DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
KUNGHER Village

PATAN District

Prepared By

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
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COLLAGE NAME:- M.K COLLAGE OF ENGINEERING &RESEARCH INSTITUTE

NODAL OFFICER NAME

PROF.JAHNAVI RAVAL

COLLAGE LOGO:-

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad – 382424 Gujarat

2020-2021

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CERTIFICATE

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

Detail Project Report for ,

VILLAGE :- KUNGHER

DISTRICT :-PATAN

Under

Vishwakarma Yojana: Phase-VIII

in partial fulfillment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

during the academic year 2020-21**.**

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

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ABSTRACT

Title: "Vishwakarma Yojana: Phase-VII An Approach towards Rurbanization for Kungar Village, Patan District, Gujarat".

Today world is growing fast, thus facilities, living standards are increasing very much so in development of urban area villages are stay behind to give attention for development. So today's biggest, issue is migration from rural area to urban area. Therefore, in Vishwakarma Yojana Phase-8 we will find rural current issues and problems, listing out existing amenities and give best economical solution. We will give planning proposal of Physical Infrastructure, Social Infrastructure & Socio-Cultural Infrastructure facilities with method of giving Redesigning, Reimaging, Repair & maintenance, and Sustainable planning for basic need of village like government buildings, schools, health facilities, water supply and sanitation, waste disposal management system, electricity, road networks, irrigation facilities, community hall, Recreational Garden and Playground, Sports zone, Biogas plant, Vermi Composed plant, rainwater harvesting system, Solar energy utilization and other non conversation energy sources utilization etc..All this done consulting with villagers, local revenue authorities, Sarpanch, TDO and DDO for future needs of the village keeping in mind the need of today's, future targeted population growth, growth of surrounding townor taluka places etc. We will give best planning proposal and best economic & sustainable solution for serving society directly or indirectly for nation with this VY project and make rurban Kunager village near Patan, Dist. Patan as ideal village like Punsari or Rajsamadhiyada or any other ideal village.

Key Words : Ideal Village Surveys, Techno-Economic Survey of Village, Data Collection, Listout existing Facilities, Gap analysis, need of amenities, Making Rurbanization by Redesigning, Reimagination, Repair & Maintaining, Sustainable Planning, Give Economical Design planning proposal.

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We also express our gratitude to **Dr. K.N.Kher**, **Registrar, Gujarat Technological University-Ahmedabad** for giving us complete support.

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ABBREVIATIONS

SHORTNAME/SYMBOL	FULL NAME
TDO	TALUKA DEVELOPMENT OFFICERS
DDO	DISTRICT DEVELOPMENT OFFICERS

1.0 IDEAL VILLAGE VISIT FROM DISTRICT OF GUJRAT STATE (BALISANA).

1.1 BACKGROUND & STUDY AREA LOCATION

BALISANA village is located at 14 Km from PATAN.The village is connected with Patan Unjha. This village is developed during recent years very efficiently and now this village have all basic amenities like, Cement Concrete road, underground drainage, water supply, solid waste management, gram panchayat, most houses are pucca, transportation services, higher education etc. the education is very good in this village. This village has post office. Figure 1 represents the Google map of the village.

Study area location

Name: Balisana

District: Patan

Taluka: Patan

Distance from Patan: 14 km

Pin code: 384110

Language: Gujarati and Hindi

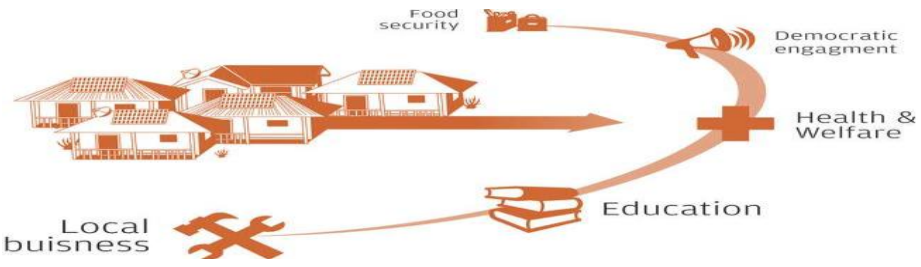
Time zone: IST (UTC+5:30)

1.2 concept: Ideal Village, Normal Village

- **Ideal Village**

An ideal Indian village will be so constructed as to lend itself to perfect sanitation. It will have cottages with sufficient light and ventilation built of a material obtainable within a radius of five miles of it. The cottages will have

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



- **Normal Village**

A village is a place where people live, normally in the countryside. It is usually larger than a hamlet and smaller than a town or city. In some places, it may be a kind of local government. The dwellings in a village are clustered fairly close to one another, not scattered broadly over the landscape.

1.2.1 Objectives

1. Better livelihood opportunities which are not in villages.
2. To get basic amenities
3. To facilitate enough power supply system for wholevillage.
4. To retrofit and renovate the primary school facilities with smarttechnology.

1.2.2 live case studies of ideal village punsari Gujarat

Punsari is a village located in Sabarkantha district in the state of Gujarat, India.[1] Punsari is considered as India's smartest village. 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 Panchayati 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 . The village has undergone a transformation under the panchayat. 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.[2][3] The village's model has been appreciated by delegates from Nairobi and they are keen to replicate this in Kenyan villages.[4]

1.2.3 The ideal of a smart 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, HimachalPradesh, Rajasthan and Tamil Nadu, with an allocation of Rs 10 lakh per village. This limitwas later raised to
- Rs 20 lakh per village. The target villages under the scheme were those with more than 50%of the
- Population belonging to Scheduled Castes (SCs). Additionally, State governments have alsotaken
- Steps in this direction. Himachal Pradesh launched a Mukhiya Mantri Adarsh Gram Yojanaalong
- Similar lines in 2011, with the allocation of Rs 10 lakh per village.

1.2.4 Ancient History in India village

Rural areas are large and isolated areas and open country with low population density. The Indus valley civilization is so far known to be the ancient civilization in India and at mainly comprise two cities of Harappa and Mohenjo-Daro.

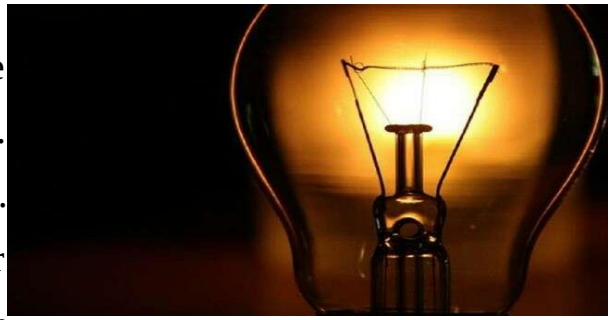
1.3 Socio economic, physical, demographic and infrastructure details of Punsari–an Idealvillage

A] PHYSICAL FACILITIES

1. Road Facilities

The paper highlights that Inspite of the highest place of rural roads in the planned development of rural oriented Indian economy, the Indian planners have been preoccupied with inter-city and intra-city transport during past plan period, leaving the rural transport system in a state of utter neglect. The paper deals with the impact of rural roads on agriculture, industry, health, communication, education etc. and describes the planning targets and achievements during the last three decades of planning for rural roads and highlights the need to formulate long term plans and to sort out national policies and priorities. The paper presents some of the experience gained from the studies on rural roads conducted by the National Transportation Planning and Research Centre and suggests some recommendations which may accelerate the process of rural road development.

2. Electricity



The electricity should be supplied 24 hour. The village should good facilities of electricity. Electricity also available for agricultural purpose. Various crops of field are depended on regular water supply and water supply is depended on electricity.

B. SOCIAL FACILITIES

3. Food

Agricultural processing means the processing of crops or milk to produce a product primarily for wholesale or retail sale for human or animal consumption, including but not limited to potato, fruit, vegetable, and grain processing.

4. Education facilities

Basic Education In Rural Areas Under the basic education in rural areas, the child's primary education begins on the basis of rural environments. The child's first teacher is the mother.Kungher and its regional language are very important in rural education. Teaching the child in the regional language through rural education is very important In rural Education in Rural Areas. So that he can develop his mind and learn about his surroundings.

5. Agriculture facilities

Smart village has small market for sell their crop at same palace so that transportation costs of farmers are reduced. Various farming technology machine should available for farmers in smartvillage.

1.4 SWOT analysis of Ideal village

SWOT analysis is a strategic planning tool used to evaluate the Strengths, Weaknesses, Opportunities and Threats in a project or an organization. It is used to develop a plan that takes into consideration different factors, maximizes the potential and minimizes the impact of weaknesses and threats. Strengths describe tangible and intangible positive attributes like resources and competency available (knowledge, background, education, skills etc.) in individuals, community or organization) Weaknesses stand for those attributes of an individual, community or organization that are harmful to achieving the objectives. These are features that are under your control, but for a variety of reasons they need improvement.

Opportunities are external the conditions that are helpful in achieving the objective. Threats are the external conditions that can be harmful to achieving the objective. They are major unfavorable situations in an organization's environment.

- Strength
  - Land
  - Transportation system
  - Drinking facilities
  - Drainage facilities
- Weakness
  - Solid waste management
- Treats
  - The price of crops is low
  - Production risk

1.5 future prospects of village

- Sustainable development, Community ,Technology and Connectivity is the most important point of the ideal village.

1.6 Benefits of the visits of the village

- Know about a behaviour of different village people.
- Get a such surveyor experience in illiterate people.
- We see some different type of little requirements of village.
- We saw all type of basic and primary amenities available.

1.7 Electrical / Civil aspects required in Ideal village

The government has identified 15 basic amenities to enhance quality of life in villages. It has asked gram panchayats (GPs) to make all these facilities available to the people. These include drinking water, playgrounds and open-air theatres.

The move is aimed at arresting the migration of rural people towards urban areas. In a circular issued last week, the Rural Development and Panchayat Raj (RDPR) Department said of the 6.11 crore population of Karnataka, nearly 61 per cent live in rural areas. There are 59,532 habitats and 27,397 villages within 5,629 GPs.

The foremost priority with the government is to enhance quality of life in villages so that it is on a par with urban areas, the department said. The department has asked GPs to make the amenities available through ongoing schemes, including the Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA).

Since the government is committed to provide at least 55 litres per capita day (LPCD) of water to every family in a village, the GPs should focus on providing individual households tap connections.

At the same time, focus should also be given to construction of toilets for each household

under the MNREGA and the Nirmal Bharat Abhiyan. Schools and anganwadis in villages should be provided with toilets even as panchayats have to take steps towards solid waste management, the department said.

Large tracks of roads (75,866 km) in the State are still mud tracks and they require development, the department said. This would help improve the economic activities of the region. Also, GPs are required to provide roads to farms under different schemes.

Playgrounds and open-air theatres provide the much-needed avenues for physical activity and recreation of village people. There should be at least one playground and one open-air theatre in each village.

The GPs should also provide animal shelters for cows and sheep. This would encourage dairy and sheep-rearing activities. Also, community harvesting facilities should be provided to enable small and marginal farmers to join in, the department said.

Having concurred with the department of e-governance to extend e-governance facilities, the RDPR Department said each panchayat should establish citizen service centres in their limits.

This is to avoid village people approaching hobli/taluk headquarters to get services, including land records and utility payments, the department said.

For youth

Besides providing skill development centres for the youth, panchayats should also focus on enabling the youth to set up self-employment units. Water harvesting, groundwater recharge and improvement of village tanks/lakes are also projects to be pursued.

2.0 Literature review

2.1 Various Definitions

2.1.1 Urban Area

An urban area is the region surrounding a city. Most inhabitants of urban areas have non-agricultural jobs. Urban areas are very developed, meaning there is a density of human structures such as houses, commercial buildings, roads, bridges, and railways. "Urban area" can refer to towns, cities, and suburbs.All places with a municipality, corporation, encampment board or notified city space committee, etc.

2.1.2 Rural Area

A rural area is an open swath of land that has few homes or other buildings, and not very many people. A rural areas population density is very low. Many people live in a city, or urban area.In a rural area, Typical rural areas have a low population density and small settlements. Agricultural areas are commonly rural, though so are others such as forests. In these areas the panchayat takes all the decisions.

2.1.3 Rurbanisation

Rurbanization is a process of altering rural forms with pre-selected urban patterns and lifestyles, which creates new genetically altered rurban forms. Rurbnisation is new concept which has more importance in developing the rural areas with the assimilation of urban facilities. Rurbanisation can cater the needs of rural people with better facilities and infrastructure. It has it's advantages empowering the rural people with the facilities like electrification which has the major utility in Agricultural sector of rural areas. It also has some drawbacks as lack of political will, Delay in funds disbursement and geographical factors like topography makes it difficult for the implementation of Rurbanisation.

2.1.4 Urbanization

Urbanization refers to the population shift from rural to urban areas, the corresponding decrease in the proportion of people living in rural areas, and the ways in which societies adapt to this change.

2.1.5 Standard urban areas

The essential criteria of a Standard Urban Area are: it should have a core town of a minimum population size of 50,000, the contiguous areas made up of other urban as well as rural administrative units should have close mutual socio- economic links with the core town and.

2.1.6 Infrastructure facilities

Infrastructure plays a critical role in the economic development of any country. Presently 65% of India's population resides in its rural areas. Therefore, rural infrastructure needs to be developed to provide basic amenities such as civic services and housing to the rural population. This will help boost their quality of life. Growth of rural infrastructure is important from the perspective of agriculture, agro-based industries, poverty alleviation and better access to markets and job opportunities in rural regions.

India a largely agrarian economy has got majority of population in rural area. It is now transforming to industrial and service economy. Distribution of socio economic activities in urban and rural India proportionately may result in terms of balance in infrastructure development planning and management in India.

2.2 Importance of the rural development

Rural development is important not only for the majority of the population residing in rural areas, but also for the overall economic expansion of the nation.

Rural development is considered to be of noticeable importance in the country today than in the olden days in the process of the evolution of the nation. It is a strategy that tries to obtain an improved and productivity, higher socio-economic equality and ambition, and stability in social and economic development.

The primary task is to decrease the famine that exists in roughly about 70 percent of the rural population, and to make sufficient and healthy food available.

The secondary task is to ensure the availability of clothing and footwear, a clean environment and house, medical attention, recreational provision, education, transport, and communication.

2.3 Ancient villages/different definitions of: Rural areas/villages:

- Rural areas are also known as the 'Countryside' or a 'village' in India. It has a very low population density. In rural areas, agriculture is the chief source of livelihood along with fishing cottage industries, pottery etc.

2.4 Scenario: Rural/ urban village of India population Growth

➢ Persons:

- Total population: 1,201,193,422
- Rural : 833,087,662

- Urban : 377,105,760

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

2.5 Scanario: Rural/urban village of Gujarat poppulation growth

- **Persons:**

- Total population: 586,469,174
- Rural : 405,170,610
- Urban : 181,298,564

	2001-2011
Total	18.12
Rural	12.25
Urban	33.73

2.6 Rural Development Issues - Concerns –Measures

India, home to 70 per cent of the region's rural population, has unveiled a number of measures to bolster the rural economy. The government will maintain minimum support prices for major crops (25 at present) equal to at least 1.5 times their production costs.

"The efficacy of this policy will depend on the extent of implementation, as government procurement has been largely restricted to rice, wheat, sugarcane, and cotton. Further, this policy risks creating barriers to private sector entry into agricultural markets," said the 2019 Global Food Policy Report (GFPR) released by the International Food Policy Research Institute (IFPRI) in Washington.
A fund of about USD 350 million is proposed to develop and upgrade agri marketing infrastructure.
Other government measures to boost India's rural economy and improve rural livelihoods include

development of cluster-based specialised farming, promotion of organic farming, support for farmers' organisations, extension of farmer credit to fisheries and animal husbandry farmers

1. Rural environment as a complex and dynamic strategy
2. It involves rural people's satisfaction and loyalty
3. Changing attitude of the rural society
4. Focusing on continuous people service
5. Maintain a constant updating technological changes
6. High technological purgation and modernization
7. Implement of the people friendly policies.
8. Assimilation of rural growth and development

2.7 Various Measures for Rural Development

- Rural development can be defined as —an integrated development of the area and the people through optimum development and utilization of local resources-physical, biological and human and by bringing about necessary institutional, structural, and attitudinal changes of rural public.
- Policy for developing uplifting the lifestyle of the farmers
- Support of the villagers is requiring developing the infrastructure in the village and accordingly also proper use of it require

2.8 Ancient / Existing Electrical concept study as a Literature Review for village development

Rural electrification is the process of bringing electrical power to rural and remote areas. Rural communities are suffering from colossal market failures as the national grids fall short of their demand for electricity. As of 2017, over 1 billion people worldwide lack household electric power – 14% of the global population. Electrification typically begins in cities and towns and gradually extends to rural areas, however, this process often runs into obstacles in developing nations. Expanding the national grid is expensive and countries consistently lack the capital to grow their current infrastructure. Additionally, amortizing capital costs to reduce the unit cost of each hook-up is harder to do in lightly populated areas (yielding higher per capita share of the expense). If countries are able to overcome these obstacles and reach nationwide electrification, rural

communities will be able to reap considerable amounts of economic and social development.

2.9 Government schemes, Projects implemented for village development:

2.9.1 Janani suraksha yojana

JananiSurakshaYojana (JSY) is a safe motherhood intervention under the National Health Mission. It is being implemented with the objective of reducing maternal and neonatal mortality by promoting institutional delivery among poor pregnant women. The scheme, launched on 12 April 2005 by the Hon'ble Prime Minister, is under implementatioin all states and Union Territories (UTs), with a special focus on Low Performing States (LPS).

JSY is a centrally sponsored scheme, which integrates cash assistance with delivery and post-delivery care. The Yojana has identified Accredited Social Health Activist (ASHA) as an effective link between the government and pregnant women.

2.9.2 Pradhan Mantri MUDRA Yojana (PMMY)

Pradhan Mantri MUDRA Yojana (PMMY) is a scheme launched by the Hon'ble Prime Minister on April 8, 2015 for providing loans upto 10 lakh to the non-corporate, non-farm small/micro enterprises. These loans are classified as MUDRA loans under PMMY. These loans are given by Commercial Banks, RRBs, Small Finance Banks, Cooperative Banks, MFIs and NBFCs. The borrower can approach any of the lending institutions mentioned above or can apply online through this portal. Under the aegis of PMMY, MUDRA has created three products namely 'Shishu', 'Kishore' and 'Tarun' to signify the stage of growth / development and funding needs of the beneficiary micro unit / entrepreneur and also provide a reference point for the next phase of graduation / growth.

2.9.3 Pradhan Mantri AVAS Yojana(PMAY)

Pradhan Mantri Awas Yojana – Urban (PMAY-U), a flagship Mission of Government of India being implemented by Ministry of Housing and Urban Affairs (MoHUA), was launched on 25th June 2015. The Mission addresses urban housing shortage among the EWS/LIG and MIG categories including the slum dwellers by ensuring a pucca house to all eligible urban households by the year 2022, when Nation completes 75 years of its Independence.

3.0 Smart Villages & Villages concept

3.1 Introduction : Definition & Concept

Abstract Smart Village refers to a concept developed in rural area that provides solutions to problems occurred and improves the quality of life. The main problems faced by rural areas are cover poverty, low level of education, and limited access to technology.

The Eco Needs Foundation has initiated the concept of "Smart Village". Under this project the Foundation is adopting villages and putting efforts for sustainable development by providing basic amenities like sanitation, safe drinking water, internal road, tree plantation, water conservation. The Foundation is also working for inculcating moral values in the society and for improving the standard of living of the villagers. In the concept of "Smart Village" the development of the village shall be based on the five paths Retrofitting, Redevelopment, Green fields, e-Pan, Livelihood.

3.2 Vision - Goals , Standards and Performance Measurements Indicators

- **Goals**

The Smart Villages concept aims to enable local actors to look beyond component parts, assess, plan and take action around how existing assets and future opportunities can come together and join the dots for more balanced, forward looking rural development.

- **Vision**

The vision of smart village is that modern energy access can act as catalyst for development in education , health , productive enterprise , clean water , sanitation , environmental sustainability and participatory democracy which helps to support further improvement in access to energy .

- **Performance Measurements**

Key performance indicators represent a particular value or characteristic that is measured to assess whether an organization's goals are being achieved. The main benefit of a KPI is that it collects all the data from various individuals and combines it on a main data base. But does not address the constraints involved to achieve the goals is a setback for leaders to take decision. Smart city is a complexsystem and attributes vary from state to state and city to city even with same IT system. In this contextKPI metrics confuse the stake holders rather helping in promoting the sustainable smart city services.Hence combination of systems engineering methodology may help solving complexity involved in smart city performances.

3.3 Technological Options

- **Smart Energy**

  The answer proves to be not so black and white, as the potential uses for smart energy are vast. On the surface, understanding what makes energy smart appears simple.

  It has to be renewable. Renewable energy comes from non-depletable sources that won't run out. Solar energy has become one of the dominant focuses for those looking to harvest the power of renewable energy.

- **Smart Transportation**

  A smart city is, in particular, a city that uses technology to provide facilities and help fix problems in the city. A smart city works like improving transport and convenience, improving public assistance, saving energy, and giving voice to its people.

- **Smart Agriculture**

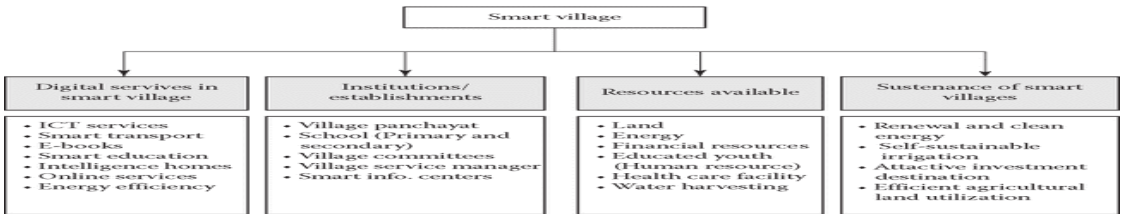
  The need to make the businesses of farmers more productive, profitable, and less tedious has driven experts to build technology for high-precision crop examination, gathering data from the field, and efficient logistics management. Agriculture IoT Solutions is likely going to witness the agriculture business get increasingly profitable with the utilization of recent advancements in Smart Agriculture.

3.4 Roadmap and safe guards

Smart Maps are designed so that users can quickly and intuitively interact with them despite having virtually no training, ensuring that information reaches the widest possible audience. Smart Maps are built to update quickly and correctly as cities change and evolve.

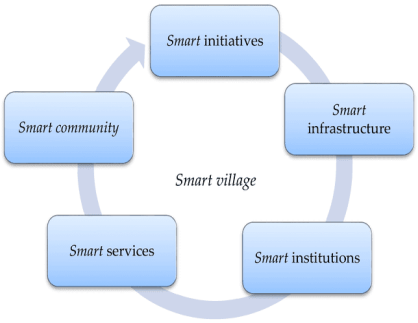
3.5 Issue & challanges

There is a huge requirement for smart technology to be used in these smart villages. There is a need of proper financial resources and a market to create these smart technologies. But as of now there are a lot of constraints to get the ecosystem ready for financial resources as well as for proper marketization.



3.6 Smart Infrastructure

Smart Infrastructures comprise several operators from different domains of activity, such as energy, public transport, public safety. They deploy and operate “cyber-physical systems”, that are data-controlled equipment which interact with the physical world. They collaborate and exchange data under several schemes, depending on their level of maturity.



The usage of cyber-physical devices (software-controlled devices that interact with the physical world) bring new risks: on the economy and on the safety of citizens.

Recent trends see Critical Infrastructures migrating toward Smart Infrastructures by deploying IoT. They invest on remote management and big data to improve the quality of service.

3.7 Cyber security

The complex and interdependent nature of smart cities raises significant political, technical, and socioeconomic challenges for designers, integrators and organisations involved in administrating these new entities. An increasing number of studies focus on the security, privacy and risks within smart cities, highlighting the threats relating to information security and challenges for smart city infrastructure in the management and processing of personal data. This

study analyses many of these challenges, offers a valuable synthesis of the relevant key literature, and develops a smart city interaction framework. The study is organised around a

number of key themes within smart cities research: privacy and security of mobile devices and services; smart city infrastructure, power systems, healthcare, frameworks, algorithms and protocols to improve security and privacy, operational threats for smart cities, use and adoption of smart services by citizens, use of blockchain and use of social media. This comprehensive review provides a useful perspective on many of the key issues and offers key direction for future studies. The findings of this study can provide an informative research framework and reference point for academics and practitioners.

3.8 District colling and heating

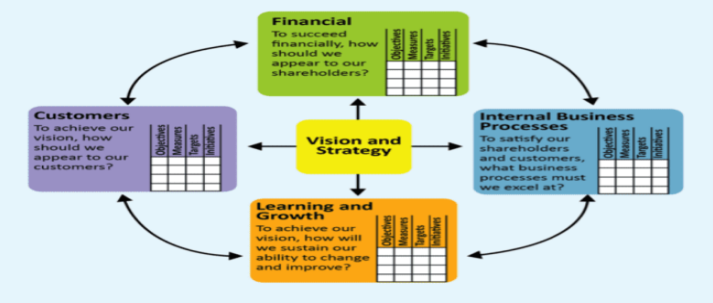
District heating and cooling is the centralised generation and distribution of heating and cooling. Depending on local circumstances, networks can be both lower carbon and cheaper for consumers than an individual heating system. A district heating network allows a large number of individual consumers to access heat that has been produced from a number of sources such as: combined heat and power (CHP), large scale heat pumps, municipal waste incineration, biomass boilers or industrial waste heat recovery.

As countries move to incorporate more intermittent renewable sources of electricity such as solar PV and wind into existing electrical grids, district heating and cooling networks can fulfil an important balancing role. Along with large scale thermal storage, CHP plants can be operated at short notice to provide electricity when the sun stops shining or the wind stops blowing, and the heat produced can be stored for later use. Likewise, an electricity system

with high renewables penetration can sometimes produce excess electricity when not needed, using this electricity for heat production and storing it for later use can help balance the grid.

Multiple ownership models exist for district heating networks, ranging from full state or municipal ownership, long term concession agreements with private operators for heat generation and distribution, “unbundled” networks with separate ownership of different network assets or a private owner/operator that bills and interacts directly with consumers

3.9 Strategic Options for Fast Development



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

Urban water and Sanitation Challenges

Urban Water and Sanitation is identified as a key theme under the Knowledge Support Network initiative of the Cities Alliance support to the PEARL platform given the extensive investment focus and commitments to urban water and sanitation under programs of Government of India, several State governments including those that are being implemented with support from external funding agencies.

This Compendium on ‘Good practices in Water supply and Sanitation

projects in Indian cities' seeks to showcase select good practices from Indian cities across a variety of sub-themes in the water and sanitation sector. The objective of this Com-pendium is to draw insights on underlying success factors and contextual nuances in these cases and to distil possible lessons and insights for wider adoption/replication across cities in India.

Role of Indigenous Technologies

Understanding "indigenous technology" begins with defining indigenous. The possible definitions are many. The term is used in reference to plants, animals, or people that naturally belong to a particular place . It can be defined as "native," as in something not introduced directly or indirectly according to historical record or scientific analysis into a particular land or region or environment from the outside . Indigenous is associated with people originating or developing naturally in a particular land, region, or environment . Indigenous is a term used to describe people who are the original inhabitants of a particular geographical area.

3.11 Initiatives in village development by local self-government

Local bodies are institutions of the local self governance, which look after the administration of an area or small community such as villages, towns, or cities. The Local bodies in India are broadly classified into two categories. The local bodies constituted for local planning, development and administration in the rural areas are referred as Rural Local Bodies (Panchayats) and the local bodies, which are constituted for local planning, development and administration in the urban areas are referred as Urban Local Bodies (Municipalities).

3.12 Smart Initiatives by District MunicipalCorporation

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

1 PMMY

Pradhan Mantri MUDRA Yojana (PMMY) is a scheme launched by the Hon'ble Prime Minister on April 8, 2015 for providing loans upto 10 lakh to the non-corporate, non-farm small/micro enterprises. These loans are classified as MUDRA loans under PMMY.

2 PMAY

Pradhan Mantri Awas Yojana – Urban (PMAY-U), a flagship Mission of Government of India being implemented by Ministry of Housing and Urban Affairs (MoHUA), was launched on 25th June 2015. The Mission addresses urban housing shortage among the EWS/LIG and MIG categories including the slum dwellers by ensuring a pucca house to all eligible urban households by the year 2022, when Nation completes 75 years of its Independence.

3.14 How to implement other Countries smart villages project inIndian village context

Human society is developing with rapid momentum and achieved various successes for making its livelihood better. The civilization is witness for various changes related to it's the development through different catalysts like industrial development, green revaluation, science and technology, etc.

The present era is augmented onInformation and Communication Technology. This technology has proved its potential in various sectors of development in urban and rural landscapes. Urban areas are seems to more inclined to accept and adopt Information and Communication Technology due to advantages of literacy and better infrastructure as compared to rural areas. Due to such suitable situations of urban landscapes good amount of success of this technology is visible in the form of smart cities and better livelihood of residing human beings. But the problems, consequences and opportunities in urban areas are different for effective utilization of Information and Communication Technology for sustainable development of rural masses. The present research article discusses about rural development in developing world for the up-liftment of livelihood of the rural masses and to take a 'look ahead' at scientific developments and technologies that might be influential over the next 10-20 years. The driving motivation behind the concept on " Smart Village " is that the technology should acts as a catalyst for development, enabling education and local business opportunities, improving health and welfare, enhancing democratic engagement and overall enhancement of rural village dwellers. The " Smart Village " concept aims to realize its goal through providing policymakers with insightful, bottom–up analyses of the challenges of village development.

3.15 Electrical concept (Design Ideal and Prototype model)

3.15.1 Design of AC-AC Converter

What is AC to AC Converter and Its Working

AC to AC converters is used for converting the AC waveforms with one particular frequency and magnitude to AC waveform with another frequency at another magnitude. This conversion is mainly required in case of speed controlling of machines, for low frequency and variable voltage magnitude applications as well. We know that there are different types of loads that work with different types of power supplies like single-phase, three-phase supply, and the supplies can be differentiated based on the voltage and frequency range also.

What is AC to AC Converter?

We require a particular voltage and particular frequency for operating some special devices or machines. For speed control of induction motors, AC to AC converters (Cycloconverters) is used majorly. For obtaining a desired AC power supply from the actual power supply, we need some converters called AC to AC converters.

Types of AC to AC Converters

The AC to AC converters can be classified into different types:

Cycl converters
AC to AC Converters with DC link
Matrix Converters
Hybrid Matrix Converters

1. Cycloconverters

Cycloconverters are majorly called as frequency changers that convert the AC power with one input frequency to AC power with a different output frequency and can be used for changing the magnitude of the AC power also. Cycloconverters are preferred for avoiding DC links and to avoid many stages like AC to DC to AC which is not economical and causes more losses. The cost of the DC link required will vary according to the ratings of the supply power being used.

Cycloconverters

The above figure shows the working principle of a cycloconverter wherein the input wave frequency changed by changing the firing angle applied to the thyristors. By switching the positive and negative limb thyristors, we can get variable output frequency that can be step-up or step-down frequency compared to the input frequency.

Cycloconverters are Classified into Different Types Based on Different Criteria

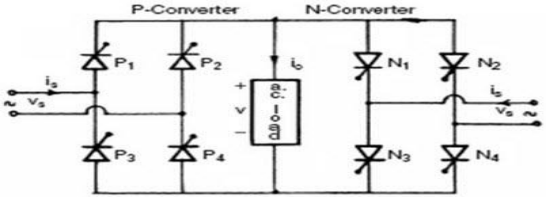
Cycloconverters consist of two limbs namely Positive limb also called a positive converter and negative limb also called a negative converter. The Positivelimb operates during the positive half cycle and the negative limb operates during the negative half cycle.

Classification of Cycloconverters Based on the Mode of Operation:

Blocking Mode Cycloconverters

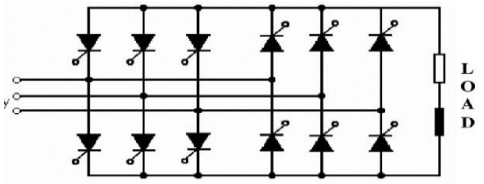
These Cycloconverters don't need any limiting reactor as in this mode only one limb either positive or negative limb conducts at a time, and the other limb is blocked. Hence, this is called as Blocking Mode Cycloconverters.

Circulating Current Mode Cycloconverter



These Cycloconvertersneed limiting reactor as both the positive limb and the negative limb conduct at a time, and hence a reactor is placed to limit the circulating current. As both the limbs conducting at the same time, there will be a circulating current in the system, and hence, it is called Circulating Current Mode cycloconverter.

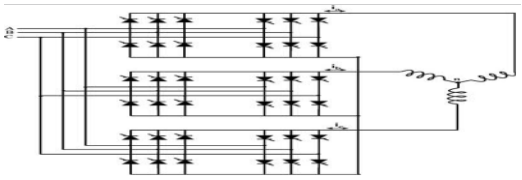
Classification of Cycloconverters Based on the Number of Phases of Output Voltage



Single Phase Cycloconverters

These are again classified into two types based on the number of input phases.

1-Øto 1- Ø Cylcoconverter



This Cycloconverter converts the single-phase AC waveform with input frequency and t magnitude to output AC waveform with a different magnitude and frequency.

3-Ø to 1- Ø Phase Cycloconverter

This Cycloconverter has a three-phase AC supply with an input frequency and magnitude and produces output as a single-phase AC waveform with a different output frequency or magnitude.

3-Ø to 3- Ø Phase Cycloconverter

This Cycloconverterhas three-phase AC supply with input frequency and magnitude

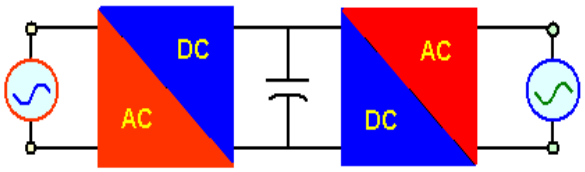
and produces output as the three-phase AC waveform with a different output frequency or magnitude.

