on other proven Smart city projects to act as a blueprint for success.

3.6 Smart infrastructure- intelligent Traffic management

In Smart Village (Baben), village have All types of school (Primary, Secondary, Higher Secondary) available with better facilities. Village have collage also for commerce stream. village have all basic amenities and other facilities like shopping mall, restaurant, transport facilities etc. in smart infrastructure facilities village have CCTV cameras in village for security of village infrastructure. For intelligent traffic management village provided 12 feet width road for transportation & traffic management.

3.7 Cyber security

- **What is cyber security?**

Cyber security is the practice of defending computers, servers, mobile devices, electronic system, network, and data from malicious attacks. It's also known as information technology security or electronic information security. The term applies in a variety of contexts, and can be divided into a few common categories.
Network security is the practice of securing a computer network from intruders, Whether targeted attackers or opportunistic malware.

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

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

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

- **Types of cyber threats**

1. **Cybercrime**includes single actors or groups targeting system for financial gain or to cause disruption.
2. **Cyber-attack** often involves politically motivated information gathering.
3. **Cyberterrorism** is intended to undermine electronic system to cause panic or fear.

3.8 Retrofitting-Redevelopment-Greenfield Development district cooling

The Retrofitting process is a general term that may consist of a variety of treatments, including: preservation, rehabilitation, restoration and reconstruction.
Selecting the appropriate treatment strategy is a great challenge involved in the retrofitting process and must be determined for each project. Depending on project objectives, preservations and renovations of buildings may involve an array of diverse technical considerations, such as fire life safety, geotechnical hazards and remedies, weathering and water infiltration, structural performance under earthquake and wind loads.

- **Different Techniques of Retrofitting**

1. Retrofitting of concrete members
2. Retrofitting as a structural body
3. Foundation retrofitting
4. Repair of cracks
5. Historical building
6. Innovative techniques for historic preservation
7. Seismic Retrofitting Technique
8. Member-level Retrofitting

9. Surface treatment
10. Recent Retrofitting methods

3.9 Strategic Options for Fast Development

The strategic components of area-based development in the smart Cities Mission are city improvement, city renewal and city extension plus a pan city initiative in which smart solutions are applied covering larger parts of the city. Below are the deions of the three models of area-based smart city development:

- Greenfield development will introduce most of the smart solution in a previously vacant area (more than 250 acers) using innovative planning, plan financing and plan implementation tools with provision for affordable housing, especially for the poor. Greenfield development is required around cities in order to address the needs of the expanding population. One well known example is the GIFT city in Gujarat. Unlike retrofitting and redevelopment.

- Greenfield developments could be located either within the limits of the ULB or within the limits of the local urban Development Authority (UDA).

3.10 India's Urban Water and Sanititation challenges and role of indigenous Technologies

The problem of access to safe drinking water and sanitation facilities in urban areas of India is a major concern. There is a need to reuse treated wastewater in order to meet the current and future demands for water.

Urban water issues

The consistent increase in the rate of growth of India's population has also led to the increase in demand for water, particularly in the urban areas where the rate of increase is higher compared to rural areas. In 2001, urban population was 285 million and assuming water supply of 135 liters per capita per day, the domestic water demand is estimated at around 38,475 million liters per day (MLD), whereas as in 2011 urban population was 377 million with a domestic water demand of 50,895 MLD. It shows that growth in urban population leads to additional water demand of 12,420 MLD in urban areas. The water supply of 135 liters per capita per day (LPCD) as a service level benchmark should be given for domestic water use in urban local bodies. However, currently as per Central Public Health and

Environmental Engineering Organization (CPHEEO), an average water supply in urban local bodies is 69.25 LPCD. This indicates that there is a vast gap between the demand and supply of water in urban areas of India.

Role of indigenous technologies:

Taking care of thousands of village water supply systems requires a large organization and large financial inputs which most developing countries cannot afford. The author, after having briefly outlined the main points to be considered for the implementations of successful rural water programs, stresses the need to introduce simple, low cost technologies for supplying safe water to small rural villages. The risk of failure is greatly reduced if there is an active participation of villagers in the various phases of the project. Health educations village sanitation and training in the use and repair of equipment are essentials for the long lifer of the water systems.

3.11 Initiatives in Village Development by Local Self-Government

Prime Minister Narendra Modi, 'Adarsh Gram Yojana' whose foundation was laid in October, does not implement on Baben village as it already had written their own story for development.

Located 25 km from Surat with 13,000 population, Baben village initiated its development in 2007 under the supervision of sarpanch Bhavesh Bhai. 19 Panchayat members pledged to work for the development of the village. In 2011, the village received 'Best Gram Panchayat of the Year' awards from Gujarat government.

The village has 8500 houses out of which 95% of them are pacca houses. It has primary facilities such as sewage, water, streetlight etc. From aanganwadi, primary school, high school to post office the village has everything. The village has its own ambulance. Panchayat has fixed deposit of 1 crore.

3.12 Smart Initiatives by District Municipal Corporation

Surat is ranked among the best corporations in the country in terms of governance; basic infrastructure facilities and also in terms of advanced facilities like mobile app, CCTV surveillance etc. The prime focus would be to maintain the high growth rate

and consistent high GDP. The status of Surat may be coveted by other cities as a goal for Smart city. However, for Surat to continue its trajectory of upward curve it needs to sustain the development and ensure a better quality of life for all by providing equal access to all the citizens including women. children, elderly, special needs, poor etc. The city will also have to maintain the almost zero unemployment rates and as the city has the large unskilled labour force, there needs to be a comprehensive skill development programme aimed at upgrading the skill levels of people. Skill gap requirements of the nearby industrial regions need to be assessed and skill gap needs to be addressed through proper interventions.

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

In Talangpur village a small contribution to the implementation of infrastructure by the government of the Gujarat. No NGO is working in Talangpur

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

By the detail study of any interesting concept of any countries smart village, we can it implement in small scale in the beginning. Whenever its gone success, we can implement at large scale on villages.

3.15 Electrical concept:

For the electrical concept of smart village, design of a smart remotely monitored CCTV system. One type of CCTV technology which stands-up well to scrutiny, it is remotely monitored, detector activated CCTV. Time and again it has demonstrated an ability to stop crime at the earliest possible stage on villages and public-sector sites and, crucially, to assist the police to apprehend the culprits CCTV camera

Advantages of smart CCTV security system

- Crime deterrence
- Increased safety
- Remote monitoring
- Cost-Effective

CHAPTER 4 : INTRODUCTION ABOUT TALANGPUR VILLAGE

4.1 INTRODUCTION: -

4.1.1 BASIC INTRODUCTION ABOUT TALANGPUR VILLAGE: -

About 70%of India's population, or 750 million, live in its 600,000 villages. More than 85% of these villages are in the plains or on the Deccan plateau. The average village has 200-250 households, and occupies an area of 5 sq. km. Most of this is farmland, and it is typical to find all the houses in one or two clusters. Villages are thus spaced 2-3 km apart, and spread out in all directions from the market towns. The market centers are typically spaced 30-40 km apart. Each such center serves a catchment of around250-300 villages in a radius of about 20 km. As the population and the economy grow, several large villages are continually morphing into towns and market centers. Around 65% of the State's population is living in rural areas. People in rural areas should have the same quality of life as is enjoyed by people living in sub urban and urban areas. Further there are cascading effects of poverty, unemployment, poor and inadequate infrastructure in rural areas on urban centers causing slums and consequential social and economic tensions manifesting in economic deprivation and urban poverty. Hence Rural Development which is concerned with economic growth and social justice, improvement in the living standard of the rural people by providing adequate and quality social services and minimum basic needs becomes essential. The present Project deals with the same.
Vishwakarma Yojana would provide "Design to Delivery" solution for development of villages in 'Rurban' areas. The developmental work in villages that could undertake as per the need of the village in particular includes Physical infrastructure facilities (Water, Drainage, Road, Electricity, Solid waste Management, Storm Water Network, Telecommunication & Other), Social infrastructure facilities (Education, Health, Community Hall, Library, Recreation Facilities & other) and renewable energy(Rain water harvesting, Biogas plant, Solar Street lights & Other) for Sustainable development. Under this scheme, the villages of"Rurban" area will be adopted by the engineering colleges under the Gujarat Technological University. The Engineering colleges would study the identified villages and make the recommendations on the application of technology to achieve integrated and comprehensive development, through project preparation and management.

4.1.2 NEED OF THE STUDY: -

There are a number of schemes of the Government which are being operated and run for rural development in the rural areas of the country. Evaluation taken up so far for these schemes has been more or less in a piecemeal form, i.e., generally for each scheme separately. It thus becomes difficult to get an overall picture of the development in totality in the rural areas and is difficult toassess the impact of any one particular scheme, since most of the schemes are complementary and supplementary and most of the time, they all are contributing to the impact. Hence, a view has been formed to take up studies on trial basis to assess the impact of the important schemes as a whole in rural development in selected villages.

4.1.3 STUDY AREA: -

India accounts for 2.4 percent of total world surface area. According to Ministry of Home Affairs, Government of India, area of India is 3,287,469 square km or 1,269,298 square miles. As stated in official source, Area figures of Jammu & Kashmir includes the area under unlawful occupation of Pakistan and China.

Fig 4.1.1INDIA MAP.

Fig. 4.1.2. GUJARAT MAP

The area of the Indian state of Gujarat is 1,96,024 square kilometers. The areas can be clearly distinguished from one another- a result of natural geological entropy which is continuing for thousands of years. The eastern area of Gujarat state comprises the mainland area of the region

Fig. 4.1.3. MAP OF SURATFig.4.1.4 MAP OF TALANGPUR

Total area of Surat is 4,549 km² including 4,040.39 km² rural area and 508.61 km² urban area. Surat has a population of 60,81,322 peoples. There are 13,33,200 houses in the district. The Surat district is further divided in to Tehsils / Blocks / Community Development Blocks (C.D. Blocks) for administrative purposes.**The total area of Talangpur is 6.072 sq. km.**

4.1.4 OBJECTIVE OF STUDY: -

Basic delivery of facilities to village dwellers. Promote integrated development of rural areas with provision of quality housing, better connectivity, employment opportunities and supporting physical and social infrastructure. Reduce migration from rural to urban areas due to lack of basic services and sufficient economic activities in rural areas. Internal roads within village settlement, Efficient Mass Transportation systems to improve connectivity between urban and rural areas, Public transportation facilities that need to be developed like bus stops, transport depot etc. Identification of sanitation facilities that need improvement – sewerage and drainage line for household connection, door to door solid waste collection & dumping facilities. Electricity connections like street lighting that is energy efficient and eco-friendly. Refurbishing of village lakes, water tanks and wells, construction of rain water harvesting structures for sustainable Development. Physical infrastructure – Water Supply, Transport, Sewerage and Solid Waste Management should be the priority focus and be provided.

Basic Social infrastructure – Health and Education facilities should be provided and ensure proper.

4.1.5 SCOPE OF STUDY: -

It is very essential to develop village because India's development depends upon the progress of the villages.

India is agriculture country and poverty can be removed through improvement in agriculture.

Solutions of rural problems can bring the change in the rural society.

The country and its society can be reconstructed only through rural developments.

For successful implementation of democratic decentralization, the village community is to be studied in detail. Rural sociology can help to organize the disorganized Indian in detail.

The extension worker must know the rural culture, rural institutions, problems, resources etc. for successful transfer of technology for improvement of agriculture. It can be achieved through the study of rural sociology.

Through the technology and communication methods are known to the extension workers. The study of rural sociology helps the extension worker to transfer the technology.

4.1.6 METHODOLOGY FRAME WORK: -

Firstly, we studied what are various objectives and the need of the Vishwakarma Yojana. Then we completed our Literature Review that includes the basic definitions of rural area, urban area, Rurbanisation, Sustainable development etc. We also visited an ideal village named Bhatha which is also located in the Surat District. There we understood what kind of facilities are required in the village and how to implement it

After this we met our village (Talangpur) Sarpanch, talatimantri and other gram Panchayat members.

We collected all the required data related to the various facility and completed our Techno-Economic survey and Smart Village form.

Gap analysis is done using the collected data and various suggestions made by us on the development of the village and based on these suggestions we will design proposed facilities in the village according to the need and population of the village.

4.1.7 LIST OF OBJECTS AVAILABLE RELATED TO CIVIL / ELECTRICAL METHODOLOGY: -

After the visit of Talangpur village we find that the village does not need more development as a perspective of construction so we thought we try to develop the village by maintenance purpose.

The various objects are ....

Pond development

Road network

Irrigation facilities

Developed the government school and increase capacity of students

These are some objectives available in allotted village.

4.2 STUDY AREA PROFILE

4.2.1 STUDY AREA VILLAGE

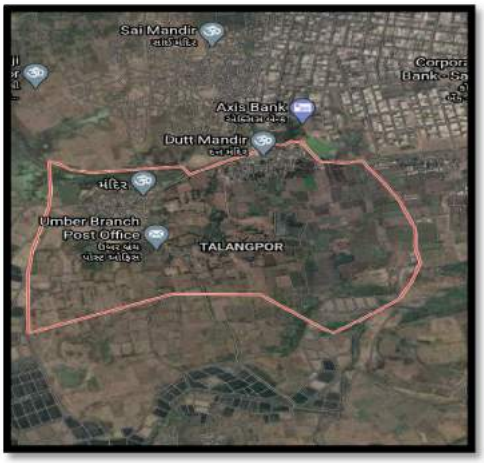


Fig. 4.2.1 Satellite view of Talangpur.

Fig. 4.2.2. Talangpur map

4.2.2 PHYSICAL AND DEMOGRAPHICAL GROWTH

- The geographical area of the village is 6.072 square km. Taluka name is Sachin.

Total population as per 2011 census is 11417.

4.2.3 BRIEF HISTORY

- Talangpur is the village in Chorasi taluka in the Surat district of Gujarat.
- The location code or the village code is
- The location code or the village code is 524212.
- The main language of the village is Guajarati and Hindi.
- Elevation/Altitude- 16 meters (above the sea level).
- Temperature- 32°C.
- Village is a home of 11417 peoples of which 3020 is females and 8397 is male.

4.2.4 ECONOMIC PROFILE/BANKS

- Mainly all the people is indulge with the job. Agricultural work is done on very small scale. 70% of the male population is working and 35% of female population is working.20% is migratory population is working.

4.2.5 ACTUAL PROBLEM FACING BY VILLAGERS AND SMART SOLUTIONS.

Problems	Solutions
Public transportation	Connect to BRTS or availability of bus
Instant access to the healthcare	Developing healthcare facilities
Pollution	Growing more greeneries

Table 4.2.1

4.2.6 BASE LOCATION MAP, LAND MAP, GRAM TAL MAP

Fig. 4.2.3. Base location map

4.2.7 PREVENTION OF TRADITIONS, FESTIVALS, CUISINE.

- Makarsankranti
- Diwali
- Holi
- Ganesh Chaturthi
- Janmashtami
- Navratri

4.2.8 TO KNOW THE REASON OF MIGRATION/ TRENDS OF MIGRATION/ PROBLEMS AND POTENTIAL OF MIGRATION.

- Employment opportunities is the most common reason due to people migrate. Except this lack of opportunities, better education, construction of dams, globalization, natural disasters (like earthquake, flood, etc.) and sometimes failure of the crops forced villagers to migrate to cities.

4.3DATACOLLECTION

4.3.1 METHODS OF DATA COLLECTION

- Problem definition
- Objective
- Survey
- Household data
- Water facilities
- Drainage facilities
- Solid waste management facilities
- Transportation facilities
- Electricity facilities
- Irrigation system
- Education facilities
- Data collection
- Analysis
- Design proposal
- Conclusion

4.3.2 PRIMARY SURVEY DETAILS

Fig. 4.2.4 Primary survey map

4.3.3 AVERAGE SIZE OF HOUSE

- All the house average size is 1 floor.
- Kachha houses average size is also 1 floor

4.3.4GEO-TAGGING OF HOUSE

- There is no geo-tagging house in the village.

4.3.5 NO. OF HUMAN BEING IN A HOUSE

- There are average 6 persons in each family in Talangpur village. As per 2011 census there are total 11417 peoples living in which 8397 is male and 3020 is female in Talangpur village.

4.3.6 WHICH MATERIAL USED LOCALLY?

- Most of the house have been constructed of RCC frame. There are very few kutchcha houses made up of bricks and stones in the village. The ratio of kutchcha to pucca house is 30:70.

4.3.7 OUT SOURCED MATERIAL

- Materials like cement, steel reinforcement, marbles, sand, aggregate etc have to purchase from outside as there is no material shop in the village.

4.3.8 LABOUR WORK DOING

- Skilled labour is not available in the village and in the village majority of the people is engaged in their jobs, agricultural work and small-scale industries.

4.3.9 ANY COSTING

- A new construction technique is bit costly compare to other villages because unavailability of material and unskilled labours. Transportation cost is more in this village. Sometimes it's costly on different site conditions.

4.3.10GEOGRAPHICAL DETAILS

- The geographical area of this village is 6.072 square km.
- Elevation/Altitude- 16 meters (above the sea level).
- It is located at 310 km from state capital Gandhinagar.
- Navsari, Surat, Vyara, Valsad is nearby cities.

4.3.11 DEMOGRAPHICAL DETAILS

- Total population is as per 2011 census is 11417 of which 8397 is male population and 3020 is female population.
- Literacy rate of this village is 61.4%.

4.3.12 OCCUPATIONAL DETAILS

- Mainly all the peoples areindulging in their jobs. Agricultural work is done on very small scale. 70% of male population is working and 35% of female population is working. 20% of migratory population is working.
- Their main occupation is: service in small scale industries, dairy, agricultural work.

4.3.13AGRICULTURAL DETAILS/ ORGANIC FARMING/FISHERY

- In the Talangpur village the main crops Isshirdi, Dangar, wheat, rice, vegetables, bajra, jowar, fodder.

4.3.14 MANUFACTURING HUB/ WARE HOUSES

- There are no large-scale industries in the village.

4.3.15 TOURISM CLUSTER

- There are no major attraction tourism spot in the Talangpur village except the lake near panchayat building.

4.3.16 SERVICE CLUSTER

- There are no necessary services like hospitals, cyber cafes, telecommunication networks etc.

Bank and ATM facilities is available.

4.3.17 MALE/ FEMALE DETAILS

	Male	Female	Total
Population	8397	3020	11417
Literacy rate	39 %	22 %	61 %

Table 4..3.1

4.3.18CAST WISE POPULATION DETAILS/ WHICH ID PROOF USING BY VILLAGERS

- All the cast peoples living in the village have the following ID proof:

I. Aadhar card

II. Ration card

4.3.19 OCCUPATIONWISEDETAILS/ MAJORITYBUSINESS

- Majority of the peoples of the village are indulge with their jobs, services in industries, agriculture.
- There are non-workers too in the village.
- Other works like street vendors, general shop owner, government employees, SMC workers.

4.3.20 PHYSICAL INFRASTRUCTURE FACILITIES

- Rain water harvesting system is available in the village.
- There are no sustainable facilities available in the village like bio-gas plant, solar street light rain, solid waste management plant, etc.
- No repair, no maintenance.
- Periodic Road repair facilities to be adopted.
- Drinking water facilities is available in the village.

4.4 INFRASTRUCTURE DETAILS: -

4.4.1 DRINKING WATER: -

Main source of drinking water is tap water to each home. In addition, there are Two Overhead tank of 1,40,000 lit., 60,000 lit. and One Underground tank of 40000 lit. is available.



Fig. 4.4.1 Overhead tank (1)Fig. 4.4.2 Overhead tank (2). Fig. 4.4.3 Underground tank

4.4.2 DRAINAGE NETWORK: -

Drainage is done with closed drainage system or you can say underground drainage line. Most of them are in good condition.

4.4.3 TRANSPORTATION AND ROAD NETWORK: - Local transportation facilities like chhakda, auto is available from Sachin to reach the village. There is a one bus stop in that village but that does not work means the bus are not travel through that village so proper bus network facilities problem occurs in that village.


Fig. 4.4.4 Road of agriculture area Fig. 4.4.5 Road of the village

4.4.4 HOUSING CONDITION: -

The village cover around 6.072 sq. km. for the residence purpose or housing purpose 60% of the total area means 3.64 sq.km. and 20% for agricultural and 20% for other uses.

fig. 4.4.6 Houses

4.4.5 SOCIAL INFRASTRUCTURE FACILITIES, HEALTH, EDUCATION, COMMUNITY HALL, LIBRARY

HEALTH FACILITIES

There is a one PHC center is available in that village also the main PHC center is nearby that village (Lajpor).

Fig.4.4.7 Health Care Center

EDUCATION FACILITIES

For education purpose primary school, Aaganwadi is available but the government school contains only 280 students in their school so more capacity and more area required to the school so some maintenance and development is required.

Fig. 4.4.8 Aanganwadi of Talangpur

Fig. 4.4.9 School of Talangpur

COMMUNITY HALL

There is no availability of community hall in Talangpur village.

LIBRARY

There is no extra area and room for library but for school students a small book shell or a library available in their village.

4.4.6 TECHONOLOGY MOBILE / WIFI / INTERNET USAGE DETAILS %

In the Talangpur village there are no Wi-Fi is available but for the dwellers network towers and cell towers are install by private network companies so freely they can use internet without any disturbance or problems around 70-75% people are use internet in that village.

4.4.7 SPORTS ACTIVITY AS GRAM PANCHAYAT: -

There is no any sports activities in that village but for the interested participants they can apply through SachinTaluka in district level competition.

4.4.8SOCIOCULTURALFACILITIES, PUBLICGARDEN/PARK/PLAYGROUND/POND /OTH ER RECREATIONAL FACILITIES: -

There is some socio-cultural facilities like public library, public garden, pond etc.But no any cinema hall or theatre is available in that village.

Fig. 4.4.10 Pond facilities

4.4.9 OTHER FACILITIES

In other additional facilities there are pever block pavement available in both sides of the road for the purpose of footpath or dwellers walking and also at the outer slope of the pond available in that village.

4.4.10 SUSTAINABLE INFRASTRUCTURE FACILITIES & REPAIR &MAINTENANCE: -

As a sustainable infrastructure means which is fulfilling the development purpose as well as environment purpose so in this category of infrastructure a rain water harvesting system is available is that village which does not need any reappearance and maintenance otherwise after this no any sustainable facilities is available.

4.4.11 EXISTING CONDITION OF PUBLIC BUILDINGS & MAINTENANCE OF EXISTING PUBLIC INFRASTRUCTURES: -

As a public infrastructure development there are a big pond and cement concrete road is available which are in good condition but the cement concrete is not fulfill the maintenance and reappearance purpose in future so the future condition of that road is quietly low compare to present situation.

4.4.12 ANY OTHER DETAILS: -

In other details the village install some benches at a particular distance for peoples to rest, And also a small dome is available in that village as a protective from sun rays.

Fig. 4.4.11 Benches Facilities

4.5 ELECTRICAL CONCEPT

4.5.1 RENEWABLE ENERGY SOURCE PLANNING PARTICULARLY FOR VILLAGES

Providing access to electricity in rural areas of India is a major challenge. The fuel is generally of poor quality, and energy is used inefficiently; the power supply is unreliable and access to it limited, with about 500 million people in rural areas still unable to benefit from modern energy services. This not only has an adverse effect on economic productivity; more importantly, it also affects people's quality of life and is having a strong impact on the environment. The unsustainable use of locally sourced biomass and an increasing dependence on fossil fuels are causing environmental degradation at local (land degradation), regional (air, water and soil pollution) and global levels (greenhouse gas – GHG emissions contributing to climate change).The national Ministries of Power and of New and Renewable Energy are addressing these challenges through a multi-pronged approach with programmes, such as the Rajiv Gandhi Scheme of Rural Electricity Infrastructure and Household Electrification, the National Biogas and Manure Management Programme, and Biomass Gasification. At the same time, locally based measures that use renewable energies to secure the rural power supply are opening up new opportunities for economic productivity while also reducing GHG emissions and local pollutants resulting from the extensive usage of fossil fuels. The project takes into account India's diverse rural landscape. It is carrying out cluster-based pilot interventions in 26 villages in two distinct regions: Korba in Chhattisgarh, and Kolwan in Maharashtra. It involves the use of three different renewable energy technologies: straight vegetable oil-based electricity generation, dry anaerobic digestion of napier grass, and napier grass-based fuel pellet production. The project integrates the respective communities into its activities through the formation of village energy committees (VECs), sub-VECs and village energy enterprises (VEEs).Key approaches used to increase the productive applications of the power generated under the project include the promotion of entrepreneurship and the dovetailing of government schemes, such as integrated child development schemes.

In this way, the project adheres to a sustainable and integrated concept addressing environmental, economic and social concerns.

4.5.2 IRRIGATION FACILITIES

Irrigation is the process of applying controlled amounts of water to plants at needed intervals. Irrigation helps to grow agricultural crops, maintain landscapes, and revegetate disturbed soils in dry areas and during periods of less than average rainfall. Irrigation also has other uses in crop production, including frost protection,[1] suppressing weed growth in grain fields[2] and preventing soil consolidation.[3] In contrast, agriculture that relies only on direct rainfall is referred to as rain-fed. Irrigation systems are also used for cooling livestock, dust suppression, disposal of sewage, and in mining. Irrigation is often studied together with drainage, which is the removal of surface and sub-surface water from a given area. Irrigation systems are also used for cooling livestock, dust suppression, disposal of sewage, and in mining.

Irrigation is often studied together with drainage, which is the removal of surface and sub-surface water from a given areaare:

Fig.4.5.1Leaks in micro-irrigation drip lines.

Fig.4.5.2 Irrigation canal

4.5.3 ELECTRICITY FACILITIES :-

Electricity in Talangpur village is supply by GEB. Under Jyotigram yojana electricity is Provided 24 hour in domestic use. But for agricultural use electricity is available only 8 hours. Government and school building are also well electrified. Electricity for road Streetlight are fulfil by GEB. There is no renewable energy source are available to Produce electricity.

4.6 Existing institution like- Village administration- Detail profile

4.6.1 BACHAT MANDALI

- This type of mandali is not available in the talangpur village.

4.6.2 DUDH MANDALI

- This type of mandali is not available in the talangpur village.

4.6.3 MAHILA FORUM

This type of forum is not available in the Talangpur village.

4.6.4 PLANTATION FOR AIR POLLUTION

- There is no need of such an action because the village is air population free.
- And there is no action taken like plantation for air pollution.

4.6.5 RAIN WATER HARVESTING- WASTEWATER RECYCLING

- Rain water harvesting is done in the Talangpur village.

4.6.6 AGRICULTURAL DEVELOPMENT

- Agricultural work is done on the small scale in the village and all the facilities related agriculture work is available in the village.

4.6.7 ANY OTHER

- There is no other village administration exist.

CHAPTER5: SUSTAINABLE TECHNICAL OPTIONS WITH CASE STUDY OF EXISTING VILLAGE

5.1 CIVIL

5.1.1 ADVANCED CONSTRUCTION TECHNIQUES

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

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

- 3D printing.
- Materials.
- Building information modeling (BIM).
- Cladding systems.
- Computer aided design and computer aided manufacturing (CAD/CAM).
- Computer numerical control.
- Construction Innovation Hub.
- Construction plant.
- Modern methods of construction.
- Modular construction.
- Offsite manufacturing.
- Prefabrication and preassembly.
- Research and development

5.1.2 SOIL LIQUIFICATION

Liquefaction is the phenomena when there is loss of strength in saturated and cohesion-less soils because of increased pore water pressures and hence reduced effective stresses due to dynamic loading. It is a phenomenon in which the strength and stiffness of a soil is reduced by earthquake shaking or other rapid loading.

Liquefaction occurs in saturated soils and saturated soils are the soils in which the space between individual particles is completely filled with water. This water exerts a pressure on the soil particles that. The water pressure is however relatively low before the occurrence of earthquake. But earthquake shaking can cause the water pressure to increase to the point at which the soil particles can readily move with respect to one another. Although earthquakes often triggers this increase in water

pressure, but activities such as blasting can also cause an increase in water pressure. When liquefaction occurs, the strength of the soil decreases and the ability of a soil deposit to support the construction above it.
Soil liquefaction can also exert higher pressure on retaining walls, which can cause them to slide or tilt. This movement can cause destruction of structures on the ground surface and settlement of the retained soil.

5.1.3 SUSTAINABLE SANITATION

The main objective of a sanitation system is to protect and promote human health by providing a clean environment and breaking the cycle of disease.

To qualify as **sustainable sanitation**, a sanitation system has to be economically viable, socially acceptable, technically and institutionally appropriate, and protect the environment and natural resources.

Most sanitation systems have been designed with these aspects in mind, but they fail far too often because some of the criteria are not met. In fact, there is probably no system which is absolutely sustainable. The concept of sustainability is more of a **direction** than a state to reach. Nevertheless, it is crucial that sanitation systems are evaluated carefully with regard to all dimensions of sustainability.

5.1.4 TRANSPORTATION INFRASTRUCTURE/SYSTEM

The term “infrastructure” is used on various scientific and non-scientific fields. It originates from Latin, and namely the word “infra” is understood as grounds or fundamentals while “structure” means distribution of elements of certain undefined setup. By the definition that is given in the Cambridge Advance Learner’s Dictionary Thesaurus (2016) “infrastructure” is the basic systems and services, such as transport and power supplies, that a country or organization uses in order to work effectively. Infrastructure is a component of the territorial structure of national economy, which is formed by the transport, communications, trade, energy and water management system, as well as dwellings, schools, objects of health protection, culture, sports and other objects for care of inhabitants and their arrangement in any territory (Saeima, 2010). Russian researches Rudneva and Kudryavtsev believe that transport infrastructure is a regional transport infrastructure capital, i.e., “a certain type of

capital demonstrating the specific social character, manifested in transport infrastructure ability to bring to the region the benefits with not only economic, but also with socio-cultural characteristics, and conditioning the synergistic effect of its implementation" (Rudneva and Kudryavtsev, 2013).

5.1.5 VERTICAL FARMING

The earth population is growing at a steady pace. As the population is growing so the demand for food supply is also increasing. To grow more food more land is required while prime agricultural lands are becoming scarce and expensive. Agriculture researchers are coming up with new ideas to generate food production and one such researcher Professor Dickson Despommier in 1999 came up with a concept of vertical farming; this farming utilizes less space for growing more food. Unlike traditional farming, he came up with new farming methods such as Hydroponics and Aeroponics which has high production of food at less space and yields faster.

Vertical farming in simple words is – 'farms stacked on top of one another unlike conventional horizontal farming'. We can also define vertical farming as the practice of producing food and medicine in vertically stacked layers, either vertically inclined surfaces and/or integrated into Different Constructions. Some entrepreneurs or farmers are beginning to implement vertical farming by using abandoned warehouses, apartment rooftops, and lands that are unfertile and useless for farming to produce vegetables, fruits, and leafy vegetables with high yields. In vertical farming, it involves growing crops in stacked layers reaching to several stories high with controlled environments such as light, temperature, and nutrients in indoors. This concept of farming is mostly utilized in small residential homes in Indian urban regions, while to produce commercially it has to be seriously considered as this new farming technology is growing rapidly in developed countries.

5.1.6 CORROSION MECHANISM, PREVENTION & REPAIR MEASURE OF RCC STRUCTURE

Concrete is one of the most widely used construction materials in the world, with many key advantages such as formability and durability[i]. Concrete also has high compressive strength, which is defined as the maximum compressive load a body can bear prior to failure. However, concrete is actually quite weak in tensile

strength, meaning that concrete is not an ideal material if the structure is subjected to tension.

We choose the road as a project which cover the maintenance and as well as construction parts so no needs any repairs to that road. The details of the project are..

Self-healing Roads

Technology

While solar roadways turned out to be an engineering blunder, self-healing roadways could yet prove to be an engineering marvel.

Asphalt, one of the key compounds that make up a road, is a naturally self-healing material. If given an adequate rest period, asphalt retains the ability to restore **stiffness and strength**. Under the intense heat of the sun compounded by asphalts natural tendency to absorb heat, asphalt will revert to a slightly less viscous state (like on those hot summer days when the road turns into goo). The material, as it expands slightly due to thermal expansion, seals micro-cracks that naturally develop from traffic.

As it turns out, with the simple addition of small steel fibers, the self-healing abilities of asphalt can be significantly amplified. ErikSchlangen, a materials scientist at Delft University in the Netherlands, believes this is the solution to self-healing roads.

