DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII

AN APPROACH TOWARDS RURBANISATION

Motidau : Village

Mehsana : District

PREPARED BY

Student name	Branch	Enrollment No
Jay G Suthar	Civil Engineering	170290106013
Sachin K Limbachiya	Civil Engineering	180293106002

NODAL OFFICERS NAME: Prof. Sumit B. Patel

Civil Engineering Department

L.C. Institute of Technology, Bhandu

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad – 382424 Gujarat

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ON

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Chandkheda, Ahmedabad– 382424 Gujarat

CERTIFICATE

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

Detail Project Report for,

VILLAGE: Motidau

DISTRICT: Mehsana

Under

Vishwakarma Yojana: Phase-VIII

In partial fulfillment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

During the academic year 2020-21

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

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
Jay G Suthar	Civil	170290106013
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Date of Report Submission:	
Principal Name and Signature:	Dr. Dipak M. Patel
VY-Nodal Officer Name and Signature:	Prof. Sumit B. Patel
Internal(Evaluator) Guide Name and Signature:	Prof. Sumit B. Patel
College Name:	L.C. Institute Of Technology, Bhandu.
College Stamp:	

ABSTRACT

VishwakarmaYojana project and how you do your vision project:

Today the world is growing rapidly and the living standards of society are improving due to development in each and every field, Due to evolution of new technologies and new developments.
Mehsana is among one of the developed cities of Gujarat, and Motidau is a village in Mehsana District.

About your village description:

Motidau is a large village located in Mehsana Taluka and Mehsana district, Gujarat with total 1035 families residing. The Motidau village has population of 4986 of which 2576 are males while 2410 are females as per Population Census 2011.

In Motidau village population of children with age 0-6 is 647 which make up 12.98 % of total population of village. Average Sex Ratio of Motidau village is 936 which is higher than Gujarat state average of 919. Child Sex Ratio for the Motidau as per census is 823, lower than Gujarat average of 890Motidau village has higher literacy rate compared to Gujarat. In 2011, literacy rate of Motidau village was 84.88 % compared to 78.03 % of Gujarat. In Motidau Male literacy stands at 93.83 % while female literacy rate was 75.50 %.

About existing village condition:

Internal road network is damaged due to rain. Transportation facilities are not good. InCOVID-19 it’s difficult to visit a village and permission not granted by Sarpanch

About your proposed designs your view for village development:

To give villagers full facilities & amenities like urban areas. Like advance farming. Good road network. Good water supply. Well managed drainage. PHC (Public Health Center) well designed. Good transportation

About future scope of the village development:

Providing good infrastructure & living Standard and reduce migration from village to urban areas. Data collection wills e give full master plan for development

Keywords:

Smart village, Village Development, Survey, Clean village

ACKNOWLEDGEMENT

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

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Above all we would like to thank our Parents, family members and Friends for their encouragement and support rendered in completion of the present this work.

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1: Ideal village

1.1 Background

Maktupur is a Village in Unjha Taluka in Mehsana District of Gujarat State, India. It is located (29 KM) towards North from District headquarters Mehsana (4 KM) From (85 KM) from State capital Gandhinagar Maktupur Pin code is 384170 and postal head office is Unjha Umiya Mataji Brahmanvada (4 KM) , Gunj Bazaar (4 KM) , Ramparu (4 KM) , Tundav (4 KM) , Kamli (4 KM) are the nearby Villages to Maktupur. Maktupur is surrounded by Sidhpur Taluka towards North Visnagar Taluka towards South, Patan Taluka towards west, and Chanasma Taluka towards west.

According to Census 2011 information the location code or village code of Maktupur village is 509259. This Place is in the border of the Mehsana District and Patan District. Patan District Sidhpur is north towards this place.

Study area of location:

Name: Maktupur

- District: Mehsana
- Taluka: Unjha
- Distance from Patan: 33 km
- Pin code: 384170
- Language: Gujarati and Hindi
- Time zone: IST (UTC+5:30)
- Elevation/Altitude**:** 110 meters. Above-Sea level.

Fig. 01:- Maktupur village map

1.2 Concept: Ideal Village, Normal Village

1.2.1 Objectives of study

- Skill and village enterprise development with financial and shopping market is more access to for youth.
- Has good functional solid/liquid waste management.
- Better livelihood opportunities which are not in villages.
- Homes for all – with access to toilet, safe drinking water and regular power.
- To get basic amenities.
- Prevent distress migration from rural to urban areas, which is a common phenomenon in India's villages due to lack of opportunities & facilities that guarantee a decent standard of living.
- Educational work should be good in the village.

1.2.2 The top ideal villages in India

- Punsari (Gujarat):- The villages with all the urban facilities.
- Mawlynnong (Meghalaya):- Asia's cleanest village.

- Hiware Bazaar (Maharashtra);- The villages of billionaires.
- Pothanikkad (Maharashtra):- The village with 100% literacy rate.
- Dharnai (Bihar):- The solar powered village of India.
- Chappar (Haryana):- An Indian village that distribute the sweets when a girl is born.
- Kokkarebellur (Maharashtra):- A villages that believes in conservation of nature.
- Ballia (Uttar Pradesh):- The village that beat arsenic poisoning of water.
- Kathiawadi (Maharashtra):- The village that transformed itself in to a model village.

1.2.3 The idea of smart village

- Drainage & public sanitation
- Economic connectivity – financial inclusion
- Drinking water & watershed development
- Healthcare
- Solid waste management
- Knowledge connectivity
- Physical connectivity – transportation
- Digital connectivity – electronic delivery of services
- Energy access & renewable energy development
- Skills & entrepreneurship development
- Eco-tourism & environment conservation
- Agriculture & organic farming
- Cultural inclusion
- Good governance

1.2.4 History of Indian villages

PHASE 1:- **"Atma Gaon Ki Suvidha Shaher Ki**". As a part of Implementation of Vishwakarma Yojana Phase- I and 85 villages have been selected for the academic Year 2013-14.

PHASE 2:- continuing phase 1, but 175 to 200 villages have been selected for the academic Year 2014-15.

PHASE 3:- Vishwakarma Yojana Phase III for Rurban Development as per the criteria discussed with Panchayat, Gram Gruh Nirman and Gram Vikas Vibhag, 252 villages have been selected for the academic Year 2015-16.

PHASE 4:- Vishwakarma Yojana Phase-IV for Rurban Development as per the criteria discuss with Gram vikas kacheri & Panchayat .Gram gruh Nirman and .Gram vikas Vibhag.

PHASE 5 :- "For Rural Villages & Smart Cities Sustainable Planning for Rural Area–Repair, Redevelopment, Redesign & Sustainable Water and Sanitation" As part of the VY Phase 5, in academic Year 2017-18

PHASE 6:- Vishwakarma Yojana Phase VI for Rurban Development as per the criteria of Gram Vikas Kacheri and Panchayat, Gram Gruh Nirman and Gram Vikas Vibhag, for 28 Colleges of Degree and Diploma from the across Gujarat, 276 students, 136 villages from the smart villages, Enclosing College wise Village Allotment for your Sansad Adarsh Gram Yojana and other villages (Not included phase – I, II, III, IV, V

villages which has been already done) have been selected for the academic Year 2018-19.

PHASE 7:- Vishwakarma Yojana is framed to provide the benefits of real-world experiences to the students of Engineering and Management phase wise and simultaneously apply their technical knowledge in the development of infrastructure in Rurban area. The project is under taken on a "Design to Delivery" basis, in academic Year 2019-20.

1.2.5 The idea of a model/smart village

- The homes and building can be smart by the use of sensors and camera
- Efficient energy management is the key need in villages where the electricity is nit available all of the time
- Steps in this direction. Himachal Pradesh launched a Mukhiya Mantri Adarsh Gram Yojana along.
- Similar lines in 2011, with the allocation of Rs 10 lakh per village.
- Through the Pradhan Mantri Adarsh Gram Yojana, launched by the Central Government in2009.
- The scheme was implemented in pilot mode in 1000 villages of Assam, Bihar, Himachal Pradesh, Rajasthan and Tamil Nadu, with an allocation of Rs 10 lakh per village. This limit was later raised.
- Rs 20 lakh per village. The target villages under the scheme were those with more than 50%.
- Population belonging to Scheduled Castes (SCs). Additionally, State governments have also taken.

1.3 Detail Study

❖ Physical & Demographic Representation

State Name	District Name	Sub District	Village Name
Gujarat	Patan	Chanasma	Ruppur

❖ Demographic Details

Census Year	Population	Male	Female
2011	1833	929	904

Table: 1 – Physical & Demographical Details of Maktupur

❖ Maktupur 2011 Census Details

Total Population	5197
Total No of Houses	1124
Female Population %	48.2 % (2507)
Total Literacy rate %	81.0 % (4210)
Female Literacy rate	36.8 % (1915)
Scheduled Tribes Population %	0.9 % (49)
Scheduled Caste Population %	11.7 % (606)
Working Population %	40.5 %
Child(0 -6) Population by 2011	540
Girl Child(0 -6) Population % by 2011	46.1 % (249)

Table: 2 - Maktupur 2011 Census Details

❖ Occupational details

- Business
- Shopkeeper
- Farming
- Dairy
- Animal husbandry

❖ Social profile

The social scenario of village is excellent .in the past few years there is 0% migration in the village. The gram Panchayat had spent around 12-13 crores for the development of the village and that to with use government schemes and from the revenue, the gram Panchayat has zero financing from NRI, NGO and CSR. The income of the village is approx. 5.50-6.00 lakhs.

❖ Infrastructures facilities

➢ **ABOUT -** The fundamental of structure of a system or organization, the basic, fundamental architecture of any system (electronic, mechanical, social, political, etc.) determines how it functions and how flexible it is to meet future requirements.

➢ **Various infrastructure facilities like,**

- Educational buildings,
- Health and Wellness Centers,
- Administrative buildings,
- Parks and Banking,
- Drinking Water,
- Facilities, etc. are visited and observed.

Arts, Commerce Collage

Post Office

Temple

Community Hall

Dudh Sarita

Gram Panchayat

Children Playing Ground

Primary School 1


Dustbins


Houses & Street Road


Public Garden

Fig. 02:- Infrastructure details pictures

1.4 SWOT ANALYSIS OF IDEAL VILLAGE

Herewith the SWOT analysis for ideal village is represented.
It consists of mainly three elements: 1) Strength 2) Weakness and 3) Opportunities & threats.

Strength	Weakness	Opportunuties & threats
• Education • Land • Roads • Health Facilities • Electricity • Water facility	• No Recreational Centre • Solid Waste Management • Poor quality of con-structors work • Fuel poverty	• To rise the living standards of peo-ple • Govt. Schemes • Job insecurity • To make the village digital • Water Treatment plant

1.5 FUTURE PROSPECTS OF VILLAGE

The focus on prepare a team of young local level leaders who are not only from his own state but from across the country. He has already networked with a thousand such young village headmen from different corners of India, cutting across party ideologies.

The aim of such a group is to share experiences of rural development among themselves. The village should use advance technologies in agricultural, water-supply as well as for other fields.

- The village should use advance technologies in agricultural, water-supply as well as for other fields.
- Recycling of drainage water.
- Requirement of an Easy Mechanism for penetration of Ecommerce in rural areas.
- Easy data base management for agriculture.

1.6 BENEFITS OF THE VISIT OF VILLAGE

- We learned the requirement of the facilities in the village.
- We known about internet speed and connectivity in village.
- We known about village weather condition.
- Town and village experience cultural and economic growth and regeneration.
- We see some different type of little requirements of village.
- To know the strength and weakness of village.
- Know about a behavior of different village people.
- We discussed the good and bad thing about village from village people.
- To known about agricultural properties.

1.7 CIVIL CONCEPT OF IDEAL VILLAGE

- The idea of smart village in the present day context seems more reasonable as there is a limit. Of growth of cities which is leading to creation of urban jungles where the population ratio/km of land is way above the design norms.
- We making smart village by taking smart decisions using smart technologies and services.
- Village is totally covered with 100% CCTV camera.
- Smart agricultural equipment for crop production.
- The basic accommodations are must be available in the village such as; drainage facility, toilet blocks, solid waste management, gram Panchayat, tap water, etc.

2: Literature review

2.1 Introduction: Urban & Rural village concept

➢ **Urban**: - For the Census of India 2011, the definition of urban area is as follows:

- All places with a municipality, corporation, cantonment board or notified town area committee, etc.
- All other places which satisfied the following criteria:
- A minimum population of 5,000;
- At least 75% of the male main working population engaged in non-agricultural pursuits, a density of population of at least 400 persons per sq. km.

➢ **Rural**: - In general, a rural area is a geographic area that is located outside cities and the centers of towns. Rural is that which is not having their basic requirements easily that may be village or a part of it. Rural is relating to, or characteristic of the countryside rather than the town.

2.2 IMPORTANCE OF THE RURAL DEVELOPMENT

Rural development has assumed greater importance in India today than in the earlier period in the process of the development of the country. It is a strategy package seeking to achieve enhanced rural production and productivity, greater socio-economic equity, and aspiration, balance in social and economic development.

➢ The aim of objectives composed by the government in 4-5 year plan for rural development are

- To guarantee to increase the standard of living of the underprivileged population.
- To improve productivity and the wages of rural people.
- Rural households are the nearest to the environment or environments our ceased they have capacity to protect land water, and forest.
- Rural households are live in community.
- To provide the basic needs – e.g. elementary education, health care, clean drinking water, and, rural roads, etc.

2.3 Different Definition of: Rural area / Village

In general, a rural area is a geographic area that is located outside the cities and towns. Commission, a town with a maximum population of 15,000 is considered rural in nature. The National Sample Survey Organization (NSSO) defines Rural ‘as follows:

- An area with a population density of up to 400 per square kilometer,
- Villages with a clear surveyed boundaries but no municipal board,
- A minimum of 75% of male working population involved in agricultural and Aligned activities.

2.4 Scenario: Rural / Urban village of India population Growth

	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: 3 - Population Growth India

	2001	2011	Difference
India	21.5	17.6	-3.9
Rural	18.1	12.2	-5.9
Urban	31.5	31.8	+.03

Table: 4 - Growth Rate of Population India (in %)

2.5 Scenario: Rural / Urban India & Gujarat as per Census 2011 {Population Growth}:

- **INDIA**

Description	Rural	Urban
Population (%)	68.84%	31.16%
Total Population	833,087,662	377,105,760
Male Population	427,917,052	195,807,196
Female Population	405,170,610	181,298,564
Population Growth	12.18%	31.80%

Table 5:- Scenario of India

- **GUJARAT**

Description	Rural	Urban
Population (%)	57.40 %	42.60 %
Total Population	34,694,609	25,745,083
Male Population	17,799,159	13,692,101
Female Population	16,895,450	12,052,982
Population Growth	9.31 %	36.00 %

Table 6:- Scenario of Gujarat

2.6 Rural development issues & Concerns:

- Very less people are employed in the rural areas.
- Lessen come opportunity.
- Improvement in technology and Net-work connection.
- Irrigation and financial facilities.
- Economy of the people living in rural areas is low.
- Availability of rural infrastructure.
- No use of renewable energy resources.
- Availability of rural housing.
- The price the farmers get for their pro-duces less than in relation to the work they put in.

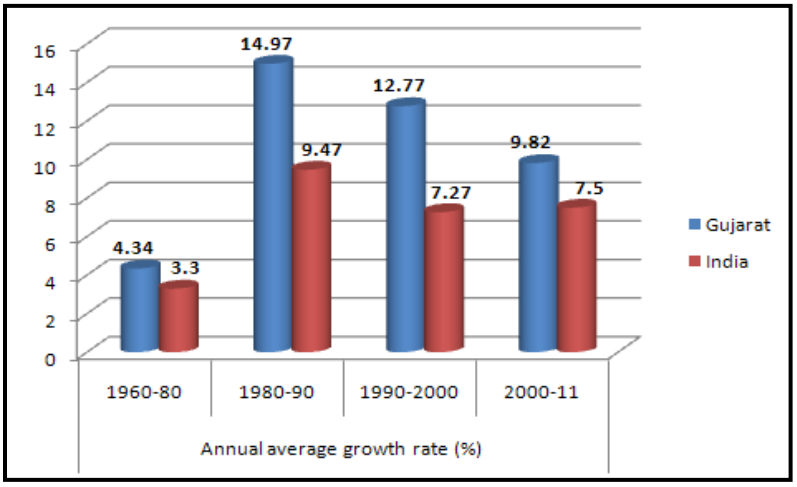

Fig. 03:- Rural and Urban Population Growth in Gujarat

2.7 Various infrastructures for rural development

Rural development is a dynamic process, which is mainly concerned with the rural areas. These in-clude agricultural growth, putting up of economic and social infrastructure, fair wages as also housing and house sites for the landless, village planning, public health, education and functional literacy, communica-tion etc. Rural development is a national necessity and has considerable importance in India because of the following reasons.

1. About three-fourth of India's population live in rural areas, thus rural development is needed to devel-op nation as whole.
2. Nearly half of the country's national income is derived from agriculture, which is major occupation of rural India.
3. Around seventy per cent of Indian population gets employment through agriculture.
4. Increase in industrial population can be justified only in rural population's motivation and increasing the purchasing power to buy industrial goods.
5. Growing disparity between the urban elite and the rural poor can lead to political instability.

➢ **Various Measures for Rural development:**

1. Projects / Schemes by govt. sector
2. Projects / Schemes by Private sector
3. Other projects / Schemes.

Facilities	Planning Commission/ UDPFI Norms
Anganwadi	**Each village**
Primary School	**Each Village**
Secondary School	**Per 7,500 Population**
Higher Secondary school	**Per 15,000 Population**
College	**Per 125,000 Population**
Tech. Training institute	**Per 100,000**

Agriculture Research centre	Per 100,000 Population
Gov./Panchayat Dispensary or Sub PHC or Health Centre	Each village
PHC & CHC	Per 20,000 Population
Child Welfare and Maternity Home	Per 10,000 Population
Hospital	Per 100,000 Population
Pucca village Approach road	Each village
Bus/auto stand Provision	All Villages connected by
Over Head Tank	1/3 of Total Demand
U/G Sump	2/3 of Total Demand
Public Latrines	Each Village
Cremation Ground	Per 20,000 Population
Post Office	Per 10,000 Population
Gram Panchayat Building	Each individual/group
APMC	Per 100,000 Population
Fire Station	Per 100,000 Population
Police Station	Per 15,000 Population
Community Hall	Per 10,000 Population

Table: 7: Infrastructure facilities of smart village

2.8 Other Projects / Schemes by Govt. sector:

1. Kutir Jyoti Program (KJP)

KJP was initiated in 1988-89 to provide single point light connection (60 w) to all Below Poverty Line (BPL) households in the country. KJP provides 100% grant for one time cost of internal wiring and service connection charges and builds in a proviso for 100% metering for release of grants. Nearly 5.1 million households have been covered under the scheme to date. The scheme was merged into the Accelerated Electrification of One Lakh Villages and One Crore Households in May2004 and now into the RGGVY.

2. Pradhan Mantri Gramodaya Yojana (PMGY)

The PMGY launched in 2000-2001 provided additional financial assistance for minimum services by the central government to all states on a 90% loan and 10% grant basis. These included rural health, education, drinking water and rural electrification. The PMGY with an outlay of about Rs 1600 crores during the 10th Plan period was being coordinated and monitored by the Rural Development Division of the Planning Commission. Under PMGY states had the flexibility to decide on the internal location of funds amongst the 6 basic services. Thus states could enhance allocations to expedite the pace of rural electrification.

3. Accelerated Rural Electrification Program (AREP)

The AREP operational since 2002, provides an interest subsidy of 4% to states for rural electrification (RE) programs. The AREP covers electrification of unelectrified villages and household electrification and has an approved outlay of Rs. 560 Crore under the 10th Plan. The interest subsidy is available to state governments and electricity utilities on loans availed from approved financial institutions like the REC (Rural Electrification Corporation), PFC (Power Finance Corporation) under the Rural Infrastructure Development Fund (RIDF).

4. Rural Electricity Supply Technology Mission (REST)

The REST was initiated on 11th 2002. REST proposes an integrated approach for rural electrification and its aims are:

1. To identify and adopt technological solutions
2. To review the current legal and institutional framework and make changes when necessary
3. To promote fund, finance and facilitate alternative approaches in rural electrification
4. To coordinate with various ministries, apex institutions and research organizations to facilitate meeting national objectives.

5. Minimum Needs Program (MNP)

The MNP exclusively targeted states with less than 65% rural electrification (by the old definition) provides 100% loans for last mile connectivity. The program resources are drawn from the Central Plan Assistance. Rs. 775 Crore was released during 2001-03 for rural electrification under the MNP. The scheme was discontinued in 2004-05 on account of difficulties in implementation.

6. Deendayal Upadhyaya Gram Jyoti Yojana

It is earlier known as Rajiv Gandhi Grameen Vidyutikaran Yojana.

Government of India, in April 2005, launched the scheme Rajiv Gandhi Grameen Vidyutikaran Yojana Scheme of Rural Electricity Infrastructure and Household Electrification for electrification of un-electrified villages and providing access to electricity to all rural households in the country, including electrification of un-electrified habitations with a population of above 100, providing free electricity connections to BPL households.

7. The Remote Village Electrification (RVE) Program

Since 2005, the RVE program of the Ministry of New and Renewable Energies (MNRE) has been supplementing the efforts of the Ministry of Power (MoP) through complementary measures for the provision of basic lighting/electricity facilities through renewable energy sources. The Remote Village Electrification program (RVE) is responsible for electrifying un-electrified remote census villages and remote un-electrified hamlets of electrified census villages where grid connection is either not feasible or not economical (because they are located in forests, hills, deserts or islands) and where DDG projects are not implemented by the RGGVY of the Ministry of power.

8. The Jawaharlal Nehru National Solar Mission (JNNSM)

The Jawaharlal Nehru National Solar Mission was launched on 23 November 2009 in a statement to Parliament by the Union Minister for New and Renewable Energies. This mission is part of the 2008 Indian National Action Plan on Climate Change (NAPCC) which seeks to reduce India's future reliance on non-renewable energy sources. The National Solar Mission is a major initiative of the Government of India and State Governments to promote ecologically sustainable growth while addressing India's energy security challenge. It will also constitute a major contribution by India to the global effort to meet the challenges of climate change.

9. Provision of Urban Amenities to Rural Areas (PURA)

It is a strategy for rural development in India. PURA proposes that urban infrastructure and services be provided in rural hubs to create economic opportunities outside of cities. Physical connectivity by provid-

ing roads, electronic connectivity by providing communication network, and knowledge connectivity by establishing professional and Technical institutions will have to be done in an integrated way so that economic connectivity will emanate. The Indian central government has been running pilot PURA programs in several states since 2004.

❖ **Other Initiatives by center govt. for villages**

- Small wind energy and hybrid systems Program
- Biomass gasification
- mini/micro hydro projects
- Waste to Energy

10. E-Gram Vishwakarma Project

Initiated in 2001 through a pilot project of one district in Gujarat and which has since then been expanded to all districts of Gujarat, the project aims to digitize all the Panchayat in the State. An e-Gram center is usually located in a public space usually a Panchayat office. The Centre has a computer and a printer and is operated by a village computer entrepreneur (VCE) who generally is a village youth with some technical skill set. The center offers services like print outs of land records, payment of electricity bills, issue of caste certificates and information on government schemes. A certain amount is charged as user fees for availing these services, except for the provision of information on government schemes. The user fee is shared between the Panchayat and the VCE. Taking e-Gram project to the next level, Government of Gujarat is planning to leverage VCEs and their knowledge of internet for extending banking facilities to every remote village devoid of access to proper banking.

11. Jyotigram Yojana

Launched in 2003 as a response to the power deficit situation, Jyotigram Yojana provides 24 hour power supply to villages in the state. The scheme was recently lauded by Stockholm International Water Institute (SIWI) as a move which had completely rewired Gujarat, radically improved the quality of village life, spurred non-farm sector and halved the power subsidy in agriculture Jyotigram took shape as a focused effort to break the vicious cycle wherein power is caught between being a poll winning freebie to be offered to farmers for agriculture and the need for having financially self-sufficient electricity boards to continue supplying quality power. The strategy involved separating power supply for agriculture from.

Domestic and industrial power supply chain. It constructed a whole new parallel transmission system to feed and monitor electricity being used for agriculture resulting in intelligent rationing of power supply to farmers, quality power supply for 8 hours and charging farmers for the power being used.

i. State wide Gas Grid

The only state in the country with a well-established network of gas grid across the length and breadth of the state, Gujarat has seen natural gas act as a major catalyst in the overall growth of the State. The gas pipeline network spans an overwhelming 2200km making gas available to industries, power sector, and small and medium enterprises including those based in remote rural areas, transport, households and cooperatives across the state.

The gas based economy is also helping villages by creating a reliable and robust gas infrastructure enhancing output, competitiveness and sustainability in Gujarat. Gas infrastructure of Gujarat also includes India's only two dedicated LNG terminals with three more proposed to be coming up. Gujarat State Pertinent Limited and Gujarat State Petroleum Corporation are the lead players in development of the gas pipeline network

3: Smart village (Punsari)

3.1 UNDERSTANDING SMART VILLAGE (CONCEPT, DEFINITIONS AND PRACTICES)

❖ Background& Study Area:-

Punsari is a village located in Sabarkantha district in the state of Gujarat, India. The village follows the Panchayat raj system. The village is located at about 80km from the state capital, Gandhinagar. Punsari is 20km from Parvati Hills. Parvati Hills is the largest table top land of India. The village follows the Panchayat raj system. The village extent is about 65 km. The land in use of agriculture is 6 hectares. The main non farming activity is dairy in this village. There has been use of new and advanced technology in education. This village has Wi-Fi connection for all people. Efforts have been made for the empowerment of women and increasing security in the village. Some of the facilities provided by the Panchayat include local mineral water supply, sewer & drainage project, a healthcare centre, banking facilities and toll-free complaint reception service. Consequently, Punsari received the award of being the best Gram Panchayat in Gujarat. The village has undergone a transformation under the panchayat. Main Aim of visiting Punsari is to have idea about facilities provide in village which makes it unique as compare to other village. By studying this, we can develop a village on its basis.

Punsari is a very popular village of Gujarat because of highly developed. It is well known for their awards and also their news comes in media frequently.

❖ Study Area Location :

❖ Main sight seen related to study is:

1. Mobile Library
2. Skill Development Center
3. Primary School
4. Waste to Energy Plant
5. Water Plant
6. Primary Health Centre
7. CC TV and Speaker System

Fig. 04:- Punsari Village Map

❖ Concept

Providing updated information and databanks to the Government for better analysis andindividual profiling, To provide awareness about government schemes & policies to farmers. Prevent distress migration from rural to urban areas, which is a common phenomenon in India'svillages due to lack of opportunities & facilities that guarantee a decent standard of living.

According to Mahatma Gandhi's philosophy and thoughts smart village project provides "Global means to the local needs,

"Awareness about global, social and economic issues adjective and adjusting the fast changing environment"

❖ Practices: -

1. Strategic system planning
2. Demonstration of low energy building
3. Demonstration of nearly zero-energy building renovation for cities and districts
4. Sustainable energy solutions
5. energy systems for urban heating and cooling

3.2 PHYSICAL & DEMOGRAPHICAL AND ECONOMIC PROFILE:

It has a population of 6000 people (2015) which was then 5100 (2011), having 23 communities residing of majorly consisting of Thakor Community followed by Patels, Brahmin, etc. Of About 98% of the population engage in agricultural activities and rest 2% are either occupied with labour activities or having their own shops etc. In the past few years, there is 0% migration in the village and around 10 families have been Re - migrated to Punsari.
Total area= 0.47sq.km.
The population of Punsari was 5500 as per 2011 census of India, which has increased to 5500 in 2011. As of June 2012, the population is 6000.

❖ Economic profile

About 98% of the population engages in agricultural activities and rest 2% are either occupied with labor activities or having their own shops etc.

❖ Demographical Detail

Sr. No	Census	Population	Male	Female	Total No. of house holds
1.	2011	5500	2885	2615	1380
2.	2012	6000	3055	2945	1500

Table: 8:- Demographical Detail of Punsari

❖ Socio Economic

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

Major crops grown in the village	1. Wheat
	2. Cotton
	3. Millet

Table: 9:-Major occupation & Crops growth

3.3 TECHNOLOGY &INFRASTRUCTURES FACILITIES:

- Bus facility for all households.
- Wi-Fi connectivity all over village.
- 400 LED Street light has been setup.
- Sanitization in all houses having a toilet i.e. Safety Tank toilets are installed in every home
- The village is having all weather road and block road with covered pucca drainage system.
- The village has a toll free number. Villagers can call and record their complaints and suggestions.
- For waste collection, a door to door collection system wherein a tractor trailer which collects waste twice a day.
- The bio-electricity plant is installed; it supplies power to streetlights while the remaining electricity is supplied to the households.
- The gram panchayat has also set up a Mobile Library .It has scheduled a particular day or time within different locations of the village.
- Skill Development Centre.
- digitized all land records,
- The gram panchayat tied up with GEDA which provides the solar grid at Approx. Rs.7 per unit having 3years maintenance contract and thereby led to 50% reduction in the cost (which was then Rs. 70000/- & Now Rs. 35000/-).
- Underground Drainage system with three point outlet which gets dumped in a landfill outside the village.
- PA system i.e. Public Announcement system is installed at two places wherein announcements, Bhajans and other news been announced from 120 speakers twice a day i.e. Morning and evening.
- A reverse osmosis plant which supplies 20 litres of water to each household.
- The Gram Panchayat is assisting Women of the village. There are 109 self-help groups (SHGs) (10-15 women per group).
- E-Governance:
- The villagers are also using bank and most of the families are having an account with SBI bank which is also money exchange bank having facilities of ATM cum Debit Card Services for withdrawing cash.
- Biometric attendance system for the government employees.

3.4 VISION-GOALS, STANDARDS AND PERFO- MANCE MEASUREMENT INDICATORS

- **VISION:** - A smart city is a municipality that uses information and communication technologies to increase operational efficiency, share information with the public and improve both the quality of government services and citizen welfare.
- **STRATEGY:** - In essence, a smart city uses connected sensors and information technology to improve the quality of life of residents. A vast range of cities across the world are attempting to deploy technology to reimagining urban living and are adopting an array of strategies to do so.
- **OBJECTIVES:** - In the approach to the Smart Cities Mission, the objective is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions.

❖ **TRANSPORTATION:** - Dedicated and physically segregated bicycle tracks with width of 2 m or more, one in each direction, should be provided on all streets with carriage way larger than 10 m.

Maximum travel time of 30 minutes in small &Medium size cities and 45 minutes in metropolitan areas.

- **Water Supply:** - 24 x 7 supply of water, Every household with direct water supply connections, Every house should have metered of water connections Max efficiency in collection of water related charges.
- **Sewerage & Sanitation:-** Every households should have access to toilets, Every schools should have separate toilets for girls, Every efficiency in the collection and treatment of waste water, Max efficiency in the collection of sewerage network
- **Solid management:** - Every household should be covered by daily door-step Collection system, Max collection of municipal solid waste, 100% segregation of waste at source, i.e. Bio-degradable and non-degradable waste, Max Efficiency in recycling of solid waste.
- **Electricity:** - Every household having 24 x 7 supply of electricity, every house with metered electricity supply.
- **Healthcare facilities:-** Availability of telemedicine facilitiesto100% residents, 30 minutes of emergency response time, 1 dispensary for every 15,000resident, Nursing home, child, welfare and maternity center - 25 to 30 beds per lakh population.

3.5 ROAD MAP AND SAFEGUARDS FOR SMART VILLAGES

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

- First, we have to check why we necessary smart village initiative, why we need.
- Study Community: Before deciding to build a smart city, first we need to know that. This can be done by determining the benefits of such an initiative. Study the community to know the citizens, the business's needs – know the citizens and the community's unique attributes, such as the age of the citizens, their education, hobbies, and attractions of the city.

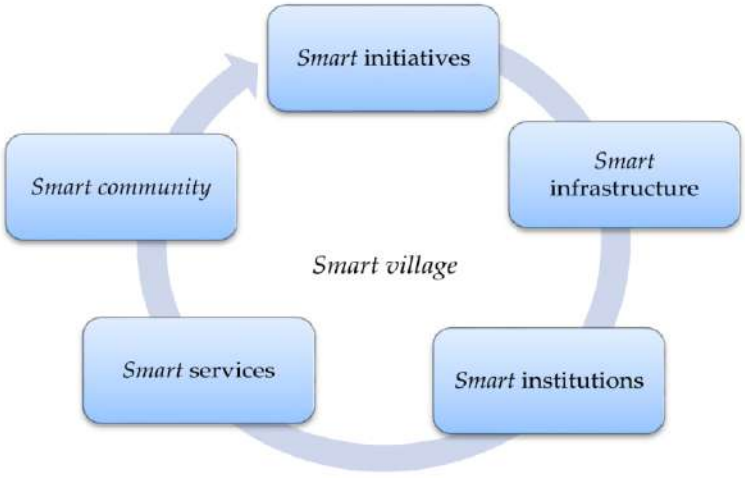

Fig. 05:- Road map safe guard

- People, Processes, and Technology (PPT) are the three principles of the success of a smart city initiative. Cities must study their citizens; know the processes, business drivers, create policies, and objectives to meet the citizens' needs. Then, technology can be implemented to meet the citizens' need, in order to improve the quality of life and create real economic opportunities.
- 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.
- Engage The Citizens: This can be done by engaging the citizens through the use of - government initiatives, open data, sport events, etc.
- To describe exactly what is the community: maybe that definition can condition what you are doing in the subsequent steps; it relates to geography, links between cities and flows of people between them.

3.6 SMART VILLAGE: ISSUES & CHALLENGES

❖ Followings are some issues in village:

1) Financing smart cities:-

The High Power Expert Committee (HPEC) on Investment Estimates in Urban Infrastructure has assessed a per-capita investment cost (PCIC) of Rs 43,386 for a 20-year period. Using an average figure of 1 million people in each of the 100 smart cities, the total estimate of investment requirements for the smart city comes to Rs 7 lakh crore over 20 years (with an annual escalation of 10 per cent from 2009-20 to 2014-15). This translates into an annual requirement of Rs 35,000 crore. One needs to see how these projects will be financed as the majority of project need would move through complete private investment or through PPPs (public-private partnership).

2) Technology Challenges: -

There are certain technologies that are a part of the project and it is expensive to use them. Because of the advancement, some technologies are borrowed from other countries which Makes it more expensive. This hinders the success of smart city project. Another challenge is in the discovery of technology and the need for a medium that can bring technology users and creators together to adopt faster platforms.
Maintenance, management, recovery of this instrument should be done carefully.

3) Financial sustainability of ULBs:-

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

4) Education / Job Opportunity:-

The building of smart learning environments for citizen will provide individuals more opportunities to learning easy, engaged and effective, and therefore provide wisdom into the creativity of the whole city.

Smart learning is an important support to bridge educational systems and citizen living experience.

The future of a smart city is reliant on human talent and skills, making job creation one of the biggest benefits. These jobs will obviously be smart and focus on skills including data analytics, programming, high-end consulting, and system and network integration. With IT infrastructure being the backbone of any smart city, IT professionals will certainly be in greater demand

5) Governmental Issues:-

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

6) Technical constraints of ULBs:-

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

3.7 SMART INFRASTRUCTURE& TECHNOLOGY

1. Smart Economy:-

Among the many local government KPIs that have to do with the economy are those related to the cost of a smart city project and the structures it generates, as well as general micro and macroeconomic parameters. Some examples would be:-

- Growth of technology and science parks.
- Number of new start-ups per year.
- Unemployment rate.
- Number of jobs created per year.
- Unemployment rate in technology and creative sectors.

2. Smart Governance :-

The area of governance brings together the local government KPIs applicable to the administration of the smart city. Here you can control aspects such as:

- Implementation of electronic systems to regulate the administration-citizen relation-ship.
- Number of infrastructures with connected sensors.
- Amount of online information available to city inhabitants.

3. Smart Mobility:-

The local government KPIs related to urban mobility take into accounts both transport and ICT (Information & Communication Technology). Urban mobility indicators include:

- Number of public Wi-Fi zones.
- Percentage of the territory with broadband internet coverage.
- Kilometers of bike lanes per 100,000 inhabitants.

4. Smart Environment:-

With regard to the environment, it's about monitoring energy consumption and the effects of human activity on the environment. To monitor these, we have KPIs for smart cities such as:

- Rate of chronic respiratory diseases per 100,000 inhabitants.
- Number of intelligent street lamps.
- Proportion of solid waste that is recycled.
- Water pollution levels.
- Noise pollution levels.

5. Smart People:-

Given that the improvement of living conditions for its inhabitants is the ultimate goal of any smart city, local government KPIs for smart cities also focus on measuring the training and skills acquired by citizens, calculating data such as:

- Use of ICT in education.
- Accessibility to educational resources.
- Number of computers per student.
- School dropout rate.

6. Smart Living:-

To determine the quality of life in the smart city, we use KPIs associated with health, safety and well-being**.** Here are some ideas:

- Average emergency service response time.
- Average waiting time at medical centers.
- Level of cyber security.
- Gini coefficient of economic inequality.
- Index of energy poverty.
- Implementation of online health services.