Classification of Cycloconverters Based on the Firing Angle of Positive and Negative Limbs

Envelope Cycloconverters

In this type of Cycloconverters, the firing angle is fixed for both the positive and negative half-cycles during the positive half cycle. For a positive converter, the firing angle is set to α=0°, and during the negative half cycle, the firing angle is set to α=180°.

Similarly, for a negative converter, the firing angle is set to α=180°, during the p



ositive half cycle, and during the negative half cycle, the firing angle is set to α=0°.

Phase controlled Cycloconverters

By using this type of Cycloconverters, we can change the magnitude of the output voltage in addition to the frequency of the output. Both can be varied by varying the firing angle of the converter.

Phase controlled Cycloconverters

2. AC to AC Converters with a DC Link

AC to AC converters with a DC link generally consists of a rectifier, DC link, and

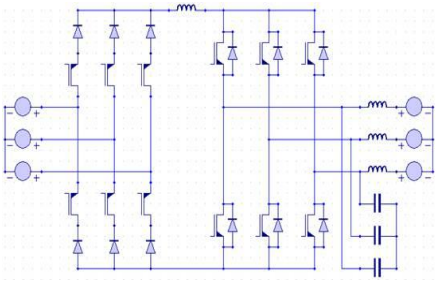
inverter as in this process the AC is converted into DC by using the rectifier. After being converted into DC, the DC link is used to store DC power, and then again it is converted into AC by using the inverter. AC to AC converter circuit with a DC link is shown in the figure.

AC to AC converters with a DC link is classified into two types:

Current Source Inverter Converter

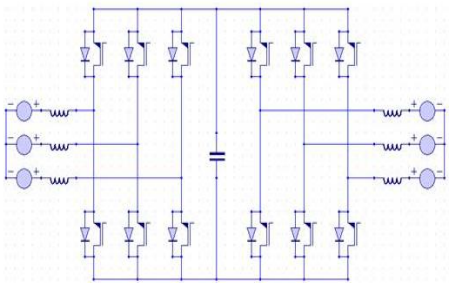
In this type of inverter, one or two series inductors are used between one or both limbs of the connection between the rectifier and inverter. The rectifier used here is a phase-controlled switching device like Thyristor Bridge.

Current Source Inverter Converter



Voltage Source Inverter ConverterIn this type of converter, the DC link consists of a shunt capacitor and the rectifier consists of a diode bridge. The diode bridges are preferred for the low load as the AC line distortion and low power factor caused by the Diode Bridge are lesser than the Thyristor Bridge.

However, the AC to AC converters with a DC link is not recommended for high-power ratings as the DC link passive component required capacity increases with the increase in power rating. For storing high power, we need high DC storage bulky passive components which are not economical and efficient as losses also increase



for converting AC to DC and DC to AC process.

Voltage Source Inverter Converter

3. Matrix Converters

Matrix converters are used for converting AC to AC directly without using any DC link for increasing the reliability and efficiency of the system by reducing the cost and losses of the DC-link storage element.

Matrix converter consists of the bidirectional switches that practically don't exist at present but can be realized by using the IGBTs, and these are capable of conducting current and blocking voltage of both polarities.

Matrix converters are again classified into different types based on the number of components used.

Sparse Matrix Converter

The function of a sparse matrix converter is identical to the direct matrix converter, but here the number of switches required is less than the direct matrix converter, and thus the reliability of the system can be improved by reducing the controlling complexity.

18 diodes, 15 transistors, and 7 isolated driver potentials are required for sparse matrix converter.

Very Sparse Matrix Converter

The number of diodes is increased with the reduced number of transistors compared to the sparse matrix converter, and thus, due to more number of diodes, the conduction losses are high. The function of the very sparse matrix converter is similar to the sparse/direct matrix converter.

30 diodes, 12 transistors, and 10 isolated driver potentials are required for a very sparse matrix converter.

Ultra Sparse Matrix Converter

These are used for variable speed drives of low dynamics as the input stage of this converter is unidirectional, and due to this, there is an admissible phase displacement between the input current fundamental and input voltage. Similarly, for an output voltage fundamental and output current is 30°, and hence these are majorly used for variable speed PSM drives of low dynamics.

12 diodes, 9 transistors, and 7 isolated driver potentials are required for ultra sparse matrix converter.

Hybrid Matrix Converter

The matrix converters that convert AC/DC/AC are termed as Hybrid matrix converters, and similar to the matrix converters, these hybrid converters also don't use any capacitor or inductor or DC link.

These are again classified into two types based on the number of stages they take for conversion, if the voltage and current both are converted in a single stage, then that converter can be called as a Hybrid Direct Matrix Converter.

If the voltage and current are converted in two different stages, then that converter can be called a Hybrid Indirect Matrix Converter

4.0 About Kungher Village

4.1 Introduction

4.1.1 Background:-

Gujarat Technological University is allotted important and prestigious project of Vishwakarma Yojana by the Government of Gujarat for the year 2020-21.The third phase project is aimed to study the present status and techno-economic survey of villages in terms of basic and public amenities, essential commodities, and other infrastructural facilities for the need of people and to prepare report on adequacy of the available resource with reference to population of the village and growth of the area. With consultation of Local revenue authorities, TDO and DDO the future need of the village keeping to mind the need of days, future targeted population growth, growth of surrounding town or taluka places etc. a projected development plan of the village ready to execute is required to be prepared under this project as targeted outcome at end.

The Scenario Of Vishwakarma Yojana Project Studying at Present Status And Techno-Economic Survey Of 6 Villages in different terms of basic and public amenities, other infrastructural facilities for the need of people and to prepare a report on the expected socio-economic growth of the area. With consultation of the local revenue authorities, TDO and DDO, the leaders like the Sarpanch, the needs of the village are to be determined keeping in mind the population growth, growth of surrounding town or taluka places etc. He said that the objective of the project is to prepare a completeroadmap of urban Development of the targeted villages. For the villages, a development plan, which is ready to execute, is required to be prepared under thisproject.

In third phase of my study area kungher. We get enough warm from local public and revpeople. We did three prestigious projects. We get enough feedback from people. They are eager to wel-come this govt. project.

4.1..2 Need ofstudy:-

Generally every mind knows that Indian villages are not as developed as the ther country. In this time condition is the totally change. Government want

toincrease the rural development in the compare of town government provide all facilities as possible. We know cities are more progressive than villages but there is agree to make change in compare of cities.

Rurban development is the big idea which government has to ready for implementation. When we started to discuss about development of rural area we realize that villagers. They should be ready to welcome various types of government project of villagers any project can go right. Rurban development is related to honesty of villagers. They should be ready to welcome various types of government project.

Government of Gujarat & Gujarat Technological University has establish the Vishwakarma Yojna to know the minimize problems of rurban people. Generally we know that many rurban people are face unexpected conflicts, because of their ignorance. Government is ready to improve this all problem, if we provide proper sanitary system. We can remove unexpected garbage from thevillage.

Educational development is more support for rural ignorance, the village know his duty regularly we can stop such type of colcumity .In sort the government improve all facilities invillage.

4.1.3 Village Development plan &Objectives:-

Fig.-1 District of Patan

Fig.-2 Village of kungher

District: - Patan

Taluka: - Patan

Village: -Kungher

Male Population: 3,282

Female Population: - 2,979

Total Population: -6,261

Particulars	Total	Male	Female
Total No. of Houses	1,342	–	–
Population	6,261	3,282	2,979
Child (0–6)	744	417	327
Schedule Caste	1,267	682	585
Schedule Tribe	26	12	14
Literacy	76.74 %	86.28 %	66.44 %
Total Workers	2,572	1,857	715
Main Worker	2,330	–	–
Marginal Worker	242	140	102

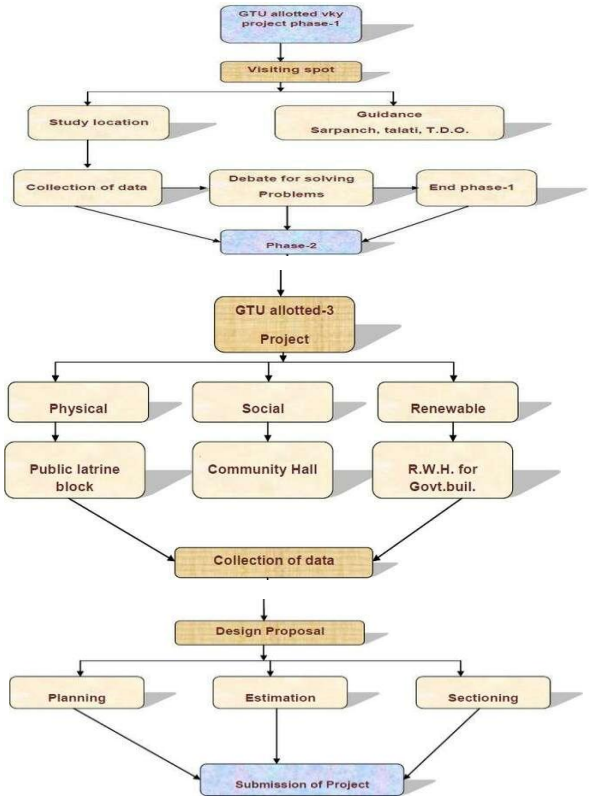
4.1.4 Scope ofstudy:-

The village on the way of high progress. The under drainage system is also on progress. If we provide this facility we can make modelvillage.

Infrastructure facility like dam is existing in our village. By this facility the ratio of public health we can improve. This type of facility will uplift human life. Physical problem can be solving. We can compare the life style to the urban locality.

Renewable facility is more supportive for coming generation. By this we can improve life style. Techno economy survey related task in our village is mostly related to farming. Cause surround area is totally empty and water table is at also at insufficient level.

4.1.5 Methodology



4.1.6 Methodology Frame Work for development of our village

Meeting with Villagers, Sarpanch, Talati

• Techno-Economic Survey
• Gap analysis for facilities available as per ideal village norms &requirement
• SWOT analysis

Ideal village Survey at Punsari Village

• Techno-economic survey
• Gap analysis for facilities available as per ideal village norms &requirement
• SWOT analysis
• Consulting with all related to village and analyse problem faced by Nardipur village

Kungher Village allocated by Vishwakarma Yojana

• Finding solution for problems
• Planing of best economical & sustainable designs
• Giving proposal design
• Detail progress report and detail design done in final project report

4.1.7 Available Methodology for development of related to Civil/Electrical

- We can do some special efforts to increase production of pulses and root vegetable.
- By implementing agricultural land ceiling, allocate left-over area and complete assembling of land records by eliminating all administrative and legal difficulties.
- Also by Increase irrigation development, potential equipment and contributions for dry land cultivation.
- We can supply mineral drinking water to all the village at minimal monthly cost.
- By strengthening and expanding the handling of rural development and national rural employment programmes.
- Allot house locations to rural families who are starved of them and develop packages for building support also.
- Basic Necessities in Life – food, shelter, clothes, basic literacy, primary health care and security of life and property
- Also by pursuing enthusiastically programmes of social, afforestation, to implement of bio-gas plant, farm forestry and other substitute energy sources.

4.2Study Area

4.2.1 Village location

Fig.3. State of Gujarat

Fig.4 District of Patan

Fig.5 Village of Kungher

PIN: 384255

District: Patan

State: Gujarat

4.2.2 Briefhistory:-

The nearest town is Patan which is about 10 Km away from kungher Cluster and is well connected by highway. Like Thakor, Rajput, Darbar, Desai, Brahman, and SC & ST communities are the primary inhabitants of the Cluster. The livelihood of these people is primarily based on rain fed agriculture, animal husbandry

4.2.3 Economy Profile.

Land andAgriculture:

Lack of surface water source and high salinity of ground water has limited the sufficient base for irrigation as well as for drinking purpose. The average land holding is about 4 ha ranging 1 to 5 ha. The cluster doesn't have proper irrigation source which forces the majority of the farmers to migrate to ensure their livelihood. The major crops cultivated by the farmers are Bajra, cotton wheat, maize. Some of the farmers take up rain-fed Bajracrop if rainfall is medium.

MigrationPattern:

People migrate during summer season to different parts of the District like Patan as daily wagers and also involved as agricultural labours and construction workers and local workers, shop keeper. Lack of fodder availability and grazing land for smaller ruminant force these people migrate to other places. During drought times all family members migrate to upperplaces.

4.2.4 Socialscenario:-

kungher cluster is well connected with 8km patan-chansma highway. The cluster has electricity connectivity under UGVCL of the Government.Kungher village in the all houses 24 hrs electricity provided. Kungher cluster has a primary school and high school with all facilities like personal computers and study rooms. All facilities are providing in Kungher

Area of Village : 1858.61 hector

Agriculture area:-800 Hector
TotalPopulation : 6261
Male: 3282 and Female: 2979

Work file

In Kungher village out of total population, 2572 were engaged in work activities. 90.59 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 9.41 % were involved in Marginal activity providing livelihood for less than 6 months. Of 2572 workers engaged in Main Work, 738 were cultivators (owner or co-owner) while 778 were Agricultural labourer.

4.2.5 Regional setting & linkage ofvillage:-

Kungher is situated in a north Gujarat near economical center of the district Patan. Kunger is known as a small village on single Line Road Way. And 10 km from District head quarters Patan. And 108 km from State capital Gandhinagar.

4.2.6 Village map & study area land usedetail:

Kungher is 10 km from Patan & 108 km from Gandhinagar. Transport facility from the main district Patan to Kungher is good. high way is provided. Buses and private vehicles are easily available. Road system connecting to various places with in the village is slightly in poor condition. The village has population in Kungher mostly people is educated.For drinking water is available from river. In village well isavailable.

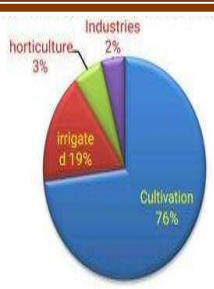


Fig.6 land use details

Land Use Details

AsperTechno-economicsurveycollectinginformationfrom Sarpanch,Talati, and Villagers and by our team the land use detail or Geographical detail are asunder…

Table 1:- Land Description

Sr no.	*Description*	*Information/Detail*
1	*Area of village approx.(In Hectors)*	1858.61
2	*Forest Area approx. (In Hectors)*	303.58
3	*Agricultural Land Area approx. (in Hectors)*	*800*
4	*Residential Area (in Hectors)*	10.3
5	*Other Area (in Hectors)*	0.2570
6	*Water Bodies*	*Check Dam and ponds nearerto villages*
7	*Nearest Town with Distance*	*Patan 12 km*

4.2.7 Migration Reasons / Trends

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

4.3 Data Collection

4.3.1 General

After conducting the primary and secondary survey we have got idea about the village requirements and available facility in the village. Based on that Gap analysis is prepared.

The village is divided in to different categories and based on that information are collected the different categories:

- Education
- MedicalFacility
- Transportation
- DrinkingWater
- Publiclatrines
- Postoffice
- Gram PanchayatBuildingl

Based on this gap analysis is done and Physical and Social infrastructure amenities of each village found and also plan for renewable sources.

4.3.2 Primary Survey Details

Primary survey is done in order to collect the basic information about various facilities available in the village.

In this survey data is collected by various means like house to house means door to door survey, by interviewing people, school teachers, shop keepers, and other public. Accuracy of this data is not sufficient means that data based on primary survey is not reliable or very accurate. Variances in the data happened due to different views of people.

We checked the infrastructure condition of different buildings like school, gram-panchyat, police station, banks, etc. And also check the condition of various basic amenities like water supply, drainage, electricity, solid waste management, railway station, bus station, hospitals, PHC, etc

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

The average size of house is where a family of 4 to 5 members can live not luxurious but a comfortable life. The Nardipur village has population of 6261 of which 3282 are males

while 2979 are females as per Population Census 2011.And has 1392 number of houses.

4.3.4 No of Human being in One House

In the village, there are average 4 persons per household.

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

The construction of the houses was made of stone, cement, sand, bricks and concrete. In this village pucca houses are more than the kutcha houses. In village almost 75% - 80% are pucca houses.Major economic option of the village is farming so there are no more locally material available like standard bricks, aggregates, concrete and reinforcements. So, this material is brought from nearest city for construction of the houses. Rooftop steel sheet are out sourced material for more of the village.

4.3.6 Geographical Detail

Geographical Detail: Table 2

Sr. No.	Description	Information/Detail
1)	AreaofVillage (Approx.) (In Hector) Coordinates for Location:	1858.61
2)	Forest Area (In hect.)	303.58
3)	Agricultural Land Area (In hect.)	800.00
4)	Residential Area (In hect.)	10.3
5)	Other Area (In hect.)	0.2570
6)	Water bodies	Bore well, check dam
7)	Nearest Town with Distance:	Bhalgam 3km

Occupational Details: Table 3

Name of Three Major Occupation groups in Village	1. Farming
	2. Cattel Farming
	3. Shop keeper

Educational Facilities: Table 4

Aaganwadi/ Play group	-	Yes	2	Maintenance
Primary School	Govt.	Yes	1	Maintenance
Secondary school	Govt.	Yes	1	Good
Higher sec. School	Private	No	0	-

4.3.7 Demographical Detail - Cast Wise Population Details / Which ID proof

Particulars	Total	Male	Female
Total No. of Houses	1,342	–	–
Population	6,261	3,282	2,979
Child (0–6)	744	417	327
Schedule Caste	1,267	682	585
Schedule Tribe	26	12	14
Literacy	76.74 %	86.28 %	66.44 %
Total Workers	2,572	1,857	715
Main Worker	2,330	–	–
Marginal Worker	242	140	102

4.3.8 Occupational Detail - Occupation wise Details / Majority business

Major Occupation of Village People is Agriculture.

- Agriculture - 80-85 %
- Milk production- 12%
- Daily wages- 3-5%

4.3.9 Agricultural Details / Organic Farming / Fishery

Major crops grown in the village are

1. Wheat
2. Bajra
3. Castor
4. Cotton

4.3.10 Physical Infrastructure Facilities - Manufacturing HUB / Ware Houses

- Panchayat building
- Anganwadi
- Primary school
- PHC Sub centre
- Underground drainage
- Drinking water supply network
- WBM and R.C.C. roads

4.3.11 Tourism development available in the village for attracting the tourist

- There is no tourism cluster in village

4.4 Infrastructure Details

4.4.1. DrinkingWater:-

In Kungher, village is having several (total-1, working- 1)bore-well which are directly overhead tank with cap 1,00,000 liter capacity as a main source of and there is also one sump available with cap 1,00,000 liter which is also use. So, the quality average it needs to betterthanpresent.

water tank

4.4.2.Drainage System:-

This village is having under ground pucca drainage network as well as close pucca drainage network. The drainage lines are sometime overflows due to jamming caused by solid waste disposal with water. And its odour is so strong in monsoon and it gives growth to the production of mosquitoes so it is the negative significant for the village dwellers. Every alternate day cleaning of sewerage network and proper waste managing can Resolve this problem.

Fig .8 Drainage system

4.4.3. Transportation & Road Network:

This village main source of transportation facility is held by private operators. Village is also having one Pickup stand of GSRTC which required more maintenance. Internal road not in good condition, but work in progress for making cement concrete roads.

We can make it usable even in monsoon by providing above layer covering with stoes or making them pucca road with use of RCC.

Fig.9 Transpostation Road

4.4.4 Housing condition

Kachha - pacca house

Fig.10 Kachha house

Fig.11 Pacca house

4.4.5 Social infrastructure facilities

1 . Health Facility

Primary health center in form of Aanganwadi is available in village. There are 2number of Aanganwadi in the village which provides the primary needs of health center to the villagers.

2 . Education facility

In this village basic facilities for educationare:

Anganwadi

PrimarySchool

SecondarySchool

In Kungher due to small population village is having 1 Anganwadi which are situated in different zones.

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

In village existing public building are panchayat building, school, branch post office, etc.all the structure need to reconstruction and maintenance.

4.4.7 Technology Mobile/ WIFI / Internet Usage Details

In village 65 to 70% use smart phone.20 to 25% use a normal phone and rest of people are not use phone.

4.4.8 Sports Activity as Gram Panchayat

No activity of sports is conducted by gram panchayat but school are conducted a

sport activity during a sport weak or any function.

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

Recreation Facilities In village lake of socio-cultural facility like public garden, park, playground, theater, walking area,etc. Village have only one pond near gamtal.

4.4.10 Other Facilities

1. Rural health training center :-

Fig.12 *Rural health training center*

2. Kungher gram panchayat

Fig.13 kungher village gram panchayat

3. Village Photographs

Fig.14 Kungher Village Postoffice

Fig.15 Kungher Rural Health Training Center

Fig.16 Kungher village Temple

4.5 Electrical Concept

4.5.1 Electricity Facilities

The government has provided 24hours electricity to the village. street light also available in this village. The village has good electricity facility.

Fig.17 RCC Single Pole Electricity System

Fig.18 RCC Double Pole Distribution

4.5.2 Solar Energy Facility

4.6 Existing Institutions

Fig.19 Kungher village gate

Fig.20 Kungher high Secondary School

Fig.21 Kungher primary school **Fig.22 Kungher village Anganwadi**

Fig.23 Kungher village Primary animal treatment center **Fig.24 Kungher village Dairy**

Fig.25 Kungher village waste **Fig.26 Kungher village visit photo**

Fig.27 Kungher village Police station

5.0 Technical Options

5.1 Civil Concept

5.1.1 Advance Sustainable construction techniques / Practices and Quantity Surveying

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.

The construction of buildings with wood, for instance is a sustainable construction technology because it has a lower embodied energy in comparison to those build of steel or concrete. Sustainable green construction also makes use of designs that cuts back air leakage and allows for free flow of air while at the same time using high performance windows and insulation techniques.

In most cases, agricultural wastes or by-products are used to produce the construction materials. Overall, the materials are remanufactured, recycled, recyclable, and obtained from sustainable sources.

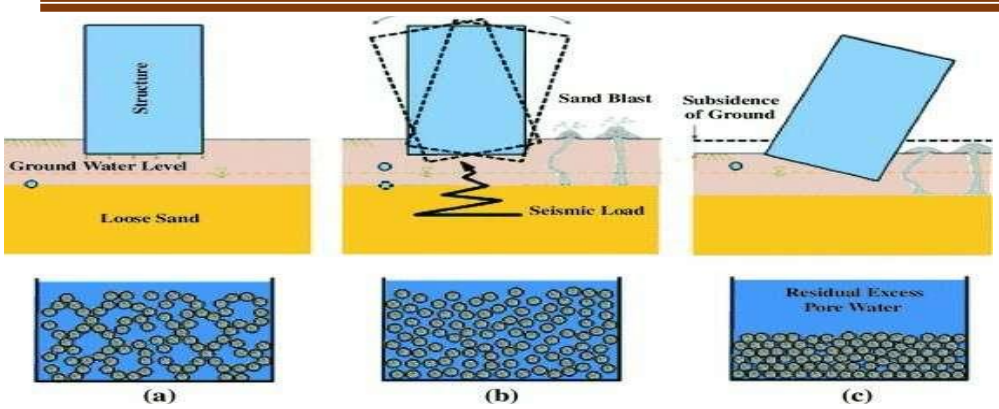
5.1.2 Soil liquefaction

Soil liquefaction occurs when a saturated or partially saturated soil substantially loses ((strength and stiffness in response to an applied stress such as shaking during an earthquake or other sudden change in stress condition, in which material that is ordinarily a solid behaves like a liquid.

When the soil is in the saturated condition, the pores and the soil are fully filled with water. These water molecules present in the soil exerts pressure on the neighboring particles. The water pressure exerted by these water molecules increases with rapid load action or earthquake forces. During liquefaction, the water pressures become high enough to counteract the gravitational pull on the soil particles.

The occurrence of liquefaction is the result of rapid load application and break down of the loose, saturated sand and the loosely-packed individual soil particles. Under the action of earthquake force or rapid loading condition, there is no time to completely squeeze out the pore water within the soil. Instead of being squeezed out, the soil particles are prevented from moving closer to each other.

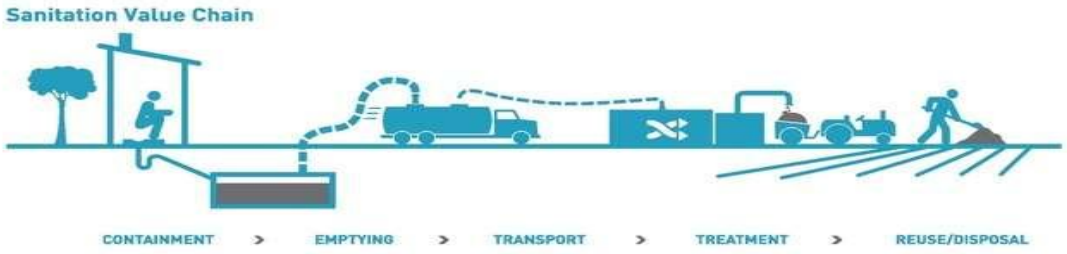
This increases the water pressure within the soil system. This water pressure created is very high compared to the contact forces within the soil particles. This softens and weakens the soil deposit.Other than the earthquake and large load actions, the liquefaction of soil can be happened due to construction practices like blasting, vibroflotation, and dynamic compaction.



soil liquefaction

5.1.3 Sustainable Sanitation

Sustainable sanitation is a sanitation system designed to meet certain criteria and to work well over the long-term. Sustainable sanitation systems consider the entire "sanitation value chain", from the experience of the user, excreta and wastewater collection methods, transportation or conveyance of waste, treatment, and reuse or disposal. The Sustainable Sanitation Alliance (SuSanA) includes five features (or criteria) in its definition of "sustainable sanitation": Systems need to be economically and socially acceptable, technically and institutionally appropriate and protect the environment and natural resources. The purpose of sustainable sanitation is the same as sanitation in general: to protect human health. However, "sustainable sanitation" attends to all processes of the system:



5.1.4 Transport Infrastructure / system :

In their endeavour to facilitate transport, however, decision-makers in governments and international organizations face difficult challenges. These include the existence of physical barriers or hindrances, such as insufficient or inadequate transport infrastructures, bottlenecks and missing links, as well as lack of funds to remove them. Solving these problems is not an easy task. It requires action on the part of the governments concerned, actions that are coordinated with other governments at international level.

Rail Rail transport is a means of conveyance of passengers and goods by way of wheeled vehicles running on rail track, known as a railway or railroad. The rails are anchored perpendicular to railroad train consists of one or more connected vehicles that run on the rails. Propulsion is commonly provided by a locomotive, that hauls a series of unpowered cars, that can carry passengers or freight. The locomotive can be powered by steam, diesel or by electricity supplied by trackside systems. Alternatively, some or all the cars can be powered, known as a multiple unit. Also, a

train can be powered by horses, cables, gravity, pneumatics and gas turbines. Railed vehicles move with much less friction than rubber tires on paved roads, making trains more energy efficient, though not as efficient as ships.

Intercity trains are long-haul services connecting cities;modern high-speed rail is capable of speeds up to 430 km/h (270 mph), but this requires a specially built track. Regional and commuter trains feed cities from suburbs and surrounding areas, while intra-urban transport is performed by high- capacity tramways and rapid transits, often making up the backbone of a city's public transport. Freight trains traditionally used box cars, requiring manual loading and unloading of the cargo. Since the 1960s, container trains have become the dominant solution for general freight, while large quantities of bulk are transported by dedicated trains

rail tranportaion

5.1.5 Vertical Farming

There are four critical areas in understanding how vertical farming works: 1. Physical layout, 2. Lighting, 3. Growing medium, and 4. Sustainability features.

Firstly, the primary goal of vertical farming is producing more foods per square meter. To accomplish this goal, crops are cultivated in stacked layers in a tower life structure. Secondly, a perfect combination of natural and artificial lights is used to maintain the perfect light level in the room. Technologies such as rotating beds are used to improve lighting efficiency.

Thirdly, instead of soil, aeroponic, aquaponic or hydroponic growing mediums are used. Peat moss or coconut husks and similar non-soil mediums are very common in vertical farming. Finally, the vertical farming method uses various sustainability features to offset the energy cost of farming. In fact, vertical farming uses 95% less water.

Vertical Farming

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

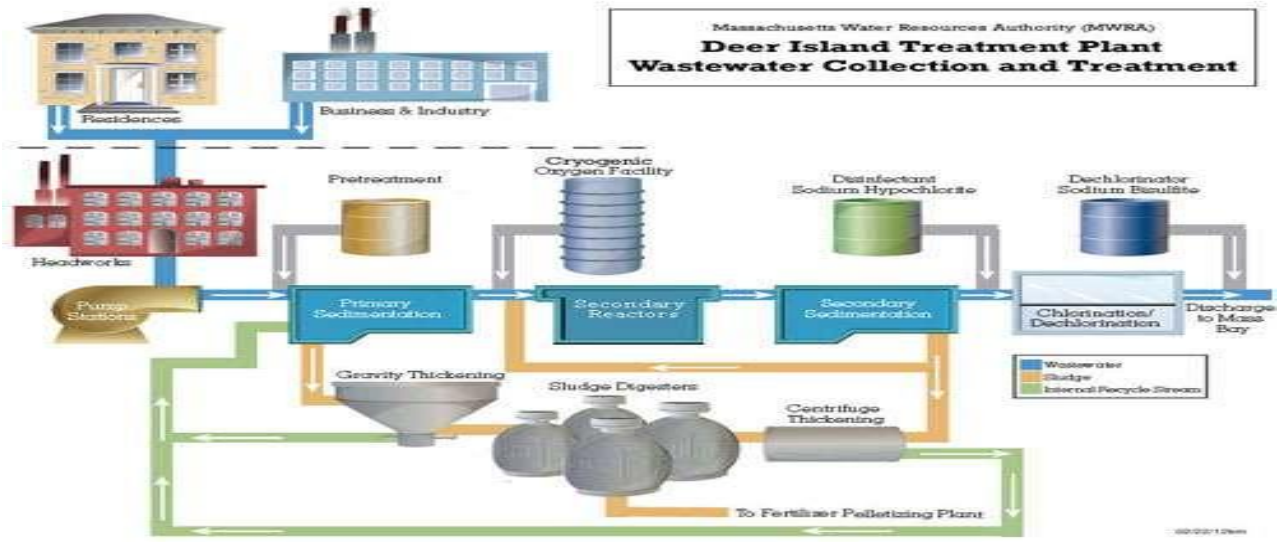
Corrosion of reinforcing steel is a significant economic and safety problem, preventing many buildings from attaining their design life. It is now a must look into field as corrosion of reinforcing steel is seen almost in every 10 out of 100 constructions within a life of 10 years. Nowadays the increase content of pollutants in the city

atmosphere has very much affected the lifespan of RCC structures. The increased content of pollutants include a very high rates of Sulphates and Chlorides which when these mixes with rain water and falls over these structures and damages the visible parts.

5.1.7 Sewage treatment plant :

Physical, chemical, and biological processes are used to remove contaminants and produce treated wastewater (or treated effluent) that is safe enough for release into the environment. The term "sewage treatment plant" (or "sewage treatment works" in some countries) is nowadays often replaced with the term wastewater treatment plant or wastewater treatment station. Sewage can be treated close to where the sewage is created, which may be called a "decentralized" system or even an "on-site" system (in septic tanks, biofilters or aerobic treatment systems). Alternatively, sewage can be collected and transported by a network of pipes and pump stations to a municipal treatment plant. This is called a "centralized" system (see also sewerage and pipes and infrastructure).

Sewage water can travel towards treatment plants via piping and in a flow aided by gravity and pumps. The first part of the filtration of sewage typically includes a bar screen to filter solids and large objects that are then collected in dumpsters and disposed of in landfills. Fat and grease are also removed before the primary treatment of sewage.



Sewage treatment plant :

5.2 Electrical Concept

5.2.1. ELECRICAL GRID

An electrical grid is an interconnected network for electricity delivery from producers to consumers. Electrical grids vary in size and can cover whole countries or continents. It consists of:

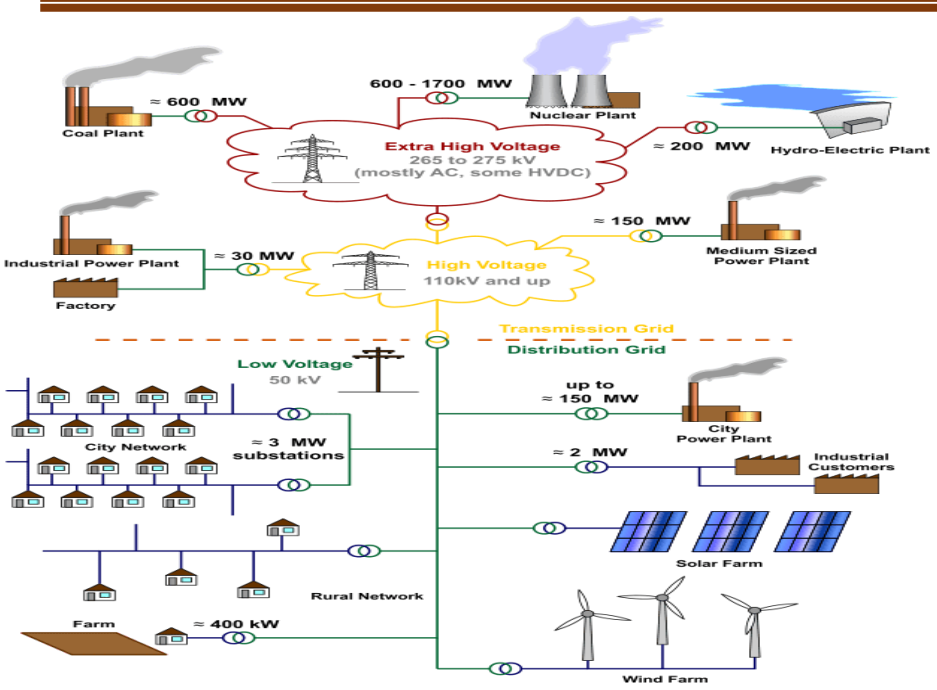
power stations: often located near energy and away from heavily populated areaselectrical substations to step voltage up or downelectric power transmission to carry power long distanceselectric power distribution to individual customers, where voltage is stepped down again to the required service voltage(s).