How it Works

The secret is in the conductivity of the steel. By simply driving an **induction machine*** over the compromised area, the steel will heat up, effectively raising the temperature of the asphalt. The heated asphalt then becomes quite malleable to the point where it is practically a liquid. From there, cracks begin to seal and potholes go into remission, restoring the road to its formal glory.

* Induction heating involves the process of using a magnet to rapidly heat up a metal. The process involves sending an alternating current through a series of coils, resulting in an oscillating magnetic field. The magnetic field then heats up molecules within a ferromagnetic metal (a substance that is highly susceptible to magnetization)- in this case, the steel fibers.

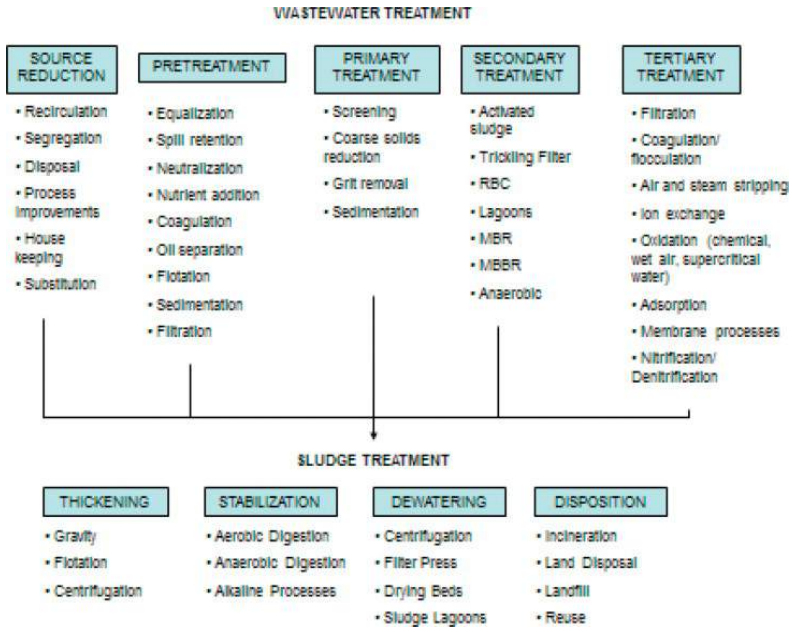
The process is technically not entirely "self-healing" since an induction machine is necessary to initiate the healing process. It is, however, highly effective and sufficiently cheaper than closing the road for a temporary patch or a new road entirely, a process which takes days to complete

Induction heating process of self-healing road

5.1.7 SEWAGE TREATMENT PLANT

Wastewater Treatment Processes

Wastewater treatment plant design is based on the selection and sequencing of various unit operations. A schematic illustrating integration of processes capable of treating a variety of wastewaters is showing Figure. Selection of a combination of processes depends on the characteristics of the wastewaters; the required effluent quality(including potential future restrictions); costs; and, availability of land. As previously indicated, treatment methods can be classified as pretreatment/primary treatment; secondary treatment; tertiary treatment; sludge treatment/stabilization; and, ultimate disposition or reuse treatment technologies for residuals.



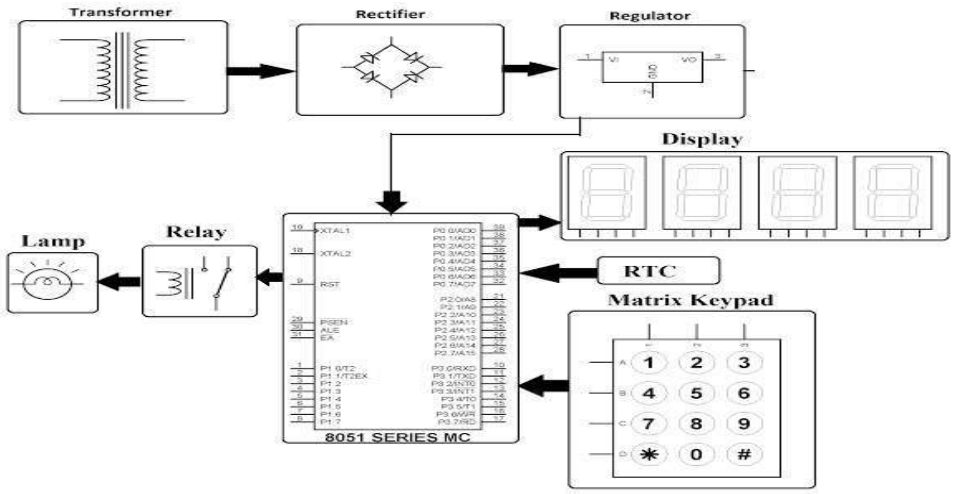
5.2 ELECTRICAL CONCEPT

5.2.1 PROGRAMMABLE LOAD SHEDDING

Introduction: -

The project is an automatic load operation system that controls load operation, multiple numbers of times According to programmed instruction. The project eliminates the manual ON/OFF switching of load. A real Time clock (RTC) is used to track the time and automatically switch ON/OFF the load. This project is required for load shedding time management which is used when the electricity demand Exceeds the supply and there comes a need for manually switching ON/OFF the electrical devices in time. Hence this system eliminates.

the manual operation by automatically switching the load ON/OFF. A matrix Keypad is interfaced with the microcontroller from where the specified time is input to the microcontroller When this input time equals to the real time, based on the commands the microcontroller initiates that Particular relay to switch ON/OFF the load. The time is displayed on a seven-segment display.



Block diagram: -

Fig.5.2.1

COMPONENTS: -

- **REGULATOR**
- **RTC**
- **LCD**
- **KEYPAD**
- **RELAY**
- **ARDUINOUNO**
- **TRANSFORMER**
- **LED**

WORKING: -

The AC power supply from mains first gets converted into and unregulated DC and then into a constant Regulated DC with the help of this circuit. The circuit is made up of transformer, bridge rectifier made up from diodes, linear voltage regulator

7805 and capacitors. If you observe, the working of the circuit can be divided into two parts. In the first part, the AC Mains is Converted into unregulated DC and in the second part, this unregulated DC is converted into regulated 5V DC. So, let us start discussing the working with this in mind. Initially, a 230V to 12V Step down transformer is taken and its primary is connected to mains supply. The Secondary of the transformer is connected to Bridge rectifier (either a dedicated IC or a combination of 4 1N4007 Diodes can be used). A 1A fuse is placed between the transformer and the bridge rectifier. This will limit the current drawn by the Circuit to 1A. The rectified DC from the bridge rectifier is smoothened out with the help of 1000µF Capacitor. So, the output across the 1000µF Capacitor is unregulated 12V DC. This is given as an input to the 7805 Voltage Regulator IC. 7805 IC then converts this to a regulated 5V DC and the output can be obtained at its Output terminals

5.2.2 RAILWAY SECURITY SYSTEM USINGIOT

This project is to create a Security System for the goods that are carried in open top freight trains. The most efficient way to secure anything from thieves is to have a continuous observation. So, for continuous observation of the open top freight train, Camera module2 has been used. Passive Infrared Sensor (PIR) 1 has been used to detect the motion or to sense movement of people, animals, or any object. So, whenever a motion is detected by the PIR sensor, the Camera takes a picture of that particular instance.

That picture will be sent to the Raspberry PI which does Skin Detection Algorithm and specifies whether that motion was created by a human or not. If a human makes it, then that picture will send to the drop box. Any Official can have a look at the same. The existing system has a CCTV installed at various critical locations like bridges, railway stations etc. but they do not provide a continuous observation. This paper describes about the Security System that provides continuous observation for open top freight trains so that goods can be carried safely to its destination.

5.2.3 MANAGEMENT THROUGH ENERGYHARVESTING

Energy harvesting (also known as power harvesting or energy scavenging or ambient power) is the process by which energy is derived from external sources (e.g., solar power, thermal energy, wind energy, salinity gradients, and kinetic energy, also known as ambient energy), captured, and stored for small, wireless autonomous devices, like those used in wearable electronics and wireless sensor networks.

Energy harvesters provide a very small amount of power for low-energy electronics. While the input fuel to some large-scale generation costs resources (oil, coal, etc.),

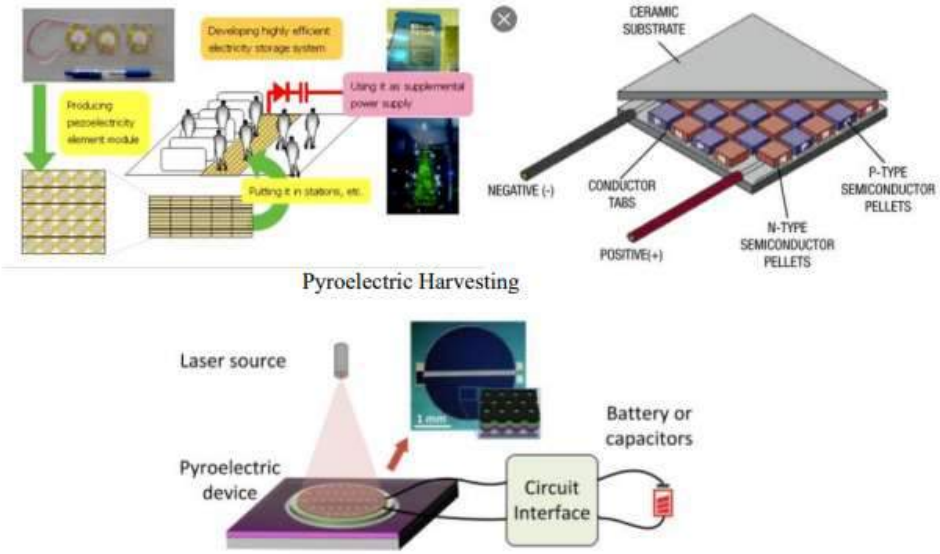


Fig. 5.2.3.1

the energy source for energy harvesters is present as ambient background. For example, temperature gradients exist from the operation of a combustion engine and in urban areas, there is a large amount of electromagnetic energy in the environment because of radio and television broadcasting.

One of the earliest applications of ambient power collected from ambient electromagnetic radiation (EMR) is the crystal radio. The principles of energy harvesting from ambient EMR can be demonstrated with basic components.

5.2.4 MOISTURE MONITORINGSYSTEM

Monitoring the soil moisture generally done by manual observation of researchers in agriculture area. It is obviously taking a long time, especially when monitoring the declining level of soil moisture. This practice is less efficient especially when examining the level of soil moisture contained plants in it. For that we need a solution to improve efficiency in terms of use of time and in terms of facilitating the monitoring of soil moisture conditions. Our proposed system to monitor soil moisture uses Libmium Wasp mote as a microcontroller. The process of sending data from the sensor to the Internet network and then to the database server took about 10-15 seconds. This was influenced by the process of taking data from the board and also the delay when the sensor connected to the available network. The results of system testing showed that the system can work in a way if researchers leave the soil with high humidity, then researchers want to monitor soil moisture at a certain moisture level, then the researchers simply set the level of humidity that wants to be

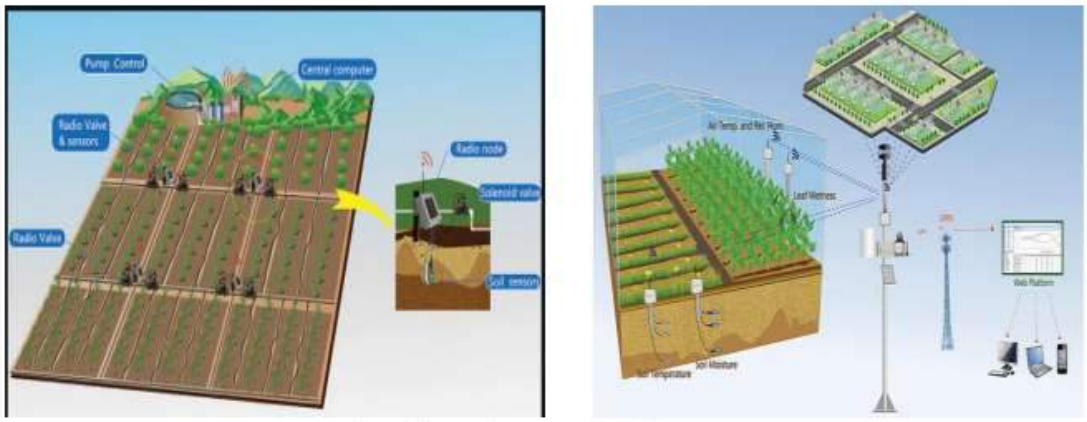


Fig. 5.2.4.1

maintained by the application system. If the soil moisture content is equal or less than the point set on the system, the system provided notification immediately.

BLOCK DIAGRAM: -

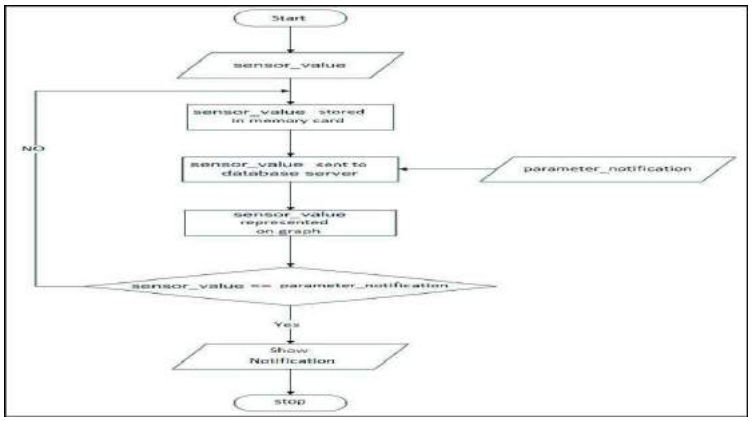


Fig.5.2.2

5.2.5 HOME AUTOMATION USING IOTCONTROL

Home automation is a challenging one not only to the developer but also to the Consumer. Developer has to choose the component as per the customer requirement. Due to all the customer demands are not equal hence they have to compromise with the existing products.

Through detailed study of "Home Automation Using Internet of Thing" it is found that have used Raspberry pi module to connect ESP8266-01 module to the internet. Through this module they are

controlling various devices through web page and also through android application. In the design have implemented Zigbee module in Arduino mega through which they are controlling devices. In this design used various sensors for various purpose. Also, they have provided real time notification, feedback on web-server in whichcustomers

can see what is happening in their home. With the help of logic gates, a Raspberry pi, 555 timer and flip-flop also the devices are controlled from web app.
Programmable Infrared Accessory Light Switch", how TV remote is used to control room light and other appliances. Here IR remote and one IR receiver is used and programmed in such a way that it stores the frequency of the existing remote and use them directly to control appliances. So, here we introduce Arduino Uno with ESP8266-01 module. This is not only cost-effective but also prove to be the easiest one when it comes in term of programming and also implementation.

Table 5.2.5.1 Comparison of Different communication module

Available Technology	**IEEE Standard**	**Network Topology**	**Maximum Power Consumption (In mw)**	**Data Rate**	**Maximum Range (in meter)**	**Cost**
Bluetooth	802.15.1	One to many	100	1 to 3 Mbps	10	Medium
Zigbee	802.14.5	Star, mesh	3	20 to 250 kbps	100	High
Esp8266-01	802.11	Star, mesh	100	1 to 11 Mbps	150	Low

From table 5.2.1.1, it is observed that Esp8266-01 works on 802.11 b/g/n protocol whereas Zig bee uses 802.14.5 protocol. Zigbee consumes least power as 3mW whereas Wi-Fi and Bluetooth consume nearly
100mW. But if we compare speed of Esp8266 has maximum speed up to 11mbps but Zigbee has only 250kbps. Clearly esp8266 defeat Zigbee and Bluetooth not only in cost but also in speed. Fig.1 is giving a brief idea about the interconnection of microcontroller, peripheral devices as well as sensors and what is the architecture behind it.

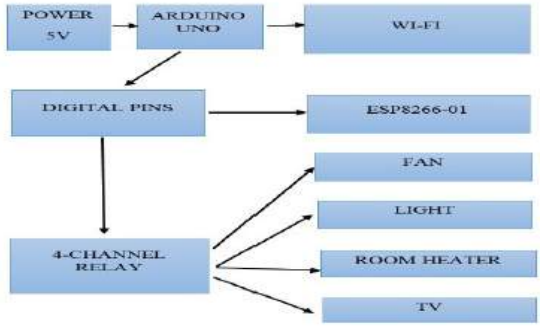


Fig 5.2.3 Home automation system Fig 5.2.4 Arduino Uno circuit

Here are some possible scenarios that we may see in future.

- **Lighting**

These days, smart lighting is all the rage. They can be scheduled to turn on/off and change their intensity. However, in future, it is possible for this to be taken a step further. With IoT enabled across the home, the lights can respond to other actions you take. For example, the lights can respond to your home cinema. They can turn off or dim whenever you start watching a movie. Going further, they may even react to the type of movie. For example, they can turn off completely if the lights sense that you are watching a horror movie, giving you the proper atmosphere.

- **Doors**

In the future, doors can become smarter as well. Imagine them opening only when you enter or close. This may be made possible via a smart device or facial recognition. This can be taken to the next step by getting the rest of the house take actions in tandem with your entry. For example, the lights can turn on as soon you as enter through the door. Alternatively, if you are leaving, they can turn off.

- **Thermostat**

These days, you can control your home thermostat remotely via apps. In the future, you may not even need to do that. The thermostat will be able to recognize if you are nearing your home. It will then check the room and external temperature and set the right one for you. It may even recognize when you are taking certain actions and adjust accordingly such as when you are showering or exercising.

- **Home routines**

  It is already possible for much of the home to be connected with smart devices. There are smart sockets that automatically turn on/off devices. Smart alarms can play music when you wake up or even tell you the news. Voice assistants can even run entire routines where the lights, home appliances, thermostat, alarms and other devices are controlled.

Table 5.2.5.2 Design Costing of home automation using IoT

No.	Equipment	Quantity	Price
1	Arduino UNO ATMEGA328P processor	1	1000
2	4 channel relays	1	500
3	ESP8266601 Compact board	1	500
4	Wi fi	1	8000
5	Gas sensor	1	250
6	Temperature sensor	1	250
7	LCD display	1	500
8	Additional cost	5% of total cost	500
Total			10500 Rs.

5.2.6 PC BASED ELECRICAL LOAD CONTROL

Introduction-:

The aim of this project is to control the electrical appliances through a personal computer (PC). For example, theatre lighting can be centrally controlled form the PC for better stage management. Presently, they are manually managed which makes it difficult to coordinate the lighting with the respective scene. With this system, one

can control the electrical appliances ON/OFF by just being seated at one place using a PC.

This system is integrated with the electrical loads and also connected to the PC where centralized control takes place. It uses an RS-232 protocol from the microcontroller to communicate with the PC. To turn on/off the appliances, we use Hyper Terminal on PC. Once the connection is established with the PC, then the system starts working. The microcontroller used in this project belongs to 8051 family.

This project can be further enhanced by implementing a GUI based control panel on the PC with appropriate embedded software. The intensity control can also be incorporated using power electronics devices. Note: The project works only on operating systems having hyper terminal (E.g., Windows XP). The computer must have a RS232 serial port. Electrical appliances can be controlled through a PC interfaced to a microcontroller. This interface is done through a level shifter IC. The loads are then controlled through the relays duly interfaced to the relay driver which in turn is connected to the microcontroller.

5.2.7 ELECTRICAL PARAMETERSMEASUREMENTS

Electrical measurements are the methods, devices and calculations used to measure electrical quantities. Measurement of electrical quantities may be done to measure electrical parameters of a system. Using transducers, physical properties such as temperature, pressure, flow, force, and many others can be converted into electrical signals, which can then be conveniently measured and recorded. High- precision laboratory measurements of electrical quantities are used in experiments to determine fundamental physical properties such as the charge of the electron or the speed of light, and in the definition of the units for electrical measurements, with precision in some cases on the order of a few parts per million. Less precise measurements are required every day in industrial practice. Example-: Ammeter, Voltmeter.

CHAPTER 6: SWACHCHH BHARAT ABHIYAN (CLEAN INDIA)

6.1 WHICH TYPE OF SWACHCHHTA NEEDED IN YOUR VILLAGE EXPLAINING EXISTING SITUATION WITH PHOTOGRAPH

- Our village is facing problems regarding the Swachchhta as there are not any facilities Available in village for excretion of waste.
- There are no facilities given by government for management of waste.
- No facility is available for the management of solid waste as well.

Types of Swachchhta needed in Talangpur village

- Biogas plant is required for the treatment of biological waste.
- Dustbins should be distributed in whole village so the villagers throw garbage in Dustbins.
- Government should provide facilities like garbage vans like urban areas so that waste Is deposited and directly treated in treatment plants.
- Water treatment plant is also necessary for the treatment of waste water from houses And agricultural fields.

6.2GUIDELINES FOR THE PROCESS OF THE IMPLEMENTATION IN YOUR VILLAGE

- The Swachh Bharat Mission is split into two sub–Missions Swachh Bharat Mission (Gramin) and Swachh Bharat Mission (Urban).
- Swachh Bharat Mission (Gramin), Gram Panchayats and Jilla Parishads will work on War footing to make sure that all households in all villages have functional water Supply and toilet facilities. Productive use of night soil as bio-fertilizers is also on the Cards.
- Implementation of SBM (G) is proposed with ‘District’s the base unit, with the goal Of creating ODF GPs. The District Collectors/Magistrates/CEOs of Zilla Panchayat Are expected to lead the Mission themselves, so as to facilitate district wide planning Of the Mission and optimum utilization of resources. The Baseline Survey data of

2013 collected by States and entered on the IMIS of MDWS by 31.1.2015 will be Considered as the base for States where the survey is complete. For other States the Data entered on completion of the Survey will be taken as the base data.

- A project proposal shall be prepared by the district, scrutinized and consolidated by The State Government into a State Plan. The State Plan with district wise details will Be shared with the Government of India (Swachh Bharat Mission-Ministry of Drinking Water and Sanitation). This Plan will include a 5-year Plan along with 5 Independent Annual Plans which merge into the 5 year Plan. These plans shall be Approved by the Ministry each year. On the basis of formative research and Consultation rounds, the State shall develop tailor made Communication Strategy, a Communication Plan, and material and will train community mobilisers to use these Tools.
- Individual households will be provided a menu of options for their household latrines, Both in terms of technology, design and cost. To bring about the desired sustainable Behavioral changes for relevant sanitary practices, intensive IEC and advocacy, based On Inter Personal Communication (IPC) with participation of one or more of the Following – Government representatives like SwachhataDoots/ ASHAs, ANM Workers, Anganwadi workers/CSOs/NGOs/Panchayati Raj Institutions/resource Organizations/local SHGs with a good track record is envisaged. Thus, a mix of Individual and Community led approaches is envisaged to achieve the desired Outcomes.

Fig. 6.1 Swachhta Abhiyan

CHAPTER 7 VILLAGE CONDITION DUE TO COVID-19

7.1 TAKEN STEPS IN ALLOCATED VILLAGE RELATED TOEXISTINGSITUATION.

Steps taken in allocated village related to existing situation:

- If you have one or more of the following clinical symptoms for a prolonged duration: fever, difficulty in breathing, cough, sore throat, running nose, loss of taste or smell, and body pain. It would take anywhere between 3 hours to 2 days for the test results to arrive. Until then, you must isolate yourself to prevent the spread of infection.

- You will be likely be charged INR 1500 for an RT-PCR test. The Gujarat government is currently aggressively testing, and encouraging people to take the Rapid Antigen Test (RAT) free of cost at stations set up across the state.

- It's recommended to call the toll-free number 1075 or central helpline number +91-11-23978046 for information before going to get tested. In Gujarat, you may also call 104, the state helpline number for COVID-19.

- Please carry your government ID card (Aadhar card/Passport/Voter ID) and proof of your address when you proceed to get tested at any of the laboratories/hospitals.

- All migrant labourers returning to village will have to undergo antibody tests for COVID-19. If they are not found to have antibodies, they will have to undergo an antigen test. If the antigen test is negative even if the labourer shows symptoms of COVID-19, then RT-PCR test will be conducted. If any laborers is found to have coronavirus symptoms, he/she will have to be mandatorily quarantined for seven days.

Fig. 7.1 Social Distancing

7.2 ACTIVITIES DONE BY STUDENTS FORALLOCATED VILLAGE.

- Due to COVID-19 we are unable to do such activities to control the current condition of the village. We had visited few places in the village and follow the guidelines given there. The health center of the village is in lajpor. All the medical facilities are available there.

7.3 ANYOTHERSTEPSTAKEN BY VILLAGES ORSTUDENTS.

- Due to COVID-19 we are unable to do such activities to control the current condition of the village but on the part of villagers they use sanitizer and mask. Before entering any public property one should be properly sanitized and put on mask.

- They do also maintain social distancing.

CHAPTER 8 SUSTAINABLEDESIGN PLANNING PROPOSAL (PROTOTYPE- PART I)

8.1 DESIGN PROPOSAL

In general survey done by us, we observed that the basic facilities required in a village are Physical infrastructure, social infrastructure, Socio-cultural infrastructure. Physical infrastructure includes sources of drinking water, Water Tanks, Drainage systems, Road networks, Electricity distribution, Sanitation facilities and irrigation system. Social infrastructure includes Schools, colleges, Aanganwadi, Hospitals, sub centers, Clinics. Sociocultural facilities include Community halls, public library, public garden, pond, recreation center, cinema hall, Assembly polling station, Birth and death registration office, etc.

8.1.1 SUSTAINABLE DESIGN

Primary Health Centre

- The public healthcare system in India evolved due to a number of influences from the past 70 ... At the primary level are Sub Centres and Primary Health Centres (PHCs). of nearly one million Accredited Social Health Activist, a ratio of one for every 1000 people in rural villages and marginalized urban communities.

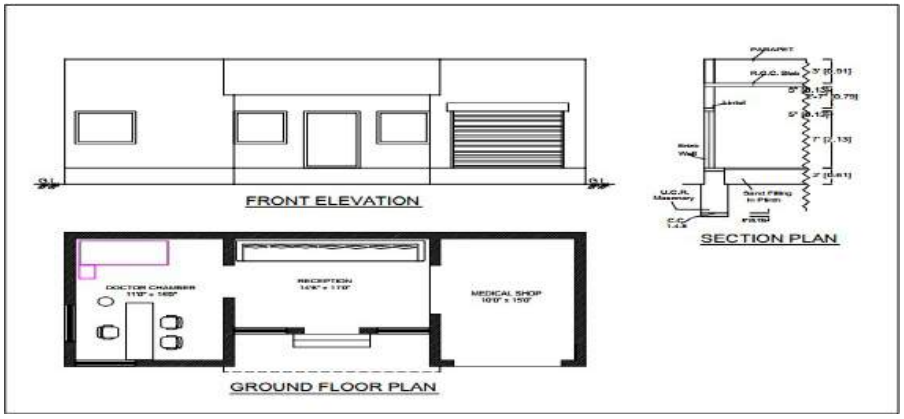


Figure 8.1.1: PHC center

Table 8.1.1 Measurment sheet and Abstract sheet

MEASUREMENT SHEET							
ITEM	**DESCRIPTION**	**NO**	**L**	**B**	**H/D**	**QUANTITY**	**UNITS**
ITEM NO.:- 1	Excavation for foundation						
	(B) Dense or Hard soil						
	LW-1	2	11.89	0.60	1.20	17.12	
	SW-1	4	3.96	0.60	1.20	11.40	
						28.53	**Cum.**
ITEM NO.:- 2	P/L Cement Concrete 1 : 4 : 8 in Foundation & Plinth						
	LW-1	2	11.89	0.60	0.15	2.14	
	SW-1	4	3.96	0.60	0.15	1.43	
	Flooring bedding						
	DOCTOR CHAMBER	1	3.35	4.57	0.10	1.53	
	RECEPTION	1	4.42	3.35	0.10	1.48	
	MEDICAL	1	3.05	4.57	0.10	1.39	
						7.97	**Cum.**
ITEM NO.:- 3	Brick masonary in C.M. 1 : 6 in Foundation andPlinth.						
	Foundation						
	STEP-1						
	LW-1	2	11.89	0.60	1.05	14.98	
	SW-1	4	3.96	0.60	1.05	9.98	
	Plinth						
	LW-1	2	11.73	0.45	0.45	4.75	
	SW-1	4	4.11	0.45	0.45	3.33	
						33.04	**Cum.**
ITEM NO.:- 4	P/L C.C. 1:2:4 for R.C.C. Work in Copping						
	Plinth						
	LW-1	2	11.73	0.45	0.15	1.58	
	SW-1	4	4.11	0.45	0.15	1.11	
						2.69	**Cum.**

ITEM	DESCRIPTION	NO	L	B	H/D	QUANTITY	UNITS
ITEM NO.:- 5	Filling in foundation and plinth						
	DOCTOR CHAMBER	1	3.01	4.11	0.80	9.90	
	RECEPTION	1	2.90	4.19	0.80	9.72	
	MEDICAL	1	2.71	4.11	0.80	8.91	
						28.53	**Cum.**
ITEM NO.:-6	Brick masonary in C. M. 1 : 6 in superstructure.						
	LW-1	2	11.73	0.23	3.05	16.46	
	SW-1	4	4.57	0.23	3.05	12.82	
	G.F. Parapet wall	1	33.84	0.23	0.90	7.00	
						36.29	**Cum.**
	DEDUCTION						
	MD	1	1.20	0.23	2.10	0.58	
	W	2	1.37	0.23	1.20	0.76	
	W	2	1.19	0.23	1.20	0.66	
	R.S.	1	2.44	0.23	2.10	1.18	
						3.17	Cum.
	Net Quantity after deduction		36.29	-	3.17	**33.11**	**Cum.**
ITEM NO.:- 7	P/F 35 mm Thick Shutters with indian teak wood frames for door						
	Main Door	1	1.20	-	2.10	2.52	
						2.52	**Sqm.**
ITEM NO.:- 8	P/F 35 mm Thick Shutters with indian teak wood frames for Windows						
	W	2	1.37	-	1.20	3.29	
	W1	2	1.19	-	1.20	2.86	
						6.14	**Sqm.**
ITEM NO.:-9	P/L C.C. 1:2:4 For R.C.C. work in Lintel						

G.F.	LW-1	2	11.73	0.23	0.15	0.81	
	SW-1	4	4.57	0.23	0.15	0.63	
						1.44	**Cum.**
ITEM NO.:- 10							
	P/L C.C. 1:1.5:3For R.C.C. work in Slab						
	G.F.	1	11.74	5.04	0.13	7.40	
	"	1	4.88	0.23	0.13	0.14	
						7.54	**Cum.**
	deduction						
		0	0.00	0.00	0.00	0.00	
						0.00	**Cum.**
	Net Quantity after deduction		7.54	-	0.00	**7.54**	**Cum.**
ITEM	**DESCRIPTION**	**NO**	**L**	**B**	**H/D**	**QUANTITY**	**UNITS**
ITEM NO.:- 11							
	Providing Steel Reinforcement for R.C.C. work						
	Copping		2.69	X	60.00	161.60	
	Lintel		1.44	X	65.00	93.60	
	Slab		7.54	X	65.00	490.10	
						745.30	**Kgs.**
					Say :	745.00	**Kgs.**
	(A) Providing Mild Steel 20 % of total Steel.						
			745	X	0.20	**149.00**	**Kgs.**
	(B) Providing Cold twisted Steel 80 % of total Steel.						
			745	X	0.80	**596.00**	**Kgs.**
ITEM NO.:- 12							

	Providing 15 mm thick interior cement plaster						
	INSIDE						
G.F.	DOCTOR CHAMBER	2	3.35	-	3.05	20.44	
	"	2	4.57	-	3.05	27.88	
	Ceilling	1	3.35	4.57	-	15.31	
	RECEPTION	2	4.42	-	3.05	26.96	
	"	2	3.35	-	3.05	20.44	
	Ceilling	1	4.42	3.35	-	14.81	
	MEDICAL	2	3.05	-	3.05	18.61	
	"	2	4.57	-	3.05	27.88	
	Ceilling	1	3.05	4.57	-	13.94	
						186.25	**Sqm.**
	DEDUCTION						
	MD	1	1.20	-	2.10	2.52	
	W	2	1.37	-	1.20	3.29	
	W1	2	1.19	-	1.20	2.86	
						8.66	**Sqm.**
	Net Quantity after deduction		186.25	-	8.66	**177.59**	**Sqm.**
ITEM NO.:- 13							
	Providing 20 mm thick Single coat Sand Faced cement plaster						
	Front & Back Side	2	11.74	-	5.83	136.89	
	Building Side	2	5.03	-	5.83	58.65	
						195.54	**Sqm.**
	Net Quantity after deduction		195.54	-	0.00	**195.54**	**Sqm.**
ITEM NO.:- 14							
	P/L Vitrified flooring						
GF	DOCTOR CHAMBER	1	3.35	4.57	-	15.31	
	RECEPTION	1	4.42	3.35	-	14.81	
	MEDICAL	1	3.05	4.57	-	13.94	
						44.06	**Sqm.**
ITEM NO.:- 15							