3.8 CYBER SECURITY

- Cyber security is concerned with the security of data, and the applications and infrastructure used to store, process and transmit the data. It is understood as the process of protecting data and info by preventing, detecting and responding to cyber security events
- The objective of Smart Cities is to optimize the city in a dynamic way to offer a better quality of life to the citizens through the Application of information and communication technology (ICT).
- Manufacturers and solution vendors should integrate security in their products.
- Municipalitiesshouldsupportthedevelopmentofaharmonizedcybersecurityframework
- The European Commission and Member States should foster knowledge exchange and collaboration in cyber security among industry, Member States and municipalities

3.9 STRATEGIC OPTIONS FOR FAST SMART VILLAGES DEVELOPMENT

The strategic components of area-based development in the Smart Cities Mission are city Improvement (retrofitting), city renewal (redevelopment) and city extension (Greenfield Development) plus a Pan-city initiative in which Smart Solutions are applied covering larger parts of the city. Below are given the Deion's of the three models of Area-based smart city development

❖ Following strategic option for fast development of smart city:

- Smart cities require extensive experimentation.
- Redevelopment will effect a replacement of the existing built-up environment and enable eco- creation of a new layout with enhanced infrastructure using mixed land use and increased density.
- It starts with having a realistic plan.
- Smart city initiatives should complement low-tech initiatives.

- Get creative when rethinking transportation.
- Green field development will introduce most of the smart solution, in this plan implementation tools with provision for affordable housing, especially for the poor

3.10 INDIA'S URBAN WATER AND SANITATION CHALLENGES AND ROLE OF INDIGENEOUS TECHNOLOGIES

The water supply and sanitation in India has increased greatly from 1980 to present. Still, much people lack access to clean water, toilets, and sewage infrastructure. Various government programs at national, state, and community level have brought rapid improvements in sanitation and the drinking water supply. These various programs are ongoing.

More than 90% of the population has access to drinking and 60 % of the population has access basic-sanitation.AndthechallengesfacedbyIndiaurbanwaterandsanitationareasFollow:-

❖ Urban water:- status and challenges

- In India, it ranges from 16 to 300 liters/day depending on the locality and the economic strata.
- Whereas this figure ranges from 100 to 600 liters/day in the developed countries.
- Most of the Indian villages depend upon underground water to meet their urban water demand.
- The daily water supply rate in the developing countries is very low compared to the industrial world
- The problem of water scarcity in urban area of developing countries is a major concern. It is estimated that by 2050, half of India's population will be living in urban areas and will face water problems
- Even as basic access eludes about 8% of urban population, a bigger challenge has been in making access to urban water supply consistent, equitable and sustainable.
- All the villages with pumping locations around the city face steep decline in water table.
- One of the main reasons is the high rate of water losses from the distribution system.
- As per Census 2011, over 71.2% of India's urban house hold shad access to drinking water within their premises; up from 65.4% during Census 2001. Another 20.7% households had a water source within 100 m of their premises. Over 8% of India's urban households need to move beyond 100 m from their premises to access drinking water; this has come down only marginally from the levels of 9.4% of households during Census 2001 and is a cause for concern.

❖ Urban sanitation: status and challenges

- It is one of the major issue in india
- It must also ramp up the waste treatment facilities so that water bodies are not polluted by effluent discharge.
- Urban India has still not been able to eliminate the scourge of open defecation, at Census 2011, over 12.6% of urban households resorted to open defecation. While this is a sharp reduction from the 18% at Census 2001, concerted efforts on a war-footing are required to eliminate open defecation all together.
- In recent years, capital funding from Government of India's Jawaharlal Nehru National Urban Renewal Mission (JnNURM), State-level initiatives and funding from multi-lateral / bi-lateral programs have helped a number of cities to expand their sewerage systems. However, the inability to deal with financing O&M has raised serious questions over long-term sustainability of some of these projects.

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3.11 INITIATIVES IN VILLAGE DEVELOPMENT BY LOCAL SELF-GOVERNMENT

In the past "government as provider" approach, the priorities were to secure budget allocations and develop projects. The Housing Policy and the NCU statement implicitly give higher priority to two other requirements: first, the reform of policies and regulations that now inhibit development initiatives by the people; and second, more efficient resource management and the building of institutional capacity, Resource management and institutional development. As discussed in Section 5, India's urban institutions do not have the capacity to provide adequate services at present, let alone address the requirements of accelerated urban growth in the future. Proposals relate to three types of institutions.

The function of a Government can be categorized into National, State and Local. Local Self Governments are those bodies that look after the administration of a area and small community such as small village, town or a city. These bodies are appointed by the Government representing the local inhabitants, which raises its revenue partially through local taxation and other types of means. The Local Self- Government can be divided into various classes like Corporations, Cities, Town Municipalities and Town Panchayat on the basis of population.

The Panchayat of India is the local bodies working for the welfare of the village. Panchayat is a form of Indian political system which com-bines five neighbouring villages known as "panch". The primary units of administration in Panchayat the gram panchayat members of the Panchayat are known as "panch", who take decisions regarding the disputes among the villagers and villages.

The modern system is based imparts on traditional Panchayati governance, in part on the vision of mahatma Gandhi and in part by the work of various committees to harmonize the highly centralized in Indian governmental administration with a degree of local autonomy the result wasintended to create greater participation in local government by people and more effective implementation of rural development programs.

3.12 SMART INITIATIVES BY DISTRICT MUNICIPAL CORPORATION

The function of a Government can be categorized into National, State and Local.

The primary units of administration in Panchayat shree the gram Panchayat, the members of the Panchayat are known as "panch", who take decisions regarding the disputes among the villagers and villages. According to the Indian Constitution, Panchayat have the authority to work as organizations of self-government. Panchayat is playing a vital role in the administration of the rural areas of India.

City bus service users will now be able to get information on the movement of their buses with the implementation of **Integrated transformation Management System (ITMS).** The system will also lead to a series of other improvements in the city bus service. ITMS was launched in 75 city buses by the **Vadodara Municipal Corporation** (VMC) as a Smart City initiative. In the second phase of the programmed, it will be launched in the remaining 75 buses.

- Submit progress report periodically to state level
- Maintenance of roads
- Encourage Gram Panchayat for taking part in the competition
- Give in principle/administrative approval to works under Smart Village
- Segregation of types of waste while collection
- Publicize and propagate the scheme in the district
- Guide the Gram Panchayat and help it achieve the goals of Smart Village.

Fig. 06:- Smart diagram

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

- **DIGI LOCKER:-**The service was launched as an important facility to store crucial documents like Voter ID Card, Pan Card, BPL Card, Driving License, education certificates, etc. in the cloud.
- **MY GOV. IN:-** The portal works as an online platform to engage citizens in governance through a "Discuss", "Do" and "Disseminate" approach.
- **SWATCH BHARAT MISSION MOBILE APP:-**The app will enable organizations and citizens to access information regarding the cleanliness drive and achieve the goals of the mission.
- **E-HOSPITAL:-**Online Registration System under this initiative enables people to avail services like online registration, payment of fees and appointment, online diagnostic reports, checking on the availability of blood online, etc.
- **CENTRE OF EXCELLENCE ON INTERNET OF THINGS (IOT):-** In partnership with NASSCOM, Deity and ERNET in Bangalore, Centre of Excellence will enable rapid adoption of IOT technology and encourage a new growth strategy. IOT will help the citizens in services like transport system, parking, electricity, waste management, water management and women's safety to create smart cities, smart health services, smart manufacturing and smart agriculture, etc

The Digital India (DI) mission was launched in July, 2015 by our honourable Prime Minister Narendra Modi, with an aim to transform India. DI's goal is to digitally empower society by infusing digital technologies into the public service ecosystem with the use of Information Technology and to make India adept at emerging technologies to transform the country into a leading knowledge economy.

Pradhan Mantri Awas Yojana (**PMAY**) is an initiative by Government of India in which affordable housing will be provided to the urban poor with a target of building 20 million affordable houses by 31 March 2022. It has two components:

Pradhan Mantri Awas Yojana (Urban) (**PMAY-U**) for the urban poor and Pradhan Mantri Awas Yojana (Garmin) (**PMAY-G** and also **PMAY-R**) for the rural poor. This scheme is converged with other schemes to ensure houses have a toilet, Saubhagya Yojana electricity connection, Ujjwal Yojana LPG gas

connection, access to drinking water and Jan Dhan banking facilities, etc. Total 88 lakhs houses are approved against total demand of 1.12Cr as of 29 Aug 2019.

The Government of India launched the Shyama Prasad Mukherji Rurban Mission (SPMRM) in 2016, with the objective to spur social, economic and infrastructural development in rural areas. The mission aims at making villages smart and growth centers of the nation. In its first phase, it targeted to develop a cluster of 300 Smart Villages over the next three years across the country. *Sansad Adarsh Gram Yojana*, which envisages integrated development of selected villages was another step taken by government in this direction.

Ayushman Bharat is National Health Protection Scheme, which will cover over 10 crore poor and vulnerable families (approximately 50 crore beneficiaries) providing coverage up to 5 lakh rupees per family per year for secondary and tertiary care hospitalization

While the government-led initiatives rely on integration and convergence of the existing central and state government schemes to develop these Smart Villages or clusters, the CSR initiatives are generally more innovative in terms of implementation and use of technologies. For example, smartphone-maker Nokia has launched a Smartpur project which aims to create a sustainable ecosystem where community members can leverage digital tools to bring efficiency in daily lives. It aims to bring transparency in governance, economic prosperity for households and ease of access to various government services and information.

Tata Trusts supports agriculture intervention for tribal communities under its Lakhpati Kisan – Smart Villages program. While these CSR or philanthropic institutions do work closely with government institutions, their model of engagement and the partnership with the government vary significantly.

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3.14 How to implement other Countries smart villages projects in Indian village context

Similar to Vishwakarma Yojana, Students of engineering colleges can be given chance to visit foreign countries' smart villages and survey and study it properly as they study the smart villages of Gujarat. Than with the help of other government or private engineers, one can implement other countries smart village projects in Indian villages.

This Plan gives the detailed development of the village by providing different facilities in unlike categories such as Physical infrastructure (Water tank, Road etc.), Social infrastructure (Health, Community Hall, and other) and Sustainable Infrastructure (Biogas, Solar Street Light and Other).

The help of the rural people to progress with urban people, generally people living in the villages are working as farmer in major, so their living standard is not leveled to the urban ones. So, a villager migrates to city for money purposed as well as for their own personal progress. By providing such amenity in the village, it will lead as a helping hand in resisting migration of people. Also increase the living standard of the village people.

4: Allocated Village

4.1: Introduction

4.1.1 Introduction about village

Motidau is a large village is located in Mehsana District & Sub-district and Gujarat state in India, it is situated 14KM away from Mehsana and 66 KM from State capital Gandhinagar. As per census 2011 the pin code of motidau village is 384310 and postal head office is Valam. Mehsana, Unjha, Visnagar, Sidhpur are the nearby Cities to Motidau.

Motidau is a village with a gram panchayat, as per constitution of India and Panchayati Raaj Act; Motidau village is administrated by Sarpanch (Head of Village) who is elected representative of village. As per 2019 stats, Motidau village comes under Becharaji assembly & Mehsana parliamentary constituency.

As per census 2011 Motidau village Local Language is Gujarati. Motidau Village Total population is 4986, male 2576, female 2410 and number of houses are 1035.

Fig. 07:- Motidau village map

4.1.2 Need of study

Vishwakarma Yojana is one of the initiatives towards Rurbanization by Government of Gujarat, which was allotted as a pilot project to GTU. The students and Faculty Members meet all the stake holders in a village, survey the existing facilities. Then they re-imagine and re-design the whole of the infrastructure of the village. The students use their engineering skills to prepare detailed project reports for the infrastructure as a part of their Final Year project work.

❖ **To provide the basic requirement and need of people in the Motidau village such as:**

- Education Facilities.
- Creation of basic social and economic infrastructure
- Provision of training to rural unemployed youth
- Providing employment to marginal Farmers/Laborers.
- Transportation Facilities.
- Primary Health Centre.
- Community hall and other amenities.
- Need bus stand in village and also on SH 41 highway.

4.1.3 Study area

Motidau is a large village is located in Mehsana District & Sub-district and Gujarat state in India, it is situated 14KM away from Mehsana and 66 KM from State capital Gandhinagar. As per census 2011 the pin code of motidau village is 384310 and postal head office is Valam. Mehsana, Unjha, Visnagar, Sidhpur are the nearby Cities to Motidau.

Bamosana (2 KM) , Bhandu (2 KM) , Vadu (3 KM) , Piludra (4 KM) , Taleti (5 KM) are the nearby Villages to Motidau. Motidau is surrounded by Unjha Taluka towards North, Mehsana Taluka towards South, Chanasma Taluka towards west, Visnagar Taluka towards East.

4.1.4 Objectives of study

- The main objective of the Vishwakarma Yojana is Rurbanization the village, provide clean and pollution free atmosphere for the villagers, to give comfortable and productive facilities, etc. The basic three objectives of the Vishwakarma Yojana are to provide pure drinking water, efficient drainage in the village, proper road connectivity.
- We will provide the creation of infrastructure-connectivity, civic & social infrastructure along with provision of different economy generation is the key pillars that the concept hinges on.
- Basic physical infrastructure- water supply, transport, sewage and solid waste management should be the main concern focus and be provided.
- Basic social infrastructure- health and infrastructure facilities should be provided and ensure proper delivery of facilities to village dwellers.
- To get insight in to the socio-economic and cultural realities of rural life, the main objective of the study is to prepare the planning proposals for development of village Motidau.
- To reduce migration of people.
- To promote integrated development.
- To provide sustainable development.

4.1.5 Scope of study

In VISHWAKARMA YOJANA village will be developed as per criteria of ideal village. Different villages of the Gujarat are given as the study area to the different groups of the institutes affiliated to GTU. The study may lead to improvise the scope of region in various fronts. Improve the physical infrastructural facilities, social infrastructural facilities such as public latrine blocks and garden. The study will focus the development trend, intensity of growth of the village, and find out the problems related to the physical development of the area and infrastructure services of the village. Project proposal and sustainability aspect not consider in micro level, it is only guide way. The study focused to only village Motidau.

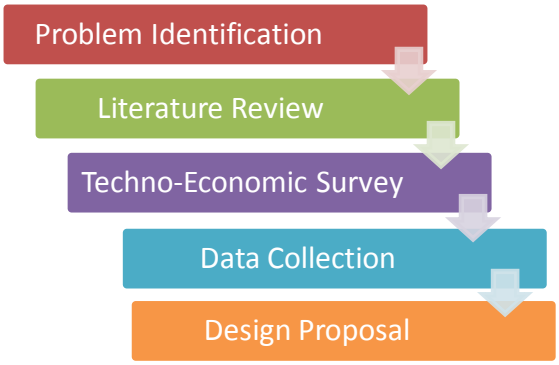
4.1.6 Methodology for development

To achieve the aim of development of village Motidau, following methodology is adopted. Work is divided in various stages and detailed flow chart for study methodology is shown below.

- **Methodology Implementation:-** The techno-economic survey of villages has been conducted in different districts of the Gujarat state in terms of basic and public amenities, other infrastructural facilities.

➢ The project had been divided into some parts:

- Problem Identification
- Literature Review
- Techno-Economic Survey
- Data Collection
- Design Proposal



❖ **Techno-Economic Survey:-** Collected all essential information from village such as: Household data, Occupational detail, Water facilities, Drainage facilities, Sanitation availability, Storm water network, Solid waste Management facilities, Electricity Networks, Recreation facilities, Education facilities, Health Facilities, Transportation facilities, Road network, Irrigation system, Use of nonconventional energy sources, Migration rate, Literacy rate and otherwise necessary data.

4.2 Study area profile

4.2.1 Study area with brief

Motidau is a large village is located in Mehsana District & Sub-district and Gujarat state in India, it is situated 14KM away from Mehsana and 66 KM from State capital Gandhinagar. As per census 2011 the pin code of motidau village is 384310 and postal head office is Valam. Mehsana, Unjha, Visnagar, Sidhpur are the nearby Cities to Motidau.

4.2.2 Base Map

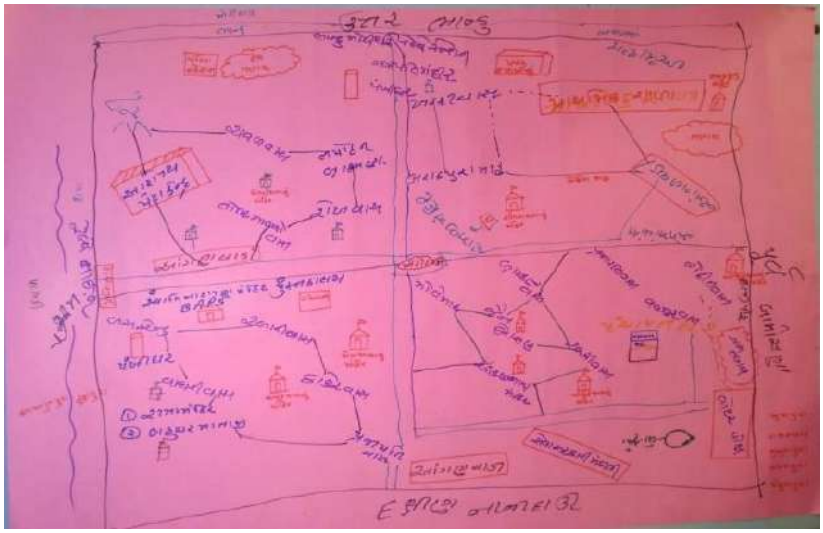


Fig. 08:- Base map Motidau

4.2.3 Physical & Demographical growth

Motidau village has higher literacy rate compared to Gujarat. In 2011, literacy rate of Motidau village was 84.88 % compared to 78.03 % of Gujarat. Motidau Village Total population is 4986 and number of houses are 1035. Female Population is 48.3%. Village literacy rate is 73.9% and the Female Literacy rate is 32.1%.

4.2.4 Economic profile

About the economic profile of this village, many citizens works interest is farming, dairy udhyog and labor work. The village doesn't have any better facilities regarding infrastructure but has good electrification system which distributed 24*7 hours for domestic use and 10 hours for agricultural use. Dairy and milk production is also work proper building and trust member on dairy Mandali. Farming was good income source for the villagers.

4.2.5 Problem faced by villagers

- Poor condition of PHC (Public Health Center),
- Poor Drainage condition,
- Government transportation facilities is poor & also bus stand condition is poor,
- Village also faced a solid waste management problem,
- Poor network connection
- Banking Financial problem

4.2.6 Social Scenario

The village lives under the influence of the Sarpanch ***Gangarambhai Adhiyol***. The most of the people in the village are farmers. Other than farming, people of village works in the industries on wage. Motidau village, people are not knowing about that basic facility provide by government.

- Also in the village basic crop are grown are Wheat, cotton and castor,
- Village people are not that much connected with technology and digitalization,
- People basic income is connected with their agriculture product value and industrial area,
- People are also connected with another village and stay connected with culture,
- People are belonging to Hindu religion and celebrate all Hindu festival with good spirit like Diwali, Navaratri, New Year, Holi etc.

4.2.7 Migration Reason

➢ Reasons of Migration are below:

- Due to improper health Facilities in the village.
- Not higher education available in the village but near in Bhandu Village
- For employment opportunities people are also migrate from village.
- To improve standard of living.
- Lack of basic Facilities.

4.3Data collection

4.3.1 Data collection method

The data are collected from the Villagers, Sarpanch, and Gram-Panchayat member, School Teachers, PHC staff and farmers.

❖ The tools used for collecting data in rural are as follows:-

- Rural survey
- Village survey
- Observation
- Interview
- Structured schedule
- Case studies
- Historical approach.

4.3.2 Primary details of survey

❖ Primary Details of Survey Include the raw data required like:-

- Land Map
- Census Details
- Infrastructure Details
- Geographical Details
- Need of villagers

The village is situated in the Mehsana District, Mehsana Taluka. The co-ordinates of the village are latitude 23.6832° Nand longitude 72.4007° E. The village is located near Ahmadabad-Mehsana Highway (SH-41). The nearest town to the Motidau village is Mehsana. It is 17 km from the village.

4.3.3 Average size of house

The average house size is4.0 x 6.0 and is it 2 floors (1st Ground, 2nd first floor). Height 20 feet.

4.3.4 No of human being in house

Total No. of house hold in Motidau village are 1800 Total population in village is 4989. 4-5 average human being in one house.

4.3.5 Material availability

There are 1035 house hold in the village out of them 90% of the houses are Pucca houses. Pucca houses are mostly made of Beam and Column type structure with Reinforced Cement Concrete Slab, Very less 10% amount of house are Kachha house which may be made up of stones and bricks.

4.3.6 Geographical details

❖ **Geographical detail of Motidau village is follows:-**

Sr No.	Description	Information / Details
1.	**Area of Villages (Approx) (In Hector)**	1542.16 Hector
2.	**Forest Area**	-
3.	**Agricultural Land (In Hector)**	1259.38 Hector
4.	**Residential Area**	282.78 Hector
5.	**Other Area (In Hector)**	1259.38 Hector
6.	**Nearest Railway Station (In Km)**	Bhandu – Motidau Rail Station (1 KM)
7.	**Nearest Town With Distance**	Mehsana 12 KM
8.	**Nearest Bus Station**	Mehsana 12 KM
9.	**Road Connectivity**	Yes

Table: 10:- Geographical Detail of Motidau

4.3.7 Demographical details

Sr. No.	Census Parameter (2011)	Census Data
1.	**Total Population**	4986
2.	**Total No of Houses**	1035
3.	**Female Population %**	48.3 % (2410)
4.	**Total Literacy rate %**	73.9 % (3683)
5.	**Female Literacy rate**	32.1 % (1599)
6.	**Scheduled Tribes Population %**	0.2 % (11)
7.	**Scheduled Caste Population %**	10.3 % (516)
8.	**Working Population %**	47.7 %
9.	**Child(0 -6) Population by 2011**	647
10.	**Girl Child(0 -6) Population % by 2011**	45.1 % (292)

Table: 11:- Demographical Detail of Motidau

4.3.8 Occupations details

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

In Motidau village farming is the biggest occupation, after the people are business in dairy Udhyog.

4.3.9 Agriculture details

Major crops grown in the village	1. Wheat
	2. Cotton
	3. Millet

Table: 12:- Occupations & Agriculture

Farmer grows crops which are mainly consumed by Animals and are used in Animal Hus-bandry. These include grains like Wheat, cotton castor etc.

4.3.10 Physical facilities

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

Table: 13:- Physical facilities

4.3.11 Tourism development

No tourism facilities in this village.

4.4 Infrastructure Details

4.4.1 Drinking water

For drinking Purpose one Over Head water tank and Sump is available. 3 lac lit Overhead and 2 lac lit underground sump elevated water tank is available. Villagers we get to know they are getting water once in 3 to 5 days. Not available hand pumps in village.


Fig. 09:- ESR (Overhead tank)

4.4.2 Drainage Facilities

Village is having closed Drainage Lines and the condition of Drainage is medium. Drainage system in village is Pucca. 90% of village is covered under drainage system. The drain water disposed in to the pond so there is need proper disposals facility in the village. The village is not having any facilities for solid waste management.

4.4.3 Transportation & road network


Fig. 10:- Village gate


Fig. 11:- Road in Motidau village

The Patan– Ahmedabad state highway passes along the village. The approach road of village is made of bituminous road and internal streets roads across the village are also made of R.C.C.

❖ Pickup stand Facilities

The condition of the bus stand in the village is a poor and the rail station is re-built construction on.

Fig. 12:- Pickup stand and Railway station of Motidau village

4.4.4 Housing condition

Village house are made of basic component like brick, cement, sand etc. The Pucca house is 90% And Kuchha house is 10%. Condition of house is well maintained and properly constructed in line. House have basic facility like water supply tap, own toilet, clean house, electricity line etc.


Fig. 13:- Houses

4.4.5 Social infrastructure facilities

❖ Health Facilities:-

There is no PHC Centre available in Motidau village. But private health centre is available.

❖ Education system:-

There is 2 Anganwadi in the village and 1 primary school for the primary and higher secondary study. The engineering collage are available near the village, it is approximately 4-5 km away from this village.

❖ **Community Hall**

In the Motidau village there is no facility for the community hall.


Fig. 14:- Health Center & Primary school


Fig. 15:-BAL-Mandir & Anganwadi

4.4.6 Public building and Public Infrastructures

In village existing public building like panchayat building, schools are in medium condition and they are few years no required maintenance. Anganwadi required maintenance, PHC not available in motidau village, Post-office service very poor.

With Talati

With Village Enterpenure

Fig. 16:- Public building

4.4.7 Technology Mobile / Wi-Fi / Internet Usage

In motidau village around 60% people use smart phone, among which around 30% use a normal phone. Youth of Village have knowledge of internet & digital life and their usages, but some time and some network is slow in village

4.4.8 Sports Activity as Gram Panchayat

No activity of sports is conducted by gram Panchayat but School Conduct Sport Activities during a sport weak or any function.

4.4.9 Socio-culture facilities

- **Public Library:** Public Library condition is very poor in the village.
- **Public Garden:** There is no proper Public Garden in the village.
- **Village Pond:** There is two pond or lake in the village.
- **Community Hall:** There is no community Hall in the village.
- **Irrigation Canal:** Water Canal is Available for Agricultural Purpose
- **Temples:** In village at Present 4 temples are available.

Fig. 17:- Library & Swaminarayan Temple

4.4.10 Other Facilities

In village at Present 4 temples are available.
Has a bank facilites and it is Axis Bank, but the bank is close soon according to the report.
In this village a plant factory is avialable for work.


Fig. 18:- Temple and Plant Factory

4.5 Electrical Concept

4.5.1 Energy Source & Electrical Concept

There has no renewable energy source.

Electricity in village comes from the nearest Village or City, and available 24 hours a day for domestic and 10 hours for agriculture.

4.6 Detail Profile

4.6.1 Bachat Mandali

Village has no Bachat Mandali.

4.6.2DudhMandali

There has a Dudh Mandali. All people collect milk from direct seller.

Fig. 19:- Dudh Mandali

4.6.3 Mahila Mandal

There has a one Group of Mahila Mandal and the management is good.

4.6.4 Water Harvesting

The rain water falling in the village flows from the sewage to and collect in the Lake of village.

4.6.5 Agricultural

In The village is well cultivated and the crop is good.

4.6.6 Financial Facilities (Bank)

Has a bank facilites and it is Axis Bank, but the bank is close soon according to the report.

Axis Bank

4.6.7 Any other Details

Village has medium mobile network connectivity and no WI-FI facility available. Villagers Need to batter mobile network.

Public Library condition is very poor in the village.

No activity of sports is conducted by gram Panchayat

Gram Panchayat

School (Primary Division)

Agricultural Area

Forest Area

Fig. 20: Other Photograph (Bank, Gram Panchayat, School, Land Areas)

5: SUSTAINABLE TECHNICAL OPTION WITH CASE STUDY: - TRANSPORTATION SYSTEM

5.1 Concept

5.1.1 Sustainable Transportation/System

Introduction:

Transportation infrastructure, as a complex network, connects cities and accommodates human activities coupling the social, economic and environmental systems with the urbanization and population growth. Additionally, the transportation network contributes to the socioeconomic development and the increased quality of life through generating inter- or intra-city connections during urbanization in addition, goals such as low-carbon, resilient and sustainable development should not be ignored. When the transportation network is expanded. In detail, transportation infrastructure among cities leads to urban aggregation and diffusion, greatly boosting the regional and national economic development. However, the irrational planning of transportation infrastructure also generates negative effects, such as the ecological destruction, increased traffic accidents, climate change, CO_2 emissions and lower transport efficiency. Therefore, it is necessary to identify multiple impacts of transportation infrastructure from existing studies.

Abstract:

Transportation infrastructure has an enormous impact on sustainable development. To identify multiple impacts of transportation infrastructure and show emerging trends and challenges, this paper presents a scientometric review based on 2543 published articles from 2000 to 2017 through co-author, co-occurring and co-citation analysis. In addition, the hierarchy of key concepts was analysed to show emerging research objects, methods and levels according to the clustering information, which includes title, keyword and abstract. The results expressed by visual graphs compared high-impact authors, collaborative relationships among institutions in developed and developing countries. In addition, representative research issues related to the economy, society and environment were identified such as cost overrun, spatial economy, prioritizing structure, local development and land value. Additionally, two future directions, integrated research of various effects and structure analysis of transportation network, are recommended. The findings of this study provide researchers and practitioners with an in-depth understanding of transportation infrastructure's impacts on sustainable development by visual expression.

Road safety has become a global issue of concern and concerted efforts need to be initiated at the ground level to avoid the thousands of lives being lost in road crashes around the world. Considering Road Safety as an area of immediate concern around the world, the United Nations (UN) has declared Decade 2010-2020 as the Decade of Action for Road Safety. The International Road Federation (IRF) has also taken many initiatives towards road safety, such as the development of the Road Accident Data Recorder (RADAR) which will help in the systematic storage of data and scientific analysis of accidents.

❖ STREET REVIVAL

❖ Background

The City of Victoria, British Columbia, created a plan to "promote a green, clean, walk able and safe city." The plan aims to promote alternate modes of transportation, improve mobility in the centre of the city, and reduce motor vehicle pollution. Fort Street is one of three key streets in the city's bikeway network. Improving Fort Street for cycle traffic would help improve the bikeway network as well. Cycling, an excellent alternative to driving is already the fastest growing mode of transportation in the city. Cycling could represent 1/5th, or 20%, of commuter trips in Victoria by 2026.

❖ The Problem

The city made changes in four key areas:

1. Improved bicycle safety: Creating a dedicated bike lane increased the safety of cyclists along this key bike travel route.

2. Improved pedestrian safety: Pedestrian safety was improved at a signal crosswalk at Fern Street by creating a centre refuge island. Creating boulevards where possible, the city separated pedestrians from vehicle traffic. Bike lanes also buffered pedestrians from cars.

3. Reduced vehicle speeds: Landscaped medians and fewer vehicle lanes means slower traffic speeds. Adding centre medians and making lanes less wide reduces collisions and vehicle speed.

4. Changes to street parking: Congestion was reduced by removing limited evening parking on one side of the street. Time limited parking on both sides of Fort Street was kept to help nearby businesses.

❖ The Solution

Through a public planning process, citizens had opportunities to hear proposed plans, provide input and ideas, and ensure that many different views were heard. Inclusive and open processes invite authentic and meaningful conversation and participation by citizens. With citizens' groups assisting in promoting and reviewing new plans, solid input from residents was available to city planners, making new developments more reflective of the growing needs of the city.

❖ Challenges and Future Possibilities

The City of Victoria is growing and changing. As it does, new initiatives come up and changes are required. Fort Street changes shown here represent the best available resource sat the time. In New York, a recent change along 9th Avenue that includes separated cycle paths has increased the number of cyclists and reduced collisions by 40%. The City of Vancouver introduced a separated bicycle lane on the Burred Street Bridge in July 2009, which led to a30% increase in bike traffic. Separated bicycle lanes may become the norm for all cities someday. Groups such as the Greater Victoria Cycling Coalition and Capital Bike and Walk in Victoria provide cyclists with newsletters on bike culture and celebrate the fun and inspiring aspects of bicycle travel. The send other groups also provide useful information for city planners on bicycle needs, safe tying other concerns.

❖ GETTING CHARGED ABOUT ELECTRIC

❖ Background

Electric cars got their start more than 100 years ago in Europe. At first, they were more popular than gasoline-powered cars. They became less popular as gasoline became cheaper and more available. The first big manufacturer of electric cars in North America was General Motors. These cars lasted a short time and became the subject of the popular movie, Who Killed the Electric Car?

In the last decade, large steps have been made in electric car development. Now all major car manufacturers have launched or plan to launch prototype cars. The success of Toyota's Prius (which combines electric and gas in a hybrid vehicle) has increased interest in more fully electric cars, called Plug In Hybrid Electric Vehicles (PHEV). Many car companies are now moving to fully electric cars.

Examples include Nissan's LEAF, Mitsubishi's iMieV, Ford's Focus BEV, and Thinks' City, which all reach highway speeds of 100 kilometres per hour. The world's most popular electric car-REVAi or G-wiz reaches speeds of 80 km per hour. Low speed vehicles such as ZENN (Zero Emissions No Noise) and IT (Dynasty) offer more affordable cars that reach speeds of 40 to 55km per hour. Drivers of electric vehicles avoid the cost of gasoline, which isexpected to continue rising. People like the energy efficiency, extremely low maintenance costs, and very small carbon footprint of electric vehicles. Electric vans are also becoming popular in cities as away to ship goods from depots to stores.

❖ The Problem

The largest challenge with electric cars is their batteries. Electric vehicles require many batteries and are sensitive to temperature changes. The batteries can overheat and do not do well in cold temperatures for very long.

- **Battery recharge time:** Batteries need to be recharged regularly, which can take several hours. A group of MIT students hopes to help design technology that recharges an electric car battery in ten minutes (see link below) by late 2010. The students have volunteered many hours to support this project.
- **Weight, lifespan, toxics and popularity:** Batteries weigh a lot and need to be replaced often. Finding ways to store power at lower costs and with less toxic chemicals would help make electric vehicles more desirable. For shipping companies that want to reduce greenhouse gas emissions, lower cost and increased availability will make electrical vehicles a better choice for moving goods in and out of cities.
- **Electric stations replacing gas stations:** As more electric vehicles are built, cities, towns and regional districts will need to help create more stations for recharging vehicle batteries. This will require effort in many parts of the world.

The other big challenge is ensuring that the source of electricity itself does not create problems. For example, electricity can come from coal-powered power plants or from renewable sources such as hydro, wind and solar.

❖ The Solution

- **Better than Batteries:** A company called EE Store is working to replace batteries with simple electric device called a *Capacitor*. This device has a low weight and stores an incredible amount of electricity

in a small space. It recharges in a few minutes without the use of hazardous materials and doesn't need frequent replacement.

- **Helping create Electric Stations:** The City of Vancouver has begun installation of several public electric car-charging stations. One out of five new condominium parking stalls now has to include the equipment needed to recharge electric vehicles. These changes will help support city use of electric vehicles like the Mitsubishi iMieV.
- **Shipping Goods with Hybrid and Electric Vans:** The City of Stockholm, Sweden, participated in the ELCIDIS project that promotes electric and hybrid-electric vans for urban goods delivery. Nine new vehicles were introduced to replace diesel trucks travelling downtown. The plan is to replace all of the noisy and polluting heavy diesel trucks with electric hybrid trucks to reduce emissions in the city centre.

❖ Challenges and Future Possibilities

If capacitors replace batteries it could revolutionize the use of electric cars for transportation of goods and for travel. Gas stations may become less common and public electric-car charging stations more common. When electric vehicles are powered by renewable energy, the result is nearly zero emission transportation. To help demonstrate the potential of electric vehicles and promote renewable energy, the Pembina Institute is partnering with Recharge. Recharge is a campaign to cross Canada in an electric car that only recharges with renewable energy (see link below). Electric vehicles will continue providing transportation alternatives where traditional fossil fuel vehicles add to air pollution and emissions.

❖ CONGESTION IN INDIAN CITIES AND POLICY RESPONSES

As per the 2011 census, India's urban population has grown from 290 million in 2001, to 377 million in 2011, and accounts for over 30% of India's total population. Rapid urbanization has come with several problems, including increased congestion. Policies are now committed to the development of urban infrastructure. In particular, India is passing through the same phase of early urbanization which has already occurred in countries like Japan, Republic of Korea, and Singapore.

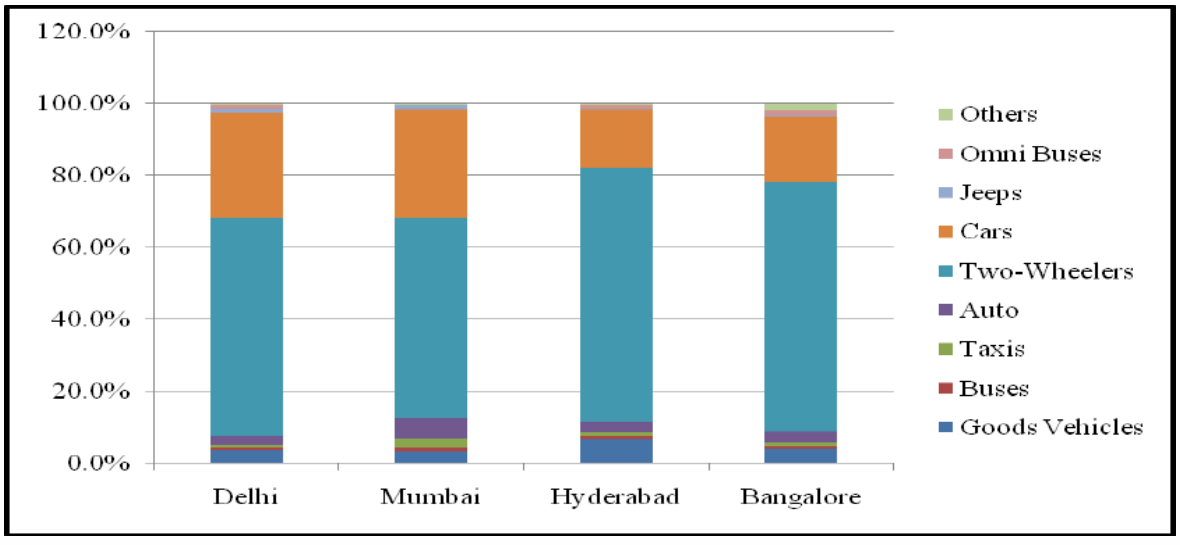


Fig. 21:- Share of Types of Motorised Vehicles in 2011

The growth scenario in Indian cities is not commensurate with the conditions for sustainable transport. The per capita trip rate for all modes of transport is expected to increase from 0.8%-1.55% in 2007 to 1%-2% by 2030 (Planning Commission, 2011). Moreover, the share of public transport is also expected to decrease as there is a likely decrease in the speed flow of public transport from 26-17 km/h to 8-6 km/h during the same period (Planning Commission, 2011). Figure shows the city-wise ownership of motorised vehicles.