General layout of electricity networks. Voltages and depictions of electrical lines are typical for Germany and other European systems.

Although electrical grids are widespread, as of 2016 1.4 billion people worldwide were not connected to an electricity grid. As electrification increases, the number of people with access to grid electricity is growing.

Electrical grids can be prone to malicious intrusion or attack; thus, there is a need for electric grid security. Also as electric grids modernize and introduce computers, cyber threats also start to become a security risk. Particular concerns relate to the more complex computer systems needed to manage grids.

Grids are nearly always synchronous, meaning all distribution areas all operate with three phase alternating current (AC) frequencies synchronized (so that peaks occur at virtually the same time). This allows transmission of AC power throughout the area, connecting a large number of electricity generators and consumers and potentially enabling more efficient electricity markets and redundant generation.



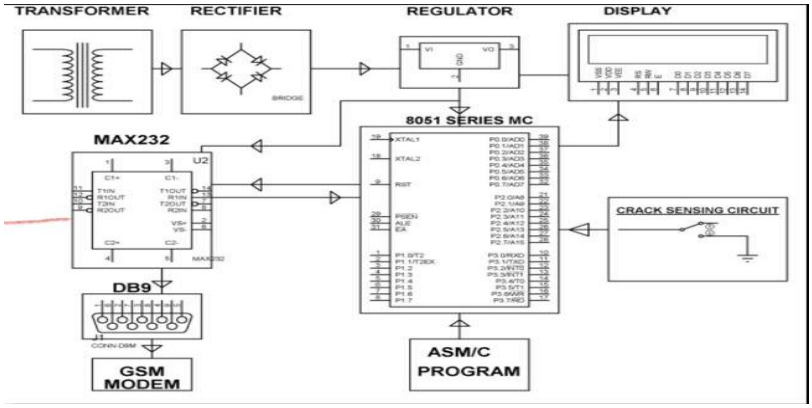
5.2.2. Programmable Railway Track Security

This section discusses the block diagram of work proposed by author in this paper. Fig.1 shows the block diagram of crack detection on railway tracks. The circuit uses standard power supply comprising of a step-down transformer from 230 Volts to 12 Volts and 4 diodes forming a bridge rectifier that delivers pulsating DC which is then filtered by

an electrolytic capacitor of about 470 microFarad to 100 microFarad. The filtered DC being unregulated, IC LM7805 is used to get 5V constant at its pin number 3 irrespective of input DC varying from 9V to 14V. The regulated 5V DC is further filtered by a small electrolytic capacitor of 10 microFarad for any noise so generated by the circuit. One Light Emitting

Diode (LED) is connected to this 5V point in series with a resistor of 330 ohms to the ground i.e. negative voltage to indicate 5V power supply availability.Fig 1.Block Diagram for Crack Detection on Railway Track 8051 microcontroller is a low cost, low-power, high-performance, most compatible 8-bit microcontroller. It is a 40 pin IC. It has 8K bytes of flash, 256 bytes of Random Access Memory (RAM), 32 I/O lines, watchdog timer, two data pointers, three 16-bit timer/counters, a six-vector two-level interrupt architecture, a full duplex serial port, on-chip oscillator, and clock circuitry. The MAX232 is an integrated circuit that converts signals from an RS-232 serial port to signals suitable for use in TTL compatible digital logic circuits, so that devices

working on TTL logic can share the data with devices connected through serial port (DB9 Connector). The DB9 (originally DE-9) connector is a 9-pin plug mainly used for serial connections, allowing for the asynchronous transmission of data as provided by standard RS-232.



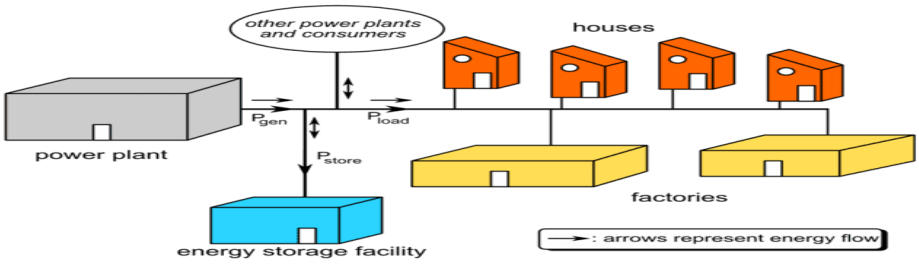
5.2.3 Electrical power storages

Energy storage is the capture of energy produced at one time for use at a later time[1] to reduce imbalances between energy demand and energy production. A device that stores energy is generally called an accumulator or battery. Energy comes in multiple forms including radiation, chemical, gravitational potential, electrical potential, electricity, elevated temperature, latent heat and kinetic. Energy storage involves converting energy from forms that are difficult to store to more conveniently or economically storable forms.

Some technologies provide short-term energy storage, while others can endure for much longer. Bulk energy storage is currently dominated by hydroelectric dams, both conventional as well as pumped. Grid energy storage is a collection of methods used for energy storage on a large scale within an electrical power grid.

Common examples of energy storage are the rechargeable battery, which stores chemical energy readily convertible to electricity to operate a mobile phone, the hydroelectric dam, which stores energy in a reservoir as gravitational potential energy, and ice storage tanks, which store ice frozen by cheaper energy at night to meet peak daytime demand for cooling. Fossil fuels such as coal and gasoline store ancient energy derived from sunlight by organisms that later died, became buried and over time were then converted into these fuels. Food (which is made by the same process as fossil

fuels) is a form of energy stored in chemical form.



5.2.4 Electrical Measurements parameters

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

Measurable independent and semi-independent electrical quantities comprise:

Voltage

Electric current

Electrical resistance and electrical conductance

Electrical reactance and susceptance

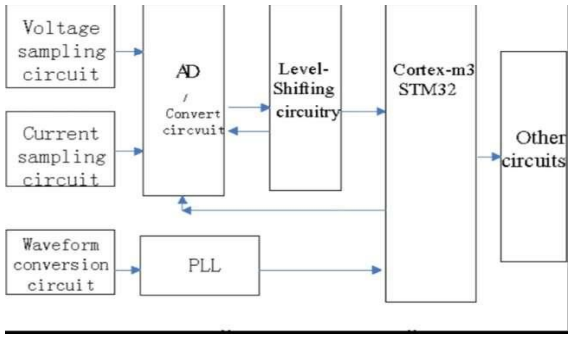
Magnetic flux

Electrical charge by the means of electrometer

Partial discharge measurement

Magnetic field by the means of Hall sensor

Electric field



Electrical power by the means of electricity meter

S-matrix by the means of network analyzer (electrical)

Electrical power spectrum by the means of spectrum analyzer

Measurable dependent electrical quantities comprise:

Inductance

Capacitance

Electrical impedance defined as vector sum of electrical resistance and electrical reactance

Electrical admittance, the reciprocal of electrical impedance

Phase between current and voltage and related power factor

Electrical spectral density

Electrical phase noise

Electrical amplitude noise

Transconductance

Transimpedance

Electrical power gain

Voltage gain

Current gain

Frequency

Propagation delay

5.2.5 Mains Operated LED Light

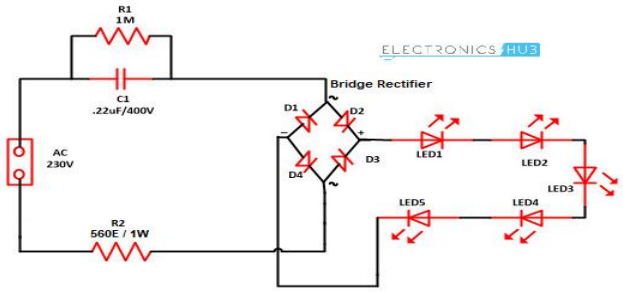
Introduction

Today, fluorescent bulbs (mercury filled Compact bulbs or tube lights) are becoming outdated and they are being replaced by LED lights. One of the main reason for this is LED lights consume less power and have long life in comparison to fluorescent lamp and tube light. LED lights have many

advantages over Fluorescent lamp and are mentioned at the end of this post.

Here, we have described a simple circuit which you can easily made and install in your homes and will not only save resources but your energy and money will also be saved.

Also Read the Post: Battery Powered Portable LED Light Circuit



Mains Operated LED Light Circuit Diagram

Components used in this Circuit

Bridge rectifier – 1

Resistor (R1) – 1MΩ

Resistor (R2) – 560Ω / 1W

Capacitor (C1) – 0.22uF / 400V)

LEDs – 5

Breadboard

Connecting Wires

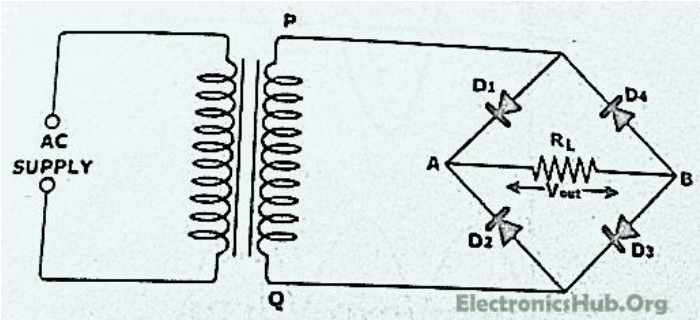
Mains Operated LED Circuit Explanation

This simple circuit is based on simple components: Bridge rectifier, resistors, LEDs and capacitor. All the components used in this circuit are easily available in market. So you can make this circuit and install in your homes and offices. Before understanding the working of circuit first have a look on the component description.

Rectifier

A rectifier is an electronic circuit used for converting alternating current (AC) to direct current(DC). And the process of converting alternating current to direct current by allowing one way electron flow is called as rectification. In full wave rectifier four diodes are connected in a circuit to form a bridge. In this approach, we are utilizing both positive and negative cycles of AC.

A bridge rectifier contains four diodes D1, D2, D3, D4 connected to form a bridge as shown in figure. Hence this arrangement is known as a bridge rectifier.



Bridge Connection of Diodes

Working of Bridge Rectifier

The AC signal to be rectified is applied to the diagonally opposite ends of the bridge through the transformer. Between another two ends of the bridge, The load resistance RL is connected.

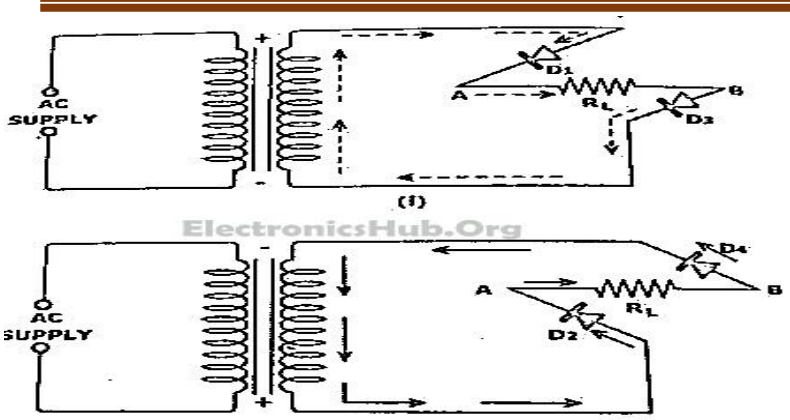
During positive half cycle of secondary voltage, The end P become positive and end Q negative. Thus Diode D1 and D3 will become forward bias and start conducting , while diode D2, D4 are reversed bias.

Diode D1 and D3 are in series with the load resistance RL hence current flows through RL as shown in figure.

D1 and D3 Series Connection with Load Resistance RL

During negative half cycle of secondary voltage, the P end becomes negative and Q end become positive. Diode D2 and D4 are forward biased hence they start conducting . Whereas diode D1 and D3 are reversed biased.

Diode D2 and D4 are in series with the load resistor RL hence current flows through RL as shown in figure. It may be seen that again current flows from A to B through the load i.e. in the same direction as for the positive half cycle. Thus DC voltage is obtained across load RL . Output waveform of a bridge rectifier is shown in figure below. The advantage of Bridge rectifier is that its output is higher than of full wave and half wave rectifier.



Output waveform of a bridge rectifier

LED

Light emitting diode are different from other diodes as they emit light and hence referred as light emitting diode. LED are available in RED, GREEN, BLUE color.

Resistor

All material have some type of opposition to the current flow. This opposition is called resistance. The resistance of a material is determine by the number of free electrons in the material. There are various type of resistor available such as carbon film, carbon composition, filament resistor and many more which can be used in an electronics or electrical circuit to determine the resistance.

Resistance of circuit depends upon p, L and A with the following equation.

R = p*(L/A)

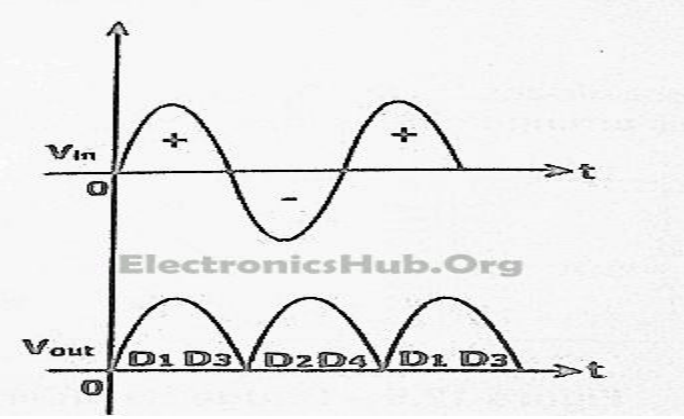
Capacitor

The capacitor is a device that store electrical energy and capacitance is the amount of electrical energy stored at a given voltage drop by capacitor. A device specially designated to have a certain value of capacitance is called a capacitor. The capacitor has the ability to store electrons and release them at later stage. The capacitor is generally consist of two metal plate which are separated by a non conducting material called as dielectric.

Diode

Diode is an electronic device which allows current to flow only in one direction. Diodes are forward by joining N type and P type semiconductors. The N type semiconductor contains free electrons that move through the material. Similarly P type semiconductor contains holes. Electrons from the N type which are near the junction cross the junction and fill in the holes in P type material.

Similarly holes near the junction of P type material, crosses the junction and occupy the place of electrons. A depletion layer is formed at the junction of the PN semiconductor.



Mains Operated LED Light Circuit Image 2

Mains Operated LED Light Circuit Working

Working of circuit is very simple. Assemble the circuit properly as shown in circuit diagram. Now apply AC mains. Resistor R2 is used as current limiting component and resistor R1 is used with capacitor C1 so that it will discharge the capacitor which prevents lethal shock.

Now this power supply is provided to the bridge rectifier circuit which will convert the AC to DC and also reduces the voltage with the help of current limiting components. Now this power supply is passed to LEDs and the LED connected at the output start glowing. You can use bridge rectifier available in market or you can make your own with the help of four diodes. Maximum you can use up to 20 LEDs.

Advantages of LED Bulbs

LED bulbs have 10 times longer life in comparison to fluorescent and incandescent lights.

LED bulbs does not contain filament so there is less chances of damage.

Common incandescent bulb become hot and generate lot of heat in the room while LED bulb prevents the heat build up and helps in reducing the air conditioning cost in room.

Power consumption of LED lamp is approx. 2-17 watt 1/3 in comparison to fluorescent lamp. So if you LED bulb you can save much on your electricity bill.

As power consumption of LED lamp is very less, use in solar panels is increasing.

Many people are using inverters in their home and now they are using LED lights with inverters because this will also increase the time period for which inverters can support LED light.

Initial cost of LED bulb is more in comparison to fluorescent bulb with they have long life and they can be easily move from one place to another without breakage and save electricity also. Therefore LED bulb is more efficient than fluorescent bulb.

LED bulbs are not sensitive to temperature or humidity.

LED bulb does not contain mercury also hence do not provide harm to environment also.

LED lights will turn on instantly.

5.2.6 Non Contact Tachometer

What is Tachometer?

The word tachometer is derived from two Greek words: tachos mean “speed” and metron means “to measure”. It works on the principle of a tachometer generator, which means when a motor is operated as a generator, it produces the voltage according to the velocity of the shaft. It is also known as revolution-counter, and its operating principle can be electromagnetic, electronic, or optical-based. Power, accuracy, RPM range, measurements, and display are the specifications of a tachometer. Tachometers can be analog or digital indicating meters; however, this article focuses only on the digital tachometers.

Digital Tachometer Types

Digital tachometers are classified into four types based on data acquisition and measurement techniques.

Based on the data acquisition technique, the tachometers are of the following types:

Contact type

Non Contact type

Based on the measurement technique, the tachometers are of the following types:

Time measurement

Frequency measurement

1. Contact Type Digital Tachometer

Contact type digital tachometer

Contact type digital tachometer

A tachometer which is in contact with the rotating shaft is known as contact type tachometer. This kind of tachometer is generally fixed to the machine or electric motor. An optical encoder or magnetic sensor can also be attached to this so that it measures its RPM.

Digital Tachometers are capable of measuring low-speeds at 0.5 rpm and high speed at 10,000 rpm and are equipped with a storage pocket for the circumferential measurement. The specifications of this tachometer are LCD 5 digit display, the operational temperature range of 0 to + 40oC, temperature storage range of – 20 to + 55o C, and rotating speed of about 0.5 to 10,000 rpm.

2. Non-Contact Type Digital Tachometer

Non Contact type Digital Tachometer

Non Contact Type Digital Tachometer

A tachometer that does not need any physical contact with the rotating shaft is called a non-contact digital tachometer. In this type, a laser or an optical disk is attached to the rotating shaft, and it can be read by an IR beam or laser, which is directed by the tachometer.

This type of tachometer can measure from 1 to 99,999 rpm; the measurement angle is less than 120 degrees, and the tachometer has a five-digit LCD. These types of tachometers are efficient, durable, accurate, and compact, and also visible from long distance.

3. Time Measurement Digital Tachometer

A tachometer that calculates the speed by measuring the time interval between incoming pulses is known as a time-based digital tachometer. The resolution of this tachometer is independent of the speed of the measurement, and it is more accurate for measuring low speed.

4. Frequency Measurement Digital Tachometer

A tachometer that calculates the speed by measuring the frequency of the pulses is called as a frequency-based digital tachometer. This type of tachometer is designed by using a red LED, and the revolution of this tachometer depends on the rotating shaft, and it is more accurate for

measuring high speed. These tachometers are of low-cost and high-efficiency, which is in between 1Hz-12 KHz.

The internal operation of these tachometers can be with the use of a tachometer generator or purely with the electronic components that are described below.

5.2.7 Thyristors used Cyclo Converter

Thyristor Based CycloConverter and Its Applications

Cycloconverter is a frequency converter from one level to another, that can change AC power from one frequency to AC power at another frequency. Here, an AC-AC conversion process is done with a frequency change. Hence it is also referred as frequency changer. Normally, the output frequency is less than the input frequency. The implementation of the control circuit is complicated due to the huge number of SCRs. The Microcontroller or DSP or microprocessor is used in control circuits.

CycloConverter

A cyclo-converter can achieve frequency conversion in one stage and ensures that voltage and the frequencies are controllable. In addition, the need to use commutation circuits is not necessary because it utilizes natural commutation. Power transfer within a Cycloconverter occurs in two directions.

There are two types of Cycloconverters

Step Up Cycloconverter:

These types use normal commutation and give an output at higher frequencies than that of the input.

Step Down Cycloconverter:

This type uses forced commutation and results in an output with a frequency lower than that of the input.

The cyclo-converters are further classified into three categories as discussed below.

Single phase to Single-phase

This Cycloconverter has two full wave converters connected back to back. If one converter is operating the other one is disabled, no current passes through it.

Three-phase to Single-phase

This Cycloconverter operates in four quadrants that are (+V, +I) and (−V, −I) being the rectification modes and (+V, −I) and (−V, +I) being the inversion modes.

Three-phase to Three-phase

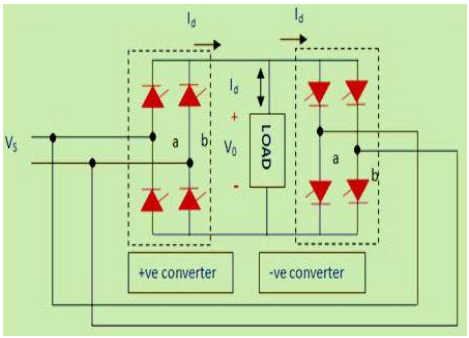
This Cycloconverter is majorly used in AC machine systems that are operating on three phase induction and synchronous machines.

Introduction of Single Phase to Single Phase Cycloconverter using Thyristors

The Cycloconverter has four Thyristors divided into two Thyristor banks, i.e, a positive bank and a negative bank of each. When the positive current flows in the load, the output voltage is controlled by phase control of the two positive array Thyristors whereas, the negative array Thyristors are kept off and vice versa when negative current flows in the load.

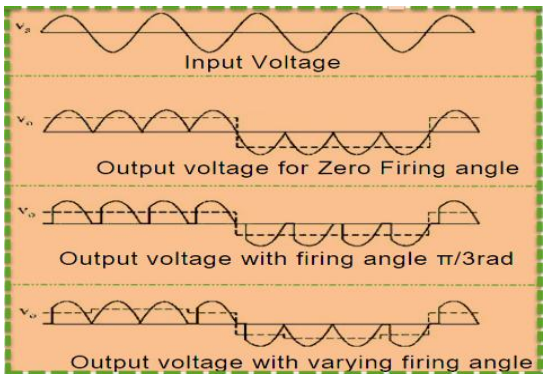
Operational illustration of Single Phase Cycloconverter

The perfect output waveforms for a sinusoidal load current and various load phase angles is shown in Figure below. It is important to keep the non-conducting Thyristor array off at all times, otherwise, the mains could be short circuited via the two Thyristor arrays, resulting in waveform distortion and possible device failure from the shorting current.



An Idealized Output Waveforms

A major control problem of the cyclo-converter is how to swap between banks in the shortest possible time to avoid distortion while ensuring the two banks do not conduct at the same time.

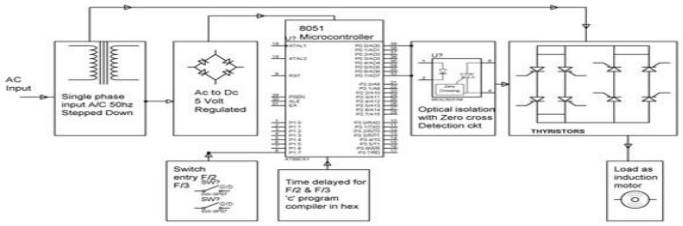


A common addition to the power circuit that removes the requirement to keep one bank off is to place a center tapped inductor called a circulating current inductor between the outputs of the two banks.

Both banks can now conduct together without shorting the mains. Also, the circulating current in the inductor keeps both banks operating all the time, resulting in improved output waveforms.

Design of Cycloconverter using Thyristors

This project is designed to control the speed of a single phase induction motor in three steps by using a Cycloconverter technique by Thyristors. An A.C Motors have the great advantages of being relatively inexpensive and very reliable.

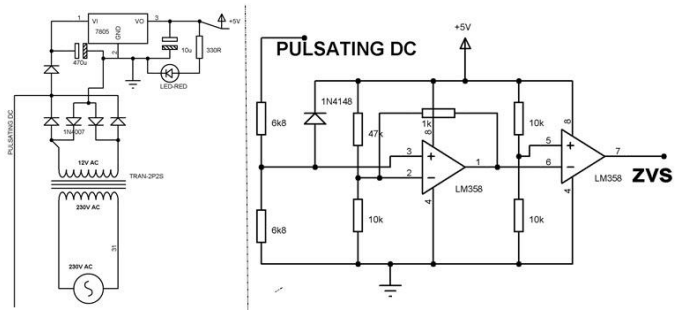


Block Diagram of Thyristor Based CycloConverter

Hardware Components Requirement

DC power supply of 5V, Microcontroller (AT89S52/AT89C51), Optoisolator (MOC3021), Single phase induction motor, Pushbuttons, SCR, LM358 IC, Resistors, Capacitors.

Zero voltage cross detection means the supply voltage waveform that passes through zero voltage for every 10msec of a 20msec cycle. We are using 50Hz AC signal, the total cycle time period is 20msec (T=1/F=1/50=20msec) in which, for every half cycle (i.e. 10ms) we have to get zero signals.



Zero Voltage Cross Detection

This is achieved by using pulsating DC after the bridge rectifier before being filtered. For that purpose, we are using a blocking diode D3 between pulsating DC and the filter capacitor so that we can get pulsating DC for use.

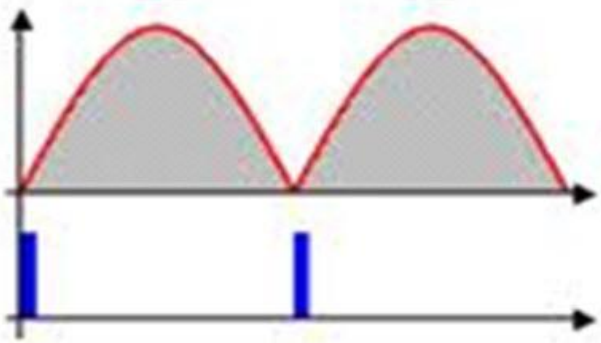
The pulsating DC is given to potential divider of 6.8k and 6.8K to deliver an output about 5V pulsating from 12V pulsating which is connected to the non-inverting input of comparator pin 3. Here, the Op-amp is used as a comparator.

The 5V DC is given to a potential divider of 47k and 10K which gives an output of about 1.06V and that is connected to inverting input pin no 2. One resistance of 1K is used from output pin 1 to the input pin 2for feedback.

As we know the principle of a comparator is that when the non-inverting terminal is greater than the inverting terminal, then the output is logic high (supply voltage). Thus the pulsating DC on pin no 3 is compared with the fixed DC 1.06V at pin no 2.

The o/p of this comparator is fed to the inverting terminal of another comparator. The non-inverting terminal of this comparator pin no 5 is given a fixed reference voltage, i.e., 2.5V taken from a voltage divider formed by resistors of 10k and 10k.

Thus we get ZVR (Zero Voltage Reference) detected. This ZVR is then used as input pulses to the Microcontroller.



ZVS Waveform

Working Procedure of Cycloconverter

The circuit connections are shown in the above diagram. The project uses zero voltage reference as described above at pin no. 13 of the Microcontroller. Eight Opto – Isolators MOC3021 are used for driving 8 SCR's U2 to U9.

4 SCR's (silicon controlled rectifiers) used in full bridge is in antiparallel with another set of 4 SCR's as shown in the diagram. Triggering pulses so generated by the MC as per the program written provides input condition to the Opto – isolator that drives the respective SCR.

Only one Opto U17 driving the SCR U2 is shown above while all others are similar as per the circuit diagram. SCR gets conducting for 20ms from the 1st bridge and next 20ms from the 2nd

bridge to get the output at a point no – 25 & 26, the total time period of one AC cycle of 40ms which is 25 Hz.

Thus F/2 is delivered to the load while switch 1 is closed. Similarly, for F/3 the conduction takes place for 30ms in the 1st bridge and next 30ms from the next bridge, such that a total time period of 1 cycle comes to 60ms which in turn in F/3 while switch -2 is operated.

The Fundamental frequency of 50Hz is available by triggering on a pair from the 1st bridge for 1st 10ms and for the next 10ms from the next bridge while both the switches are kept in “OFF” condition. The reverse current flowing in the gates of the SCR’s are Opto – isolator output.

Applications of Cycloconverter

Applications include Controlling the speed of AC machines like It is mainly used in electric traction, AC motors having variable speed and induction heating.

Synchronous Motors

Mill Drives

Ship propulsions

Grinding Mills

I hope you have clearly understood the topic of Cycloconverter, it is a frequency converter from one level to another, that can change AC power from one frequency to AC power at another frequency. If any furthermore queries on this topic or on the electrical and electronic projects leave the comments section below

6.0 swachh Bharat Abhiyan (Clean India)

6.1 Swachh Needed In Allocated Village

Kunger village is good for cleannes. In our village no need of swachhta because of our village is clean and there are good cleaning facilities for garbage and dump so there are no needs of implementation in village.

6.2 Guidelines - Implementation in allocated village with Photograph

- The District Collectors/Magistrates/CEOs of Zillah Panchayat are expected to lead the Mission themselves, so as to facilitate district wide planning of the Mission and optimum utilization of resources.
- A project proposal shall be prepared by the District, scrutinized and consolidated by the State Government into a State Plan.
- The State plans shall provide details of the IEC, BCC, Triggering exercise, Capacity building, Implementation, Financial support and Monitoring activities planned in each district, consolidated forall Gram Panchayat.
- The District-wise plans will have Gram Panchayat wise details. The State Project Implementation Plans currently prepared by States on a perspective basis shall be revised based on the Baseline data and the revised norms of the SBM.

6.3 Activities Done by Students for allocated village with Photograph

About Swachh Bharat Abhiyan, we aware the people of Nardipur village by personal interaction, how they should keep their houses and surroundings clean. Also, knowledge of cleanliness was distributed among them, by conducting lectures on the importance, benefits, necessities, requirements, etc. Here are some of the activities done by us in the Village…

6.3.1 Importance of Primary Segregations with handbills

The Gram Panchayat already arrange to supply three different colour bins to all the residents. But villagers do not cooperate with the system. As we personally interact with villagers and asked them, “Why they do not use the waste bins properly?” And the most common answer was, they do not know segregation system or use of waste bins.

6.3.2 IPC (Interpersonal Communication)

Interpersonal communication (IPC) is the tailored exchange or sharing of information, thoughts, ideas and feelings between two or more people to address behavioral determinants of health. It is influenced by attitudes, values, social norms and the individuals’ immediate environment. IPC can be one way or two way. It can also be verbal, non-verbal or both. Types of IPC include one-on-one interactions (at clinic or community), small group interactions, large group discussions, hotlines, supportive supervision visits, peer education, parent-child or inter-spousal communication.

People often engage and communicate better when they have shared values and attitudes or can at least see things from each other’s perspective and accept each other’s values and attitudes.

7.0 Village condition due to Covid-19

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

- Village locals were informed by the sarpanch and talati about the pandemic situation and were also informed about the norms given by Government to fight this situation.
- They then sealed the village border to stop the movement of villagers and also to restrict entry of others.
- 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.
- 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.

7.2 Any other steps taken by the students / villagers

- All the safety measures were taken by the students while visiting the allocated village.
- Mask was always on and we also washed our hands regularly.
- We kept social distance while interaction with everyone in the village be it the locals or the Sarpanch.
- Proper mask wearing were there in our group.

7.3 Any other steps taken by the students / villagers:

- Villagers were quarantine themselves in their homes.
- They are maintain social distancing during buying some things and going in temple

8.0 Planning proposal

8.1 Design selection

8.1..1 Solar street light

Introduction

- In this village street lights are found at some places but most of that found not in workable condition. So it needs to maintain them. And some of important places found with not having this facility. So they need a solar street light facility. Because solar street light facility is better than the normal street light facility.
- Solar street light have low maintenance cost and it is renewable energy source. So we suggest to the government to take steps to provide solar street light in this village.
- Each street light can have its own photo voltaic panel independent of other street lights. Alternatively, a number of panels can be installed as a central power source on a separate location and supply power to a number of street lights.
- The village has electrified from many years. Most of the household are electrified. Electricity is available 24 hours in their house. The survey shows the 95% households are electrified. The village receives 24 hour every day without break in a day.
- In the view of agricultural there is a few farmers use the electricity for the agriculture purpose. There is no facility of the street light in the village road and the main road approach to the village.
- They use the Jyoti gram Yojana for the electricity. There is also electrification in the gram Panchayat building, anganwady Kendra and primary school. All over in the village the electrification system is well but they need the street light in the village road and the main road at some interval.

Latest designs use wireless technology and fuzzy control theory for battery development. The street lights using this technology can operate as a network with each light having the capability of performing on or off the network.

- Places Where It Is Required
- In this village some places like temple and gram Panchayat are having this facility, but other important buildings are not having this facility. So we can design for other government buildings and some public locations. Primary school, main market and in the street we are going to design solar streets light.

✓ Design of solar street light

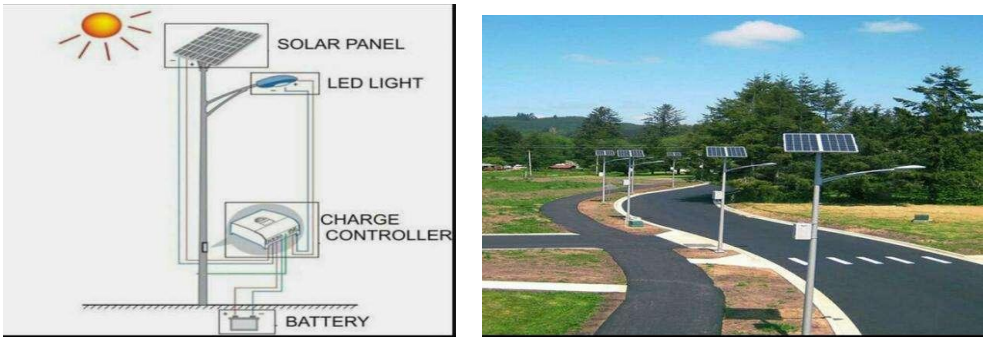


Fig.28 Solar street light

Components of street light Solar Panel

Solar panel is one of the most important parts of solar street lights, as solar panel will convert solar energy into electricity. There are 2 types of solar panel; mono-crystalline and poly-crystalline. Conversion rate of monocrystalline solar panel is much higher than poly-crystalline.

Lighting Fixture

LED is usually used as lighting source of modern solar street light, as the Led will provide much higher lumens with lower energy consumption. The energy consumption of LED fixture is at least 50% lower than HPS fixturewhich is widely used as lighting source in Traditional street lights. LEDs lack of warm up time also allows for use of motion detectors for additional efficiency gains.

Rechargeable Battery

Battery will store the electricity from solar panel provide energy to the fixture during night . The life cycle of the battery is very important to the lifetime of the light and the capacity of the battery will affect the backup days of the lights. There are usually 2 types of batteries; Gel Cell Deep Cycle Battery and Lead Acid Battery

Controller

Controller is also very important for solar street light. A controller will usually decide to switch on/off charging and lighting. Some modern controllers are programmable so that user can decide the appropriate chance of charging, lighting and dimming.