	Providing andFixind M. S. Rolling Shutters.						
	Rolling Shutter	1	2.44	-	2.10	5.12	
						5.12	**Sqm.**

ABSTRACT SHEET

ITEM	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
ITEM NO.:- 1					
	Excavation for foundation up to 1.5 M Depth including sorting out and stacking of useful materials and disposing of the excavated stuff upto 50 meter lead. (A) Dense or Hard soil	28.53	106.00	Cum.	3023.80
ITEM NO.:- 2					
	Providing and laying cement concrete 1 : 4 : 8 (1- Cement : 4- Course sand : 8-				
	Hand broken stone aggregate 40 mm				
	nominal size) and curing complete				
	including cost of form work in :				
	(B) Foundation andplinth	7.97	2258.00	Cum.	17999.20
ITEM NO.:- 3					
	Brick work using common burnt clay				
	building bricks having crushing not less				
	than 35 kg / Sq. cm. in Cement Mortar 1 : 6				
	(1- Cement : 6 - Fine sand) in Foundation				
	and plinth and in Super structure above				
	plinth level up to floor two level.				
	(B) Conventional.	33.04	3553.00	Cum.	117392.36
ITEM NO.:- 4					
	Providing and casting in situ ordinary cement				
	Concrete M150 mix for copping over railing				
	returns incl. Form work curing and				
	finishing Comp.	2.69	2991.00	Cum.	8055.51

ITEM	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
ITEM NO.:-5					
	Filling in Foundation and Plinth with				
	murrum or selected soil in layers of				
	20 cm thickness including watering				
	ramming and consolidating etc. comp.	28.53	354.00	Cum.	10098.97
ITEM NO.:- 6					
	Brick work using common burnt clay				
	building bricks having crushing not less				
	than 35 kg / Sq. cm. in Cement Mortar 1 : 6				
	(1- Cement : 6 - Fine sand) in Foundation				
	and plinth and in Super structure above				
	plinth level up to floor two level.				
	(B) Conventional.	33.11	3553.00	Cum.	117654.93
ITEM NO.:-7					
	Providing and fixing 35 mm thick shutters for doors, windows and clearstory windows including Indian Teak woods frames 10 cm x7 cm. Size including black enameled iron oxidized fixtures and fastenings including priming coats of approved quality andtwo coats of oil painting etc. complete.				
	(ii) FullyPanelled.	2.52	5222.00	Sqmt.	13159.44
ITEM NO.:-8					
	Providing and fixing 35 mm thick shutters				
	for doors, windows andclearstory windows				
	including Indian Teak woods frames 10 cmx				
	7 cm. Size including black enameled iron				
	oxidized fixtures and fastenings including				
	priming coats of approved quality and two				

	coats of oil painting etc. complete.				
	(i) Fully Glazed.	6.14	4282.00	Sqmt.	26308.61
ITEM NO.:-9					
	Providing and laying ordinary cement				
	concrete 1: 2 : 4 (1- cement : 2- coarse				
	sand : 4- graded stone aggregate 20 mm				
	nominal size) for RCC Lintel including				
	finishing smooth with curing etc. comp.				
	including the cost of form work but				
	excluding the cost of reinforcement.	1.44	5996.00	Cum.	8634.42
ITEM	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
ITEM NO.:-10					
	Providing and laying ordinary cement				
	concrete 1 : 2 : 4 (1- cement : 2- coarse				
	sand : 4- graded stone aggregate 20mm				
	nominal size) exposed workwith				
	curing etc. complete including the				
	cost of form work but excluding the				
	cost of reinforcement for R C C work in:				
	(iii) Slabs having more than 10 cm				
	and up to 13 cm thickness.	7.54	5581.00	Cum.	42080.74
ITEM NO.:- 11 (A)					
	Providing mild steel reinforcement for				
	RCC. work including bending, binding				
	and placing in position complete up to				
	floor twolevel.	149.00	47.00	Kgs.	7003.00
ITEM NO.:-11 (B)					
	Cold twisted steel reinforcement for				
	RCC work including bending, binding				
	and placing in position complete up				
	to floor twolevel.	596.00	50.00	Kgs.	29800.00
ITEM NO.:- 12					
	Providing 15 mm thick cement plaster				
	single coat on brick / concrete wall				
	for interior plastering up to floor two				
	level finished even and smoothin				
	cement mortar 1 : 3 (1- cement :3- sand)	177.59	131.00	Sqm.	23263.77
ITEM NO.:-13					
	20 mm thick sand faced cement plaster				
	on walls up to height 10 meters above				
	ground level consisting of 12 mm thick				
	backing coat of C. M. 1 : 3 (1- cement :				

	3- sand) and 8 mm thick finishing coat				
	of C. M. 1 : 1 (1- cement : 1- sand)				
	etc.complete.	195.54	197.00	Sqm.	38521.38
ITEM	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
ITEM NO.:- 14					
	providing and laying 24"x24" vitrified 8 mm				
	thick tiles flooring over 20 mm (average)				
	base of cement mortar 1:6 (1-cement existing				
	flooring by :6 coarse sand) on new surface				
	or fixing on existing flooring by dhesivemterials				
	including dismentalling of existing flooring				
	and jointed with colour cement slurry				
	including finished with flush pointing & cleaning				
	the surface etc. complete for. Dark Shade.	44.06	989.00	Sqmt.	43575.34
ITEM NO.:- 15					
	Providing and fixing rolling shutters of				
	approved make made of 80 mm wide				
	M.S. Laths inter-locked together through				
	their entire length and jointed together				
	at the ends by end lokes mounted on				
	specially designed pipe shafts with				
	bracket plates. Guide channels and arr-				
	angements for inside and out side				
	locking with push pull operation comp-				
	lete including the cost of hood cover				
	and spring.				
	(A) Shutters having width below 3.5 mts.	5.12	4819.00	Sqm.	24673.28
			Total Amount Rs.		531244.74
	Add 3 % Electricfication Charge				15937.34

	Add 3 % Plumbing Charge			15937.34
			Total Amount Rs.	563119.42
	Add 3 % Contingency Charge			16893.58
			Total Amount Rs.	580013.01
			Say Rupees	5,80,000/-
				(RUPEES FIVE LAC EIGHTY THOUSAND ONLY)

8.1.2 PHYSICAL DESIGN

PUBLIC TOILET

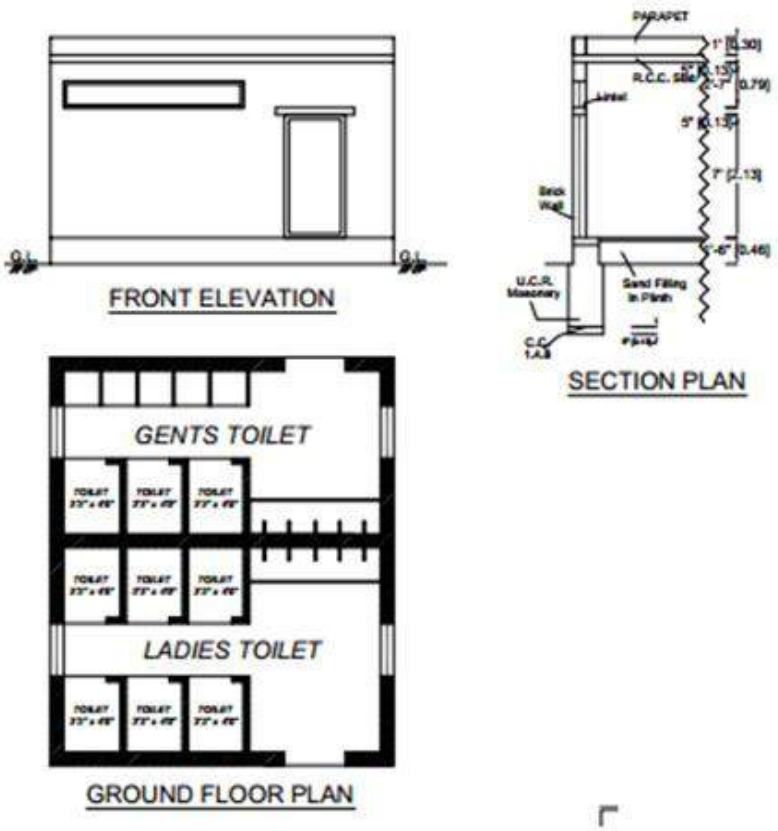


FIGURE 8.1.2 PUBLIC TOILET

- Toilet use is crucial to unlocking social and economic progress in India and

to save the lives of thousands of children. At the moment, 564 million people, that's just under half the population in India, do not yet use a toilet. Instead, they go out in the open fields, railway tracks, garbage dumps, parks and roadside ditches. This is incredibly dangerous, as exposure to human waste causes diarrhea and other diseases that can be deadly, especially for children. In 2015 it was estimated that 2.4 billion people globally had no access to improved sanitation facilities. Out of them, 946 million defecate in the open. Of these 564 million live in India.

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TABLE 8.1.2 Measurement sheet and Abstract sheet

MEASUREMENT SHEET							
ITEM	DESCRIPTION	NO	L	B	H/D	QUANTITY	UNITS
ITEM NO.:- 1							
	Excavation for foundation						
	(B) Dense or Hardsoil						
	LW-1	3	6.16	0.60	1.20	13.31	
	SW-1	2	2.35	0.60	1.20	3.38	
	SW-2	2	3.06	0.60	1.20	4.41	
						21.10	**Cum.**
ITEM NO.:- 2							
	P/L Cement Concrete 1 : 4 : 8 in Foundation & Plinth						
	LW-1	3	6.16	0.60	0.15	1.66	
	SW-1	2	2.35	0.60	0.15	0.42	
	SW-2	2	3.03	0.60	0.15	0.55	
Flooring bedding							
	GENTS TOILET	1	5.55	2.84	0.10	1.58	
	LADIES TOILET	1	5.55	3.56	0.10	1.98	
						6.18	**Cum.**
ITEM NO.:- 3							
	Brick masonary in C. M. 1 : 6 in Foundation and Plinth.						
Foundation							
STEP-1							
	LW-1	3	6.16	0.60	1.05	11.64	
	SW-1	2	2.35	0.60	1.05	2.96	
	SW-2	2	3.03	0.60	1.05	3.82	

Plinth							
	LW-1	3	6.01	0.45	0.30	2.43	
	SW-1	2	2.50	0.45	0.30	0.68	
	SW-2	2	3.21	0.45	0.30	0.87	
						22.40	**Cum.**
ITEM	DESCRIPTION	NO	L	B	H/D	QUANTITY	UNITS
ITEM NO.:- 4							
	P/L C.C. 1:2:4 for R.C.C. Work in Copping						
Plinth							
	LW-1	3	6.01	0.45	0.15	1.22	
	SW-1	2	2.50	0.45	0.15	0.34	
	SW-1	2	3.21	0.45	0.15	0.43	
						1.99	**Cum.**
ITEM NO.:- 5							
	Filling in foundation and plinth						
	GENTS TOILET	1	5.55	2.84	0.30	4.73	
	LADIES TOILET	1	5.55	3.56	0.30	5.93	
						10.66	**Cum.**
ITEM NO.:-6							
	Brick masonary in C. M. 1 : 6 in superstructure.						
	LW-1	2	6.01	0.23	3.05	8.43	
	SW-1	4	2.84	0.23	3.05	7.97	
	SW-2	4	3.56	0.23	3.05	9.99	
	SW-3	9	1.32	0.23	3.05	8.33	
	G.F. Parapet wall	1	25.28	0.23	0.30	1.74	
						36.47	**Cum.**
	DEDUCTION						
	MD	2	1.08	0.23	2.10	1.04	
	V	2	3.15	0.23	0.45	0.65	
	W	4	0.90	0.23	1.20	0.99	
						2.69	**Cum.**
	Net Quantity after deduction		36.47	-	2.69	**33.78**	**Cum.**
ITEM NO.:- 7							
	P/F 35 mm Thick Shutters with indian teak wood frames for door						

	MD	2	1.08	-	2.10	4.54	
	D1	9	0.75	-	2.10	14.18	
						18.71	**Sqm.**
ITEM NO.:- 8							
	P/F 35 mm Thick Shutters with Indian teak wood frames for Windows						
	V	2	3.15	-	1.20	7.56	
	W1	4	0.90	-	1.20	4.32	
						11.88	**Sqm.**
ITEM NO.:-9							
	P/L C.C. 1:2:4 For R.C.C. work in Lintel						
G.F.	LW-1	3	6.01	0.23	0.15	0.62	
	SW-1	2	2.84	0.23	0.15	0.20	
	SW-2	2	3.56	0.23	0.15	0.25	
						1.06	**Cum.**
ITEM	DESCRIPTION	NO	L	B	H/D	QUANTITY	UNITS
ITEM NO.:- 10							
	P/L C.C. 1:1.5:3 For R.C.C. work in Slab						
	G.F.	1	6.01	7.09	0.13	5.33	
						5.33	**Cum.**
	deduction						
		0	0.00	0.00	0.00	0.00	
						0.00	**Cum.**
	Net Quantity after deduction		5.33	-	0.00	**5.33**	**Cum.**
ITEM NO.:- 11							
	P/L C. C. 1 : 1.5 : 3 For R.C.C. work in :						
	(A) BEAMS						
	(i) Having Cross Sectional area 0.050 to 0.085 Sqm.						
	Beam	4	6.63	0.23	0.30	1.83	
	"	6	3.25	0.23	0.30	1.35	
						3.18	**Cum.**
ITEM NO.:- 12							
	Providing Steel Reinforcement for R.C.C. work						

	Copping		1.99	X	60.00	119.27	
	Lintel		1.06	X	65.00	69.14	
	Slab		5.33	X	65.00	346.45	
	Slab		3.18	X	80.00	254.40	
						789.26	**Kgs.**
					Say :	790.00	**Kgs.**
	(A) Providing Mild Steel 20 % of total Steel.						
			790	X	0.20	**158.00**	**Kgs.**
	(B) Providing Cold twisted Steel 80 % of total Steel.						
			790	X	0.80	**632.00**	**Kgs.**
ITEM NO.:- 13							
	Providing 15 mm thick interior cement plaster						
	INSIDE						
G.F.	GENTS TOILET	2	5.55	-	3.05	33.86	
	"	2	2.85	-	3.05	17.39	
	Ceilling	1	5.55	2.85	-	15.82	
	LADIES TOILET	2	5.55	-	3.05	33.86	
	"	2	3.56	-	3.05	21.72	
	Ceilling	1	5.55	3.56	-	19.76	
	TOILET	18	1.22	-	3.05	66.98	
	"	18	0.99	-	3.05	54.35	
	Ceilling	9	1.22	0.99	-	10.87	
						274.59	**Sqm.**
	DEDUCTION						
	MD	1	1.08	-	2.10	2.27	
	D1	9	0.75	-	2.10	14.18	
	V	2	3.15	-	0.45	2.84	
ITEM	DESCRIPTION	NO	L	B	H/D	QUANTITY	UNITS
ITEM NO.:- 13 Cout…							
	W	4	0.90	-	1.20	4.32	
						23.60	**Sqm.**
	Net Quantity after deduction		274.59	-	23.60	**250.99**	**Sqm.**
ITEM NO.:- 14							
	Providing 20 mm thick Single coat Sand Faced cement plaster						
	Front & Back Side	2	6.01	-	4.47	53.73	
	Building Side	2	7.09	-	4.47	63.38	
						117.11	**Sqm.**

	Net Quantity after deduction		117.11	-	0.00	**117.11**	**Sqm.**
ITEM NO.:- 15							
	P/L Vitrified flooring						
GF	GENTS TOILET	1	5.55	2.84	-	15.76	
	LADIES TOILET	1	5.55	3.56	-	19.76	
						35.52	**Sqm.**
ITEM NO.:- 16							
	Providing and fixing (Indian type W.C.pan)						
		9	Nos.			**9 Nos.**	

ABSTRACT SHEET

ITEM	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
ITEM NO.:- 1					
	Excavation for foundation up to 1.5M				
	Depth includingsorting out andstacking				
	of useful material sand disposing of the				
	excavated stuff up to50 meterlead.				
	(B) Dense or Hardsoil	21.10	106.00	Cum.	2236.18
ITEM NO.:- 2					
	Providing and layingcement concrete				
	1 : 4 : 8 (1- Cement : 4- Course sand : 8-				
	Hand broken stone aggregate40 mm				
	nominal size) and curingcomplete				

	including cost of form work in :				
	(A) Foundation andplinth	6.18	2258.00	Cum.	13962.57
ITEM NO.:-3					
	Brick work using commonburnt clay				
	building bricks havingcrushing notless				
	than 35 kg / Sq. cm. in Cement Mortar 1 : 6				
	(1- Cement : 6 - Fine sand) in Foundation				
	and plinth and in Super structure above				
	plinth level up to floor twolevel.				
	(B)Conventional.	22.40	3553.00	Cum.	79576.36
ITEM NO.:-4					
	Providing and casting in situ ordinary cement				
	Concrate M150 mix for copping over rinding				
	returns incl. Form workcurring and				
	finishing Comp.	1.99	2991.00	Cum.	5945.73
ITEM	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
ITEM NO.:-5					
	Filling in Foundation andPlinth with				
	murrum or selected soil inlayers of				
	20 cm thickness includingwatering				
	ramming and consolidatingetc. comp.	10.66	354.00	Cum.	3772.22
ITEM NO.:-					

6					
	Brick work using commonburnt clay				
	building bricks havingcrushing notless				
	than 35 kg / Sq. cm. in Cement Mortar 1 : 6				
	(1- Cement : 6 - Fine sand) in Foundation				
	and plinth and in Super structure above				
	plinth level up to floor twolevel.				
	(B)Conventional.	33.78	3553.00	Cum.	120019.06
ITEM NO.:-7					
	Providing and fixing 35 mmthick shutters				
	for doors, windows andclearstory windows				
	including Indian Teak woods frames 10 cmx				
	7 cm. Size includingblack enamelediron				
	oxidized fixtures andfastenings including				
	priming coats of approvedquality andtwo				
	coats of oil painting etc.complete.				
	(ii) FullyPanelled.	18.71	5222.00	Sqmt.	97708.84
ITEM NO.:-8					
	Providing and fixing 35 mmthick shutters				
	for doors, windows andclearstory windows				

	including Indian Teak woods frames 10 cmx				
	7 cm. Size includingblack enamelediron				
	oxidized fixtures andfastenings including				
	priming coats of approvedquality andtwo				
	coats of oil painting etc.complete.				
	(i) FullyGlazed.	11.88	4282.00	Sqmt.	50870.16
ITEM NO.:-9					
	Providing and layingordinary cement				
	concrete 1: 2 : 4 (1- cement : 2- coarse				
	sand : 4- graded stone aggregate20 mm				
	nominal size) for RCCLintel including				
	finishing smooth with curingetc. comp.				
	including the cost of form work but				
	excluding the cost of reinforcement.	1.06	5996.00	Cum.	6377.56
	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
ITEM NO.:-10					
	Providing and layingordinary cement				
	concrete 1 : 2 : 4 (1- cement : 2- coarse				
	sand : 4- graded stoneaggregate 20mm				
	nominal size) exposed workwith				
	curing etc. complete includingthe				

	cost of form work butexcluding the				
	cost of reinforcement for R C C workin:				
	(iii) Slabs having more than10 cm				
	and up to 13 cmthickness.	5.33	5581.00	Cum.	29746.73
ITEM NO.:- 11					
	Providing and layingordinary cement				
	concrete 1 : 1.5 : 3 (1- cement : 1.5 - coarse				
	sand : 3- graded stone aggregate20 mm				
	nominal size) and finishing smooth with				
	curing etc. complete includingthe cost				
	of form work but excludingthe costof				
	reinforcement for RCC work in:				
	(A) BEAMS				
	(i) Having cross-sectionalarea 0.050				
	to 0.085 Sqm.	3.18	6659.00	Cum.	21175.62
ITEM NO.:- 12 (A)					
	Providing mild steelreinforcement for				
	RCC. work includingbending, binding				
	and placing in positioncomplete up to				
	floor twolevel.	158.00	47.00	Kgs.	7426.00

ITEM NO.:- 12 (B)					
	Cold twisted steel reinforcement For RCC work including bending, Binding and placing in position complete Up to floor two level.	632.00	50.00	Kgs.	31600.00
ITEM NO.:- 13					
	Providing 15 mm thickcement plaster				
	single coat on brick / concretewall				
	for interior plastering up tofloor two				
	level finished even and smoothin				
	cement mortar 1 : 3 (1- cement :3- sand)	250.99	131.00	Sqm.	32879.95
	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
ITEM NO.:- 14					
	20 mm thick sand facedcement plaster				
	on walls up to height 10meters above				
	ground level consisting of 12 mm thick				
	backing coat of C. M. 1 : 3 (1- cement :				
	3- sand) and 8 mm thickfinishing coat				
	of C. M. 1 : 1 (1- cement : 1- sand)				
	etc.complete.	117.11	197.00	Sqm.	23070.67
ITEM NO.:- 15					

	providing and laying24"x24" vitrified 8 mm				
	thick tiles flooring over 20 mm (average)				
	base of cement mortar 1:6 (1-cement existing				
	flooring by :6 coarse sand) on new surface				
	or fixing on existing flooring by dhesivemterials				
	including dismentalling ofexisting flooring				
	and jointed with colour cement slurry				
	including finished withflush pointing & cleaning				
	the surface etc. complete for. Dark Shade.	35.52	989.00	Sqmt.	35129.28
ITEM NO.:-16					
	Providing and fixing (indian type W.C.pan)				
	(Market Rate)	9 nos.	1150.00	No.	10350.00
				Total Amount Rupees	571846.94
		Add 3 % Electricficati on Charge			17155.41
		Add 8 % Plumbing Charge			45747.76
				Total Amount Rupees	634750.10
		Add 3 % Contingency Charge			19042.50

				Total Amount Rupees	653792.61
			Say Rupees		6,53,800.00
					(RUPEES SIX LAC FIFTY THREE THOUSAND EIGHT HUNDRED ONLY)

8.1.3 SOCIAL DESIGN

Public Library

There is no limit for the size of the building of Public library. But according to the requirement of villagers and keeping in mind the Economical aspects, we have designed a small Library of size 11m x 11m. The measurement sheets, abstract sheet and Revit design are given below.

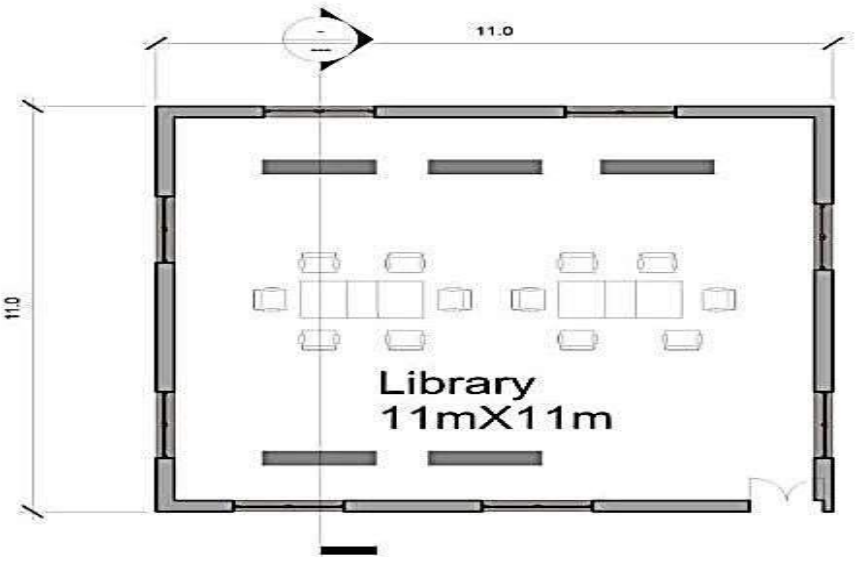


FIGURE 8.1.4

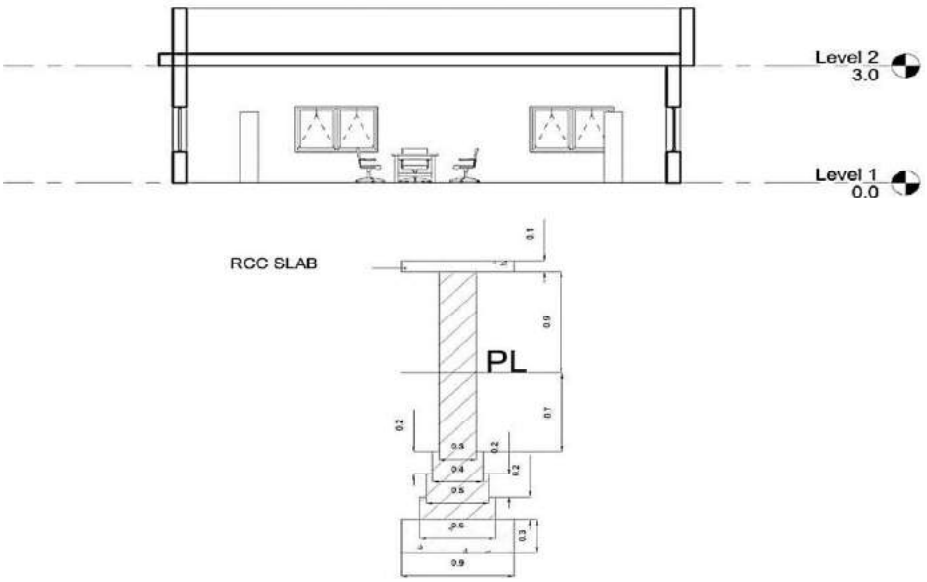


FIGURE 8.1.4 PUBLIC LIBRARY

Table 8.1.3 Measurement sheet and Abstract sheet

Measurement Sheet of Library

Measurement Sheet						
Sr. No.	Item description	No.	Length	Breadth	Height	Quantity
Total Length=2(11-(2*0.15))+ 2(11-(2*0.15))=42.8 m						
1	Excavation in foundation	1	42.8	0.9	1.2	**46.22m^3**
2	P.C.C. in foundation	1	42.8	0.9	0.3	**11.56m^3**
3	Brick Masonry in foundation up to Plinth					
	Step 1	1	42.8	0.6	0.2	5.14m^3
	Step 2	1	42.8	0.5	0.2	4.28m^3
	Step 3	1	42.8	0.4	0.2	3.42m^3
	Up to plinth level	1	42.8	0.3	0.7	8.99m^3
						21.83m^3
4	Sand filling in foundation and plinth					
	46.22-(11.56+5.14+4.28+3.42)					**21.82m^3**
5	Brick work in super structure	1	42.8	0.3	3	38.52m^3
	Deduction					
	Window	8	1	0.3	1.2	2.88m^3

	Door	1	2	0.3	2.1	1.26m^3
	Lintel					
	Window	8	1.2	0.3	0.15	0.432m^3
	Door	1	2.2	0.3	0.15	0.099m^3
						0.531m^3
	Total=38.52-(4.14+0.531)					**33.849m^3**
6	12mm thick inside plaster					
	=2(11-(2*0.15))+2(11-(2*0.15))	1	42.8	-	2.9	124.12m^2
	Add Ceiling	1	9.7	9.7	-	94.09m^2
						218.21m^2
	Deduction					
	Window	0.5*8	1	-	1.2	4.8m^2
	Doors	0.5*1	2	-	2.1	2.1m^2
						6.9m^2
	Total=218.21-6.9					**211.31m^2**
7	15mm Thick outside plaster					
8	No. of Tiles required	1	9.7	-	9.7	**94.09m^2**
	Tile size=25cm*25cm					
				94.09/0.0625=1506 ADD 5% wastage=**1582 tiles**		

Abstract Sheet					
No.	Particulars	Quantity	Cost	Per	Amount in INR
1	Earthwork in foundation up to depth 1.5m for 46.22m^2				
	Labor				
	Male coolie	8	350	Day	2800
	Female coolie	8	300	Day	2400
	Sundries				50
				Total=5250	
2	P.C.C. (1:4:8) in foundation for 11.56m^3				
	Materials				
	Cement	32Bags	280	Bag	8960
	Sand	4.45m^3	800	M^3	3557
	Aggregate	8.89M^3	1000	M^3	8890
	Sundries				50
				Material cost Rs. 21457	
	Labor				
	Main mason	0.5	650	Day	325
	Mason	1	550	Day	550
	Male coolie	7	350	Day	2450
	Female coolie	11	300	Day	3300
	Bhistie	2	350	Day	700
				Labor cost Rs.7325	
3	Sand filling in foundation and plinth for 21.82m^3				
	Materials				
Sand		21.82	800	M^3	17456
	Sundries				50
				Material cost Rs.17506	
	Labor				
	Male coolie	2	350	Day	700
	Female coolie	2	300	Day	600
	Bhistie	1	350	Day	350
	Sundries				50
			Labor cost Rs. 1700		
4	Brick bat cement concrete in foundation (1:4:8) for 21.83m^3				
	Materials				
	Brick bats	21.83	800	M^3	17464
	Sand	10.91	800	M^3	8728
	Cement	80	280	Bags	22400
	Sundries				50
				Material cost Rs.48642	

	Labor				
	Male coolie	6	350	Day	2100
	Female coolie	12	300	Day	3600
	Bhistie	3	350	Day	1050
	Sundries				50
				Labor cost Rs. 6800	
5	First class brick work in CM 1:6 in superstructure 33.849m^3				
	Materials				
	Brick	16925			
	Add 5% wastage	846			
	Total Brick	17771	4000	1000nos.	71084
	Cement	46	280	Bag	12880
	Sand	9.57M^3	800	M^3	7656
	Sundries				50
				Material cost Rs.91670	
	Labor				
	Main Mason	1.5	650		975
	Mason	20	550		11000
	Male coolie	20	350		7000
	Female coolie	20	300		6000
	Bhistie	5	350		1750
				Labor cost Rs.26775	
6	12mm thick inside plaster in CM 1:4 for 211.31m^2				
	Materials				
	Cement	24	280	Bags	6720
	Sand	3.3	800	M^3	2640
	Sundries				50
				Material cost Rs.9410	
	Labor				
	Main mason	0.5	650	Day	325
	Mason	20	550	Day	11000
	Male coolie	20	350	Day	7000
	Female coolie	20	300	Day	6000
	Bhistie	4	350	day	1400
	Sundries				50
				Labor cost Rs. 25775	
7	15mm thick outside plaster in C.M. 1:3 for 144.6m^3				
	Materials				

	Cement	25	280	Bags	7000
	Sand	2.64	800	M^3	2112
	Sundries				50
				Material cost Rs.9162	
	Labor				
	Main mason	0.5	650	Day	325
	Mason	20	600	Day	12000
	Male coolie	20	350	Day	7000
	Female coolie	20	300	Day	6000
	Bhistie	4	350	Day	1400
	Sundries				50
				Labor cost Rs.26775	
8	RCC work for slab and lintel 1:1.5:3 for 24.2m^3				
	Materials				
	Cement	157		bags	43960
	Sand	8.25		M^3	6600
	Aggregate	16.5		M^3	16500
	Steel	1900		Kg	85500
	Binding wire	19		Kg	950
	Sundries				50
				Material cost Rs. 153560	
	Labor				
	(1)Labor for mixing, transporting and placing concrete, including curing	15	300	M^3	4500
	(2)Cost of hiring mixture and vibrator	-	-	L.S.	1500
	(3)Labor for bending, cutting, placing reinforcement steel	1178	5.0	Kg	5890
	(4)Labor for centering and shuttering	-	-	L.S.	5000
	(5)Sundries				50
				Labor cost Rs. 16940	

Costing:

=Material cost+Labor cost

=5250+21457+7325+17506+1700+48642+6800+91670+26775+9410+25775+9162 +26775+ 153560+16940

=Rs. 4,68,747

Add 1.5% water charges = 7031.20 say=Rs.7031

Add 10% contractor profit=46874.7 say=Rs.46875

Add Lump Sump = 1000

Total cost=468747+7031+46875+1000**=Rs. 523653/-**

Explanation:

1)P.C.C (1:4:8) in foundation

For 11.56m^3 wet concrete, 14.45m^3 dry concrete is required.
Proportion 1:4:8=13
∴Cement = (1/13)×14.45=1.11m^3
No. of bags=1.11/0.035=32 Bags
Sand =(4/13)×14.45=4.44m^3
Aggregate= (8/13)* 14.45= 8.89 m^3

2)Brick bat cement concrete in foundation (1:4:8)

In brick bat cement concrete, the volume of brick bats require will be equal to the total volume of total volume of concrete.