❖ BATTER INTEGRATED URBAN PLANNING

Currently, urban transport policies are regulated by city municipalities in the country. At the national level, the Government of India's Jawaharlal Nehru National Urban Renewal Mission (JNNURM) mandated to transform urban areas, particularly urban transport. To get funds under this programme, states and municipalities are required to adopt specific reforms in urban development policies, which relate to the management of funds and adoption of new regulations pertaining to urban land ceiling and public discourse law, etc.

❖ Promotion of Public Transport

The Working Group on Urban Transport for 12th Plan period recognizes the important of public transport. In India, metro rail transport is already in operation in cities like New Delhi and Bangalore. The same facilities are also underway in other major cities like Mumbai, Chennai, Hyderabad, Jaipur and Kolkata.

❖ Fuel Subsidies

The deregulation of prices of fuel to cut subsidy remains an important issue in public discourse in India. To this effect, the Government of India recently partially deregulated fuel prices. Oil companies have been permitted to raise prices of fuel for retail. However, the use of diesel for both goods and passenger transportation (private cars) are not differentiated under this policy. This implies that both types of users are paying the same price. The impact of partial deregulation of fuel prices on demand side management of travel demand by diesel cars has yet to be studied. The difference between the prices of diesel and petrol remains an important attraction for diesel cars (in addition to efficiency of diesel cars over petrol cars).

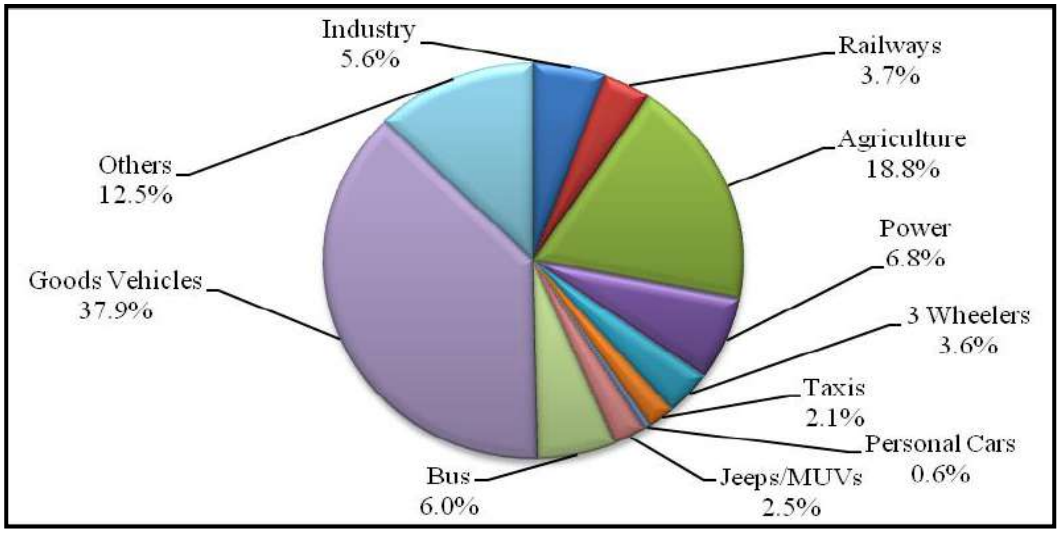


Fig. 22:- Sectorial Consumption of Fuel

❖ Driver Education and Road Safety

Both large and small cities in India have poor safety standards due to poor driving behaviour, inadequate driving education and poor standard of driving tests. As a result, India has around 1% of the total vehicles in the world but accounts for 18% of the world's road deaths.9 As per a national daily, every sixth accident in the world happens in India.10 In the year 2010, total death by road accidents in India was estimated to be .23 million out of 1.24 million in the world.11 According to a Delhi Traffic Police survey, majority of drunk drivers are educated, young and familiar with traffic rules.

However, their behaviour while driving is irresponsible. The survey found that more than 85% of drivers were car drivers.12 this is again a serious concern for urban safety, as these drivers are well aware of driving norms but are negligent when it comes to following such norms. On roads in Indian cities (both major and small cities), drivers of private cars are generally car owners under the age of 40. Regulation of such drivers on roads needs the strict enforcement of laws.

Driving education manuals are presently related to traffic manuals. More comprehensive manuals for drivers' education, which can also encompass social and environmental impacts of road transport, need to be developed. At municipal and institutional levels, training programmes are being carried out. These programmes require manuals for both municipal as well as state levels. The traffic guidelines for car drivers by Delhi Traffic Police make no mention about issues such as congestion, pollution, etc.

❖ More Effective Parking Policies

Parking policy is featured in the National Urban Transport Policy (NUTP) and JNNURM programme. The NUTP clearly spells out the need for high parking fees, which represents the land value. In addition, the policy also calls for encouraging parking places to catalyse the use of public transport through connectivity with urban mass transit systems. JNNURM has also linked its financing with availability of adequate parking. The programme advocates provision of parking lots through public private partnerships.

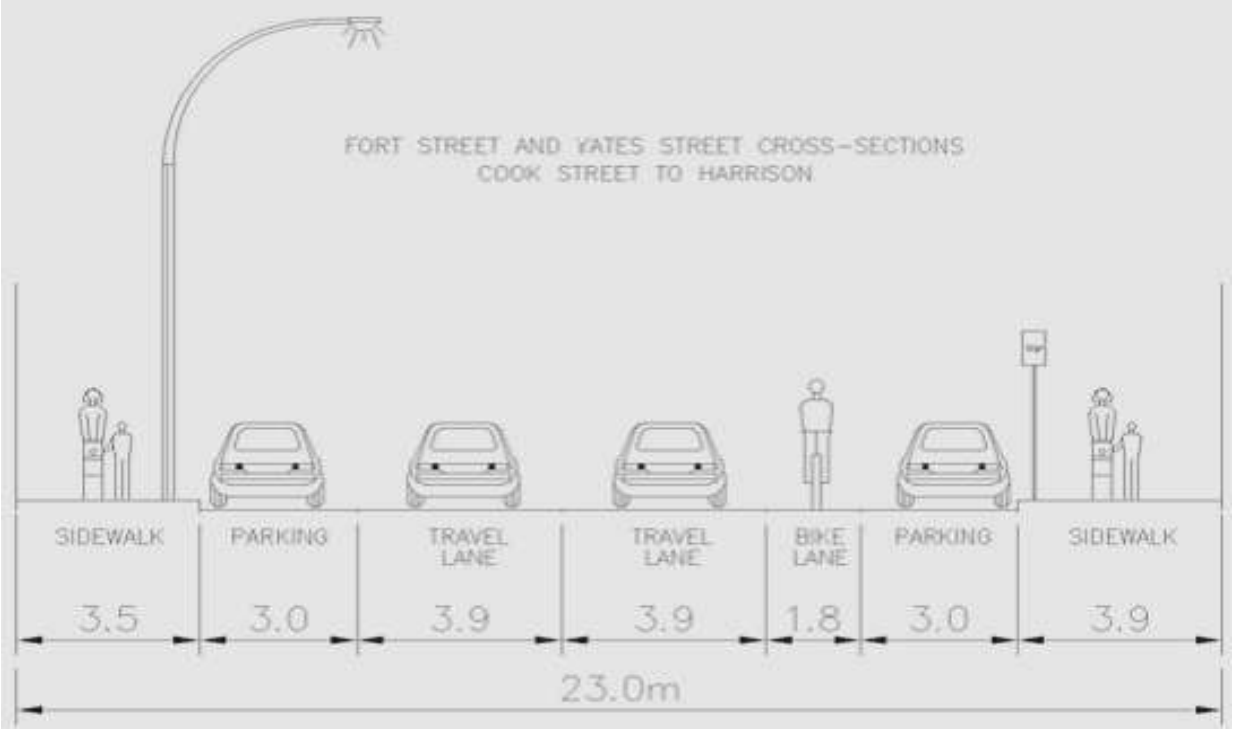
However, parking policy is generally not seen as an important instrument for decongesting cities. In Delhi, the Environmental Policy (Prevention and Control) Authority has submitted a report in 2004 indicating that there is an urgent need for an exclusive parking policy to manage travel demand. Even the Supreme Court of India directed the government of National Capital Territory of Delhi to have an action plan for parking policy in 2005. At that time, recommendations were made by the government, and in 2006 the recommendation on increases in parking charges was accepted by the Supreme Court as well.

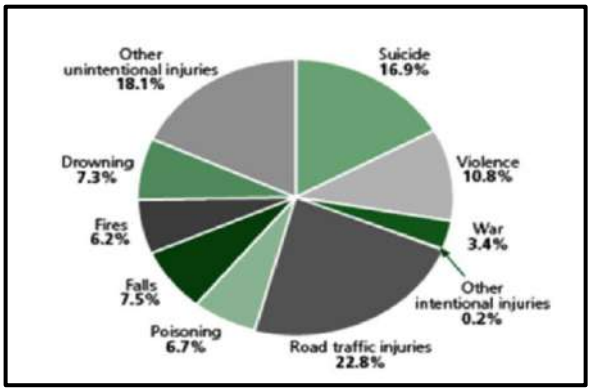
Increasing parking charges is not the only remedy for congestion. The evolving nature of parking policy has an impact on reducing travel demand in Delhi, but it is one of the least effective measures which is not able to control the rising demand for private car travel in the city. A report of Centre for Science and Environment on parking in Delhi shows that while the transportation reform agenda under JNNURM has a mandate to fund urban renewal projects including parking projects, the National Urban Transport Policy (NUTP) states that urban agglomerations must have parking areas built on the basis of public-private partnerships. Under NUTP, state governments are directed toward building bye-laws in all cities which have a population of more than 1 million. This is adopted to make available adequate parking space for all residents. The two important aspects of NUTP and JNNURM have different perspectives, in that "the floor area ratio (FAR) laws are made more liberal and multi-level parking is made mandatory in cities" (CSE, 2012)

❖ ENGINEERING ASPECTS OF SAFE ROAD INFRASTRUCTURE DESIGN

In this regard, the role of engineers is paramount to ensuring roads are as safe as possible. From an engineering perspective, road safety can be enhanced by Highway Engineers into various stages of road projects, as follows.

- **Planning Stage** - through land use control policies; providing by-passes for congested towns and linking them by spurs; and creating Self Contained zones to avoid nonessential traffic in the neighbourhood.
- **Design Stage** - designing "Self Explaining Roads" and "Forgiving Road Side" by selecting the most desirable design standards (and NOT the minimum standards) involving:
  1. Design speed
  2. Horizontal and vertical geometry
  3. Cross-sectional elements
  4. Design of at-grade and grade separated junctions
  5. Provision of service roads for segregation of slow and fast traffic
  6. Designing effective road furniture.
- **Construction Stage** - Proper separation of the construction zone through effective barricading; construction of proper traffic diversions; provision of road signage; environmental controls for reducing noise, dust, etc.
- **Maintenance and Operation Stage** - providing an Automated Traffic Management System (ATMS) for safe operation of Traffic and Incident Management. This includes providing Mobile Communication Systems, Variable Message Signs, Weigh-in-Motion System, and Central Control Room.





World-wide Cause of Injuries

Speed Camera/Radar (Speed Control)

Forgiving Road Side Treatment

Recovery Zone (Hard Shoulder)

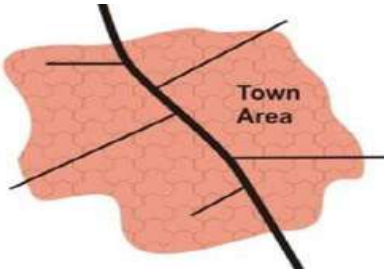
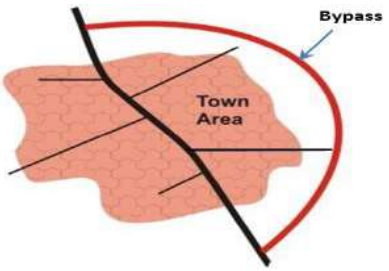
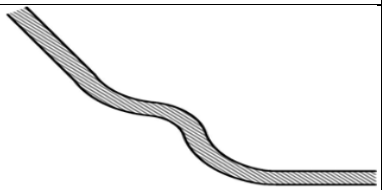
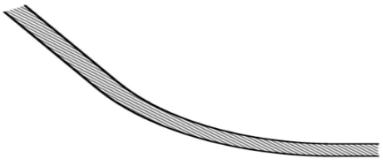
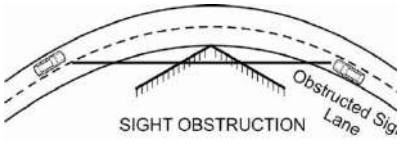
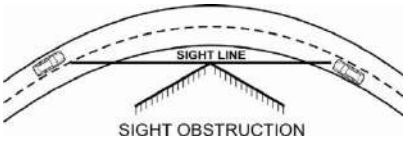
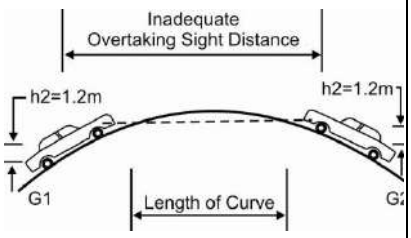
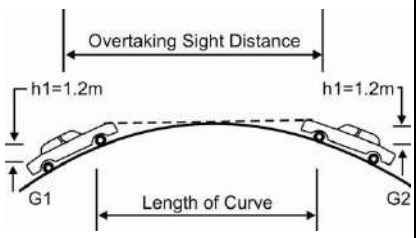
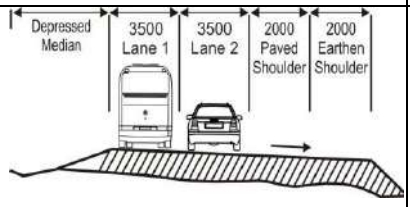
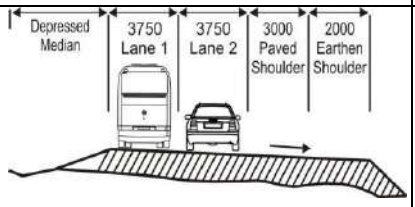
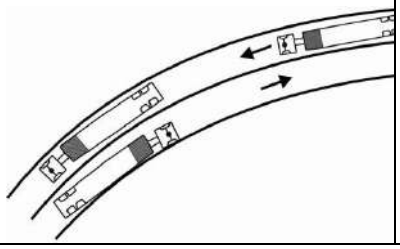
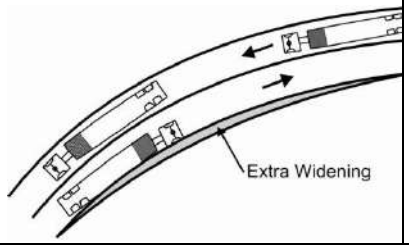
Recoverable Fill Slope

Rock Face Cutting (Shielded with Safety Barrier)

Roundabout

Grade Separation at Bust Intersection

Figures 23:- Good Practices of Safe Road Infrastructure Designs

Design/ Planning Element	Undesirable	Desirable	Principleapplied
Alignment Selection and Land Use			Major arterialsand expressways should bypass major towns which should be connected by spurs. There shouldbe clear zones identified for linear land use control
Horizontal Geometry			Consistency of horizontalgeometry avoiding monotonousstraight lines or abrupt change of speed.
Horizontal Geometry			Adequate off-set distance from natural road side features.
Vertical Geometry			Undivided Carriageways designed for desirable Overtaking Sight Distance (OSD)
Cross- sectionalElements			Wider lane widths and shoulders forhigh speed roads
Cross-sectional Elements			Inside widening for sharp curves

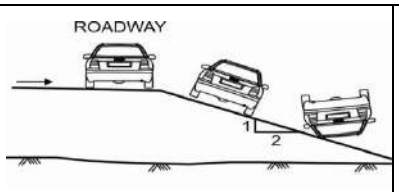
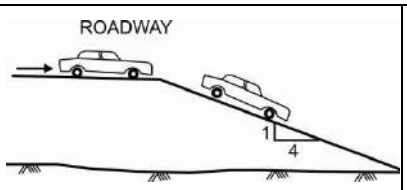
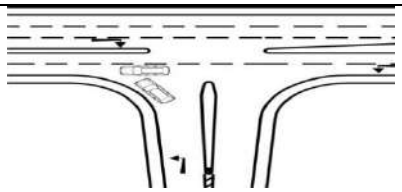
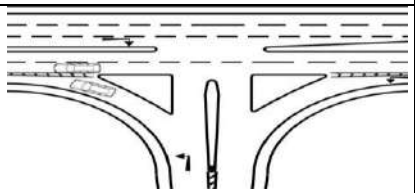
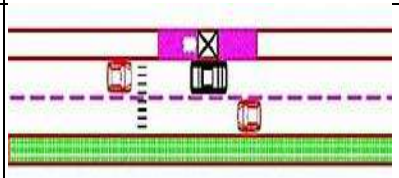
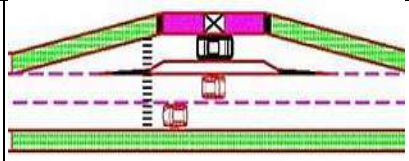
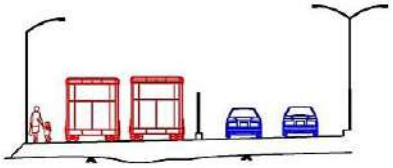
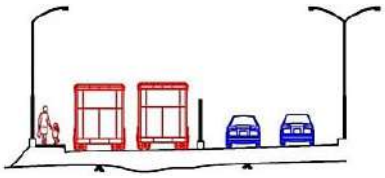
Cross-sectional Elements			Recoverable slopes for outof control vehicles
Entry/ Exit			Entry Exit only through slip lanes withproper acceleration and deceleration lanes
Passenger Transit			Separate Laybye for busesand taxis to facilitate segregation and improve visibility
Pedestrian Facilities inUrban Areas			Provision of raised footpath for pedestrians inUrban Areas
Barriers			Barriers should be designed todeflect the vehicle andnot crash it.
Road Signs			The road signs should be standardized throughout the country
Traffic Calming			Properly designed traffic calming devices like speed humps, rumble strips, small roundabouts

Table: 14:- Design and Planning Elements of Transportations

❖ CONCLUSIONS

The road fatality trajectory is going up alarmingly around the world. Following the example of developed countries, where road fatalities through infrastructure safety and other educational and enforcement programs have drastically reduced the number of accidents, developing countries need to put in place a good regime of Safe Road Infrastructure Design to improve road safety scenario and reduce road casualties/fatalities.

Immediate implementation of successful road safety models in some regional countries may also require institutional reforms/change in legislation. However, safety engineering can be carried out without any structural change in existing implementation framework. To improve infrastructure safety, the major steps which need to be implemented are:

1. Road Agencies to adopt road safety audit in all stages of road development and to make them mandatory.
2. Training and Capacity Building to enhance Safety Engineering Expertise
3. Revise Codes and Manuals for improved vehicle technology and prevailing road user behavior.
4. Initiate Peer–to-Peer Program at National Level and establish Center of Excellence and Road Safety Auditor's Accreditation system

5.1.2 Advance Sustainable construction techniques / Practicesand Quantity Surveying

❖ Abstract

The paper deals with an introduction and implementation of super performing building materials and techniques all in terms of energy saving efficiency of the material, cost efficiency, application feasibility, availability, vernacular characteristics, life span, etc. A material is considered smart only when it contributes something to upgrade the quality of building. With all those advancements in construction techniques and also with the demand of end users for the smart buildings we as constructors and designers are ought to introduce something new and smart to fulfill their demands and needs. Smart structures and material technologies are a tool for sharing the knowledge of how various building materials can significantly increase production and profit using advanced communication, collaboration and management technologies. The paper provides an overview of the types of materials available giving a new insight into innovative methods and techniques that will be available, and open new doors for advancement and improvement in the construction industry. The new materials discussed in this paper present a small fraction of the options that are available for use by industry.

❖ Introduction

The construction industry is repeatedly criticized for being inefficient and slow to innovate. The basic methods of construction, techniques and technologies have changed little since Roman times. But the application of innovation in the construction industry is not straight forward.

Every construction project is different, every site is a singular prototype, construction works are located in different places, and involve the constant movement of personnel and machinery. In addition, the weather and other factors can prevent the application of previous experience effectively.

The term 'advanced construction technology' covers a wide range of modern techniques and practices that encompass the latest developments in materials technology, design procedures, quantity

surveying, facilities management, services, structural analysis and design, and management studies.

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

- Foundation
- Plinth
- Beam
- Column
- Wall
- Sill
- Window
- Door
- Roof
- Parapet
- Skylights
- Finishing Works
- Save overall building energy
- Make building esthetically pleasing
- Cut cost of construction
- Easily available
- Increase life span of building
- Upgrade building quality
- Make the building safe for living

❖ Conclusion

	Material	Uses	Advantages
1	High Performance Conc.	Beam	On long span structures like bridges and halls
2	Light Transmitting Conc.	Interior walls	Energy Saving
3	Pervious Conc.	Paving, Parking, Walkways	Will be permeable for water supporting water table recharge
4	Floating Conc.	Marine architecture	Will save construction cost
5	Weave Metal Mesh	Half walls, Fences, Acoustic walls	Cost and time effective
6	Aerogel	Skylight, Thermal panels	Heat resistive, transparent
7	Super Black	Paints, Varnishes and Finishes	Less Reflective, absorptive
8	Banner work	Shading device, Landscape element	Time, Cost, Energy efficient
9	Geoweb	Vertical Gardening, Green walls	Energy conserving, Water conserving
10	3D Molded Plywood	Furniture, Formworks	Time Saving, Repetitive design
11	Braille Tiles	On Floor or Walls	Signage for Blinds
12	Fly Ash Concrete	Beams, Columns, Slab	Repurposed , Provides strength to base material

5.1.3 Soil Liquefaction

❖ INTRODUCTION

➢ **What is soil liquefaction:-**

- Liquefaction is the phenomena when there is loss of strength in saturated and cohesion-less soil because of increased pore water pressures and hence effective stress is reduce due to dynamic loading.
- During liquefaction the water pressure become high enough to counteract the gravitational pull on the soil particles and effectively float or suspend the particles.
- Then soil particle move freely with respect to each other. due to this the strength of soil decreases and the ability of a soil deposit to support foundations for buildings and bridge is reduce.

Fig. 24:- Soil Liquefaction on road

❖ OBJECTIVES

- To understand the liquefaction.
- The process that causes the soil to collapse and liquefy during an earthquake.
- Which soil are most susceptible to this occurrence.
- To find out which soil are strong on their own or could be combined with another soil to make it more stable during an earthquake.

❖ TYPES OF LIQUEFACTION

1. Flow liquefaction
2. Cyclic mobility

❖ EFFECTS OF LIQUEFACTION

- Loss of bearing strength
- Lateral spreading
- Sand boil
- Flow failures
- Ground oscillation
- Flotation
- Settlement

❖ METHODS TO REDUCE LIQUEFACTION

- Avoid liquefaction-susceptible soil
- Build liquefaction-resistant structures
- Shallow foundation aspects
- Deep foundation aspect
- Soil improvement techniques against liquefaction
- Vibro-compaction
- Dynamic compaction
- Compaction grouting
- Stone column

❖ CONCLUSION

- It can clearly be concluded that the ill effects caused by liquefaction have devastating damages to structures built on liquefied soils. Hence the various methods in which the severity of damage as a result of liquefaction can be reduced.
- The behavior of soils under the influence of loading forces and soilwater interactions

5.1.4 Sustainable Sanitation

❖ ABSTRACT

Sanitation has been always neglected area at local, regional, national and international level. The recent statistics declared that India is the most populated open defecated country i.e. 660 million people in rural and urban do not have access to safe sanitation, besides most town, cities, mega cities in India face serious problem in providing adequate sanitation, sewer and waste water management systems, collectively producing more than 27,000 million liters of waste water per day. The continuous declining of fresh water quantity and quality (from 3400 cu m/cap to 1967 cu m/cap over last 50 years) is a major cause of concern. It is also estimated that by 2025, India will be water stress country which may lead to conflict between three major users of water i.e. Agriculture, Industrial and Domestic.

Thus innovative, decentralized, cost effective, environment friendly and energy efficient solution treating the waste as close to the source and reusing the same after proper treatment, there by taking care of environment is the need of an hour! Ecosan Services Foundation (ESF), Pune based non-profit organization felt that there is need of appropriate knowledge sharing on the concept. Hence ESF in cooperation with gtz, Germany and second International Switzerland started to work in the field of capacity development along with pilot demo model to disseminate the knowledge of sustainable sanitation approach focusing to school to the future generations, there catching them young to make the open defecation free and livable cities in India.

❖ INTRODUCTION

“Success Stories of Sustainable Sanitation Initiatives in India by ESF”

Almost all sanitation systems are water centric systems and do not run without sufficient quantity of water. These systems are linear expensive, unaffordable in terms of operation and maintenance and not as per Bellagio principles accepted by Nations worldwide. Inadequate management of sanitation and sewerage system has posed enormous health and hygiene problems and ever increasingly urban population has

further compounded the same. Loss of school days, man days on account of this is a major issue for poverty alleviation and overall economic development of the country. With water centric sanitation system approach and the day by day increase in demand and supply gap in drinking water, it will be almost important that the concept of sustainability should always in focus while providing the solutions. 2/3rd of generated waste water which is 80% of supplied drinking water does not get any treatment which shows that there should be some paradigm shift in thinking is to approach while finding solution for these unnerved population in providing sanitation. From 'Flush' and 'Forget' system to 'Recycle in consonance with 'Waste to Wealth' approach.

Ecological Sanitation, 'Ecosan', is endeavoring to provide economically viable, socially acceptable and technically appropriate sanitation solutions for protecting the environment and natural resources and achieving long term sustainability. With its philosophy of moving from flush and forget attitude towards Waste to Wealth recycle approach, Ecosan claims to have awakened in a resourceful dawn. While closing the loop between sanitation and agriculture without compromising the health Ecosan has provided many eco friendly, user friendly, cost effective and low maintenance solutions for reuse of waste water as nutrients for crops. 'Ecosan' concept is based on segregation of different flow streams at source reuse after appropriate treatment.

5.1.5 Vertical Farming

❖ ABSTRACT

Vertical farming (VF) has been recognized as an important tool for managing future food security, yet economic viability poses a significant hurdle with the vast majority of farms closing within three years. The application of lean principles poses an opportunity to address inefficiencies, such as significant labour expenditure, but existing literature is yet to consider process improvement methodologies in VF. In this paper, an established framework for lean implementation is applied to an industry case study providing techniques for process improvement. This work is novel and crucial for workflow standardization and higher profit margins in this emerging sector.

❖ INTRODUCTION

In this introduction, vertical farming (VF) and its challenges are presented, followed by a selection of an appropriate process improvement methodology and the research aims.

Vertical Farming (VF) is a method of food production that uses the vertical dimension to grow crops hydroponically; typically with indoor controlled-environment agriculture (CEA) technologies such as artificial grow lighting. Over the past decade, VF has seen a surge in popularity and it is viewed by many as a method to engage with a plethora of global challenges facing food production such as the growing population, water scarcity and food safety. VF involves the management of highly complex systems and, despite the opportunity it presents, standard approaches to process management are yet to be adopted in the industry. Addressing this knowledge gap could resolve several issues currently facing the industry. Economic viability is one of the core obstacles facing this sector, as start-ups have struggled with (i) Underestimated labour costs, (ii) lack of adequate VF knowledge and education and (iii) inefficient workflow and inadequate ergonomic design considerations. In the largest survey conducted on CEA businesses globally in 2019 (n=316), human labour was identified as the largest challenge for growers. Industry reports indicate labour is the single highest operating expense for even the most well capitalized vertical farms. Solutions to this key issue are likely to lie in the processes adopted for the management of the farm. A practitioner has begun to consider manufacturing methodologies but techniques have yet to be discussed in the literature.

❖ AIM AND OBJECTIVES

In this paper, the authors demonstrate the application of lean manufacturing implementation in the context of VF in a practical manner. This is the first work in academic literature to apply manufacturing principles to the nascent sector. Core lean principles are analyzed and applied to a case-study farm in Liverpool, United Kingdom. This is representative of many VF companies because of the limited variety of equipment solutions. With this paper the authors aim to enhance lean transformation for VF companies through the examples provided. To fulfill the aim of this paper, two objectives were developed:

- To investigate lean manufacturing implementation methods
- To evaluate how lean principles can be applied within a VF context through a case-study for practical implementation

The structure of the paper is organized into five sections. After the introduction, the second section describes and illustrates the case-study and its existing operations. The third section is broken down into three lean manufacturing principles and how each can be applied to VF (with an example for the case study). The fourth section consolidates the considerations improvements in operations for the case-study. The final section concludes with the potential implication of implementing lean principles proposed, addressing the research objectives and providing recommendations for future research.

❖ CONCLUSIONS

Vertical farming (VF) benefits from unprecedented control and rapid crop cycles that enable the implementation of manufacturing methodologies. While industry practitioners express the value that manufacturing methodologies could offer the industry, there is no available guidance or literature. After consideration of different process improvement methodologies for VF, the authors determined lean principles a way to engage with labour challenges reported in the sector. This paper is the first of its kind to provide guidelines for implementing lean manufacturing principles in a VF context.

This exploratory paper lays the groundwork for further lean principles to be considered. Exploring principles such as Establish Pull and Seek Perfection could provide guidelines for vertical farms to avoid over production improve customer experience and consequently boost profits. In addition, several other manufacturing methodologies such as Kanban and Just- in-Time are likely to hold similar opportunities to the application of lean principles, and therefore should be explored in parallel. Work is currently underway to collect process data and integrate further lean manufacturing techniques to the case study farm to develop best practice guidelines and mathematical models which can be used for other farms. The authors hope the novel nature of this work in the sector will facilitate the adoption of process improvement methodologies, providing an agenda for further research by exposing voids in the knowledge base.

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

❖ ABSTRACT

The durability of concrete structures is affected by a number of factors such as environmental exposure, electrochemical reactions, mechanical loading, impact damage and others. Of all of these, corrosion of the reinforcement is probably the main cause for the deterioration of steel reinforced concrete (RC) structures.

Corrosion management is becoming increasingly necessary as a result of the growing number of ageing infrastructure assets (e.g. bridges, tunnels etc.) and the increased requirement for unplanned maintenance in order to keep these structures operational throughout their design life (and commonly, beyond). The main

RC repair, refurbishment and rehabilitation approaches generally employed can be broadly categorized under a) conventional, b) surface treatments, c) electrochemical treatments and d) design solutions.

To achieve this, individual research packages were identified from the above broad five approaches for repair, replacement and rehabilitation. These were 1) Patch repairs and incipient anodes, 2) Impressed Current Cathodic Protection, 3) Galvanic Cathodic Protection and 4) Hydrophobic treatments.

❖ INTRODUCTION

As discussed previously in section 1.1, corrosion management of RC structures can be broadly divided into four broad approaches, with each one including several corrosion management techniques. Corrosion is an electrochemical process and in the majority of cases the contributing cause is chloride contamination. Chlorides may be cast into the concrete or may be transported within it as a result of exposure to marine environments or use of de-icing salts during winter maintenance. For the above reasons, corrosion management is usually focused on the following three approaches from the list discussed previously:

- Conventional
- Electrochemical treatments
- Surface treatments

The objectives of this work were developed from the individual corrosion management techniques belonging to the three general approaches described above, in order to identify savings as a result of reduced costs of maintenance and monitoring from which asset owners such as the HA can benefit, while at the same time extending the service life of their assets.

➢ **The key findings from each research package can be summarized as follows:**

- Macro cell activity appears to be a consequence rather than a cause of incipient anode formation in repaired concrete structures, as has previously been presented;
- ICCP has persistent protective effects even after interruption of the protective current;
- Discrete galvanic anodes installed in the parent concrete surrounding the patch repair are a feasible alternative to galvanic anodes embedded within the patch repairs of RC structures;
- Silanes may have a residual hydrophobic effect even after 20 years of service.

5.1.7 Sewage treatment plant

❖ ABSTRACT

A sewage treatment plant is quite necessary to receive the domestic and commercial waste and removes the materials which pose harm for general public. Its objective is to produce an environmentally-safe fluid waste stream (or treated effluent) and a solid waste (or treated sludge) suitable for disposal or reuse (usually as farm fertilizer).A study on domestic waste water characterization has been performed followed by the design of sewage treatment plant. The present study involves the analysis of pH value, total solids, total suspended solids, hardness, acidity, oils fats & greases, chloride, BOD and DO etc. The samplings of the domestic waste have been done in different times of the day to have an average data of the measured parameters. Depending upon the values of these parameters, calculations are done for designing the different units of a 30 MLD Sewage Treatment Plant and a preliminary layout is prepared for the same.

❖ INTRODUCTION

Pollution in its broadest sense includes all changes that curtail natural utility and exert deleterious effect

on life. The crisis triggered by the rapidly growing population and industrialization with the resultant degradation of the environment causes a grave threat to the quality of life. Degradation of water quality is the unfavorable alteration of the physical, chemical and biological properties of water that prevents domestic, commercial, industrial, agricultural, recreational and other beneficial uses of water. Sewage and sewage effluents are the major sources of water pollution. Sewage is mainly composed of human fecal material, domestic wastes including wash-water and industrial wastes. The growing environmental pollution needs for decontaminating wastewater result in the study of characterization of waste water, especially domestic sewage. Sewage Treatment Plant is a facility designed to receive the waste from domestic, commercial and industrial sources and to remove materials that damage water quality and compromise public health and safety when discharged into water receiving systems. It includes physical, chemical, and biological processes to remove various contaminants depending on its constituents. Using advanced technology it is now possible to re-use sewage effluent for drinking water.

The present study comprises the study on quality of domestic waste water and industrial waste water(mixed sewage) .The study includes characterization tests for pH value, acidity, alkalinity, chloride, turbidity & BOD etc. Depending upon the values of these parameters, calculations are done for designing the different units of a 30 MLD Sewage Treatment Plant and a preliminary layout is prepared for the same.

❖ OBJECTIVES OF THE STUDY

- The objective of municipal and industrial waste water treatment is to extract pollutants, remove toxicants, neutralize coarse particles, kill pathogens so that quality of discharged water is improved to reach the permissible level of water to be discharged into water bodies or for agricultural land.
- Treatment of water thus aims at reduction of BOD, COD, total solids, nitrogen content etc. of receiving water bodies and prevention of bio-magnification of toxic substances in food chain.
- The effluents to be disposed without a danger to the human health or unacceptable damage to the natural environment.

➢ **The objective of this project can be summarized as-**

- Physical, chemical and biological characterization of waste water.
- Comparison with the prescribed standard
- Design of the sewage treatment plant.

❖ RESULTS & DISCUSSION

After following the designing procedure, the size of different treatment units required are as follows-

- SIZE OF SCREEN – 1.32m x 0.8m
- SIZE OF GRIT CHAMBER – 12m x 3m x 1.50m
- SIZE OF SKIMMING TANK – 27m x 27m
- SIZE OF PST – 36m x 13m x 6m
- SIZE OF AERATION TANK – 37m x 20m x 5.5m
- SIZE OF AERATOR – 11 GENERATORS OF 30 HP
- SIZE OF SECONDARY CLARIFIER – DIA 35m with 5.5m DEPTH
- SIZE OF SLUDGE DIGESTION TANK – DIA 22m with 6m DEPTH
- GAS PRODUCED FROM DIGESTION TANK – 3154.79 cu. m

AS THESE PARAMETERS ARE COMING WITHIN SPECIFIED RANGE
HENCE, THE DESIGN IS OKAY.

6: Swachh Bharat Abhiyaan

6.1 Swatchhta needed in village

In a Motidau village a need of Swatchhta is more because unavailability of solid waste management likes collection of waste collection dustbin and management of that waste. Due to this village people throw all waste around the village border**.** This is real issue of villagers the disposal of waste. In a monsoon there is so many problems found for People use pond as a dumping ground & dump all type of waste in pond. Some people use it for washing clothe & animal use it for drinking water.


Fig. 25:- Pond of Motidau Village

- To provide sweepers for clean village.
- To provide different color garbage bins for collection waste
- Green: - biodegradable waste
- Blue: - plastic& metal waste
- Provision for Public Toilets is required, as they are lacking in village

6.2 GUIDELINES FOR THE PROCESS OF THE IMPLEMENTATION IN YOUR VILLAGE WITH PHOTOGRAPHS

As the work of cleaning the old type of dustbins of Municipal Corporation comes under the Gram Panchayat or Municipal Corporation, it should be properly emptied and new dustbins for dry and wet waste should be provided separately and it should be maintained properly and regularly. The design of Public sanitary blocks would be given by us, so they should be constructed by the government if designed properly. At rest of the few places left, the villagers should clean it themselves as very less area would be come under that part.