Pole

Strong Poles are necessary to all street lights, especially to solar street lights as there are components mounted on the top of the pole;Fixture, Panels and sometimes batteries. And wind resistance should also be taken into consideration when choosing the pole.

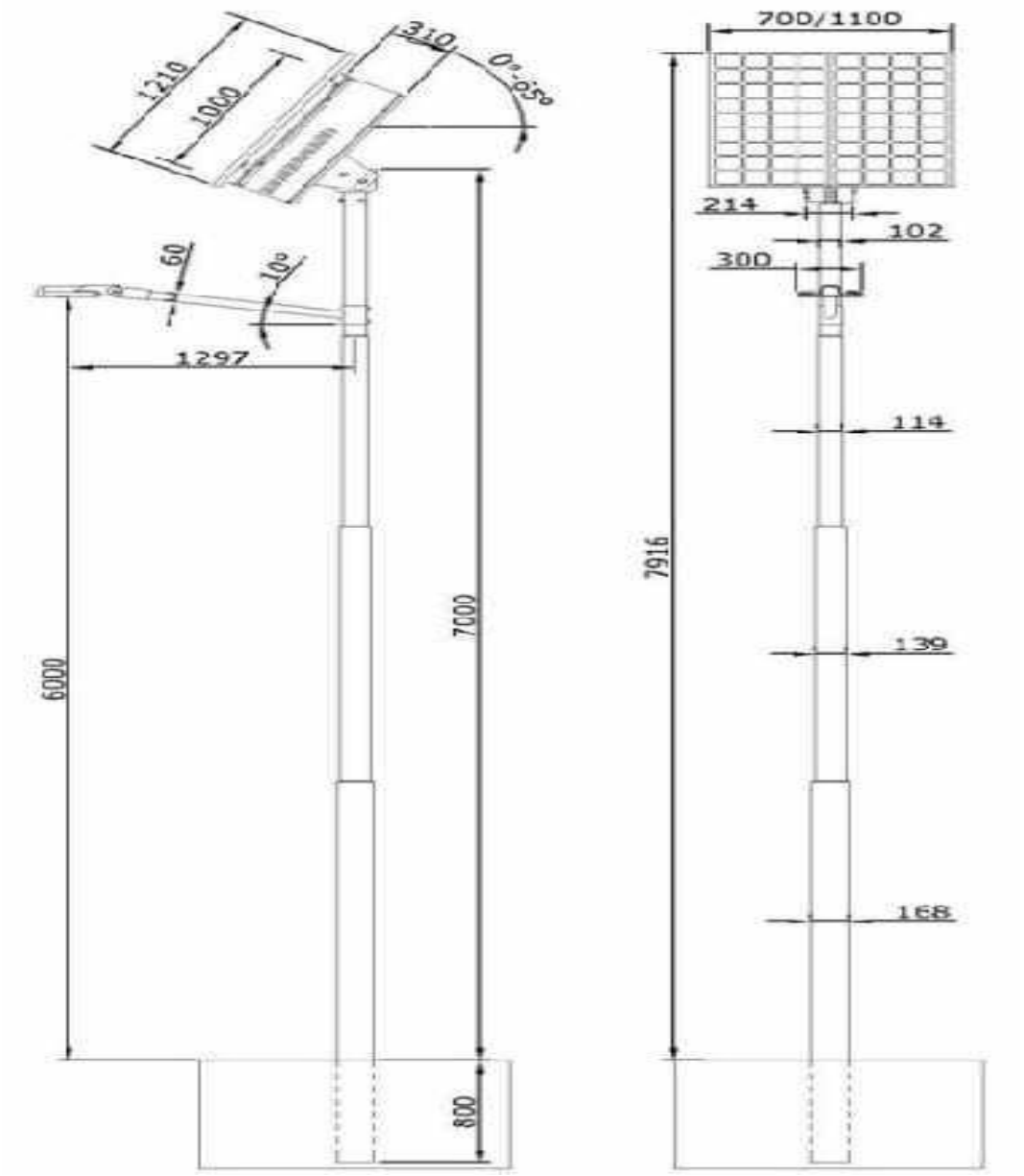


Fig .29 Solar Street Light Plan

Fig .30 3D Design of Solar Street Light

Cost of Component

Sr. No.	Component	Price
1	Solar panel	2,550 Rs.
2	Lighting fixtures	1,250 Rs.
3	Controller	4,000 Rs.
4	Rechargeable battery	3,500 Rs.
5	Pole	2,000 Rs.
6	Labour charge	1,000 Rs.
Total		28,100 Rs.

8.1.2 solar water pump:-

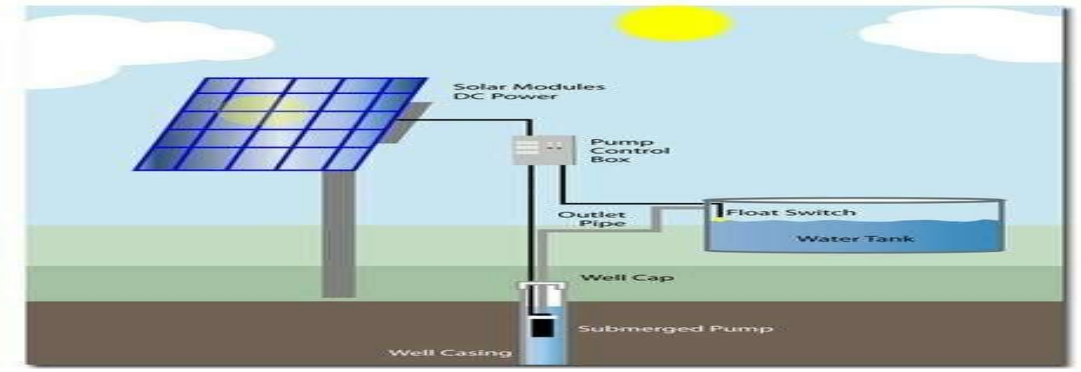
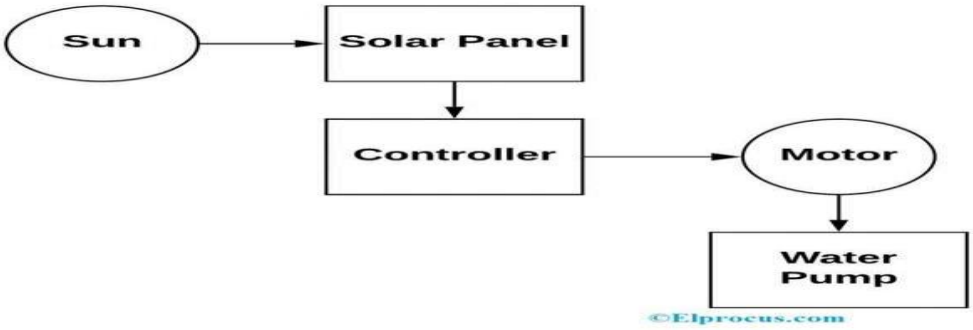


Fig 31 .3D Design of Solar Water Pump

Solar Pump Block Diagram

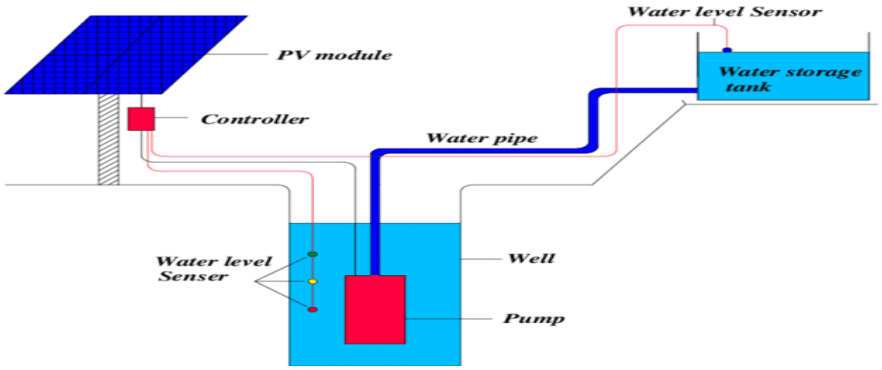
The solar pump block diagram mainly includes a solar panel, water pump, electric motor, and controller. This pump is basically an electrical pump, and this pump uses the electricity which is received from the solar panels to work. These panels store the energy from the solar. The electric motor manages the alternating current or direct current. The controller used in this system adjusts the output power as well as speed.



Blank Diagram of Solar Pump

How Does Solar Pump Work?

When the solar energy drops sun rays on the PV panels then the solar panel converts the rays into electrical energy with the help of Si wafers fixed within the PV panels. Then the solar energy supplies to the electrical motor to operate the pumping system using cables. By the revolution of the shaft which is fixed to the pump, then the pump begins to pick up the soil water and supplies to the fields.



Solar Pump Advantages

The solar pump advantages include the following.

- The installations of solar pumps are flexible & applicable to different applications.
- It allows people to handle their water supply for drinking, farm animals watering, irrigation, & other housing applications.
- Generally, the usage of water in summer is utmost. During this season, the PV panels can generate the most power so that more water can be pumped into the water tank.
- Because of the ease of PV power-driven water pumps, solar technology is consistent, as well as needs small protection.

Solar Pump Disadvantages

The solar pump disadvantages include the following.

- It is expensive.
- The output of the panel will depend on the weather.
- It requires a water storage tank as well as a battery.

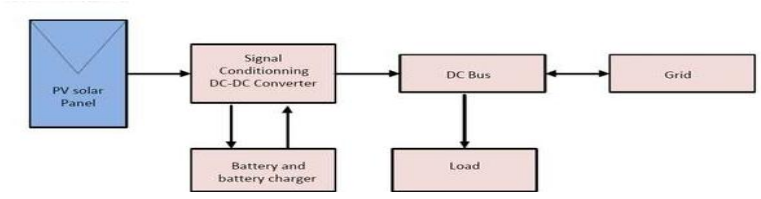
Solar Pump Applications

The applications of solar pumps mainly used where pumping water is required.

- Water supply for animals
- Water supply for harvest irrigation
- Water supply for Cooking and Drinking water supply.

8.1.3 Solar Rooftop System Connected Grid

Renewable energy resources become very popular and commonly used nowadays. An example of a clean renewable energy resource is the energy generated using photovoltaic (PV) systems. As a result of using PV as a renewable energy resource, components of PV such as an inverter become widely used for this purpose and in order to enhance the maximum obtained power from PV, different methods were used to achieve the desired power, where it become a very considerable to use different methods to achieve desired maximum power received from PV. The main goal of this manuscript is to introduce the idea of using photovoltaic system, along with its components, (sizing of arrays, charge regulator ratings, inverter ratings and other related information), for a specific load, (Majan Electricity Company (MJEC) administration building – Sohar – Sultanate of Oman), to achieve a design generates power up to 50 kW from solar PV system. MJEC company provided details of the available area of the rooftop. Solar irradiation data will be utilized to estimate the annual energy output as well and the cost per kWh of electricity generated from a specific PV system using RETSCREEN software. Economic indicators such as internal rate of return, the payback period, the net present value, the annual life cycle savings, and the cost renewable energy production will be considered as well.



Block Diagram

The urban environment provides a large amount of empty rooftop spaces and can inherently avoid the potential land use and environmental concerns. Estimating rooftop solar insolation is a multi-faceted process, as insolation values in rooftops are impacted by the following:

Time of the year

Latitude

Weather conditions

Roof slope

Roof aspect

Shading from adjacent buildings and vegetation

There are various methods for calculating potential solar rooftop systems including the use of Lidar and orthophotos.Sophisticated models can even determine shading losses over large areas for PV deployment at the municipal level.[6]

Components of a rooftop solar array:

The following section contains the most commonly utilized components of a rooftop solar array. Though designs may vary with roof type (eg. metal vs shingle), roof angle, and shading concerns, most arrays consist of some variation of the following components

Solar Panels produce carbon free electricity when irradiated with sunlight. Often made of Silicon, solar panels are made of smaller solar cells which typically number 6 cells per panel. Multiple solar panels strung together make up a solar array. Solar panels are generally protected by tempered glass and secured with an aluminum

frame. The front of a solar panel is very durable whereas the back of a panel is generally more vulnerable.

Mounting clamps generally consist of aluminum brackets and stainless steel bolts that secure solar panels to one another on the roof and onto the rails. Clamps often vary in design in order to account for various roof and rail configurations.

Racking or rails are made of metal and often lie in a parallel configuration on the roof for the panels to lie on. It is important that the rails are level enough for the panels to be evenly mounted.

Mounts attach the rails and the entire array to the surface of the roof. These mounts are often L brackets that are bolted through flashing and into the rafters of the roof. Mounts vary in design due to the wide range of roof configurations and materials.[8]

Flashings are a durable metal plate that provide a water resistant seal between the mounts and roof surface. Oftentimes, caulk is used to seal the flashing to the roof and it resembles a metal roof shingle.

DC/AC wiring for inverters connect wires between panels and into a micro inverter or string inverter. No cables should touch the roof surface or hang from the array to avoid weathering and the deterioration of cables.

Micro inverters are mounted to the bottom of the panel and convert DC power from the panels into AC power that can be sent into the grid. Micro inverters allow for the optimization of each panel when shading occurs and can provide specific data from individual panels.

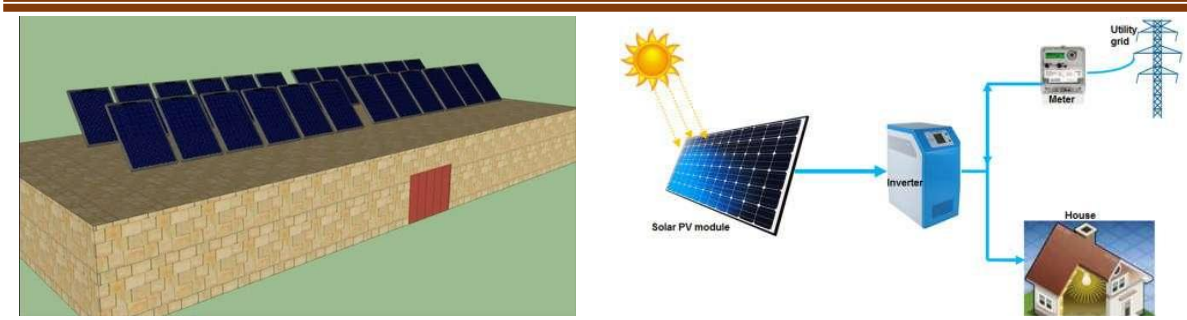


Fig . 32 Solar Rooftop 3d design

Features

Electric power from photovoltaic panels must be converted to alternating current by a power inverter if it is intended for delivery to a power grid. The inverter sits between the solar array and the grid, and may be a large stand-alone unit or may be a collection of small inverters attached to individual solar panels as an AC module. The inverter must monitor grid voltage, waveform, and frequency. The inverter must detect failure of the grid supply and must not supply power to the grid. An inverter connected to a malfunctioning power line will automatically disconnect in accordance with safety rules, which vary by jurisdiction. The location of the fault current plays a crucial part in deciding whether the protection mechanism of the inverter will kick in, especially for low and medium electricity supply network. A protection system must ensure proper operation for faults external to the inverter on the supply network. The inverter must be designed to synchronize its AC frequency with the grid, to ensure correct direction of power flow.

8.1.4 Design of Planning Bus Station

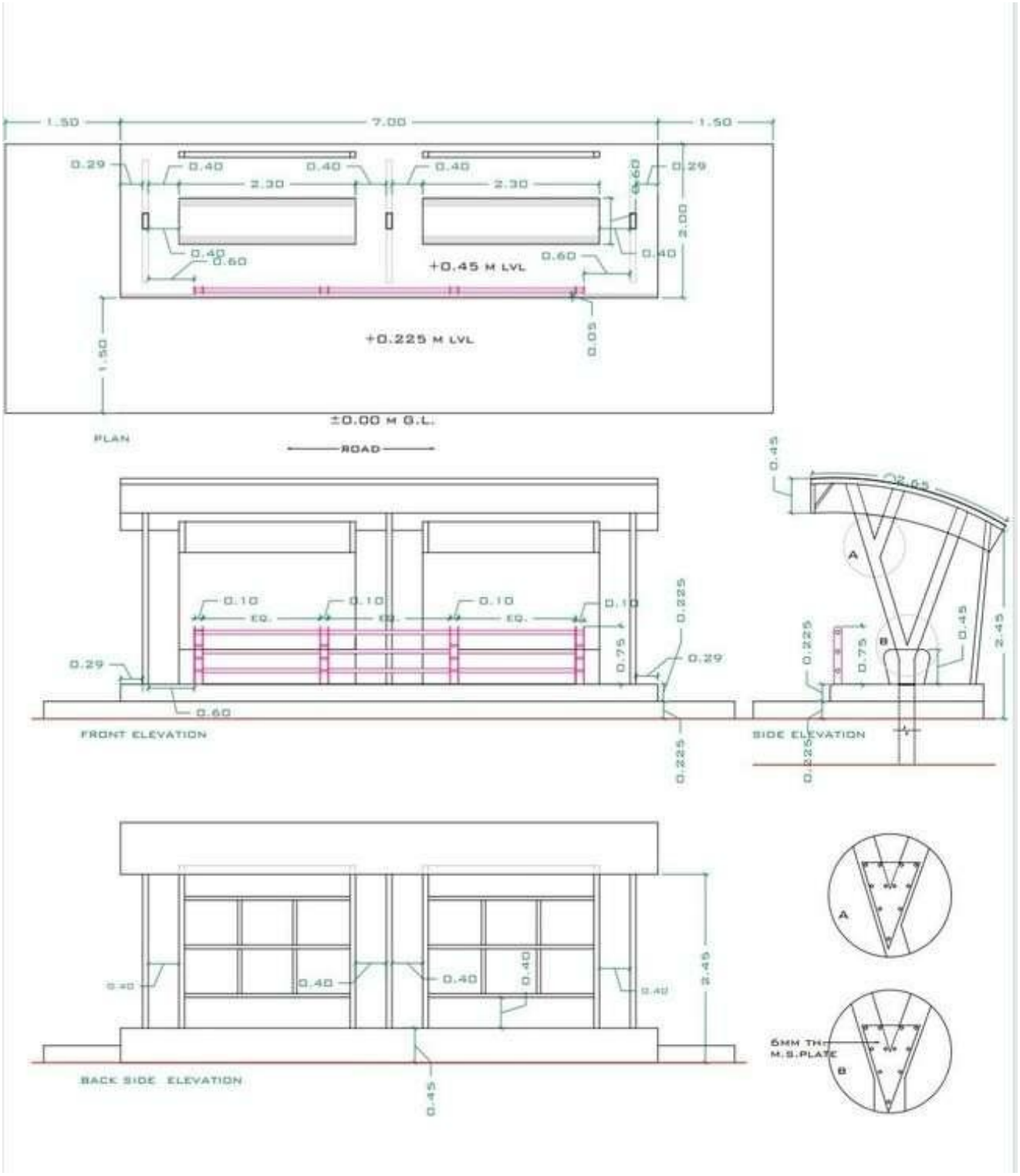


Fig .33. Design of Bus Station

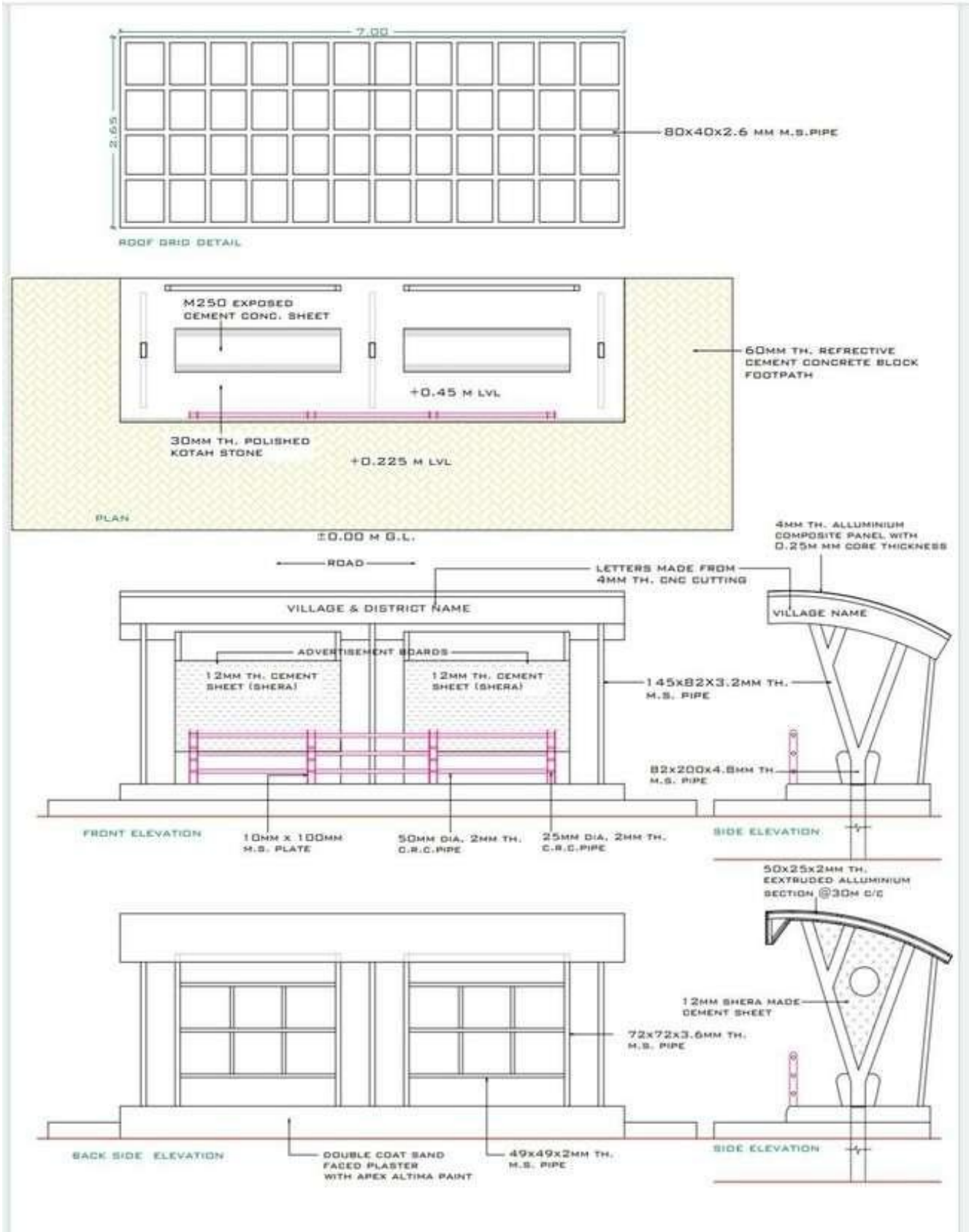


Fig 34.Bus Station Elevation

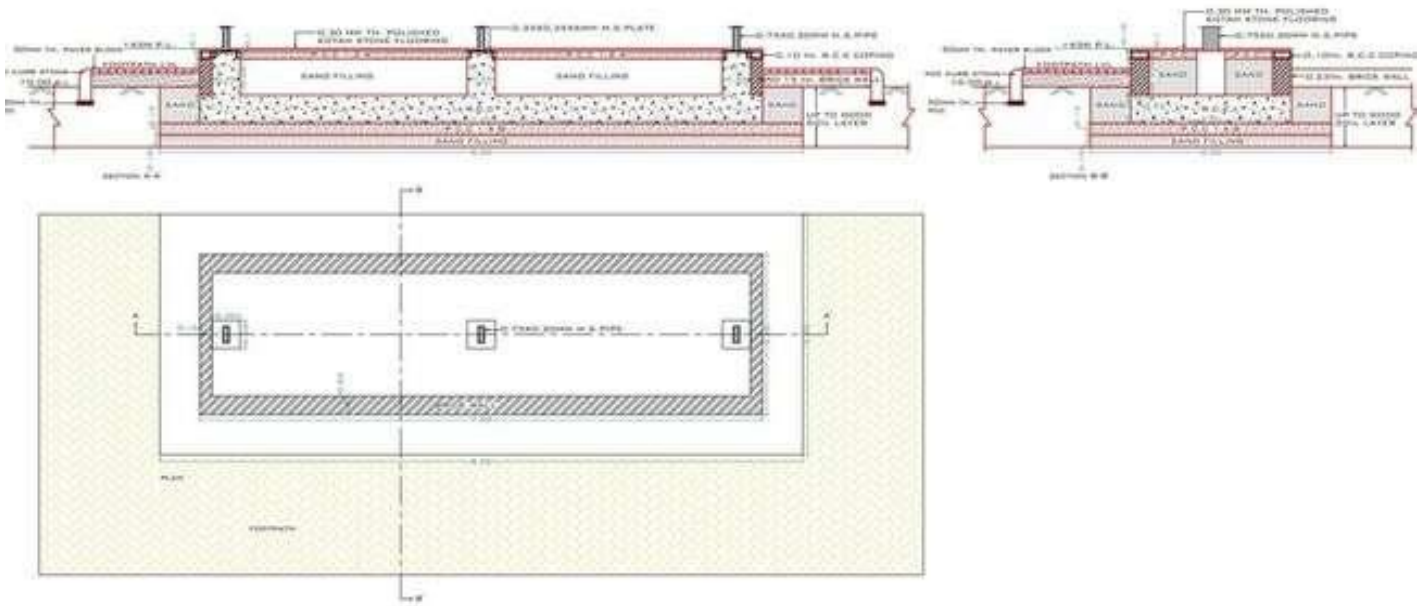


Fig 35. Bus Station Plan

Fig 36. Bus Station 3D Design

Table no 5. Bus Station Estimation

Sr. No	Description	No.	L	B	HT	Qty	Unit	Rate Rs.	Total Rs.
1	Excavation	1.00	8.00	3.00	1.00	24.00	Cmt.	60.50	1452.00
2	Filling								
	Earth Filling	1.00	8.00	3.00	1.00	24.00	Cmt.	38.90	933.60
	Sand Filling in Foundation	1.00	8.00	3.00	0.15	3.60	Cmt.	472.00	1699.20
	Sand Filling in Plinth	2.00	2.82	1.54	0.50	4.34	Cmt.	472.00	1576.44
3	PCC :								
	PCC 1:4:8 in Foundation	1.00	8.00	3.00	0.15	3.60	Cmt.	2478.00	8920.80
	PCC 1:2:4 in Plinth under Floor	1.00	7.00	2.00	0.10	1.40	Cmt.	3573.00	5002.20
	PCC 1:2:4 in Plinth under Floor footpath	1.00	10.00	1.50	0.10	1.50	Cmt.	3573.00	5359.50
4	M250 RCC including fromwork								
	In foundaion	1.00	7.00	2.00	0.35	4.90	Cmt.	5256.00	25754.40
	RCC Column	3.00	0.35	0.35	0.40	0.15	Cmt.	5380.00	607.85
	RCC Couping								
	0.23m Width	2.00	7.00	0.23	0.10	0.32	Cmt.	5380.00	1331.47
	0.15m Width	2.00	2.00	0.15	0.10	0.06	Cmt.	5380.00	322.80
5	M2500 exposed RCC in seating :	2.00	2.30	1.00	0.67	3.08	Cmt.	4979.00	15345.28
6	TMT Steel			90.00	8.51	765.99	Kg.	48.10	36844.12
7	Brick work in Foundation (1:5) :								
	Width 0.23m	2.00	7.00	0.23	0.30	0.97	Cmt.	2837.00	2179.30
	Width 0.23m	1.00	17.00	0.23	1.00	3.91	Cmt.	2837.00	11092.67
	Width 0.15m	2.00	2.00		0.30	1.20	Smt	360.00	432.00
8	Brick work Boards 12mm cement sheet :	2.00	2.30		1.31	6.13	Smt	975.00	5875.35
	12mm cement sheet on sides	2.00	2.05		1.00	4.10	Smt	975.00	3997.50
9	ACP Sign Boards incldluing letters :								
	Front Side	2.00	7.00		0.45	6.30	Smt	1800.00	11340.00
	Left and Right Sides	4.00	2.65		0.45	4.77	Smt	1800.00	8586.00
10	MS Plate in Foundation :								
	Size : 0.35x0.35x6mm	6.00	0.35	0.35	0.006	0.004			
					7850.00	34.62	Kg.	48.00	1661.69
11	MS fabrication for Roof :								
	80x40x2.6mm Roof Gird (Long Members)	9.00	7.00	63.00	4.55	286.65	Kg.	60.20	4032.00
	80x40x2.6mm Roof Gird (Short Members)	24.00	2.65	63.60	4.55	289.38	Kg.	60.20	4070.40
12	MS Pipes								
	Size : 290x82x4.8mm Vertical Columns	3.00	0.50	1.50	26.09	39.14	Kg.	60.20	2504.64
	Size : 145x82x4.8mm Vertical Columns	3.00	5.73	17.19	15.92	273.66	Kg.	60.20	17514.55

	Size : 82x82x3.2mm Vertical Members	4.00	2.13	8.52	7.51	63.99	Kg.	60.20	4095.05
	Size : 49x49mm								
	(Horizontal Members)	6.00	2.15	12.90	3.69	47.60	Kg.	60.20	3046.46
	(Vertical Members)	8.00	0.58	4.64	3.69	17.12	Kg.	60.20	1095.78
	Plates Size L 10x100mm	8.00	1.20	0.010	7860.00	75.46	Kg.	60.20	4929.18
	Pipe Diameter : 25mm	12.00	0.15	1.80	2.37	4.27	Kg.	60.20	273.02
	Pipe Diameter : 50mm	9.00	1.75	15.75	4.84	76.23	Kg.	60.20	4589.05
13	Paint :								
	Oil paint on MS pipes	3.00	2.50	2.05	0.00	15.38	Smt	82.30	2306.25
	Oil paint on MS pipes	2.00	2.50	5.15	0.00	25.75	Smt	82.30	2119.23
	Oil paint on Cement Sheet	4.00	2.50	5.15	0.00	51.50	Smt	82.30	4238.45
	Oil paint on MS railing	1.00	2.50	5.35	0.75	10.03	Smt	82.30	1504.69
14	ACP Roof	1.00	7.00	2.50	2.50	43.75	Smt	1800.00	78750.00
15	Sand Faced Plaster	1.00	18.00	1.00	0.00	18.00	Smt	182.00	3276.00
16	Polished Kotastone flooring	1.00	7.00	2.00	0.00	14.00	Smt	775.00	10850.00
17	60mm reflective cement concrete block	1.00	14.00	1.50	0.00	21.00	Smt	542.00	11382.00
								Total Rs.	310890.91
								Say Rs.	**310890.91**