∴For 21.83m^3 of concrete, 21.83m^3 brick bats are required. Proportion 1:4:8
Volume of sand is one half of the volume of brick bats.
∴Volume of sand required =10.91m^3
The volume of cement is one-fourth of the volume of sand.
∴Volume of cement = (1/4)×10.91=2.72m^3 =80 bags required.

3)First class brickwork in C.M. 1:6 in superstructure

i. For 1m^3 of Brickwork, 500 bricks are required.
   ∴For 33.849m^3, 16925 bricks are required
   Add 5% wastage=846
   Total brick=17771 nos.

ii. Volume of dry mortar 0.33m^3

∴Cement= (1/7)×0.33×33.849=1.60m^3=46bags

Sand=(6/7)×0.33×33.849=9.57m^3

4)12mm thick cement plaster in C.M. 1:4

Area of plaster=211.31m^2, thickness =12mm

∴Volume of wet mortar=211.31×0.012=2.53m^3

For uneven surface of masonry and for filling joints 30% more mortar is required

∴quantity of wet mortar =2.53 × 1.30 =3.30m^3

Again, volume of dry mortar required is about 25% more than that of wet Quantity of mortar

Quantity of mortar=3.3*1.25=4.125 m^3

Mortar proportion=1:4=5

Cement =(1/5)*4.125=0.825m^3=24 bags required

Sand=(4/5)×4.125=3.3m^3required

5)15mm thick cement plaster in C.M. 1:3

Area of plaster=144.6 m^2,thickness =15mm

Volume of wet mortar=144.6×0.015=2.169m^3

For uneven surface of masonry and for filling joints in masonry 30% more mortar is required ∴Quantity of wet mortar=2.169×1.30=2.82m^3

Again, volume of dry mortar required is about 25% more than that of wet mortar

∴Quantity of mortar=2.82m^3×1.25=3.52m^3

Mortar proportion=1:3=4

∴Cement =(1/4)×3.52=0.88m^3=25bags required

Sand=(3/4)×3.52=2.64m^3 required.

6)RCC Work for slab and lintel

(1) For 1m^3 wet concrete, 1.25 m^3dry concrete is required.

1m^3→1.25m^3

24.2m^3→30.25m^3 Proportion

1:1.5:3=5.5

Cement= (1/5.5)×30.25=5.5m^3=157 bags

Sand=(1.5/5.5)×30.25=8.25m^3

Aggregate=(3/5.5)×30.25=16.5m^3

(2) Assume 1% steel of the wet volume of concrete Volume of steel=(1/100)*24.2=0.242m^3

Density of steel=7850kg/m^3

Density=Mass/Volume

∴Mass of steel=0.242×7850 =1899.7kg=1900kg

(3) For 100kg of steel,1kg binding wire is required.

∴For 1900kg of steel, 19kg binding wire is required.

8.1.4 SOCIO CULTURAL DESIGN

Thevillageentrygateisamostbeautyofvillagethevillageentrygatelocationisastartof villagetheunknown person can know the name of village.

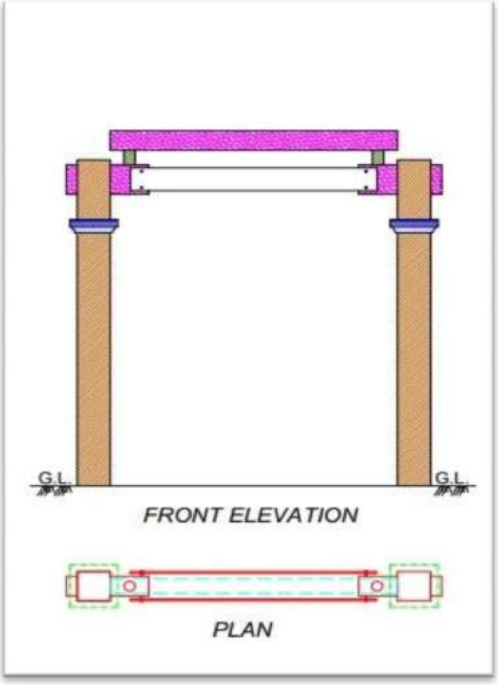


Figure 8.1.5 Entry Gate

Table 8.1.5 Entry Gate Details

Item no.	Description	No.	L	B	H	Total
1	Exavation for Soil	2	0.51	0.51	1.90	1.00m^3
2	Brick in Foundation Step-1	2	0.51	0.51	0.03	0.015m^3
3	Step-2	2	0.50	0.50	0.03	0.015m^3
4	Step-3	2	0.49	0.49	0.03	0.014m^3
5	Step-4	2	0.48	0.48	1.00	0.46m^3
6	Brick working in Super structure	2	0.48	0.48	5.15	2.37m3^3
					Total	2.43m^3
7	C.C. in cutter part	2	0.15	0.30	0.45	0.040m^3
8	C.C in innerpart	2	0.57	0.30	0.45	0.15m^3
9	C.C.intop part	1	3.96	0.27	0.30	0.32m^3
					Total	0.51m^3
10	Cement Plaster in Super Str.	8	0.48	0.015	5.15	0.29m^3
12	Cutter part	8	0.15	0.015	0.45	0.0081m^3
13	Inner part	8	0.57	0.015	0.45	0.030m^3
14	Top part	4	3.96	0.015	0.30	0.071m^3
					Total	0.399m^3
15	Colour work in superstructure	8	0.48	-	5.15	19.77m^2
16	Cutter part	8	0.15		0.45	0.54m^2
17	Inner part	8	0.57	-	0.45	2.052m^2
18	Top part	4	3.96	-	0.30	4.752m^2
					Total	27.11m^2

No.	Description	Quantity	Rate	Amount (Rs)
1	Excavation for soil	1.00m^3	1000	1000

2	Brick work	2.43m^3	3553	8633.79
3	Cement concrete work	0.51m^3	5770	2942.7
4	Plaster work	27.11m^2	150	4066.5
5	Colour work	27.11m^2	110	2982.1
Total amount		19625.09 Rs		
Labour work 20%		3925.018 Rs		
Contractor charge 10%		1962.509Rs		
Consistency 5%		981.25 Rs		
Water charge 2%		392.50 Rs		
Total construction amount		26886.36 Rs		

8.1.5 SMART VILLAGE DESIGN

SELF HEALING ROAD

- INTRODUCTION: -

a) Concrete is the most widely used material for construction.

b) It has low tensile strength than compressive strength. So is most effective when reinforced by steel bars.

c) Concrete is a brittle material with low tolerance for strain.

d) So it forms cracks, leading to

- corrosion
- water ingress
- Decrease in durability
- increasing maintenance cost

e) Self-healing concrete is a solution to all above. Here we will induce self-healing property using Steel Wool.

Fig 8.1.6Self healing roads

EXPERIMENTAL PROGRAMME:-

- Objective
- Material and Equipment
- Experimental Procedure
- Flow Chart
- Experimental Results

1. OBJECTIVE:-

Analysis healing property of concrete by adding steel wool.

2. MATERIAL:-

- Aggregate
- Asphalt
- Tamping Rod
- Copper Wire
- Steel Wool

EQUIPMENT:-

- Hot mix Plant
- Wooden Mould
- Oven
- Electric Heater

Fig. 8.1.7. Steel wool

Fig. 8.1.8 Wooden Mould

3. EXPERIMENTAL PROCEDURE:-

- Firstly, we don't mix the steel wool in bitumen in our laboratory because the temperature required for melting asphalt, steel wool and the mixing with aggregate in it is quietly difficult for us.
- So that we contact with the SMC hot mix plant where large equipment and machinery are used to produce bituminous concrete.
- In the hot mix plant the process is shown in figure….

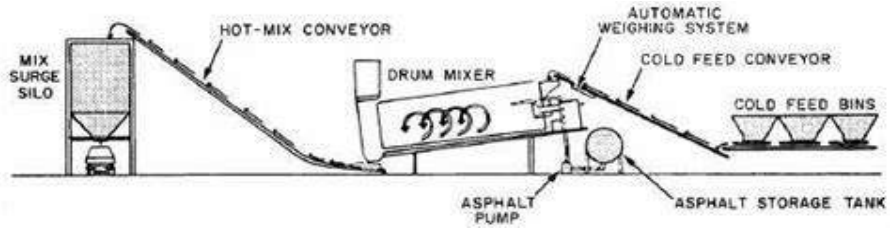


Fig 8.1.9 hot mix plant process

Below picture in clicked on hot mix plant site…

Fig 8.1.10 Hot Mix Plant.

Fig 8.1.11 Hot Mix Plant

Asphalt batch mix plant operation:

The operation of asphalt batch mix plant starts from feeding the aggregates into the feeder bins. The operation ends when hot mix asphalt is discharged into the truck.

We add our steel wool in bitumen by melting process.

- Then prepare a wooden mould to moulding the self-healing bitumen we can use steel also but the bitumen is a sticky material therefore the unmoulding is slightly difficult.
- After 1 days unmould the sample.
- After unmoulding take the sample and kept in room temperature for 7, 14 and 28 days respectively for hardened the bitumen.
- After proper hardening cut the sample from the center. It is not possible to cut the sample normally so we dip it in hot water then cut.
- After cutting kept the sample in oven at **105C -110C for 8 hours** but before the sample is kept n the oven tightened the boundary by using copper wire.
- After 8 hours observed the sample and conclude

EXPERIMENTAL RESULT

SR	DAYS	BEFORE	AFTER	REMARK

NO.		RESULT	RESULT	
1.	7 DAYS			The healing is proper but due to less harden the sides of bitumen are splitted
2.	14 DAYS			The healing is more satisfactory as compare to the 7 days healing.

Table 8.1.1

CONCLUSION

As per the above result, we may conclude that, Based on the result Bitumen heal the crack at 105°C – 110°C temperature in 8 hours. Steel wool which we use as a healing material gives satisfactory results. Self-healing bitumen road is much more beneficial for repair and maintanence of bituminous road and is more viable.

.

Cost Estimates:-

Firstly we determine the volume of the mould then we find the quantity required to make the sample and by the abstract sheet and measure ment sheet we conclude the cost of the self healing road per cubic metres.

Measurement sheet :-

Sr no.	Item description	No.	Length (m)	Breadth (m)	Height (m)	Quantity (m^3)
1.	Wooden Mould	1	0.30	0.30	0.15	0.0135

Table 8.1.2

Total volume of mould is 0.0135 m^3

6% of the total volume = volume of asphalt

Volume of asphalt= 0.0135×0.06

= 0.00081 m^3

Volume of aggregate= 0.0135-0.00081= 0.01269m^3

Steel wool= 5×10^-5 m^3

Abstract sheet:-

Particular	Quantity	Rate	Per	Amount
Material:-				
Aggregate (grit)	0.01269	Rs. 900	cum.	11 Rs
Asphalt	0.00081	Rs. 26000	cum.	21 Rs
Steel wool	50 gm	Rs. 125	Kg	6Rs

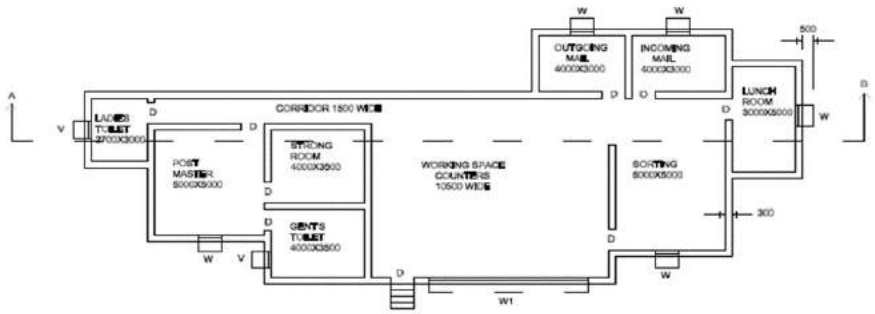
Table 8.1.3

Total costing of sample = 38Rs for 0.0135 m^3

Approx. Material Cost of the Self Healing Concrete is 3000Rs/cum. approx.

8.1.6 HERITAGE VILLAGE DESIGN

Socio-Cultural design



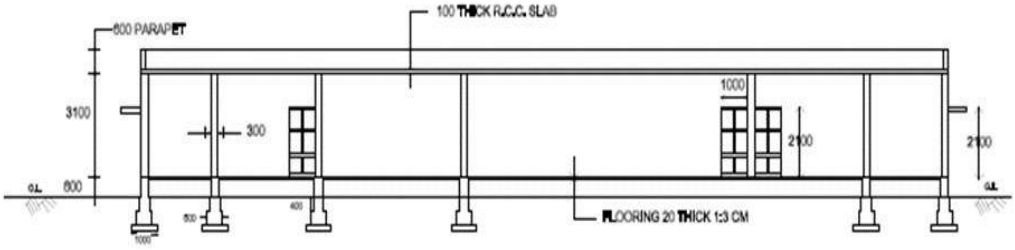


Fig.8.1.12 Post office plan

Social design is design that is mindful of the designer's role and responsibility in society, and of the use of the design process to bring about social change. Social design is also a critical discipline that challenges the pure market-orienteers of conventional design practice, and attempts to see past this into a more inclusive conception of design, in which user groups who are marginalized are also given priority

Another starting point for outlining social design is strategic thinking of design. Creating policies and implementing them on a civil level. The two poles: tradition and the market economy can, in one of the models for social design, be placed in interaction, rather than in competition, with each other. An author that has to be mentioned here is Jacque Fresco and his Venus Project. He proposes that the future of the social systems needs to be designed by the scientific method. Social design can then be seen as a process that leads to human capabilities that in turn contributes to their well-being. As Amartya Sen writes, poverty is seen as deprivation of capabilities. By focusing on capabilities, rather than e.g. income, Amartya Sen suggests that development within various social aspects of life can contribute to general development. Understanding and using social design processes can contribute to the improvement of livelihood.

8.1.7 ELECTRICAL

Scenario:

In the present scenario, the need for energy has been increasing in a distressing rate and the availability of the energy resources are not abundant for sustainable

development and the demand of the hour is to establish an economical pollution free inexhaustible energy resources to compensate the increasing requirement. The mechanical power transformation into electrical power as the pressure exerted by the footstep and by using transducers is basically called as “Foot step power generation system”. Power is produced by the power generating tiles and it is basically the production from kinetic energy in to electrical energy. As today electricity requirement is increasing and it is insufficient to overcome this global issue by using the fossil fuel sources. Demand and supply gap is the major issue of energy crisis. Since, walking is the most usual activity in human day to day life, whenever a person walks he exhausts energy to the ground which goes as a waste. In order to preserve and make use of this energy we are converting it into electrical energy using piezoelectric sensor. Piezoelectric sensor producing output energy in the form of AC voltage.

Existing solution:
Power generation through footstep by piezoelectric sensor

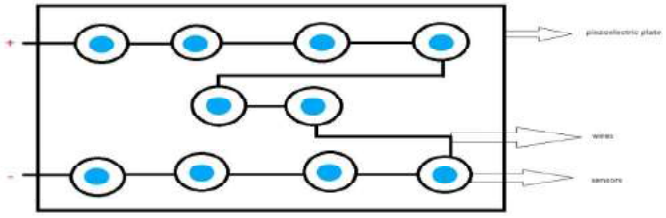


Fig. 8.1.7.1 Piezoelectric Plate
Circuit Diagram of Single plate :

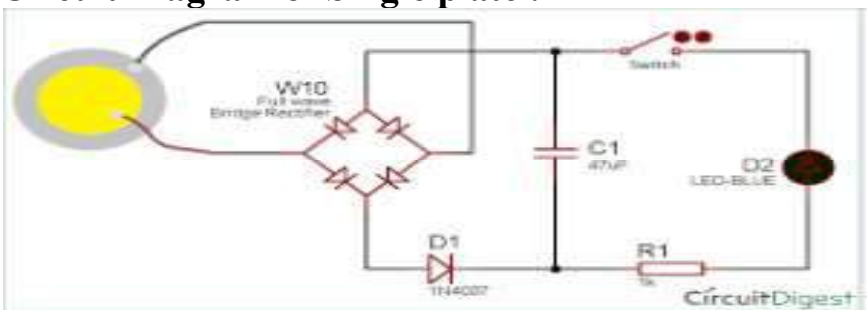


Fig. 8.1.7.2 Circuit diagram of plate
Expected Design :

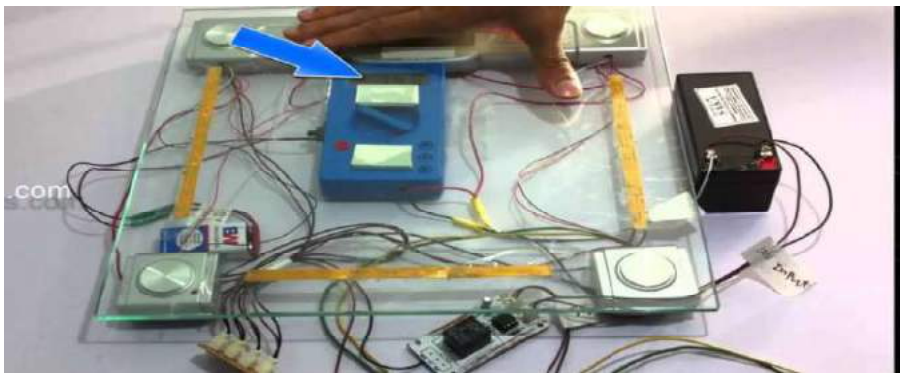
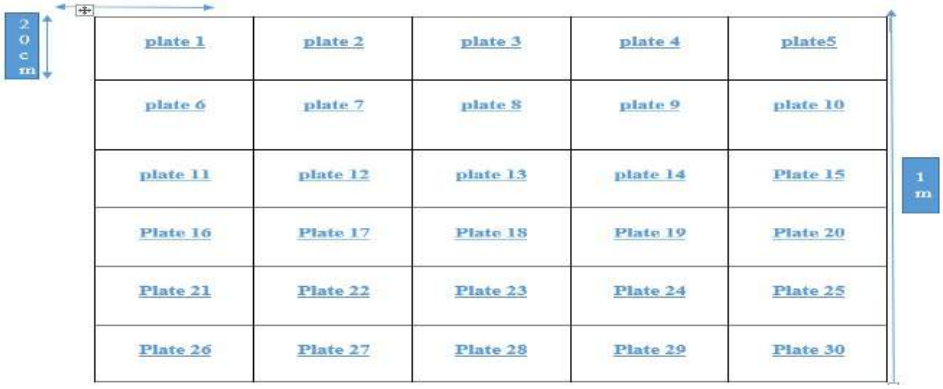


Fig. 8.1.7.3 Expected Design



Abstract sheet:

Equipment require for piezoelectric plate

Table 8.1.7.1 Require Equipment

Name of Equipment	Quantity	Price(Rs)	Total(Rs)
Wooden/glass box	1	200	300
Piezoelectric sensor	10	100	1000
Screw &Nut	5	10	50
Rubber buffer	10	1	10
LED	1	10	10
Total		1370	

Cost of 1 piezoelectric plate = 1,370

In 1 flooring tiles 30 can be fitted, so
=1,370*30
=41,100
We placed 5 piezoelectric tiles in railway station and 2 tiles in panchayat office
=41,100*7
=287,700

Reference cost estimation table

Table 8.1.7.2 Cost Estimation

Equipment	Quantity	Price (Rs)	Total (Rs)
Battery	4	3000	12,000
Voltage regulators	2	200	400
Inverter	2	6000	12,000
Piezoelectric plates	7	41100	287,700
Additional cost	5% of total cost	-	14,385
		Total	326485 Rs.

8.1.8 ELECTRICAL DESIGN: 2

Scenario:

Renewable energy resources become very popular and often used nowadays. An example of a clean renewable energy resource is the energy generated using photovoltaic systems. As a result of using PV as a renewable energy resource, components of PV such as an inverter become commonly used for this purpose and in order to enhance the maximum obtained power from PV, different methods were used to achieve the desired power, where it become a very considerable to use different methods to achieve desired maximum power received from PV.

Using fossil fuel as a primary resource in generating electricity. The solution to such problem can be compensated or reduced by means of using a renewable energy such

as a solar power system. The first problem that is related to use of fossil fuels is the global warming, where the increase of using fossil fuels such as oil and natural gas in generating electricity resulted several health and environmental problems.

Existing solution:

ROOF TOP SOLAR SYSTEM DESIGN

Prototype and wiring diagram of design:

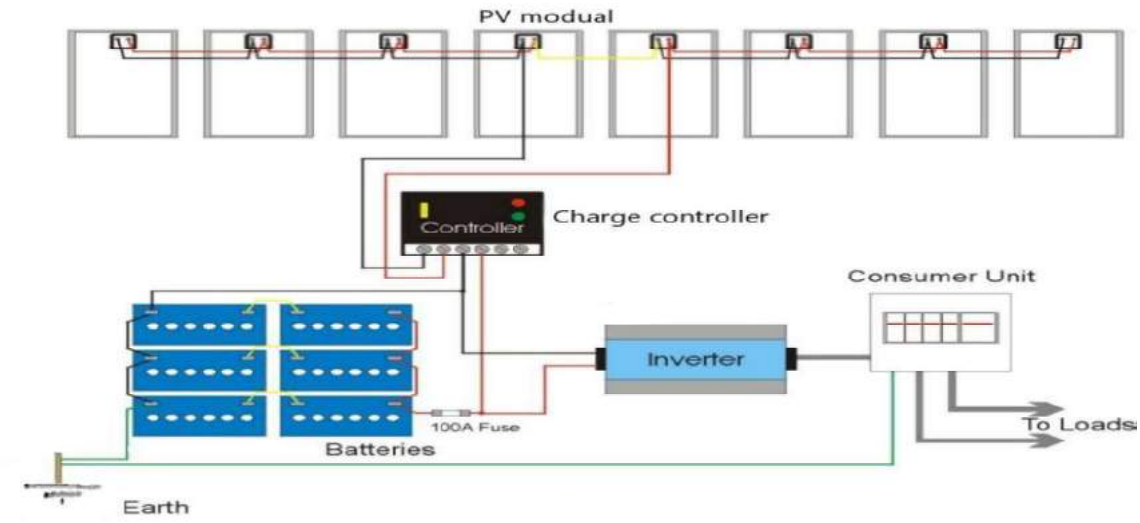


Fig 8.1.8.1 Connection diagram

SOLAR SYSTEM DESIGN

A solar PV system design can be done in four steps:

- Load estimation
- Estimation of number of PV panels
- Estimation of battery bank
- Cost estimation of the system.

Base condition:9 CFLs (12 watts each),7 fans (60 watts each), 2 pc (200 watt each) for 6hrs a day.

- The total energy requirement of the system (total load)

- i.e. Total connected load to PV panel system

= No. of units * rating of equipment *time
= 9*12*6 =648wh (cfls)
=7*60*6 =2520wh (fan)
=2*200*5 =2000wh (pc)

Total, wh = 5168wh
= 5.168 kw

Actual power output of a PV panel

= Peak power rating × operating factor
= 40 × 0.75 = 30 watt
The power used at the end use is less (due to lower combined efficiency of the system

= Actual power output of a panel × combined efficiency
= 30 × 0.81
= 24.3 watts (VA)
= 24.3 watts

Energy produced by one 40 Wp panel in a day

= Actual power output × 8 hours/day (peak equivalent)
= 30 × 8
= 240 watts-hour

Number of solar panels required to satisfy given estimated daily load :

= (Total watt-hour rating (daily load)/(Daily energy produced by a panel)
=5168/240
= 21.5
= 22 (round figure)

Inverter size is to be calculated as:

- Total connected load to PV panel system = 156 watts
- Inverter are available with rating of 100, 200, 500 VA, etc.
- Therefore, the choice of the inverter should be 200 VA.

Abstract sheet:

Reference cost estimation model:

(a) Cost of arrays = No. of PV modules × Cost/Module

= 22 × 8000 (for a 40 Wp panel @ Rs.200/Wp)
= **Rs.176000**

(b) Cost of batteries = No. of Batteries × Cost/Module

= 4 × 7500

= **Rs.30000**
(c) Cost of Inverter = No. of inverters × Cost/Inverter
= 1 × 8000
= 1 × 8000
= **Rs.8000**
Total cost of system
= A + B + C
=176000 + 30000 + 8000
= **Rs.214000**
[Additional cost of wiring may be taken as 5% of total system cost]
= 214000+additional cost
= 214000+10700
= 224700
= **~230000rs**

ASSUMPTIONS TAKEN FOR DESIGN

- Inverter converts DC into AC power with efficiency of about 90%.
- Battery voltage used for operation = 12 volts
- The combined efficiency of inverter and battery will be calculated as:
- Combined efficiency = inverter efficiency × battery efficiency

= 0.9 × 0.9 = 0.81 = 81%

- Sunlight available in a day = 8 hours/day (equivalent of peak radiation.
- Operation of lights and fan = 6 hours/day of PV panels.
- PV panel power rating = 40 Wp (Wp, meaning, watt (peak), gives only peak power output of a PV panel)
- A factor called „ operating factor" is used to estimate the actual output from a PV module. [The operating factor between 0.60 and 0.90 (implying the output power is 60 to 80% lower than rated output power) in normal operating conditions, depending on temperature, dust on module, etc.]

Sustainability of proposal:

Solar rooftops need only the light of our sun to generate electricity, making it a cleaner source of energy than most of any other usual forms. Its renewable nature promises sustainability. No health hazards are involved and no pollutants are emitted by solar rooftops. No extra land or places is required to set up rooftops. With widespread usage, solar rooftops can help in minimizing global warming.

Solar rooftops are very cost effective. They are only one-time investments which continue to serve both nature and the society for a much longer time. In the long run,

they turn out to be less expensive as compared to diesel generators or even grid electricity. People who switch to solar energy experience a huge cut in electricity bills, hence saving a lot of money.

Solar rooftops have an expected life of 25 years which make them worth the investment.

8.1.9 ELECTRICAL DESIGN 3

Existing solution: Solar Street light

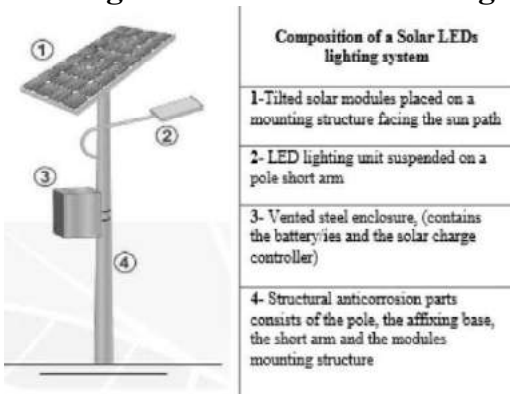


Fig 8.1.9.1 Solar Street Light

Scenario:

Light is the primary thing for better life. In the allocated village Kosamba, where only few number of street light. So, villagers face many problems after evening or during night. The main road which approach the village has no street light so the peoples of other villages or town faces problem during night. Chance of accident is also due to absence of light.

Installation of solar street light system:

The configuration of solar street light system must be designed to be robust and must be good enough to withstand the harsh environmental condition as the system are installed in road where it is continuously exposed to sun, rain, fog, pollution etc. The solar street lighting installation shall not damage aesthetic of the existing city or street plan; rather it shall add beauty to the existing roadway. The solar street lights can be installed in following two ways:

In above figure, first configuration depicts the situation where the battery is kept in the battery box on the pole whereas in second configuration the battery is installed in underground. Either of the configurations can be considered for installation of the system, and it has to be decided case wise case depending upon the requirement of the project site. Nevertheless, the battery box mounted on the light pole is common practice in case of stand-alone solar street lighting systems.

Defining of packages:

The packages have been defined based on the power consumption of lamps. The package will be selected based on the nature and size of the road for which the solar street light system is being designed.

Table 8.1.9.1 Types of Solar Street Light System

SSLS Type	Lamp Size (Watt)	Minimum Solar PV Module Size (Wp)	Minimum Battery Size for Lead Acid(AH)	Minimum Battery Size for Lithium Ion (AH)	Minimum Charge Controller Size (A)	Height of pole in meter
Type 1	10	50	40	30	5	7
Type 2	20	100	60	45	10	7
Type 3	30	150	80	60	12	7

Abstract sheet:

Reference cost estimation model:

Table 8.1.9.6

S.N.	**Name of thecomponent**	**Technical Specification**	**Quantity**	**Cost (NPR)**
1	Solar PV Panel	140 Wp	1	3000
2	Battery (12 v)	100 Ah T	1	13000
3	Charge Controller with Dusk to Down Function,	Size as required by panel	1	2500

	three stage dimming function			
4	Lamp (LED)	40 Watt	1	2500
5	Single Arm Galvanized Pole	9 m	1	5000
6	Interconnecting Accessories			500
7	Transportation			1000
Total Cost			**28500/-**	

We select 30 locations in the village where we placed the solar street light.
5 street lights placed in the main chowk of the village.
15 street lights placed in the main road of the village.
10 street lights placed in the different location where there is no light during night.
Total street light placed in village is = 30
Total cost of single street light is = 28500
Total cost of these design = 30 * 28,500
= 8,55000 rs

8.2 RECOMMENDATION OF THE DESIGNS:

1. By gap Analysis done, we found the requirement of proposed designs.
2. As from the interaction with few dwellers we found so many problems and after that our proposed design are prepared.

8.3ABOUT DESIGNS SUGGESTIONS / BENEFIT OF THE VILLAGERS:

At last of this techno economic survey, after going through all facilities and data it can be concluded that sudden improvement are required in some of the facilities provided and some facilities are still required to be provided.

1) The public toilet is very useful in our life.
2) The PHC health center is very important at present time.
3) The entry gate enhance the beauty of the village.

CHAPTER 9: FUTUREDEVELOPMENT OF VILLAGE (PART II DESIGN)

The study is aimed to know the basic scenario of village through techno economic survey and Gap analysis done.

Through our study we will try to make a master development plan of the village.

Our master development plan might be include provisions of all the facilities suggest by us then we focus on the improvement in the existing facilities. Our aim is to work according To new upcoming T.P. scheme in Talangpur village.

As major facilities are already available in village, few facilities are required which We suggest. Once this all basic facilities is available in Talangpur Village, then we should focus on Making the village smarter by adopting various technology.

In new designs proposed by as, we should focus on regular maintenance of these Facilities 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.

In this way with coordination between various Government agencies, we can develop Talangpur Village in better way as other smart or model villages.

CHAPTER 10: CONCLUSION

Villages and small towns play an important role as a “rural incubator” in the process of rural Development and provide services in areas of marketing, providing agricultural inputs such as Fertilizer and agricultural machinery, municipal services such as educational facilities, health Care and so on for their rural domains.

After visiting of Ideal Village Bhatha and Smart Village Baben, we get the idea and Scenario of a model village. Up till now in our mind we think the meaning of ‘village’ as low Class people, leaving with ordinary life and with old mindset and old technologies. But now a Day scenario is totally changed, Indian villages growing out now. With smart cities, Smart Village concept is also introduced and we are proudly say that, we are one of its part, hence, through Vishwakarma Yojana we connect with the rural development concepts.

As from Ideal village visit we saw that all the success of village depend on the Sarpanch of Village. A sarpanch is the only person who can increase the level of village in all aspects. There Are so many Govt. scheme for villages and for villagers, but the Sarpanch is the only a Link Between this two phase. With some little awareness and group work can achieve anything, which Bhatha village has proved.

LikewiseBaben is also a village which is role model of Award winning gram panchayats. It is known for its 100% cleanliness. It is a Smart Village of Gujarat. After visiting this two Villages, we visit our Talangpur Village. We saw the huge difference between the local bodies (Gram Panchayat) and villagers. Major issue for rural development particularly in India is the Political Issue. All are working for themselves. They only want to develop them self instead of village. Villages need long term planning proposals in terms of master plan. From our study we conclude That providing a facilities is not only the solution of rural development. All villages in Gujarat are Now become very well compare to past. But we should focus on improvement on existing Facilities. Villagers and also gram panchayats are not focusing on the existing facilities. Due to this villagers try to discarding for its use. Also villagers are not aware about new technologies, which make them a better one. We should try to aware them.