Swachh Bharat Abhiyaan, in spite of the fact that it not the first occasion when that indian government attempted to dispatch the clean India battle. In 1999 legislature of India propelled the “Aggregate sanitation camping” which was later renamed as “Nirmal bharat Abhiyaan” by then head administration manmohan Singh.

❖ **Why Swatchhtaabhiyan ?**

To accelerate the efforts to achieve universal sanitation coverage and to put focus on safe sanitation,the Prime Minister of India launched the Swachh Bharat Mission on 2nd October, 2014. The Mission Coordinator shall be Secretary, Ministry of Drinking Water and Sanitation (MDWS) with two Sub-Missions, the Swachh Bharat Mission (Gramin) and the Swachh Bharat Mission (Urban), which aims to achieve Swachh Bharat by 2019, as a fitting tribute to the 150th Birth Anniversary ofMahatma Gandhi, which in rural areas shall mean improving the levels of cleanliness in rural areas through Solid and Liquid Waste Management activities and making Gram Panchayat Open Defecation Free (ODF), clean and sanitized.

❖ Village has following thing implemented:-

- Toilets for all households and institutions.
- Use of toilets and Maintenance of it.
- Hygiene education.
- Inclusion of water and sanitation issues in Gram Panchayat Development plan(GPDP).

❖ Village has Certain Draw Backs:

- Solid waste management.
- Public toilet.
- Surveillance of water bodies.
- Water supply scheme.
- Environment management framework.

❖ Guidelines:-

- Accelerate sanitation coverage in rural areas to achieve the vision of Swachh Bharat by 2nd October 2019.

- Bring about an improvement in the general quality of life in the rural areas, by promoting cleanliness, hygiene and eliminating open defecation.
- Develop, wherever required, community managed sanitation systems focusing on scientific Solid & Liquid Waste Management systems for overall cleanliness in the rural areas.
- Create significant positive impact on gender and promote social inclusion by improving sanitation especially in marginalized communities
- Motivate communities and Panchayati Raj Institutions to adopt sustainable sanitation practices and facilities through awareness creation and health education
- Encourage cost effective and appropriate technologies for ecologically safe and sustainable sanitation

6.3 Activities Done by Students for allocated village with Photograph

- We avoided throwing waste in open and always used dustbin.
- We interacted with village people and tried to spread awareness regarding Swatch Bharat Abhiyaan.
- We proposed Solid waste management design for the allocated village.
- We also planned to carry out awareness campaign but due to Covid-19 we didn't get Permission still we will conduct campaign in future.

6.3.1 Activity and Steps of clean village:

- You should grow trees must and should.
- In your village waste thing not see in your village on soil.
- You should clean a gutter where water flow.
- You should say people daily clean your home and other side of home.
- You should help together.
- You should use one society for clean.
- Prevent littering and dispose garbage appropriately

➢ **Necessary steps should be taken by Government:-**

- Dustbins should be kept at all public places like Bus stations, Railway stations, Gardens, Theatres etc.
- Dustbins should be kept at proper distance on roads
- Proper waste containers should be kept in every area.
- Rules should be made and action should be taken if someone breaks the rule.
- Daily cleaning of public places is necessary.
- They should make public aware of importance of cleanliness and should tell them the after effects of not keeping it clean (like diseases).
- Proper public toilets are to be made and they should be maintained regularly.
- Controlling the plastic bag menace

➢ **Re-Use and Re-cycle**

Reuse and recycle are the two magical mantras in developing cleaner surroundings. If there is something which you don't require anymore; discover another way of using it, if not then look for someone who might need it; if it's wrecked, then try to repair it before disposing.

7: VILLAGE CONDITION DUE TO CO-VID-19

7.1 Taken steps in allocated village related to existing situation with photographs

- Villagers were informed by the village teachers about the pandemic situation and were also in-formed about the norms given by Government to fight this situation.
- With help of Government officers, Sarpanch and other village people they sanitized the village streets and houses and other places.
- People also started using sanitizer and mask when they went out of home.
- They then sealed the village border to stop the movement of villagers and also to restrict entry of others.
- All the villagers were following Government norms of how to be safe from this situation and were also regularly taking account of updates by Government for this situation.

Fig. 26:- Village condition due to COVID-19

7.2 Activities Done by Students for allocated village with Photograph

Villagers were informed by the village teachers about the pandemic situation and were also in-formed about the norms given by Government to fight this situation.

All the villagers were following Government norms of how to be safe from this situation and were also regularly taking account of updates by Government for this situation

❖ Overview about Corona-virus

COVID-19 is an infectious disease caused by the most recently discovered Corona virus. This new virus and disease were unknown before the outbreak began in Wuhan, China, in December 2019. Incubation period for COVID-19 is 1-14 days, most commonly around 5 days. The disease causes respiratory illness (like the flu) with symptoms such as a cough, fever, and in more severe cases, difficulty breathing. CO-

VID-19 virus may persist on surfaces for a few hours or up to several days. This may vary under different conditions (e.g. type of surface, temperature or humidity of the environment).

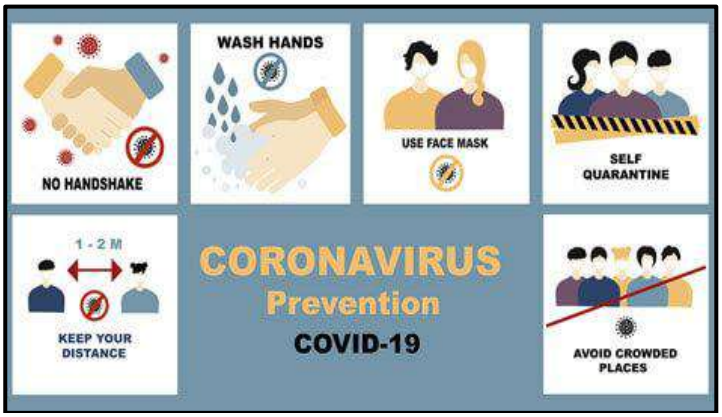


Fig. 27:- Safety from COVID-19

7.3 Steps taken by students while visiting the village

❖ To prevent the spread of COVID-19:

- Clean your hands often. Use soap and water, or an alcohol-based hand rub.
- Maintain a safe distance from anyone who is coughing or sneezing.
- Wear a mask when physical distancing is not possible.
- Don’t touch your eyes, nose or mouth.
- Cover your nose and mouth with your bent elbow or a tissue when you cough or sneeze.
- Stay home if you feel unwell.
- If you have a fever, cough and difficulty breathing, seek medical attention.

8: Design Proposal for Part - I

8.1 Design Proposals

❖ There are some design proposals given from the sarpanch and talati:

1. Bank
2. Pickup stand
3. Post office
4. Rain Water Harvesting
5. Public Toilet
6. Public Garden

8.1.1 Social Design: Bank:-

Bank is Essential need for any village or town. In Motidau there is only one Bank facilities but the bank is close soon according to the report and we are proposing bank between three villages we is in attach with Motidau village to solve the purpose.

8.1.2 Transportation design: Pickup stand:-

Pickup stand is a very important in people life for transportation. Currently there has poor Condition Bus Stop is in Motidau Village.

8.1.3 Socio-Culture: Post office:-

Post office is Essential need for motidau village, the facilities of post office is very poor in Motidau village.

8.1.4 Sustainable design: Rain Water harvesting:-

Water harvesting Essential need for motidau village, the facilities of water harvesting is not in motidau village

8.1.5 Physical design: Public toilet:-

A public toilet is important in culture for villagers; it is providing a safety and hygiene to the people.

8.1.6 Environmental design: Public garden :-

Public garden is an important in people life for to relax. And enjoying and playing for childrends.

8.2 Reason for Students Recommending this Design

- **Bank-** To provide Financial Facilities in village.
- **Pickup stand -** Is to provide transportation Facilities in village.
- **Post office -** Is to provide courier facilities in village.
- **Rain Water Harvesting -** It is an important in people life for water collection.
- **Public toilet -** it is providing a safety and hygiene to the people.
- **Public garden -** Public garden is an important in people life for to relax.

8.3 About designs Suggestions / Benefit of the villagers

- **Bank:-** Currently there one private bank in this village and villagers have to travel a long for bank. Thus we are proposing bank to reduce the time of villagers and to provide financial comfort and easy.
- **Pickup stand:-** Currently there has poor Condition Bus Stop is in Motidau Village, Thus we are proposing Bus Stop to reduce the travel time of villagers and to provide comfort and easy.
- **Post office: -** Having a post office in village does not require the villagers to move to another village far away.
- **Rain Water Harvesting:-** There has no facility in this village. Thus we are proposing.
- **Public toilet:-** A public toilet is important in culture for villagers; it is providing a safety and hygiene to the people.
- **Public garden:-**Public garden is an important in people life for to relax. And enjoying and playing for children

8.1.1 BANK PLAN

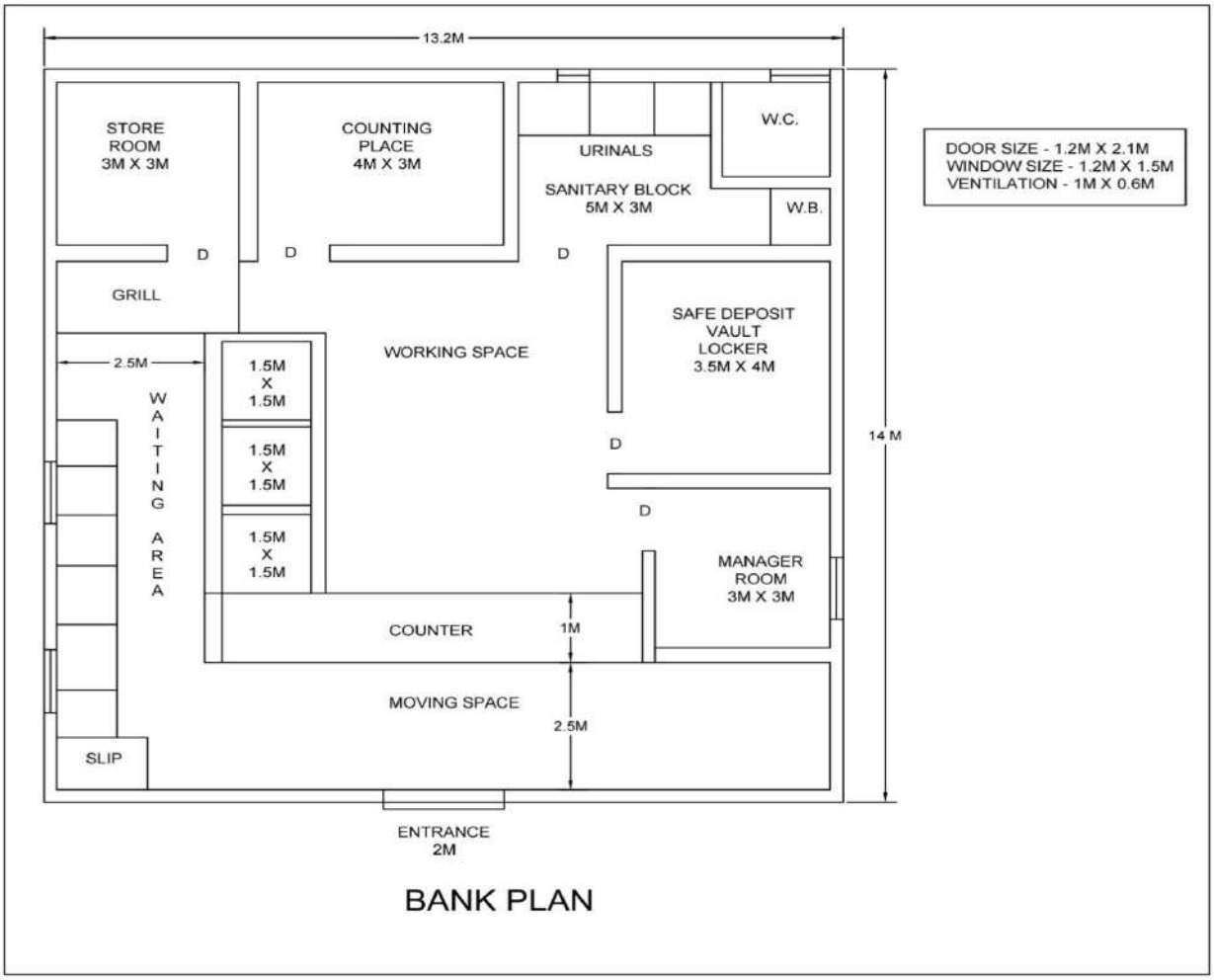


Fig. 28:- Plan of Bank Building

BANK BUILDING									
MEASUREMENT SHEET									
Sr No	**Description**	**Unit**	**No**	**L(m)**	**W (m)**	**H (m)**	**Area**	**Quantity**	**Total**
1	Excavation for Foundation	CuM							
	Long Wall 1:		2	14m	0.9m	1.5m	25.5 m^2	37.8 m^3	104.76 m^3
	Long Wall 2:		2	3m	0.9m	1.5m	5.4 m^2	8.1 m^3	
	Long Wall 3:		1	4m	0.9m	1.5m	3.6 m^2	5.4 m^3	
	Short Wall 1:		3	13.2m	0.9m	1.5m	35.64 m^2	53.46 m^3	
2	PCC								
	Long Wall 1:	CuM	2	14	0.9	0.3	25.2 m^2	7.56 m^3	20.95 m^3
	Long Wall 2:		2	3	0.9	0.3	5.4 m^2	1.62 m^3	
	Long Wall 3:		1	4	0.9	0.3	3.6 m^2	1.08 m^3	
	Sort Wall 1:		3	13.2	0.9	0.3	35.64 m^2	10.69 m^3	
3	Brick Masonry in Foundation (0.6m thick Wall)	Num							
	Long Wall 1:		2	13.7	0.6	0.2	16.44	3.288	9.24
	Long Wall 2:		2	2.7	0.6	0.2	3.24	0.648	
	Long Wall 3:		1	3.7	0.6	0.2	2.22	0.444	
	Short Wall 1:		3	13.5	0.6	0.2	24.3	4.86	
	0.5 thick Wall	CuM							7.68
	Long Wall 1:		2	13.6	0.5	0.2	13.6	2.72	
	Long Wall 2:		2	2.6	0.5	0.2	2.6	0.52	
	Long Wall 3:		2	3.6	0.5	0.2	3.6	0.36	
	Short Wall 1:		3	13.6	0.5	0.2	13.6	4.08	
	0.4 thick Wall								
	Long Wall 1:		2	13.5	0.4	0.2	10.8	2.16	6.12
	Long Wall 2:		2	2.5	0.4	0.2	2	0.4	
	Long Wall 3:		1	3.5	0.4	0.2	1.4	0.28	
	Short Wall 1:		3	13.7	0.4	0.2	16.44	3.28	

4	Brick Work in Super Structure in C.M (1:4)	CuM							
	Long Wall 1:		2	13.5	0.3	3.5	8.1	28.35	80.42
	Long Wall 2:		2	2.5	0.3	3.5	1.5	5.25	
	Long Wall 3:		1	3.5	0.3	3.5	1.05	3.67	
	Short Wall 1:		3	13.7	0.3	3.5	12.33	43.15	
	Deduction for door, window, ventilation								
	Door		5	1.2	0.3	2.1	1.8	3.78	5.76
	Window		3	1.5	0.3	1.2	1.35	1.62	
	Ventilation		2	0.6	0.3	1	0.36	0.36	
5	R.C.C Slab	CuM							
	Length (L): 14		1	14	13.2	0.125	184.8	23.6	
	Width (B): 13.2								
	R.C.C Chhajja		3	1.2	1.5	0.1	5.4	0.54	
6	Flooring (Marble)								
	Store Room		1	0.3	3	-	0.9		
	Counting Place		1	4	3	-	12		
	Sanitary Block		1	5	3	-	15		
	Cocker Room		1	3.5	4	-	14		
	Manager Room		1	3	3	-	9		
	Moving Place		1	11.4	2.5	-	28.5		
	Waiting Room		1	11.9	2.5	-	29.75		
	Working Room		1	5.4	3.9	-	21.06		

BANK BUILDING						
ABSTRACT						
Sr. No	**Description**	**Unit**	**Quantity**	**Rate**	**Amount**	**Remarks**
1	Excavation in Foundations	CuM	104.74	155	162347	
2	P.C.C	CuM	20.95	4845	101502.7	
3	Brick Masonry in Foundation	CuM	23.02	3200	73664	
4	Brick Masonry in Super Structure	CuM	80.42	3500	281470	
5	R.C.C Work in Slab With Chhajja	CuM	23.64	14932	352992.5	
6	Marble Flooring	SqM	235.31	297	41078.7	
	Total Rupees			1013054.9		
	Contingency 05.00%			50652.74		
	10% contractor charges			101305.4		
	2% water charges			20261		
	Total Amount Rupees			1185274		
	Say Rupees			**11,86000.00/-**		

8.1.1 PICKUP STAND

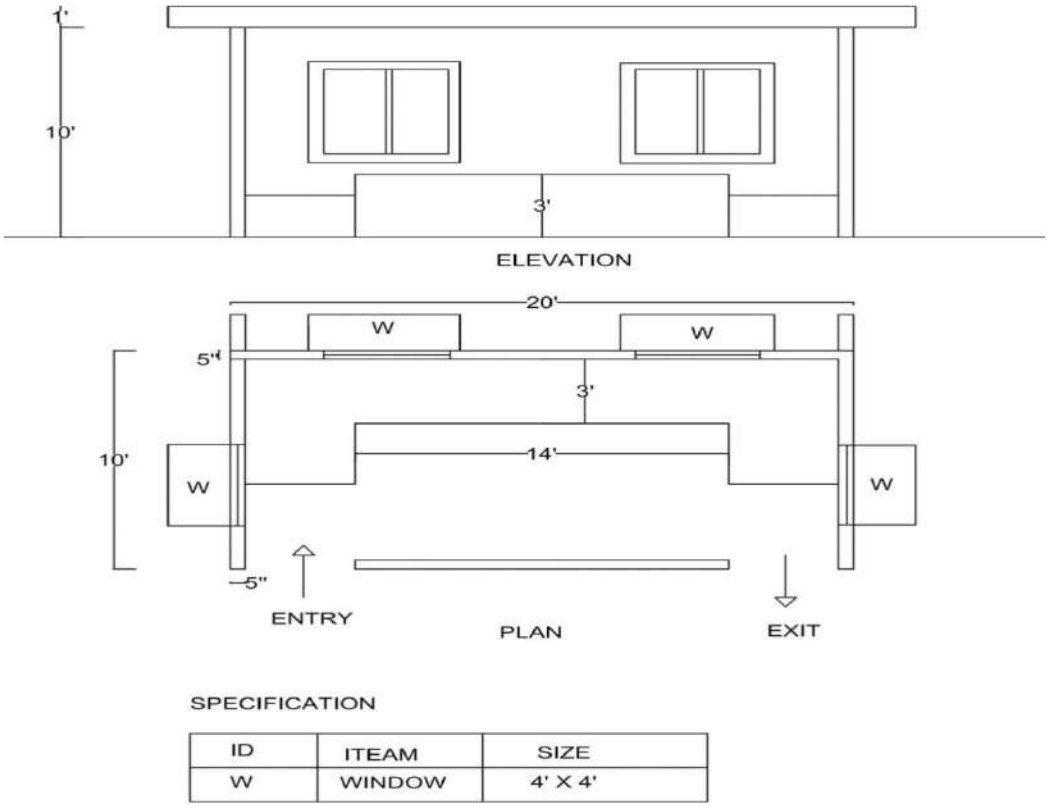


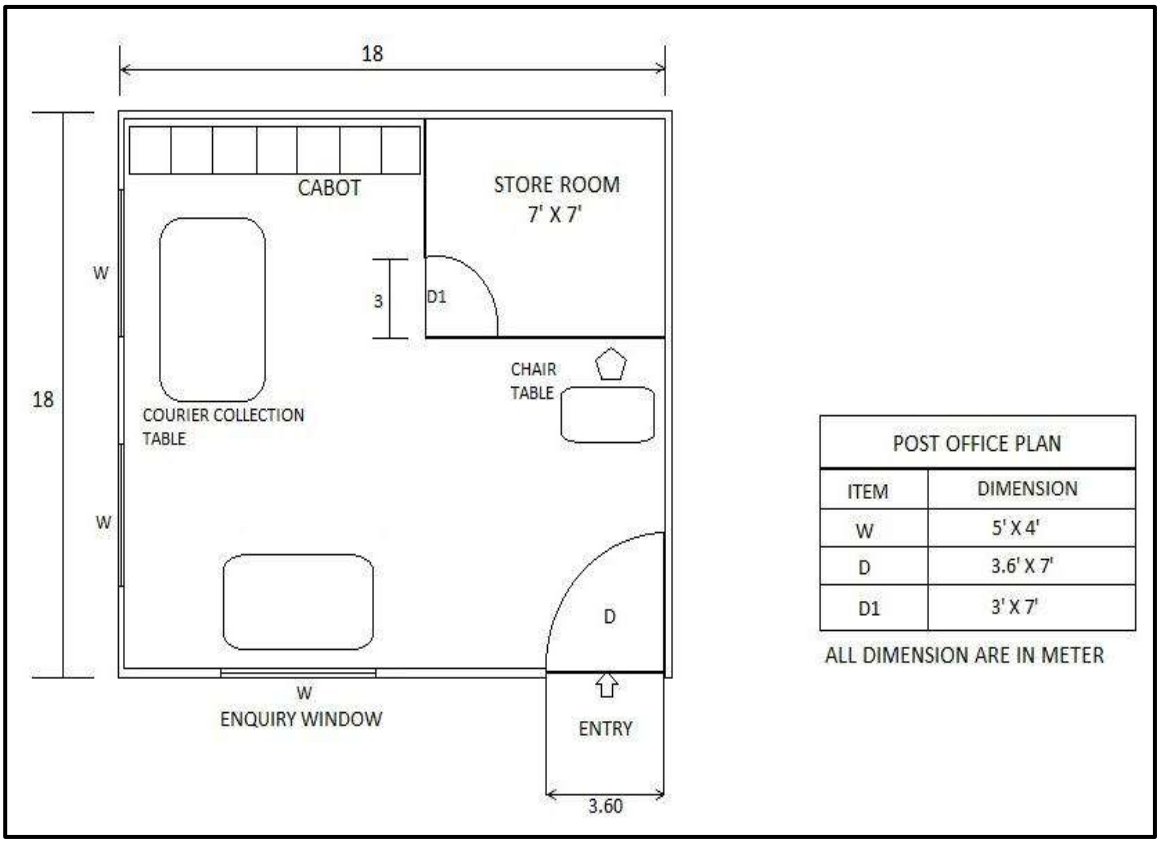
Fig. 29:- Plan of Pickup stand

PICKUP STAND								
MEASUREMENT SHEET								
Sr No	**Description**	**Unit**	**No**	**L (m)**	**W (m)**	**H (m)**	**Quantity**	**Total**
1	Excavation	CuM						
	Long Wall		2	6.096	0.9	1.2	13.16	19.74
	Short Wall		2	3.048	0.9	1.2	6.58	
2	P.C.C (1:4:8)							
	Long Wall		2	6.096	0.9	0.3	3.29	4.93
	Short Wall		2	3.048	0.9	0.3	1.64	
3	Brick masonry in Foundation with deduction	CuM						10.37
	0.6 m Thick Wall							
	Long Wall		2	5,796	0.6	0.2	1.39	

	Short Wall		2	3.348	0.6	0.2	0.80	
	0.5 m Thick Wall							
	Long Wall		2	5,696	0.5	0.2	1.13	
	Short Wall		2	3.448	0.5	0.2	0.688	
	0.4 m Thick Wall							
	Long Wall		2	5.59	0.4	0.2	0.89	
	Short Wall		2	3.448	0.4	0.2	0.56	
	Up to plinth Level							
	Long Wall		2	5.49	0.3	0.9	2.96	
	Short Wall		2	3.648	0.3	0.9	1.96	
4	R.C.C Slab		1	6.096	3.048	0.125	2.32	2.32
5	Plaster Work		2	6.096		3.048	37.16	
		CuM	2	3.048		3.048	18.58	74.32
			1	6.096	3.048		18.58	

PICKUP STAND						
ABSTARCT						
Sr No	**Description**	**Unit**	**Quantity**	**Rate**	**Amount**	**Remarks**
1	Excavation	CuM	19.74	155	2749.7	-
2	PCC (1:4:8)	CuM	4.93	4845	23885.85	-
3	Brick Masonry work	CuM	10.37	6700	69479	-
4	R.C.C. Slab	CuM	2.32	8800	20416	-
5	Plaster Work	SqM	74.32	180	13377.6	-
6	Earth Filling	CuM	13	150	1950	-
	Total Rupees			131,858.15		
	Contingency 05.00%			6592.9		
	10% contractor charges			13185.8		
	2% water charges			2637.16		
	Total Amount Rupees			154,274.01		
	Say Rupees			**154,300.00/-**		

8.1.2 POST OFFICE



POST OFFICE PLAN	
ITEM	DIMENSION
W	5' X 4'
D	3.6' X 7'
D1	3' X 7'

ALL DIMENSION ARE IN METER

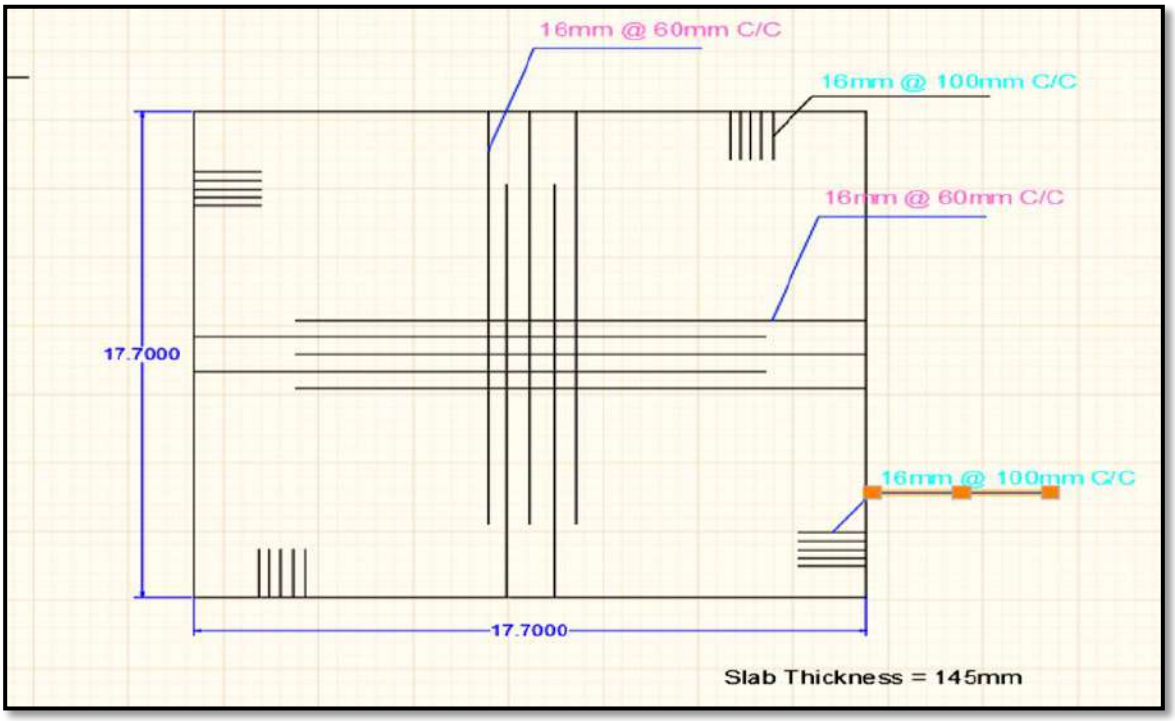


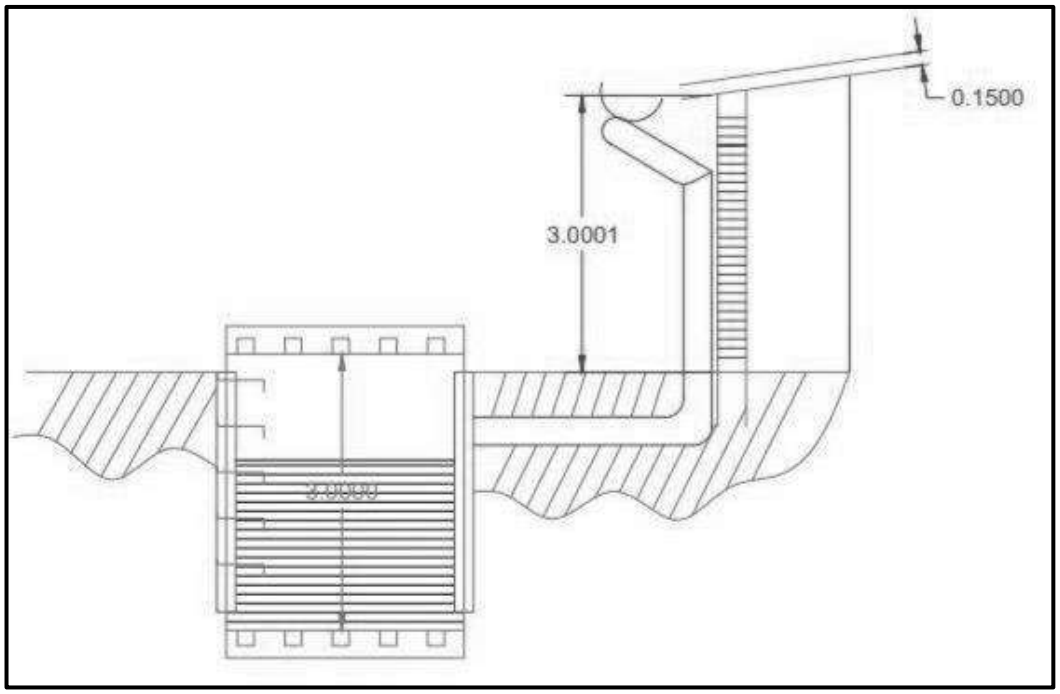
Fig. 30:- Plan & Reinforcement detail of slab of Post office

POST OFFICE							
MEASUREMENT SHEET							
ITEM	**DESCRIPTION**	**UNITS**	**NO**	**L**	**B/W**	**H/D**	**QUANTIY**
ITEM NO.:-1	Excavation for						
	Foundation						
	L=70.80	Cu.m.	1	69.9	0.9	1.1	69.20
ITEM NO.:-2	C.C. work in founda-tion						
	L=70.80	Cu.m.	1	69.9	0.9	0.2	12.58
ITEM NO.:-3	Brick masonry work in foundation						
	1st step						
	L=70.8-2*0.6/2	Cu.m	1	70.2	0.6	0.3	12.63
	2nd step						
	L=70.8-2*(0.5/2)	Cu.m	1	70.3	0.5	0.3	10.54
	3rd step						
	L=70.8-2*(0.4/2)	Cu.m	1	70.3	0.4	0.9	25.31
	Total Brick masonry	Cu.m.					48.49
	work in foundation						
ITEM NO.:-4	Brick masonry work in						
	super structure						
	Outer wall	Cu.m.	1	70.5	0.3	3.7	78.25
	Partition wall		2	7	0.3	3	12.6
	Deduction for door & Windows						
	Door D	Cu.m.	2	1.2	0.3	2.1	1.51
	Windows W		1	2	0.3	1.5	0.9
	Windows W1	Cu.m.	3	1	0.3	1.5	1.35
	Total	Cu.m.					3.76
ITEM NO.:-	Deduction for lintel						

4	Door D	Cu.m.	2	1.2	0.3	0.1	0.072
	Windows W	Cu.m.	1	2	0.3	0.1	0.06
	Windows W1	Cu.m.	3	1	0.3	0.1	0.09
	Total	Cu.m.					0.22
	Total Brick masonry	Cu.m.					86.87
	Work						
ITEM NO.:-5	Brick masonry work in step						
	Step: 1	Cu.m.	1	1.5	0.3	0.15	0.22
	Step: 2	Cu.m.	1	1.5	0.3	0.15	0.22
		Cu.m.				Total	0.45
ITEM NO.:-6	D.P.C at plinth level						
	For 300mm thick wall	SQM	1	70.5	0.3	0.05	1.057
ITEM NO 7	Earth filling						
		Cu.m		17.4	17.4	0.6	181.65
ITEM NO.:-8	Plastering	SQ.M	4	17.4		3	52.2
		SQ.M	2	7		3	21
			1	17.4	17.4		302.76
	TOTAL	SQ.M					375.96
	Deduction for door & Windows						
	Door D	SQ.M	2	1.2		2.1	5.04
	Windows W	SQ.M	1	2		1.5	3
	Windows W1	SQ.M	3	1		1.5	4.5
	Total	SQ.M					12.54
	Total Platering	SQ.M					363.42
ITEM NO.:-9	White wash	SQ.M					363.42
	(Same as Plastering)						
ITEM NO 10	RCC Work for	CU.M	1	18	18	0.15	48.6
	Slab						

POST OFFICE					
ABSTRACT SHEET					
Sr. No.	**Item description**	**Quantity**	**Rate**	**Per**	**Amount**
1	Excavation work	69.20	155	Cu.m.	10726
2	P C.C	12.58	4845	Cu.m.	60950.1
3	Brickwork in foundation	48.49	3200	Cu.m.	155168
4	Brickwork in superstructure	86.87	3500	Cu.m.	304045
5	Brickwork in steps	0.45	3000	Cu.m.	1350
6	D.P.C at plinth level	1.057	4900	Cu.m.	5179.3
7	Earth filling	181.66	150	Cu.m.	27249
8	Plastering	363.42	180	Sq.m.	65415.6
9	Whitewash	363.42	25	Sq.m.	9085.5
10	Rcc work for slab	48.6	8800	Cu.m.	427680
	Total Rupees				1066848.5
	Contingency 05.00%				53342.42
	10% contractor charges				106684.85
	2% water charges				21336.97
	Total Amount Rupees				1248212.74
	Say Rupees				**1249000.00/-**

8.1.3 Rain Water Harvesting:-

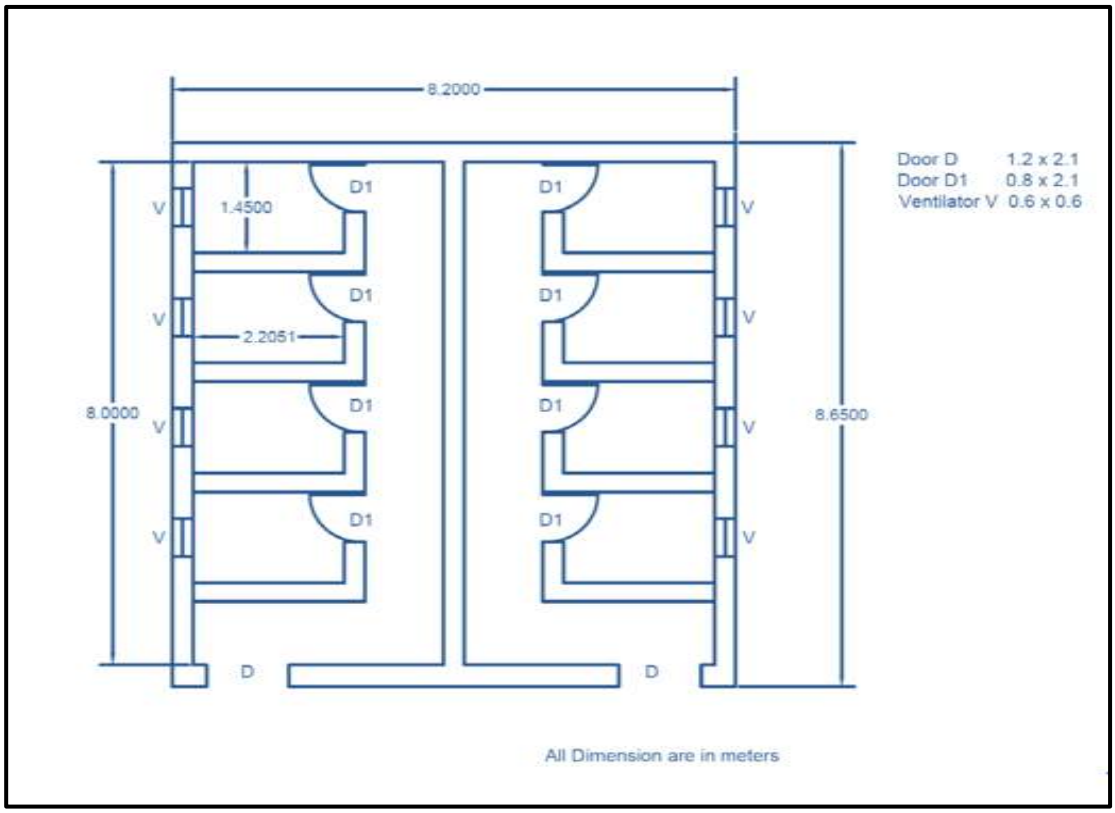


SCALE 1:1

Fig. 31:- Plan and Elevation of rain water harvesting

Rain water harvesting		
Unit Estimation		
Instrument	**nos**	**costing**
Excavation	**1**	**25000**
Pipes	**3**	**700**
Nozel	**2**	**600**
Gutters	**2**	**700**
Filter	**5**	**1000**
Storage tank	**1**	**10000**
TOTAL AMOUNT		**44,000/-**