8.1.5 Design of Water Tank

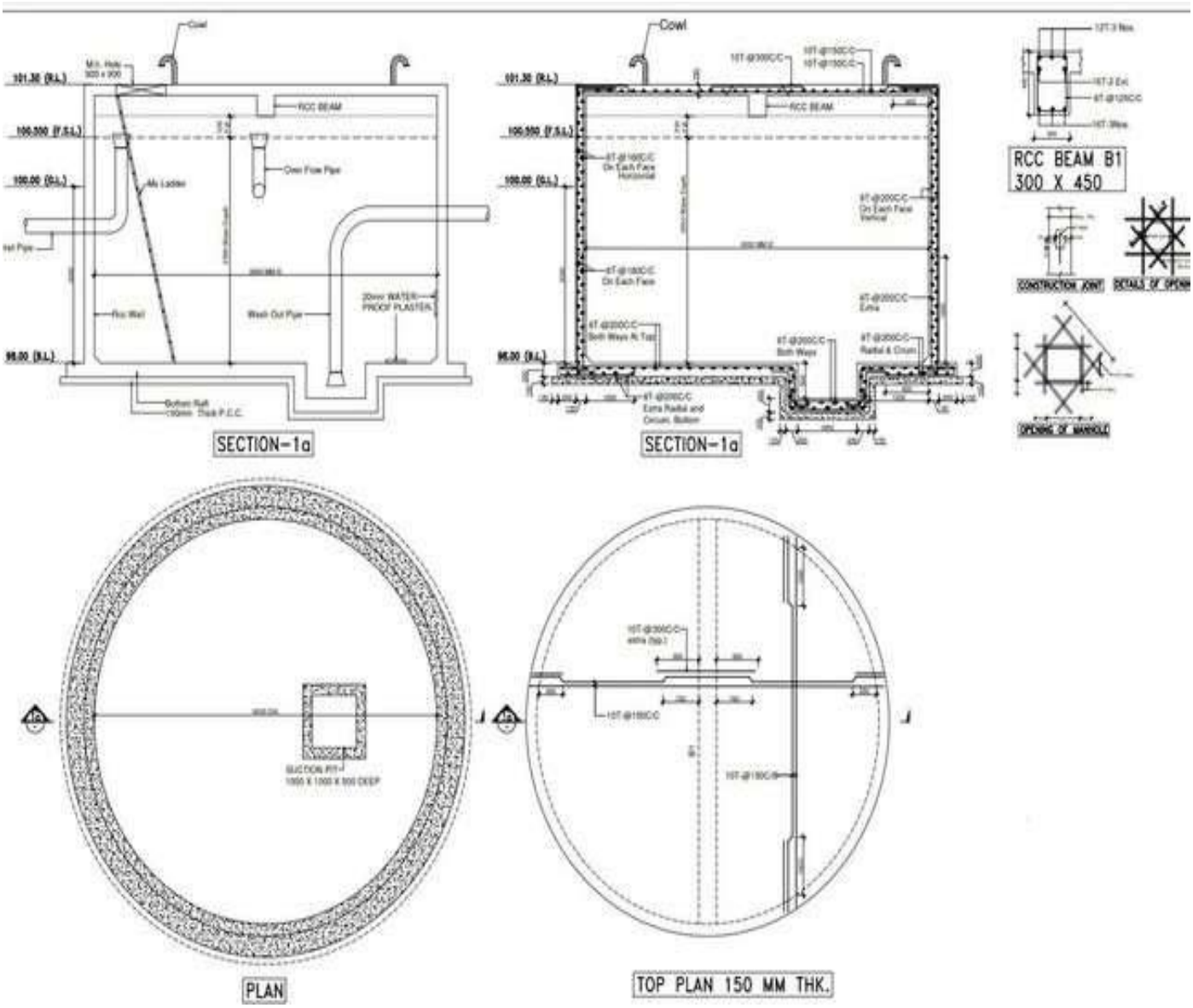


Fig 37. Water Tank Plan

8.1.6 design of gate

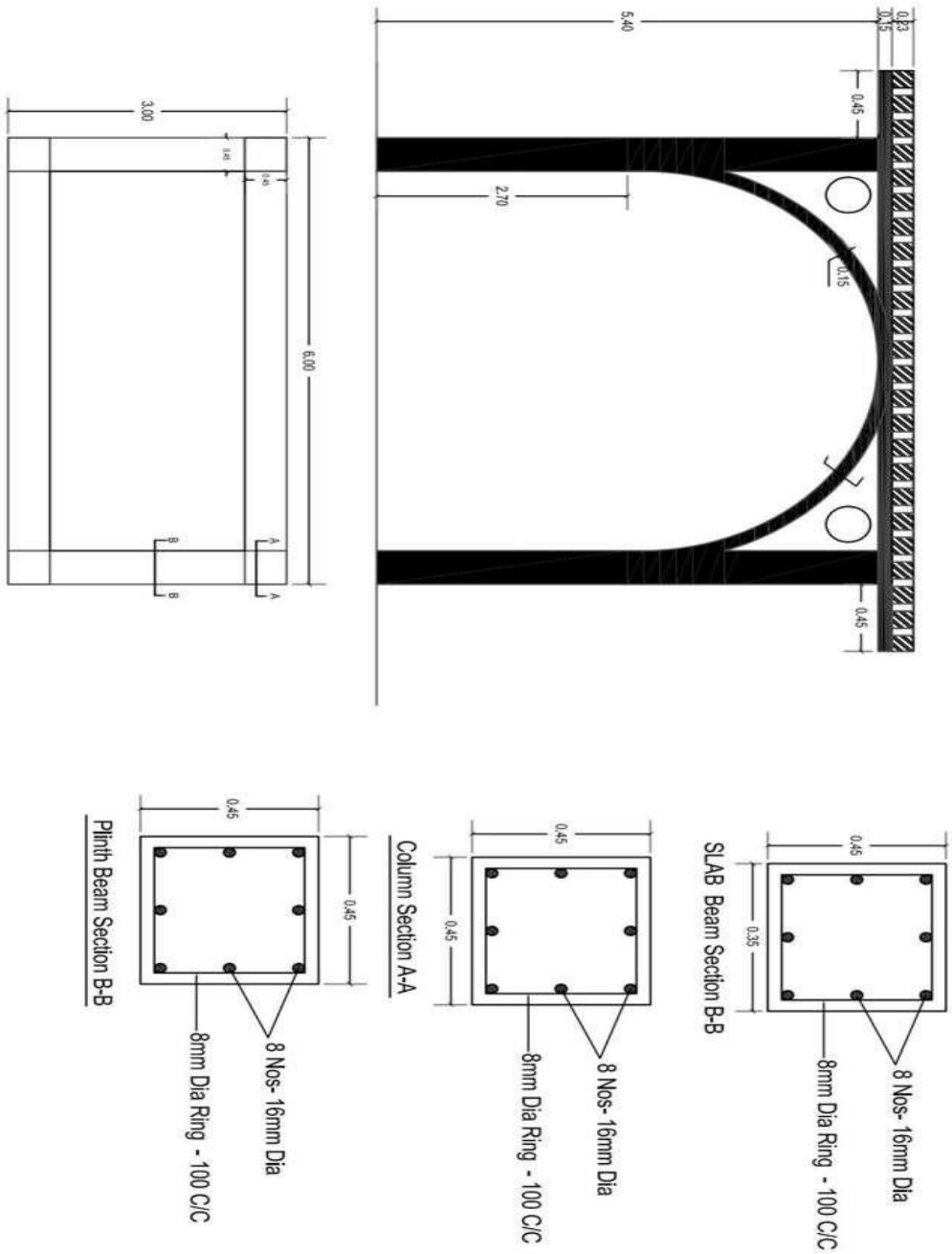


Fig 38. Design of Plan

Table no 6. Gate Estimation

Estimated Rate					2015 -16 R & B		
I.No	Quantity	cDescription	Rate	1% Labour less	Total rate	Unit	Amount in
1	18.00	Excavation for foundation up to 1.5 M Depth including sorting out and stacking of useful materials and disposing of the excavated stuff up to 50 meter lead (A) Loose or soft soil	67.20	0.67	67.87	Cu.Mt	1221.66
2	3.00	Excavation for foundation up to 1.5 to 3.0 M Depth including sorting out and stacking of useful materials and disposing of the excavated stuff up to 50 meter lead (A) Loose or soft soil	74.50	0.75	75.25	Cu.Mt	225.75
3	8.00	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20 cm. in depth consolidation each deposited layer by ramming and watering.	76.50	0.77	77.27	Cu.Mt	618.16
4	5.00	Providing and laying cement concrete 1:3:6 (1-Cement : 3- coarse sand : 6- hand broken stone aggregates 40 mm nominal size) and curing complete excluding cost of formwork in (A) Foundation and Plinth (upto 10 ton)	2482.00	24.82	2506.82	Cu.Mt	12534.10
5	3.00	Providing and laying controlled cement concrete M 250 and curing complete excluding the cost of formwork and reinforcement for reinforced concrete work in (A) Foundations, footings, Base of columns and Mass concrete. (upto 10 ton)(PRC/10/2017/CEMENCONSUMPTION/16/C(70X4.76)	3890.22	38.90	3929.12	Cu.Mt	11787.36
6	1.00	Providing and laying controlled cement concrete M.250 and curing complete excluding the cost of formwork and reinforcement for reinforced concrete work in (D) Columns, Pillars posts and struts, upto floor two level. (upto 10 ton))(PRC/10/2017/CEMENT CONSUMPTION/16/C(70X4.76)=333.20	5428.70	54.29	5482.99	Cu.Mt	5482.99

7	4.00	Providing and laying controlled cement concrete M 250 and curing complete excluding the cost of formwork and reinforcement for reinforced concrete work in (A) Foundations, footings, Base of columns and Mass concrete. (upto 10 ton)(PRC/10/2017/CEMENTCONSUMPTION/16/C(70X 4.76)=333.20	4357.88	43.58	4401.46	Cu.Mt	1
8	2.00	Brick work using common burnt clay building bricks having crushing strength not less than 35 kg./Sq.Cm. in foundation and plinth in Cement Mortar 1:6 (1- Cement : 6 -fine sand) Extra for brick work in superstructure above plinth level upto floor two level (B) Conventional(upto 10 ton)	3040.00	30.40	3070.40	Cu.Mt	6
9	5.00	Providing and laying controlled cement concrete M.250 and curing complete excluding the cost of formwork and reinforcement for reinforced concrete work in (D) Columns, Pillars posts and struts, upto floor two level. (upto 10 ton) (PRC/10/2017/CEMENT CONSUMPTION/16/C(70X4.76)=333.20(5799.39-333.20)=5466.19	5428.70	54.29	5482.99	Cu.Mt	2
10	5.00	Providing and laying controlled cement concrete M.200 and curing complete excluding the cost of formwork and reinforcement for reinforced concrete work in (C) Slabs, landing, shelves, Balconies Lintels, Beams, Girders and Cantilever upto floor two level. (upto 10 ton)**(PRC/10/2017/CEMENT CONSUMPTION/16/C(40X4.76)=190.4**	4695.80	46.96	4742.76	Cu.Mt	2
11	1711.00	Providing TMT Bar FE 415 reinforcement for R.C.C. work including bending, binding and placing in position complete upto floor two level (upto 10 ton,	44.30	0.44	44.74	Kg	7

12	81.00	Providing 15mm thick cement plaster in single coat on brick/concrete wall for interior polastering up to floor two level and finished even and smooth with (II) cement mortar 1:4 (1 cement : 4 sand) curing etc.	98.8	0.99	99.79	Sq.Mt	8

		Completed as approved by the Architect and Engineer- in-charge,					
13	44.00	Providing and fixing in position 50mm thick Banshipahadpur Pink stone for Cladding the otta and Around Ashoka Chakra Stambh area including providing horizontal/vertical groove chiselled for filling of mortar ,texture work in any pattern all as per drawing and details etc complete.(Any shades / colour of Banshipahadpur stone sample approved by Architect).	2415.00	24.15	2439.15	Sq.Mt	107322.60
14	23.00	P & L 24" x 24" vitrified 8 mm thick tile flooring over 20 mm (average) base of cement mortar 1:6 (1 cement: 6 coarse sand) on new surface or fixing on existing flooring by adhesive material including dismantling of existing flooring and jointed with colour cement slurry including finished with flush pointing & cleaning the surface etc. complete for light shade (upto 10 ton)	805	8.05	813.05	Sq.Mt	18700.15
Total Amount							317402

9.0 Future Development Of Village (for Part-II Design)

- In part-I after completion of survey and gap analysis we propose some design for future development of village. But still village have lack of some basic facilities.
- In part-II we providing School, Overheaded Water Tank, Milk Collection Centre, Bus Stop, Laundry, and Dust Bin.
- Renewable energy sources can be used for the purpose of energy conservation in every structure to.
- Reduce load on conventional energy sources.
- Internal road quality can be improved to provide better transportation facilities by using waste material as filling material which is produced within the village.

➢ Renewable energy sources can be used for the purpose of energy conservation and to reduce load on conventional energy sources.

➢ Rain Water Harvesting system can be implemented for individual as well as public buildings such as hospitals or schools.

➢ Solar Energy Sources can be used for electricity purposes in schools and hospitals.

➢ Community hole should be in village for various means.

-Government Hospital

-Solar plant

-Higher Secondary School

-Disposal plant

-Road

10.0 Conclusion

We can also determine that what is the process needs to be done such all this work and what is role of villagers, Sarpanch, Local authorities, Talati, TDO, DDO for development of village and also basic and main thing is supporting to all will make sustaining design and facilities for village develops as an allocated village.

We can also provided infrastructure facilities and electricity facility providing our smart village kungher

We can say that by this project that if we want to change the society as nation or urban area then first of all the main income source and backbone of our India is villages or rural area. so we have to give all necessity amenities that cause they live better life as well as they can utilize all facilities as economical as possible also villagers can develop their self as compare to urban area.

Village area is far from city area hence many things like educational, health, social cultural facilities hasdeveloped by us with the help of this excellent project VYphase-8

The intention of Vishwakarma Yojana is to raise the way of life of the country zones to its specific degree up to the level of an ideal town circumstance. It is a viable government plan to build up the country zones under efficient expense with great functionality and effectiveness during its utilization. The task will in general improve the physical, social just as socio-social parts of the town by actualizing and adding lobbing different foundations concerning lesser or least obstruction to its provincial genuineness. The principle point is to create town with a "country soul" however with all metropolitan conveniences that a city may have. This project provides “DESIGN TO DELIVERY” solutions for development of villages in “RURBAN” areas.

11.0 References refereed for this project

https://villageinfo.in

http://www.onefivenine.com

http://smartvillages.org

https://www.google.com/maps

http://www.vyojana.gtu.ac.in

12.0 Annexure attachment

12.1 Survey form the allocated village scanned copy attachment in the report from part-1

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	Patan
Name of Taluka:	Patan
Name of Village:	kunghen
Name of Institute:	M K college of engineering & Technology
Nodal Officer Name & Contact Detail:	Prof. Jahnavi Raval
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sarpanch : kantibhai Patel Talati : vinubhai
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Femal	Total Number of House Holds
1.	2001	6215			
2.	2011	6261	3252	3009	1342

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1858.61 Hector
2.	Forest Area (In heet.)	203.58 heet
3.	Agricultural Land Area (In heet.)	800 heet
4.	Residential Area (In heet.)	10.3
5.	Other Area (In heet.)	0.2570
6.	Distance to the nearest railway station (in kilometers):	12km

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7.	Name of Nearest Town with Distance:	Shalgam (3km)
8.	Distance to the nearest bus station (in kilometers):	Patan 9 km
9.	Whether village is connected to all road for the any facility or town or City?	

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. Farming 2. Cattel Farming 3. shop keeper
Major crops grown in the village:	1. Wheat 2. Cattel Seed 3. Cotton Seed

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	Everyday	Yes		Good
2.	**DUG WELL** Protected Well Un Protected Well				
3.	**WATER FROM SPRING** Protected Spring Unprotected Spring Rainwater Tanker Truck Cart With Small Tank				
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water Hand Pump Other(Specify)Lake/ Pond	lake	Yes		Good

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Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	1,00,000l		Crood
	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	Under-Ground		✓	Moderate
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Single lane		✓	
	Main road	Single lane		✓	
	Internal streets	RCC		✓	
	Nearest NH/SH/MDR/ODR Dist. in kms.	5H in 2km			
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No Nearest in 12 km			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	✓		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto / Jeep	✓		Good.
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes		✓	

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	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	12 hrs	✓		Good
	Electrification in Government Buildings/ Schools/ Hospitals	24 hrs	✓		
	Renewable Energy Source Facilities (Y/ N)	No			
	LED Facilities	No			
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	No			
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	No			
	Solid & liquid waste Disposal system available			✓	
	Any facility for Waste collection from road	No			
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND		✓		Good
	STREAM/RIVER	No			
	CANAL	No			
	WELL		✓		
	TUBE WELL		✓		Good
	OTHER (SPECIFY)				
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Pucca 60% Kutchha 40%	Yes		Good

V. SOCIAL INFRASTRUCTURAL FACILITIES:

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

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Suggestions if any:

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

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

Suggestions if any:

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

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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				
2.	Recent Projects going on for Development of Village	No			
3.	Any NGO working for village development	No			
4.	Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY)	No			

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

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1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other		croad condition
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?		

IX. Smart Village / Heritage Details

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

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 the allocated village scanned copy attachment in the report from part-1

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For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	kunghes
Name of Taluka:	Patan
Name of District:	Patan
Name of Institute:	MKCETR
Nodal Officer Name & Contact Detail:	Prof. Jahnvi Raval
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sarpanch : Kantibhai Talati : Vimalbhai
Date of Survey:	10 march 2021

1. Demographical Detail:

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	6215			
ii)	2011	6261	3282	2979	1342

2. Geographical Detail:

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	1858.61 Hectos
	Forest Area (In hect.)	303.58
	Agricultural Land Area (In hect.)	800 hect
	Residential Area (In hect.)	10.9
	Other Area (In hect.)	02570
	Water bodies	Boreaell Canal.
	Nearest Town with Distance:	~~Patan~~ Bhalgam (8km)

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3. Occupational Details:

Name of Three Major Occupation groups in Village	1. farming 2. cattel farming 3. Shop keepes.

4. Physical Infrastructure Facilities:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated) • RO Water • Well (Covered/ Uncovered) • Hand pumps • Tube well/ Borehole • River/ Canal/ Spring/ Lake/ Pond	Reyulas Borehole Lake	✓ ✓ ✓		Good Good Good.
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 100000	✓		Averege
	Underground Sump	Capacity:			
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	Undes Ground	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		Good.
Suggestions if any:					

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E.	**Road Network : All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Single lane	✓		Good
	Main road	"	✓		Good
	Internal streets	RCC	✓		Good
	Nearest NH/SH/MDR/ODR Dist. in kms.	5Km in 2Km	✓		Good
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No Nearest in 12 Km	✓		Good
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)		✓		Good
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)		✓		Good
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	24 hrs	✓		Good
	Power supply for Domestic Use	24 hrs	✓		Good
	Power supply for Agricultural Use	24 hrs	✓		Good
	Power supply for Commercial Use	12 hrs	✓		Good
	Road/ Street Lights	12 hrs	✓		Good

	Electrification in Government Buildings/ Schools/ Hospitals	24 hrs	✓		Good
	Renewable Energy Source Facilities (Y/ N)		✓		
	LED Facilities			✓	
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.		✓		
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	without bath	✓		
	Solid & liquid waste Disposal system available		✓		Good
	Any facility for Waste collection from road	No			
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Canal/ Tubewell	✓		good
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Pucca	✓		good

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

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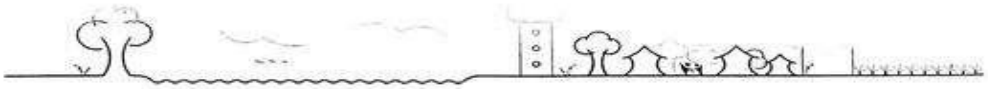
K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:		✓		good
	Private Clinic/Private Hospital/ Nursing Home	clinic private	✓		good
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
L.	**Education Facilities:**				
	Aaganwadi/ Play group		✓		good
	Primary School		✓		good
	Secondary school		✓		good
	Higher sec. School				
	ITI college/ vocational Training Center	No			
	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: .12.....kms.				
Suggestions if any:					
M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	yes	✓		good



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

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

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

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
O.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources		✓		avoage
P.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	Solars Street Light	✓		good.
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	Swatch Bharat Abhiyan
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)		good
2.	Additional Information/ Requirement		

9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

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

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

12.3 Survey form the allocated village scanned copy attachment in the report from part-1

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Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	kyngher
Name of Taluka:	Patan
Name of District:	Patan
Name of Institute:	MKCETR
Nodal Officer Name & Contact Detail:	Prof. Jahnvi Raval
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sarpanch : Kantibhai Talati : Vimalbhai
Date of Survey:	10 march 2021

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	6215			
ii)	2011	6261	3282	2979	1342

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	1858.61 Hectos
	Forest Area (In hect.)	303.58
	Agricultural Land Area (In hect.)	800 hect
	Residential Area (In hect.)	10.9
	Other Area (In hect.)	12570
	Water bodies	Borewell / canal.
	Nearest Town with Distance:	~~Patan~~ Bhalgam (8km)

3. Occupational Details:

Name of Three Major Occupation groups in Village	1. Farming 2. Cattel Farming 3. Shop keepes.

4. Physical Infrastructure Facilities:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated) • RO Water • Well (Covered/ Uncovered) • Hand pumps • Tube well/ Borehole • River/ Canal/ Spring/ Lake/ Pond	Regulas Borehole Lake	✓ ✓ ✓		Good Good Good.
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 100000	✓		Avereye
	Underground Sump	Capacity:			
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	Undes Ground	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		Good.
Suggestions if any:					

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E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Single lane	✓		Good
	Main road	"	✓		good
	Internal streets	RCC	✓		Good
	Nearest NH/SH/MDR/ODR Dist. in kms.	5th in 2km	✓		good
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No Nearest in 12km	✓		good
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)		✓		Good
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)		✓		Good
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	24 hrs	✓		Good
	Power supply for Domestic Use	24 hrs	✓		Good
	Power supply for Agricultural Use	24 hrs	✓		Good
	Power supply for Commercial Use	12 hrs	✓		Good
	Road/ Street Lights	12 hrs	✓		Good

	Electrification in Government Buildings/ Schools/ Hospitals	24 hrs	✓		Good
	Renewable Energy Source Facilities (Y/ N)		✓		
	LED Facilities			✓	
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.		✓		
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	without bath	✓		
	Solid & liquid waste Disposal system available		✓		Good
	Any facility for Waste collection from road	No			
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Canal/ Tubewell	✓		Good
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Pucca	✓		Good

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:		✓		Good
	Private Clinic/Private Hospital/ Nursing Home	clinic private	✓		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		✓		Good
	Primary School		✓		Good
	Secondary school		✓		Good
	Higher sec. School				
	ITI college/ vocational Training Center	No			
	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: .12.....kms.				
Suggestions if any:					
M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	Yes	✓		Good

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

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

Suggestions if any:

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

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

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	

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Techno Economic Survey

Recent Projects going on for Development of Village	Swarteha Bhavan Abhiyan.
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)		good
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.

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Contact No – 079-23267588
Email ID: rurban@gtu.edu.in

12.4 Gap Analysis:-

Table-7 Gap Analysis

VILLAGE GAP Analysis					
Village Facilities	Planning Commission/ UDPFINorms	Village Name:	KUNGHER		
		Population: 6261			
		Existing	Required as per Norms	Future Projection Design	Gap
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	1	0		0
Primary School	Each Per 2500 population	1	0		0
Secondary School	Per 7,500 Population	1	0		0
Higher Secondary School	Per 15,000 Population	0	1		0
College	Per 125,000 Population	0	0		0
Tech. Training Institute	Per 100000 Population	0	0		0
Agriculture Research Centre	Per 100000 Population	0	0		0
Skill Development Center	Per 100000 Population	0	0		0
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	1	0		0
Primary Health & Child Health Center	Per 20,000 Population	1	1		0
Child Welfare and Maternity Home	Per 10,000 Population	0	1		0
Multispeciality Hospital	Per 100000 Population	0	1		0

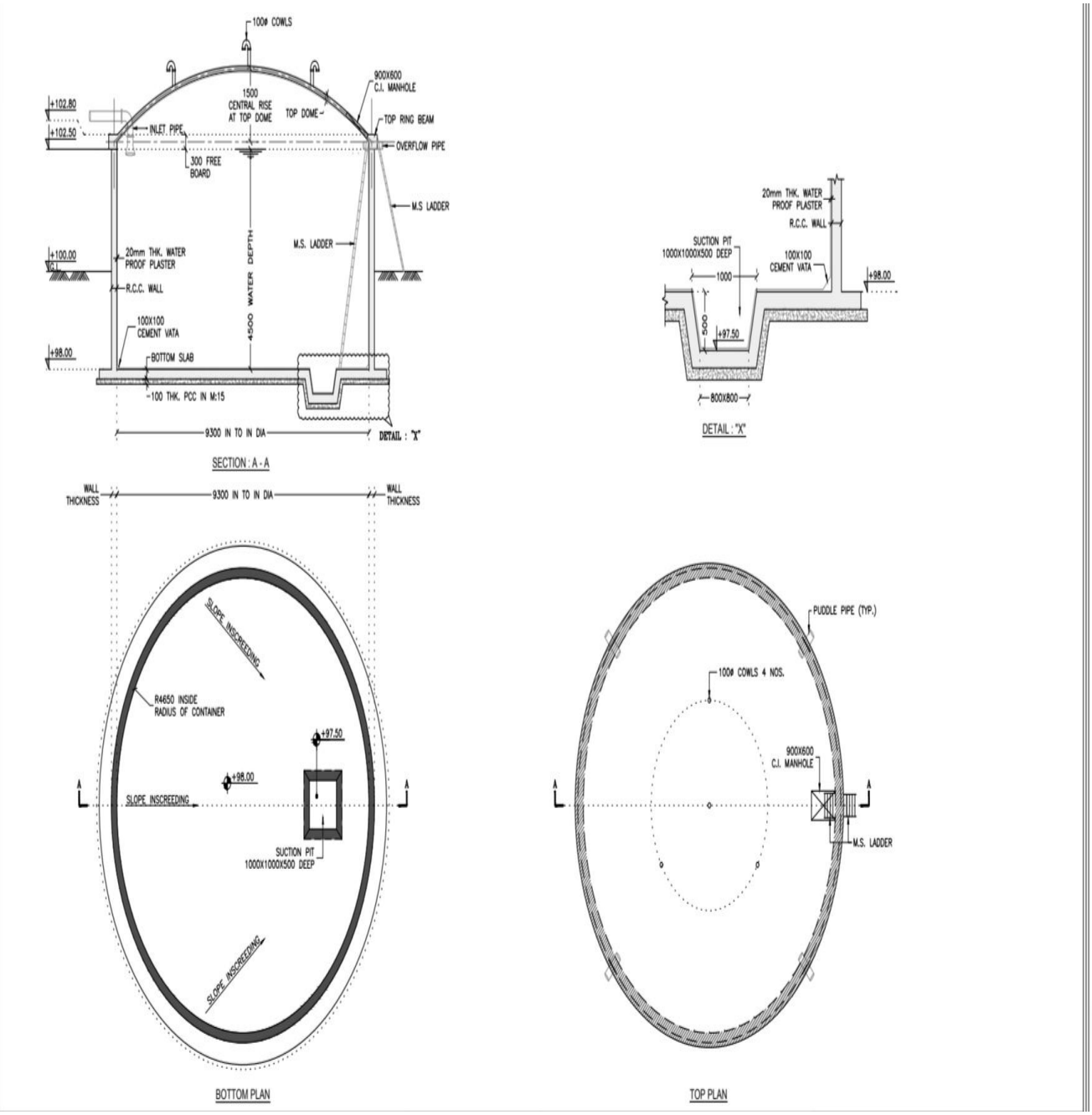
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutcha house)	**0**	**1**		**1**
Physical Infrastructure Facilities					
Transportation		Adequate			
Pucca Village Approach Road	Each village	**1**	**1**		**0**
Bus/Auto Stand provision		**1**			**0**
Drinking Water (Minimum 70 lpcd)		Adequate			
Over Head Tank	1 of Total Demand	1 LAC CAP			
U/G Sump	2 of Total Demand	2 LAC CAP			
Drainage Network – Open			1		
Drainage Network – Cover		Adequate			
Waste Management System		Inadequate			
Socio- Cultural Infrastructure Facilities					
Community Hall	Per10000 Population	**0**	**1**		**1**
community hall and Public Library	Per15000 Population	**0**	**1**		**1**
Cremation Ground	Per 20,000 Population	**0**	**1**		**1**
Post Office	Per 10,000 Population	**1**	**0**		**0**
Gram Panchayat Building	Each individual/group panchayat	**1**	**0**		**0**
APMC	Per 100000 Population	**0**	**0**		**0**

Fire Station	Per 100000 Population	**0**	**0**		**0**
Public Garden	Per village	**0**	**0**		**0**
Police post	Per 40,000Population	**0**	**0**		**0**
Shopping Mall	Shops are Available	**no**			
Electrical Design					
ElectricityNetwork	**UGVCL**	Adequate	33 KVSubstation		

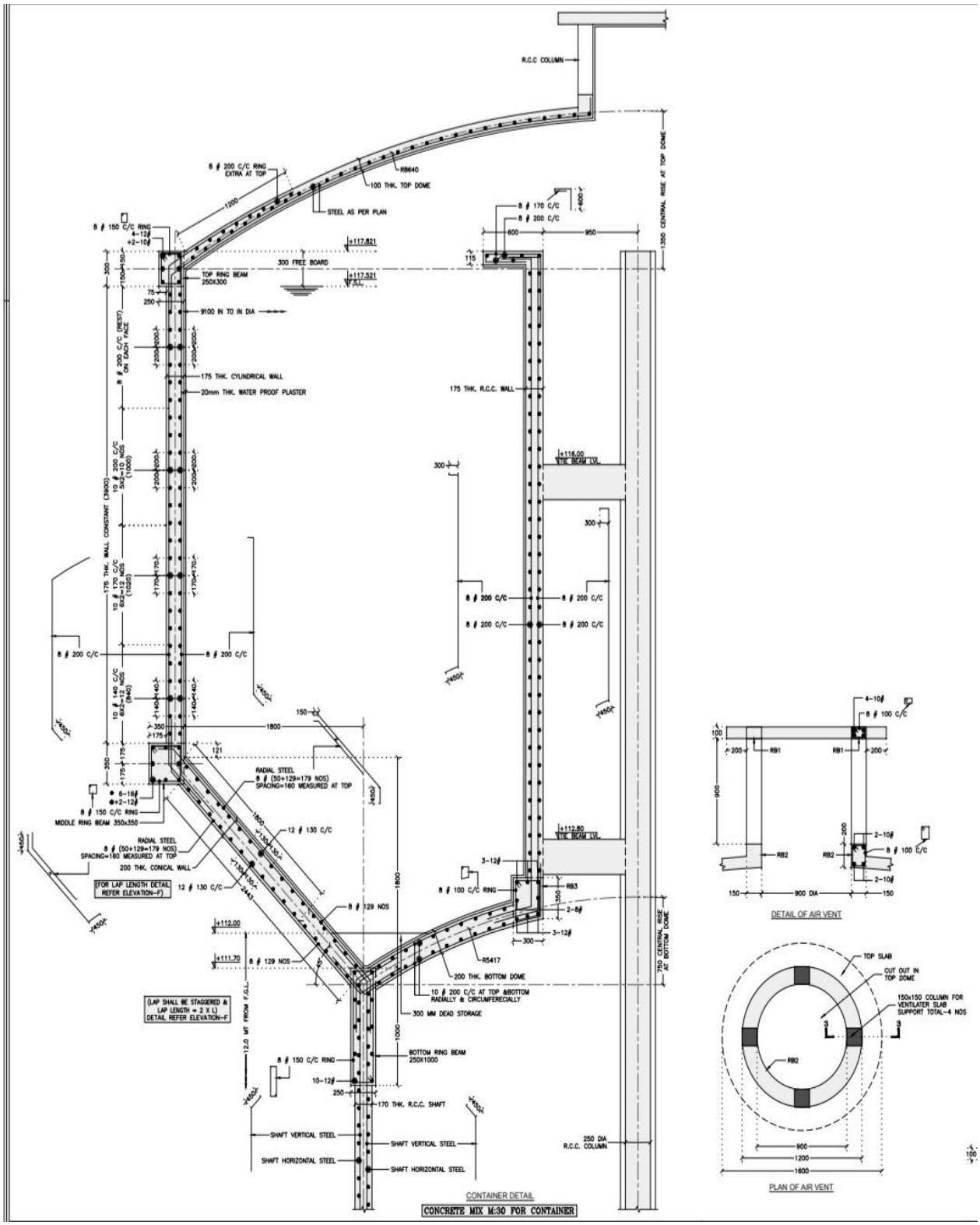
13.0 From the Chapter- 8 future designs of the aspects

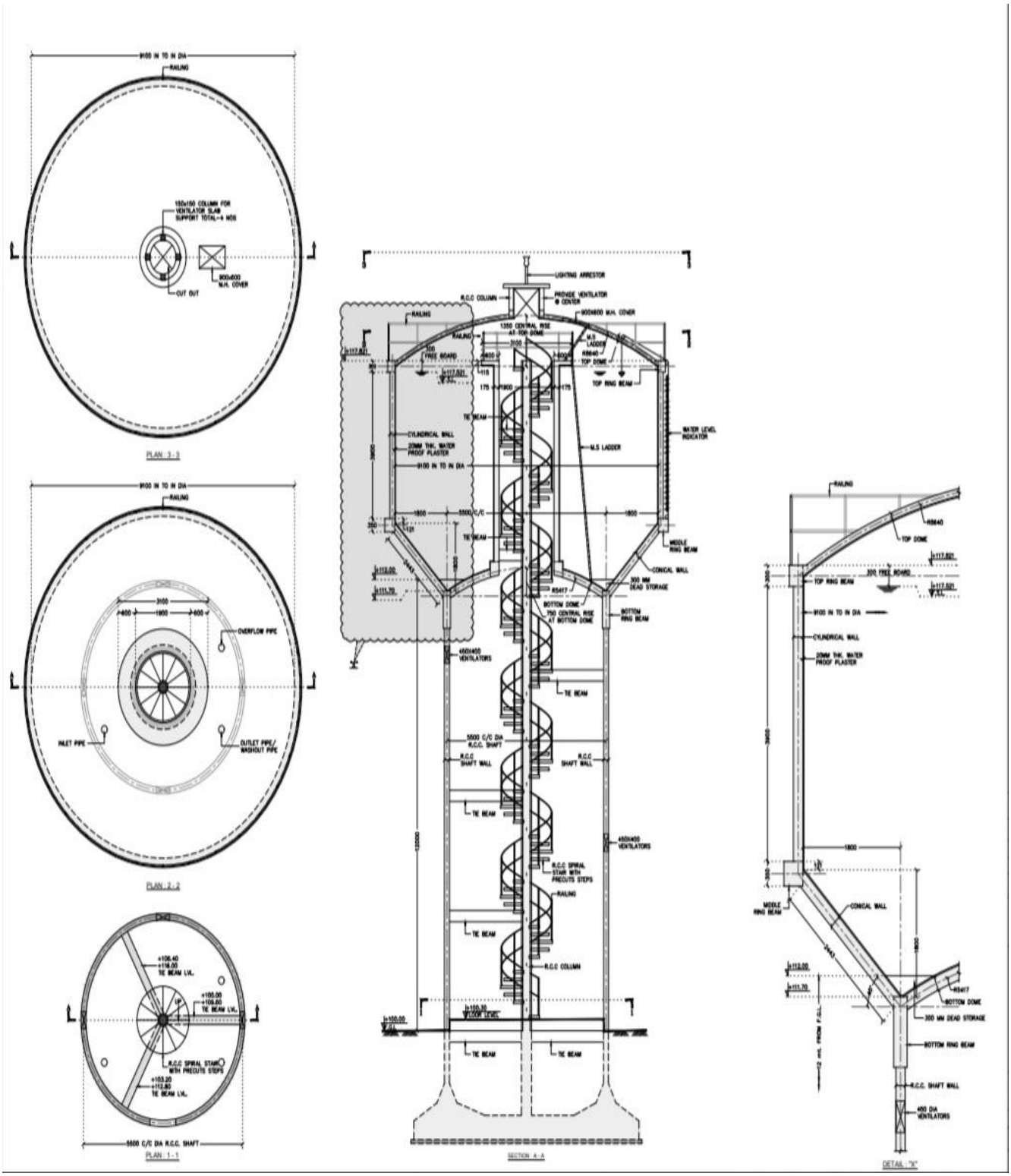
13.1 Planning proposal

13.1.1 Civi Design-1

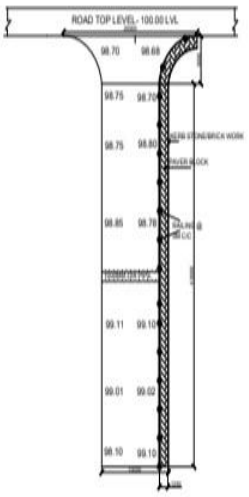


13.1.2 Civil Design-2

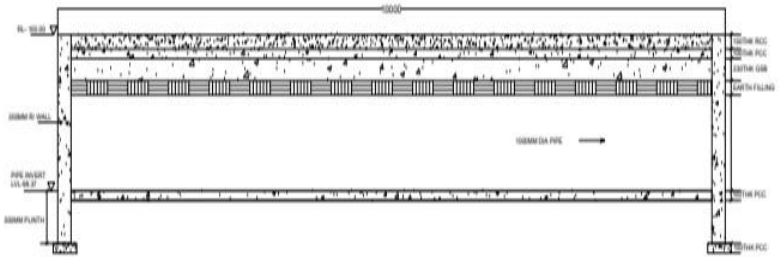



RAILING
PLAN : 3 - 3
OVERFLOW PIPE
INLET PIPE
OUTLET PIPE/ WASHOUT PIPE
PLAN : 2 - 2
PLAN : 1 - 1
LIGHTING ARRESTOR
R.C.C COLUMN
PROVIDE VENTILATOR @ CENTER
TOP DOME
TOP RING BEAM
TIE BEAM
CYLINDRICAL WALL
M.S LADDER
WATER LEVEL INDICATOR
MIDDLE RING BEAM
CONICAL WALL
BOTTOM DOME
BOTTOM RING BEAM
R.C.C SHAFT WALL
R.C.C SPIRAL STAIR WITH PRECUTS STEPS
SECTION A-A
DETAIL 'X'