CHAPTER 11 REFERENCES

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- UDPFI Guidelines
- Schedule of rate
- http://vy.gtu.ac.in - vishwakarma literatures
- http://theconstructor.org/practical-guide/rate-analysis
- Google maps
- https://www.timeanddate.com/sun/india/anand
- http://www.synergyenviron.com/tools/solar-irradiance/india/gujarat/anand
- https://energypedia.info/wiki/Hydro_Power_Basics
- http://www.synergyenviron.com/tools/solarirradiance/india/gujarat/anandhttps ://www.sciencedirect.com/
- https://www.sunlabob.com/solar-energy-systems-off-grid-solar-home-system.html
- http://www.gageapplied.com/dataacquisition/applications/inde

htm

- MicroC Pro: Help Library,PIC16F877A, JZC-22F Data Sheet
- YOUTUBE, GOOGLE, WIKIPEDIA, GOOGLE MAP.

CHAPTER 12 ANNEXURE ATTACHMENT

12.1 SURVEY FORM OF IDEAL VILLAGE

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	Bhaka.
Name of Taluka:	Chorasi
Name of District:	Surat
Name of Institute:	Dr. S. & S.S. Ghandhy College
Nodal Officer Name & Contact Detail:	Prof. M.G. Shaikh Sir. +91 8200321046
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Mr. Bhadresh bhai (Surpanch). Bhartiben Bhadreshbhai. Patel. (Bhartiben B. Patel.)
Date of Survey:	25-08-2020

1. Demographical Detail:

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	5164	2608	2556	513
ii)	2011	5122	2608	2519	513

2. Geographical Detail:

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector)	887.9 hect.
	Coordinates for Location:	21° 11' N 72° 46' E
	Forest Area (In hect.)	—
	Agricultural Land Area (In hect.)	520 hect.
	Residential Area (In hect.)	300 hect.
	Other Area (In hect.)	67.9 hect.
	Water bodies	—
	Nearest Town with Distance:	Surat, Distance : 6 Km

3. **Occupational Details:**

Name of Three Major Occupation groups in Village	1. Agriculture. 2. Dairy of milk. 3. Business

4. **Physical Infrastructure Facilities:**

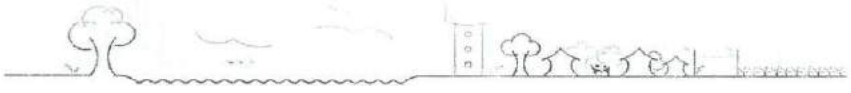
Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated) • RO Water • Well (Covered/ Uncovered) • Hand pumps • Tube well/ Borehole • River/ Canal/ Spring/ Lake/ Pond	Water tank connected with Pipes and supply through tap	✓		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:			
	Underground Sump	Capacity:	300000ltr		
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	Yes			
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	Closed			
	If Open than Pucca / Kutchcha	—			
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	Drain water is discharged directly in sewer plant			
Suggestions if any:					

E.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	All weather	✓		All weather
	Main road	Yes	✓		All weather
	Internal streets	Yes	✓		All weather
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH-53			NH-53 3.38 km From Bhatha village
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO Near Railway Station in Surat - 12 km.			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes Good	✓		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto/Chhakda/ Private vehicles	✓		
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes			Govt. more then 6 hours
	Power supply for Domestic Use	Yes			24 hours (Daily)
	Power supply for Agricultural Use	Yes			Fixed hours.
	Power supply for Commercial Use	Yes			24 hours
	Road/ Street Lights	Yes			All night hours

	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	NO			
	LED Facilities	Yes			
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	Yes			
	Location Condition	Not Good			
	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	✓		
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Pucca	✓		Only Small amount of Kutchha house.

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks



K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	Yes	✓		1 nos. PHC Center
	Private Clinic/Private Hospital/ Nursing Home				
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
L.	**Education Facilities:**				
	Aaganwadi/ Play group	Yes	✓		1 nos
	Primary School	Yes	✓		1 nos
	Secondary school	Yes	✓		1 nos
	Higher sec. School	Yes	✓		1 nos.
	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:	Without TV Bhatha.			

	Condition:	Good			
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	Yes Bhatha Good	✓		
	Public Garden Location: Condition:	Yes Bhatha Good	✓		
	Village Pond Location: Condition:	Yes Bhatha Good	✓		
	Recreation Center Location: Condition:	—		✓	
	Cinema/ Video Hall Location: Condition:	—		✓	
	Assembly Polling Station Location: Condition:	Gram Panchayat Bhatha Good	✓		
	Birth & Death Registration Office Location: Condition:	Gram Panchayat Bhatha Good	✓		
If any of the above Facility is not available in village than approx. distance from village: .....kms.					
Suggestions if any:					
N.	**Other Facilities**				
	Post-office	Good	✓		
	Telecommunication Network/ STD booth	Good	✓		

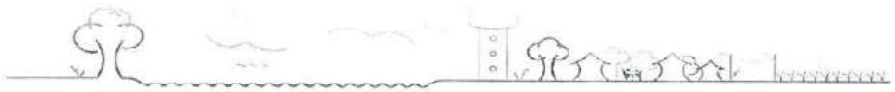
	General Market	Good	✓		
	Shops (Public Distribution System)	Good	✓		
	Panchayat Building	-		✓	
	Pharmacy/Medical Shop	-		✓	
	Bank & ATM Facility	-		✓	
	Agriculture Co-operative Society	-		✓	
	Milk Co-operative Soc.	-		✓	
	Small Scale Industries	-		✓	
	Internet Cafes/ Common Service Center/Wi Fi	-		✓	
	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	NO		✓	

7. **Data Collection From Village**

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



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

8. Additional Information/ Requirement:

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities(School Building, Health Center, Panchayat Building, Public Toilets & any other)	All infrastructure are in good condition. No repair and maintanance are required in this village.	
2.	Additional Information/ Requirement	-	

9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Solar system	It's act as a renewal source of energy.	

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: ruban@gtu.edu.in

12.2 SURVEY FORM OF SMART VILLAGE

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	Surat
Name of Taluka:	Bardoli
Name of Village:	Baben.
Name of Institute:	Dr. S. & S.S. Ghandhy College of Engg. & Tech
Nodal Officer Name & Contact Detail:	Prof. M.G. Shaikh Sir +918200321046
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Mr. B.N. Patel (Sarpanch)
Date of Survey:	8-11-2020.

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	8377	4576	3601	1599
2.	2011	15610	8642	6968	5248

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	466 hec.
2.	Forest Area (In hect.)	–
3.	Agricultural Land Area (In hect.)	282 hect.
4.	Residential Area (In hect.)	140 hect.
5.	Other Area (In hect.)	41 hect.
6.	Distance to the nearest railway station (in kilometers):	Nearest railway station is Bardoli ~1.5 km.

7.	Name of Nearest Town with Distance:	Bardoli, distance : 1Km
8.	Distance to the nearest bus station (in kilometers):	Available in Baben
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.	Business
	3.	Job

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

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

Suggestions if any:						
B.	**Water Tank Facility**					
	Overhead Tank	Capacity:	90000 ltr	-		
	Underground Sump	Capacity:	60000 ltr	-		
Suggestions if any:						
C.	**The Type of Drainage Facility**					
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	closed drainage facilities available	✓			
Suggestions if any:						
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**					
	Village approach road	Yes	✓		All weather	
	Main road	Yes	✓		All weather	
	Internal streets	Yes	✓		All weather	
	Nearest NH/SH/MDR/ODR Dist. in kms.	Yes	✓		NH-53 5Km	
Suggestions if any:						
E.	**Transport Facility**					
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Yes	✓		Bardoli -1.5 Km.	
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	✓		Baben.	
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes	✓		Auto / Chhakdo / Private Vehicles	
Suggestions if any:						
F.	**Electricity Distribution**					
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes.	✓		Govt. 24 hours.	

	Power supply for Domestic Use	Yes	✓		24 hours DGVCL
	Power supply for Agricultural Use	Yes	✓		Fixed hours
	Power supply for Commercial Use	Yes	✓		24 hours
	Road/ Street Lights	Yes	✓		At night hours
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		24 hours.
	Renewable Energy Source Facilities (Y/ N)	No		✓	-
	LED Facilities	Yes	✓		-
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	Yes	✓		
	Location Condition	Good			
	Community Toilet (With bath/ without bath facilities)	Yes	✓		With Bath.
	Solid & liquid waste Disposal system available	No		✓	
	Any facility for Waste collection from road	Yes	✓		4 Vehicles
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	Pond Canal and Tube well.	✓		
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Pucca	✓		Minor houses are Kutchha.

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	Yes	✓		8 Nos. of Sub centre /PHC.
	Sub-Centre				
	PHC			✓	
	BLOCK PHC			✓	
	CHC/RH			✓	
	District/ Govt. Hospital			✓	
	Govt. Dispensary			✓	
	Private Clinic	Private clinic & Hospital.	✓		
	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	Yes	✓		8 nos
	Primary School	Yes.	✓		1
	Secondary school	Yes	✓		1
	Higher sec. School	Yes	✓		1
	ITI college/ vocational Training Center	-		✓	
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	Yes	✓		Engineering
	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 with TV	Baben	Yes.	
	Public Library (With daily newspaper supply: Y/N)	Good	Baben	Yes	
	Public Garden	Good	Baben	Yes	
	Village Pond	Good	Baben	Yes(1 Nos)	
	Recreation Center	Good	Baben	Yes(4 Nos)	
	Cinema/ Video Hall	-	-	-	
	Assembly Polling Station	-	-	-	
	Birth & Death Registration		Panchayat		

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

Suggestions if any:

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

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

Suggestions if any:

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

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	NO		✓	
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	NO		✓	
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	NO	NO	✓	
2.	Recent Projects going on for Development of Village	NO		✓	
3.	Any NGO working for village development	NO	NO	✓	
4.	Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY)	NO		✓	

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

1.	Repair & Maintenance of Existing Public Infrastructure facilities. School Building Health Center Panchayat Building Public Toilets & any other	Everything is in good condition So there is NO requirement of maintenance.	
2.	Additional Information/ Requirement	Everything is available	
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?	6 times Cleaning	

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	Public library & Community hall	

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

12.3 SURVEY FORM OF ALLOCATED VILLAGE

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

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	Surat
Name of Taluka:	Sachin
Name of Village:	Talangpur
Name of Institute:	Dr. S. & S.S. Ghandhy College of Engg. & Tech.
Nodal Officer Name & Contact Detail:	Prof. M. G. Sheikh Sir +91 8200321046
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Mr. Bhikhubhai Chimubhai Patel (Sarpanch)
Date of Survey:	29-10-2020

Deputy Town Planner (S.Z.)
Surat Mahanagar Sevas adan

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	3802	2616	1186	179
2.	2011	11417	8397	3802	612

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	607.2 hect.
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	420 hect.
4.	Residential Area (In hect.)	180 hect.
5.	Other Area (In hect.)	7.2 hect.
6.	Distance to the nearest railway station (in kilometers):	Sachin railway station : Distance : 5.2 Km

7.	Name of Nearest Town with Distance:	Surat, Navsari, Vaisad, Bardoli, Kadodara
8.	Distance to the nearest bus station (in kilometers):	Sachin, GIDC Naka
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. Fishing 3. Teaching

Major crops grown in the village:	1. Sugarcane 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	Public Tap	✓	-	
2.	**DUG WELL** Protected Well Un Protected Well	NO		✓	
3.	**WATER FROM SPRING** Protected Spring Unprotected Spring	NO		✓	
	Rainwater Tanker Truck Cart With Small Tank				
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/**	Lake	✓		
	Irrigation Channel Bottled Water Hand Pump				

	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 without TV	Talangpur	Yes	
	Public Library (With daily newspaper supply: Y/N)	No		No	
	Public Garden	Yes Good	Talangpur	Yes	
	Village Pond	Good	Talangpur	Yes	
	Recreation Center	–			No
	Cinema/ Video Hall	–			No
	Assembly Polling Station	–			No
	Birth & Death Registration Office	Good	Talangpur	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	–			No
	Telecommunication Network/ STD booth	Good	Talangpur	Yes	
	General Market	Good	Talangpur	Yes	
	Shops (Public Distribution System)	Good	Talangpur	Yes	
	Panchayat Building	Good	Talangpur	Yes	
	Pharmacy/Medical Shop	Good	Talangpur	Yes	
	Bank & ATM Facility	Good	Talangpur	Yes	
	Agriculture Co-operative Society	–	–	–	No
	Milk Co-operative Soc.	–	–	–	No
	Small Scale Industries	Good	Talangpur	Yes	–
	Internet Cafes/ Common Service Center/Wi Fi	–	–	–	No
	Youth Club	–	–	–	No
	Mahila Mandal	–	–	–	No.

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	Yes all are in good condition	✓		1 PHC center Sub-center is in umber village.
	Sub-Centre				
	PHC				
	BLOCK PHC			✓	
	CHC/RH			✓	
	District/ Govt. Hospital			✓	
	Govt. Dispensary		✓		
	Private Clinic	✓	✓		
	Private Hospital/			✓	
	Nursing Home			✓	
	AYUSH Health Facility				
	sonography /ultrasound facility			✓	
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	Yes	✓		4 nos
	Primary School	Yes	✓		1
	Secondary school	No Yes	✓		0
	Higher sec. School	000 Yes	✓		0
	ITI college/ vocational Training Center	-		✓	-
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	-		✓	-

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	Power supply for Domestic Use	Yes	✓		24 hours DGVCL
	Power supply for Agricultural Use	Yes	✓		Fixed hours
	Power supply for Commercial Use	Yes	✓		24 hours
	Road/ Street Lights	Yes	✓		At night hours
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		24 hours
	Renewable Energy Source Facilities (Y/ N)	No		✓	
	LED Facilities	Yes	✓		
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	Yes	✓		1 nos of public latrines blocks are available.
	Location Condition	Good	✓		
	Community Toilet (With bath/ without bath facilities)	Yes	✓		without bath.
	Solid & liquid waste Disposal system available	No		✓	
	Any facility for Waste collection from road	No		✓	
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	Good pond	✓		
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Yes	✓		40% Kutchha 60% Pucca

	Other(Specify)Lake/ Pond	Yes	✓		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	2 lakhs ltr		
	Underground Sump	Capacity:	40000 ltr		
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE	No		✓	
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Yes	✓		R.c.c Road
	Main road	Yes	✓		Bitumen Road
	Internal streets	Yes	✓		Paver Blocks/RcRoad
	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)	No		✓	Nearest railway station Sachin 5.2 Km
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes Good	✓		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	All	✓		
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes	✓		Govt. More than 6 hours

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

Suggestions if any:

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

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	Some facilities requires Maintenance.	
2.	Additional Information/ Requirement	-	
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?	6 times Cleaning	

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	Self healing roads & Public Library.	

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

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

12.4 GAP ANALYSIS OF ALLOCATED VILLAGE

VILLAGE GAP Analysis					
Village Facilities	**Planning Commission/UDPFI Norms**	**Village Name: Talangpor**			
		Population:11417 (2011)			
		Existing	**Required as per Norms**	**Smart Vilage / Cities / Heritage Future Projection Design**	**Gap**
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	4	130	-	
Primary School	Each Per 2500 population	1 to 9	280	-	
College	Per 125,000 Population	-	-	-	
Tech. Training Institute	Per 100000 Population	-	-	-	
Agriculture Research Centre	Per 100000 Population	-	-	-	
Skill Development Center	Per 100000 Population	-	-	-	
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	1		-	Main branch is in lajpor.
Primary Health & Child Health Center	Per 20,000 population	-	-	-	
Child Welfare and Maternity Home	Per 10,000 population	-	-	-	
Multispeciality Hospital	Per 100000 Population	-	-	-	
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutcha house)	Yes	-	-	
Physical Infrastructure Facilities					

Transportatio n		**Adequate / Inadequate**	-		
Pucca Village Approach Road. Yes	Each village		-	-	
Bus/Auto Stand provision Auto	All Villages connected by PT (ST Bus or Auto)	Auto	-	-	
Over Head Tank	1/3 of Total Demand	2 Nos	60000ltr & 140000ltr	-	
U/G Sump	2/3 of Total Demand	40000 (U.G)	-	-	
Waste Management System	Door to door	**Adequate / Inadequate**	-	-	
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	-	-	-	
community hall and Public Library	Per 15000 Population	-	-	-	
Cremation Ground	Per 20,000 population	-	-		
Post Office	Per 10,000 population	1	-	-	
Gram Panchayat Building	Each individual/group panchayat	1	-	-	
APMC	Per 100000 Population				
Fire Station	Per 100000 Population	Near Sachin GIDC	-	-	
Public Garden	Per village	2	-	-	
Police post	Per 40,000Population	Near Sachin GIDC	-	-	
Shopping Mall	-				
Electrical Design					
Electricity Network. (GEB)	**Gujarat Electricity Board**	**Adequate / Inadequate**	-	-	
Electricity	Yes	Adequate (24*7)			
Any Smart Village Facility					
Technology					
SMC water lines Door to door		ESR cap	0		
Paver blocks		Sump cap	0		
Pond facilities developed		Lat	0		

12.5 SUMMARY DETAILS OF ALL THE VILLAGE DESIGN AS PER PART-1 (IN TABLE FORMAT)

Sr.no.	Village	Discipline	Part-1	Part-2
1.	TALANGPUR	CIVIL	PHC CENTER PUBLIC TOILET PUBLIC LIBRARY ENTRY GATE SELF HEALING ROAD POST OFFICE	PRIMARY SCHOOL COMMUNITY HALL AGRO STORAGE UNIT PLAYGROUND RAIN WATER HARVESTING R.O. WATER PLANT
2.	TALANGPUR	ELECTRICAL	PIEZOELECTIC SOLAR SYSTEM SOLAR STREET LIGHT	CCTV CAMERA P.V. PUMPING SYSTEM SOLAR ELECTRIFICATION

12.6 SUMMARY OF GOOD PHOTOGRAPHS (ALLOCATED VILLAGE)

Overhead Tank

Underground Tank

Vertical Reservoir


Village School

Village Road

Public Toilet

PHC Center

Aanganwadi

House

12.8 VILLAGE INTERACTION WITH SARPANCH REPORT WITH THE PHOTOGRAPH

Due Covid-19 situation we didn't get permission to interact with sarpanch…

CHAPTER-13 FROM THE CHAPTER 9 FUTURE DESIGNS OF THE ASPECTS (FEASIBILITY, CONSTRUCTION, OPERATION AND MAINTENANCE OF VARIOUS DESIGN IN OPTIONS IN RURAL AREAS ALONG WITH COST WITH AUTOCAD DESIGNS / PLANNING WITH ANY SOFTWARE

13.1 DESIGN OF PRIMARY SCHOOL

Talangpur Village have one primary school but the plan and construction of village is old andthere are many structural problem in the primary school Building and sarpanch and villager alsogive us feed back that a new plan of primary is required and as population is also growing sonumber ofstudent isalso increasing soas perrequirementwegive the planof theprimaryschool.

FIG 13.1.1. ElevationofPrimarySchool

FIG. 13.1.2. PLAN OF PRIMARY SCHOOL

- **EstimationofPrimary school**

BUILDINGESTIMATE						
QUANTITYSHEET						
Sr.No.	**ItemDescription**	**No.**	**Length (m)**	**Width/ Breadth (m)**	**Height /Depth (m)**	**Quantity (CUM)**
1	**Earthwork inExcavationin Foundation:**					
	L=15.8m	3	15.8	1	1.5	71.10
	L=6.1m	4	6.1	1	1.5	36.60
	L=5.2m	1	5.2	1	1.5	7.80
	S1=11.4	2	11.4	1	1.5	34.20
	S2=9.17	2	9.17	1	1.5	27.51

				TOTALQTY.		149.70
2	**P.C.CinExcavation in Foundation:**					
	L=15.8m	3	0.9	1.3	0.3	1.05
	L=6.1m	4	0.9	1.3	0.3	1.40
	L=5.2m	1	0.9	1.3	0.3	0.35
	S1=11.4	2	0.9	1.3	0.3	0.70
	S2=9.17	2	0.9	1.3	0.3	0.70
				TOTALQTY.		3.51
3	**BrickMasonaryupto**					
	plinth					
Step 1	**L1=15.4 m**	3	15.4	0.5	0.3	6.93
Step 2	**L1=15.3m**	3	15.3	0.4	0.3	5.51
Step 3	**L1=5.2m**	3	15.2	0.3	0.3	4.10
Step 1	**L2=5.7m**	4	5.7	0.5	0.3	3.42
Step 2	**L2=5.6m**	4	5.6	0.4	0.3	2.69
Step 3	**L2=5.3m**	4	5.3	0.3	0.3	1.91
Step 1	**L3=4.8m**	4	4.8	0.5	0.3	2.88
Step 2	**L3=4.7m**	4	4.7	0.4	0.3	2.26
Step 3	**L3=4.6m**	4	4.6	0.3	0.3	1.66
Step 1	**S1=11.8m**	2	11.8	0.5	0.3	3.54
Step 2	**S1=11.9m**	2	11.9	0.4	0.3	2.86
Step 3	**S1=5.2m**	2	15.2	0.3	0.3	2.74
Step 1	**S2=9.57**	2	9.57	0.5	0.3	2.87
Step 2	**S2=9.67**	2	9.67	0.4	0.3	2.32
Step 3	**S2=9.77**	2	9.77	0.4	0.3	2.34

				TOTALQTY.		48.02
4	BrickMasonaryabove plinth upto slab in c.m (1:6)					
	LONGWALL					
	L1=5.1m	2	11.8	0.2	3.2	15.10
	L2=5.2m	2	11.9	0.2	3.2	15.23
	L3=4.5m	2	15.2	0.2	3.2	19.46
	S1=5.3m	2	9.57	0.2	3.2	12.25
	S2=9.87	2	9.67	0.2	3.2	12.38
				TOTALQTY.		74.42
5	Deducationfor Door Window					
	D1	7	1	0.2	2.1	2.94
	D2	3	0.7	0.2	2.1	0.88

BUILDINGESTIMATE

QUANTITYSHEET

Sr.No.	**ItemDescription**	**No.**	**Length(m)**	**Widht/ Breadth (m)**	**Height/ Depth(m)**	**Quantity(CUM)**
	D3	1	0.8	0.2	2.1	0.34
	W1	6	1.6	0.2	1.4	2.69
	W2	4	0.7	0.2	1.4	0.78

	W 3	4	1.2	0.2	1.4	1.34
	V 1	2	0.6	0.2	0.6	0.14
				TOTALQTY.		5.30
6	Deducationfor lintel window&door					
	D 1	7	1.3	0.2	3.2	5.82
	D 2	3	1	0.2	3.2	1.92
	D 3	1	1.1	0.2	3.2	0.70
	W 1	6	1.9	0.2	0.15	0.34
	W 2	4	1	0.2	0.15	0.12
	W 3	4	1.5	0.2	0.15	0.18
	V 1	2	0.9	0.2	0.15	0.05
				TOTALQTY.(m2)		9.14
				NETQTY.(m2)		60.48
7	1:3Plasterforwall					
	CWSN	2	1.3	3		7.80
		2	2.4	3		14.40
	DRINKINGAREA	2	1.3	3		7.80
		2	2	3		12.00
	TOILET	2	1.4	3		8.40
		2	1.7	3		10.20
	TOILET1	2	4.7	3		28.20

		2	1.7	3		10.20
	CLASSROOM	2	5.4	3		32.40
		2	4.9	3		29.40
	Cellingplaster					
	CWSN	1	1.3	2.4		3.12
	DRINKINGAREA	1	1.3	2		2.60
	TOILET	1	1.4	1.7		2.38
	TOILET1	1	4.7	1.7		7.99
	CLASSROOM	1	5.4	4.9		26.46
				TOTALQTY.(m2)		203.35
8	DeducationforDoor Window					
	D1	2.5	1		2.1	5.25
	D2	2	0.7		2.1	2.94
	D3	1	0.8		2.1	1.68
	W1	2	1.6		1.4	4.48
	W2	1	0.7		1.4	0.98
	W3	1	1.2		1.4	1.68
	V1	1	0.6		0.6	0.36

BUILDINGESTIMATE

QUANTITYSHEET

Sr.No.	ItemDescription	No.	Length(m)	Widht/Breadth (m)	Height/Depth (m)	Quantity (m^3)
				TOTALQTY.(m2)		17.37
				NetQTY.(m2)		185.98
9	1:3Plasterforwall FristFloor					
	CLASSROOM1	2	4.8	3		28.80
		2	5	3		30.00
	CLASSROOM2	2	4.8	3		28.80
		2	5	3		30.00
	PASSANGE	2	1	3		6.00
		2	3	3		18.00
	Cellingplaster					
	CLASSROOM1	1	4.8	5		24.00
	CLASSROOM2	1	4.8	5		24.00
	PASSANGE	1	1	3		3.00
				TOTALQTY.(m2)		192.60
10	Deducationforlintel Paintwork					
				NETQTY.(m2)		60.48
11	BrickMasonaryParapet wall					
		2	13	10	1.5	390.00
				TOTALQTY.		390.00

12	1:3Plasterforwall outerface	2	13		4.5	117.00
		2	10		4.5	90.00
				TOTALQTY.		207.00
				NETQTY.(m2)		197.86

Table no. 13.1.1 Measurement sheet of primary school

- **AbstractsheetofPrimaryschool**

AbstractSheetofPrimary SchoolBuilding					
Sr. no	ltemDescription	QTY	Rate	Per	Amount(Rs.)
1	Earthworkinexcavation infoundation	149CUM	90	CUM	13410
2	Earthfillinginplinth	130CUM	2700	CUM	129600
3	Brickmasonaryupto plinth in CM (1:60	48CUM	3500	CUM	689500
4	smoothplasterinsiderooms &ceilling	204SQ.M	150	SQ.M	29700
5	smoothplasteron outerwall	197SQ.M	150	SQ.M	29550
6	paintwork(whitewash)	204SQ.M	5	SQ.M	990

7	paintworkon outerwall	198SQ.M	5	SQ.M	990
8	Brickworkforparapetwall	390 CUM	3500	CUM	1365000
			TotalRs.		2258740
		Add 1.5%WaterCharge			33881
		Add10%con.Charge			22587.4
		Total Estimate Cost inRs.			2315209

Table No. 13.1.2. Abstract Sheet of primary school

13.2 DESIGN OF COMMUNITY HALL

Village has no community hall, therefore villager have no specific place forfunction, social gathering, meeting etc., so as per the feedback and request from thevillagers wehavedesignthe communityhall forvillage.

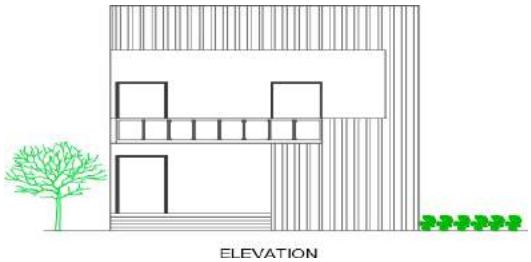


FIG.13.2.1 ElevationofCommunityHall

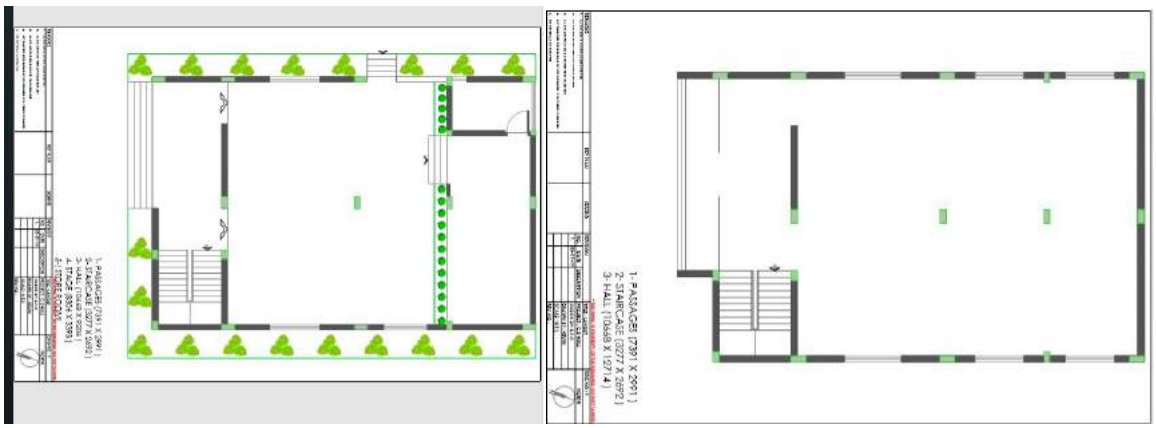


FIG.13.2.2 PlanofcommunityhallFig.13.2.3 Firstfloorplanof communityhall

- **EstimationCommunityhall**

BUILDINGESTIMATE

QUANTITYSHEET

Sr. No.	ItemDescription	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity (CUM)
1	**EarthworkinExcavationin Foundation:**					
	L1=11	3	11	1	1.5	49.50
	L2=4.50	1	4.5	1	1.5	6.75
	S1=15.5	2	15.5	1	1.5	46.50
	S2=4	1	4	1	1.5	6.00
	S3=5	1	5	1	1.5	7.50
				TOTALQTY.		108.75

2	**padfootinguptoplinth Foundation:**					
	L1=10.7	3	10.7	1	0.3	9.63
	L1=4.2	1	4.2	1	0.3	1.26
	S1=11.9	2	11.9	1	0.3	7.14
	S1=12.9	2	12.9	1	0.3	7.74
	S2=4.5	1	4.5	1	0.3	1.35
	S2=4.8	1	4.8	1	0.3	1.44
	S3=5.5	1	5.5	1	0.3	1.65
	S3=5.5	5.5	5.5	1	0.3	9.08
				TOTALQTY.		12.18
3	**P.C.C Foundation:**					
	L1=11	3	11	1	0.2	6.60
	L2=4.5	1	4.5	1	0.2	0.90
	S1=15.5	2	15.5	1	0.2	6.20
	S2=4	1	4	1	0.2	0.80
	S3=5	1	5	1	0.2	1.00
				TOTALQTY.		14.50
3	**B.B.C.C Foundation:**					
	L1=11	3	11	1	0.2	6.60
	L2=4.5	1	4.5	1	0.2	0.90
	S1=15.5	2	15.5	1	0.2	6.20
	S2=4	1	4	1	0.2	0.80
	S3=5	1	5	1	0.2	1.00
				TOTALQTY.		14.50

4	**BrickMasonryaboveplinth**					
	uptoslab inc.m(1:6)					
	L=11m	3	11	0.2	4	26.40
	L=4.5m	1	4.5	0.2	4	3.60
	S1=11.4m	2	15.5	0.2	4	24.80
	S2=4m	1	4	0.2	4	3.20
	S3=5m	1	5	0.2	4	4.00
				TOTALQTY.		84.55
5	DeducationforDoor					
	Window					
	D1	2	3.5	0.2	3.5	4.90
	D2	1	1.2	0.2	3.5	0.84

BUILDINGESTIMATE

QUANTITYSHEET

Sr. No.	**ItemDescription**	**No.**	**Length(m)**	**Width/ Breadth(m)**	**Height/ Depth(m)**	**Quantity(CUM)**
	W1	4	1.2	0.2	1.4	1.34
	V1	2	0.6	0.2	0.6	0.14
				TOTALQTY.		1.49
6	Deducationforlintel					
	window&door					
	D1	2	3.5	0.2	0.15	0.21

	D2	1	1.2	0.2	0.15	0.04
	W1	4	1.2	0.2	0.15	0.14
	V1	2	0.6	0.2	0.15	0.04
				TOTALQTY.		0.18
				NETQTY.(m2)		82.88
7	1:3Plasterforwall					
	HALL	2	10.6	3.5		74.20
		2	9.2	3.5		64.40
	STOREROOM	2	2.1	3.5		14.70
		2	3.3	3.5		23.10
	STAGE	2	8.3	3.5		58.10
		2	3.3	3.5		23.10
	Cellingplaster					
	HALL	1	10.6	9.2		97.52
	STOREROOM	1	2.1	3.3		6.93
	STAGE	1	8.3	3.3		27.39
				TOTALQTY.		389.44
	DeducationforDoor					
	Window					
	D1	2.5	3.5	0.2	3.5	6.13
	D2	2	1.2	0.2	3.5	1.68
	W1	1	1.2	0.2	0.4	0.10
	V1	2	0.6	0.2	0.3	0.07
				TOTALQTY.(m2)		7.97
				NETQTY.(m2)		381.47
8	InsidePanitonWall					

				TOTALQTY.(m2)		381.47
9	OutsidePanit on Wall					
	HALL	2	16.1	9.2		296.24
				TOTALQTY.(m2)		677.71
	DeducationforDoor and Window&Lintel			NETQTY.(m2)		669.73
10	paintwork(whitewash)					
				TOTALQTY.(m2)		669.73

BUILDINGESTIMATE

QUANTITYSHEET

Sr. No.	ItemDescription	No.	Length (m)	Widht/ Breadth (m)	Height/ Depth (m)	Quantity(CUM)
9	paintworkon outerwall					
				NETQTY.(m2)		670.00
11	BrickMasonary Parapetwall					
	L1=16	2	16	0.2	1.5	9.60
	S1=11.1	2	11.1	0.2	1.5	6.66
				TOTALQTY.		16.26

Table No. 13.2.1 Measurement Sheet of Community Hall

- **Abstract Sheet of Community hall**

Abstract Sheet of Community hall					
Sr. no	ltemDescription	QTY	Rate	Per	Amount(Rs.)
1	Earthworkinexcavation infoundation	108.0CUM	90	CUM	9720
2	Earthfillinginplinth	126.0CUM	2700	CUM	340200
3	Brickmasonaryupto plinth in CM (1:60	84.0CUM	3500	CUM	294000
4	smoothplasterinsiderooms &ceilling	82.9SQ.M	150	SQ.M	12432
5	smoothplasteron outerwall	381.4SQ.M	150	SQ.M	57210
6	paintwork(whitewash)	669.1SQ.M	5	SQ.M	3345.5
7	paintworkon outerwall	667.0SQ.M	5	SQ.M	3335
8	Brickworkforparapetwall	16.3CUM	3500	CUM	56910
			TotalRs.		777152.5
		Add 1.5%WaterCharge			11657
		Add10%con.Charge			7771.525
		TotalEstimateCostinRs.			796581

Table No. 13.2.2 Abstract Sheet of Community Hall

13.3 DESIGN OF AGRO STORAGE UNIT

The 70% population of the Talangpur village is doing farming and other 30 % people are doingLabourworkinfarmso,Agroproductisproduceinbigamount,Butthevillagedoesnothav ethe storage building for agro product therefore the villagers need a storage house for their agroproductso theycan storetheiragro product safely.

