DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII

AN APPROACH TOWARDS RURBANISATION

KUNDANPAR Village

KUTCH District

PREPARED BY

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
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HJD INSTITUTE OF TECHNICAL EDUCATION AND RESEARCH, KUTCH

PROF. DINESH BHUVA
Assistant. Professor
Civil Department
NODAL OFFICER
HJD-ITER 085

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad – 382424 Gujarat

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CERTIFICATE

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

Detail Project Report for,
VILLAGE: KUNDANPAR
DISTRICT: KUTCH
Under

Vishwakarma Yojana: Phase-VIII

in partial fulfillment of the project offered by

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

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

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
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Date of Report Submission:	
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Internal (Evaluator) Guide Name and Signature:	PROF. DINESH BHUVA
College Name:	HJD INSTITUTE OF TECHNICAL EDUCATION AND RESEARCH, KUTCH
College Stamp:	

ABSTRACT

Vishwakarma Yojana project and how you do your vision project:

Vishwakarma yojana provides engineering students with the benefits of real work experience and students can apply their technical skills to infrastructure growth in rural development. The villages are surveyed under this framework and this project has been identified and chosen for execution.

Rurbanisation is the idea of providing the basic facilities needed for villagers and keeping the soul of the village alive. This project provides fresh ideas for rural village growth. The government of the Vishwakarma Yojana project needs a technological solution from an engineering point of view to the problems of villages.

About your village description:

Kundanpar is a village situated in Kutch district of Gujarat, India. Coordinates of Kundanpar are 23.08973N,69.59410E. It has its gram panchayat under Kera village near it. There is about 8063 population according to census2011.

About existing village condition:

The village development is quite good. The main facilities are shared by the near village Kera. The panchayat provides proper guidelines for Swachh Bharat. The facilities available here are managed very well, and most of the facilities that an ideal village should have are already available here. But there are some basic services that are lacking. The economy and culture are already superior to other villages. It also leads in safety and cleanliness.

About your proposed designs your view for village development:

Since we conclude, as per survey and gap study, that the basic amenities and facilities in a village are not sufficient and include a proposal for that basic amenity that is useful and helps to improve the village. Therefore, we made design of a smart public garden, a multifunctional hall in school and a community toilet.

About future scope of the village development:

Through an analysis of the status and techno-economic survey of the village in terms of basic services, public facilities, other infrastructural facilities Development plans for village development will be generated from the gap analysis and ideas will be formulated for the planning of physical infrastructure, social infrastructure, and renewable energy sources for the village. The research will focus on the village 's growth.

Key Words: Rurbanisation, sustainable development, good quality education facilities.

ACKNOWLEDGEMENT

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

We wish to express our deep sense of gratitude to **Prof. (Dr.) Navin Sheth**, **Hon'ble Vice Chancellor, Gujarat Technological University-Ahmedabad**, for his encouragement and giving us the wonderful project.

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We express our sincere thanks to **Commissionerate of Technical Education, Gujarat State** for appreciating and acknowledging our work.

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Mr. DINESH BHUVA from college **HJD INSTITUTE OF TECHNICAL EDUCATION AND RESEARCH, KUTCH** for their invaluable guidance, constant inspiration, and active involvement in our project work.

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We are also thankful to **Ms. Darshana Chauhan, Vishwakarmrma Yojana**, for all support during our work. We, therefore, take this opportunity for this Project work expressing our deep gratitude and sincere thanks for her cooperation to produce this project work in the present form.

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

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
RCC	Reinforced Cement Concrete
CC	Cement Concrete
PCC	Plain Cement Concrete
CHC	Community Health Centre
PHC	Primary Health Centre
APMC	Agricultural Produce Market Committees
GRID	Global Resource Information Database
MOUD	Ministry of Urban Development
ATMS	Advanced Traffic Management System
HHS	Horizontal Hydroponic System
VFS	Vertical Framing System
VAFS	Vertical Automation Framing System

CHAPTER 1. IDEAL VILLAGE –SUKHPAR

1.1 Background & Study Area Location

Sukhpar village is 7 km from Bhuj. The village is linked to the SH 42 road. This village has been built quite successfully in recent years, and now this village has all fundamental amenities, such as, C.C. Ways, underground drainage, availability of water, solid waste management, gram panchayat, 90% houses are pucca, transportation facilities, Education, etc.