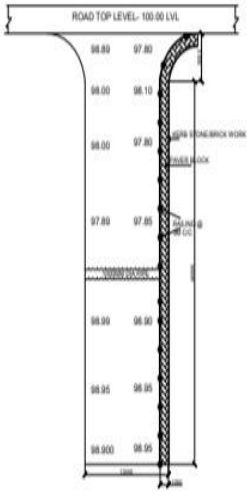
13.1.3 Civil Design-3



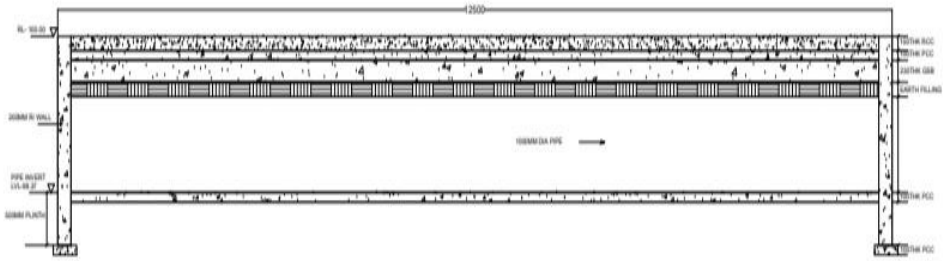
PIPE CULVERT (10.00 M)



CULVERT SECTION (10.00 M)



PIPE CULVERT (12.50 M)



CULVERT SECTION (12.50 M)

MEASURMENT SHEET

Sr.No	Item	No	Length	Width	Height	Qty	UNIT
1	Earthwork for embankment including breaking clods, dressing with all lead and lift (excluding watering and consolidation)(E) From Borrow area within 3.0 Km. lead including Rolling of earthwork in layers with power roller including filling in depressions which occur during the process. Watering of earth work as directed (upto 10 ton)						
		1.00	40.00	10.00	0.700	280.00	Cum
					Total Qty.	280.00	Cum
					Say	280.00	Cum
2	Construction of 200mm thick Granular Sub Base (Grading I) by providing coarse graded Black Trap material, mixing by machanical means / rotavator, spreading in uniform layers with motor grader as per required slope and gradient on prepared surface and compacting with vibratory roller at OMC to achieve the desired compaction complete as per MORT & H clause 401						
		1.00	40.00	10.00	0.230	92.00	Cum
					Total Qty.	92.00	Cum
					Say	92.00	Cum
3	Providing and laying cement concrete work 1:2:4 (1- Cement : 2- Coarse sand : 4- graded stone aggregates 20 mm nominal size) and curing complete excluding cost of formwork and reinforcement for reinforced concrete work in (A) Foundations, footings, Base or columns and Mass concrete (upto 10 ton)						
		1.00	40.00	10.00	0.100	40.00	Cum
		2.00	40.00	1.20	0.100	9.60	Cum
					Total Qty.	49.60	Cum
					Say	51.00	Cum
4	Providing and casting in situ ordinary cement concrete 1:1.5;3 (1 Cement :1.5Coarsed Sand : 3 Graded Stone Aggregate 20mm nominal size) for C.C. Road Including Compaction and finishing by trimix process including providing Construction Contraction and expansion joint and filling in joints with Asphalt filler jont etc. completed as directed by engineer in charge.						
		1.00	40.00	10.00	0.150	60.00	Cum
					Total Qty.	60.00	Cum
					Say	60.00	Cum
5	Providing TMT bar reinforcement for RCC work including bedding binding and placing in position complete upto floor two level.						
						60.00	Cum
	Per Cumt 20 Kg Steel					1200.00	Kg
					Total Qty.	1200.00	Kg
					Say	1200.00	Kg
6	Earthwork for embankment including breaking clods, dressing with all lead and lift and including watering rolling and consolidation of subgrade in layers at O.M.C. to required dry density including filling the depression which occur during the process using power roller 8T to 10T.(E) From Borrow area within 3.0KM. lead (upto 10 ton)						
		1.00	6.00	10.00	1.20	72.00	Cum
					Total Qty.	72.00	Cum
					Say	73.00	Cum
7	Excavation for foundation in sand, gravel, clay soft soils and murrum etc. including shoring, strutting dewatering as necessary and disposing of the excavated stuff as directed.(A) Depth upto 3.0 M. and lead upto 100m for 10 Cum						
		2.00	6.00	0.90	1.20	12.96	Cum
		2.00	34.00	0.90	0.75	45.90	Cum
		1.00	6.00	10.00	1.00	60.00	Cum
					Total Qty.	118.86	Cum
					Say	120.00	Cum
8	Providing and laying cement concrete 1:3:6 (1- Cement : 3- coarse sand : 6- hand broken stone aggregates 40 mm nominal size) and curing complete excluding cost of formwork in (A) Foundation and Plinth (upto 10 ton)						
		2.00	6.00	1.20	0.15	2.16	Cum
		2.00	34.00	0.90	0.15	9.18	Cum
		1.00	12.00	2.25	0.20	5.40	Cum
					Total Qty.	16.74	Cum
					Say	18.00	Cum

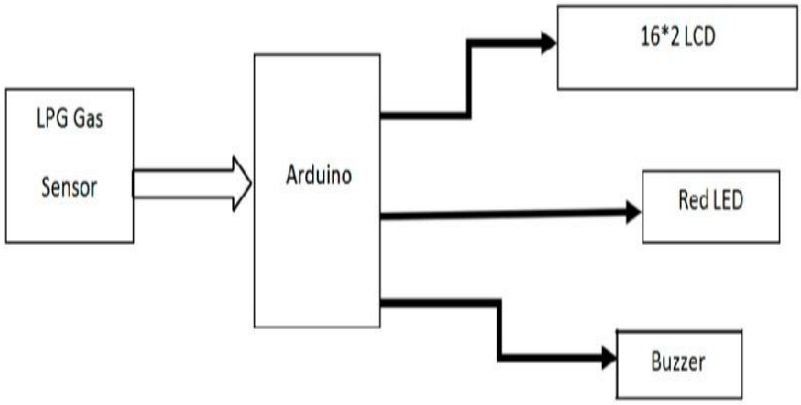
9	Providing and laying controlled cement concrete M.200 and curing complete excluding the cost of formwork and reinforcement for reinforced concrete work in (A) Foundations, footings, Base of columns and Mass concrete (more than 10 ton) PRC/10/2017/Cement Consumption/16/C (40X4.76) = 190.4 (3542.00-190.40)=3351.60						
		2.00	6.00	0.825	3.450	34.16	Cum
		2.00	34.00	0.450	1.700	52.02	Cum
		8.00	3.25	0.300	1.000	7.80	Cum
	Deduction Qty	8 X 0.785	D2	Height			Cum
	Pipe	-6.28	1.00	1.000		-6.28	Cum
					Total Qty.	87.70	Cum
					Say	89.00	Cum
10	Filling available excavated earth (excluding rock) in trenches. plinth, sides of foundations etc. in layers not exceeding 20 cm. in depth consolidating each disposited layer by ramming and watering.						
	As Per Item no					118.86	Cum
	Deduction Qty						Cum
	P.C.C.					-18.00	Cum
	Foundation Work					-87.70	Cum
					Total Qty.	13.16	cum
					Say	14.00	cum
11	Extra for Providing formwork with sheathing steel sheets so as to give a fair finish in (C)Vertical surface such as walls (anythickness) partitions & lime including attached pilasters buttresses plinth & string course & like. (upto 10 ton)						
	Foundation	4.00	6.00	-	3.450	82.80	sqmt
		4.00	34.00	-	1.700	231.20	sqmt
		4.00	0.825	-	2.680	8.84	sqmt
					Total Qty.	322.84	sqmt
					Say	324.00	sqmt
12	Supplying and fixing reinforced concrete heavy duty non-pressure pipes with collars for culverts carrying heavy traffic as per IS 458-1991 specifications including setting the pipes in C.M. 1:2 watering and laying (to level or slopes) of class NP3 of following internal daimeters.(vi)1000mm dia.						
		2.00	10.00			20.00	rmt
					Total Qty.	20.00	rmt
					Say	20.00	rmt
13	Providing and fixing pre-cast Rubber Dye inter locking concrete block 60mm thick with grade of concrete M200 pnumatic compressed by mechanically pressed and as per approved design including 75mm Sand layer for levelling and filling the joint with sand in proper line and level etc complete.						
		2.00	1.20	-	40.000	96.00	sqmt
					Total Qty.	96.00	sqmt
					Say	96.00	sqmt
14	Providing and fixing pre-cast concrete kerb stone of gray cement based concrete block 30cm length, 30cm height and 15cm thick of M250 grade concret as per approved design and including excavation for fixing in proper line and level,filling the joint with C:M 1:3 (1cement:3fine sand) etc complete. (upto 10 ton)						
		2.00	45.00			90.00	rmt
					Total Qty.	90.00	rmt
					Say	90.00	rmt

13.1.4 Sencer based gas leakage detector system

Gas leakage is a serious problem and nowadays it is observed in many places like residences, industries, and vehicles like Compressed Natural Gas (CNG), buses, cars, etc. It is noticed that due
to gas leakage, dangerous accidents occur. The Liquefied petroleum gas (LPG), or propane, is a flammable mixture of hydrocarbon gases used as fuel in many applications like homes, hostels, industries, automobiles, and vehicles because of its desirable properties which include high calorific value, less smoke, less soot, and meager harm to the environment. Liquid petroleum gas (LPG) is highly inflammable and can burn even at some distance from the source of leakage. This energy source is primarily composed of propane and butane which are highly flammable chemical compounds. These gases can catch fire easily. In homes, LPG is used mainly for cooking purposes. When a leak occurs, the leaked gases may lead to an explosion. Gas leakage leads to various
accidents resulting in both material loss and human injuries. Home fires have been occurring frequently and the threat to human lives and properties has been growing in recent years. The risks
of explosion, fire, suffocation are based on their physical properties such toxicity, flammability, etc. The number of deaths due to the explosion of gas cylinders has been increasing in recent years. The Bhopal gas tragedy is an example of accidents due to gas leakage.
The reason for such explosions is due to substandard cylinders, old valves, no regular checking of gas cylinders, worn out regulators and a lack of awareness of handling gas cylinders. Therefore, the gas leakage should be detected and controlled to protect people from danger. An odorant such as ethane thiol is added to LPG, so that leaks can be detected easily by most people. However, some people who have a reduced sense of smell may not be able to rely upon this inherent safety mechanism. A gas leakage detector becomes vital and helps to protect people from the dangers of gas leakage. A number of research papers have been published on gas leakage detection techniques []. K. Padmapriya et al. proposed the design of a wireless LPG monitoring system. In this paper the user is alerted about the gas leakage through SMS and the power supply is turned off [6]. Meenakshi Vidya et al. proposed the leakage detection and real time gas monitoring system. In this system, the gas leakage is detected and controlled by means of an exhaust fan. The level of LPG in cylinder is also continuously monitored [7]. Selvapriya et al. proposed the system in which the leakage is detected by the gas sensor and produce the results in the audio and visual forms. It provides a design approach on software as well as hardware [8]. In the existing method, different gas sensing technology is used. In this paper a low-cost advanced sensor-based gas leakage detector, alert and control system is proposed and discussed. The system is very efficient, user friendly, portable, small in size and cost effective. It will cost only 917 Bangladeshi taka which is equivalent to ten USD.

Method and Materials

In this paper, semiconductor sensors are used to detect LPG gas. An MQ6 semiconductor sensor is used. Sensitive material of the MQ-6 gas sensor is SnO2, which has lower conductivity in clean air. When the target combustible gas exists, the sensor conductivity increases along with the rising gas concentration. The MQ6 gas sensor has a high sensitivity to Propane, Butane and LPG, and response to Natural gas. The sensor could be used to detect different combustible gasses, especially Methane; it hasa lowcost and is suitable for different applications. The MQ-6 can detect gas concentrations anywhere from 200 to 10,000 ppm.



The sensor's output is an analog resistance.This system is based on the Arduino UNO R3 and MQ-6 gas sensor. When the sensor detects gas in the atmosphere, it will give digital output 1 and if gas in not detected the sensor will give digital output 0. Arduino will receive the sensor output as digital input. If the sensor output is high, then the buzzer will start tuning along with the LCD that will show that "Gas detected: Yes". If the sensor output is low then buzzer will not be tuning, and the LCD will show that "Gas detected: No". The buzzer most commonly consists of a number of switches or sensors connected to control unit that determines which button was pushed or whether a preset time has lapsed, and usually illuminates a light on the appreciate button or control panel, and sounds a warning in the form of a continuous or intermittent buzzing or beeping sound. For the design of a sensor-based gas leakage detector and alarm system the following hardware components are required. Table 1 lists the list of required hardware opponents, quantity and price in Bangladeshi Taka. The gas detector system is very cheap and it will cost only 917 BD Taka. The device is portable, light weight, user friendly and efficient with multi-functional features.

13.1.5 PLC based control solar tracking system

Photovoltaic (PV) technology converts solar irradiation directly into electricity typically using a silicon based semi-conductive material. Only the absorbed irradiation generates electricity.

Concentrating Solar Power (CSP) technologies use mirrors to reflect and concentrate sunlight onto receivers that collect solar energy and convert it to heat through a medium i.e. water. This thermal energy can then be used to generate electricity in a steam turbine or heat engine coupled to a generator.

With Concentrated Photovoltaic (CPV) technology, large area of solar irradiation is focused onto the solar cell with the help of an optical device. This requires direct solar irradiation rather than diffused irradiation.

Parabolic trough collectors are the most efficient and widely used method for large-scale solar thermal power generation. The collectors are parabolic mirrors that reflect and concentrate the sunlight onto tubes containing heat transfer fluid. The fluid is then used to heat steam in a turbine to generate electric power.

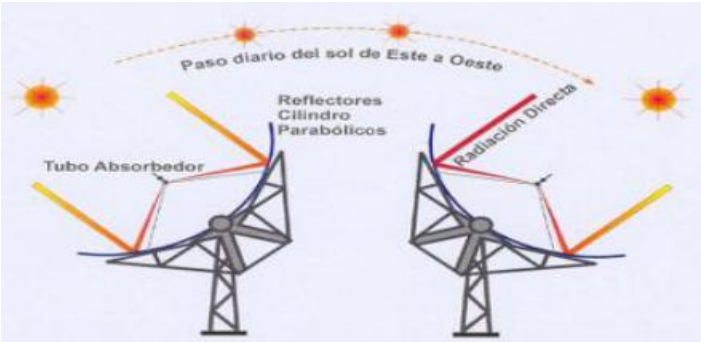


ABB has played a leading role in the development of solar concentration and parabolic trough technology since the 1990s when it developed a distributed control system for the world's first test facility on behalf of the International Energy Agency at the Plataforma Solar de Almería (PSA) in Spain. The PSA is Europe's leading test facility for solar concentration technologies.

Concentrating Solar Power: continuous sun tracking with maximum concentration of normal sun radiation into the focus

Precision control of solar trackers
With tracking devices the energy production of a photovoltaic plant can be increased up to 30% in optimal locations. With concentrating photovoltaic solar cells tracking devices with high accuracy are a must.

ABB's product portfolio for solar tracking devices includes all key components, such as drives, motors, PLCs and other low voltage products.

The AC500 PLC uses high-precision solar algorithms to ensure that all type of trackers, for either PV, CPV or CSP, are precisely aligned and follow the movement of the sun with exceptional accuracy.

Exceptionally robust, ABB PLC solutions are designed to withstand extreme environments of intense heat and cold, as well as dust, erosion and mechanical stress.

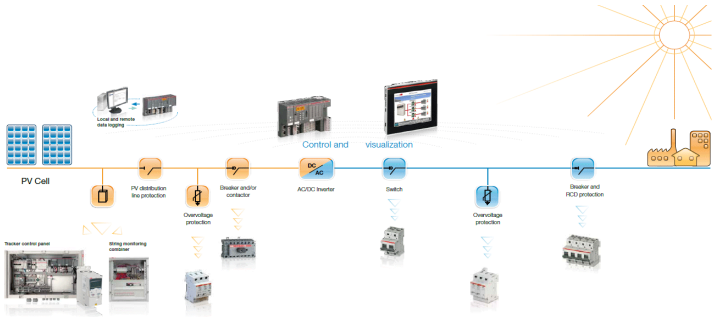
This, together with the easy-to-use ABB library for solar applications and the unique scalability of the AC500, makes the solution adapted for all your control and automation needs.

The AC500 performs all control tasks linked to open and closed loops, monitors the tracking of the sun, and includes options like:

Calculating the path of the sun
Registering and assessing the sensors connected (anemometers, pyranometer, etc.)
Placing the panels in a safe position if weather conditions deteriorate
Manual positioning mode
Calibration mode
Remote data transmission

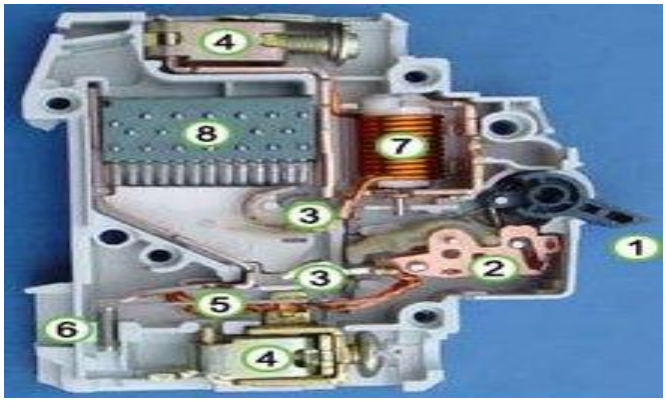
Besides their outstanding accuracy, AC500 PLCs are certified to withstand the demanding operating conditions of extreme heat during the day and low temperatures at night.

Suitable automation components, such as the scalable PLC AC500, maximize the effective use of sunlight. For any solar technology, PV, CPV or CSP and design, AC500 PLCs offer precision in both azimuth and elevation among the most accurate in the market.



13.1.6 Automatically trip coil(CB)

A circuit breaker is an automatically operated electrical switch designed to protect an electrical circuit from damage caused by excess current from an overload or short circuit. Its basic function is to interrupt current flow after a fault is detected. Unlike a fuse, which operates once and then must be replaced, a circuit breaker can be reset (either manually or automatically) to resume normal operation.



Operation

All circuit breaker systems have common features in their operation, but details vary substantially depending on the voltage class, current rating and type of the circuit breaker.

The circuit breaker must first detect a fault condition. In small mains and low voltage circuit breakers, this is usually done within the device itself. Typically, the heating or magnetic effects of electric current are employed. Circuit breakers for large currents or high voltages are usually arranged with protective relay pilot devices to sense a fault condition and to operate the opening mechanism. These typically require a separate power source, such as a battery, although some

high-voltage circuit breakers are self-contained with current transformers, protective relays, and an internal control power source.

Once a fault is detected, the circuit breaker contacts must open to interrupt the circuit; this is commonly done using mechanically stored energy contained within the breaker, such as a spring or compressed air to separate the contacts. Circuit breakers may also use the higher current caused by the fault to separate the contacts, such as thermal expansion or a magnetic field. Small circuit breakers typically have a manual control lever to switch off the load or reset a tripped breaker, while larger units use solenoids to trip the mechanism, and electric motors to restore energy to the springs.

The circuit breaker contacts must carry the load current without excessive heating, and must also withstand the heat of the arc produced when interrupting (opening) the circuit. Contacts are made of copper or copper alloys, silver alloys and other highly conductive materials. Service life of the contacts is limited by the erosion of contact material due to arcing while interrupting the current. Miniature and molded-case circuit breakers are usually discarded when the contacts have worn, but power circuit breakers and high-voltage circuit breakers have replaceable contacts.

When a high current or voltage is interrupted, an arc is generated. The length of the arc is generally proportional to the voltage while the intensity (or heat) is proportional to the current. This arc must be contained, cooled and extinguished in a controlled way, so that the gap between the contacts can again withstand the voltage in the circuit. Different circuit breakers use vacuum, air, insulating gas, or oil as the medium the arc forms in. Different techniques are used to extinguish the arc including:

Lengthening or deflecting the arc
Intensive cooling (in jet chambers)
Division into partial arcs
Zero point quenching (contacts open at the zero current time crossing of the AC waveform, effectively breaking no load current at the time of opening. The zero-crossing occurs at twice the line frequency; i.e., 100 times per second for 50 Hz and 120 times per second for 60 Hz AC.)
Connecting capacitors in parallel with contacts in DC circuits.
Finally, once the fault condition has been cleared, the contacts must again be closed to restore power to the interrupted circuit.

Types

Many classifications of circuit breakers can be made, based on their features such as voltage class, construction type, interrupting type, and structural features.

Low-voltage
Low-voltage (less than 1,000 VAC) types are common in domestic, commercial and industrial application, and include:

Miniature circuit breaker (MCB)—rated current up to 125 A. Trip characteristics normally not adjustable. Thermal or thermal-magnetic operation. Breakers illustrated above are in this category.
Molded Case Circuit Breaker (MCCB)—rated current up to 1,600 A. Thermal or thermal-magnetic operation. Trip current may be adjustable in larger ratings.

Low-voltage power circuit breakers can be mounted in multi-tiers in low-voltage switchboards or switchgear cabinets.
The characteristics of low-voltage circuit breakers are given by international standards such as IEC 947. These circuit breakers are often installed in draw-out enclosures that allow removal and interchange without dismantling the switchgear.

Large low-voltage molded case and power circuit breakers may have electric motor operators so they can open and close under remote control. These may form part of an automatic transfer switch system for standby power.

Low-voltage circuit breakers are also made for direct-current (DC) applications, such as DC for subway lines. Direct current requires special breakers because the arc is continuous—unlike an AC arc, which tends to go out on each half cycle, direct current circuit breaker has blow-out coils that generate a magnetic field that rapidly stretches the arc. Small circuit breakers are either installed directly in equipment, or are arranged in a breaker panel.

Inside of a miniature circuit breaker
The DIN rail-mounted thermal-magnetic miniature circuit breaker is the most common style in modern domestic consumer units and commercial electrical distribution boards throughout Europe. The design includes the following components:

Actuator lever - used to manually trip and reset the circuit breaker. Also indicates the status of the circuit breaker (On or Off/tripped). Most breakers are designed so they can still trip even if the lever is held or locked in the "on" position. This is sometimes referred to as "free trip" or "positive trip" operation.
Actuator mechanism - forces the contacts together or apart.
Contacts - allow current when touching and break the current when moved apart.
Terminals
Bimetallic strip - separates contacts in response to smaller, longer-term overcurrents
Calibration screw - allows the manufacturer to precisely adjust the trip current of the device after assembly.
Solenoid - separates contacts rapidly in response to high overcurrents
Arc divider/extinguisher
Solid state
Solid-state circuit breakers, also known as digital circuit breakers are a technological innovation which promises advance circuit breaker technology out of the mechanical level, into the electrical. This promises several advantages, such as cutting the circuit in fractions of microseconds, better monitoring of circuit loads and longer lifetimes.[6]

Magnetic
Magnetic circuit breakers use a solenoid (electromagnet) whose pulling force increases with the current. Certain designs utilize electromagnetic forces in addition to those of the solenoid. The circuit breaker contacts are held closed by a latch. As the current in the solenoid increases beyond the rating of the circuit breaker, the solenoid's pull releases the latch, which lets the contacts open by spring action. They are the most commonly used circuit breakers in the USA.

Thermal-magnetic

Shihlin Electric MCCB with SHT
Thermal magnetic circuit breakers, which are the type found in most distribution boards in Europe and countries with a similar wiring arrangements, incorporate both techniques with the electromagnet responding instantaneously to large surges in current (short circuits) and the bimetallic strip responding to less extreme but longer-term over-current conditions. The thermal portion of the circuit breaker provides a time response feature, that trips the circuit breaker sooner for larger over currents but allows smaller overloads to persist for a longer time. This allows short current spikes such as are produced when a motor or other non-resistive load is switched on. With very large over-currents during a short circuit, the magnetic element trips the circuit breaker with no intentional additional delay.

Magnetic hydraulic

A magnetic-hydraulic circuit breaker uses a solenoid coil to provide operating force to open the contacts. Magnetic-hydraulic breakers incorporate a hydraulic time delay feature using a viscous fluid. A spring restrains the core until the current exceeds the breaker rating. During an overload, the speed of the solenoid motion is restricted by the fluid. The delay permits brief current surges beyond normal running current for motor starting, energizing equipment, etc. Short-circuit currents provide sufficient solenoid force to release the latch regardless of core position thus bypassing the delay feature. Ambient temperature affects the time delay but does not affect the current rating of a magnetic breaker.

Large power circuit breakers, applied in circuits of more than 1000 volts, may incorporate hydraulic elements in the contact operating mechanism. Hydraulic energy may be supplied by a pump, or stored in accumulators. These form a distinct type from oil-filled circuit breakers where oil is the arc extinguishing medium.

Common trip (ganged) breakers

Three-pole common trip breaker for supplying a three-phase device. This breaker has a 2 A rating.
To provide simultaneous breaking on multiple circuits from a fault on any one, circuit breakers may be made as a ganged assembly. This is a very common requirement for 3 phase systems, where breaking may be either 3 or 4 pole (solid or switched neutral). Some makers make ganging kits to allow groups of single phase breakers to be interlinked as required.

In the US, where split phase supplies are common, in branch circuits with more than one live conductor, each live conductor must be protected by a breaker pole. To ensure that all live conductors are interrupted when any pole trips, a "common trip" breaker must be used. These may either contain two or three tripping mechanisms within one case, or for small breakers, may externally tie the poles together via their operating handles. Two-pole common trip breakers are common on 120/240-volt systems where 240 volt loads (including major appliances or further distribution boards) span the two live wires. Three-pole common trip breakers are typically used to supply three-phase electric power to large motors or further distribution boards.

Separate circuit breakers must never be used for live and neutral, because if the neutral is disconnected while the live conductor stays connected, a very dangerous condition arises: the circuit appears de-energized (appliances don't work), but wires remain live and some residual-

current devices (RCDs) may not trip if someone touches the live wire (because some RCDs need power to trip). This is why only common trip breakers must be used when neutral wire switching is needed.

Shunt-trip units

A shunt-trip unit appears similar to a normal breaker and the moving actuators are 'ganged' to a normal breaker mechanism to operate together in a similar way, but the shunt trip is a solenoid intended to be operated by an external constant voltage signal, rather than a current, commonly the local mains voltage or DC. These are often used to cut the power when a high risk event occurs, such as a fire or flood alarm, or another electrical condition, such as over voltage detection. Shunt trips may be a user fitted accessory to a standard breaker, or supplied as an integral part of the circuit breaker.

Medium-voltage

An air circuit breaker of Siemens brand mounted on a motor control cubicle

Medium-voltage circuit breakers rated between 1 and 72 kV may be assembled into metal-enclosed switchgear line ups for indoor use, or may be individual components installed outdoors in a substation. Air-break circuit breakers replaced oil-filled units for indoor applications, but are now themselves being replaced by vacuum circuit breakers (up to about 40.5 kV). Like the high voltage circuit breakers described below, these are also operated by current sensing protective relays operated through current transformers. The characteristics of MV breakers are given by international standards such as IEC 62271. Medium-voltage circuit breakers nearly always use separate current sensors and protective relays, instead of relying on built-in thermal or magnetic overcurrent sensors.

Medium-voltage circuit breakers can be classified by the medium used to extinguish the arc:

Vacuum circuit breakers—With rated current up to 6,300 A, and higher for generator circuit breakers application (up to 16,000 A & 140 kA). These breakers interrupt the current by creating and extinguishing the arc in a vacuum container - aka "bottle". Long life bellows are designed to travel the 6–10 mm the contacts must part. These are generally applied for voltages up to about 40,500 V,[10] which corresponds roughly to the medium-voltage range of power systems. Vacuum circuit breakers have longer life expectancy between overhaul than do other circuit breakers. In addition their global warming potential is by far lower than SF6 circuit breaker.

Air circuit breakers—Rated current up to 6,300 A and higher for generator circuit breakers. Trip characteristics are often fully adjustable including configurable trip thresholds and delays. Usually electronically controlled, though some models are microprocessor controlled via an integral electronic trip unit. Often used for main power distribution in large industrial plant, where the breakers are arranged in draw-out enclosures for ease of maintenance.

SF6 circuit breakers extinguish the arc in a chamber filled with sulfur hexafluoride gas.

Medium-voltage circuit breakers may be connected into the circuit by bolted connections to bus bars or wires, especially in outdoor switchyards. Medium-voltage circuit breakers in switchgear line-ups are often built with draw-out construction, allowing breaker removal without disturbing power circuit connections, using a motor-operated or hand-cranked mechanism to separate the breaker from its enclosure.

High-voltage

Main article: High-voltage switchgear

Three single-phase Soviet/Russian 110-kV oil circuit breakers

400 kV SF6 live-tank circuit breakers
Electrical power transmission networks are protected and controlled by high-voltage breakers. The definition of high voltage varies but in power transmission work is usually thought to be 72.5 kV or higher, according to a recent definition by the International Electrotechnical Commission (IEC). High-voltage breakers are nearly always solenoid-operated, with current sensing protective relays operated through current transformers. In substations the protective relay scheme can be complex, protecting equipment and buses from various types of overload or ground/earth fault.

High-voltage breakers are broadly classified by the medium used to extinguish the arc:

Bulk oil
Minimum oil
Air blast
Vacuum
SF6
CO2
Due to environmental and cost concerns over insulating oil spills, most new breakers use SF6 gas to quench the arc.

Circuit breakers can be classified as live tank, where the enclosure that contains the breaking mechanism is at line potential, or dead tank with the enclosure at earth potential. High-voltage AC circuit breakers are routinely available with ratings up to 765 kV. 1,200 kV breakers were launched by Siemens in November 2011,[11] followed by ABB in April the following year.[12]

High-voltage circuit breakers used on transmission systems may be arranged to allow a single pole of a three-phase line to trip, instead of tripping all three poles; for some classes of faults this improves the system stability and availability.

High-voltage direct current circuit breakers are still a field of research as of 2015. Such breakers would be useful to interconnect HVDC transmission systems.

Sulfur hexafluoride (SF6) high-voltage
Main article: Sulfur hexafluoride circuit breaker
A sulfur hexafluoride circuit breaker uses contacts surrounded by sulfur hexafluoride gas to quench the arc. They are most often used for transmission-level voltages and may be incorporated into compact gas-insulated switchgear. In cold climates, supplemental heating or de-rating of the circuit breakers may be required due to liquefaction of the SF6 gas.

Disconnecting circuit breaker (DCB)
The disconnecting circuit breaker (DCB) was introduced in 2000[14] and is a high-voltage circuit breaker modeled after the SF6-breaker. It presents a technical solution where the disconnecting function is integrated in the breaking chamber, eliminating the need for separate disconnectors. This increases the availability, since open-air disconnecting switch main contacts need maintenance every 2–6 years, while modern circuit breakers have maintenance intervals of 15

years. Implementing a DCB solution also reduces the space requirements within the substation, and increases the reliability, due to the lack of separate disconnectors.

In order to further reduce the required space of substation, as well as simplifying the design and engineering of the substation, a fiber optic current sensor (FOCS) can be integrated with the DCB. A 420 kV DCB with integrated FOCS can reduce a substation's footprint with over 50% compared to a conventional solution of live tank breakers with disconnectors and current transformers, due to reduced material and no additional insulation medium.

Carbon dioxide (CO2) high-voltage
In 2012, ABB presented a 75 kV high-voltage breaker that uses carbon dioxide as the medium to extinguish the arc. The carbon dioxide breaker works on the same principles as an SF6 breaker and can also be produced as a disconnecting circuit breaker. By switching from SF6 to CO2, it is possible to reduce the CO2 emissions by 10 tons during the product's life cycle

13.2 Reason for Students Recommending this Design

1 Social Design Proposals: Bus Station

People in rural areas generally have more access useful transportation is bus and mostaly pepole used bus transportation. They transport is very easy and cheap.

2 Social Design Proposals: water tank

Water tank is so many useful in daily pepole life. Water Tank to supplied water in daily nomber of household,animal etc.

3 Physical Design Proposals: Gate

The ground near the village is unprotected as there are no boundary walls available, many times vehicles came into the ground in night times and park their and several times street animals comes too in the ground and make it dirtier and create unsafe environment for children.

13.3 About designs Suggestions / Benefit of the villagers

- In the village as if bus Station social condition are bestso all village pepole also nearby village will easily get much better transportation facilities.
- water tank more usefulness in people. Tyey daily water supplied to our village people.