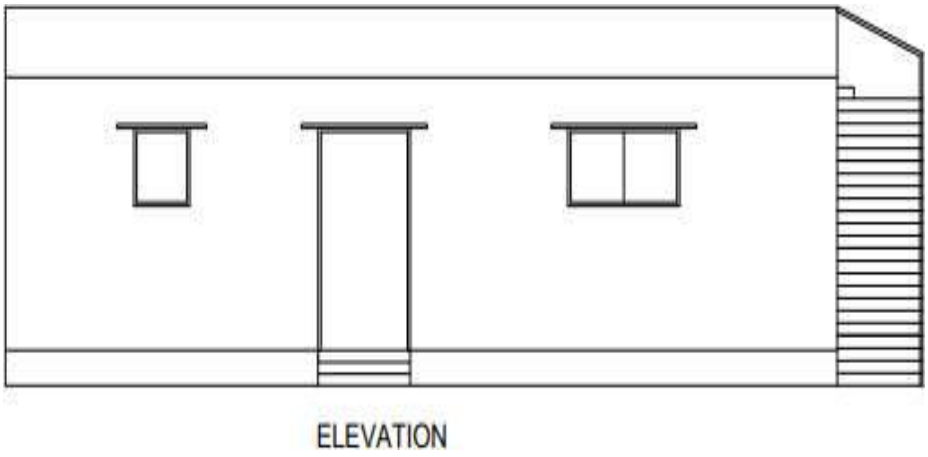


Fig.13.3.1Elevation ofAgrostorageunit

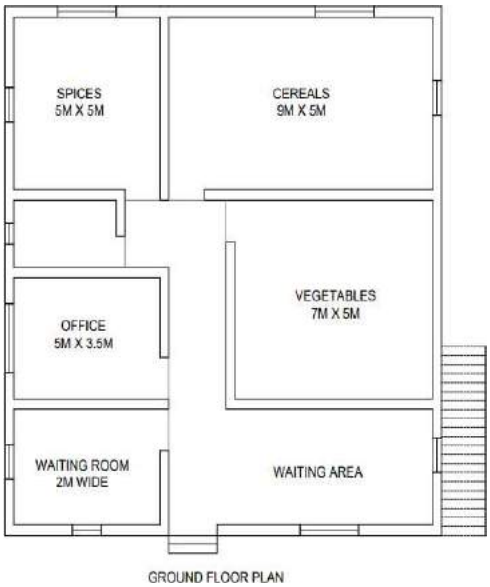


Fig. 13.3.2 Plan forAgrostorageunit

Estimationof Agrostorageunit

BUILDINGESTIMATE

QUANTITYSHEET

Sr. No.	ItemDescription	No.	Length (m)	Width/ Breadth (m)	Height/ Depth(m)	Quantity (CUM)
1	**EarthworkinExcavationin Foundation:**					
	ExcavationforForfoundation	16	4	4	1.5	384.00
	ExcavationforForstep	1	2.4	0.7	0.2	0.34
				TOTALQTY.		384.34
2	**P.C.CinExcavationin Foundation:**					
	P.C.C.forfoundation	16	4	4	0.1	25.60
	P.C.C.forsteps	1	2	0.7	0.1	0.14
				TOTALQTY.		25.74
3	**R.C.C.forfoundation**					
	Volume	16	0.19			3.04
				TOTALQTY.		3.04
	R.C.Cforbeam					
	steps1	16	5.23	0.23	0.3	5.77
	steps2	4	4	0.23	0.3	1.10
	steps3	4	2.23	0.23	0.3	0.62

						7.49
4	Brick Masonary in super structure					
	Longwall1L=12m	3	12	0.23	3.5	28.98
	Longwall2L=5m	1	5	0.23	3.5	4.03
	Shortwall1S=14m	4	14	0.23	3.5	45.08
	Shortwall1S=5m	1	5	0.23	3.5	4.03
	Brickmasonrysteps					
	step1	1	2	0.7	0.3	0.42
	step2	1	2	0.35	0.3	0.21
		-	-	TOTALQTY.		82.74
	Deduction forDoor					
	&window					
	D	1	1.85	0.23	2.1	0.89
	D1	4	1.2	0.23	2.1	2.32
	D2	1	0.9	0.23	2.1	0.43
	W	6	2	0.23	1.2	3.31
	W1	3	1	0.23	1.2	0.83
	V1	1	0.6	0.23	1.2	0.17
				TOTALQTY.(m3)		7.95

BUILDINGESTIMATE

QUANTITYSHEET

Sr. No.	ItemDescription	No.	Length(m)	Widht/ Breadth (m)	Height/ Depth(m)	Quantity (CUM)
5	**Flooring**					
	Kotastone					
	Room 1	1	5	5		25.00
	Room 2	1	9	5		45.00
	Room 3	1	7	5		35.00
				TOTALQTY.(m2)		105.00
	Marbel					
	Office	1	5	3		15.00
	Verandah	1	2.4	3		7.20
	openarea1	1	2	5		10.00
	openarea2	1	5	1.5		7.50
				TOTALQTY.(m2)		39.70
6	**R.C.C.forslab**					
	(1:1.5:3)	1	13	1 5	0.5	97.50
				TOTALQTY.(m3)		97.50
7	**outsideplaster**					
	L2(13+15)	1	56	3.5		196.00
				TOTALQTY.(m2)		196.00

	Deduction					
	D	1	1.85		2.1	3.89
	W	6	2		1.2	14.40
	W1	3	1		1.2	3.60
				TOTALQTY.(m2)		21.89
8	**Insideplaster(1:4)**					
	Longwall1	4	12		3.5	168.00
	Longwall2	1	5		3.5	17.50
	short wall 1	6	14		3.5	294.00
	short wall 2	1	5		3.5	17.50
				TOTALQTY.(m2)		497.00
	Deduction					
	D	1	1.85		2.1	3.89
	D1	10	1.2		2.1	25.20
	D2	2	0.9		2.1	3.78
	W	5	2		1.2	12.00
	W1	3	1		1.2	3.60
				TOTALQTY.(m2)		48.47
9	**colouroutside**					
	L=2(13+15)	1	56		3.5	196.00
				TOTALQTY.(m2)		196.00

BUILDINGESTIMATE

QUANTITYSHEET

Sr. No.	ItemDescription	No.	Length(m)	Width/ Breadth(m)	Height/ Depth(m)	Quantity (CUM)
	Deduction					
	D	1	1.85		2.1	3.89
	W	6	2		1.2	14.40
	W1	3	1		1.2	3.60
				TOTALQTY.(m2)		21.89
10	**Colourinside**					
	longwall1	4	12		3.5	168.00
	longwall2	1	5		3.5	17.50
	Shortwall1	6	14		3.5	294.00
	Shortwall2	1	5		3.5	17.50
				TOTALQTY.(m2)		497.00
	Deduction					
	D	1	1.85		2.1	3.89
	D1	10	1.2		2.1	25.20
	D2	2	0.9		2.1	3.78
	W	5	2		1.2	12.00
	W1	3	1		1.2	3.60
				TOTALQTY.		48.47
11	**Woodwork**					
	Door(400 thick) & Window					
	D	1	1.85		2.1	3.89
	D1	5	1.2		2.1	12.60
	D2	1	0.9		2.1	1.89

	W	6	2		1.2	14.40
	W1	3	1		1.2	3.60
				TOTALQTY.		36.38
12	**R.C.C.Chajja**					
	W	5	2.4	0.65	0.1	0.78
	W1	3	1.6	0.65	0.1	0.31
	W3	1	5	0.65	0.1	0.33
				TOTALQTY.(m3)		1.42
13	**R.C.C.Column**	16	0.23	0.23	5	4.23
				TOTALQTY.(m3)		4.23

Table No. 13.3.1 Measurement sheet of agro storage unit

- **AbstractSheetofAgro Storageunit**

AbstractSheetofAgroStorageUnit					
Sr. no	ItemDescription	QTY	Rate	Per	Amount(Rs.)
1	Earthworkinexcavation infoundation	384.34	90	CUM	34590.6
2	P.C.C.forFoundation	25.74	3150	CUM	81081
3	R.C.C.forFoundationAndBeam	24	9218	CUM	221232
4	Brickmasonaryinsuper Structure	74.25	3321	SQ.M	246584.25

5	Flooring	60.5	742	SQ. M	44891
6	R.C.C.forSlab	29.25	4937	SQ .M	144407.25
7	OutsidePlaster(1:4)	174.12	132	SQ.	22983.84
				M	
8	InsidePlaster(1:4)	448.54	100	SQ. M	44854
9	Colour outside	174.12	130	SQ. M	22635.6
10	Colourinside	448.54	90	SQ. M	40368.6
11	Woodwork forDoorandWindows	33.56	245	SQ. M	8222.2
12	R.C.C.forChajja	1.41	4235	CU M	5971.35
13	R.C.C.forColumn	4.23	4792	CU M	20270.16
				TotalRs.	938091.85
		Add1.5%Water Charge			14071
		Add10%co. Charge			9380.9185
		TotalEstimateCostinRs.			961544

Table No. 13.3.2 Abstract sheet of agro storage unit

13.4 DESIGN OF PLAYGROUND

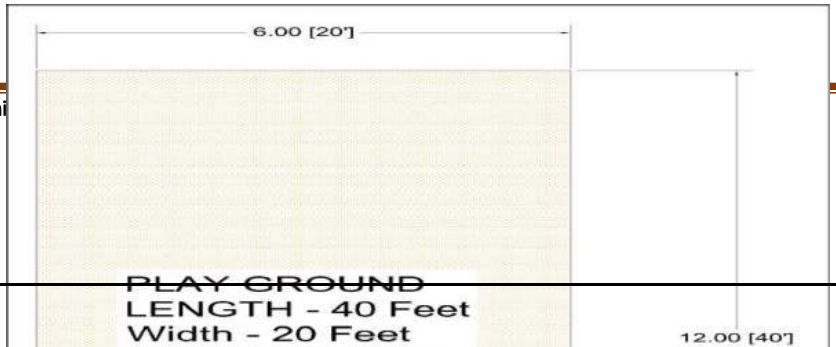


Fig 13.4.1 Design of Playground

Table 13.4.1Construction work estimate of proposed playground

SR.NO.	DESCRIPTION	QTY.	RATE (Rs.)	UNIT	AMOUNT (Rs.)
1	Cleaning of Land	40.00	80.00	SQ.M	3200.00
2	levelling of land	100.00	150.00	SQ.M	15000.00
3	Smooth surfacing of land	800.00	20.00	CU.M	16000.00
4	Planting	80.00	180.00	Nos	14400.00
5	Boundary Making	120.00	300.00	SQ.M	36000.00
Rupees Eighty Five Thousand Only.				**Total**	84600.00
				say	85000.00

13.5 DESIGN OF RAIN WATER HARVESTING

RAIN WATER HARVESTING:

Sustainable Design Proposals- Rainwater HarvestingSystem:

- After the survey and data collection, we are decided to design rainwater harvesting techniques over a gram panchayat building of Talangpur village.
- Gram panchayat building is in Rectangular shape.
- Width of terrace =11m
- Length of terrace =11m
- Total area of terrace = 11x 11=121m^2

Note: (All the Dimensions and Data are assumed)

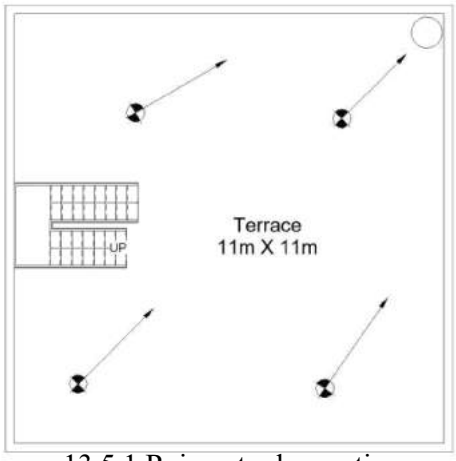


Figure.13.5.1 Rainwater harvesting

Design of Components of Rainwater Harvesting System:

Design of Tank

- No of person =200
- Period of water scarcity =120
- Per capita water requirement =5lit/day
- Annual average rainfall =1903.83mm
- Area of roof =121m^2
- Run off coefficient =0.75
- Avg. rain fall in day =26mm
- Water available from terrace = annual avg. rain falls x area of terrace x avg. rain fall in day
- Daily a consumptive use of water =1000lit
- Here annual water available from terrace is 161632.62 Lit, which is of volume 161. 63m3.Which is uneconomical to construct?
- So, here we design the tank on base of total daily available water which is2207.4 lit.

Providing 2000 Lit. Tank and whichever water is collected above this limit that water may use for recharging the ground water table

Design of Pipe:

The following table gives an idea about dia. of pipe required in draining out drain water based on rainfall intensity and roof area.

Table 13.5.1 Sizing of Rainwater Pipe for Roof Drainage

Diameter of pipe (mm)	Average rate of rainfall in mm/h					
	50	75	100	125	150	200
50	13.4	8.9	6.6	5.3	4.4	3.3
65	24.1	16	12	9.6	8	6
75	40.8	27	20.4	16.3	13.6	10.2
100	85.4	57	42.7	34.2	28.5	21.3
125	0	0	80.5	64.3	53.5	40
150	0	0	0	0	83.6	62.7

According to this table the dia. of down pipe required is approx.75mm. So, we are providing pipe of75mm.

Filter Unit:

- It is preferable to filter the rainwater before storing it if leaves and other organic material enter the storage tank, they decompose and support bacterial growth in the tank.
- Dirt and other debris, if not filtered out, can cause blocks in the plumbing system when the stored rainwater is used Different filters exist some are commercially available while others can be put together by us

Sand gravel filter:

- This is a do-it-yourself filter consisting of three layers of gravel, sand and gravel, separated by meshes. The filter can be made in a fibrocement tank or in a HDPE drum.

Variations to the sand:

- Gravel filter include using a sponge layer on top to filter out coarse debris or adding a layer of charcoal or activated carbon to improve the odor.

- The top layer of sand to a depth of about 3 cm needs to be cleaned periodically. The sand or sponge can be removed and soaked Cleaned in a bucket of water and replaced.
- There could be fungal growth on the sponge if prescribed maintenance is not followed if charcoal is used, it needs to be changed every year it is also advised to clean the meshes and the top layer of gravel.

- It is a slow-sand filter constructed in a 90 liters' drum. The lid is turned over and holes are punched in it.
- This is the first sieve which keeps out large leaves, twigs etc. Rainwater coming out of the lid sieves the passes through three layers of sponge and a 150 mm thick layer of coarse sand.
- The filter removes suspended solids from the harvested rainwater. It has been developed by S. Vishwanath; a Bangalore based water harvesting expert.

Table 13.5.2 Difference b/w sand and mesh filters

Sand Filters	Mesh Filters
Can be assembled with locally available materials and not dependent on product availability in a region	Off-the-shelf products which are easy to install but availability depends on marketing initiative of manufacturer
Higher efficiency than some mesh filters, provided the filter does not over flow	Slightly lower efficiency than sand filters since some water is used to wash away dirt and debris
Requires regular maintenance	Some mesh filters require regular maintenance but others are relatively low maintenance products
Overflow may occur during heavy rain or if the filter is clogged	Overflow may occur if the filter is clogged

Table .13.5.3 Components Cost and Design Life (USE R&B SOR YEAR18-19)

Components	Price (Rs.)	Unit	Quantity	Amount (Rs.)	Design life(Year)
Syntax Tank	9/- Rs. Per liter capacity	Liter	2000	18000	50
Downpipe	150/- Rs. Per foot	Feet	14	2100	50
Water proofing	120/- Rs.	m^2	121	14520	
Filter 1. Varun filter 2. Mesh filter	4500/-Rs. 5000/-Rs. (Approx.)	Nos.	1	4500	40 to 50
TOTALAMOUNT				=	**39,120 RS**

13.6 DESIGN OF R.O. WATER PLANT

RO-Water Plant

In Talangpur village there is availability of daily usage water supply but there is no availability of Clear drinking water supply. They use sources like underground

water, by using of hand pump, tube well, open well etc. Or directly from the supply by the panchayat which is untreated water, so we decided to give design of R.O plant building there. This R.O plant will be machinery working plant.

As per IS drinking and cooking water use is 15 lt./head/day, 5 lt. water is extra for safety purpose.

= 15 lt./head/day × 5484 head
= 82260 lt./day
= 90000 lt./day (with extra factor)

Total requirement of R.O water of the village is 82260 lt./day, so we design R.O plant and its capacity is 90000 lit/day. We decided to use machinery of R.O plan and it's filtering capacity is 20000 lit/hr.

The Plant BASIS OF DESIGN the Following Raw Water Analysis Is Considered as Basis of Design (Approx.)

A. RAW WATER CHARACTERISTICS

Ph. = 7.0-7.5mg/Lt.
Total Dissolved Solids = 2000mg/Lt.
Total Hardness = 200mg/Lt.
Total Alkalinity = Nil

B. TREATED WATER QUALITY FROM R.O. PLANT:

Total Hardness …<50 ppm
Ph. ….7.0-7.5
Total Dissolved Solids …. <50 mg/lit
Color…. nil
Odor …. nil

The Above Quality of R.O. Product Water Is Achieved, Subject to Following Conditions: -

1. The Feed Water Quality Is Not Worse Than Specified
2. The Feed Water Limiting Condition Mentioned Below Are Strictly Maintained.
3. The Operation & Maintenance of The Entire Systems Is Carried Out Strictly as Per Our Operation & Maintenance Manual.

4. Pure Cleaning Chemicals. Original Spare & Consumables Specified by Us Are Used in Plant.

Table 13.6.1

For 20,000 lit/hr. R.O plant machinery at below the table 28. with all description.

No.	Item	Capacity	Quantity	Made	Information
1.	Raw water pump	40,000 LPH	2	Lubi/ Equiv.	
2.	Pressure sand filter	40,000 LPH	2	FRP	Filtering media - sand, pebbles, gravels, Type- Vertical pressure vessel
3.	Activated Carbon filter	40,000 LPH	2	FRP	Filtering media - Activated Carbon, Type - Vertical pressure vessel
4.	Anticipant dosing pump	0 to 5LPh	2	Italy/ equiv.	Type - Electronic Diaphragm
5.	Micro cartridge filter unit	40,000 LPH	2	FRP	Type- Replaceable
6.	High pressure pump	40,000 LPH	2	SS	Type - Vertical multistage centrifugal
7.	Ro module	-	40	Polyamide	Type - Thin Film Composite spiral wound Item - Ro
8.	Ro skid	-	2	SS	-
9.	Raw water storage tank	20,000 LPH	4	Polyamide	Type - syntax tank
10	Ro water storage tank	5,000 LPH	8	Polyamide	Type - syntax tank

Scope of remaining work

- Bore well & Raw water storage tank
- Total Electrical wiring up to pane of the machine
- PVC piping (1.5 inch) up to inlet of Sand/Media filter
- Drainage / Backwash/Waste pipe line of PVC (1.5 inch) for RO
- Raw material for Testing and Trial
- Servo Power Stabilizer
- To & Fro Travelling + Lodging + Boarding of All Visiting Parsons

Maintenance & area for plant

Maintenance Cost for Anticipant Liquid per month = 10,000 Rs. Micron Cartridge Filter Per No = 1500 Per Month Manpower Required for Operation = 2Nos.
Total cost of (20,000 lit/h) R.O plant machinery with fitting &labor charges is 20 lacs per R.O plant. Including 8 no. storage tank of 5,000 lt. R.O plant required area is = 16m × 30m

Required area for Operation= 2m × 1m

Total area for R.O plant building = 20m × 30m

Table 13.6.2. TOTAL MATERIAL USE IN R.O PLANT BUILDING

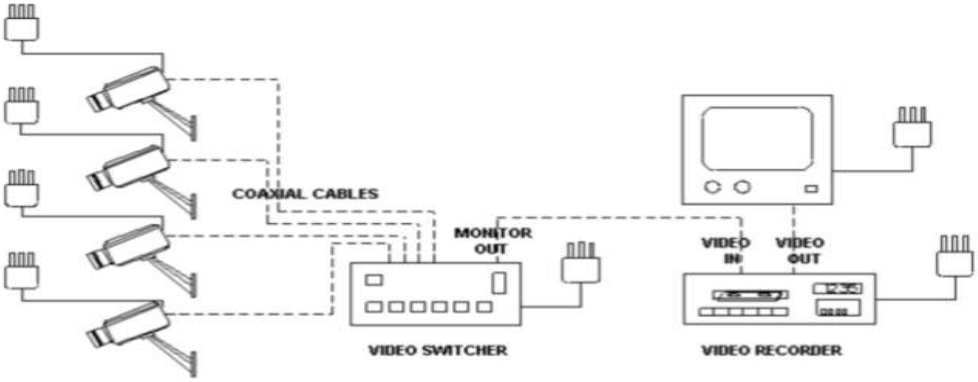
MATERIAL	REQUIRED (FOR)	QUNTITY	Rate Per Unit	Amount in INR
Brick (19cm × 9cm ×9cm)	131.2 m^3	65600 Nos.	4	2,62,400
Cement	721.38 Bags	722 Bags	280/bag	2,38,260
Aggregate	35.64 m^3	36 m^3	1000/m^3	36,000
Brick bats	18.4 m^3	19 m^3	800/m^3	15,200
Sand	90.30 m^3	91 m^3	800/m^3	72,800
Reinforcement	2684.7 kg	2.7 tonnes	45/kg	1,21,500
Polished kota (600mm× 600mm)	270.72 m^2	888 Sq. Feet	15/feet	13,320
Water supply pipe	19 m	19 m	26/m	494
Raw water storage tank (syntax)	1,00,000 litres	20,000 litres (2)	78,000	1,56,000
R.O. water storage tank (syntax)	90,000 litres	5,000 litres (5)	31,500	1,57,500
		TOTAL	=	**Rs. 10,73,474**

ELECTRICAL DESIGNS

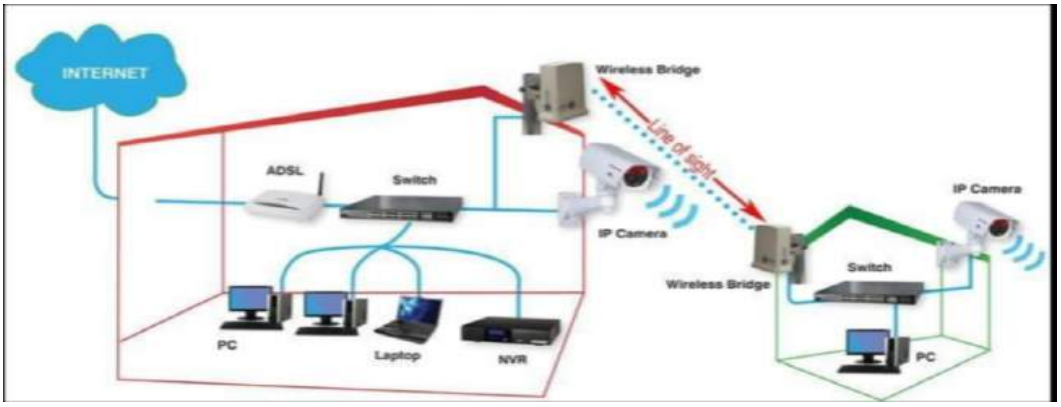
13.7 DESIGN OF CCTV CAMERA

- CCTV stands for Closed Circuit Television
- CCTV Stands Place in Any Village.

• CCTV (closed-circuit television) is a TV framework in which signals are not openly Conveyed but rather are observed, basically for observation and security purposes.



(Fig. 13.7.1- Design of CCTV Camera Maintenance)



(Fig 13.7.2- CCTV Camera Connection)

CCTV is ordinarily utilized for an assortment of purposes, Including:

1)Wrongdoing Prevention and Detection

• The essential utilization of a shut circuit TV camera (the CCTV camera of full frame) is Cautioning and preventing robbers, cheats and different hoodlums.

2)Dealing with Elders, Children, and Pets

• Numerous families utilize shut circuit TV cameras, the full type of CCTV cameras, in the home To monitor senior citizens, kids or pets. After proper setup, you can check in CCTV cameras if Senior citizens tumble down, youngsters arrive home securely or pets eat sustenance on time.

3)Record Valuable Moments

• The wonderful snapshots of life won't be passed up a major opportunity or obscured after some Time, on account of your CCTV cameras that can generally observe and record something Inconceivable, vital or even insane.

4)Business Use

• Observing of basic regions, for example, customer-facing facades, workplaces or distribution Centers principally requires the arrangement of shut circuit TV (the CCTV long shape) to deal with your properties or enhance representatives' efficiency.

Essential Components Use Of CCTV

• Surveillance Cameras (Analog or Digital).
• Links (RJ45 or RJ59 Cables).
• Video Recorders (DVR or NVR).
• Capacity Unit (for the most part a Hard Disk).
• Show Unit (discretionary, for the most part, a screen).

CCTV Camera Installation Table

Sr. No	**Name Of Components**	**Cost Of Component**
1	Camera Security Kits + Shipping (Per Annum) (IP High Speed Dom) (IR Distance Up 120m	3935
2	Power Strips	3000
3	Cable	620
4	Memory Backups (USB Or CDs Or DVDs)	4000
	Total (essential Item)	**11555/-**

Advantages of CCTV

- It lessens the dread of wrongdoing.
- It encourages remote observing.
- It builds the business proficiency and enhances the benefit.
- It very well may be utilized as the best choice for home security.
- It likewise builds the dangers for shoplifters.
- CCTV film gives significant help to the police in exploring wrongdoings

13.8 PHOTOVOLTAIC WATER PUMPING SYSTEM DESIGN

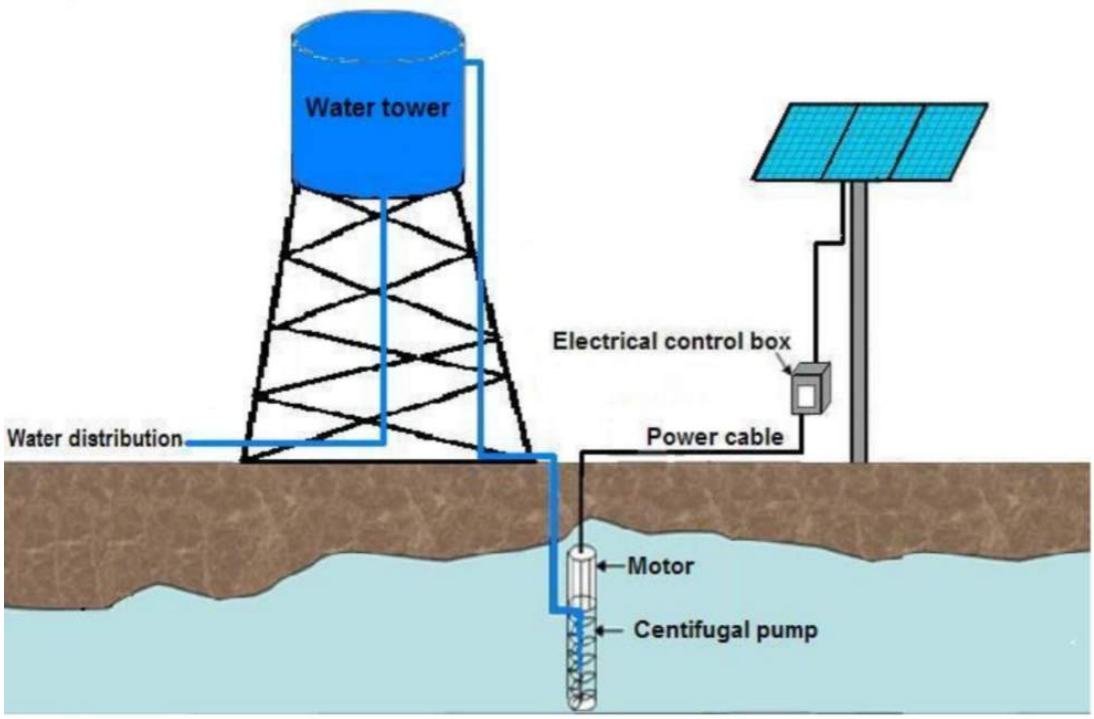
13.8.1 INTRODUCTION

Solar energy such as photovoltaic is the most important energy of the non-conventional energy Sources which is capable to satisfy the energy needs of the isolated rural areas.This source of energy is kind offree. The water from the source is kept and pumped then it is Stored in the tanks until its next use by dwellers.These water tanks can be bought directly from The market. Photovoltaic pumping system is a standard system.Here the whole system is equipped with Pump and an electric motor.This motor will be providing electrical energy by photovoltaic panels Installed on the site.The main function of pump is to make water available to the reach of the Dwellers.so pump water from the basement is accessible to users.There are mainly two types of Photovoltaic water pumping systems are being used: the photovoltaic water pumping with

1. Batteries 2. without batteries.

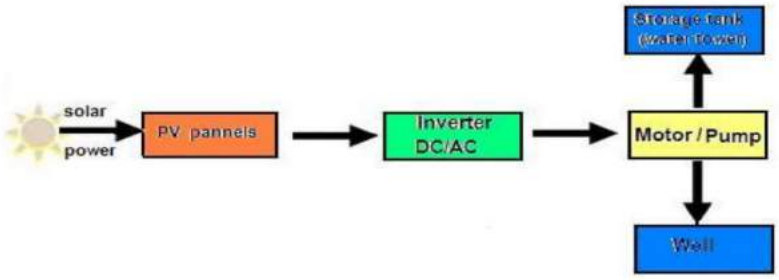
13.8.2 Photovoltaic system

To draw the water surface there are two types of pumps can be used Pumps
1.Volumetric pumps and 2. centrifugal pumps.
According to the physical location of the pump, there are two other characteristics at the pumps in relation to the pumped water: the suction system and stuffer one. They discharge pumps are Submerged in water. Their motor is immersed in water with the pump and the discharge pipe Placed after the pump can lift water to tons of meters to the storage tank depending to the Engine's power. Afterward, the system is connected to a distribution network that delivers water to dwellers.