8.1.4 Public Toilet:-



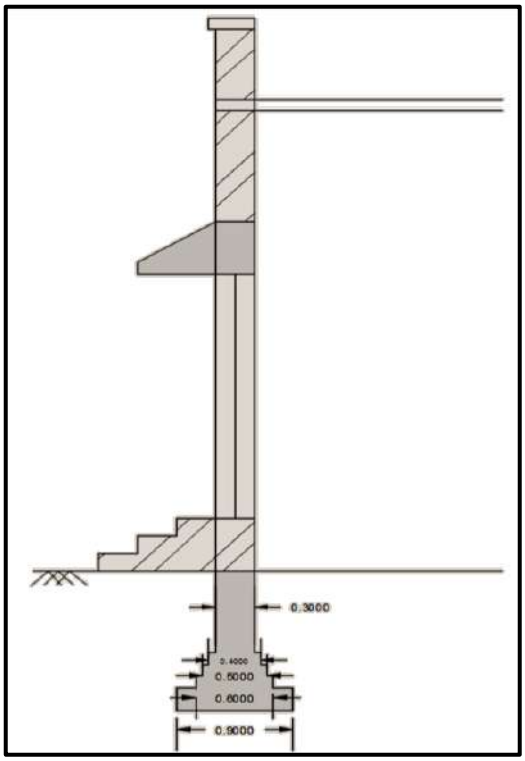


Figure 32:- Plan, Elevation and Section of Public Toilet

PUBLIC TOILET								
MEASUREMENT SHEET								
ITEM	**DESCRIPTION**	**UNITS**	**NO**	**L**	**B/W**	**H/D**	**QUANTITY**	**Total Q.**
	ITEM NO.:- 1							
	Excavation for Foundation	Cu.m.	1	69.78	0.9	1.2	75.36	75.36 m3
	ITEM NO.:- 2							
	PCC work in foundation	Cu.m.	1	69.78	0.9	0.2	12.56	12.56 m3
	ITEM NO.:- 3							
	Brick masonry work in							25.80 m3
	Foundation							
	1st step	Cu.m	1	69.78	0.6	0.1	4.1868	
	2nd step	Cu.m	1	70.68	0.5	0.1	3.534	
	3rd step	Cu.m	1	71.58	0.4	0.1	2.8632	
	4th step	Cu.m	1	72.48	0.3	0.7	15.2208	
	ITEM NO.:- 4							
	Super Structure	Cu.m.	1	75.18	0.3	3.5	78.939	
	Door	Cu.m.	2	1.2	0.3	2.1	1.512	
	Door 1	Cu.m.	8	0.8	0.3	2.1	4.032	
	Ventilator – V	Cu.m.	8	0.6	0.3	0.6	0.864	
		Cu.m.					6.408	
	Deduction for lintel							
	Door 1	Cu.m.	2	1.2	0.3	0.1	0.072	
	Door 2	Cu.m.	8	0.8	0.3	0.1	0.192	
	Ventilator – V	Cu.m.	8	0.6	0.3	0.1	0.144	
		Cu.m.					0.408	
		Cu.m.					0.816	84.53 m3
	Total Brick masonry	Cu.m.						
	ITEM NO.:- 5							
	Brick masonry work in							0.45 m3

	step							
	Step: 1	Cu.m.	2	1.5	0.3	0.25	0.225	
	Step: 2	Cu.m.	2	1.5	0.3	0.25	0.225	
	ITEM NO.:- 6							
	D.P.C							27.29 m3
		SQ.M	1	33.7	0.9	0.9	27.297	
	ITEM NO 7							
	EARTH FILLING							24.49 m3
	Wide area	Cu.m	2	8.05	1.44	0.6	13.9104	
	At Entrance	Cu.m	2	4	2.205	0.6	10.584	
	ITEM NO.:- 7							
	PLASTERING	SQ.M	16	2.85		3.5	159.6	438.2 m2
		SQ.M	6	8		3.5	168	
		SQ.M	4	7.9		3.5	110.6	
	ITEM NO.:- 8							
	WHITE WASH			2.85		3.5	159.6	438.2 m2
		SQ.M	6	8		3.5	168	
				7.9		3.5	110.6	
	RCC FOR SLAB	CU.M	1	8.65	8.2	0.15	10.64	10.64 m3
	L=8.65							
	B=8.2							
	H=0.15							

Public Toilet					
ABSTRACT					
Sr No	**Description**	**Unit**	**Quantity**	**Rate**	**Amount**
1	Excavation work	Cu.m.	75.36	155	11680.8
2	P C.C	Cu.m.	12.56	4845	60853.2
3	Brickwork in foundation	Cu.m.	25.8	3200	82560
4	Brickwork in superstructure	Cu.m.	90.93	3500	318286.5
5	Brickwork in steps	Cu.m.	0.45	3000	1350
6	D.P.C at plinth level	Cu.m.	27.29	4900	133755.3
7	Earth filling	Cu.m.	24.49	150	3673.5

8	Plastering	Sq.m.	438.2	180	78876
9	Whitewash	Sq.m.	438.2	25	10955
10	Rcc work for slab	Cu.m.	10.64	8800	93632
	Total Rupees				795622.3
	Contingency 5%				39781.11
	10% contractor charges				79562.23
	2% water charges				15912.44
	Total Amount Rupees				930878.18
	Say Rupees				**931000.00/-**

8.1.5 Public Garden:-

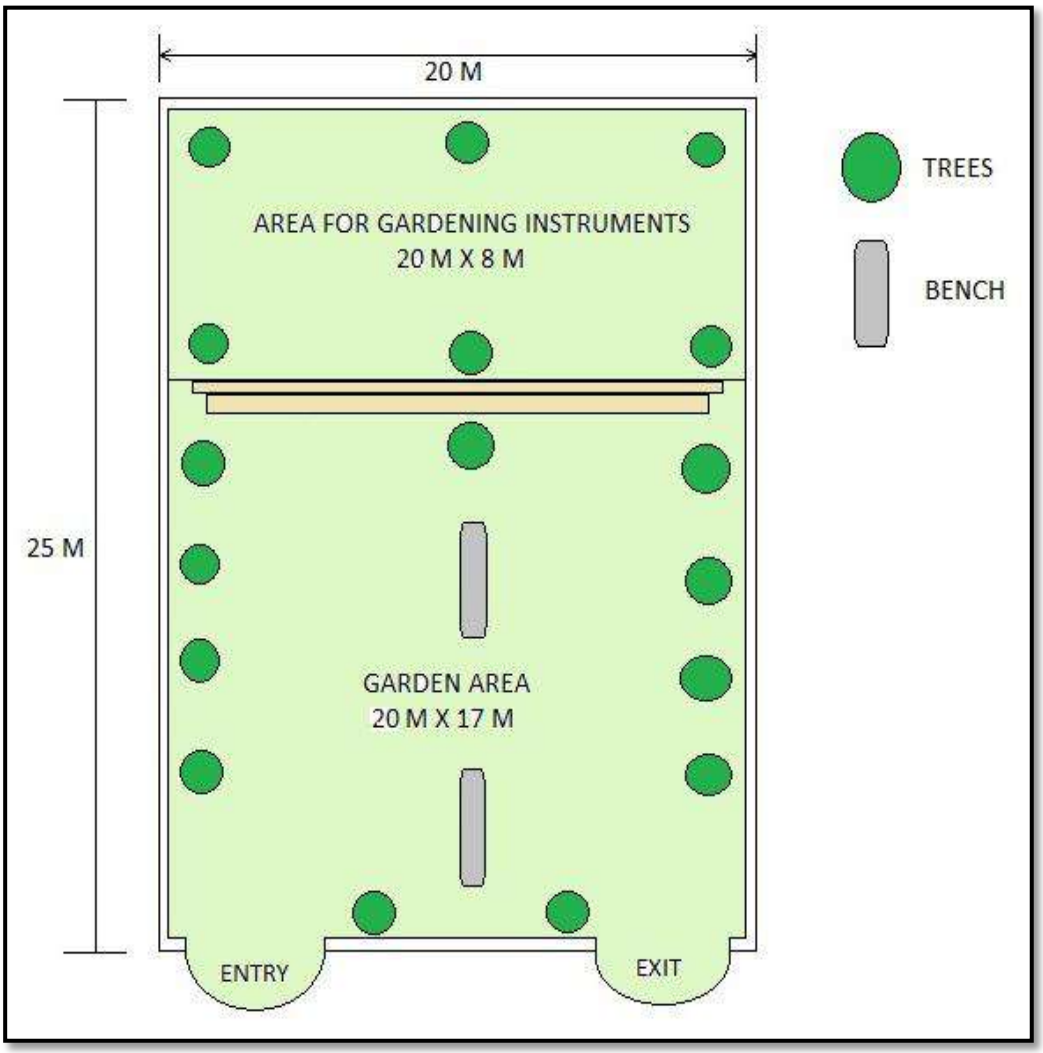


Fig. 33:- Plan of Public Garden

PUBLIC GARDEN								
MEASUREMENT SHEET								
Item No.	**Description**	**Unit**	**No.**	**L**	**B**	**H**	**Quantity**	**Total Quantity**
1								
	Excavation for Column	m3	27	0.9	0.9	1.3	28.43	
	L= (20 x21+							
	(24.4							32.42
	x2)							
	= 88.8	m3	1	88.8	0.3	0.15	3.99	
2	PCC							
	For column	m3	27	0.9	0.9	0.3	6.56	10.56
	Below wall	m3	1	88.8	0.3	0.15	3.99	
3	RCC COLUMN							
	Below ground	m3	27	0.3	0.3	1	2.43	4.85
	Above ground	m3	27	0.3	0.3	1	2.43	
4	EARTH FILLING							
	Q= 32.427-2.43-3.996							
	=26	m3					26	26
5	MASONARY							
	L=88,8-(27X0.3)							
	= 80.7	m3	1	80.7	0.3	0.5	12.11	12.11
6	STEEL RAILING							
	L=88,8-(27X0.3)							
	= 80.7	m2	1	80.7		0.5	40.35	40.35
7	PLASTER							
	For column	m2	108	0.3		1	32.4	32.4
	For Masonary	m2	1	266.4		0.5	133.2	133.2

8	LANDSCAPING							
	Area= 20x17							
	340	m2					340	340

PUBLIC GARDEN					
ABSTRACT SHEET					
Item. No.	**Description**	**Quantity**	**Rate**	**Per Unit**	**Amount**
1	Excavation	32.5	155	m^3	5037.5
2	P.C.C	11	4845	m^3	53295
3	RCC COLUMN	4.9	8800	m^3	43120
4	Earth filling	26	150	m^3	3900
5	MASONARY	12.2	3500	m^2	42700
6	Steel railing	40.36	2590	m^2	104506.5
7	Plaster				
	For column	32.5	150	m^2	4875
	For Masonry	133.2	150	m^2	19980
8	Landscaping	340	215	m^2	73100
	Total				350,514
	Water Charge				7010.28
	Contractor profit 10%				35051.4
	Contingencies. = 5%				17525.7
	Total				410,101.38
	Say Rupees				**411,000/-**

9: PROPOSING DESIGNS FOR FUTURE DEVELOPMENT OF THE VILLAGE FOR THE PART-II DESIGN

9 Proposing design for PART-II:-

1. Public library
2. (PHC) Public health center
3. Solid Waste management & Disposal
4. Community hall
5. Solar panel
6. Wi-Fi Connection

10 Following points should be considered for Motidau village in future prospects:

1. To facilitate good health amenities through building Maternity Home and dispensary. Currently there are no maternity facilities present in the village. Hence provision of a Maternity home and dispensary in the village will prove to be useful in the time of emergency and also day to day basic treatment.
2. There is poor condition of library in this village so provision of public library provides easy to villagers. It is providing a good knowledge providing to the people.
3. There is no good facilities in the village to keep the village clean so we will provide cleanliness from us.
4. This can be introduced as there is no community hall facility in the village for such a meeting to be held by the members of the village.
5. There is no solar panel facility in the village thus the Work proposal regarding better Electrification in the village.
6. There as poor network connection in the village so we provide the better network connection in the village for digital life culture

In this phase preliminary survey were done and according to the need different design were proposed. On these available data the following work is expected to be carried out in upcoming semester: -

- The system of solid waste management should be properly developed.
- To improve health care facilities
- To improve education facility.
- To improve transportation facility
- Providing renewable source for street Light
- Work proposal regarding better Electrification in the area.
- Wi-Fi Access in public places

10: CONCLUSION

- 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.
- Vishwakarma Yojana is one of the initiatives towards Rurbanization by Government of Gujarat, which was allotted as a pilot project to GTU. The students and Faculty Members meet all the stake holders in a village, survey the existing facilities. Then they re-imagine and re-design the whole of the infrastructure of the village. The students use their engineering skills to prepare detailed project reports for the infra-structure as a part of their Final Year project work.
- Today the world is growing rapidly and the living standards of society are improving due to development in each and every field, Due to evolution of new technologies and new developments. Mehsana is among one of the developed cities of Gujarat, and Motidau is a village in Mehsana District.
- Motidau is a large village located in Mehsana Taluka and Mehsana district, Gujarat with total 1035 families residing. The Motidau village has population of 4986 of which 2576 are males while 2410 are females as per Population Census 2011.
- In Motidau village population of children with age 0-6 is 647 which make up 12.98 % of total population of village. Average Sex Ratio of Motidau village is 936 which is higher than Gujarat state average of 919. Child Sex Ratio for the Motidau as per census is 823, lower than Gujarat average of 890Motidau village has higher literacy rate compared to Gujarat. In 2011, literacy rate of Motidau village was 84.88 % compared to 78.03 % of Gujarat. In Motidau Male literacy stands at 93.83 % while female literacy rate was 75.50 %.
- With help of 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 Motidau village such as Pickup stand, Post office, bank, toilet conditions, health facilities, Solid waste management, network connection etc.
- The motive of this project is to uplift the lifestyle of the rural areas to its certain extent up to the level of an ideal village.
- It is an effective way to develop the rural areas under economical cost with good workability and efficiency during its usage.
- The project tends to improve the physical, social as well as socio-cultural aspects of the village by implementing and improvising various infrastructures with regards to lesser or least hindrance to its rural authenticity.
- This project is proved as very knowledge gaining and interesting for us. After doing this project we have understood that the development of villages is equally important as urban area for country's overall growth.

➢ We are proposing a design base on our survey, knowledge and Gap analysis to village for its development. Following are all design we propose for village are:

1) Bank
2) Pickup stand
3) Post office
4) Rain Water Harvesting
5) Public Toilet
6) Public Garden

11: REFERENCE

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12: ANNEXURE ATTACHMENT

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

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

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	Mahtapur
Name of Taluka:	Unjha
Name of District:	mehsana
Name of Institute:	L.C. Institute of technology, Bhandu
Nodal Officer Name & Contact Detail:	Sumit B. Patel 9687637291
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sarpanch :-> Patel maduben mafabhai
Date of Survey:	

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	-	-	-	-
ii)	2011	5197	2690	2507	1124

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	1253
	Forest Area (In hect.)	-
	Agricultural Land Area (In hect.)	1072
	Residential Area (In hect.)	
	Other Area (In hect.)	
	Water bodies	
	Nearest Town with Distance:	

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3. Occupational Details:

Name of Three Major Occupation groups in Village	1.	Farming
	2.	Dairy farm
	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	Treated	yes		Good
	• Well (Covered/ Uncovered) • Hand pumps	Covered	yes		Good
	• Tube well/ Borehole • River/ Canal/ Spring/ Lake/ Pond	Hand pump	yes		Good
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank : 2 nos	Capacity: 0.5 Lac lit	yes		good
	Underground Sump	Capacity: 1.0 Lac lit.	yes		good
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	covered	yes		good.
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	closed			good.
	If Open than Pucca / Kutchcha				
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	yes.			
Suggestions if any:					

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Techno Economic Survey

E.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	500m	yes		good
	Main road	500m	yes		good.
	Internal streets	43 nos	yes.		
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH (500m)	yes		
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO 7 km.	-	-	-
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	NO 7 km	-	-	-
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto Jeep Chhakda.	yes		good.
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	UGVCL (24 hr.)	yes		good
	Power supply for Domestic Use	24 hrs			good
	Power supply for Agricultural Use	8 hrs			good
	Power supply for Commercial Use	24 hrs.			good
	Road/ Street Lights	yes			good

	Electrification in Government Buildings/ Schools/ Hospitals				
	Renewable Energy Source Facilities (Y/ N)	Solar Power in houses.	yes		good
	LED Facilities	yes	yes.		good
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	2			good
	Location Condition	Bus stand	yes		good
	Community Toilet (With bath/ without bath facilities)				
	Solid & liquid waste Disposal system available	Land fill	yes		good
	Any facility for Waste collection from road		yes.		good
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	canal Tube well	yes		good
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	20%. 80%.			

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

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K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	ayurvedic hospital	yes		good.
	Private Clinic/Private Hospital/ Nursing Home	one	yes		good.
	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	6	yes		
	Primary School	2	yes		
	Secondary school	1	yes		
	Higher sec. School				
	ITI college/ vocational Training Center				
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	Science college.	yes		
	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:				

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	Condition:				
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	yes	yes		good
	Public Garden Location: Condition:	good	yes		good
	Village Pond Location: Condition:	good	yes		good
	Recreation Center Location: Condition:				
	Cinema/ Video Hall Location: Condition:	No	No		
	Assembly Polling Station Location: Condition:	good.	yes		good.
	Birth & Death Registration Office Location: Condition:	Gram panchayat good	yes		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	L	yes		good
	Telecommunication Network/ STD booth	L	yes		good

	General Market	shop			
	Shops (Public Distribution System)				
	Panchayat Building	yes			poor
	Pharmacy/Medical Shop				
	Bank & ATM Facility	mehsana cop			
	Agriculture Co-operative Society				
	Milk Co-operative Soc.	✓			good
	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	Solar panels in houses	yes		good
P.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System				
Q.	Any Other				

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	

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

8. **Additional Information/ Requirement:**

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

9. **Smart Village Proposal Design**

Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

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

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

12.2 SURVEY FORM OF SMART VILLAGE SCANNED COPY ATTACHMENT IN THE REPORT FOR PART-I

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	Sabar kantha.
Name of Taluka:	Talod
Name of Village:	Punsari
Name of Institute:	L. C. Institute of technology, Bhandu.
Nodal Officer Name & Contact Detail:	Sumit B. Patel Mo:-> 9687637291
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sarpanch => Sunandaben patel mo => 8153041355 Talati cum Mane => Ashishbhai chaudhary mo => 9429632732. panchayat member => Kailashben barot etc.
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	–	–	–	–
2.	2011	6000	3055	2945	1500

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1531 - 65 - 76
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	1015 - 63 - 62
4.	Residential Area (In hect.)	15 - 51 - 57
5.	Other Area (In hect.)	216 - 60 - 45
6.	Distance to the nearest railway station (in kilometers):	Talod (30km)

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7.	Name of Nearest Town with Distance:	modasa (25 Km).
8.	Distance to the nearest bus station (in kilometers):	punsari (0.5 Km)
9.	Whether village is connected to all road for the any facility or town or City?	yes.

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Farming
	2.	Dairy
	3.	Labour
Major crops grown in the village:	1.	Weat
	2.	cotton
	3.	Millet.

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

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Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 1 Lakh lit ✓			Good
	Underground Sump	Capacity:			
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	yes open with outlet	yes		Good condition
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	3	yes		All weather
	Main road	2	yes		"
	Internal streets	30	yes		"
	Nearest NH/SH/MDR/ODR Dist. in kms.	yes (7 km)	yes		"
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO (30 km) Taluka.			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	yes Village BUS-stop	yes		BUS station (3 Okm). Taluka
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	yes private, Auto, Jeep etc.	yes		Good.
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	yes Govt. more than 6 hrs.	yes.		

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	Power supply for Domestic Use	yes	yes		
	Power supply for Agricultural Use	yes	yes		
	Power supply for Commercial Use	yes	yes		
	Road/ Street Lights	yes	yes		Good condn
	Electrification in Government Buildings/ Schools/ Hospitals	yes	yes		
	Renewable Energy Source Facilities (Y/ N)	No	yes		
	LED Facilities	yes.	yes		Good.
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	yes 2 nos			Good condn.
	Location Condition	clean			
	Community Toilet (With bath/ without bath facilities)	yes 2 nos	yes		Good condition.
	Solid & liquid waste Disposal system available	yes 1 nos	yes		
	Any facility for Waste collection from road	yes	yes.		
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL. OTHER (SPECIFY)	yes canal well 7 nos	yes yes		Good condition.
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	3%/97%			

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	Yes			
	Sub-Centre	-	All		All
	PHC	yes	use		use
	BLOCK PHC	yes	Adequate		good condition
	CHC/RH				
	District/ Govt. Hospital				
	Govt. Dispensary				
	Private Clinic	yes			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	8	yes		8 - good
	Primary School	5	yes		good
	Secondary school	1	yes		good
	Higher sec. School	1	yes		good
	ITI college/ vocational Training Center	1 km	yes		good condition
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities				
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				

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Suggestions if any:

L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)	Good	2 nos in Vill.	yes	
	Public Library (With daily newspaper supply: Y/N)	Good	1 No. village	yes	
	Public Garden	Good.	village	yes	
	Village Pond	Good	village	yes.	
	Recreation Center	No			
	Cinema/ Video Hall	No			
	Assembly Polling Station				
	Birth & Death Registration	Good	Panchayat	yes	

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

Suggestions if any:

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

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

Suggestions if any:

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

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

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

IX. Smart Village / Heritage Details

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

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

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

Sunanda Patel

12.3 SURVEY FORM OF ALLOCATED VILLAGE SCANNED COPY ATTACHMENT IN THE REPORT FOR PART-I

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Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	Mehsana.
Name of Taluka:	Mehsana.
Name of Village:	motidau (Pc. No: 384120).
Name of Institute:	L.C. Institute of technology, Bhandu.
Nodal Officer Name & Contact Detail:	Sumit B. Patel. Mo. No:-> 9687637291
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	-> Sarpanch:-> Gangaxumbhai Adhiyol -> Panchayat member. -> Haashad Parjapati -> Teacher. -> Tejabhai desai. -> Chandrakant Parjapati
Date of Survey:	17/8/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	-	-	-	-
2.	2011	4986	2576	2410	1035

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1542.16 Hector.
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	1259.38
4.	Residential Area (In hect.)	282.78
5.	Other Area (In hect.)	1259.38
6.	Distance to the nearest railway station (in kilometers):	Bhandu-motidau Railway Station (1 km).

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7.	Name of Nearest Town with Distance:	Mehsana 10 KM away.
8.	Distance to the nearest bus station (in kilometers):	Has Bus stand in village (0.5 KM).
9.	Whether village is connected to all road for the any facility or town or City?	yes.

III. OCCUPATIONAL DETAILS:

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

Major crops grown in the village:	1.	Wheat
	2.	Cotton
	3.	Castor

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

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	Other(Specify)Lake/ Pond	yes condi, Bor			
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 2 Lac Lit	yes		Good condn
	Underground Sump	Capacity: 3 Lac Lit	yes		Good "
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1	yes	yes		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	yes	yes		Good condn
	Main road	yes	yes		Medium.
	Internal streets	yes	yes		Good.
	Nearest NH/SH/MDR/ODR Dist. in kms.	yes NH (3 Km)	yes		Good.
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Bhandu station (1 Km)	yes		Good
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	(0.5 Km)	yes		Good.
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto, Jeep, Chhakda Private	yes		Well.
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Govt. 24 Hrs.	yes		Good condn

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	Power supply for Domestic Use	24 hrs.	yes.		Good condition.
	Power supply for Agricultural Use	10 hrs.	yes		Daily supply
	Power supply for Commercial Use	yes	yes		
	Road/ Street Lights	yes	yes		Good.
	Electrification in Government Buildings/ Schools/ Hospitals	24 hrs.	yes		Good.
	Renewable Energy Source Facilities (Y/ N)	no.			
	LED Facilities	yes		yes	More facility
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	NO			
	Location Condition	Nile			
	Community Toilet (With bath/ without bath facilities)	yes (2 nos)	yes		
	Solid & liquid waste Disposal system available	yes		yes	more facilities
	Any facility for Waste collection from road	yes.			Good. waste collection.
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL. OTHER (SPECIFY)	yes yes yes	yes		2 well 1 canal. 1 pond
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	5 % / 95 %			

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	yes	yes		→ Anganwadi need cleaning.
	Sub-Centre	No			
	PHC	yes	yes		→ PHS & CHS Nr. Bamosna.
	BLOCK PHC				
	CHC/RH	yes	yes		
	District/ Govt. Hospital	No			
	Govt. Dispensary	No			
	Private Clinic	yes(2)	yes.		
	Private Hospital/	No			
	Nursing Home	No.			Nursing Home Nr. Bhandu. (2-3 km)
	AYUSH Health Facility	No			
	sonography /ultrasound facility	No			
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	yes (4)	yes		2 Good cond^n
	Primary School	yes. (1)	yes.		Good.
	Secondary school	yes (1)	yes		Good.
	Higher sec. School	No			
	ITI college/ vocational Training Center	No			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	No			Engineering, Nursing College Nr. Bhandu (2-5 km).

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

Suggestions if any:

L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)	without TV. Pooje.	in village.	yes	
	Public Library (With daily newspaper supply: Y/N)	Not. Good	No. Bus-stand	yes.	Bed condition.
	Public Garden	No.			No.
	Village Pond	Good.		yes.	
	Recreation Center				NO
	Cinema/ Video Hall				NO
	Assembly Polling Station	well.		yes	
	Birth & Death Registration Office	Good	panchay-yat	yes.	

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

Suggestions if any:

M.	Other Facilities	Condition	Location	Available (YES)	Available (NO)
	Post-office	Good	No. Bafay.	yes	
	Telecommunication Network/ STD booth		cendge	yes.	
	General Market	pustpur shops.		yes.	
	Shops (Public Distribution System)	11		yes	
	Panchayat Building	Good.		yes	
	Pharmacy/Medical Shop	(5 km).			NO
	Bank & ATM Facility	Axis Bank		yes	
	Agriculture Co-operative Society				NO
	Milk Co-operative Soc.		No. Post off.	yes	
	Small Scale Industries				NO
	Internet Cafes/ Common Service Center/Wi Fi				NO.
	Youth Club				NO
	Mahila Mandal	1 Group.		yes	

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

Suggestions if any:

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

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

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VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	→Library repair →need more Education Good. Good.	
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING .....Daily..... FOGGING..... Drive was undertaken in the village?	yes	

IX. Smart Village / Heritage Details

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

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

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

X

સરપંચશ્રી
મોટીદાઉ ગ્રામ પંચાયત
તા.જી.મહેસાણા.

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12.4 GAP ANALYSIS OF THE ALLOCATED VILLAGE

VILLAGE GAP ANALYSIS					
Village Facilities	**Planning Commission/ UDPFI**	**Village Name**: Motidau **Population**: 4986			
	Norms	**Existing**	**Require as per Norms**	**Future Project Design**	**GAP**
Social Infrastructure Facilities					
Education					
Anganwadi	Each of per 2500 population	3	1	-	2
Primary School	Each Per 2500 population	1	1	-	0
Secondary School	Per 7,500 population	1	0	1	0
Higher Secondary School	Per 15,000 Population	0	0	1	-
College	Per 125,000 Population	0	0	-	-
Tech. Training Institute	Per 100000 Population	0	0	-	-
Agriculture Research Centre	Per 100000 Population	0	0	-	-
Skill Development Center	Per 100000 Population	0	0	-	-
Health Facility					
Govt/Panchayat Dispensary or Sub **PHC or Health Centre**	Each Village	1	1		**0**
Primary Health & Child Health Center	Per 20,000 population	-	1	-	-
Child Welfare and Maternity Home	Per 10,000 population	-	0	-	-
Multispecialty Hospital	Per 100000 Population	-	-	-	-
Public Latrines	1 for 50 families (if toilet is not there in	- 2	- **2**	-	- **0**

	Home				
Physical Infrastructure Facilities					
Pucca Village Approach Road	Each village	adequate	-	-	-
Bus/Auto Stand provision	illages connected by ST/Auto Rickshaw	adequate	**2**	**1**	**1**
Drinking Water (Mini. 70 LPCD		-	-	**1**	-
Over Head Tank	1 /3 of Total Demand	adequate	-	-	-
U/G Sump		adequate	-	-	-
Drainage Network - covered		adequate	-	-	-
Drainage		adequate	-	-	-
Waste Management System		Inadequate	-	-	-

Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	**0**	**1**	-	**-1**
community hall and Public Library	Per 15000 Population	**0**	**1**	-	**-1**
Cremation Ground	Per 20,000 population	**0**	**1**	-	**-1**
Post Office	Per 10,000 population	**1**	**1**	-	**0**
Gram Panchayat Building	Each individual/group	**1**	**1**	-	**0**
APMC	Per 100000 Population	**0**	**0**	-	**0**
Fire Station	Per 100000 Population	**0**	**0**	-	**0**
Public Garden	Per village	**1**	**1**	-	**0**
Police post	Per 40,000Population	**0**	**1**	-	**-1**
Shopping Mall	Shops are available	**no**	-	-	-
Electrical design					
ElectricityNetwork	**UGVCL**	Adequate	66 kv Substation		

Table: 15:- Gap analysis of Motidau Village

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

L.C. Institute of technology, Bhandu			
Sr. no	**Village name**	**Part 1**	**Part 2**
1	**Motidau**	1. Bank	1. Public library
		2. Pickup stand	2. Repair of old road sur-face
		3. Post office	3. Solid Waste manage-ment
		4. Water harvesting	4. Community hall
		5. Public toilet	5. Solar panel
		6. Public garden	6. Wi-Fi Connection
2	**Davada**	1. Water tank	1. Pickup stand
		2. Community hall	2. STP (Sewage treatment plant)
		3. WI-FI tower	3. (PHC) Public health center
		4. Anganwadi	4. Post office
		5. Public toilet	5. Skill Development cen-ter
		6. Public library	6. Public garden

Table: 16:- Summary of all the details of village design

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

We also put drawings in a design proposal.

12.7 Summery of Good Photograph

Fig. 34:- Summery of Good Photograph

12.8 Interaction with village - Entrepreneur

Fig. 35:- With Village Entrepreneur

12.9 Sarpanch Letter giving information about the village development

સેવા...... સહકાર...... સંગઠન.....

મોટીદાઉ ગ્રામ પંચાયત

મોટીદાઉ ગ્રામ પંચાયત તા., જી.મહેસાણા.

મુ.પો. મોટીદાઉ, તા.જી.મહેસાણા. (ઉ.ગુ.) સરપંચ : શ્રી ગંગારામભાઈ બી. અઢિયોલ

પીન કોડ– ૩૮૪૧૨૧ મો. ૯૪૨૯૭ ૩૩૬૨૮

જા.નં. : તા.: ૧ - ૬ -૨૦૨૧

આથી પ્રમાણપત્ર લખવામાં આવે છે કે
એન્જીનીયરીંગ કોલેજ [illegible] [illegible]
કોલેજના વિદ્યાર્થીઓ દ્વારા મોટીદાઉ ગામમાં
સર્વે કરવામાં આવેલો હતો અને ગામની માહિતી
તમામ માહિતીઓ આપવા બદલ આ પ્રમાણપત્ર
લખવામાં આવેલ છે

(signature)
સરપંચશ્રી
મોટીદાઉ ગ્રામ પંચાયત
તા.જી.મહેસાણા.

13: DESIGNS PROPOSAL FOR VIL-LAGE DEVELOPMENT PART-II

13.1 Proposing design for PART-II:-

1. Public library
2. Repair of old road surface
3. Solid Waste management
4. Community hall
5. Solar panel
6. Wi-Fi Connectivity

13.1.1 Social Design: Public Library:-

There is a no facilities of public library with new design, A public library is very important in social amenities .it is providing a good knowledge to the people in Motidau village.

13.1.2 Transformation design: Repair of old road surface:-

Road maintenance and repairing is required every one or two years, so that's why road repairing work is proposed in Motidau village.

13.1.3 Sustainable design: Solid Waste Management:-

These manage solid waste for creating hygiene and healthy environment by using method collection of waste deposal.

13.1.4 Social Design: Community Hall:-

To design a community hall in Motidau village by survey planning, design and estimation. Currently there has no facility in Motidau village. Thus we are proposing hall to easy the socially or important meeting with village public.

13.1.5 Smart design: Solar Panel:-

Solar panel is useful for electricity. For generation of electricity thus we design solar panel.

13.1.6 Digital design: Wi-Fi Connectivity:-

In a village urban facilities provide to villager for connecting to the others and digital life. so we are providing a WI-FI tower will new futures.

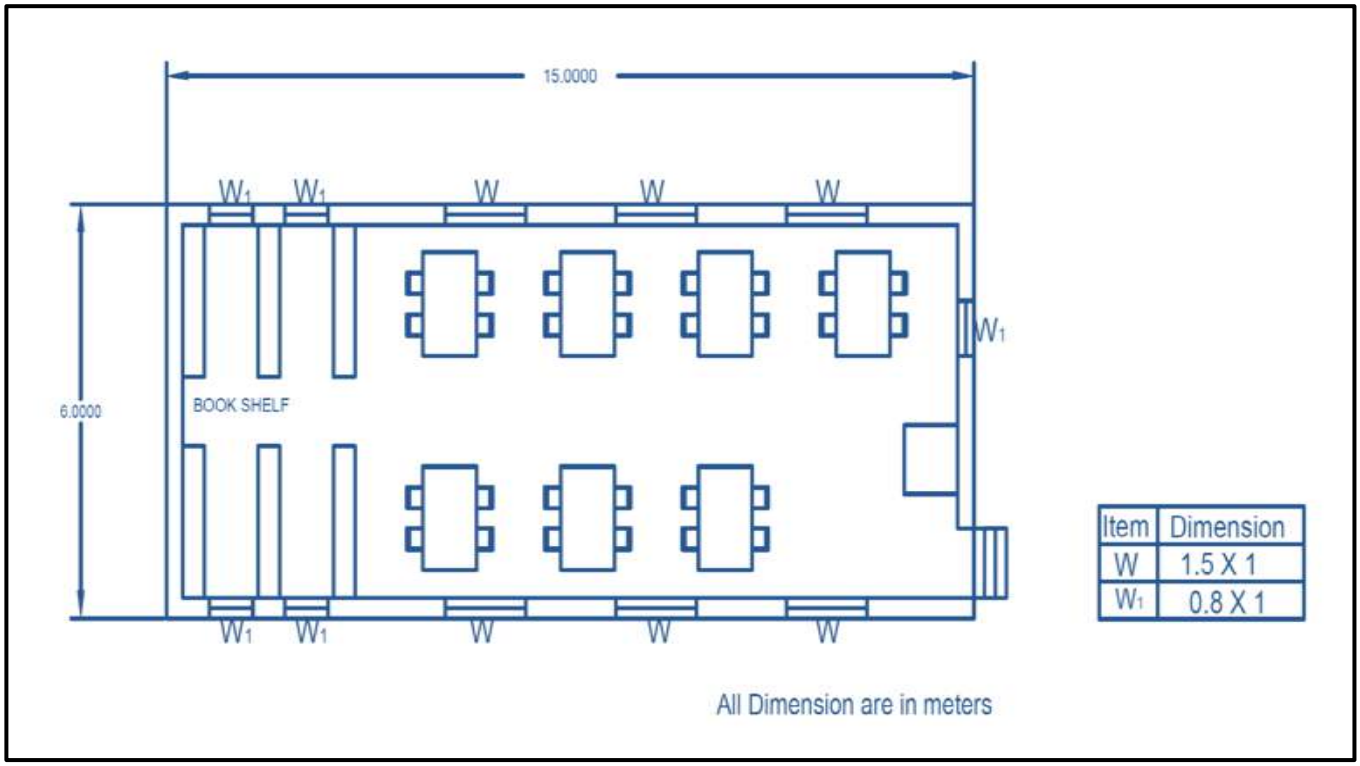
13.2 Reason for Students Recommending this Design

- **Public Library -** To education purpose & increase knowledge of students.
- **Repair of old Road surface -** Is to provide good transportation Facilities in village.
- **Solid Waste Management -** To manage solid waste for creating hygiene and healthy environment.
- **Community Hall -** To provide social development in village and meeting Facilities in village.
- **Solar Panel -** For generation of electricity we also design solar panel.
- **Wi-Fi Connectivity –** For better network connection we design wi-fi network.