14.0 Technical Options with case study

14.1 Civil Engineering

14.1.1 .Advance Eathquake Resistant

Earthquake-resistant structures are structures designed to protect buildings from earthquakes. While no structure can be entirely immune to damage from earthquakes, the goal of earthquake-resistant construction is to erect structures that fare better during seismic activity than their conventional counterparts. According to building codes, earthquake-resistant structures are intended to withstand the largest earthquake of a certain probability that is likely to occur at their location.Currently, there are several design philosophies in earthquake engineering, making use of experimental results, computer simulations and observations from past earthquakes to offer the required performance for the seismic threat at the site of interest.To get a basic idea of how base isolation works, examine Figure . This shows an earthquake acting on both a base isolated building and a conventional, fixed-base, building. As a result of an earthquake, the ground beneath each building begins to move. In Figure, it is shown moving to the left. Each building responds with movement which tends toward the right. The building undergoes displacement towards the right. The building's displacement in the direction opposite the ground motion is actually due to inertia. The inertial forces acting on a building are the most important of all those generated during an earthquake. It is important to know that the inertial forces which the building undergoes are proportional to the building's acceleration during ground motion. It is also important to realize that buildings don't actually shift in only one direction. Because of the complex nature of earthquake ground motion, the building actually tends to vibrate back and forth in varying directions. By contrast, even though it too displacing, the base-isolated building retains its original, rectangular shape. It is the lead-rubber bearings supporting the building that are deformed

14.1.2.Seismic Retrofitting Buildings

There are many points which are introduced about Retrofitting of Buildings, let us discuss point by point Some following Tests are conducted during Nondestructive Testing of Concrete

(i) Visual inspection
(ii) Rebound hammer test
(iii) Hammer strike
(iv) Impact echo test
(v) Ultrasonic pulse velocity test
(vi) Pull off test
(vii) Cover meters & rebar locators

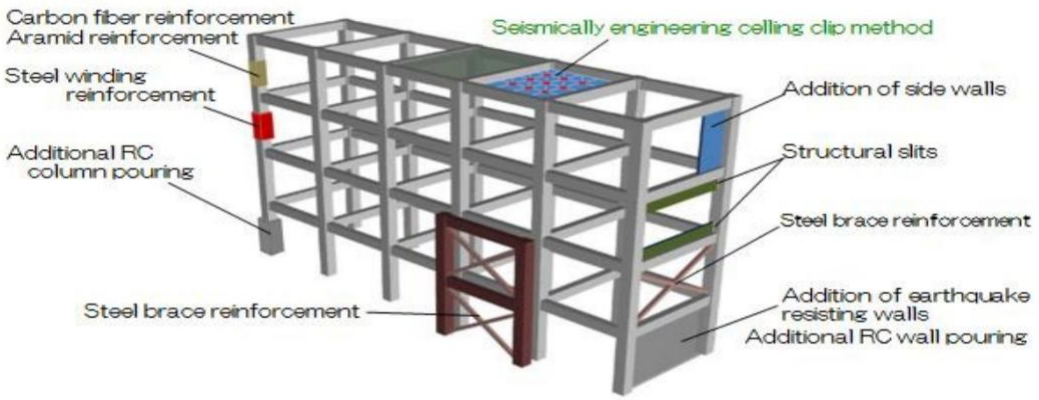
For Nondestructive Testing on Structural Steel

(i) Visual
(ii) Ultrasonic testing
(iii) Radiography
(iv) Magnetic particle test
(v) Liquid penetrate test
(vi) Hardness

Contents of Retrofitting of Building Construction

1. Concept of Various Terms Associated with Retrofitting
2. Retrofitting of Buildings Structures Damaged Due to Earthquake
3. Nondestructive Testing of Concrete
4. Destructive Testing of Concrete
5. Nondestructive Testing on Structural Steel
6. Seismic Retrofitting of Reinforced Concrete Buildings
7. External post-tensioning
8. Active control system
9. Exterior reinforcement of the building
10.Exterior concrete columns
11.Infill shear trusses
12.Massive exterior structure
13.Retrofitting Measures
14.Renovating Steel framed buildings
15.Renovating Concrete structural elements

16.Evolution of building materials
17.Masonry, stone, and adobe buildings
18.Wood and timber
19.Concrete
20.Practice and design concepts
21.Challenges of retrofitting historic fabric
22.No penetration of building envelope
23.Penetration without breakage
24.Breakage with repair
25.Innovative technologies for historic preservation
26.Post-tensioning
27.Base isolation
28.Seismic Actions
29.Seismic Resistance and Vulnerability
30.Application to Buildings in the Village of Soaring
31.Application to Buildings in the Village of Soaring
32.Seismic Retrofit of G3 Building in India Tech
33.Post-tensioned concrete walls
34.Shear steel damper
35.Seismic performance assessment
36.Alternative Design Procedures
37.Approved Foundation System.
38.Pier Foundation System.
39.Non-Continuous Perimeter Foundation Systems.
40.Unreinforced Masonry Perimeter Foundation.
41.Inadequate Sill Plate Anchorage.
42.Inadequate Cripple Wall Bracing.
43.Research for verification



14.1.3. Advance Practices In Construction Field In Modern

Materials Techniques And Equipment

The Indian advanced construction techniques industry is experiencing a period of fast growth. Aiming to overcome the housing problem, it also has to face the dual challenge of fulfilling the needs of the client and maintain the quality standards.

At the same time, the up-gradation of technology through the adoption of new techniques has become necessary to survive in a tough competitive environment. The traditional methods of construction are inadequate in executing the work speedily with economy and quality. The construction industry in India must switch over to achieve its goal in “minimum time with maximum efficiency”.

NECESSITY

1. The building construction activity, especially the residential and commercial complex is highly labour intensive with very little mechanization. Approximately 35% of the total construction cost is spent on labour.

2. The labourers have their limitations and may fail to meet the time limits. The quality of workmanship, too, differs from person to person. Hence, quality standards cannot be maintained. Wastage of material is considerably high as it is handled and utilized manually.

3. The objective of the construction organizations should be ‘speed and economy’. This cannot be achieved with labour oriented advanced construction techniques.

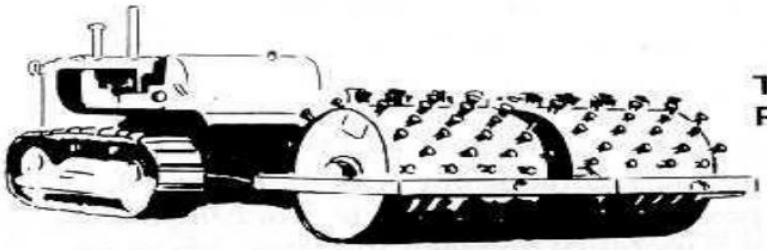
4. Only studying and adopting modern industrial techniques and equipment is the solution. By this, one can save material, reduce labour expenses, and increase the speed of work, leading to the economy in construction.

5. Though the scope of the subject is vast, in this chapter we shall discuss only the advanced techniques to be used in advanced construction techniques activities.

The equipment with proven utility in building construction may be as listed below

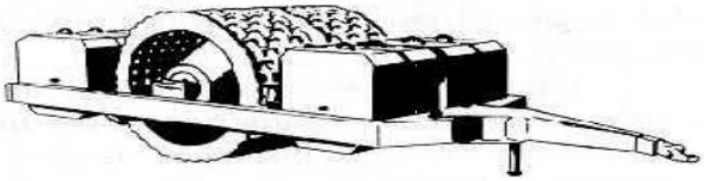
- Chain and pulley block.
- Grouting pumps.
- Sprayers for painting work.
- Tile cutters.
- Portable hand drilling machines.
- Horizontal trolleys, wheelbarrows.

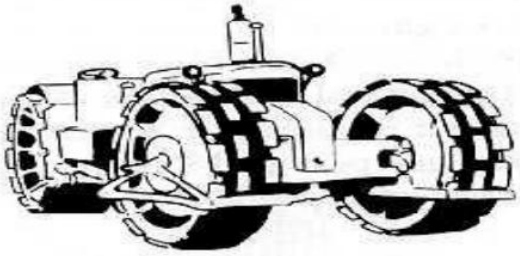
- Pumps.
- Vibrators for compaction of concrete, surface vibrators.



TOWED SHEEPSFOOT ROLLER

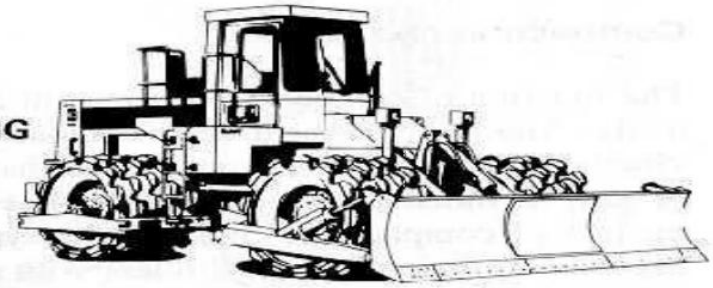
GRID ROLLER

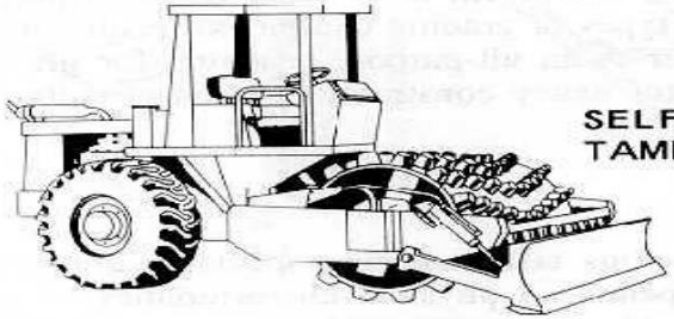




SELF-PROPELLED SEGMENTED STEEL WHEEL ROLLER

SELF-PROPELLED TAMPING FOOT ROLLER





SELF-PROPELLED VIBRATORY TAMPING FOOT ROLLER

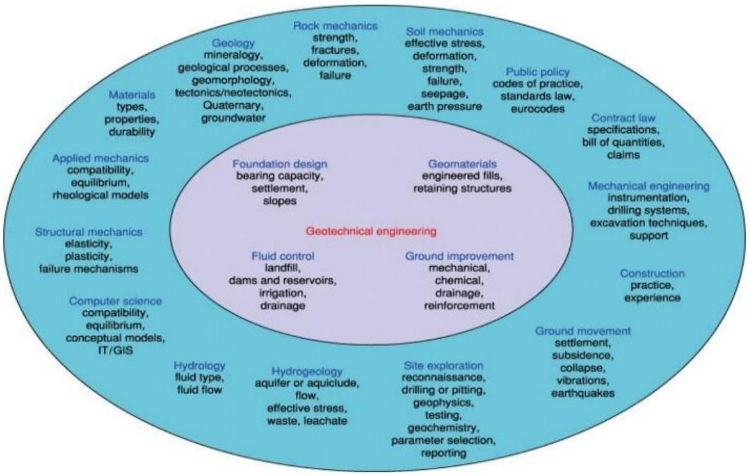
14.1.4. Engineering Aspects Of Soil Mechanics - Environmental Impact Assessment

An Environmental Impact Assessment is a formal method of judging the impact that any new developmental project would have on the environment and its constituents. This can include changes that the project would create in the physical aspects of existing geography, chemical changes to the atmosphere including air and water, biological changes that affect plant, animal and human life, cultural impact of a project on the society in the area, and other socio-economic effects that the project can have.

Such an assessment allows problems to be foreseen, so that the design and planning of the projects is modified to reduce any negative effects. It is now fashionable to build green buildings which have a positive effect on the environment.There is historical precedent for the now mandatory Environmental Impact Assessments (EIA). Past efforts by governments have resulted in bans on activities that caused noxious odors, garbage dumps were positioned at places far away from habitation, and commercial activities were restricted to town centers.Objectives of Environmental Impact AssessmentThe objective of an EIA is to predict the environmental impact project would have on all aspects of the environment. Once this is done, a study has to be made to see if the impacts can be reduced in any way. The project has then to be modified to suit the local environment and all predictions and likely options presented to decision makers for final decisions.

You can gain a better understanding of EIA by understanding how any typical project can affect the environment of a particular area. Take for example the building of a new road in a city.The alignment of the road may require that certain lands have to be leveled or new embankments created. Cutting of the land and the new embankments would affect the geography of the area and probably upset its drainage pattern. This would require re-planning existing methods of treating the run-off and could cause existing watercourses to be modified. The new road may require the removal of existing green cover and this could affect the living conditions in that area. The traffic going through that area can cause pollution problems from vehicles which also includes an increase in sound pollution. The emissions from the vehicles can affect already existing atmospheric pollutants which in turn could affect human health, animal health and affect greenery in the area. The road may affect existing structures in the area which may have to be removed and can cause changes in the economic wellbeing of the persons who are using those structures.

A positive impact of the new road may mean a reduction in traffic congestion, its positive effect on pollution, and the economic advantage of these two aspects.For any environmental impact assessment, complete data on all these aspects as they are at present has to be made so that any changes can be reasonably judged to existing standards required for good living. The deterioration or increase in these living standards has then to be highlighted by the EIA before any final decision on the project can be und.



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

The centralised sewage treatment technologies have proven to be expensive, complex and are failing to cater to the total wastewater generated. The untreated/partially treated wastewater makes its way to the water body causing immense degradation of the ecosystem and the environmental health.

Need is for sustainable wastewater treatment technologies - to locally treat the sewage and also reuse/recycle. The decentralised sewage treatment can be both electro-mechanical system that have higher energy requirement or natural systems with less or no energy requirement.

CSE has reviewed and documented select case studies that present innovative, sustainable and affordable ways treating the sewage locally including reuse/recycle. The case studies comprise of the wastewater treatment systems which have been implemented at individual, community/cluster and at municipal level. The case studies documented discuss the principle, salient features, and performance indicators and provide details of individuals or agencies/institutions who have implemented the system

The cost comparison of the natural technologies listed under decentralised sustainable wastewater management practices has been presented in the table

Wastewater treatment is a process used to remove contaminants from wastewater and convert it into an effluent that can be returned to the water cycle. Once returned to the water cycle, the effluent creates an acceptable impact on the environment or is reused for various purposes (called water reclamation).[1] The treatment process takes place in a wastewater treatment plant. There are several kinds of wastewater which are treated at the appropriate type of wastewater treatment plant. For domestic wastewater (also called municipal wastewater or sewage), the treatment plant is called a sewage treatment plant. For industrial wastewater, treatment either takes place in a separate industrial wastewater treatment plant, or in a sewage treatment plant (usually after some form of pre-treatment). Further types of wastewater treatment plants include agricultural wastewater treatment plants and leachate treatment plants.

Sewage treatment plant (a type of wastewater treatment plant) in Cuxhaven, Germany
Processes commonly used include phase separation (such as sedimentation), biological and chemical processes (such as oxidation) or polishing. The main by-product from wastewater treatment plants is a type of sludge which is usually treated in the same or another wastewater treatment plant.[2]:Ch.14 Biogas can be another by-product if anaerobic treatment processes are used.

Some wastewater may be highly treated and reused as reclaimed water. The main purpose of wastewater treatment is for the treated wastewater to be able to be disposed or reused safely. However, before it is treated, the options for disposal or reuse must be considered so the correct treatment process is used on the wastewater.
The term "wastewater treatment" is in the literature often used to mean "sewage treatment". Strictly speaking, wastewater treatment is broader than sewage treatment.

Types

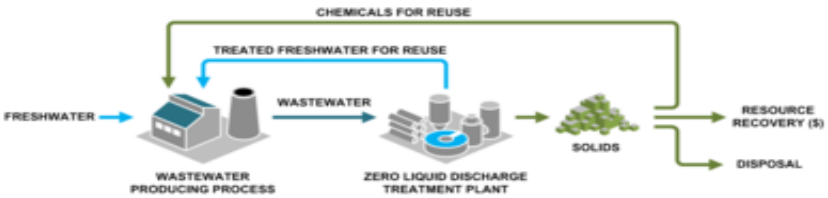
Wastewater treatment plants may be distinguished by the type of wastewater to be treated. There are numerous processes that can be used to treat wastewater depending on the type and extent of contamination. The treatment steps include physical, chemical and biological treatment processes.

Types of wastewater treatment plants include:

Sewage treatment plants
Industrial wastewater treatment plants
Agricultural wastewater treatment plants
Leachate treatment plants
Sewage treatment plants
This section is an excerpt from Sewage treatment
It has been suggested that Sewage be merged into this article. (Discuss)
Sewage treatment (or domestic wastewater treatment, municipal wastewater treatment) is a type of wastewater treatment which aims to remove contaminants from sewage. Sewage contains wastewater from households and businesses and possibly pre-treated industrial wastewater. Physical, chemical, and biological processes are used to remove contaminants and produce treated wastewater (or treated effluent) that is safe enough for release into the environment. A by-product of sewage treatment is a semi-solid waste or slurry, called sewage sludge. The sludge has to undergo further treatment before being suitable for disposal or application to land. The term "sewage treatment plant" is often used interchangeably with the term "wastewater treatment plant".[4]

For most cities, the sewer system will also carry a proportion of industrial effluent to the sewage treatment plant that has usually received pre-treatment at the factories to reduce the pollutant load. If the sewer system is a combined sewer, then it will also carry urban runoff (stormwater) to the sewage treatment plant. Sewage is conveyed in sewerage which comprises the drains, pipework and pumps to convey the sewage to the treatment works inlet. The treatment of municipal wastewater is part of the field of sanitation. Sanitation also includes the management of human waste and solid waste as well as stormwater (drainage) management.[5]

At the global level, an estimated 52% of municipal wastewater is treated.[6] However, wastewater treatment rates are highly unequal for different countries around the world. For example, while high-income countries treat approximately 74% of their municipal wastewater, developing countries treat an average of just 4.2%.[6] Wastewater that is discharged untreated into the environment can cause water pollution.



Agricultural wastewater treatment plants

This section is an excerpt from Agricultural wastewater treatment[edit]

Anaerobic lagoon for treatment of dairy wastes

Agricultural wastewater treatment is a farm management agenda for controlling pollution from confined animal operations and from surface runoff that may be contaminated by chemicals in fertilizer, pesticides, animal slurry, crop residues or irrigation water. Agricultural wastewater treatment is required for continuous confined animal operations like milk and egg production may be performed in plants using mechanized treatment units similar to those used for industrial wastewater; but where land is available for ponds, settling basins and facultative lagoons may have lower operational costs for seasonal use conditions from breeding or harvest cycles.[9]:6–8

Many farms generate nonpoint source pollution from surface runoff which is not controlled through a treatment plant. Farmers can install erosion controls and implement nutrient management plans to control runoff pollution.[10][11]:pp. 4–95–4–96 Nonpoint source pollution includes sediment runoff, nutrient runoff and pesticides. Point source pollution includes animal wastes, silage liquor, milking parlour (dairy farming) wastes, slaughtering waste, vegetable washing water and firewater.

Leachate treatment plants

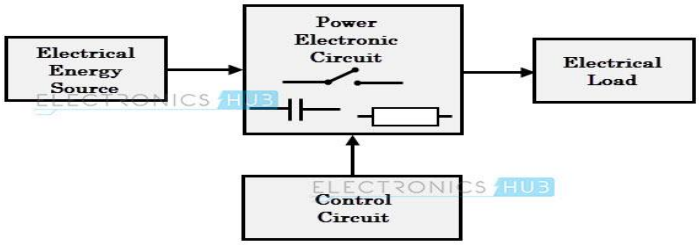
Leachate treatment plants are used to treat leachate from landfills. Treatment options include: biological treatment, mechanical treatment by ultrafiltration, treatment with active carbon filters, electrochemical treatment including electrocoagulation by various proprietary technologies and reverse osmosis membrane filtration using disc tube module technology.

14.2 Electrical Engineering

14.2.1 Design of power electronics converters

Power electronic technology deals with processing and controlling the flow of electrical energy in order to supply voltages and currents in a form that optimally suited for end user's requirements.

A power electronic converter uses power electronic components such as SCRs, TRIACs, IGBTs, etc. to control and convert the electric power. The main aim of the converter is to produce conditioning power with respect to a certain application.



The block diagram of a power electronic converter is shown in figure above. It consist of an electrical energy source, power electronic circuit, a control circuit and an electric load. This converter changes one form of electrical energy to other form of electrical energy.

The power electronic circuit consists of both power part and control part. Power part transfers the energy from source to load and it consists of power electronic switches (SCR or TRIAC), transformers, electric choke, capacitors, fuses and sometimes resistors.

The control circuit or block regulates the elements in the power part of the converter. This block is built with a complex low power electronic circuit that consists of either analog or digital circuit assembly.

Power electronic converters perform various basic power conversion functions. This converter is a single power conversion stage that can perform any of the functions in AC and DC power conversion systems.

Depending on the type of function performed, power electronic converters are categorized into following types.

AC to DC = Rectifier: It converts AC to unipolar (DC) current
DC to AC = Inverter: It converts DC to AC of desired frequency and voltage
DC to DC = Chopper: It converts constant to variable DC or variable DC to constant DC
AC to AC = Cycloconverter, Matrix converter: It converts AC of desired frequency and/or desired voltage magnitude from a line AC supply.
These types of power electronic converters may be found in a wide variety of applications such as switch mode power supplies (SMPS), electrical machine control, energy storage systems, lighting drives, active power filters, power generation and distribution, renewable energy conversion, flexible AC transmission and embedded technology.

14.2.2 Electronics soft starter for 1/3 phase i.m for agricultural

A soft starter is any device that controls the acceleration of an electric motor using controlling the applied voltage.

An Induction motor can self start owing to the interaction between the rotating magnetic field flux and the rotor winding flux, causing a high rotor current as torque is increased. As a result, the stator draws high current and by the time the motor reaches to full speed, a large amount of current (greater than the rated current) is drawn and this can cause heating up of the motor, eventually damaging it. To prevent this, motor starters are needed.

Motor starting can be in 3 ways

Applying full load voltage at intervals of time: Direct On Line Starting
Applying reduced voltage gradually: Star Delta Starter and Soft starter
Applying part winding starting: Autotransformer starter

Defining Soft Starting

In technical terms, a soft starter is any device that reduces the torque applied to the electric motor. It generally consists of solid-state devices like thyristors to control the application of supply voltage to the motor. The starter works on the fact that the torque is proportional to the square of the starting current, which in turn is proportional to the applied voltage. Thus the torque and the current can be adjusted by reducing the voltage at the time of starting the motor.

There can be two types of control using soft starter:

Open Control: A start voltage is applied with time, irrespective of the current drawn or the speed of the motor. For each phase, two SCRs are connected back to back and the SCRs are conducted initially at a delay of 180 degrees during the respective half-wave cycles (for which each SCR conducts). This delay is reduced gradually with time until the applied voltage ramps up to the full supply voltage. This is also known as Time Voltage Ramp System. This method is not relevant as it doesn't control the motor acceleration.

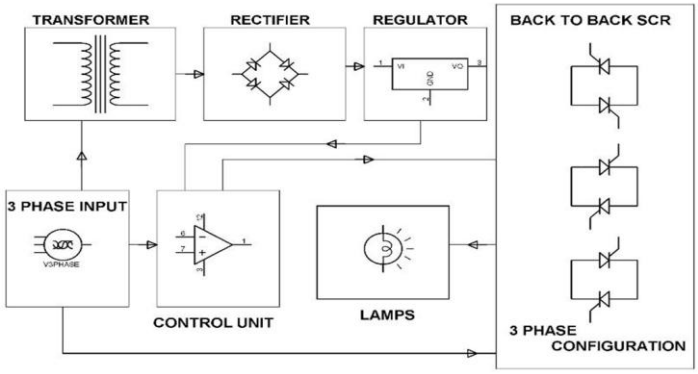
Closed-Loop Control: Any of the motor output characteristics like the current drawn or the speed is monitored and the starting voltage is modified accordingly to get the required response. The current in each phase is monitored and if it exceeds a certain set point, the time voltage ramp is halted.

Thus the basic principle of the soft starter is by controlling the conduction angle of the SCRs the application of supply voltage can be controlled.

2 Components of a basic soft starter
Power switches like SCRs which need to be phase controlled such that they are applied for each part of the cycle. For a 3 phase motor, two SCRs are connected back to back for each phase. The switching devices need to be rated at least three times more than the line voltage.
Control Logic using PID controllers or Microcontrollers or any other logic to control the application of gate voltage to the SCR, i.e. to control the firing angle of SCRs to make the SCR conduct at the required part of the supply voltage cycle.

Working Example of Electronic Soft Start System for 3 phase induction motor
The system consists of the following components.

Two back to back SCRs for each phase, i.e. 6 SCRs in total.
Control Logic circuitry in the form of two comparators- LM324 and LM339 to produce the level and the ramp voltage and an optoisolator to control the application of gate voltage to each SCR in each phase.
A power supply circuitry to provide the required dc supply voltage.



Block Diagram showing Electronic Soft Start System for 3 phase Induction Motor
The level voltage is generated using the comparator LM324 whose inverting terminal is fed using a fixed voltage source and the noninverting terminal is fed through a capacitor connected to the collector of an NPN transistor. The charging and discharging of the capacitor cause the output of the comparator to change accordingly and the voltage level to change from high to low. This output level voltage is applied to the noninverting terminal of another comparator LM339 whose inverting terminal is fed using a ramp voltage. This ramp voltage is produced using another comparator LM339 which compares the pulsating DC voltage applied at its inverting terminal to the pure DC voltage at its noninverting terminal and generates a zero voltage reference signal which is converted to a ramp signal by the charging and discharging of an electrolyte capacitor.

The 3rd comparator LM339 produces a High pulse width signal for every high-level voltage, which decreases gradually as the level voltage reduces. This signal is inverted and applied to the Optoisolator, which provides gate pulses to the SCRs. As voltage level falls, the pulse width of the Optoisolator increases and more the pulse width, lesser is the delay and gradually the SCR is triggered without any delay. Thus by controlling the duration between the pulses or delay between applications of pulses, the firing angle of SCR is controlled and the application of supply current is controlled, thus controlling the motor output torque.

The whole process is an open-loop control system where the time of application of gate triggering pulses to each SCR is controlled based on how earlier the ramp voltage decreases from the level voltage.

Advantages of Soft Start
Now that we have learned about how an electronic soft start system works, let us recollect a few reasons why it is preferred over other methods.

Improved Efficiency: The efficiency of the soft starter system using solid-state switches is more owing to the low on-state voltage.

Controlled startup: The starting current can be controlled smoothly by easily altering the starting voltage and this ensures smooth starting of the motor without any jerks.
Controlled acceleration: Motor acceleration is controlled smoothly.
Low Cost and size: This is ensured with the use of solid-state switches.

Induction motor is widely used in industrial as well asdomestic applications. Due to the extensive use of inductio motors in industrial and residential applications, precise andsmooth control of induction motor is essential requirement.High inrush current may cause adverse effects on induction motors. The problem is more severe in areaswhere the loads represent a high portion of the power demand. Medium or large induction motors draw such large current during direct-on-line starting process that it can pull down the voltage ofthe power supply net, whichwill severely influence the other electrical devices in the same power net. On the other hand, it also makes the temperature of motor become higher, which may lead to motor damage. Therefore, the motor's starting process needs to be controlled to reduce the start-up current to safe value. The idea behind a soft start is to gradually allow the motor current to rise until the motor reaches its steady state. This reduces start-up current and also reduces start-up motor torque. With the development of power semiconductor technology, it is proposed to achieve the soft starting of induction motor.
Soft starter provides a reliable and economical of these problems by delivering a controlled release of power to the motor, thereby providing smooth, steeples acceleration and
deceleration. The damage to windings and bearings are reduced, resulting in an extended motor life. A soft starter for a three-phase induction motor, comprising semiconductor devices for controlling voltages applied to the motor in three ofthe phases by adjusting firing angles of semiconductor devices,wherein two semiconductordevices are connected in anti-parallelwith each other in each phase, are been used as shown in fig 1. The firing angle ofthe semi conductor devices is used for controlling the amount of energy supplied to the motor.

In principle, reducing the impressed voltage upon the motor during starting reduces the starting current and torque pulsations. This is due to the fact that the starting torque is approximately proportional to the square of the starting current and consequently it is proportional to the square of the starting voltage. Therefore, by properly adjusting the applied effective voltage during start up, the starting torque and current can be reduced.

However, the semiconductor devices have become a costdetermining factor of such a soft starter, so a soft starter having only one pair of such semiconductor devices for three of the phases is used for controlling the voltage applied to three-phase motors. This means that the remaining two phases is in the form of a conductor, which cannot be switched. Firing angle α is a nonlinear function of motor speed and torque and it is very tricky to find the exact value of for any motor speed and torque. This paper proposes a new starting topology for selection of firing angles for thyristors in voltage controlled induction motor. In this paper simulation and results have been presented for the proposed method.

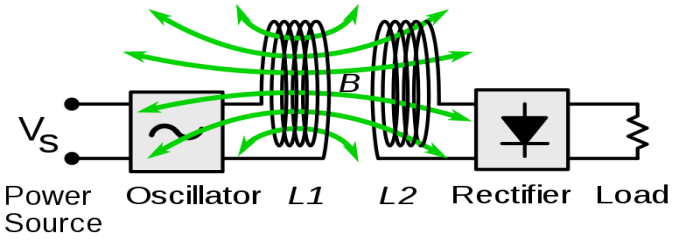
14.2.3 Advance wireless power transfer system

The Transfer of electrical power in reliable and efficient way is always challenging for the designers and engineers. Presently all electrical power from the generating stations to the distribution station is transferred by the uses of wires and underground cables. One of the major issues in these types of systems is the losses due to resistance of the material. Generally the

percentage of loss of power during the transmission and distribution is 26% [1]. In modern technology the use of portable device has increased such as mobile robots and electric vehicle.Mobility is the main concern of these equipment i.e. they are not connected to the main source of power. All these problems are the main motivation for researchers. Nikola Tesla was the first who introduce the concept of wireless power transfer [2]. But this technology from the time of Tesla is underdeveloped due to lack of funding and technology .But research from past few years has always going on and recent development has been observed in the field . Wireless power transfer can be achieved by several methods (discussed later). Here we discussed few methods such as induction coupling, resonating coupling, LASER technology for electrical power transfer.

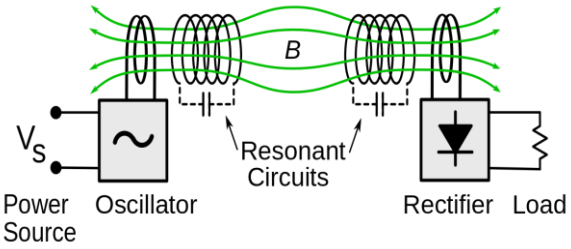
INDUCTIVE COUPLING

This type of WPT is simply based on inductive coupling between two coils. This is a type of near field technique measuring with appliance near the source. It is generally based on the principle of mutual induction, where two coils are placed vicinity to each other and there is no physical connection between these two coils. The simplest example is transformer where the transfer of energy takes place due to electromagnetic coupling. Each of these coils connected without wires and it has been an important and popular technology to transfer power without wires because of its simplicity and reliability. Based on this technology there are various application device has been already made including electric brush and charging pad for cell phones or laptop. But this kind of method also have some limitation i.e. the range can be very less upto few cm and separation distance is very less than the coil diameter



MAGNETIC RESONANCE COUPLING WPT

This is also one of the important method for transferring power based on near field technique. It generally overcome the disadvantage of upto some extent which arise in nonresonant inductive coupling. This type of coupling used the concept of resonance. At resonance we know that natural frequency and excitation frequency are same. This leads to the maximum amplitude, that means a maximum amount of energy is transferred between two coils. Here the receiverand transmitter coils are tuned to be at same resonant frequency .This allow us to transfer significant amount of power by increasing distance between coils [7]. These type of system are used for building mid range power transfer. Mid range can be specified by distance upto 10 times the diameter of the transmitting coil. Magnetic resonance coupling have several advantage such as efficiency increases with decrease in the radiation and power loss and range can be increase upto some meter and it is directional. The mainly disadvantage is that selection of resonance frequency which tunes with the natural frequency and it cannot be used for long range application.

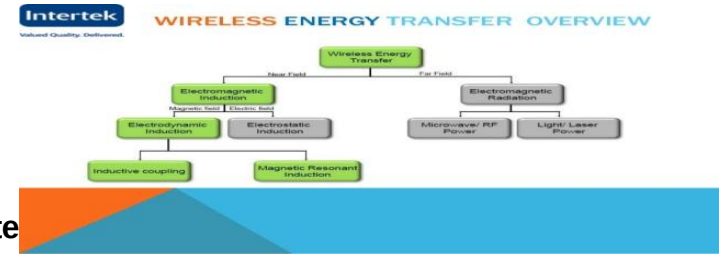


MICROWAVE WPT

This is one of the type of far-field technique of WPT which have range upto KM, with power transfer upto MW. This method uses microwave frequency ranging from 1GHZ to 1000GHZ generated from the microwave generator. First the microwave is generated by microwave generator which pass through the coax-waveguide adapter to the waveguide circulator .Then a tuner and directional coupler are used to separate wave according to their propagation direction. Then they are transmitted through antenna. At the receiverterminal, a receiver antenna receives which pass through a low pass filter to finally produce DC power. Based on
microwave WPT system the present application is solar power satellite [8]. Advantages of microwave WPT are that it is used for several KM range with transferring high amount of power. Disadvantage are generally that the radiation effect to human beings from the microwave electromagnetic radiation

LASER WPT

This is also one of the types of far- field technique, where the power is transmitted through LASER beams. For power transmission firstly the electrical energy is converted to high LASER beams and at receiving side, these LASER beams are converted to electricity by using photo voltaic cells. This type of WPT has several disadvantage i.e. why it is not used for electrical power transmission because LASER beams can easily harms human being if they cut LASER beam path. Therefore these are generally used for military weapondevelopment and space research



14.2.4 Industrial te

Temperature controllers are used in most of the manufacturing industries. The industries like textile mill, pharmaceutical industry, oil refinery etc. all requires temperature controller. The temperature controllers are used to maintain constant temperature of process or plant or any material. In such temperature controller system there is one reference temperature called set point or set temperature that is the desired temperature that must be maintained. This reference temperature is set by external means. Also it can be always adjustable according to requirements. Once this temperature is set the system tries to maintain it by sensing the current temperature and controlling it using heater, cooler or compressor etc.