{Fig.13.8.1 Photovoltaic water pumping with a tank to store water}

Solar photovoltaic panels are placed for converting solar energy into electrical energy so that we can generate the necessary energy to the motor of the pump, Panels will generate a direct current (DC), and therefore DC/AC converter to will be used to convert this direct current produced by the solar panels into alternative current (AC), so that AC motor can use this AC Power we generated. On the other side, if we have the DC motor, than we do not need this DC to AC conversion. The amount of energy will be generated can be used directly, also we can store that energy as well. If we want to use, In the case of an application for water pumping, it is more interesting to use the energy to raise the water in a castle that serves as hydraulic energy storage. When pump is live on photovoltaic due to under sizing or over sizing there are chances that Pump get damaged or loosen the support, To prevent a dysfunction of the pump, the PV generator, an inverter is used to ensure the proper operation of the PV/pump system.



13.8.3 Sizing a photovoltaic water pumping system

We need to have an assumption of desired amount for the use and in that case, Sizing is really Important. Photovoltaic water pump sizing is the determination of the power of the solar Generator that will provide the desired amount of water.
The photovoltaic water pump sizing consists of:

a) Assessment of daily water needs of the population to know the rate flow required;
b) Calculation of hydropower helpful;
c) Determining of the available solar energy;
d) Determining of the inclination of the photovoltaic generator which can be placed;
e) Determination of the month sizing (the month in which the ratio between solar radiation and hydropower is minimum);
f) Sizing of the PV generator (determination of the required electrical energy);

Determination of hydropower helpful

The average daily load i.e., hydropower helpful (kWh/day) required is expressed by:

$EH=g*\rho a*Qa*TH\eta P*3600 = CH*Qa*TH\eta P$ E1

Where,

- g is acceleration of gravity (9.81 m.s-2);

- ρa is water density (1000 kg/m3);
- Qa is daily water needs (m3/day);
- TH is the total head (m);
- ηP is pump system efficiency

The tank capacity is determined by the daily water needs and the autonomy of the system.

Taking an example of daily the water needs: (50 liters/day/person), the water needs rise to 25 m3/day. With photovoltaic panels which have 3.5 A, we will have 3 modules in parallel.

- The average daily load i.e., hydropower helpful (kWh/day) required is given by this

Expression:
EH=g*ρa*Qa*THηP*3 600 = CH*Qa*THηP
With g= 9.81 m.s-2
Pa= 1000 kg/m3
Qa= 25 m3/day
TH = 52 m
ηP= 50 %
It provides: EH=7085 Wh

The available solar energy:

Daily average radiation of sunlight varies from 5.7 to 5.8 kWh/m2/day. To make sure to do a good sizing, we choose the minimum value of average radiance: 5.7 kWh/m2/day. The inclination to the horizontal plane of the photovoltaic panels is: β=15°N.The sizing month is: December, 4.7 hours/day.

- **Sizing of the PV generator**

Assuming a 25% loss due to the temperature and dust, the required electrical energy is given by
This expression:
WPV = EHRadiance*(1−loss)
WPV=1260 Wc

The operating point of photovoltaic field is set around 120 volts due to the characteristics of the Inverter. The photovoltaic field will be composed of 10 multiple modules in series. Generator Power is 1260 Wc.

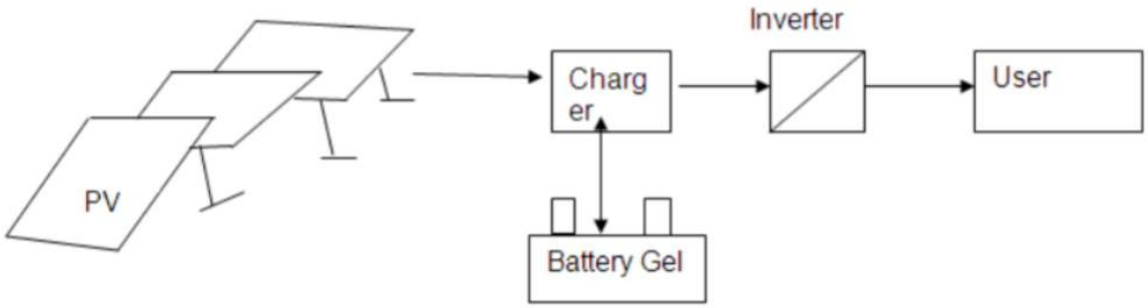
ESTIMATING COST

EQUIPMENT	No. OF QUANTITIES	ESTIMATION PRICE
AC/DC Motor	1	7500/-
Centrifugal pump	1	8500/-
Power cable	Set	3250/-
Control Box	1	3000/-
Solar panels	Set	4500/-
Storage Tank	1	3500/-
Miscellaneous	10% of cost	3025/-
Labour cost	10% of cost	3025/-
TOTAL ESTIMATION		**36300/-**

13.9 Solar Home Systems (off grid PV) for Electrification

Introduction

The rural electrification using solar PV can be a micro grid which generates electricity centrally and distribute for different users in the same area or off grid type which is used for each Individual home. It can also be solar PV lanterns using central charging system. A solar home system consists of PV modules, batteries, a charge controller and an inverter if AC Appliances are used. A battery is required to provide reliable electricity services to a single Household without shortage or loss of peak load at any time of the year. As a result, the battery Usually designed to give two third days of self-sufficiency if there is a possibility of inadequate Solar radiation. Most common PV modules have output range of between 10Wp to 300Wp.It is Possible to use a single PV module if the demand of electricity is low or an array of modules for High electricity demand.



{Fig.13.9.1 PV Solar Home System block diagram}

1 Solar PV Module

There are two classes of PV cells that are used in the present commercial PV modules. These are Crystalline silicon (first generation) and thin film (second generation). The crystalline PV cells Produce electricity via crystalline silicon semiconductor material derived from highly refined Poly silicon feed stock. On the other hand thin film cells produce electricity via extremely thin Layers of semi-conductor materials which are made up of amorphous silicon (a-Si), copper Indium diselenide (CIS), copper indium gallium diselenide (CIGS), or cadmium telluride (CdTe).

2 Batteries

Batteries offer the best balance of capacity per dollar and it is the most common type of battery That used in standalone power systems. More than 97% of the batteries can be recycled. As an Electrochemical device, batteries are sensitive to climate, charge or discharge history, Temperature and age.

3 Charge controller

Charge controller is one of the important parts of solar home systems that controls the energy Inflow and out flow into and from the battery bank. It prevents overcharging and deep Discharging so that the life of the battery becomes longer. A typical charge controller has an Efficiency of 85% for solar home system.

4 Inverters (converters)

An inverter is used to convert DC electric power to AC. There are three kinds of DC to AC Converters. These are square wave, modified sin wave and pure sin wave. From these three Inverters the square wave type is the simplest and least expensive but has a poor quality. The Modified 33 sine wave inverter type is suitable for many

load types and it also has low cost. The Pure sine wave inverters produce high quality signals and are used mainly for sensitive devices Like medical equipment.

Costs of the PV sub systems

PV sub system	Initial cost of the system (INR)
PV module	Rs 50-70/Watt
Charge controller	Rs 350-400/Ampere
Inverter	Rs 100/W
Lamp	Rs 75/lamp
Cable,box,plugs,user box,fixings,manufacturing and installation.	25% of the total cost
Total estimation	**Rs 8000-13000**

{Table.13.9.1 Costs of the PV sub systems}

Recommendation of Design (Electrical)

1. CCTV Cameras

It has helped to improve the socioeconomic infrastructure of villageCCTV camera across village had made continuous surveillance possible and the crime rate is negligible. Availability of local transport system provides better connectivity to outer world and it has improved the economic activity of village.

2.Photovoltaic Water Pumping System:

In Talangpur there are villagers who are still struggling to meet the basic needs of the population due To lack of availability of electric power system. These needs are summarized in the drinking Water, electrification of health centers and irrigation. The water which involves in agricultural and domestic consumption requires dewatering technologies adapted to local conditions. Yet, the Solar energy potential is very abundant. The use of solar energy can make a meaningful and Lasting solution to the drainage in here. The use of photovoltaic solar energy for water pumping Is well suited to these regions due to the existence of a potential groundwater.

3.Solar Home Systems (off grid PV) for Electrification:

Talangpur village is still facing the issue with continuous power supply in certain situations. Off-grid Solar systems can facilitate independent, long-term and sustainable electricity generation in rural And remote areas. Off-grid solar systems can provide an economical and viable long-term backup Solution to overcome the problems occurring during frequent power cuts.

13.2 RECOMMENDATION OF THE DESIGN

In Talangpur Village, all types of basic facilities like physical and social infrastructures, as mentioned above, are already available. But some of the socio-cultural facilities are missing. So in our report we have suggested some of the designs of the building as follows;

1) Primary School
2) Community hall
3) Prathmik Arogya Kendra
4) Play ground
5) Rain water harvesting
6) R..O.plant

CHAPTER-14 TECHNICAL OPTIONS WITH CASE STUDIES

14.1 CIVIL ENGINEERING

14.1.1 ADVANCED EARTHQUAKE RESISTANT

The science of structural and Earthquake Engineering helps enhance the seismic flexibility of civil structures and critical infrastructure through advanced engineering and management tools. While natural forces are extremely useful to mankind, natural disasters can wreak a havoc with hurricanes, earthquakes, tsunamis posing threat to life and infrastructure worth billions of dollars.

Techniques For Earthquake Resistant Design of Structures
There are many known and practiced measures to protect against seismic threats. Let's take a look at some of the earthquake resistant techniques used by the engineers world over to minimize the damage to structures due to earthquakes:

Floating Foundation:

The levitating or floating foundation separates the substructure of a building from its superstructure.

One way of doing this is by floating a building above its foundation on lead-rubber bearings that comprise a solid lead core covered in alternating layers of rubber and steel. The bearings are attached to the building and its foundation with the help of steel plates. So, when an earthquake occurs, the floating foundation can move without moving the structure above it.

Shock Absorption:

Similar to the shock absorbers used in vehicles, buildings also makes use of this technology. This earthquake resistant technology helps buildings slow down and reduce the magnitude of vibratory motions. Ideally shock absorbers should be placed at each level of the building – one end attached to the beam and the other end to the column. Each comprises a piston head that moves inside a cylinder full of silicone oil. During earthquakes, the horizontal motion of building will make the piston push against the oil, transforming mechanical energy from the quake to heat.

Rocking Core-Wall:

Modern high-rise buildings use this technique to improve seismic resistance at a low cost. To make this work, a reinforced concrete core is set through the heart of the structure, surrounded by elevator banks. Many modern high-rise buildings use this technique to increase seismic resistance in an affordable way. It works most effectively when used together with base isolation. For base isolation, elastometric bearings are built with alternating layers of steel and natural rubber/neoprene. The bearing thus created has low horizontal stiffness and vertical rigidity. The combination is highly effective, cost-friendly and simple to implement.

Pendulum Power:

The pendulum power technique works by suspending a huge mass near the top of the structure. This mass is supported by steel cables and viscous fluid dampers are placed between the mass and the building that it protects. In case of any seismic activity, the pendulum moves in the opposite direction to balance the energy. Each of the pendulums are tuned to sync with the natural frequency of the structure and these systems are called tuned mas dampers. Their goal is to counter resonance and reduce the structure's dynamic response.

Finally

Seismic Engineering is a very complex and constantly evolving. Seismic structural assessment is a powerful tool in Earthquake Engineering that uses detailed modeling of the structure in conjunction with structural analysis to get a better understanding of the building's resistance. Retrofitting older structures with enhanced designs or materials is as important as rebuilding new structures from scratch. The ultimate goal of Earthquake Civil Engineering is to save lives so that the buildings don't collapse and allow inhabitants to escape in a timely manner.

14.1.2.SEISMIC RETROFITTING OF BUILDINGS

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

general. The seismic hazard in the areas, where those earthquakes have occurred, has been known for a long time because of similar events that occurred in the past. It is therefore legitimate to ask why constructions vulnerable to earthquakes exist if people and institutions knew of the seismic hazard. Several causes may have contributed to the creation of such a situation. These are associated to historical events, fading memory, greed, avarice, poverty and ignorance. Among historical events particularly relevant are wars, epidemics, and natural disasters which may limit, in a significant way, the available resources of a country. In such circumstances there is a tendency to build with poor materials and without too much attention to good construction techniques and safety margins. A situation of this kind occurred in Italy and in Japan after the Second World War and similar situations have occurred in Italy many times in the past. In such a situation it is possible that the phenomenon of fading memory occurs and past memories are easily erased. In Italy commercial profits often result from the employment of poor material and workmanship rather than of the optimal utilization of the production factors. The depressing situation of poor quality control and material acceptance also falls into this framework, which, in most cases, results only in paperwork devoid of substantive value. Marginal propensity to expenditure sometimes ensures that even the owner prefers a low quality product to save resources for more immediate needs. Among causes arising from ignorance there may be both an inadequate knowledge of the seismic hazard and design errors due to insufficient knowledge of the earthquake problem; also the inability to correctly model the structural response to the seismic action. While considerable progress has been made in recent years by the research community in dealing with the above problems, it has become more difficult to transfer the results to the seismic engineering profession and the situation can only deteriorate in the near future. Recent changes in the curricula of engineering schools are leading to a general impoverishment of the basic knowledge and operational capabilities of our engineering graduates. A final cause of vulnerability is connected with the maintenance of constructions; it is obvious that if a construction is not regularly maintained, much as happens for a motorcar, the mechanical properties of the materials may undergo local and global degradation with a significant loss of resistance of the 22 Seismic Retrofitting of Reinforced Concrete Buildings Using Traditional and Innovative Techniques structural members and of the entire construction. Also, changes in service conditions, often made arbitrarily, may lead to substantial changes in the structural behaviour resulting in a degradation of the structural response to the expected loading conditions. On the basis of what has been presented so far, it is not surprising that in areas long known to be subject to the seismic hazard it is not infrequent to find constructions vulnerable to earthquakes.

These constructions need to be retrofitted to allow them to withstand the effects of the earthquake ground motion expected at the site considered. In the following sections some procedures used for the evaluation of the seismic resistance and vulnerability of reinforced concrete buildings will be described together with traditional and innovative techniques of seismic retrofitting of the same structures. The paper ends with a description of the seismic retrofitting of two reinforced concrete residential buildings in the village of Solarino, near Syracuse, in Sicily. The buildings belong to the Institute Autonomo Case Popolari (IACP) of Syracuse. As will be clear from following arguments the aim of the paper is not to discuss in depth the state-of the-art of seismic retrofitting, but rather to give a general overview. The aim is also to focus on a few specific procedures which may improve the state-of-the-art practice for the evaluation of seismic vulnerability of existing reinforced concrete buildings and for their seismic retrofitting by means of innovative techniques such as base isolation and energy dissipation.

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

A wide variety of modern methods of construction (MMC) techniques and products have been developed that have completely changed the behavior of construction industry from what it was before. This change is amazing and is in the way to bring more and more developments in this sector.

What are Modern Methods of Construction?

Modern construction methods (MMC) are methods that are developed in construction industry with proper planning and design so that each project reduces the construction time, cost and maintain overall sustainability.

There are many methods followed and constructed in the present scenario widespread. Most famous and highly applied methods of modern construction are listed and explained below.

Types of Modern Methods of Construction

The different MMC used in construction field includes:

Precast Flat Panel System
3D Volumetric Modules
Flat Slab Construction
Precast Cladding Panels
Concrete Wall and Floors
Twin Wall Technology
Precast Concrete Foundation
Concrete Formwork Insulation

14.1.4 ENGINEERING ASPECTS OF SOIL MECHANICS - ENVIRONMENTAL IMPACT ASSESSMENT

The civil engineering structures like building, bridge, highway, tunnel, dam, tower, etc. are founded below or on the surface of the earth. For their stability, suitable foundation soil is required. To check the suitability of soil to be used as foundation or as construction materials, its properties are required to be assessed . As per different researchers assessment of geotechnical properties of subsoil at project site is necessary for generating relevant input data for design and construction of foundations for the proposed structures. Researchers have stated that proper design and construction of civil engineering structures prevent an adverse environmental impact or structural failure or post construction problems.

Information about the surface and sub-surface features is essential for the design of structures and for planning construction techniques. When buildings impose very heavy loads and the zone of influence is very deep, it would be desirable to invest some amount on sub-surface exploration than to overdesign the building and make it costlier. For complex projects involving heavy structures, such as bridges, dams, multi-storey buildings, it is essential to have detail exploration. The purpose of detailed explorations is to determine the engineering properties of the soils for different strata

When the foundations of any structure are constructed on compressible soil, it leads to settlement. Knowledge of the rate at which the compression of the soil takes place is essential from design consideration. The properties of the soil such as plasticity, compressibility or strength of the soil always affect the design in the construction. Lack of understanding of the properties of the soil can lead to the construction errors. The suitability of soil for a particular use should be determined based on its engineering characteristics and not on visual inspection or apparent similarity to other soils. The loading capability of soil depends upon the type of soil. Generally, fine grained soils have a relative smaller capacity in bearing of load than the coarser grained soils .

Plasticity index and liquid limit are the important factors that help an engineer to understand the consistency or plasticity of clay. Though shearing strength constants at liquid limits but varies for plastic limits for all clays . Permeability influences the civil engineering structures. As per Karsten et al. , the shear strength of soils is of special relevance among geotechnical soil properties because it is one of the essential parameters for analyzing and solving stability problems (calculating earth pressure, the bearing capacity of footings and foundations, slope stability or stability of embankments and earth dams). Considering these, interactions among different

geotechnical properties and their influences on civil engineering structures have been discussed in this paper.

Geotechnical Properties of Soils

Different geotechnical property of soils has different influence on the civil engineering structures. They also depends upon each other.

- Specific Gravity
- Density Index
- Consistency Limits
- Particle Size Analysis
- Compaction
- Consolidation
- Permeability
- Shear Strength

14.1.5 WATER SUPPLY-SEWERAGE SYSTEM-WASTE WATER-SUSTAINABLE DEVELOPMENT TECHNIQUES

Water supply is the provision of water by public utilities, commercial organisations, community endeavors or by individuals, usually via a system of pumps and pipes. Aspects of service quality include: Continuity of supply, water quality and water pressure. The institutional responsibility for water supply is arranged differently in different countries and regions (urban versus rural). It usually includes issues surrounding policy and regulation, service provision and standardization.

The cost of supplying water consists, to a very large extent, of fixed costs (capital costs and personnel costs) and only to a small extent of variable costs that depend on the amount of water consumed (mainly energy and chemicals). Almost all service providers in the world charge tariffs to recover part of their costs.

Water supply is a separate topic from irrigation, the practice and systems of water supply on a larger scale, for a wider variety of purposes, primarily agriculture.

Wastewater is any water that has been contaminated by human use. Wastewater is "used water from any combination of domestic, industrial, commercial or agricultural activities, surface runoff or stormwater, and any sewer inflow or sewer

infiltration".[1] Therefore, wastewater is a byproduct of domestic, industrial, commercial or agricultural activities. The characteristics of wastewater vary depending on the source. Types of wastewater include: domestic wastewater from households, municipal wastewater from communities (also called sewage) and industrial wastewater. Wastewater can contain physical, chemical and biological pollutants.

Sewerage system, network of pipes, pumps, and force mains for the collection of wastewater, or sewage, from a community. Modern sewerage systems fall under two categories: domestic and industrial sewers and storm sewers. Sometimes a combined system provides only one network of pipes, mains, and outfall sewers for all types of sewage and runoff. The preferred system, however, provides one network of sewers for domestic and industrial waste, which is generally treated before discharge, and a separate network for storm runoff, which may be diverted to temporary detention basins or piped directly to a point of disposal in a stream or river.

Sustainable, biological filters called slow sand filters have been used to filter drinking water since the 1800s. They don't use any chemicals, create no waste and use very little energy. However, technologies that meet modern requirements for control, monitoring and time-efficiency have become popular, while biological water treatment has been less favoured, since little has been understood about how it works. New research from Lund University in Sweden shows that not only are the older filters more efficient cleaners -- they could be making a comeback soon with the help of new technology

14.2 ELECTRICAL ENGINEERING

14.2.1 DESIGN OF POWER ELECTRONICS CONVERTER

Introduction

The first high power electronic devices were mercury-arc valves. In modern systems, the conversion is performed with semiconductor switching devices such as diodes, thyristors, and power transistors such as the power MOSFET and IGBT. In contrast to electronic systems concerned with transmission and processing of signals and data, in power electronics substantial amounts of electrical energy are processed. An AC/DC converter (rectifier) is the most typical power electronics device found in many consumer electronic devices, e.g. television sets, personal computers, battery chargers, etc. The power range is typically from tens of watts to several hundred watts. In industry a common application is the variable speed drive (VSD) that is

used to control an induction motor. The power range of VSDs start from a few hundred watts and end at tens of megawatts.

The power conversion systems can be classified according to the type of the input and output power

- AC to DC (rectifier)
- DC to AC (inverter)
- DC to DC (DC-to-DC converter)
- AC to AC (AC-to-AC converter)

APPLICATION

Applications of power electronics range in size from a switched mode power supply in an AC adapter, battery chargers, audio amplifiers, fluorescent lamp ballasts, through variable frequency drives and DC motor drives used to operate pumps, fans, and manufacturing machinery, up to gigawatt-scale high voltage direct current power transmission systems used to interconnect electrical grids. Power electronic systems are found in virtually every electronic device. For example:

- DC/DC converters are used in most mobile devices (mobile phones, PDA etc.) to maintain the voltage at a fixed value whatever the voltage level of the battery is. These converters are also used for electronic isolation and power factor correction. A power optimizer is a type of DC/DC converter developed to maximize the energy harvest from solar photovoltaic or wind turbine systems.
- AC/DC converters (rectifiers) are used every time an electronic device is connected to the mains (computer, television etc.). These may simply change AC to DC or can also change the voltage level as part of their operation.
- AC/AC converters are used to change either the voltage level or the frequency (international power adapters, light dimmer). In power distribution networks AC/AC converters may be used to exchange power between utility frequency 50 Hz and 60 Hz power grids.
- DC/AC converters (inverters) are used primarily in UPS or renewable energy systems or emergency lighting systems. Mains power charges the DC battery.

If the mains fail, an inverter produces AC electricity at mains voltage from the DC battery. Solar inverter, both smaller string and larger central inverters, as well as solar micro-inverter are used in photovoltaics as a component of a PV system.

14.2.2 ELECTRONIC SOFT STARTER FOR 1/3PHASE INDUCTION MOTOR FOR AGRICULTURE

Introduction

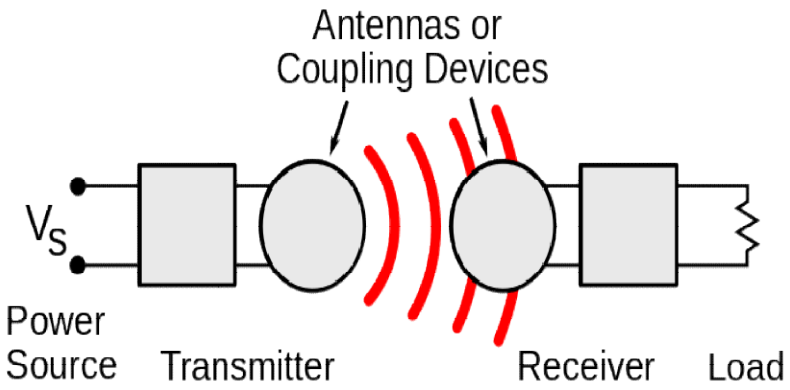
An electronic soft starter for induction motors using power electronic circuits and microcontroller. The starting current in an induction motor will be five to seven times the rated current and torque will be of the order of two to three times the rated torque during starting. Phase control method of Silicon Controlled Rectifiers (SCR) are used to control both starting current and starting torque. It is a method of pulse width modulation for limiting voltage, current and power and it is generally applied in thyristors, triacs and other power electronic devices. Using this method the stator input voltage can be gradually increased and hence the starting current can be controlled.This project consists of connection of antiparallel thyristors in between the three phase supply and the induction motor. The triggering angle decides the flow of current based on the change in the voltage. Open loop phase control method is developed by coding a program using Arduino software in which Arduino controller takes input and generates firing pulses for the TRIAC which controls the starting current of the Induction motor. The total process is executed with the help of an Arduino controller kit where Arduino MEGA ADK is used for Micro Controller. This results in starting current control of Induction motor.

14.2.3 ADVANCED WIRELESS POWER TRANSFER SYSTEM

Introduction

Wireless power transfer (WPT), wireless power transmission, wireless energy transmission (WET), or electromagnetic power transfer is the transmission of electrical energy without wires as a physical link. In a wireless power transmission system, a transmitter device, driven by electric power from a power source, generates a time-varying electromagnetic field, which transmits power across space to a receiver device, which extracts power from the field and supplies it to an electrical load. The technology of wireless power transmission can eliminate the use of the wires and batteries, thus increasing the mobility, convenience, and safety of an electronic device for all users.Wireless power transfer is useful to power electrical devices where interconnecting wires are inconvenient, hazardous, or are not possible.

Wireless power techniques mainly fall into two categories, near field and far-field. In near field or non-radiative techniques, power is transferred over short distances by magnetic fields using inductive coupling between coils of wire, or by electric fields using capacitive coupling between metal electrodes.Inductive coupling is the most widely used wireless technology; its applications include charging handheld devices like phones and electric toothbrushes, RFID tags, induction cooking, and wirelessly charging or continuous wireless power transfer in implantable medical devices like artificial



cardiac pacemakers, or electric vehicles.

Generic block diagram of a wireless power system

Wireless power transfer is a generic term for a number of different technologies for transmitting energy by means of electromagnetic fields.The technologies, listed in the table below, differ in the distance over which they can transfer power efficiently, whether the transmitter must be aimed (directed) at the receiver, and in the type of electromagnetic energy they use: time varying electric fields, magnetic fields, radio waves, microwaves, infrared or visible light waves.

Hardware Specifications

1). HF Transformer
2). 2 Inductor Coils
3). Resistors
4). Capacitors
5). Transistors
6). Cablesandconnector

7). Diodes
8). PCB and Breadboards
9). LED

10) Switch
11) Transformer/Adapter
12) Push Buttons.

Future Work Image

Applications:
1) Smart Phones, Portable Media Players, Digital Cameras and Tablets.
2) Public Access Charging Terminal.
3) Computer Systems
4) Miscellaneous: Wireless chargers are finding its way into anything with a battery inside it. This includes game and TV remotes, cordless power tools, cordless vacuum cleaners, soap dispensers, hearing aids and even cardiac pacemakers. Wireless chargers are also capable of charging super capacitors (super caps), or any device that is traditionally powered by a low-voltage power cable.

Costing Estimation

EQUIPMENT	**PRICE (₹)**
HF TRANSFORMER	500/-
INDUCTOR COILS *2	100/-
RESISTORS	100/-
CAPACITORS	200/-
TRANSISTORS	100/-
CABLE CONECTORS	200/-
DIODES	100/-
PCB & BREADBOARDS	200/-
LED	100/-
SWITCH	50/-
TRANSFORMER/ADAPTER	500/-
PUSH BUTTONS	50/-
LABOUR COST	1200/-
MISCELLANEOUS COST	800/-
TOTAL COST	**4300/-**

For 1 installation the price is ₹4300, for upto 12 installation the total price would be ₹4300*12 = 51,600/-

14.2.4 INDUSTRIAL TEMPERATURE CONTROLLER

What is Temperature control

Temperature Controller is a device that is used to control a heater or other equipment by comparing a sensor signal with a set point and performing calculations according to the deviation between those values. Devices that can handle sensor signals other than for temperature, such as humidity, pressure, and flow rate, are called Controllers. Electronic controllers are specifically called Digital Controllers.

Temperature Control

Temperature Controllers control temperature so that the process value will be the same as the set point, but the response will differ due to the characteristics of the controlled object and the control method of the Temperature Controller. Typically, a response, where the set point is reached as quick as possible without overshooting, is required in a Temperature Controller. There are also cases such as the, where a response quickly increases the temperature even if it overshoots is required, and the one, where a response slowly increases the temperature is required.

14.2.5 ACCIDENT ALERTS IN MODERN TRAFFIC SIGNAL CONTROL SYSTEM-CAMERA SURVEILLANCE SYSTEM

The microcontroller unit calculates the speed=displacement/time taken. If the speed exceeds the particular value, it sends signal to the other side vehicle to be alert. It also alerts the other side vehicle when someone crosses one side. Also, it captures the high-speed vehicle.

Enormous advance has proven throughout the years in the area of traffic surveillance by the growth of intelligent traffic video surveillance system. In the current work, through the traffic videos, the traffic video surveillance automatically keyed out the vehicles like ambulance and trucks, which in turn assisted us in directing the vehicles at the time of emergency. Nevertheless, it doesn't provide us a vital solution for the regulating the traffic. Moreover, this idea just identifies the vehicles, but it couldn't notice the accidents expeditiously. Therefore, in the proposed work, expeditious traffic video surveillance and monitoring system are presented along with dynamic traffic signal control and accident detection mechanism. Hybrid median filter has been utilized at the beginning for pre-processing of traffic videos, and to remove the

noise. Hybrid support vector machine (SVM with extended Kalman filter) has been utilized to chase the vehicles. Next, the histogram of flow gradient features are drew-out to categories the vehicles. According to the traffic density and through video files, vehicles are computed, and then for emergency vehicles, the traffic signal gets switched dynamically. To realize the arrival of ambulances, the cameras have been set to catch traffic videos minimum at 500 m of the signal and deep learning neural networks has been employed. Hence dynamic signal control has been incorporated expeditiously. Likewise, multinomial logistic regression has been utilized in real-time live streaming videos, to identify the accidents correctly. The observational solution shows that the proposed intelligent traffic video surveillance system render expeditious dynamic control of traffic signals and it raises the identification of accidents correctly.