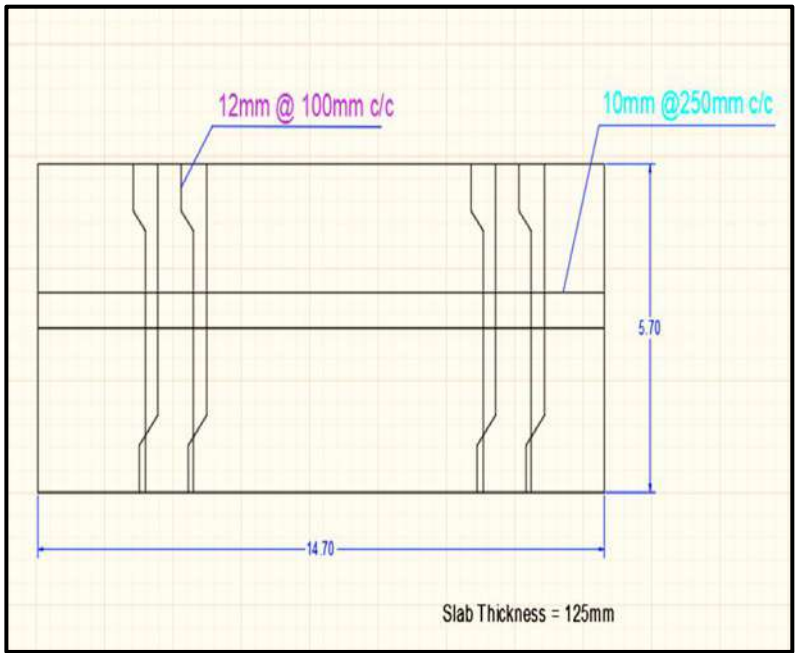
13.3 About designs Suggestions / Benefit of the villagers

- **Public Library:-** It is providing a good knowledge to the people in Motidau village, So we design library for education purpose &increase knowledge of students.
- **Repair of Old Road Surface**: - Clean old concrete surface, Finish new concrete surface, Curing new concrete, In the village all road are made by concrete with new finishing.
- **Solid Waste Management:-** Motidau Village is not having any facilities for solid waste management. These manage solid waste for creating hygiene and healthy environment by using method collection of waste deposal.
- **Community Hall:-** To provide facilitate for social development of village, it should described the village will developed after providing this facilities to villagers.
- **Solar Panel:-** Solar panel is useful for electricity. For generation of electricity and Contribute to a better environment. There is no Pollution and Effect on People life.
- **Wi-Fi Connectivity:-** There is poor connectivity in a Motidau village, the WI-FI tower is connect people to the urban people and with digital knowledge.

13.1.1 PUBLIC LIBRARY



Item	Dimension
W	1.5 X 1
W1	0.8 X 1



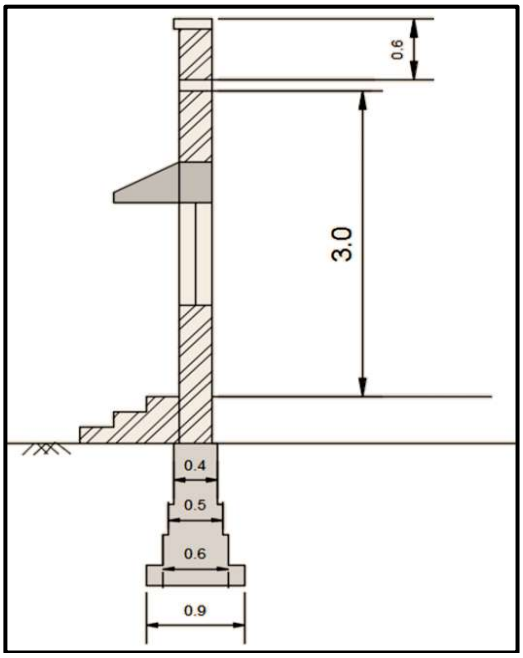


Fig 36:- Plan, Reinforcement & Section of Public Library

PUBLIC LIBRARY								
MEASUREMENT SHEET								
CENTER LINE = 40.80m								
Sr. NO	**DESCRIPTION**	**UNITS**	**NO**	**L**	**B/W**	**H/D**	**QUANTIY**	**TOTAL QUANTITY**
NO.:-1	Excavation for Foundation							
		Cu.m.	1	39.9	0.9	1.1	39.50	39.50 m3
	L=40.80							
NO.:-2	C.C. work in foundation							
		Cu.m.	1	39.9	0.9	0.2	7.18	7.18 m3
	L=40.80							
NO.:-3	Brick masonry work in foundation							
	1st step							
	L=40.8-2*0.6/2	Cu.m	1	40.2	0.6	0.3	7.23	
	2nd step							
	L=40.8-2*(0.5/2)	Cu.m	1	40.3	0.5	0.3	6.045	
	3rd step							
	L=40.8-2*(0.4/2)	Cu.m	1	40.4	0.4	0.9	14.544	

NO.:-4	Brick masonry work in Superstructure	Cu.m.	1	40.5	0.3	3.7	44.955	42.45 m3
	Deduction for door & Windows							
	Door	Cu.m.	1	1.2	0.3	2.1	0.756	
	Windows W		6	1.5	0.3	1.4		
	Windows W1	Cu.m.	4	0.8	0.3	1.4	1.344	
	Total	Cu.m.					-2.1	
NO.:-4	Deduction for lintel							
	Door 1	Cu.m.	1	1.2	0.3	0.1	0.036	
	Windows W	Cu.m.	6	1.5	0.3	0.1	0.27	
	Windows W1	Cu.m.	4	0.8	0.3	0.1	0.096	
	Total	Cu.m.					- 0.402	
NO.:-5	Brick masonry work in step							0.45 m3
	Step: 1	Cu.m.	1	1.5	0.3	0.15	0.225	
	Step: 2	Cu.m.	1	1.5	0.3	0.15	0.225	
NO.:-6	D.P.C at plinth level							
	For 300mm thick wall	cum	1	40.5	0.3	0.05	0.6075	0.6075 m3
NO.:-7	Earth filling	Cu.m		14.4	5.4	0.6	46.65	46.65 m3
NO.:-8	Plastering	SQ.M	1	14.4		3	43.2	137.16 m3
		SQ.M	1	5.4		3	16.2	
			1	14.4	5.4		77.76	
	Deduction for door & Windows							130.16 m3
	Door	SQ.M	1	1.2		2.1	2.52	
	Windows W	SQ.M	6	1.5		1.4	12.6	
	Windows W1	SQ.M	4	0.8		1.4	4.48	
	Total	SQ.M					7	
NO.:-9	RCC Work for Slab	CU.M	1	15	6	0.15	13.5	13.5 m3

PUBLIC LIBRARY					
ABSTRACT SHEET					
Sr. No.	**Description**	**Per**	**Quantity**	**Rate**	**Amount**
1	Excavation work	Cu.m.	39.50	155	6122.655
2	P C.C	Cu.m.	7.18	4845	34787.1
3	Brickwork in foundation	Cu.m.	27.82	3200	89040
4	Brickwork in superstructure	Cu.m.	42.45	3500	148585.5
5	Brickwork in steps	Cu.m.	0.45	3000	1350
6	D.P.C at plinth level	Cu.m.	0.607	4900	2976.75
7	Earth filling	Cu.m.	46.65	150	6997.5
8	Plastering	Sq.m.	130.16	180	23428.8
9	Rcc work for slab	Cu.m.	13.5	8800	118800
	Total Rupees				432088.3
	Contingency 05.00%				21604.41
	10% contractor charges				43208.83
	2% water charges				8641.76
	Total Amount Rupees				505543.3
	Say Rupees				**505600.00/-**

13.1.2 REPAIR OF OLD ROAD SURFACE

A road surface or pavement is the durable surface materials laid down on an area for the movement of vehicles and pedestrian. In the village all road are made by concrete. Concrete surfaces are created using a concrete mix of Portland cement, aggregate, sand and water.

❖ Placing the new concrete on old surface:-

- Steps involve in placing the concrete:

1) Clean old concrete surface.
2) Fix formwork.
3) Placement of reinforcement.
4) Saturate existing concrete surface.
5) Pour/place new concrete.
6) Finish new concrete surface.
7) Curing new concrete.


Fig 37:- Road in motidau village

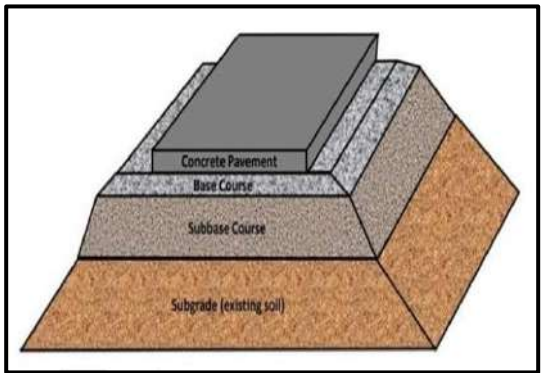


Fig 38:- Placing Repairing like Road

❖ Quantity of new pour concrete:-

For 100 meter length, width of road-3.75m, thickness of new concrete- 0.05m (5cm).

Item no.	Item de-scription	No.	Length	Width	Height	Quantity
1.	Concrete placing	1.	100	3.75	0.05	18.75 m3

Total dry concrete= (18.75*1.52) = 28.5 m3 (1:2:4)
One part of cement = (28.5/7) = 0.41 m3
= 4.07/.035 = 116.3 or 117 bags
Two parts of sand = 8.2 m3
Four parts of aggregates- 16.4 m3

APROX ESTIMATE				
Item description	**Quantity**	**Rate**	**Per unit**	**Amount (Rs.)**
MATERIALS;				
Cement	117bags	340	bag	39780
Sand	8.2 m3	940	m3	7708
Aggregates	16.4m3	775	m3	12710

Machines & Vehicle Cost	5	2000	day	10000
Labors; Male coolie	4	250	day	1000
Female coolie	3	200	day	600
Bhistie	1	180	day	180
Total Rupees				71976.00
Contingency 05.00%				3599
10% contractor charges				7197.6
2% water charges				1439.2
Total Amount Rupees				84211.8
Say Rupees				**85000.00**

13.1.3 SOLID WASTE MANAGEMENT

❖ Introduction:-

To manage solid waste for creating hygiene and healthy environment by using method of collection of waste disposal and basic sanitary cleaning process to decompose the waste for Motidau village. Motidau village is located near Mehsana district and in this village amount of daily waste generated is not less than 100 kgs per day.

Swachh Bharat Abhiyaan (Gramin) was launched in October 2014 with an objective to bring about improvement in the cleanliness, hygiene and the general quality of life in rural areas.

❖ Solid Waste Management System:-

- **STEP – 1: Community Education and Provision of Dustbins:** At least two weeks before the actual collection of waste from the door steps of households, ward-wise community education took place on types of wastes; and how community cooperation in waste-segregation at the household level can ease waste management at the GP level. The GP campaigned with the community to cooperate with the arrangement in their personal interests, and in the interest of community well-being. Each household was provided with two dustbins – Green for dry waste; and Red for Wet Waste.
- **STEP – 2: Collection:** Kamli engages 2battery operated tri-wheelers (vehicles) tri-wheelers cycles for daily collection of waste from households and market area. The vehicles make two trips daily one in the morning from 7.00 to 10.30 am; and again in the evening from 4.30 to 6.00 pm. The vehicle has two compartments – one for collection of _wet wastes,, and the other for dry wastes. Each vehicle has a driver and a genitor who empties the dustbins into the vehicle handed by residents at their door steps. The idea of collecting two times a day is part of their planning. It feels easy to touch the wet waste, when it is still fresh or when it has not started decaying. It is a well-thought out plan. The unit attempts handling any type of waste of any quantity generated within the Panchayat.
- **STEP- 3: Segregation – Primary – Secondary - Tertiary:** The households are supposed to segregate wet waste from dry waste at the household level, before handing them over to genitors. This is primary segregation. Bring them to the SWM unit and do secondary segregation. Secondary segregation is reported to be necessary because - all said and done many a household do only a rough segregation into

two different bins. The genitors do a secondary segregation and shift the wet waste fit for vermi-composting, and others go for tertiary segregation. Practically, tertiary segregation involves sorting dry wastes of different types – such as plastics, bottles, pet bottles, iron pieces, papers, card boards, cloth pieces, carry bags, tetra packs etc.

- **STEP - 4: Treatment:** Wet wastes that are easily digestible decomposable go into making vermi-compost; and wet waste of assorted nature go into plain composting covered with a plastic sheet. The non-biodegradable wastes are classified and kept separately for different recycling use. There are buyers for each type of waste – be it papers, card boards, bottles, pet bottles, bottle caps etc. Each type of bio-degradable waste has some utility. Some of the items like orange peels, lemon peels, eggshells etc are processed by the SWM Unit itself and are converted into bio-products.
- **STEP - 5: Store Keeping:** Each type of dry waste is kept in one compartment each after segregation. There is a long tin-shed compartmentalized for this purpose. These items (bottles, pet bottles, papers, card boards, worn out cloths/footwear etc.) cannot be sold on a daily basis. So, they let them accumulate over a period of one or two months so that it becomes economical for recyclers who deal in such waste materials to buy and transport to their places. They are sold to recycling agents who visit this SWM Unit periodically.
- **STEP – 6: Sale as recyclables:** These items (bottles, pet bottles, papers, card boards, worn out cloths/footwear etc.) are sold to traders who deal in recyclable waste materials. They go for reprocessing, and they may arrive in the market in several different forms.
- **STEP – 7: Sale after recycled products:** Some of the wastes such as orange peels, lemon peels, egg shells are processed by the SLWM Unit. They become salable commodities. For instance, orange peels / lemon peels are dried up and powdered to be added in making scouring powders used for vessel cleaning. Similarly, egg shells are powdered and sold for use as organic fertilizers in rose gardens. They are presented as resource recovery from wastes below.

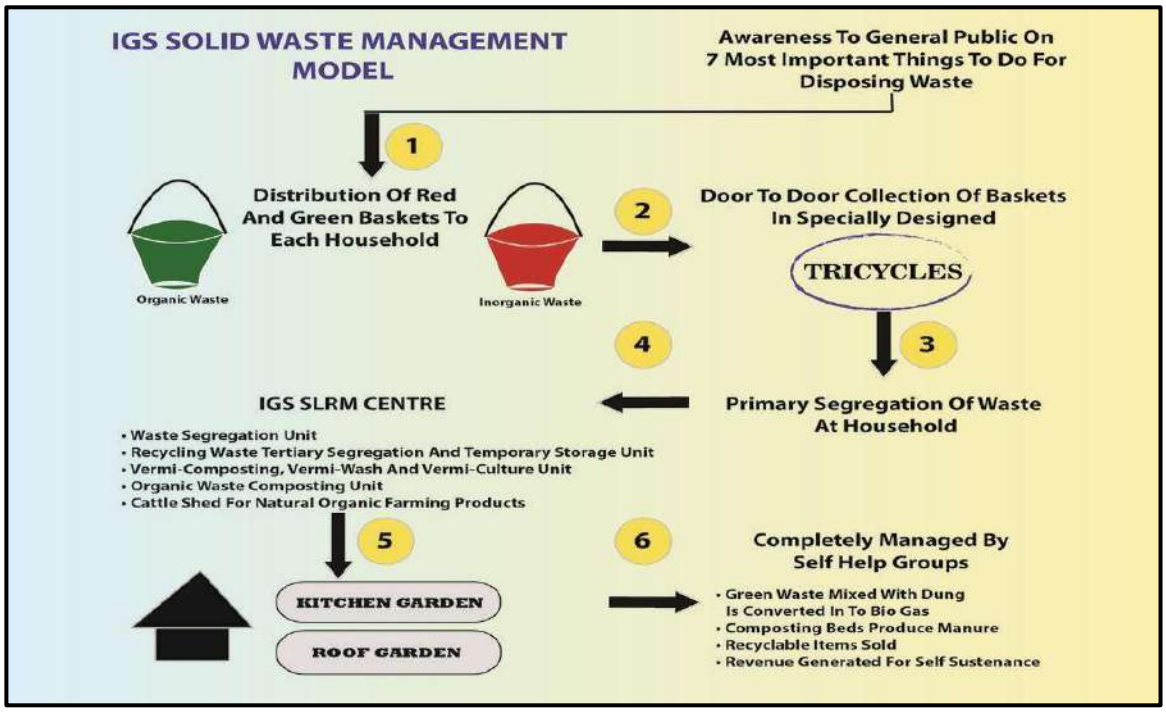
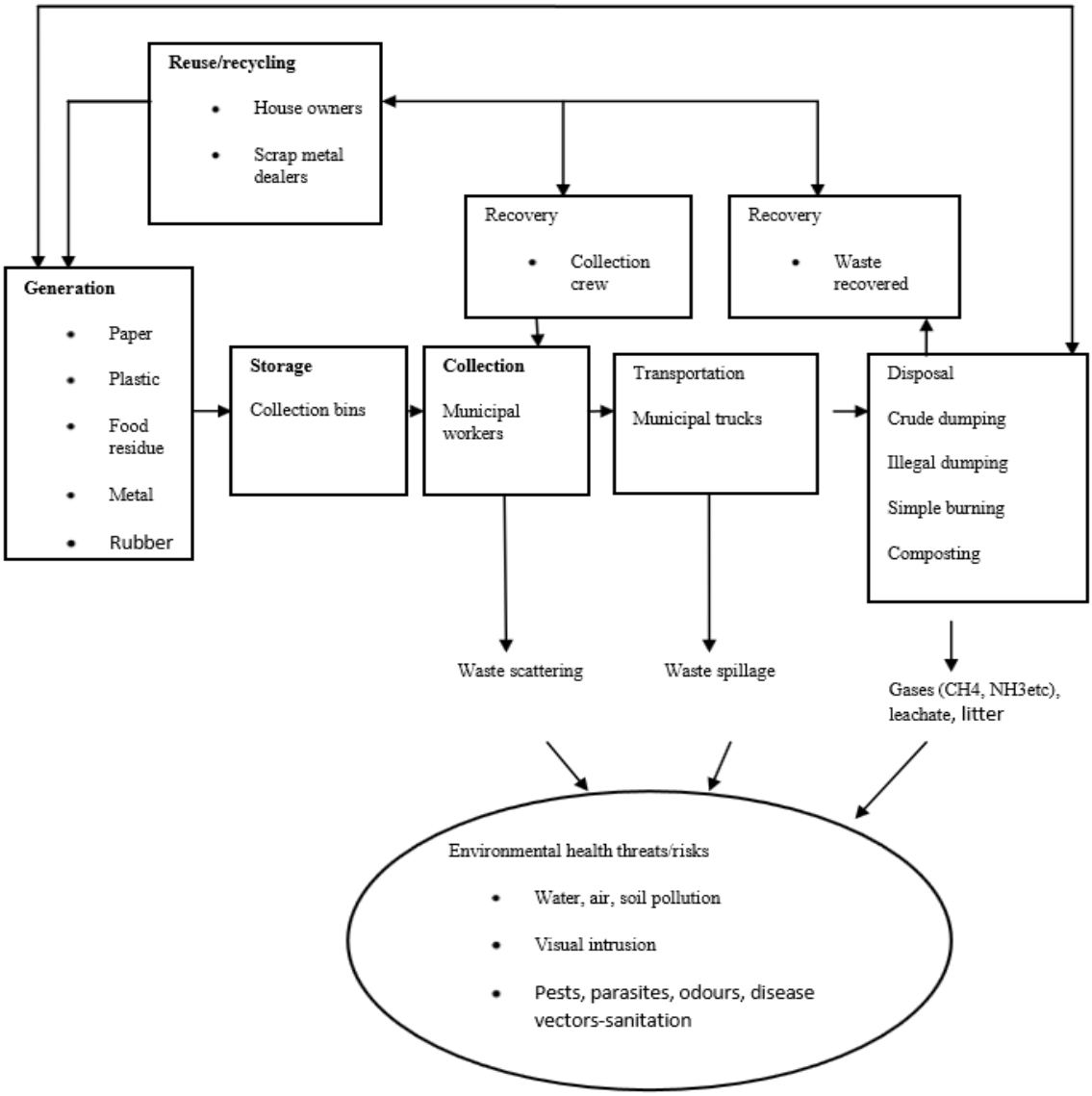


Fig. 39:- Solid Waste Management model system

Fig. 40:- Integrated Waste Management Hierarchy



❖ Pre-production Actions:-

- **Reducing Production (consumption):** Producing and consuming only as much as needed. Redesigning Production processes: Producing using cleaner processes and packaging using less material.
- **Production of safe and recyclable materials:** Avoiding the use of toxic and no recyclable materials, so that maximum resource can be recovered with least harm to the environment.

❖ Post-production Actions :-

- **Reuse:** What is produced should be reused as many times as possible. E.g., Bottles, containers, bags, etc.
- **Recycle:** Recycling those materials that cannot be reused. E.g., Organic waste into compost, PET bottles into polyester fibers, glass bottles into glass panes, cotton rags into paper, etc.

Waste Generation	Collection & Transportation	Disposal
Total estimated Solid Waste Generated: 1.5 – 2 tons per day (based on an estimate of 250g per person per day)	Currently there is no scientific system to daily collect and/or transport the solid waste generated.	Current Disposal Methods.
Types of Solid Waste: Biodegradable: Animal waste, vegetable waste	Once in 2 to 3 months, waste is collected from the roads/drains and transported to an open area outside the village.	Vegetables & Food Waste: Given to livestock, reused in field
Non-Biodegradable: Plastic bags, papers, glass Solid Waste Sources: HH, weakly markets, Schools / Anganwadis, Shops, etc.	This process is contracted out by the GP	Plastics: Thrown outside in the open area, fields, drains or Burnt.

❖ Items required and costing for proposed solid waste management system:-

Sr. no	Items	Quantity	Unit price	Total cost
1	Common dustbins of 100 kg capacity (including school, Anganwadi and panchayat building)	100	500	50000
2	Dustbins for households green color (10 liters)	604	135	81540
3	Dustbins for households red color (15 liters)	604	175	105700
4	Workers Uniforms, safety equipment; hand gloves, canvas shoes, first aid kits etc.		3000	3000
5	Tools required (Shovels,	1 set	15000	15000

	Brooms etc.)			
6	Waste Collection Vehicles (Battery operated vehicles)	2	200000	400000
7	Other SWM Activities, Landscaping and Beautification			30000
	TOTAL COST			**658240**
Sr. no	**Particular**	**Quantity**	**Unit price**	**Total cost**
1	Salary for the workers	3	7000	21000
2	Safety tools and equipment's	LS	5000	5000
3	Water and Electricity charges at the RRC	LS	5000	5000
4	Vehicle maintenance	LS	3000	5000
	TOTAL COST			**36000**
	FINAL TOTAL COST			**721240.00**

13.1.4 COMMUNITY HALL

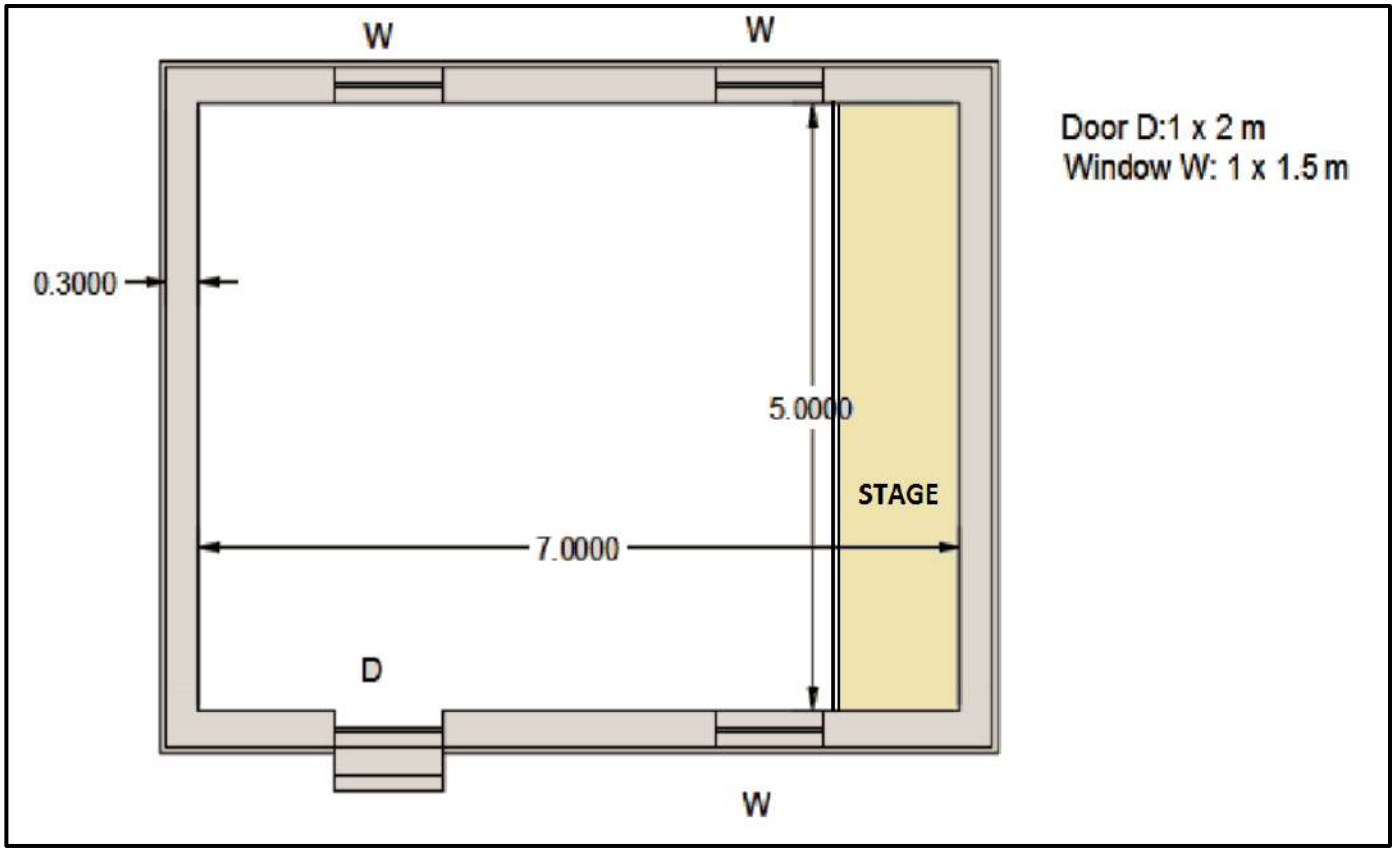
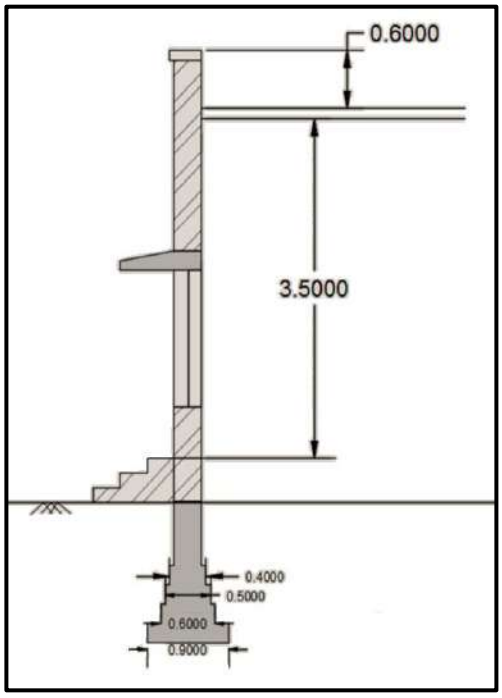


Fig.41:- Plan of Community Hall



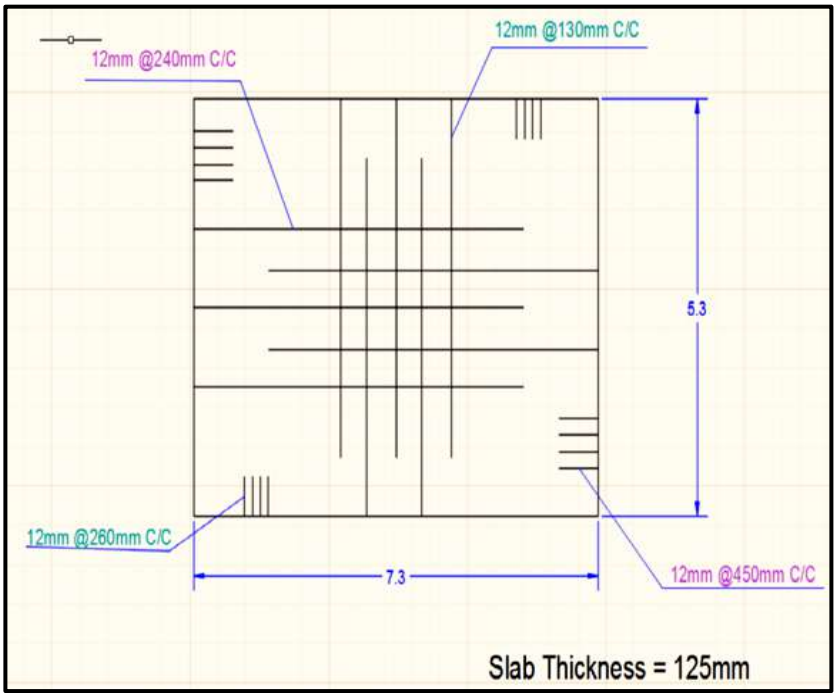


Fig.42:- Section & Reinforcement of community hall plan

COMMUNITY HALL								
MEASUREMENT SHEET								
Item no	**Design of work**	**Unit**	**No**	**L**	**B**	**H**	**Quantity**	**Total**
1	**Excavation for foundation**							
	Long wall	Cum	2	7.30m	0.90m	1.00m	13.8	23.49
	Short wall	Cum	2	5.30m	0.90m	1.00m	9.54	
	Steps I front of door	Cum	1	1.30m	0.75m	0.15m	0.15	
2	**Cement concrete in foundation**							
	long wall	Cum	2	7.3	0.9	0.3	3.94	6.95
	Short wall	Cum	2	5.3	0.9	0.3	2.86	
	Steps	Cum	1	1.3	0.75	0.15	0.15	
3	**Reinforced cement concrete lintels**							
	Door	Cum	1	1	0.3	2	0.6	9.156
	Window	Cum	3	1	0.3	1.5	1.35	
	Door	Cum	1	1	0.36	0.15	0.054	
	Window	Cum	3	1	0.36	0.15	0.162	

	Room	Cum	1	7.9	5.9	0.15	6.99	
4	**Damp proof course**							
	long wall	Sq.M	2	7.3	0.35		5.11	5.295
	Short wall		2	5.3	0.35		0.185	
5	**Brick work for foundation and plinth**							
	long wall	Cum						
	1st step	Cum	2	7.3	0.6	0.2	1.75	8.46
	2nd step	Cum	2	7.3	0.5	0.2	1.46	
	3rd step	Cum	2	7.3	0.4	0.9	5.25	
	Short wall	Cum						
	1st step	Cum	2	5.3	0.6	0.2	1.27	6.14
	2nd step	Cum	2	5.3	0.5	0.2	1.06	
	3rd step	Cum	2	5.3	0.4	0.9	3.81	
	Steps in	Cum						
	Frontof 1st step	Cum	2	1	0.6	0.2	0.24	0.36
	The door 2ndstep	Cum	2	1	0.3	0.2	0.12	
	Deduct D.P.C.	Sq.M	1	6.5	0.04		0.26	0.26
6	**Brick work in cement mortar in super structure**							
	Long wall	Cum	2	7.3	0.3	3.5	15.33	26.46
	Short wall	Cum	2	5.3	0.3	3.5	11.13	
	Deduct	Cum						
	door	Cum	1	1	0.3	2	0.6	0.81
	Window	Cum	3	1	0.3	1.5	1.35	
7	**Plastering**							
	Inside room	Sq.M	1	24		3.5	84	197.16
	outside room	Sq.M	1	27.6		4.1	113.16	
	Deduct	Sq.M						
	Door	Sq.M	1	1		2	2	6.5
	Window	Sq.M	3	1		1.5	4.5	

COMMUNITY HALL					
ABSTRACT SHEET					
Sr.no	**Particular items**	**Quantity**	**Rate**	**Per**	**Amount**
1	Excavation work	23.49	155	Cum	3640.95
2	Plain Cement Concrete	6.95	250	Cum	1737.5
3	Reinforced cement concrete	9.156	14932	Cub m	136717.39
4	Damp proof course	5.295	340	Sq. m.	1798.6
5	Brick Work for foundation	14.7	3200	Cub m	47040
6	Brick Work for super structure	25.65	3500	Cub m	89775
9	Plastering	190.66	180	Sq. m.	34318.8
	Total construction Cost			315028.24	
	10% Contractor Profit			31502.82	
	5% Contingencies			15751.41	
	2% water charges			6300	
	Overall Cost			368582.47	
	SAY RUPEES			**369000.00**	

13.1.5 SOLAR PANEL

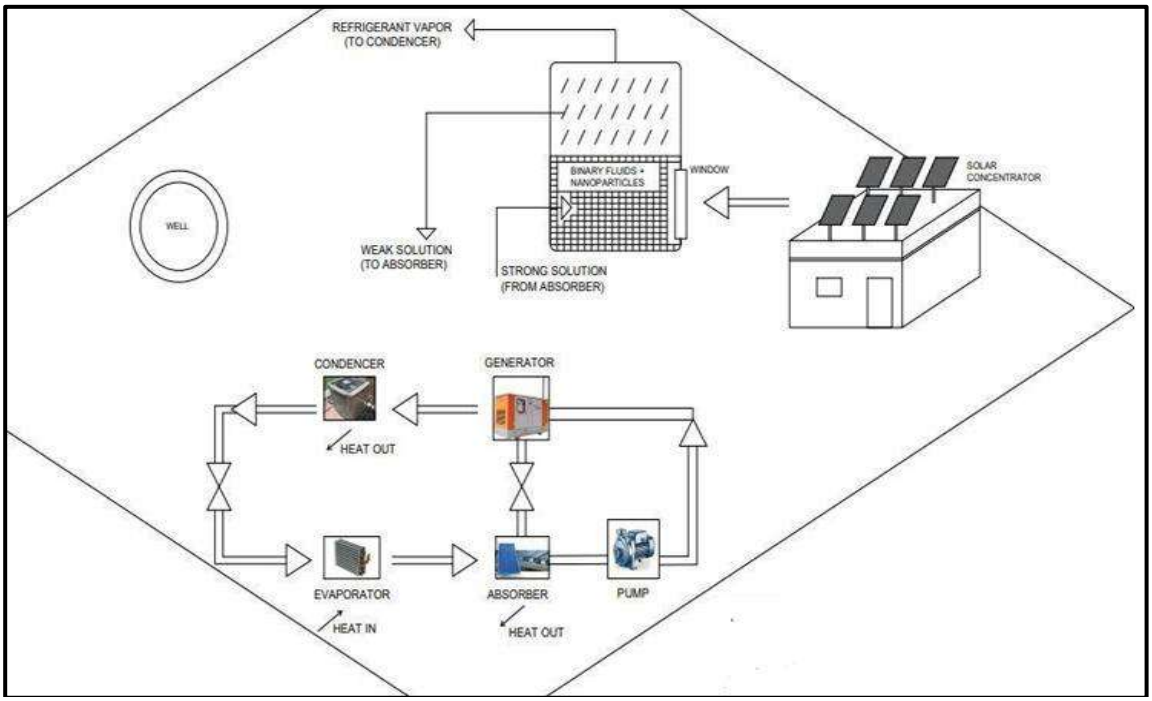


Fig.43:- Drawing plan of Main Solar Panel

SOLAR PANEL		
ESTIMATE		
Instrument	**NOS**	**PRICE(PER PIECE)**
SOLAR PANELS	8	2400
CONDENSER	1	25000
GENERATOR	1	2,50,000
EVAPORATER	1	5,00,000
ABSORBER	1	1000
PUMP (2 HP 1.5KW)	1	15000
TOTAL	**13**	**8,10,200.00/-**

❖ **MODIFIED SOLAR PANEL**

MODIFIED SOLAR PANEL		
ESTIMATE		
Instrument	**NOS**	**PRICE(PER PIECE)**
Solar Panels	8	2400
Inverter	1	20000
Battery	1	20000
Main Meter	1	400
Fans	8	600
Lamps	16	80
Distribution Box	1	1800
TOTAL	**36**	**67,480.00/-**