It senses current temperature, compares it with reference temperature and generates error signal. Then based on this error signal it controls heating element (or cooling element). If set temperature is more then error signal is negative and vice versa.

So here I have given one such temperature control system that senses current temperature using temperature sensor. It compares it with the set temperature that is set by external reference. And it gives indication of error signal as positive or negative.

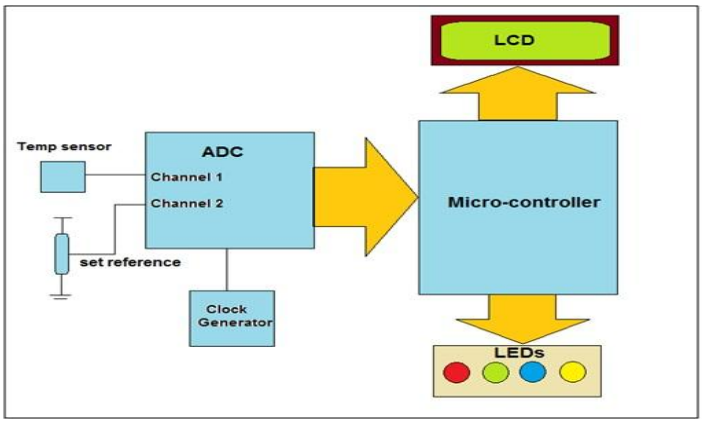
· If error is positive that means current temperature is more than set temperature that has to be

reduced

· If error is negative that means current temperature is less than set temperature and it is required to increase it

System Block Diagram:

Overview of Industrial Temperature Control System



As shown in above figure, major building blocks of system are temperature sensor, Analog to Digital Converter (ADC), micro-controller, LCD, clock generator and LED indicators.

Temperature sensor: It's a transducer. It gives corresponding voltage (or current) output as change in temperature. It can be calibrated to degree Celsius. Otherwise it has to be calibrated first.

Reference potentiometer: It sets reference temperature between min to max value. The system operation depends upon this set temperature value.

ADC: Its analog to digital converter with built in multiplexer. It takes two analog inputs one from temperature sensor and another from reference potentiometer. It gives 8-bit digital output corresponding selected analog input. To get the digital output of any one channel, micro controller will select the required channel and takes digital output.

Clock generator: ADC requires clock signal for its operation. This clock signal is generated by IC555 based clock generator.

Micro controller: it controls operation of ADC and LCD. It takes digital output of both channels and displays them on LCD. It takes suitable decision by comparing two temperatures. Also it gives different indications on LEDs

LED indicators: shows different indications like

Table listing LED Indicators in Industrial Temperature Control System

Reading channel 1 temperature	RED LED
Reading channel 2 temperature	GREEN LED
Sensor temperature is more than set temperature (+Ve error)	BLUE LED
Sensor temperature is less than set temperature (-Ve error)	YELLOW LED

Connections
Connections: –

· LM35 temperature sensor is connected to channel 2 (IN1) of ADC0808. It will sense the current temperature and gives analog voltage output as 10 mV / oC

· A 1K pot is connected to channel 1 (IN0) of ADC0808. It will set the reference temperature between 0 to 255

· The data signals (OUT1 – OUT8) are connected to port P1 of microcontroller 89C51. So micro controller gets digital value of current/set temperature on port P1.

· The control signals START, EOC and OE of ADC0808 are connected to port P3 pins P3.4, P3.5 and P3.6 respectively. These pins are used to control ADC operation like start conversion, enable output, check end of conversion etc.

· The channel select pins ADD A, ADD B, ADD C and ALE pin are also connected to port P3 pins P3.0 to P3.4. these pins selects one of the 8 input channel for conversion

· IC555 is connected in astable mode. Its output frequency is approx 50 KHz. Its output is given to clock input of ADC. IC555 generates required clock signal for ADC0808

· Port P0 is connected to data pins (D0 – D7) of LCD. So data to be displayed on LCD or commands are given to LCD from P0. Two control pins RS and E of LCD are connected to P2.7 and P2.7 respectively. RW pin is grounded.

· A 1K pot is connected with LCD as shown. It varies the brightness.

· Port P2 pins P2.0 to P2.3 drives four different colour LEDs as shown. So these pins gives various indications through LEDs

· A 12 MHz crystal along with two 33 pf capacitors is connected to crystal input pins XTAL1 and XTAL2. This gives basic clock of 12 MHz to micro controller.

Working & Operations
Working and operation:

· Microcontroller first latches address of channel 1 in to ADC. Then it asserts start signal to start conversion. It waits for end of conversion (EOC) signal from ADC. When it gets it, it takes digital input from P1 and after processing it displays it on LCD as set temperature

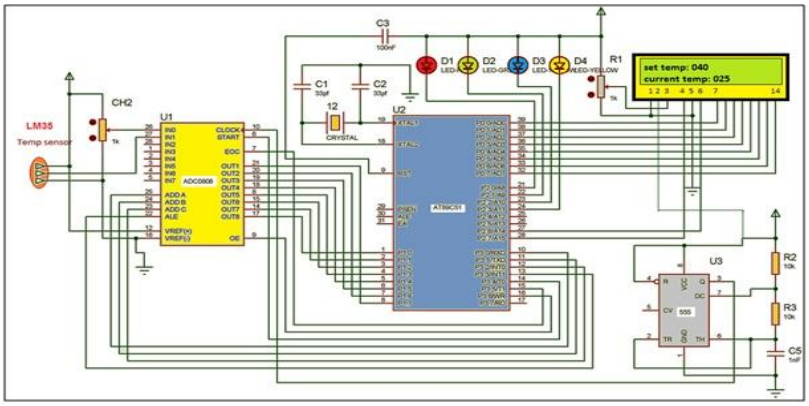
· Next microcontroller latches address of channel 2. Again it asserts start signal and waits for EOC. When it gets EOC, takes digital input – process it – displays it on LCD as current temperature

· Then microcontroller take difference of these two temperature values that is the error. If error is positive then it indicates this on BLUE LED. If error is negative then it gives indication on YELLOW LED

· This process is continuously repeated after every two second

Further extension

The project can be further extended. The error signal output can be used to control any heating or cooling element that will change the temperature. The change in temperature is continuously monitored using temperature sensor. So this becomes complete close loop control system. The system will try to automatically maintain the set temperature value by getting feedback and generating +Ve or –Ve error signal.



14.2.5 Accidents alerts in morden traffic control system-camera surveillance system

Having the best video surveillance system protecting your property not only provides evidence in the event of a crime but also deters criminal activity in the first place and increases the safety of your employees and customers.

Understanding all of the elements that make up a closed-circuit television (CCTV) system and how these systems work will go a long way in helping you make the best choice for your business.

Looking for new security cameras for your business? Click the button below to download our free Security Camera Cheat Sheet to help you decide which type is right for your business.

What Makes a Video Surveillance System?
A video surveillance system / CCTV is composed of a system of cameras, monitors/display units, and recorders. Cameras may be either analog or digital with a host of possible design features which will be discussed momentarily.

These systems can be applied to both interior and exterior areas of a building or property. They can operate 24/7, can be designed to only record in response to movement, or set to record during

specific times of the day.

The cameras may be conspicuous and out in the open to deter crime, or they can be more hidden and discreet to record evidence with fewer chances of being tampered with. However, it is essential to note that laws regulate the placement of security cameras within the workplace. These laws vary from state to state, so be sure to contact your state's labor agency to learn what your restrictions are.

Footage can be monitored live by a security guard, monitored remotely if using an IP camera and system (more on that in a moment) by a monitoring company, or can simply be recorded and stored by a DVR (digital video recorder) or NVR (network video recorder) for review later should the need arise.

Finally, video surveillance systems are closed – this means its signals are not broadcast so that others could intercept and view the content. Only authorized users can access the recorded material.

What Types of Cameras Can Make up a Video Surveillance System?
There is an overwhelming variety of cameras that can be used for video surveillance systems. All of your camera options will, however, fall into either the analog or IP (internet protocol)/digital category:

Analog: analog cameras are traditional cameras that usually only offer lower resolution and require coaxial cable hook-ups for each camera to the DVR and separate wired connections for power. Additionally, to ensure better quality footage, the cameras must be located near the DVR. Their range of vision is typically smaller than IP/digital cameras, meaning more cameras may be needed to cover the same amount of space than one IP camera can cover. Finally, the recorded footage will further distort if an attempt is made to enlarge an image.

However, these cameras are cheaper, and they do have a wide variety of design options to ensure that you can find what you need at a reasonable price. Additionally, they won't take up any of your network's bandwidth, unlike IP/Digital cameras.

IP/Digital: Internet Protocol cameras are digital cameras that possess much higher resolution and clearer images than analog cameras do. They connect to an NVR through a power over ethernet (PoE) switch and only use one cable to connect to both the NVR and the power source.

IP cameras do not need to be near the NVR to produce quality images, and their pictures can be digitally enlarged without severely degrading the quality of the image. Finally, IP cameras have a broader range of vision and many additional special features such as motion-triggered auto-recording, object recognition, and smart-technology options.

The downside to the digital IP cameras is that they are significantly more expensive, they do take up bandwidth from your network to transmit the images, and they require more storage. Furthermore, though they provide the convenience of being Wi-Fi cameras, which makes their feed remotely accessible, it also makes them hackable, so special attention needs to be paid to their security features.
For both analog and digital camera options, additional specialized features exist, such as cameras

that can record quality images in poor lighting, multiple direction cameras, cameras that can capture long-distance images, and more.

Following is just a sampling of specialized camera options:

Internal / External Dome Cameras: vandal-resistant and most common for basic indoor/outdoor surveillance, dome cameras prevent criminals from knowing which direction the camera may be pointing.

PTZ Pan/Tilt/Zoom Cameras: these cameras allow a live surveillance operator or security guard to actively move the camera left or right, up or down, or zoom the lens farther or closer.

Discreet Cameras: as their name implies, these cameras are hard to see and provide clear footage. They can be disguised as a variety of objects, can be mounted or propped, and are ideal for indoor use.

Bullet Cameras: long and cylindrical in shape, these are most efficient for outdoor use, as they provide clear long-distance views.

Thermal Image / Infrared Cameras: used by many airports, seaports, and premises that provide critical infrastructure, infrared cameras can provide quality 24-hour surveillance regardless of the time of day and light quality. They can capture figures moving even in pitch-black darkness, and the lenses have a long-distance range of over 900 ft.

ANPR/LPR Cameras: Automatic Number Plate Recognition (ANPR) or License Plate Recognition (LPR) cameras are highly specialized cameras able to read and store data on license and registration plates.

High Definition Cameras: provide such high-resolution images that they are mostly used in establishments with very high risks, such as casinos and banks.

How is a Video Surveillance System Monitored?
There are several ways in which the footage produced by a video surveillance system may be monitored.

Perhaps the most traditional and familiar method is by having a security guard or team who is responsible for viewing the live footage on the monitors/display units that are connected to the recorder. For the analog systems using coaxial cables to connect the cameras to their DVRs and display units, the monitors are often a monochrome screen, but they also may be HD with color.

However, with a vast majority of today's security cameras being digital internet protocol cameras, the feed is now available via one's network. So, while it may still be monitored on an official display unit, it can also be accessed via computers and mobile devices. Furthermore, some systems and cameras have the ability to wait until they detect movement and then send mobile notifications to authorized personnel who can then check the live feed.

How do Video Surveillance Systems Record?
Again, this depends on the type of system and how you have it set up.

In general, when a CCTV camera picks up movement, it will begin recording the footage so that it can be reviewed later. If you feel it is necessary for your property, you can choose to have the system record every second of footage, but be aware that this takes up a massive amount of storage.

For systems using analog cameras, the footage will be sent from the camera to a DVR via a coaxial cable. The DVR, which has replaced old analog recorders with videotapes, will record footage from the analog cameras in digital format. Once the DVR's hard disk storage is full, older images will be recorded over by newer ones, starting with the oldest images first.

For video surveillance systems using IP cameras, NVR will be used. The cameras and NVR are connected via a router or network switch but otherwise, work similarly. The recorded footage is encrypted and stored on a hard disk and can be viewed through a connected display unit, web browser, or mobile app.

New Technologies Available for Video Surveillance Systems
As already evident from above, modern technologies have greatly enhanced the capabilities of video surveillance systems.

Video surveillance cameras can now offer facial recognition, smart cameras – like PTZ cameras with smart tracking that enables them to ID and follow people or vehicles until they are out of range – thermal cameras, night vision, high def full color, and a variety of smart technologies that allow cameras to send immediate notifications regarding specific types of activities.

Needless to say, with all that advanced technology has made available, you can have as simple or complex a system as you need to keep your facility safe.

Don't Know Where to Start?
There are so many options when it comes to updating, replacing, or choosing a new video surveillance system, it can be overwhelming.

Knowing exactly how many cameras you need and the type of footage and capabilities you would like your cameras to have will certainly help you in your search, but be sure to talk to an expert.

Koorsen Fire & Security has security experts ready to help you identify what types of cameras will best meet your needs. They can also help you get the most out of your current analog system while helping you transition to the use of more advanced technologies.

Give the experts at Koorsen a call today to get started

15.0 Smart and Sustainable features of designs and Impact on society.

Sr No.	Design Name	Amount Period	Expenditure Rs.	Benefits
1.	Bus Station	Immediately	310890	It will helpVillagers in transportation It eases the load on the one bus stop and help to reduce noise pollution by easy control of less crowd.
2.	UG water Tank	Immediately	275000	To raise ground water level To store water to avoid water scarcity To achieve Sustainability
3.	Gate	Immediately	317502	-
4.	OH water Tank	Immediately	3802465	To raise ground water level To store water to avoid waterscarcity To achieve Sustainability
5.	Pipe Culvert	Immediately	89000	I will help village in Purity water supplied.

16.0 Survey By Interviewing With Talati And Sarpanch

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

CHAPTER- 16

Sr.	Questions	Yes/ No	Remarks
1	What are the sources of income in village?	Yes	Agriculture, Dairy, cattle
2	What are the chances of employment in village?	Yes	farming, business etc
3	What are the special technical facilities in village?	Yes	roades & power supply
4	Is any debt on village dwellers?	No	
5	Are village people getting agricultural help?	Yes	Agriculture dep.
6	Is women health awareness Program organized in village?	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	Anganwadi is there
10	Are village people aware about child vaccination and done to each and every child as per norms?	Yes	
11	Women help line number information is provided. to village people?	Yes	
12	Is water scarcity in village? How many days per year?	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.	No	
18	Is village improvement is observed in comparative scenario from past to present?	Yes	In last few years dev. Pmorit is very impres
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

સરપંચ
કુણધેર ગ્રામ પંચાયત
તા. જિ. પાટણ

17.0 Agriculture Activities and Agro Industry, Alternate Technics and Solution

1. Urban Agriculture, Smart Design, and Vertical Farms

The big advantage that urban farming touts is the innovative reimagining and utilization of space. Urban farms might be as humble as your traditional, outdoor community garden. On the other hand, they might be as complex and futuristic as well-regulated, self-contained, environmentally controlled pods that are stacked on top of each other.

In one of the latest trends in urban farming, vertical farming, we've begun to realize yields that are nearly 10 times more efficient than traditional agriculture. "Vertical farming doesn't promise to radically change the way we farm, only make it more efficient, productive, and take up less space," writes Jelor Gallego with Futurism.com.

Traditional farmers could take a lesson from vertical farmers in their buildings and design, adopting the tenets of smart design to reduce waste and increase yield. Josh Tittle, writing on smart and sustainable barn design, reminds that it's easy to get carried away by what you want rather than what you need.

" … more space means more energy that's needed for heat and light, which in turn makes for higher costs and more wasted resources. Instead of building a larger structure, consider what it is you need at the moment and design an efficient space for that purpose," he writes.

As we continue to overpopulate our world and take up space, we'll need to rely on efficiency in spaces and growth to continue to feed ourselves. Unfortunately, no matter how high we build or how intelligently we design, human beings are causing extensive damage and change to our environments, impacting our ability to raise healthy, mature crops.

2. The Drones & the Bees

Climate change is a massive problem for human beings that, perhaps, hasn't been fully realized yet — but it's no secret that we're on an extremely destructive path.

"If climate change continues to worsen, food shortages could drive prices higher even in more developed countries like the U.S., leading to a public health crisis in the form of global food shortages and waves of hunger," write the experts at the University of Reno, Nevada in their blog. "As such, public health officials should turn their attention to exploring efforts to shore up food reserves and alternative forms of agriculture."

One of the problems that it seems everybody is familiar with is the problem of disappearing bees — Time magazine claims that there are more than 700 species of North American Bee that headed toward extinction. This could spell disaster, as bees "play an important economic role as pollinators helping sustain agricultural production," they write. "In the United States, that value reaches billions of dollars annually, according to a

2015 White House report."

Fortunately, drones are now being used in experiments to, hopefully, supplement the pollination efforts that bees have traditionally completed.

"The Beak & Skiff Apple Orchard in LaFayette has become the first apple orchard in the world to pollinate its trees using a drone, according to the start-up company that developed the technology," writes Rick Moriarty with Syracuse.com.

Pollination aside, there are plenty of ways that that agriculture could utilize drones, including aerial drone photography for a quick look at fields, automated crop harvest, and even as delivery drones in the future. This will be further compounded by a further rise in automation, A.I., and the IoT.

3. Artificial Intelligence, IoT, and Automation

When we think about the future of driving, we generally think about cars on the road and commuters that aren't required to keep their hands on the wheel — because A.I. is doing the driving. What we generally don't think about, however, is driverless vehicles on the farm. Nevertheless, a company called Smart Ag has announced functional driverless tractor technology in the form of "AutoCart" software, according to Matthew J. Grassi with Precision Ag.

"This software application fully automates a grain cart tractor, which provide farmers much needed assistance during the demanding harvest season," he writes. "Colin Hurd, the founder and CEO of Smart Ag, said the innovative technology will allow farmers to automate their existing equipment and maximize its efficiency and capacity – regardless of manufacturer."

The AutoCart software is actually a cloud-based platform, meaning that these automated ag vehicles will join the worldwide internet of things (IoT)Of course, automated vehicles are just one facet of machine learning and IoT innovation in agriculture. Kristin Houser reports that Chinese farmers have recently begun "testing a new AI system that uses a combination of machine vision, voice recognition, and temperature sensors to keep track of pigs' location, health, and wellbeing."

Other use-cases include advanced detection of diseases in crops using many of the same techniques.

It's important to remember that much of AI's true potential has yet to even be realized and that the field is still very much in its infancy. A little further along, however, is blockchain technology — the same tech behind the latest financial phenomenon, bitcoin and other cryptocurrencies.

4. Blockchain Technology

While most people know the blockchain for its application in cryptocurrency finance, the agricultural world is beginning to get to know this innovative new technology in another capacity.

Commodity traders Louis Dreyfus Co. (LDC) recently completed the first blockchain-powered agricultural trade, selling and delivering 60,000 tons of soybeans to China in December 2017. This trade represents how the blockchain will likely be used in agriculture early on, with decentralized transactions and self-executing

smart contracts.

“Most of the early applications of blockchain in agriculture have to do with traceability and supply chains; a blockchain ledger could record and update the status of crops from planting to harvest to storage to delivery,” writes Remi Schmaltz with AgFunder News. “The upside for large operations is a secure, immutable ledger that ensures you never lose a load. The status of all your crops is available in real time.”

Another way that the blockchain can be used is for resource management, like tracking machinery maintenance records or for tracking other sensors and equipment.

5. CRISPR and Genetic Editing

Scientists have recently begun utilizing CRISPR/Cas9 to do precise genetic “surgeries,” so-to-speak, allowing them to target and alter the genome of an organism by cutting out or replacing specific parts of a DNA strand’s genetic sequence. Medical News Today reports that genetic editing via this avenue has been shown to lower cholesterol in monkeys, and could be used to eradicate the herpes virus in humans.

Now, CRISPR is being used to change a cow’s gut microbes to try and reduce the amount of methane they are producing as well as how large they get.

“Tweaking cow microbiomes to make more meat on less food could make the meat industry more efficient and more profitable,” writes Chelsea Gohd with Futurism.com. “Given that methane has roughly 25 times the heat trapping ability of carbon dioxide, reducing cows’ methane production could also have a serious impact on the environment.”

Scientists have also begun engineering crops that require less water and that grow more food. Of course, there could be unforeseen consequences when it comes to messing with genetics in any environment or ecosystem — we’ll have to be extremely cautious that we don’t create more problems in an attempt to solve a few.

These are just a couple of ways that innovative agricultural practices are changing our future, and making the world a more liveable place. Without these innovations, it’s worth mentioning that climate change’s effect on crop growth and the threat of overpopulation could decimate the human race. Innovation in agriculture isn’t just interesting — it’s essential to our survival

18.0 Social Activities – Any Activates Planned By Students

1) First women Panchayat of Dholpur District :

First women Panchayat was held on dated 1st May 2014 at Danora village for village development planning. In this meeting womens are awared about the health and hygiene. Also acception of women for the development was understuod by Dr. Satyapal Singh Meenaji (IRS) and Prof.Priyannand Agale. Womens unanimously rasis the issue of open defection .Later on first priority would be given for construction toilet.

2) Gram Sabha

Gram Sabha plays a vital role in the development of Dhanora. Speciality of Gram Sabha is at each meeting only one topic is discussed wile one person putting his view no one interrupt this is the major reason of success.

3) World Environment Day 2016:

FIrst time in the History of village World Environment day was celebrated in the presence of Dr. Pradeep Gawande(IAS),Mr Rajesh singh (IPS,SP Dhaulpur),Mr Kishan Sahay (IPS),Dr. Sataypal Singh Meena (IRS),Mr.Budhram Meena (CEO,Dhauipur),Mr K C Meena(CTO Dhaulpur) Mr Malinga Singh (MlA Bari) Mrs Rani Kohli (MLA Basari) Prof Priyanand Agale (Pioneer of Eco Revolution movment) villagers .Villagers shows committment for environmental conservation.

4) Educational Program

SBGBT conducted the Shiksha Pawo Ghyan Badawo competion amongs the studes its prize distribution was done with gracious hands of Dr. Satayapal Singh Meenaji , Prof.Priyanand Agale, MLA Mrs Rani Kohli .

19.0 KUNGHER VILLAGE SAGY Questionnaire Survey form with the Sarpanch Signature

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Kunghes Gram Panchayat: Kunghes Ward No. ____

Block: Patan District: Patan

State: Gujrat L S Constituency: ____

1. Family Identity and Size

Name of Head of Household	Thakos lalaji vajaji							Male/ Female	M
SECC Survey ID:		Family Size	5	Over 18	3	6 to 18	2	Under 6	

2. Category & Entitlement Details (Tick as appropriate)

Social Category[1]		Life Insurance	1. All Adults 2. Some Adults 3. None	AABY	1. Yes 2. No	Kisan Credit Card	~~Yes~~ / No
Poverty Status Year[2]:	1. BPL 2. APL	Health Insurance	1. All Adults 2. Some Adults 3. None	RSBY	1. Yes 2. No	MGNREGS Job Card Number	
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]
Thakas lalaji vajaji	48	M	N	Y	-	Y	Y	Y
Thakos vishram lalaji	25	M	N	N	-	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
Het thakkes	14	M	N	N	-	N	8	N
Meet patel	13	M	N	N	-	Y	11	Y
-	-	-	-	-	-	-	-	-

4. Children below 6 years

Name	Age	Sex M/F/O	Disability Yes/No	Going to School (Y/N)	Going to AWC Y/N	De-worming Done	Fully Immu-nised Y/N	Mother's Age at the time of Child's Birth
Sameeksi Rajput	5	F	N	N	Y	Y	Y	28
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-

[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)

કુણધેર ગ્રામ પંચાયત
તા. જિ. પાટણ

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

5. Hand washing

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

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

7. Do members take Regular Physical Exercise

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

8. Consumption of Tobacco

	Smoking	Chewing
Adults		
Children		

9. House & Homestead Data

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

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

Source of Water		Distance
Piped Water at Home	Yes / No	
Community Water Tap	Yes / No	1
Hand Pump (Public / Private)	Yes / No	
Open Well(Public / Private)	Yes / No	
Other (mention):		

11. Source of Lighting and Power

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

12. Landholding (Acres)

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

13. Principal Occupations in the Household

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

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

15. Agriculture Inputs

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

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

Name	Unit	Quantity

17. Livestock Numbers

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

18. What games do Children Play

19. Do children play musical instrument (mention)

Schedule Filled By:
Principal Respondent:
Date of Survey:

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

I. Basic Information

a. Gram Panchayat: Kunghes

b. Block: Patan

c. District: Patan

d. State: Gujarat

e. Lok Sabha Constituency: -

f. Number of Wards in the Gram Panchayat: _____

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages:

Demographic Information

Number of Households 1342 Total Population 6261 Male 3282 Female 2979

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

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

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

IV. Sports Facilities in the Gram Panchayat

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

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 2

b. Number of villages without Angan Wadi Centres 0

Names of such villages: _____

c. Schools (Number)

Primary Private: 0 Primary Govt.: 1

Middle Private: 0 Middle Govt.: 1

Secondary Private: 0 Secondary Govt.: 1

Higher Secondary Private: 0 Higher Secondary Govt: 0

VI. Public Distribution System

	Item	Private Contractor	Women's SHG	Gram Panchayat	Cooperative	Other (Mention)	Location in GP (mention Location)	If outside GP, Location & distance from GP HQrs)
a.	Cereal (Rice/ Wheat/ Millets)							
b.	Kerosene							
c.	Other (mention)							

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

VII. Coverage of Villages under different Facilities & Services

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

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	303	d.	Pasture / Grazing Land		g.	Check Dam	0
b.	Irrigated Land	800	e.	Forests/ Plantations		h.	Wells/Bore Wells	1
c.	Un-irrigated Land	600	f.	Other Common Land		i	Tanks /Ponds	1

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

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

IX. Parameters relating to Households & Institutions

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

Name and Signature of Surveyor and Respondent'

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

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

4

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: kamghes

b. Ward Number: _____

c. Gram Panchayat: kamghes

d. Block: patam

e. District: patam

f. State: Gujrat

g. Lok Sabha Constituency: _____

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

i. Names of Habitations / Hamlets:

Demographic Information

Number of Households_____ Total Population_____ Male _____ Female _____

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	✓	
b.	Nearest Middle School	✓	
c.	Nearest Secondary School	✓	
d.	Kisan Seva Kendra	✗	
e.	Milk Cooperative /Collection Centre	✓	
g.	Health Sub Centre	✓	
h.	Bank	✓	
i.	ATM	✓	
j.	Bus Stop	✓	
k.	Railway Station	✗	

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

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	
m	Common Service Centre	X	
n	Veterinary Care Centre	—	

ii. Road Connectivity

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

If 3 mention the name of the habitations where not available: 1

iii. Drinking Water Facilities

a.Piped Water Supply Coverage to Habitations: 1 *(1-All 2-None 3-Some)*

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

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

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

iv. Coverage of Habitations under Waste Management System

a. Coverage under Covered Drains: 3 *(1-All 2-None 3-Some)*

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

b. Coverage under Open Drains: 2 *(1-All 2-None 3-Some)*

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

c. Coverage under Doorstep Waste Collection: *(1-All 2-None 3-Some)*

If 3 mention the name of the habitations not covered: 2

v. Coverage of Habitations under Electrification

a. Coverage under Household Connections: *(1-All 2-None 3-Some)*

If 3 mention the name of the habitations not covered: 1

b.Coverage under Street Lighting: All*(1-All 2-None 3-Some)*

If 3 mention the name of the habitations not covered: 1

vi. Sports Facilities in the Village

a.Number of Play Grounds in the Village (minimum size 200 square meters): 1

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 2

c. Schools (Number)

Primary Private: 0 Primary Govt.: 1

Middle Private: 0 Middle Govt.: 1

Secondary Private: 0 Secondary Govt.: 1

Higher Secondary Private: 0 Higher Secondary Govt: 0

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	900	d.	Pasture / Grazing Land		g.	Check Dam	0
b.	Irrigated Land	860	e.	Forests/ Plnatations		h.	Wells/Bore Wells	1
c.	Un-irrigated Land	600	f.	Other Common Land		I	Tanks /Ponds	1

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

Name and Signature of Surveyor and Respondent'

Surveyor	PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey

3.

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

(no subject)
1 message

yash patel <yashpatel96018@gmail.com> Tue, 17 Aug 2021 at 5:06 pm
To: add-collector-pat@gujarat.gov.in, ddo-pat@gujarat.gov.in, tdo-pat@gujarat.gov.in
Cc: rurban@gtu.edu.in

Respected sir/madam

We are students of m.k College of engineering research institute, Patan affiliated to Gujarat Technological University-GTU. GTU has been assigned to viswakarma Yojana-VY phase -VIII in which students survey various village and various design amenitics to deliver to them making them ideal for living better life per requirement &village problems statements.

Please find herewith attached
Detailed project report of KUNGHER

Student email ID

harshilp1885@gmail.com
yashpatel96018@gmail.com

From yash patel • yashpatel96018@gmail.com
To add-collector-pat@gujarat.gov.in
ddo-pat@gujarat.gov.in
tdo-pat@gujarat.gov.in
Cc rurban@gtu.edu.in
Date 17 Aug 2021, 5:06 pm
See security details

Respected sir/madam

We are students of m.k College of engineering research institute, Patan affiliated to Gujarat Technological University-GTU. GTU has been assigned to viswakarma Yojana-VY phase -VIII in which students survey various village and various design amenitics to deliver to them making them ideal for living better life per requirement &village problems statements.

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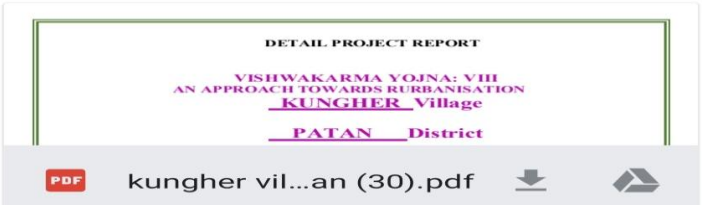
Student email ID

harshilp1885@gmail.com
yashpatel96018@gmail.com



21.0 Comprehensive report for the entire village

Gujarat Technological University is allotted important and prestigious project of Vishwakarma Yojana by the Government of Gujarat for the year 2020-21. The first phase of project is aimed to study the present status and techno-economic survey of villages in District of the state in terms of basic and public amenities, essential commodities, and other infrastructural facilities for the need of people and to prepare report on adequacy of the available resource with reference to population of the village and growth of the area.

The reason behind choosing the Vishwakarma Yojana Project as our final year project is to have an experience of working with Government bodies, to be helpful for people directly with our engineering knowledge and to be part of development of our nations' foundations.Future Plan of Vishwakarma Yojana are to maximizeparticipation from NGO, Public Private Partnershiauthorities and other need to be identified for development process also Involvement of stake holders from planning phase and Developing new technologies for effective development. Designing of Model Rurban Town and More Expert sessions and Technical skill enhancement of Students are also considerable.

Kungher is the village which selected by us. It is a village in patan Taluka in patan District of Gujarat State, India. kungher is 11 km distance from Sub District Headquarter patan. Around 70% population of the village engaged with the agricultural activities. As per Census 2011, kungher Total area is 1858.61 hectares, Non-Agricultural area is 0.2570 hectares and Total irrigated area is 800 hectares.

In village, there are school available to educate the younger generation, business and well educated farmers are available to make the village financially strong. But here we noticed the lacking of awareness for sanitation and so old government building that need reparation. So by redesign them and by implementation of sanitation method village can make a role model for surrounding village.

To find that what else we could possibly do to improve the village, we visited the first smart village of the Gujarat state, Punsari village and there we have come to know about Punsari's 7P Model which include Punsari, Public, People, Panchayat, Private, Profit, Partner-ship. The facilities that we have observed in the Punsari village are adequate sanitation facilities like Drainage system, Solid Waste Management, Public Toilet etc, adequate Educational facilities like Nand Ghar & Aanganvadi, Smart School, Smart Educational Classroom etc, and adequate infrastructure facilities like Mobile Library, Smart Agriculture, Atal Express, Primary Health Center, Water Purification Plant, 66 KV power substation, A public address & surveillance system, Bank, Public Wi-Fi and many more facilities like this.

After visiting the Punsari village we have come to know that our allocated village Kungher is lacking behind in terms of rural infrastructure. The key contributor towards sustainable transformation is mobilization & organization of community participation in development activities. This convergence the demand of rural community and change can be brought about by rural leadership. Infrastructure or rural development is not the only thing which makes village the smart village it is also a dimension of human development as individual which can affect the sustainability of any change.

Scope of developments that we have found out by Revisiting the Kungher Village with a new Perspective towards the Rurbanization are in Sanitation sector, plenty of dilapidated building that may be use after renovation, repair or rehabilitation for different purposes and other things like Pot-holes in inter connected village roads, Water logging during monsoon season, No Ecofriendly Energy-sources, Poor condition of Common Play Ground, Insufficient storage space for Animal Food

etc.Our vision for development of the kungher village comes after detailed discussion with Talati, sarpanch and villagers. That's why we have suggested solutions of already existing problem in the village by providing some infrastructure designs like.

Proposed Electrical designs

- Solar street light
- Solar water pump
- Grid connected solar rooftop system
- Sencer based gas leakage detector
- PLC based control solar tracking system
- Automatically trip coil CB

Proposed civil designs

- Design of Bus Station
- Design of UG water Tank
- Design of entrance gate
- Design of OH water Tank
- Design of pipe Culvert

By providing a good ideas and by doing quality work with our engineering and technical skills, here we have suggested some of our ideas in it. For that there were many Activities done by us in the village and for the village like techno- economic survey of ideal village, smart village and allocated village more than that gap analysis between ideal and allocated village are also done by us with SAGY survey. These survey includes Demographical detail, Geographical detail, Occupational details, Physical infrastructure facilities, Social infrastructural facilities, Sustainable infrastructure facilities, Data collection from village or any other Additional information that may have required.Based on the survey we tried to give design of required basic facilities to fulfil their needs. By providing these basic facilities to villagers migration rate will be decreased. This is ultimate aim of the Vishwakarma Yojana.