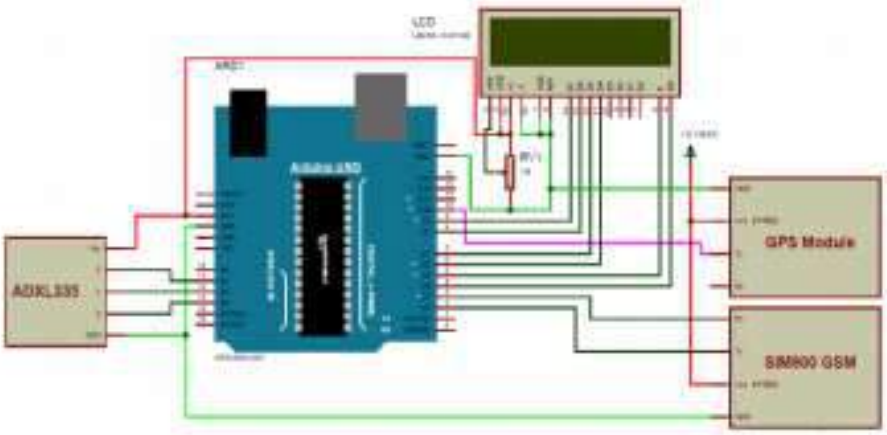


Fig 14.2.5.1 Circuit diagram of accident alert system

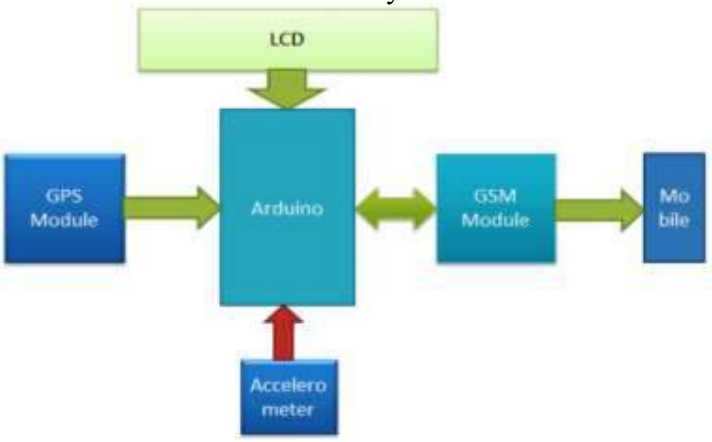


Fig 14.2.5.2 block diagram accident alert system

CHAPTER: 15
SMART AND/OR SUSTAINABLE FEATURES OF CHAPTER 8 & 13 DESIGNS, IMPACT ON SOCIETY. (FOR ALLOCATED VILLAGE DEVELOPMENT, VILLAGERS HAPPINESS, COMFORTABLE AND FOR ENHANCEMENT OF THE VILLAGE) (WITH THE SMART VILLAGE DEVELOPMENT CONCEPT AS PER YOUR IDEA AND VILLAGE VISIT, MODERN TECHNOLOGY WITH INNOVATION). WITH DOING SMALL CHANGES, PERIOD, AMOUNT EXPENDITURE AND BENEFIT – A) IMMEDIATELY B) WITHIN 1 YEAR C) LONG TERM (3-5 YEARS) ALONG WITH COST ESTIMATION. B) IF POSSIBLE, LIST THE SOURCES OF THE FUNDING AVAILABLE WITH THE VILLAGE GRAM PANCHAYAT

The items which should be included in a Smart village and which are not available in Talangpur village are as below,

1. PHC center
2. Public Toilet
3. Public library
4. Entry gate
5. Self healing road
6. Post office
7. Primary schools
8. Community hall
9. Agro storage unit
10. Playground
11. Rain water harvesting
12. R.O. water treatment Plant
13. Piezoelectric
14. Solar roof top design
15. Solar street light
16. Solar home system
17. Design of CCTV camera
18. Photovoltaic water pumping system

Sr.No.	Design Name	Period	Amount Expenditure(APPROX)	Benefit
1.	PHC CENTER	LONG-TERM	580013/-	IT GIVES A BETTER HEALTH FACILITY
2.	PUBLIC TOILET	LONG-TERM	653793/-	IT ALSO NECESSARY FOR MAINTAINING SWACHHATA AND SUITABLE ENVIROMENT FOR DWELLERS.
3.	PUBLIC LIBRARY	LONG-TERM	523653/-	IT DEVELOP THE LITERACY RATE OF THE VILLAGE SO THE NEEDY PEOPLE CAN READ BOOKS FREELY AND IN A SILENT ATMOSPHERE
4.	ENTRY GATE	5-6 MONTHS	30000/-	IT INCREASE THE BEAUTY OF THE VILLAGE
5.	SELF HEALING ROAD	LONG-TERM	300000/100m^3/-	PROVIDE BETTER FACILITY IN TRANSPORTATION NETWORK
6.	POST OFFICE	LONG-TERM	943742/-	DEVELOP COMMUNICATION FACILITY
7.	PRIMARY SCHOOL	LONG-TERM	2315209/-	INCREASE LITERACY RATE AND SPACE FOR STUDY
8.	COMMUNITY HALL	LONG-TERM	796581/-	SUITABLE FOR A BETTER CELEBRATIVE PLACE
9.	AGRO STORAGE UNIT	LONG-TERM	968544/-	PROVIDE BETTER PLACE TO STORE

				GRAINS AND UTILIZE IT FOR FUTURE.
10.	PLAY GROUND	SHORT-TERM	85000/-	CHILDREN CAN PLAY EASILY
11.	RAIN WATER HARVESTING	LONG-TERM	39120/-	LESS WASTAGE OF WATER AND RECYCLING OF WATER
12.	R.O. WATER TREATMENT PLANT	LONG-TERM	1073474/-	PROVIDE MINERALISE WATER WITHOUT ANY CHEMICAL AND POLLUTION
13.	PIEZOELECTRIC	LONG-TERM	287,700/-	ITS GENERATE ELECTRICITY AT LOW COST.
14.	SOLAR ROOF TOP DESIGN	IMMEDIATELY	224700/-	PROVIDES FREE ELECTRICITY AND CAN ALSO GIVES REVENUE
15.	SOLAR STREET LIGHT	5-6 MONTH'S	28500/-	FOR BETTER LIGHTING & SIGHT-SEEING DURING NIGHT ON ROADS
16.	SOLAR HOME SYSTEM	SHORT-TERM	13000/- TO 20000/-	CAN SAVE ELECTRICITY BILL'S OF THE VILLAGERS
17.	DESIGN OF CCTV CAMERA	2 MONTHS	11555/- TO 15000/-	INCREASES SAFETY OF THEVILLAGE
18.	PHOTOVOLTAIC WATER PUMPING SYSTEM	3-4 MONTHS	36300/- TO 100000/-	PROVIDES WATER TO PEOPLE WHICH ARE LOCATED AWAY FROM THE WATER SUPPLY

CHAPTER 16: SURVEY BY INTERVIEWING WITH TALATIAND/ORSARPANCH

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	GIDC, Sachin
2	What are the chances of employment in village?	Yes	GIDC, Surat city
3	What are the special technical facilities in village?	Yes	Water Filteration Plant
4	Is any debt on village dwellers?	No	-
5	Are village people getting agricultural help?	No	-
6	Is women health awareness Program organized in village?	No	-
7	Are women having opportunity to work and income?	Yes	-
8	Child girl education is appreciated in village?	Yes	-
9	Facility of vaccination to child is available in village?	Yes	Near Urban garn
10	Are village people aware about child vaccination and done to each and every child as per norms?	Yes	once in a month
11	Women help line number information is provided to village people?	Yes	-
12	Is water scarcity in village? How many days per year?	NO	-
13	Is village under any debt?	-	-
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.	NO	-
18	Is village improvement is observed in comparative scenario from past to present?	Yes	Water Supply System, Sanitary system, waste Management
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
Email ID: rurban@gtu.edu.in

Deputy Town Planner (S-2)
Surat Mahanagar Sevasadan

CHAPTER 17

IRRIGATION/AGRICULTUREACTIVITESANDAGROINDUSTRY,ALTENATETECHNICSANDSOLUTION

Irrigation is the backbone of agriculture as water is the most important component required in the cultivation of crops. This is because plants contain almost 90% water and require water for their growth and development. India is an agrarian country where more than 80% of its rural population depends upon agriculture and allied activities.

In Talangpur village there are different types of Irrigation system are used. Most of Farmers are using**Surface Irrigation and DripIrrigation.**

What is Irrigation and Why is it Important?

- Irrigation is supplying water artificially to the soil for the purpose of agricultural production. It is done to either replace or supplement rainwater with an additional source of water. It is used in dry areas and during periods of inadequate rainfall.

- Effective irrigation systems are needed to help in the growth of agricultural crops by maintaining the optimum amount of water required, suppress weed growth in grain fields, prevent soil consolidation, to suppress dust, disposal of sewage, mining, etc.

The main different types of irrigation are:

1. Surface Irrigation
2. Drip Irrigation
3. Sprinkler Irrigation
4. Traditional Irrigation Systems

1. **Surface Irrigation**

   Surface irrigation is the oldest form of irrigation techniques. In this technique, water is applied and distributed over the surface of soil by gravity, i.e., from an area of higher elevation to that of lower region in order to dampen and thereby infiltrate the soil. It is the most common form of irrigation throughout the world. This technique can be adopted after considering the following factors are which include the hydraulics of surface irrigation:

- Roughness of the field surface
- Depth of water to be applied
- Length of run and time required
- Size and shape of water course
- Discharge of water course
- Filed resistance erosion

Fig. 17.1.1 surface irrigation system

Fig. 17.1.2 Surface irrigation system

Advantages of Surface Irrigation

- Low initial cost
- Easy maintenance of the system
- Compatibility with all soil types
- Since it is widely used, most farmers have at least minimal understanding of how to operate and maintain the system.

2. Drip Irrigation

Drip irrigation is the most efficient water and nutrient delivery system for growing crops. It transports water and nutrients directly to the plant's roots zone, in the right amounts, so that the plant gets exactly what is needed, to grow optimally. Drip irrigation enables farmers to produce higher yields while saving water as well as fertilizers.

Fig. 17.2.1 Drip irrigation

Fig. 17.2.2 Drip irrigation

How Does it Work?

In drip irrigation, water and nutrients are transported across the land in pipes called 'dripper lines' also known as 'drippers'. Each dripper emits drops containing water and fertilizers, resulting in the uniform application of water and nutrients directly to the plants, across the entire land.

Advantages of Drip Irrigation

- Soluble fertilizers and chemicals can be used
- Minimized fertilizer and nutrient loss due to localized application and reduced leaching
- Field levelling is not a priority thereby reducing labour
- Allows use of recycled non-potable water
- Reduces soil erosion
- Helps tackle the problem of excessive weed growth
- Uniform distribution of water as water is controlled by nozzle
- Not a labour-intensive technique thereby reduces labour cost
- Regulated supply of water on account of valves and drippers
- Plants remain dry thereby reduces the risk of diseases
- Reduces energy cost as this technique uses lower pressure in comparison to other types of irrigation.

Disadvantages of Drip Irrigation

- High initial cost
- The longevity of the tubes can be compromised due to exposure to sunlight
- Proper filtration of water is of utmost importance to avoid blockage
- Proper education of farmers is a must as avoid excess water as well as inadequate water supply
- The users need to plan drip tape winding, disposal, recycle and reuse

- If the system is installed improperly, it could lead to wastage of water time and effort but most importantly, it will lead to poor harvest
- Study of subjects like land topography, soil, water requirement as per crop type, etc. is a must for this system to provide optimal results
- In lighter soil subsurface, drip may be unable to wet the soil surface for germination. Therefore, careful consideration of the installation depth is of prime importance.

3.Sprinkler Irrigation

In the sprinkler irrigation system, water is supplied by overhead high-pressure sprinklers or guns from one or more central locations within the field or from sprinklers on a moving platform. In other words, this system allows the application of water under high pressure with the help of a pump. It releases water similar to rainfall through small sprinklers placed in the pipes. Sprinkler irrigation is suited for most row, field and tree crops and water can be sprayed over or under the crop canopy.

Fig. 17.3.1 Sprinkler system

Fig. 17.3.2 Sprinkler System

Advantages of Sprinkler Irrigation

- Eliminates water conveyance channels, thereby reducing conveyance loss.
- Suitable in all types of soil except heavy clay.
- Saves water up to 30% – 50 %.
- Suitable for irrigation where the plant population per unit area is very high.
- Helps to increase yield.
- Suitable for undulating land.
- Saves land as no bunds required.

- Soluble fertilizers and chemical use are possible.
- Provides frost protection & helps in alteration of micro climate.
- Reduces labourcost.

Disadvantages of Sprinkler Irrigation

- High initial cost
- Requires constant energy
- Poor application efficiency under high wind and temperature
- Leaf burning due to high salinity of water in temperature higher than 95°F
- Uneconomical in cases where land is already levelled and developed
- Loss of water due to evaporation

1.Center Pivot irrigation

Center pivot irrigation, is a technique of irrigation where the crops are watered with sprinklers through an equipment that rotates around a pivot. This method is also called water wheel or circle irrigation.

2. Lateral move irrigation

In lateral move irrigation, the water is distributed through a series of pipes and sets of sprinklers. It is to be noted that Centre Pivot systems are anchored at one end and rotate around a fixed central point whereas Lateral systems are not anchored and both ends of the machine move at a constant speed up and down a paddock.

3. Sub-irrigation

Sub-irrigation is an irrigation practice used in areas with relatively high water tables or where the water table can be artificially raised to allow the soil to be moistened from below the root zone through a system of pumping stations, canals, weirs, gates and ditches.

Types of Irrigation- Traditional Irrigation System

1. Irrigation

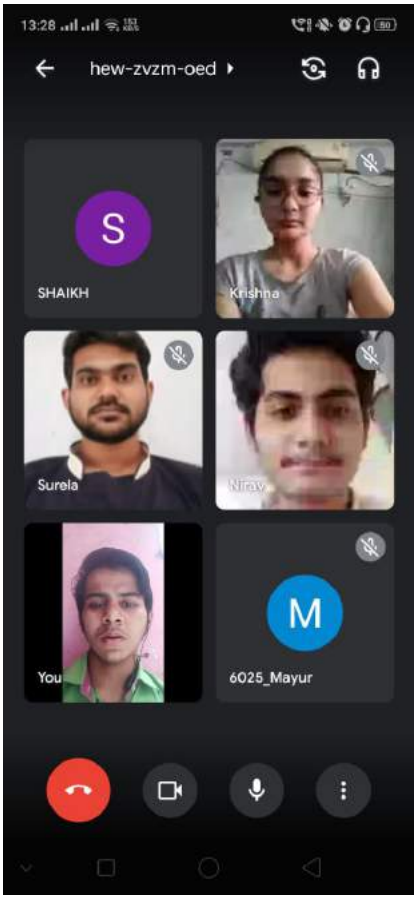
2.Moat

3.Pump

4. Dhekli

CHAPTER 18
SOCIAL ACTIVITIES – ANY ACTIVATES PLANNED BY STUDENTSE.G TEACHING LEARNING ACTIVITIES, AWARENESS CAMP, BUSINESS IDEA FOR SELF HELP GROUP OR ANY OTHER

In Social activities we conduct a awareness camp on this CoVid-19 situation by holding a webinar in Google meet also we invite some dwellers of Talangpur village and sarpanch of the village but due to some personal reason the sarpanch cannot attend the meeting. Here are some pictures when we present a power point presentation on impact of CoVID in Indian economy…..



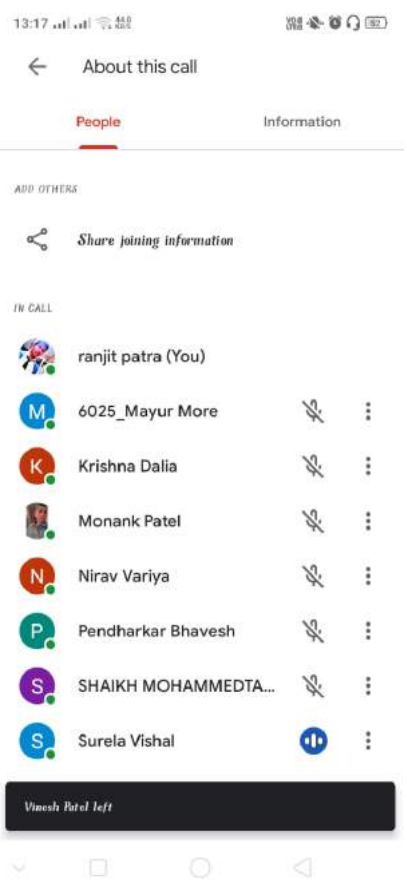


Fig. 18.1.1 Webinar arrangement

Fig. 18.1.2 Members list

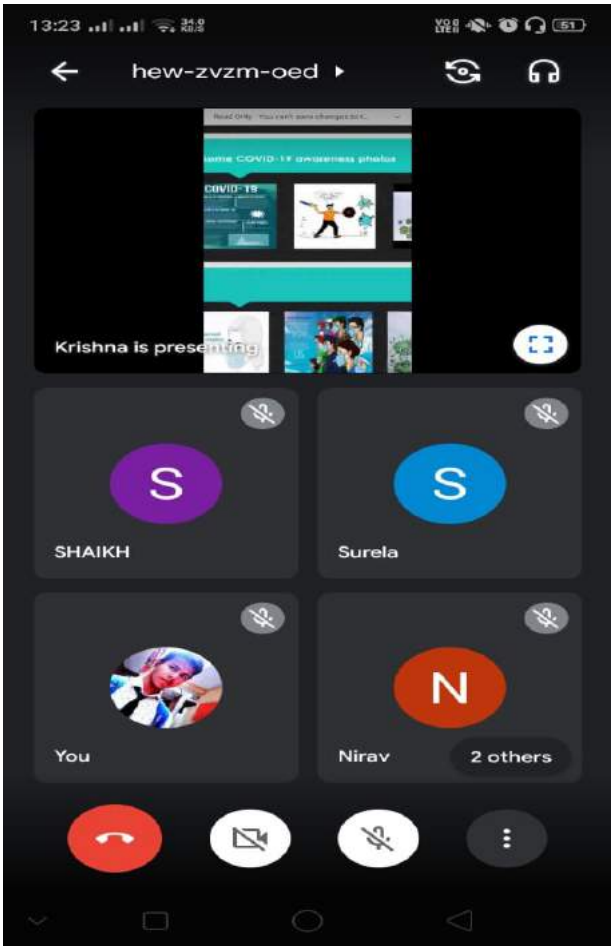


Fig. 18.1.3 PPT of awareness camp

By holding this webinar many students and dwellers were aware about this current situation and also it helps for fight with this situation.

CHAPTER 19 TALANGPUR VILLAGE SAGY QUESTIONNAIRE SURVEY FORM WITH THE SARPANCH SIGNATURE

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Talangpur Gram Panchayat: Talangpur Ward No. 30

Block: Sachin. District: Surat

State: Gujarat LS Constituency:

1. Family Identity and Size

Name of Head of Household	Rasubhai Khallasi						Male/ Female	M
SECC Survey ID:		Family Size	5	Over 18	3	6 to 18	2	Under 6	0

2. Category & Entitlement Details (Tick as appropriate)

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

2. Adults (above 18 years)

Name	Age	Sex M/F/O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/N)	Bank A/C (Y/N)	Social Security Pension[5]
Rasubhai Khallasi	50	M	N	–	12th Pass	Y	Y	
Sangeetaben Khallasi	45	F	N	–	10th Pass	Y	Y	–
Sagar Khallasi	24	M	N	–	Student	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
Vrachi Khallasi	18	F	N	1	06	Y	12th	Y
Hetvi Khallasi	13	F	N	1	05	Y	10th	–

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
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–

[1] Scheduled Caste 1, Scheduloc 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	NO	NO
Children	NO	NO

9. House & Homestead Data

Own House: Yes / No	No. of Rooms: 4
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~~	0
Community Water Tap	Yes / ~~No~~	1 Km
Hand Pump (Public / Private)	~~Yes~~ / No	NO
Open Well(Public / Private)	~~Yes~~ / No	NO
Other (mention): Pond.		0.5Km

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	607.2 Hect	2. Cultivable Area	180 Hect.
3. Irrigated Area	420 Hect.	4. Uncultivable Area	7.2 Hect

13. Principal Occupations in the Household

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

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
Sugarcane	—	—
vegetables	—	—

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, Volleyball.

19. Do children play musical instrument (mention)

Schedule Filled By: Patrica Parmar, Dalia Krishna, Vishal Solanki
Principal Respondent: Bimal Ben
Date of Survey: 18th May 2021

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: Talangpur.

b. Block: Sachin.

c. District: Surat

d. State: Gujarat

e. Lok Sabha Constituency: _____

f. Number of Wards in the Gram Panchayat: 4.

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages:

Talangpur.

Demographic Information

Number of Households 612 Total Population 1197. Male 8397 Female 3807.

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	4 Km
b.	Nearest Primary Health Centre (PHC)	N	4 Km
c.	Nearest Community Health Centre (CHC)	N	5 Km
d.	Nearest Post Office	Y	1 Km
e.	Nearest Bank Branch (Any)	Y	1-2 Km
f.	Nearest Bank with CBS Facility	N	10 Km
g.	Nearest ATM	Y	1-2 Km
h.	Nearest Primary School	Y	1 Km
i.	Nearest Middle School	Y	1 Km
j.	Nearest Secondary School	Y	1 Km
k.	Nearest Higher Secondary School / +2 College	N	3-4 Km
l.	Nearest Graduate College	N	1 –
m	Nearest ITI / Polytechnic Centre	N	–
n	Kisan Seva Kendra	N	–

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society	N	10 Km.
p	Nearest Agro Service Centre	N	5Km.
p	MSP based Government Procurement Centre	N	10Km.
q	Milk Cooperative /Collection Centre	N	2Km.
r	Veterinary Care Centre	N	5Km.
s	Ayurveda Centre	N	5Km.
t	E – Seva Kendra	N	7Km.
u	Bus Stop	Y	2Km.
v	Railway Station	Y	5-2Km.
w	Library	N	–
x	Common Service Centre	N	–

IV. Sports Facilities in the Gram Panchayat

a. Number of Play Grounds in the GP: Total 2 Public 2 Private 0

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 4

b. Number of villages without Angan Wadi Centres –

Names of such villages: –

c. Schools (Number)

Primary Private: 1 Primary Govt.: 1

Middle Private: 1 Middle Govt.: 1

Secondary Private: 1 Secondary Govt.: 1

Higher Secondary Private: – Higher Secondary Govt: –

VI. Public Distribution System

	Item	Private Contractor	Women's SHG	Gram Panchayat	Cooperative	Other (Mention)	Location in GP (mention Location)	If outside GP, Location & distance from GP HQrs)
a.	Cereal (Rice/ Wheat/ Millets)	–	–	V	–	–	0	–
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 012 / Not Connected		

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	180 hect	d.	Pasture / Grazing Land	—	g.	Check Dam	—
b.	Irrigated Land	420 hect	e.	Forests/ Plantations	—	h.	Wells/Bore Wells	—
c.	Un-irrigated Land	7.2 hect	f.	Other Common Land	—	i	Tanks /Ponds	1

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

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

IX. Parameters relating to Households & Institutions

		Number
a)	Number of eligible Households for pension (old age, widow, disability)	40.
b)	Number of Households receiving pension (old age, widow, disability)	50
c)	Number of eligible Households who are not receiving pension	40
d)	Number of Households eligible for Ration Card	220.
e)	Number of eligible HHs having ration cards	210.
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	–
l)	Number of landless households	–
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	–
q)	Number of Households headed by physically handicapped persons	1.
r)	Total number of Persons with Disability in the village	7
s)	Number of SHGs	120
t)	Number of active SHGs	–
u)	Number of SHG Federations	–
v)	Number of Youth Clubs	–
w)	Number of Bharat Nirman Volunteers	–

Name and Signature of Surveyor and Respondent'

Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably .scniormost Government official in the Gram Panchayat)	Date of Survey
		Deputy Town Planner Surat Mahanagar Sevasadan	19/05/2021.

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

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: Talangpur
b. Ward Number: 2.
c. Gram Panchayat: Talangpur.
d. Block: Sachin
e. District: Surat
f. State: Gujarat.
g. Lok Sabha Constituency: —
h. Number of Habitations / Hamlets in the Gram Panchayat: 1.
i. Names of Habitations / Hamlets:

Talangpur.

Demographic Information

Number of Households 612 Total Population 11417. Male 2616 8397. Female 3802.

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	1 Km.
b.	Nearest Middle School	N.Y	1 Km.
c.	Nearest Secondary School	Y	1 Km.
d.	Kisan Seva Kendra	N	—
e.	Milk Cooperative /Collection Centre	N	—
g.	Health Sub Centre	N	4 Km.
h.	Bank	Y	1-2 Km
i.	ATM	Y	1-2 Km.
j.	Bus Stop	Y	1-2 Km.
k.	Railway Station	N	5-6 Km

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

1

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

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

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

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

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

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

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

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

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

vi. Sports Facilities in the Village
a.Number of Play Grounds in the Village (minimum size 200 square meters): 2
b.Mini Stadium : NO Yes(Y) /No (N)

vii. Education, ICDS
a. Number of Anganwadi Centres: 4
c. Schools (Number)
Primary Private: 1 Primary Govt.: 1
Middle Private: 1 Middle Govt.: 1
Secondary Private: — Secondary Govt.: —
Higher Secondary Private: — Higher Secondary Govt: —

2

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

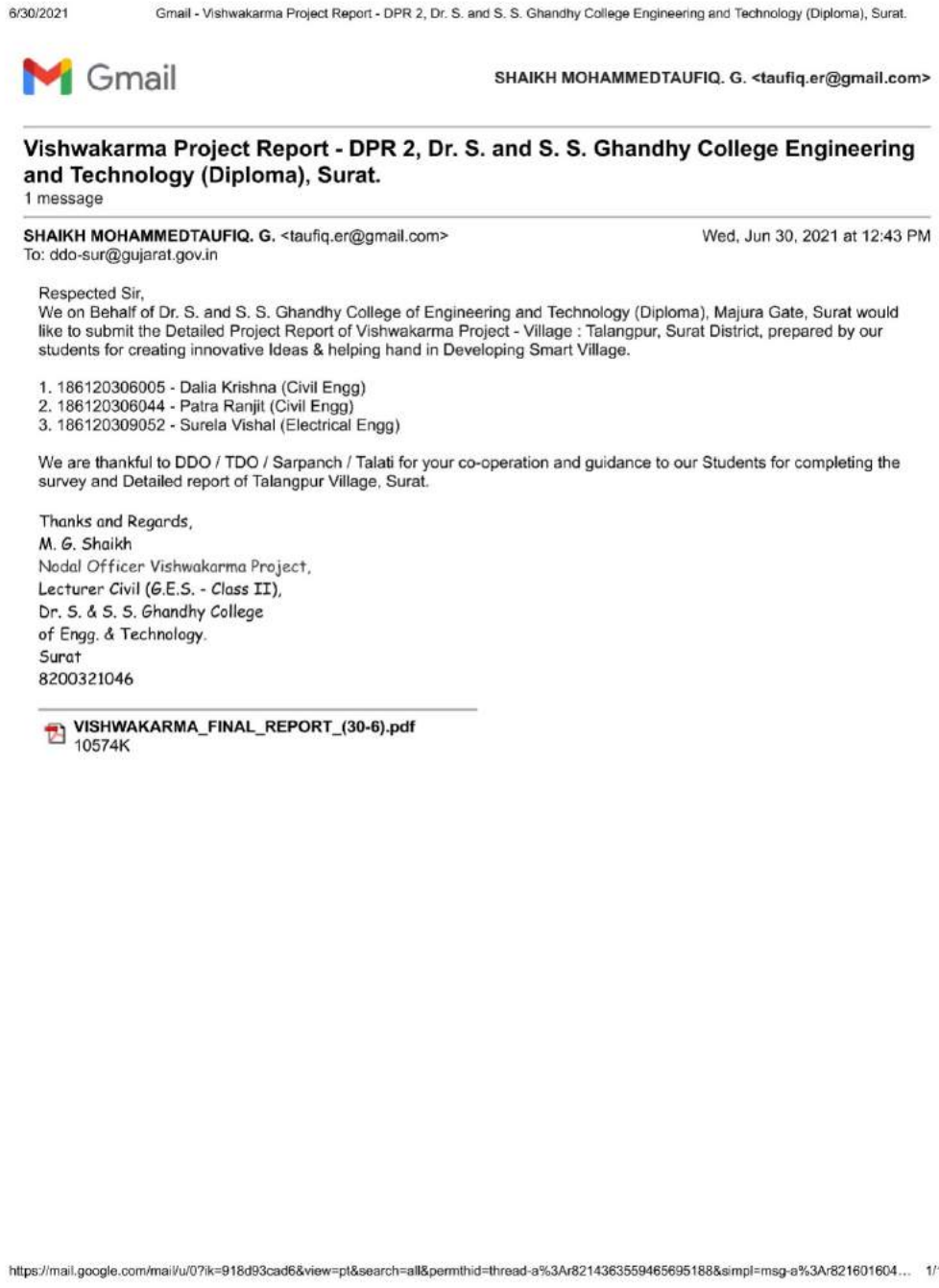
viii. Land Category		Area in Acres		Land Category	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	180 Hect.	d.	Pasture / Grazing Land	—	g.	Check Dam	—
b.	Irrigated Land	420 Hect.	e.	Forests/ Plnatations	—	h.	Wells/Bore Wells	—
c.	Un-irrigated Land	7-7 Hect.	f.	Other Common Land	—	I	Tanks /Ponds	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	400
5	Number of landless households	100
6	Number of IAY beneficiaries	—
7	Number of FRA beneficiaries	—
8	Number of common sanitation complexes	—
9	Number of SHGs	—
10	Number of active SHGs	—
11	Existence of SHG Federation in the Village (Yes / No)	—
12	Number of Youth Clubs	—
13	Number of Bharat Nirman Volunteers	—

Name and Signature of Surveyor and Respondent'

Surveyor	PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey
Patel Parul, Dalia Krishna, Kokadia Sweta, Vishal		Deputy Town Planner (SZ) Surat Mahanagar Sevaadan	18-05-2021

CHAPTER 20 TDO-DDO-COLLECTOR EMAIL SENDING SOFT COPY ATTACHMENT IN THE REPORT



6/30/2021 Gmail - Vishwakarma Project Report - DPR 2, Dr. S. and S. S. Ghandhy College Engineering and Technology (Diploma), Surat.

Gmail SHAIKH MOHAMMEDTAUFIQ. G. <taufiq.er@gmail.com>

Vishwakarma Project Report - DPR 2, Dr. S. and S. S. Ghandhy College Engineering and Technology (Diploma), Surat.

1 message

SHAIKH MOHAMMEDTAUFIQ. G. <taufiq.er@gmail.com> Wed, Jun 30, 2021 at 12:43 PM
To: ddo-sur@gujarat.gov.in

Respected Sir,
We on Behalf of Dr. S. and S. S. Ghandhy College of Engineering and Technology (Diploma), Majura Gate, Surat would like to submit the Detailed Project Report of Vishwakarma Project - Village : Talangpur, Surat District, prepared by our students for creating innovative Ideas & helping hand in Developing Smart Village.

1. 186120306005 - Dalia Krishna (Civil Engg)
2. 186120306044 - Patra Ranjit (Civil Engg)
3. 186120309052 - Surela Vishal (Electrical Engg)

We are thankful to DDO / TDO / Sarpanch / Talati for your co-operation and guidance to our Students for completing the survey and Detailed report of Talangpur Village, Surat.

Thanks and Regards,
M. G. Shaikh
Nodal Officer Vishwakarma Project,
Lecturer Civil (G.E.S. - Class II),
Dr. S. & S. S. Ghandhy College
of Engg. & Technology.
Surat
8200321046

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CHAPTER 21
COMPREHENSIVE REPORT FOR THE ENTIRE VILLAGE

Vishwakarma Yojana is the one of the schemes which is organized by Gujarat Technology University, Gujrat. In this project, university take a step to enhanced engineering students to do some new things. this project is useful for villagers as more as students. In this project, we choose any one village surround by our collage and then we have to go in village and take interviews of sarpanch, talati , and local people to know actual condition of village and to do gap analysis of village. After surveying and gap analysis we have to give our design (six designs of civil concepts and 3 design of electrical concept in each semester in last year of diploma) .

Under this project we have learned many thinks like Surveying, Interaction with peoples, also get guidance from the elder, we have given the solution of the major problems in village which is face by villagers in daily life, we are providing this design after proper observation of village and villagers also refer Government data for proper guidance. If all these things implemented in village it will be Very help full for villagers of Talangpur for better quality of Living standard. like, By the implementation of water tank in allocated village, we can solve problem of drinking water shortage. As like as implementation of public toilet we can improve cleanliness and also improve good habits. under this project we seen a many social problems which can affect the progress of village. But in the case of some good things for village, that time there is no any issues related to cast, religion etc. by this project we get opportunities to explore our ideas for rural development I hope these ideas can helps to village development.

Villages and small towns play an important role as a “rural incubator” in the process of rural development and provide services in areas of marketing, providing agricultural inputs such as fertilizers and agricultural machinery, municipal services such as educational facilities, health care and so on for their rural domains.

After visiting anideal village Bhatha and Smart Village Baben, we get the idea and Scenario of a model village. Up till now in our mind we think the meaning of ‘village’ as low-Class people, leaving an ordinary life and with an old mindset and old technologies. But now a days scenario is totally changed, Indian villages are growing out now with smart cities, smart village concept is also introduced and we are proudly saying that, we are one of its part, hence, through VishwakarmaYojana we connect with the rural development concepts.

Providing a facility is not only the solution of rural development. All villages in Gujarat havenow become very well compared to past. But we should focus on improvement on existing Facilities. Villagers and also gram panchayats are not focusing on the existing facilities. Due to this villagerare trying to discard its future use. Also, villagers are not aware about new technologies, which make them a better one. We should try to aware them.

On our side, we have prepared some designs of civil and electrical. We have planned an awareness programme related to COVID-19 which helps people to get updated about present situation. Also, we conducted a survey about Saansad Adarsh Gram Yojana (SAGY) and interviewing with Sarpanch and Talati.

On basis of upper research, the purpose of this project is to develop the village. Even today, India lives in villages. In the era of globalization, entrepreneurship development in village areas is achallenge. Allthese activities need to be addressed based on varying village situations. A specially designed suitable framework for village areas on ground of Science, Technology, Engineering, Regulations and Management will play an important role to buildthe next generation smart villages.

With help Gap Analysis we conclude that some of different Smart Village facilities are required as basic or primary level which still lack in village. So according to Gap Analysis of Talangpur village, we observed condition of existing infrastructure facilities in village such as- Primary school, Water tank, Road network, Drainage network, etc. Smart Village can solve their problem itself can become a smart village example to other village too. According to UDPFI norms, lacking in basic amenities and Smart Amenities can be provided as

Public library

- Children's Play Ground
- Septic Tank
- Community Toilet
- Maintenance of Aaganwadi

By providing required amenities to village, development of village can be possible. So ultimately migration to the city from village will be reduced and livelihood of villagers will increase. So healthy and prosperous life can be possible for the villagers. Ultimate growth of village and people is base step for the

development of country. India is developing country and GDP is highly depended on farming. As the development of village would be possible, farming techniques will increase and percentage of GDP will increase.

Photos of Baben & Talangpur villages:

Entry Gate of Baben

Lake of Baben

Pond of Talangpur

Aanganwadi of Talangpur