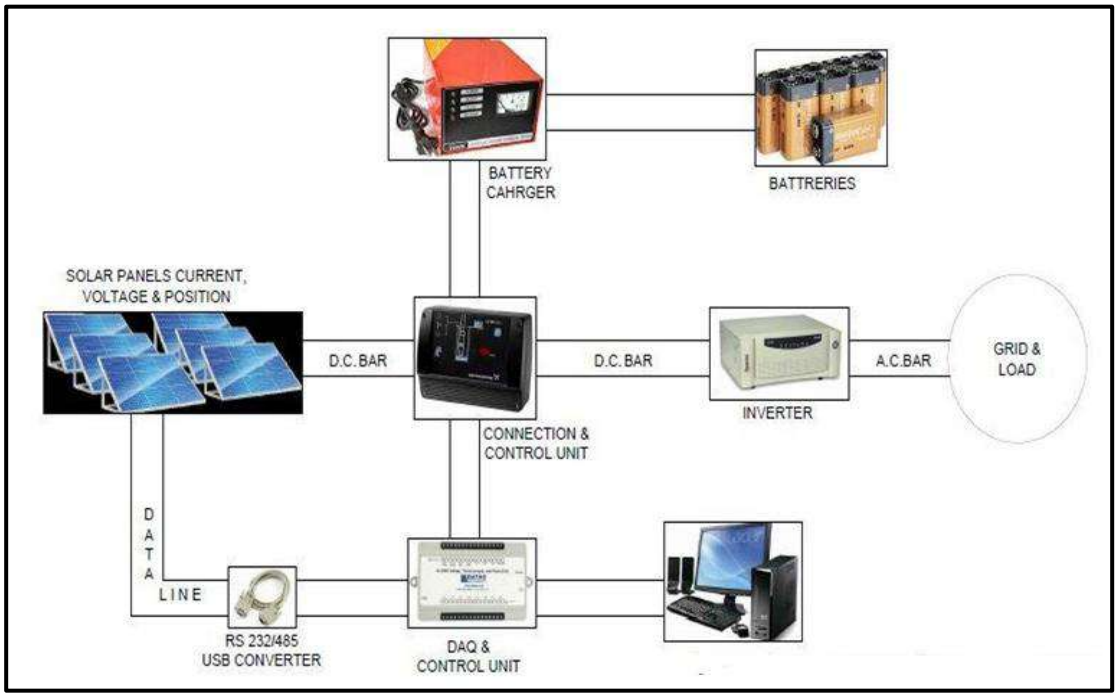
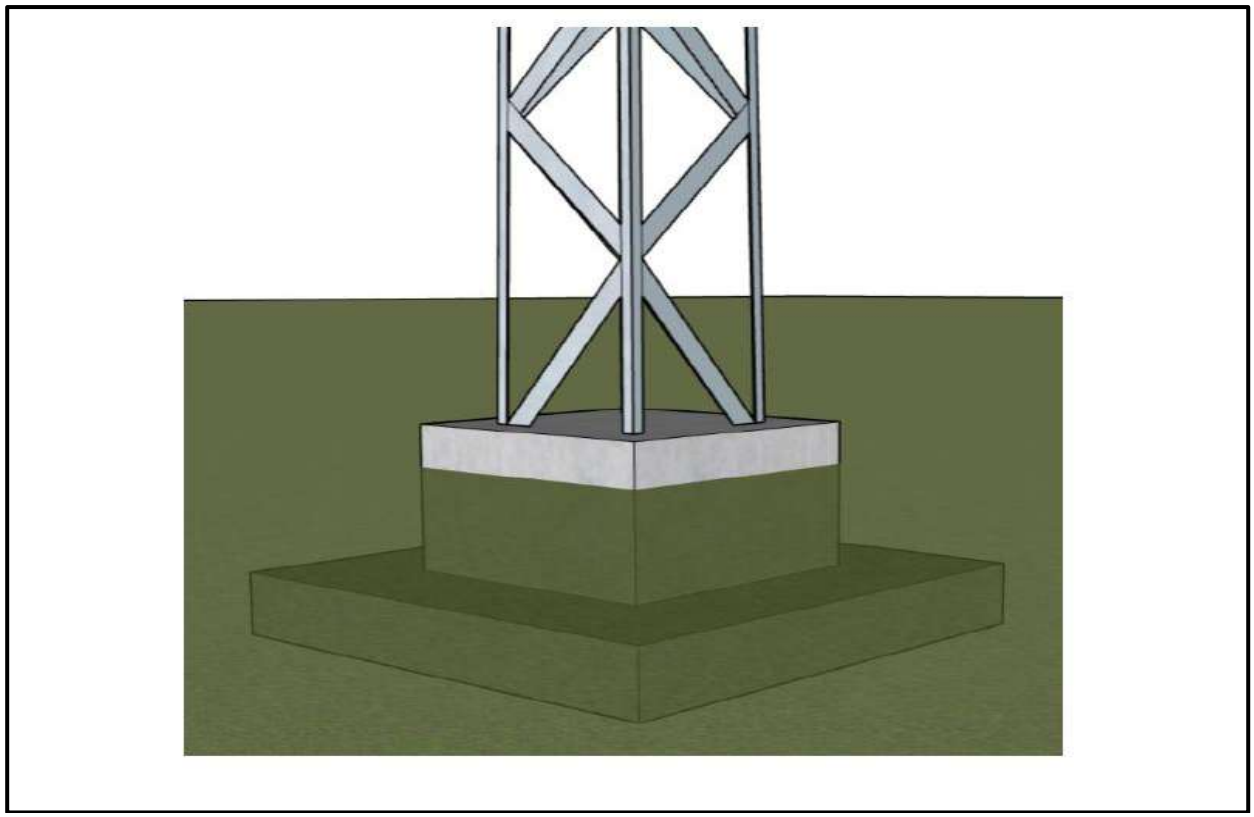


Fig.44: Modified Solar Panel

13.1.6 WI-FI CONNECTIVITY



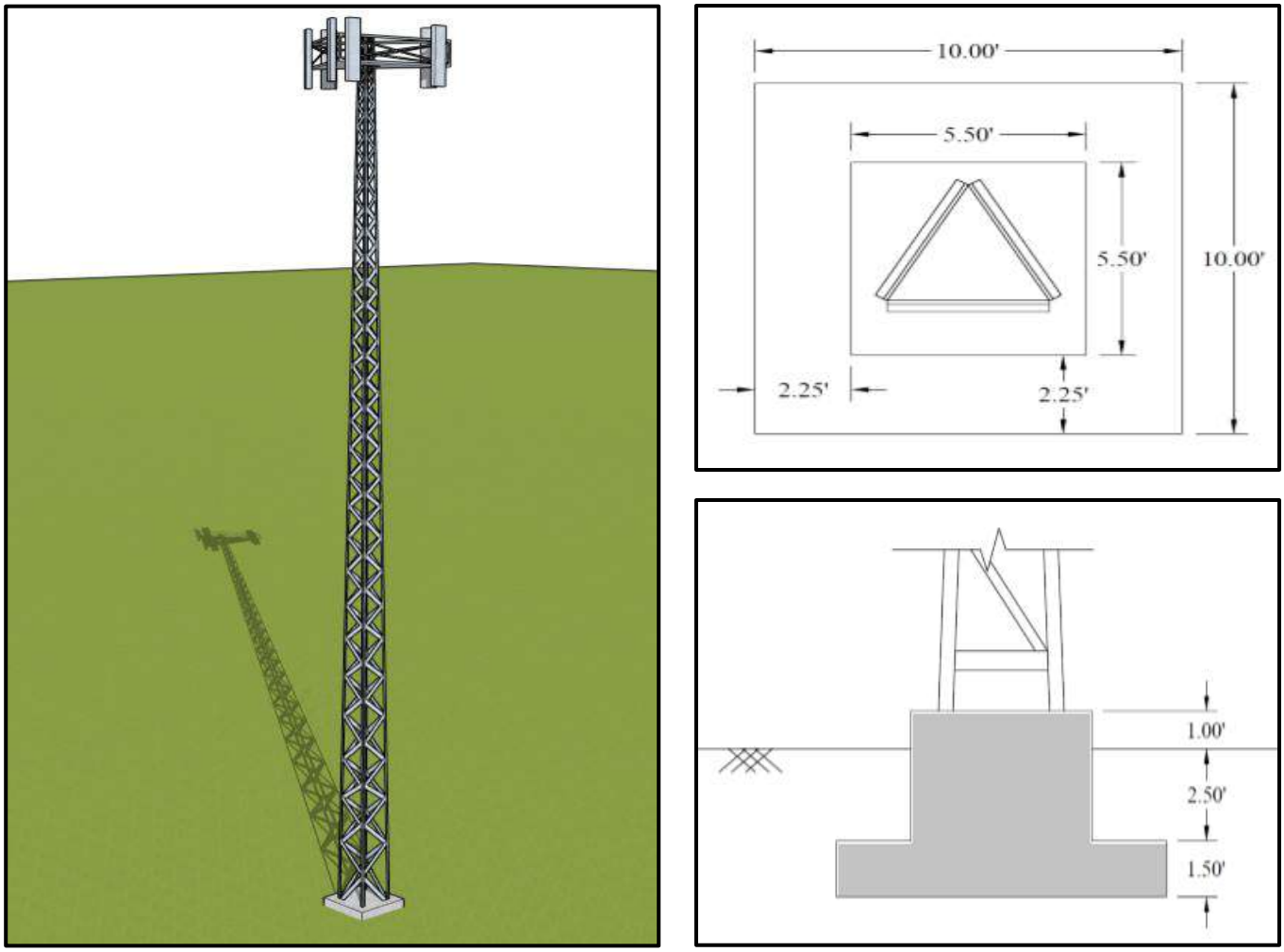


Fig.45: Design Plan of Wi-Fi tower

WI-FI TOWER					
ABSTRACT					
Sr. No	**Description**	**Unit**	**Quantity**	**Rate**	**Amount**
1	Vertical Tower Construction	NOS	1.00	270000	270000.00
2	Foundation Construction	CUMT	1.00	25000	25000.00
3	Boundary Construction	CUMT	1.00	15000	15000.00
4	Lighting and Wiring Costing	MT	200	60	12000.00
TOTAL					322000.00
SAY RUPEES					**322000.00**

14: Technical Options with Case Studies

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

14.1.1 ABSTRACT:

The paper deals with an introduction and implementation of super performing building materials and techniques all in terms of energy saving efficiency of the material, cost efficiency, application feasibility, availability, vernacular characteristics, life span, etc. A material is considered smart only when it contributes something to upgrade the quality of building. With all those advancements in construction techniques and also with the demand of end users for the smart buildings we as constructors and designers are ought to introduce something new and smart to fulfill their demands and needs. Smart structures and material technologies are a tool for sharing the knowledge of how various building materials can significantly increase production and profit using advanced communication, collaboration and management technologies. The paper provides an overview of the types of materials available giving a new insight into innovative methods and techniques that will be available, and open new doors for advancement and improvement in the construction industry. The new materials discussed in this paper present a small fraction of the options that are available for use by industry.

14.1.2 INTRODUCTION:

The construction industry is repeatedly criticized for being inefficient and slow to innovate. The basic methods of construction, techniques and technologies have changed little since Roman times. But the application of innovation in the construction industry is not straight forward.

Every construction project is different, every site is a singular prototype, construction works are located in different places, and involve the constant movement of personnel and machinery. In addition, the weather and other factors can prevent the application of previous experience effectively.

The term 'advanced construction technology' covers a wide range of modern techniques and practices that encompass the latest developments in materials technology, design procedures, quantity surveying, facilities management, services, structural analysis and design, and management studies.

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

- Foundation
- Plinth
- Beam
- Column
- Wall
- Sill
- Window
- Door

- Roof
- Parapet
- Skylights
- Finishing Works
- Save overall building energy
- Make building esthetically pleasing
- Cut cost of construction
- Easily available
- Increase life span of building
- Upgrade building quality
- Make the building safe for living

14.1.3 SUPER PERFORMING MATERIALS

1) ADVANCEMENTS IN CONCRETE

a) High Performance Concrete:

Lafarge has developed a whole new family of concretes called Ductal. These concretes have high compressive and flexural strength, and their special characteristics enable the achievement of outstanding architectural feats. Ductal concrete incorporates strengthening fibers and opens the horizon to ultra- high performance due to its special composition which provides it with outstanding strength, six to eight times greater than traditional concrete (under compression).“Fiber-reinforced” means that it contains metal fibers which make it a ductile material. Highly resistant to bending, its great flexural strength means it can withstand significant transformations without breaking. Ductal also comes with organic fibers for applications with less load and for advanced architectural applications.

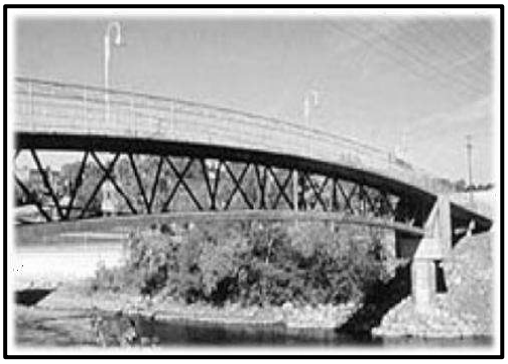


Fig.*: Bridge made of high performance concrete

b) Light Transmitting Concrete

The days of dull, grey concrete could be about to end. A Hungarian architect has combined the world’s most popular building material with optical fiber from Schott to create a new type of concrete that transmits light. A wall made of “LitraCon” allegedly has the strength of traditional concrete but thanks to an embedded array of glass fibers can display a view of the outside world, such as the silhouette of a tree, for example. “Thousands of optical glass fibers form a matrix and run parallel to each other between the two main surfaces of every block,” explained its inventor Áron Losonczi. “Shadows on the lighter side will appear with sharp outlines on the darker one. Even the colors remain the same. This special effect creates the general impression that the thickness and weight of a concrete wall will disappear.” The hope is that the new material will transform the interior appearance of concrete buildings by making them feel light and airy rather than dark and heavy.

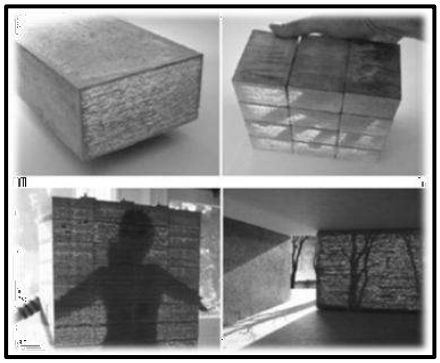


Fig.*: Translucent Concrete in Use

c) Pervious Concrete

Pervious pavement is a cement-based concrete product that has a porous structure which allows rainwater to pass directly through the pavement and into the soil naturally. This porosity is achieved without compromising the strength, durability, or integrity of the concrete structure itself. The pavement is comprised of a special blend of Portland cement, coarse aggregate rock, and water. Once dried, the pavement has a porous texture that allows water to drain through it at the rate of 8 to 12 gallons per minute per square foot. Tests conclude that a square foot of Bahia sod drains at the rate of 2 1/2 to 3 gallons per minute. According to the manufacturer, this rapid flow-through ratio inspired the phrase "the pavement that drinks water."

d) Aerated Concrete

It was discovered in 1914 in Sweden that adding aluminum powder to cement, lime, water, and finely ground sand caused the mixture to expand dramatically. The Swedes allowed this "foamed" concrete to harden in a mold, and then they cured it in a pressurized steam chamber-- an autoclave. Autoclaved aerated concrete is produced by about 200 plants in 35 countries and is used extensively in residential, commercial, and industrial buildings. At a density of roughly one-fifth that of conventional concrete and a compressive strength of about one- tenth, AAC is used in load-bearing walls only in low- rise buildings. In high-rises, AAC is used in partition and curtain walls.

e) Floating Concrete

By replacing sand and gravel with tiny polymeric spheres, University of Washington materials scientists have created a concrete stronger than traditional concrete but so light it floats in water. The team won the regional American Society of Civil Engineers Concrete Canoe Competition last year.

2) FOAMED ALUMINUM

"Light-as-air, stronger-than-steel materials are just beginning to shape our world. Foamed aluminum first emerged from the lab in the frame of a 1998 Karman concept car. Ten times stronger than traditional aluminum at just one tenth the weight, the material allows a more fuel-efficient vehicle. Its isotropic cellular structure helps the frame absorb shock and serves as an insulating firewall between the engine and the rest of the car. The foaming process can also be applied to steel, lead, tin, and zinc."The product is a high strength, extremely light weight material that possesses high durability, excellent finish and lasting value. The foam comes in an assortment of densities and sizes up to five feet wide and up to fifty feet long. It has numerous applications including architectural, automotive, marine, military, aviation, transportation, electronics, appliances, and signage.

3) WOVEN STAINLESS STEEL

K5 New York is now offering woven stainless steel in 18 different weaves, produced in Switzerland by G. Bopp. This product has been used in projects as diverse as railing systems and furniture components. Custom weaves and patterns are also possible.

4) CREATIVE WEAVE METAL MESH

Metal meshes have been known as decorative and functional design elements in architecture for only a few years. During the continuous product development along with ordinary use such as an fence element it became clear that metal meshes also have considerable technical advantages which are extremely relevant in the field of architecture. Today, the architect has a wide range of mesh samples at hand, with weaving

widths up to eight meters, which allow for great design flexibility. Woven metallic meshes used as partition elements convey a new dimension to any space. They can be used as projection screens, and, taking into account their acoustic characteristics, are suitable for the use in public buildings, opera houses and concert halls.

5) AEROGEL

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

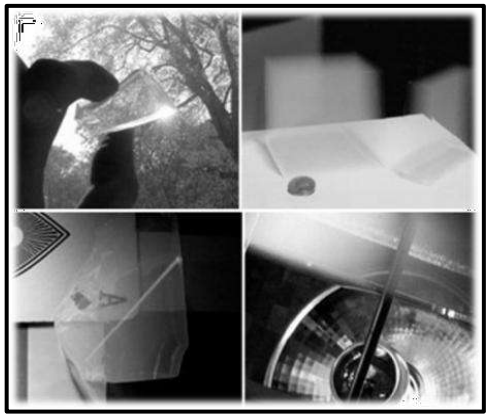


Fig.*: Aerogel

6) LAMINATED THERMO PLASTIC PANELS

Blizzard Composite GmbH manufactures high- tech plastic composites for the architectural field as well as the trucking industry. Their core expanding machinery heats up and vertically expands solid thermoplastic sheets, which are then processed into sandwich panels by lamination equipment. Due to the unique geometry of the Pep Core, the panels are of low weight and provide an excellent combination of high stiffness and compressive strength.

7) SUPER BLACK

British scientists have invented the darkest material on Earth. The super-black coating was developed by researchers at the National Physical Laboratory in London. It could revolutionize optical instruments because it reflects 10 to 20 times less light than the black paint currently used to reduce unwanted reflections. The key to the nickel and phosphorous coating's blackness is that its surface is pitted with microscopic craters. "Super-black" is especially effective at absorbing light which hits it at an angle. With the light source at right angles, the coating reflects less than 0.35%. Black paint reflects about 2.5% - seven times more.

8) BANNER WORKS

Koryn Rolstad is a Seattle-based industrial artist who leads an integrated team of industrial designers, graphic designers, project managers and production staff in creating large-scale aerial sculptures and public art installations around the world. Known as "Banner works," her pieces dexterously cross the boundaries between sculpture and signage, art and engineering.

Fig.*: Fabric in Use as Sharing Device

9) TENSION FABRIC STRUCTURE

"Transform it's" provocative tension fabric structures are appropriate for use in entertainment venues, special events, exhibits & trade shows, or anywhere that fabric architecture is appropriate. Made of nylon spandex, the structures offer a viable surface for any type of projection or lighting display, including front and rear projected video. It is also possible to print on the fabric via silk-screening or dye sublimation digital printing.

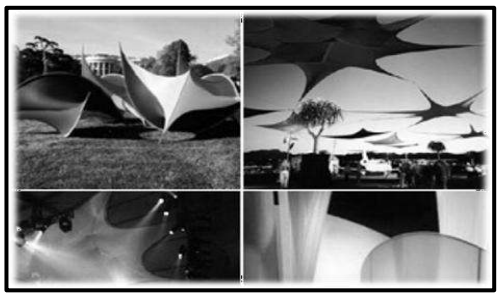


Fig.*: Tensile Fabric Structures

10) OTHER SUPER PERFORMING MULTI PURPOSED MATERIAL

- Geoweb: Cellular confinement system for vertical vegetation for green walls.
- Aero Formed Aluminum: Tightly corrugated aluminum sheets as in bamboo mats.
- Flexible Framing Track: For flexible outlining and fencing. A fence framed in metallic frame.
- 3D Molded Plywood: Fast manufacturing furniture.
- Corrugated Glass: For inside esthetics and thermal insulation.
- Braille Tiles: Exclusively for people with weak eye sight or completely blind when it comes to universal design.

❖ **Some Repurposed Materials and techniques**

- Rubber Sidewalks: Sidewalks or walkways made using used tires and hard boarding sheets.
- Strawboard: Made from agro waste mainly.
- Bagasse Boards: Boards made of material left from sugarcane after extracting juice.
- Natural Fiber Insulation: Insulation panels made out of used cloths.
- Frit: Fine powdered glass from waste with ceramics remolded for reuse.
- Acoustic-cell: Boards made for acoustics from rubber shredding.
- Plasphalt: Plastic blended with asphalt on roads for waste management.
- Fly-Ash Concrete: Using Fly-ash residue as strengthening material with cement

❖ **Some Super Performing Safe materials**

- Collapse preventing Structure
- Bombproof fiber material
- High pressure metal laminates
- Stratified wood panels
- Meta-floor

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

1) 3D PRINTING IN CONSTRUCTION

❖ **Introduction**

3D printing (sometimes referred to as Additive Manufacturing (AM)) is the computer-controlled sequential layering of materials to create three-dimensional shapes. It is particularly useful for prototyping and for the manufacture of geometrically complex components. It was first developed in the 1980s, but at that time was a difficult and expensive operation and so had few applications. It is only since 2000 that it

has become relatively straightforward and affordable and so has become viable for a wide range of uses including product design, component and tool manufacture, consumer electronics, plastics, metalworking, aerospace engineering, dental and medical applications, and footwear.

The sales of AM machines, or '3D printers' has grown rapidly and since 2005, the home use of 3D printers has become practical.

3D printing systems developed for the construction industry are referred to as 'construction 3D printers'. A 3D digital model of the item is created, either by computer-aided design (CAD) or using a 3D scanner. The printer then reads the design and lays down successive layers of printing medium (this can be a liquid, powder, or sheet material) which are joined or fused to create the item. The process can be slow, but it enables almost any shape to be created. Depending on the technique adopted, printing can produce multiple components simultaneously, can use multiple materials and can use multiple colors. Accuracy can be increased by a high-resolution subtractive process that removes material from an oversized printed item. Some techniques include the use of dissolvable materials that support overhanging features during fabrication. Materials such as metal can be expensive to print, and in this case it may be more cost-effective to print a mould, and then to use that to create the item.

❖ **Construction industry**

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

Construction 3D printing may allow, faster and more accurate construction of complex or bespoke items as well as lowering labour costs and producing less waste. It might also enable construction to be undertaken in harsh or dangerous environments not suitable for a human workforce such as in space.

❖ **Examples of projects**

In 2014, engineers at Arup used 3D printing to fabricate a steel node for a lightweight structure. Salomé Galjaard, team leader at Arup said, 'This has tremendous implications for reducing costs, cutting waste and enables a very sophisticated design.

Shanghai firm WinSun Decoration Design Engineering has used large 3D printers to spray a mixture of quick drying cement and recycled raw materials (ref. BBC). This has enabled them to construct 10 small demonstration 'houses' in less than 24 hours. They have suggested that each house can be printed for less than $5,000. Their system fabricates blocks off-site by layering the cement mix in a diagonally reinforced pattern. The blocks are then assembled on site. Winsun believes it will be possible to use the technique to build larger houses or even skyscrapers in the future. In 2015, they announced they had printed and entire villa and a five-storey apartment building. (Ref. Global Construction Review 21 January 2015.)

❖ **3D concrete printer manufacture**

The RAF recently publicized their use of metal and 3D printers to manufacture spare parts for their Tornado jets, and in 2013 we were told a rifle was manufactured in the USA that used plastic and 3D printing.

So it should come as no surprise to hear concrete could also be used as a layering medium with 3D printers. The University of California have been ‘contour crafting’ in concrete to produce small-scale models of the external and internal walls of houses. The researchers under Professor Behrokh Khoshnevis are now testing a giant transportable 3D printer that could be used to build the walls of an en-

tire house in just twenty four hours. Consistency, accuracy and speed could lead to the replacement of a large element of labour-intensive work.

The robotic system requires a flat ground slab with underground services in place.

Rails are installed either side of the footprint to take a gantry crane that spans the building. A nozzle, driven by a computer-controlled crafter then delivers the layering of concrete. The layers build up to form an inner and outer skin to each wall, leaving them to be filled later with insulation or concrete.

In November 2014, Skanska and Loughborough University signed a deal to develop what they describe as the world's first commercial concrete printing robot. Ref Construction Enquirer, Skanska to print 3D concrete products.

Building information model (BIM) enthusiasts will be watching such developments with great interest as it is a small step to link BIM design to 3D printing. It could offer an answer to accelerating the provision of UK housing without having to mass produce units to the exact same design

❖ **3D concrete printer**

3D concrete printing is an innovative construction method that can be used to fabricate building components such as roofs, floors, staircase and so on. The construction of walls dominates the market. The 3D concrete printing market is expected to grow over the CAGR of around 13% during the period 2016 to 2022. The key drivers for the growth in the market are the increasing popularity of green construction, time pressures on construction and the increasing cost effectiveness of the technology as well as the growth of the construction and infrastructure sector as a whole, and increases in the disposable income of individuals. However, high capital investment requirements may hamper the growth of the market.

Some of the technology barriers lie in the material itself which needs to set and cure rapidly before adding one layer onto another. Then comes the look and feel of the finished product. If it looks like a ball of twine rolled up it creates a perception that the finished structure is structurally unsound. Another factor is future maintenance of the finished product. There is nothing simpler than maintaining a wall with a smooth finish.

The Asia-Pacific is the fastest growing market by value.

➢ **The market can be categorized by concrete type:**

1. Ready mix concrete
2. Precast concrete
3. Shotcrete
4. High-density concrete
5. Cellular concrete

➢ **By application:**

1. Residential
2. Industrial
3. Agricultural
4. Others

➢ **By end-use**

1. Walls
2. Roof
3. Floor
4. Staircase
5. Others

❖ **Wiki House**

The WikiHouse project is intended to create an open-source set of construction information for building components that can be downloaded, manufactured and assembled using commonly available materials and equipment, at low cost and with little need for training.

WikiHouse was launched in September 2011 by 00, Espians, Momentum Engineering, and Beatrice Galilee. The WikiHouse project won the TED Cities2.0 Award in 2012.

Anyone can download designs from the WikiHouse open library, or add designs for new components to by following a simple set of guidelines. A WikiHouse plug-in for Google Sketch Up enables users to generate cutting files for components that can be manufactured from standard sheet materials such as plywood using a CNC (computer numerical control) router. The components can then be assembled, forming joints with pegs and wedges. The resulting frames can be raised and assembled by hand and then cladding panels can be attached and services, windows and so on installed.
It is claimed that the 'chassis' for a single-storey house can be built in a day.
To date, completed projects have tended to be small, single-storey prototypes.

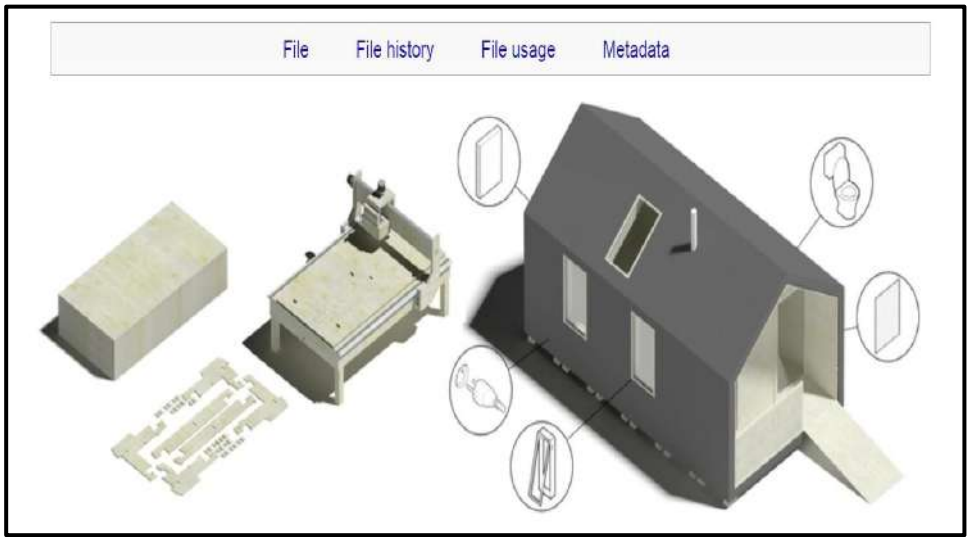


Fig. 46:- Wiki House

2) MODERN METHODS OF CONSTRUCTION

Since the Second World War, and the desperate need to deliver new housing quickly, modern methods of construction (MMC, or 'smart construction') has been promoted as a way of working more effectively to achieve more without using more. It centres on the use of off-site construction techniques that can benefit from factory conditions and mass production techniques.

In November 2005, again in the midst of a housing crisis, The National Audit Office (NAO) published 'Using modern methods of construction to build homes more quickly and efficiently'. It was commissioned by the Office of the Deputy Prime Minister and the Housing Corporation, and was indented to identify ways of getting best value when using MMC. It defined MMC as a process to produce more, better quality homes in less time.' A parallel report published in February 2006 by the Barker 33 Cross-Industry Group, set up to examine why the uptake of MMC was low, suggested that; 'Modern methods of construction are about better products and processes.

They aim to improve business efficiency, quality, customer satisfaction, environmental performance, sustainability and the predictability of delivery timescales. Modern methods of construction are, therefore, more broadly based than a particular focus on product. They engage people to seek improvement, through better processes, in the delivery and performance of construction.'

➢ **The NAO suggested modern methods of construction included:**

- Panelized units produced in a factory and assembled on-site to produce a three-dimensional structure.
- Volumetric construction to produce three-dimensional modular units in controlled factory condition prior to transport to site.
- Hybrid techniques that combine both panelized and volumetric approaches.
- Floor or roof cassettes, pre-cast concrete foundation assemblies, pre-formed wiring looms, mechanical engineering composites and innovative techniques such as tunnel form or thin-joint block work.

➢ **The NAO suggested that if modern methods of construction were adopted in place of more traditional methods:**

- It should be possible to build up to four times as many homes with the same on-site labour.
- On-site construction time could be reduced by more than half.
- Building performance could be at least as good.
- Cost ranges would be comparable depending on specific project circumstances, although they would be higher on average.
- Risks increased at early stages of the development process so good risk management would become even more important.
- Tight liaison with planning authorities would be vital.
- Benefits would be wasted if projects were not properly planned.

3) COMPUTER DESIGN

i. Computer Aided Design (CAD)

The term computer aided design (CAD) refers to the use of computers to create graphical representations of physical objects to assist in the design process. It can also refer to the use of computers to prepare presentational images or to prepare production information enabling objects to be manufactured, although sometimes this is referred to as computer aided drafting as it does not necessarily involve designing. In combination, these processes may be referred to as computer-aided design and drafting (CADD).

CAD can be used to create 2D or 3D representations, and can also be used to generate animations and other presentational material. It may allow the addition of supplementary information such as dimensions, descriptions of components, references to specifications and so on.

Specialist CAD software is available for specific purposes, and a wide range of software applications have been developed for use in the design and construction of built assists such as buildings.

➢ **Benefits of CAD**

CAD can be used to help:

- Improve the speed of production.
- Improve the quality of drawn information.
- Reduce development costs.
- Generate visualizations during the design process to help decision making.

- Improve accuracy.
- Reduce errors.
- Enable changes to be made more easily and so facilitate the consideration of a wider range of options.
- Allow drawings to be generated at a wide range of scales, and with the addition of accurate information such as dimensions.
- Allow easy re-use of information.

ii. Computer aided manufacturing (CAM)

Computer aided draughting (CAD sometimes referred to as computer aided design) and computer aided manufacturing (CAM) has allowed computer numerical control (CNC) of highly-automated end-to-end component design and manufacture.

Computers can produce files that translate design information into commands to operate machines, singularly or collectively, to perform pre-set sequences of tasks in the production of building components.

Modern machinery can be multi-functional, combining a number of tools in a single cell, or may deploy a number of different machines programmed to operate when the component is moved from machine to machine, either by human intervention or by computer control. In either case a series of steps are programmed to produce highly-automated components that closely match the original design.

➢ **The following functions lend themselves to this technology:**

- Whole punching or drilling.
- Sawing.
- Laser cutting.
- Flame and plasma cutting.
- Bending.
- Spinning.
- Routing and milling.
- Pinning.
- Gluing.
- Fabric cutting.
- Picking and placing.
- Tape and fabric placement.

It can be relatively 'low-tech', such as the WikiHouse initiative, which enables users to generate cutting files for components that can be manufactured from standard sheet materials such as plywood using a CNC router. The components can then be assembled, forming joints with pegs and wedges to create a basic dwelling. However, the movement from 2D CAD to 3D BIM may enable the manufacture of entire assemblies using rapidly advancing robotic technology long established in the automotive industry. However, this is expensive technology and requires a protected, predictable environment. It also requires repetition and high numbers of units to make the investment in the robotics technology required viable. Consequently, CAM is most likely to be taken up in off-site pre-fabrication facilities for the development of repetitive building types such as in the residential market.

Computer aided manufacturing may also be transformed by the emergence of economically-viable 3D printing (sometimes referred to as Additive Manufacturing (AM)). This the computer-controlled sequential layering of materials to create 3 dimensional shapes. It is particularly useful for prototyping and for the manufacture of geometrically complex components. See 3D printing for more information.

4) ROBOTICS

❖ Introduction

Advanced technology is changing the construction industry. The proliferation of ConTech (the intersection of tools associated with construction and technology) is having an impact on everything that is digitally connected.

However, there is often a conflict between traditional methods and innovative practices, and this is one of the factors blamed for the relatively slow uptake of technology in the industry. Incorporating advanced construction technology into practice can increase levels of quality, efficiency, safety, sustainability and value for money.

But, as technology becomes more advanced, less expensive, simpler to use and more efficient, its adoption is gradually increasing. This is particularly true in the case of robotics. Robotics relates to work executed by automated machinery. It is a form of ConTech that is typically used for repetitive tasks, dangerous tasks, heavy lifting, and so on.

❖ Robots and construction

Robotics is still a relatively new technology, but some experts see construction as a sector that is particularly well-suited to an automation takeover.

- According to the International Federation of Robotics (IFR), there are two types of robots:

a. Industrial robots used in automation (in an industrial environment).
b. Service robots for domestic and professional use.

- Both of these types are aligned with a wide range of tasks within the construction industry:

a. Mobile construction workers.
b. Inspection robots that can monitor and precisely record measurements in areas that were previously inaccessible.
c. Maintenance robots that can clean and update building facades safely.
d. 3D-printing robots able to print building components, and eventually entire buildings and other structures.
e. Service robots able to lay bricks and masonry.
f. Demolition robots that can dismantle building components safely.

This sort of robotic technology may make it possible to reduce risk, lower costs and use less energy.

While some tasks will be shifted from human workers to their robotic counterparts, it will also inevitably lead to the creation of new jobs. This could include the oversight of robots along with new robot-maintenance jobs, the design and manufacture of robots and so on.

❖ Robotics and BIM, CAM

The movement from 2D CAD to 3D BIM may enable the manufacture of entire assemblies using rapidly advancing robotic technology. However, this requires repetition and high volume to make the investment in the technology required viable. Consequently, it is most likely to be taken up in off-site prefabrication facilities for the development of repetitive building types such as those in the residential market. When technological advancements in building information modeling (BIM) and computer aided manufacturing (CAM) are combined with robotics and scale of production, this may lead to affordability and flexibility within systems which are not currently available.

Figure 47:- Robot Demolition

Until recently, construction was one of the least digitized and automated industries in the world. Many projects could be completed more efficiently with the help of the right construction robotics, mainly because the related tasks are incredibly repetitive.

While manual labor will likely always be a huge component of modern construction, technology has been steadily improving since the first pulleys and power tools. Robots, drones, autonomous vehicles, 3D printing, and exoskeletons are beginning to help get the work done. With low U.S. unemployment and shortages of skilled labor, automation is key to meeting demand and continued economic growth.

❖ **Automation is the future of construction**

The global market for construction robotics also represents a huge opportunity for developers and suppliers. It could grow from $22.7 million in 2018 to $226 million by 2025, predicts Tractica. Research and Markets estimates that the market will grow to $126.4 million by 2025.

According to the International Federation of Robotics and the Robotic Industries Association, the construction robotics market will experience a compound annual growth rate (CAGR) of 8.7% between 2018 and 2022. Research firm IDC is more bullish, predicting a CAGR of 20.2%.

Automation and digitization are driving a revolution in the construction industry, which has historically been slow to adopt new technologies. From design through final inspection and maintenance, the full benefits of construction robotics have yet to be realized.

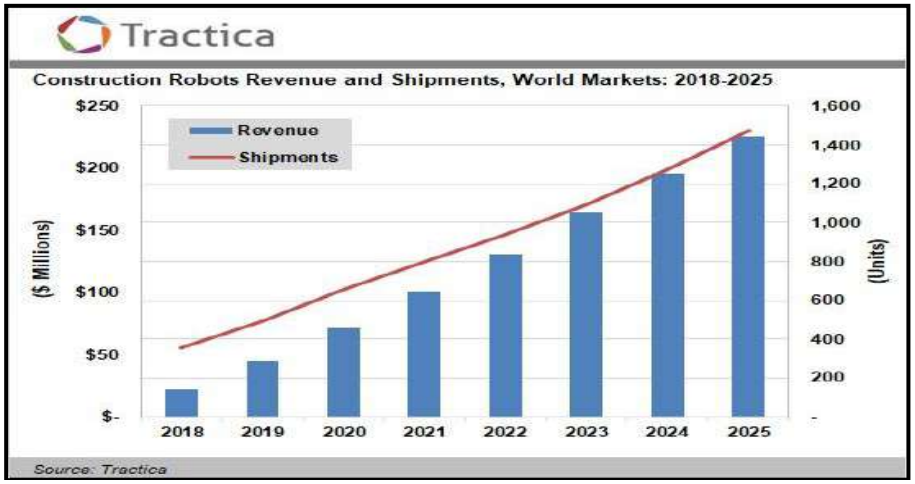


Fig. 48:- Construction robots revenue and shipments, World market 2018-25

14.1.5 Conclusion

	Material	Uses	Advantages
1	High Performance Conc.	Beam	On long span structures like bridges and halls
2	Light Transmitting Conc.	Interior walls	Energy Saving
3	Pervious Conc.	Paving, Parking, Walkways	Will be permeable for water supporting water table recharge
4	Floating Conc.	Marine architecture	Will save construction cost
5	Weave Metal Mesh	Half walls, Fences, Acoustic walls	Cost and time effective
6	Aerogel	Skylight, Thermal panels	Heat resistive, transparent
7	Super Black	Paints, Varnishes and Finishes	Less Reflective, absorptive
8	Banner work	Shading device, Landscape element	Time, Cost, Energy efficient
9	Geoweb	Vertical Gardening, Green walls	Energy conserving, Water conserving
10	3D Molded Plywood	Furniture, Formworks	Time Saving, Repetitive design
11	Braille Tiles	On Floor or Walls	Signage for Blinds
12	Fly Ash Concrete	Beams, Columns, Slab	Repurposed , Provides strength to base material

14.1.6 References

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

Sr No	Design name	Period	Amount Ex-penditure(Rs.)	Benefit
1	Bank Building	Within 1 year	11,86000.00	It is solve Financial problem in village.
2	Pick up Stand	Immediately	154,300.00	It provides comfortable, safe, and well-lighted transportation.
3	Post office	Long term (3 Years)	12,49000.00	Is to provide courier facilities in village
4	Rain water Harvesting	Within 1 year	44,000.00	It is an important in people life for water collection.
5	Public Toilet	Within 1 year	931,000.00	it is providing a safety and hygiene to the people.
6	Public Garden	Within 1 year	411,000.00	Public garden is an important in people life for to relax.
7	Public Library	Within 1 year	505,600.00	To education purpose & increase knowledge of students.
8	Repair of old road surface	Immediately	85,000.00	It provides comfortable, safe Travelling transportation.
9	Solid waste management	Within 1 year	721,240.00	It cleans the landscape. It Promotes health and sanitation.
10	Community hall	Within 1 year	369,000.00	Provides a Meeting Space. Promotes Exercise.
11	Solar panel	Long term (3 Years)	810,200.00	Solar panel is useful for electricity. For generation of electricity thus we design solar panel.
12	Wi-Fi Connection	Within 1 year	322,000.00	WI-FI tower is connect people to the urban people and with digital knowledge.

Table: 17:- Chapter 8 & 13 Designs, Impact on society

16: Survey by Interviewing With Talati and/or Sarpanch

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

CHAPTER- 16

Sr.	Questions	Yes/ No	Remarks
1	What are the sources of income in village?	Yes	Farming / Dairy
2	What are the chances of employment in village?	Yes.	11.
3	What are the special technical facilities in village?	No	
4	Is any debt on village dwellers?	No	—
5	Are village people getting agricultural help?	Yes	—
6	Is women health awareness Program organized in village?	~~No~~ Yes.	—
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	All.
10	Are village people aware about child vaccination and done to each and every child as per norms?	Yes.	
11	Women help line number information is provided to village people?	No	
12	Is water scarcity in village? How many days per year?	No	
13	Is village under any debt?	No	
14	Is any serious issue due to debt from bank or any person happened in village?	No	
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	No	
16	Is any death of patient occurred due to unavailability of medical facility in village?	No.	
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	Yes	
18	Is village improvement is observed in comparative scenario from past to present?	Yes	Public buildings.
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

મોટીદાઉ ગ્રામ પંચાયત
તા.જી.મહેસાણા.

17: Irrigation / Agriculture Activates and Agro Industry, Alternate Techniques and Solution

❖ INTRODUCTION:-

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

The frequency, rate, amount and time of irrigation are different for different crops and also vary according to the types of soil and seasons. For example, summer crops require a higher amount of water as compared to winter crops.

Irrigation is the process through which controlled amount of water can be supplied through artificial means such as pipes, ditches, sprinklers etc. the main objectives of irrigation systems is to help agricultural crop growth, landscape maintenance, reduce the effect of inadequate rainfall etc. Therefore, the importance of irrigation systems is very high.

❖ AGRICULTURE IN MOTIDAU VILLAGE:-

Fig. 50:- Agriculture in Motidau Village

Irrigation is the practice of purposely providing land with water by artificial means for crop production. Head of the distributor refers to the last point in the distributor at which theflow of water to the village is controlled by irrigation authorities.

Water table, also called groundwater table, upper level of an underground surface in which the soil or rocks are permanently saturated with water. The water table separates the groundwater zone that lies below it from the capillary fringe, or zone of aeration, that lies above it.

❖ ALTERNATE TECHNIQUES:-

1) Inadequate trenching:-

Arguably the most common problem we encounter in home irrigation systems is inadequate trenching. Trenching is the most labour intensive part of an irrigation installation, and is therefore often neglected.

Many installations are only trenched to the depth of the pop-ups (usually 20-30 centimeters), because this makes it easier – and cheaper – to join the pop-up to the pipe. Unfortunately though, poor trenching can result in pipes being frequently punctured (either by yourself or your gardener), and can lead to frequent maintenance of the system. As a general rule – and unless there are extenuating circumstances such as rock or house foundations – pipes should be trenched to a minimum of 400mm below the surface, and pop-ups joined to the pipe via swing-joint risers or flex-pipe:

Not only does this keep the pipes well away from ordinary gardening tools (such as garden forks), but swing-joints allow you to easily adjust the height of the pop-ups in future if the height of the soil changes.

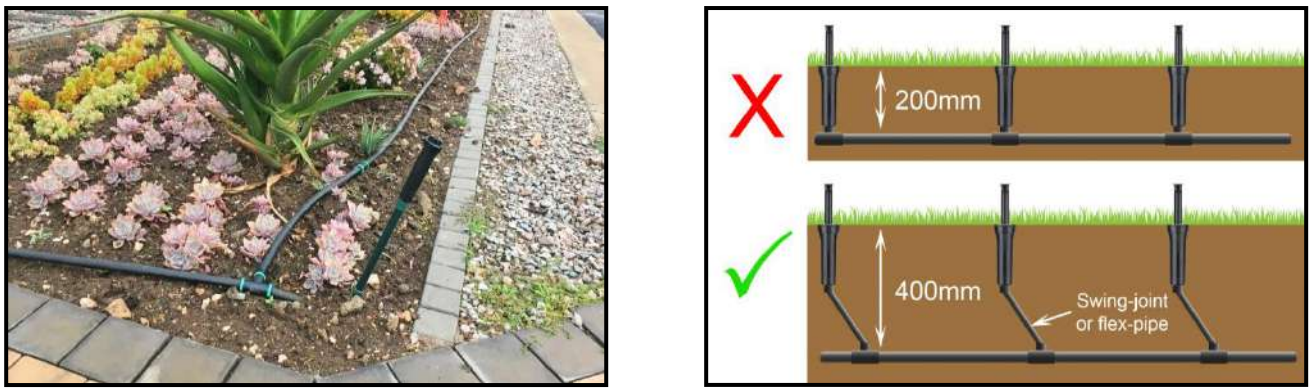

Fig. 50:- Inadequate trenching

2) Lack of head-to-head design

Perhaps the most common design flaw we see in installations is the lack of head-to-head design, which results in dry-spots, over-watering or under-watering of certain areas of the garden. It's a common misconception that if water from a sprinkler is 'reaching' a particular area, then that area is being watered. In reality though, the area covered by the sprinkler is not watered evenly, because most sprinklers put down more water at the head of the sprinkler. So the water profile of most sprinklers looks like this.

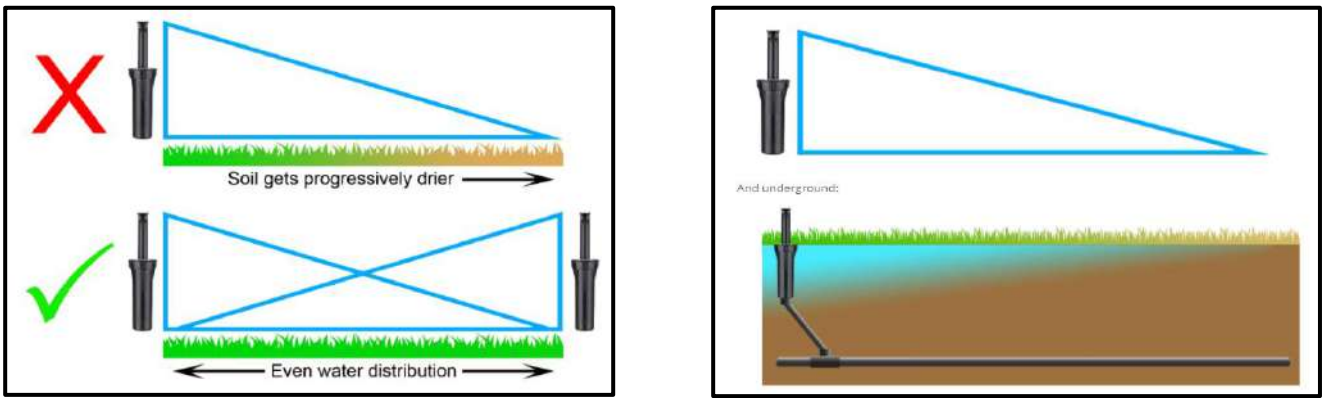

Fig. 51:- Lack of head-to-head design

3) Incorrect pipe sizes used

Another common problem in home irrigation installations is the use of incorrect pipe sizes – specifically pipes that are too narrow for the distance required. When water flows through a pipe, a certain amount of pressure is lost due to friction (known as 'friction losses). Factors affecting this include the diameter of the pipe, the length of the pipe, and the rate of flow (liters/min), amongst others. (Fittings, roughness of the

pipe, and water temperature are also factors). Unfortunately, all too frequently, we see narrow pipes – usually 20mm LDPE pipe – used over too long a distance, resulting in a loss of pressure to the sprinklers. All sprinklers have a specific pressure rating at which they work most efficiently, and a loss of pressure degrades their performance and reduces their area of coverage. Take a standard 17ft cone nozzle for example, which has a recommended pressure rating of 2.1bar. If used at this pressure, this nozzle covers a radius of 5.2 meters (17 feet). However, a 1bar drop in pressure due to friction reduces the radius to only 4.6m, thereby compromising its performance and the coverage of your plants. Likewise gear drives (rotors) require sufficient pressure in order to rotate, and may stop turning if the pressure in your system is too low. Calculating friction losses requires a friction chart or excel spreadsheet (available online), but it is an important step in the design of a system. If you currently have pressure related problems due to incorrect pipe sizes, you could try switching to nozzles that use less water (i.e have lower flow rates), which may help increase the pressure in your pipes. Ideally though, pipes should be sized correctly to begin with, so removing old pipes and replacing them with new ones is usually the most appropriate solution.

Fig. 52:- Size of pipes

4) Poor quality cabling

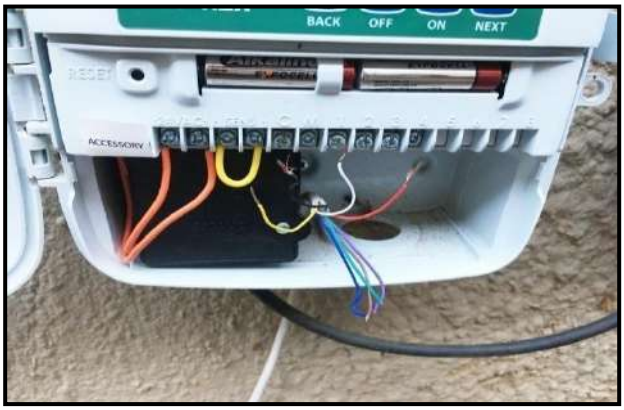

Fig. 53:- Poor quality cabling

Automated irrigation systems make use of solenoid valves, which open and close to release water to your pipes and sprinklers. Power to the solenoid coils is supplied from the controller through cabling, with each station having its own cable and a shared common wire. Unfortunately many systems are installed using inferior cabling, most frequently communications (comms) cables, which are unsuitable for underground use.

These cables can cause problems with irrigation systems, including shorting of coils or even shorting of a controller. In some cases manufacturers may void your warranty if it is found that communication cables were used on a system where their controller has blown. For most systems, 1.0mm GP wire should be used for connections from the controller to the valves, and these cables should be placed in conduit (either 20mm or 25mm PVC or LDPE). Connections at the valves should also be waterproofed, preferably with silicone connectors. Finally, cables should be trenched appropriately, and – where possible – laid in the same trenches as the irrigation pipes, 400mm below ground.

5) Mixing heads with different precipitation rates and pressure ratings

Understanding precipitation rates is one of the most important aspects to irrigation design, but is often neglected, especially when maintenance on an existing system is conducted. Different sprinklers put down water at different precipitation rates, so mixing sprinklers with differing precipitation rates can lead to overwatering or under watering of certain areas of your garden. A 12 foot Rain bird cone nozzle for example has a precipitation rate of 40mm/hr (with square spacing). In contrast, a Hunter MP Rotator nozzle has a precipitation rate of 10mm/hr (with square spacing) – four times less water per hour. It's not difficult to understand then that if you have mixed these two nozzles on the same station, why one area of your garden is getting more water than the other. Additionally, the above two nozzles have different pressure ratings: the cone nozzle works best at 2.1bar, whilst the MP rotator works best at 2.8bar. Running them both on the same station is therefore inefficient use of one or the other. Similar problems occur when cone nozzles are mixed with rotors/gear-drives, as gear drives can also have much lower precipitation rates – depending on the arc and the nozzle-insert selected. To avoid these problems it's important to first understand the precipitation rates of each of your sprinklers, and to only use sprinklers with similarly matched precipitation rates and pressure ratings on the same zone. Doing so allows for efficient, even watering of all areas of your garden.

Fig. 54:- Mixing heads with different precipitation rates and pressure rating

6) Pipes crimped by tree roots

Fig. 55:- Pipes crimped by tree roots

One of the most common problems in established gardens is the crimping of pipes by tree roots. Sometimes this is due to pipes that have not been trenched correctly, but for the most part it is because the com-

monly used low-density (LDPE) pipe and fittings are too weak to handle the pressures of a large tree's root system. Sometimes – depending on where in the pipe this problem has occurred – crimped pipes can lead to burst pipes, because there is no longer any release of pressure via the sprinklers.

If you find that one half of your garden's sprinklers are working fine, but the others are only trickling water, then this might be the problem. Troubleshooting it can be straight forward, provided you have access to the pipe on both sides of the tree.

Fortunately repairing a crimped pipe is relatively simple: dig down and find the affected pipe, then cut and replace it. If possible, avoid cutting the offending root – rather divert the new pipe around the root system. For new installations the use of hi-density (HDPE) pipe and fittings can mitigate these problems, so although these materials are more expensive they provide a robust and long-lasting irrigation solution.

7) Overwatering

Fig. 56:- Overwatering

Overwatering leads to many problems in gardens, and is a surprisingly common mistake, even for home owners with automated systems. We've met home owners who watered their gardens twice a day, every day, which was a significant waste of water and was hugely damaging to their plants. Plants that have been overwatered are susceptible to fungus and disease, whilst root systems of trees may remain shallow, thereby compromising their stability. To avoid overwatering your garden it's important to know the required amount of water for your plants per week, and to schedule your system accordingly.

On the highveld, the ideal amount of water for 'thirsty' gardens – that is gardens with large areas of lawn or species with high water requirements – is 25mm per week in summer. This 25mm should be spread evenly over the week, and only on alternate days (e.g. 7mm on Monday, 7mm on Wednesday, etc.) For established indigenous gardens, or gardens with water wise species, this figure can be reduced to 10-15mm per week, or even less. Once again, knowing your plants requirements and the precipitation rates of your sprinklers will help you calculate how long a particular zone in your garden should run for. As an example, if the sprinklers in Zone 1 have a precipitation rate of 42mm/hr, and you only require 7mm for that particular day, then your runtime for that zone should be 10 minutes (7/42 x 60). Likewise, if the sprinklers in Zone 2 have a precipitation rate of 12mm/hr, then their runtime should be 35 minutes (7/12 x 60). Additionally, many plants go dormant in the winter months, and may not require any water at all. In these cases irrigation systems should be set to reduce watering automatically – by using the seasonal adjust settings on the controller – or turned off altogether. Lastly, new technologies are available to reduce or prevent watering when it is raining. Most automated systems can cater for the addition of a rain or soil-moisture sensor, whilst newer systems can connect to weather forecasts to pause the system if rain is expected.

18: Social Activities – Any Activates Planned By Students

No Information was found as no activity was reported by student in the school or village during the pandemic situation. But In this Pandemic Situation we planned to aware people to be a safe and we provide guidelines to the school principal and village people for aware to COVID.

➢ **And there are some activities held in the village learned from Villagers:**

- A meeting is organized with the members of gram panchayat in the village.
- Students of the school rally to raise awareness about hygiene and environmental protection.
- Sports are organized in the school.
- Infrastructures, public places are is maintained and repairs by gram panchayat.
- Entertainment program are organized in the village.
- Villagers were informed by the village teachers about the pandemic situation and were also in-formed about the norms given by Government to fight this situation.
- With help of Government officers, Sarpanch and other village people they sanitized the village streets and houses and other places.
- People also started using sanitizer and mask when they went out of home.
- They then sealed the village border to stop the movement of villagers and also to restrict entry of oth-ers.
- All the villagers were following Government norms of how to be safe from this situation and were also regularly taking account of updates by Government for this situation.

19: <<ALLOCATED VILLAGE>> SA-GY Questionnaire Survey form with the Sarpanch Signature

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Motidau Gram Panchayat: Motidau Ward No. –

Block: – District: Mehsana

State: Gujarat LS Constituency: Mehsana.

1. Family Identity and Size

Name of Head of Household	Gangabambhai Adhiyon							Male/ Female	M
SECC Survey ID:	–	Family Size	5	Over 18	4	6 to 18	1	Under 6	–

2. Category & Entitlement Details (Tick as appropriate)

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

2. Adults (above 18 years)

Name	Age	Sex M/F/O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/ N)	Bank A/C (Y/N)	Social Security Pension[5]
Patel Darshan N.	22	M	N	N	BE	Y	Y	N
Patel Rishan N.	29	M	N	N	BE	Y	Y	N
Patel Jagruti M.	45	F	N	Y	12th	Y	Y	N

3. Children from 6 years and up to 18 years

Name	Age	Sex M/F/O	Disability Y/N	Marital Code*	Level of Education: Code#	Going to School /College (Y/N)	Current Class	Computer Literate Y/N
Vipul Patel	12	M	N	N	6th	Y	6th	–
Ranjit Thakor	10	M	N	N	4th	Y	4th	–
Dhara Patel	9	F	N.	N.	4th	Y	4th	–

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

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

5. Hand washing

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

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

7. Do members take Regular Physical Exercise

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

8. Consumption of Tobacco

	Smoking	Chewing
Adults	NO	NO
Children	NO	NO

9. House & Homestead Data

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

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

Source of Water		Distance
Piped Water at Home	Yes / No	0.5 km
Community Water Tap	Yes / No	0.1 km
Hand Pump (Public / Private) ~~Yes~~ / No		—
Open Well(Public / Private) Yes / ~~No~~		Public
Other (mention):		—

11. Source of Lighting and Power

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

12. Landholding (Acres)

1. Total	23	2. Cultivable Area	19
3. Irrigated Area	3	4. Uncultivable Area	3

13. Principal Occupations in the Household

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

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

15. Agriculture Inputs

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

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

Name	Unit	Quantity
Wheat	—	—
Castor	—	—
Cotton	—	—

17. Livestock Numbers

Cows: 4	Bullocks: 2	Calves: —
Female Buffalo: 3	Male Buffalo: 1	Buffalo Calves: —
Goats/ Sheep: 3	Poultry/ Ducks: —	Pigs: —
Any other: Type —		No. —
Shelter for Livestock: ~~Pucca~~ / Kutcha / ~~None~~		
Average Daily Production of Milk(Litres): 22150		

18. What games do Children Play
→ Cricket, other out-doors games, Kho-Kho etc.

19. Do children play musical instrument (mention)
-NO

Schedule Filled By: Jay suthar.
Principal Respondent:
Date of Survey: 4/5/2021

(7)

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: Motidau.

b. Block: –

c. District: Mehsana

d. State: Gujarat.

e. Lok Sabha Constituency: Mehsana.

f. Number of Wards in the Gram Panchayat: 1

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages: motidau.

Demographic Information

Number of Households 1035 Total Population 4986 Male 2576 Female 2410

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

1

(3)

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

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

IV. Sports Facilities in the Gram Panchayat

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

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 3

b. Number of villages without Angan Wadi Centres –

Names of such villages: –

c. Schools (Number)

Primary Private: N Primary Govt.: Y

Middle Private: N Middle Govt.: Y

Secondary Private: N Secondary Govt.: N

Higher Secondary Private: N Higher Secondary Govt: N

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

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

VII. Coverage of Villages under different Facilities & Services

	Parameter	Villages Status[1]	Names of Villages Covered	Names of Villages not Covered
a.	Piped Water Supply Coverage to Villages	Covered ✓ / Not Covered	Bhandu, Bamosana, mehsana, motidau	—
b.	Hand Pump Coverage in Villages:	Covered — / Not Covered	Bhandu,	
c.	Coverage under Covered Drains:	Covered / Not Covered ✓	Bhandu, Bamosana mehsana, motidau,	
d.	Coverage under Open Drains:	Covered / Not Covered ✓	motidau, Bamosana pilvadau, Bhandu	
e.	Villages with Household Electricity Connection (Numbers)	Connected ✓ / Not Connected	1950	

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	1542.16 hc.	d.	Pasture / Grazing Land	—	g.	Check Dam	—
b.	Irrigated Land	1259.38 hc.	e.	Forests/ Plantations	—	h.	Wells/Bore Wells	2
c.	Un-irrigated Land	282.78 hc.	f.	Other Common Land	1259.38 hc.	i	Tanks /Ponds	2

[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)	400
b)	Number of Households receiving pension (old age, widow, disability)	300
c)	Number of eligible Households who are not receiving pension	50
d)	Number of Households eligible for Ration Card	1124
e)	Number of eligible HHs having ration cards	1100
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	NO
k)	Number of BPL families	27
l)	Number of landless households	70
m)	Number of IAY beneficiaries	–
n)	Number of FRA[2] beneficiaries	–
o)	Number of Community Sanitary Complexes	1
p)	Number of Households headed by single women	18
q)	Number of Households headed by physically handicapped persons	110
r)	Total number of Persons with Disability in the village	450
s)	Number of SHGs	–
t)	Number of active SHGs	–
u)	Number of SHG Federations	–
v)	Number of Youth Clubs	2
w)	Number of Bharat Nirman Volunteers	–

Name and Signature of Surveyor and Respondent'

Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey
	મોટીદાઉ ગ્રામ પંચાયત તા.જી.મહેસાણા		04/05/2021

[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: Motidau.

b. Ward Number: –

c. Gram Panchayat: Motidau G.P.

d. Block: –

e. District: Mehsana.

f. State: Gujarat.

g. Lok Sabha Constituency: Mehsana.

h. Number of Habitations / Hamlets in the Gram Panchayat: –

i. Names of Habitations / Hamlets: Motidau.

Demographic Information

Number of Households 1035. Total Population 4986 Male 2576 Female 2410

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	
b.	Nearest Middle School	Y	
c.	Nearest Secondary School	N.	3 KM.
d.	Kisan Seva Kendra	N.	5 KM.
e.	Milk Cooperative /Collection Centre	Y	
g.	Health Sub Centre	N.	3 KM.
h.	Bank	N.	5 KM.
i.	ATM	N.	3 KM.
j.	Bus Stop	N	2 KM.
k.	Railway Station	Y	2 KM.

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

1

(7)

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
l	Library	Y	Poor.
m	Common Service Centre	N.	5 KM.
n	Veterinary Care Centre	N	5 KM

ii. Road Connectivity

a. Habitations connected by All-weather Roads All (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: Some (1-All 2-None 3-Some)

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

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

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

b. Coverage under Open Drains: None (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) 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) All.

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: Some.

vi. Sports Facilities in the Village

a.Number of Play Grounds in the Village (minimum size 200 square meters): NO

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 3.

c. Schools (Number)

Primary Private: 0 Primary Govt.: 1

Middle Private: 0 Middle Govt.: 1

Secondary Private: 0 Secondary Govt.: 0

Higher Secondary Private: 0 Higher Secondary Govt: 0

(6)

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	1542.16 hc.	d.	Pasture / Grazing Land	–	g.	Check Dam	–
b.	Irrigated Land	1759.35 hc.	e.	Forests/ Plnatations	–	h.	Wells/Bore Wells	2
c.	Un-irrigated Land	283.78 hc.	f.	Other Common Land	1259.35 hc.	I	Tanks /Ponds	2.

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	27
5	Number of landless households	70
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	2
13	Number of Bharat Nirman Volunteers	–

Name and Signature of Surveyor and Respondent'

Surveyor	X સરપંચશ્રી મોટીદાઉ ગ્રામ પંચાયત તા.જી.મહેસાણા. PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	X Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	04/05/21. Date of Survey

(9)

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

Gmail JAY Suthar <jayusuthar56@gmail.com>

Motidau Village Development project Report

JAY Suthar <jayusuthar56@gmail.com> Sat, Aug 21, 2021 at 5:16 PM
To: collector-meh@gujarat.gov.in, ddo-meh@gujarat.gov.in, rurban@gtu.edu.in, ddo-mehsana@gujarat.gov.in, tdo-mehsana@gujarat.gov.in

Respected Sir / Madam

We are students from L. C. Institute of Technology, Bhandu affiliated to Gujarat Technological University-GTU. GTU has been assigned to Vishwakarma Yojana- VIII (2020-21) in which students survey various villages and Design Various Amenities to deliver it to them making them ideal for living a better life as per requirements & village Problem statements.

As a part of Vishwakarma Yojana's guidelines, we have been asked to inform all the Respected officers about the our project in which we will shortly notify about Motidau Village profile of issues for development and our design work for them which are as below,

Village : Motidau		**Population : 4986 (As of census 2011)**
Key issue	**Remark**	**Provided Designs**
Financial	Financial Villagers are facing problems because the bank or ATM is far from the village.	Bank
Transportation	Pickup stands are very important in people's lives for transportation. Currently there has poor Condition Bus Stop is in Motidau Village	Pickup Stand
Courier facilities	The post office is around 15 KM from the motidau village, When the post office is in the village Is to provide easy courier facilities in the village.	Post Office
Water Scarcity	Water storage capacity is important for any village, Water can be stored in the village and used in many places.	Water Harvesting system
Toilet	Almost 80% have household toilets, but there is no toilet in some houses, so Public toilets are required.	Public Toilet
Education	There are no facilities of public libraries with new design, A public library is very important in social amenities .It is providing a good knowledge to the people in Motidau village.	Public Library
Internal Road Network	Roads inside and outside to near motidau village are getting a partly worse as over time so this need to be Repaired	Repair of old Road Surface
Social Connection	Currently there is no facility in Motidau village. To design a community hall in Motidau village by survey planning, design and estimation.	Community hall
Network connectivity	In village there is very poor network connection so provided Wi-Fi Tower design	Wi-Fi Tower
Solid Waste Management	Open waste disposal can be seen everywhere in the village.	Solid Waste Management

Electricity	Solar panel is useful for electricity. For generation of electricity and Contribute to a better environment. There is no Pollution and Effect on People life	Solar panel

Sr No	Design name	Period	Amount Expenditure (Rs.)	Benefit
1	Bank Building	Within 1 year	11,86000.00	It is to solve Financial problems in the village.
2	Pick up Stand	Immediately	154,300.00	It provides comfortable, safe, and well-lighted transportation.
3	Post office	Long term (3 Years)	12,49000.00	Is to provide courier facilities in village
4	Rain water Harvesting	Within 1 year	44,000.00	It is an important in people life for water collection.
5	Public Toilet	Within 1 year	931,000.00	It is providing safety and hygiene to the people.
6	Public Garden	Within 1 year	411,000.00	Public garden is important in people's lives to relax.
7	Public Library	Within 1 year	505,600.00	To education purposes & increase knowledge of students.
8	Repair of old road surface	Immediately	85,000.00	It provides comfortable, safe Travelling transportation.
9	Solid waste management	Within 1 year	721,240.00	It cleans the landscape. It Promotes health and sanitation.
10	Community hall	Within 1 year	369,000.00	Provides a Meeting Space. Promotes Exercise.
11	Solar panel	Long term (3 Years)	810,200.00	Solar panel is useful for electricity. For generation of electricity thus we design solar panels.
12	Wi-Fi Connection	Within 1 year	322,000.00	WI-FI tower connects people to the urban people and with digital knowledge.

Thanks and Regards

Civil Engineering Department
L. C. Institute of Technology, Bhandu College
Gujarat Technological University (GTU), Ahmedabad

Nodal Officer & guide Name:- **Prof. Sumit B Patel**

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Motidau - Part 1 & 2.pdf
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21: Comprehensive report for the entire village

Vishwakarma Yojana is provides special scheme for development of rural area by GTU and Government of Gujarat in which students work together and collect data and information regards Rural area development with the help of gram panchayat, Talati, villagers and stake holders. Our selected village Motidau have some basic facilities likes drinking water, electricity, drainage system, Pucca road, are sufficient so that village can develop. So, we will give proposal solution related to infrastructure problems.

In VISHWAKARMA YOJANA village will be developed as per criteria of ideal village. Different villages of the Gujarat are given as the study area to the different groups of the institutes affiliated to GTU. The study may lead to improvise the scope of region in various fronts. Improve the physical infrastructural facilities, social infrastructural facilities such as public latrine blocks and garden.

The study will focus the development trend, intensity of growth of the village, and find out theproblems related to the physical development of the area and infrastructure services of the village. Project proposal and sustainability aspect not consider in micro level, it is only guide way. The study focused to only village Motidau.

By this project certain experiences recreates a real work and need of application of an individual technical knowledge on any existing problems. Based on survey we tried to give design of basic facilities to fulfil their needs. By providing basic facilities like Solid waste management system, Banking, Community hall, toilet, Roads for reduce urban city pressure and decrease migration rate, which is ultimate aim of Vishwakarma Yojana.

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, Road, Electricity, Solid waste Management, and Telecommunication& other), Social infrastructure facilities (Education, Health, Community Hall, Library & other) and renewable energy (Rain water harvesting, 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.

Vishwakarma Yojana is one of the initiatives towards Rurbanization by Government of Gujarat, which was allotted as a pilot project to GTU. The students and Faculty Members meet all the stake holders in a village, survey the existing facilities. Then they re-imagine and re-design the whole of the infrastructure of the village. The students use their engineering skills to prepare detailed project reports for the infra-structure as a part of their Final Year project work.

Today the world is growing rapidly and the living standards of society are improving due to development in each and every field, Due to evolution of new technologies and new developments.

Mehsana is among one of the developed cities of Gujarat, and Motidau is a village in Mehsana District.

Motidau is a large village located in Mehsana Taluka and Mehsana district, Gujarat with total 1035 families residing. The Motidau village has population of 4986 of which 2576 are males while 2410 are females as per Population Census 2011.

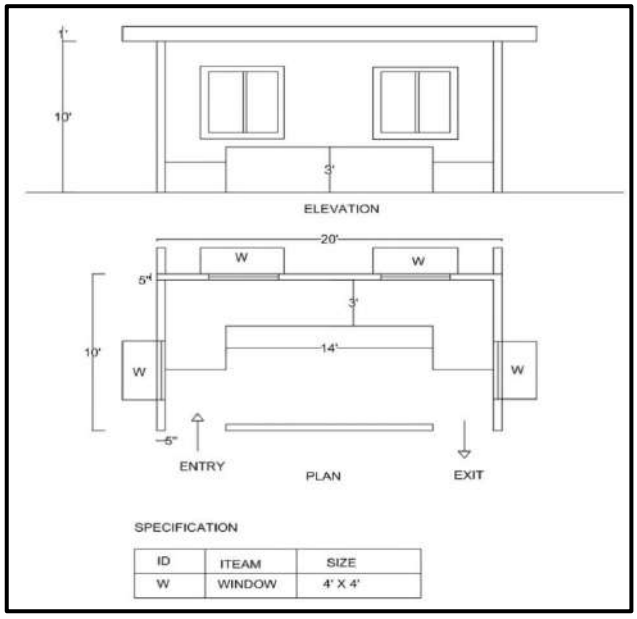
In Motidau village population of children with age 0-6 is 647 which make up 12.98 % of total population of village. Average Sex Ratio of Motidau village is 936 which is higher than Gujarat state average of 919. Child Sex Ratio for the Motidau as per census is 823, lower than Gujarat average of 890Motidau village has higher literacy rate compared to Gujarat. In 2011, literacy rate of Motidau village was 84.88 % compared to 78.03 % of Gujarat. In Motidau Male literacy stands at 93.83 % while female literacy rate was 75.50 %.

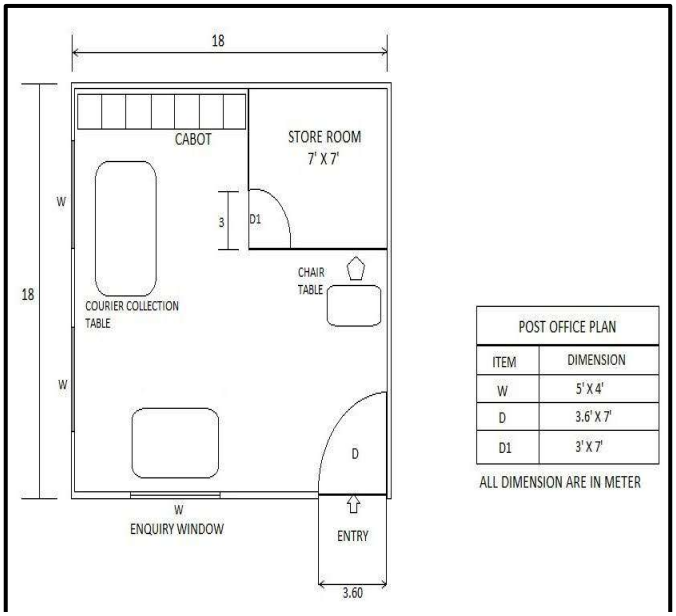
Providing good infrastructure & living Standard and reduce migration from village to urban areas. Data collection wills e give full master plan for development

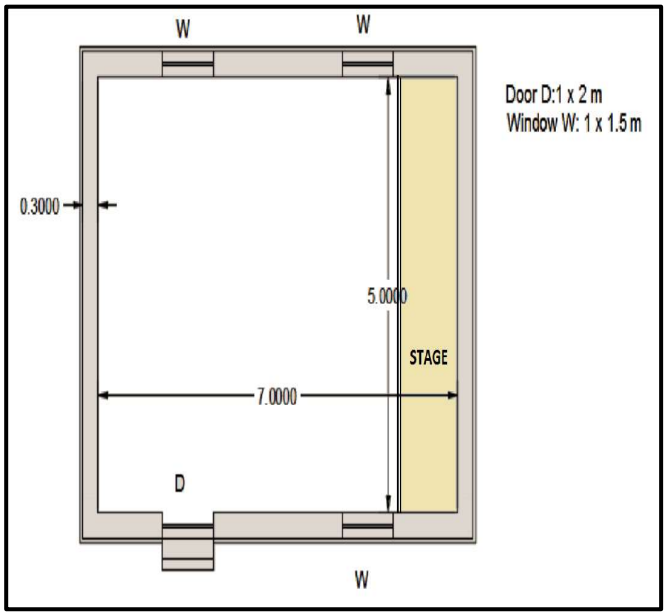
❖ **There are some design proposals:-**

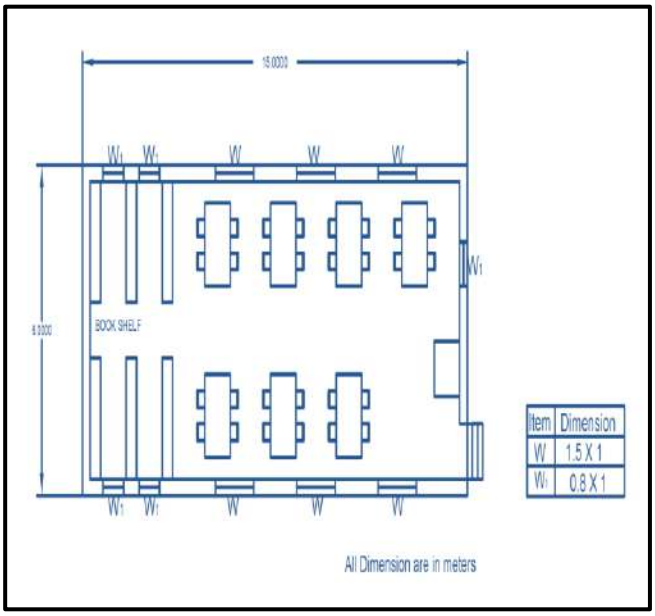
1) Bank
2) Pickup stand
3) Post office
4) Rain Water Harvesting
5) Public Toilet
6) Public Garden
7) Public library
8) Repair of old road surface
9) Solid Waste management
10) Community hall
11) Solar panel
12) Wi-Fi Connectivity

❖ Some Provided Designs:-









❖ Nodal officer statement

By providing this required facility to Motidau village, development and Rurbanization the village can be possible. So ultimately migration rate and urban city pressure can be reduced and livelihood of village dweller will increase.

All the design which is given as above is very helpful for future development of village and village people for their enhancement and prosperity. I admire these students to do work related to civil engineering people and hope these works is help to improve and understand their skills and make it even batter. I am sure they got deep knowledge about development of village and various infrastructure facility design of village. Lastly, we all enjoyed the informational as well as practical journey of civil engineering work.

Nodal Officer

Mr. Sumit B. Patel
L. C. Institute of Technology, Bhandu