LOCATION AND DETAILS:

- Name: Sukhpar
- District: Kutch
- Taluka: Bhuj
- Distance from Bhuj: 7 km
- Pin code: 370040
- Language: Gujarati, Hindi, English.
- Elevation/Altitude: 120 meters above-Sea level

Figure 1 Sukhpar map

1.2 Concept: Ideal Village, Normal Village

The perfect village house is very tidy and clean. The owners of these houses look at the sanitation and the ventilation of the property. The houses are fitted with enough windows to allow air and light in. An ideal village of has a good sanitation and drainage scheme. A normal village has a very strong irrigation system such that the village's polluted water is washed away properly. We can find the post office, public library, playground, garden, etc. They plant food and seasonal crops, etc. They have developed methods of farming for further crop production every season.

1.2.1 Objectives:

- Migration from rural to urban areas to be avoided
- Establish and maintain a cooperative living culture for inclusive and rapid growth.
- Providing farmers with knowledge of government processes & policies.
- Providing urban services to enhance the quality of life in rural areas.
- Providing modern agricultural machinery and training farmers on climate-smart farming practices.
- Provide a contribution to the development of good infrastructure & transport for highways.
- Empowerment with the latest digital technologies for rural areas.
- Prevent migratory distress from rural to urban areas
- Establish and maintain a cooperative living community.

1.2.2. Example/live case studies of ideal village of India/Gujarat

Sukhpar:

Sukhpar is a village in Gujarat State, India, situated in the district of Kutch. Sukhpar is considered a smart village in Kutch so we took it as our ideal village. The village is situated about 7 km from Bhuj.

Village	Sukhpar
Taluka	Bhuj
District	Kutch
State	Gujrat
Pin code	370040
Area	2135 hectare
Population	13303

Table 1 Sukhpar details

1.2.3. The Idea of a model/ Smart village

Sustainable energy services are the main drivers of economic growth in clever villages that allow good education and healthcare to be provided, access to clean water, sanitation and nutrition, revenue growth in profitable businesses and enhanced security. The concept of an" Adarsh Gram "or model village was also explored earlier, mostly through the Pradhan Mantri Adarsh Gram Yojana, launched in 2009 by the Central Government. Regardless of rural or urban areas, the idea of smartness is common in respect and honor of human development, literate, or illiterate in all countries, and it is not excluded by India. Smart village ideas will also solve numerous problems in the growth of villages and smart villages, such as unplanned urbanization.

1.2.4 Ancient History Civil concept about Indian Village / Foreign

There are many facts and history of ancient Indian concepts of civil namely:
It is well known that we were acquainted with science just as time has changed and the same thing is in new form in front of us.

Here are some other facts:

- It is Chandbauri well in Rajasthan, which is 100 feet below the earth level, one of the most beautiful instances of patterns in architecture.
- The Delhi iron pillar is a popular Indian place with 99 percent corrosion resistance that as iron hydrogen phosphate corrosion-resistance agent was added to it, showing our ancestors' advanced chemical knowledge.
- The underground drainage system in Harappa civilization was then from small to wide sewer to canal and then canal to river. It also has a remarkable method of town planning.
- The procedures for making an aero plane are shown in a book called Vimanashastram.

- The sun temple is the main attraction is its twelve pairs of wheels situated at the temple ‘s base. Those wheels, but they also say time that the wheels by just looking at the shadow cast by those spokes, one can measure the exact time of the day.
- The Narayan pal Vishnu mandir of Chitrkut, Bastar, was only constructed entirely in one day. In a shorter amount of time a day, the structure and arts are often constructed.
- The use of marbles indicates that we have had strong knowledge of geology.

1.3 Detail study (Socio economic, physical, demographic and infrastructure details) of Ideal village / Smart Village with photograph

1.3.1 Sukhpar ideal village:

Sukhpar is a village in Gujarat State, India, situated in the district of Kutch. Sukhpar is considered a smart village in Kutch so we took it as our ideal village. The village is situated about 7 km from Bhuj. It has an area of 2135 hectares.

Sr. No.	Census	Population	Male	Female	Total House Holds
1	2001	10505	5310	5195	2501
2	2011	13303	6442	6861	3005

Table 2 Sukhpar census

The occupation in the village is farming, construction, and building services.
The most common crops grown are caster seed, cotton, wheat.

PHOTOGRAPHS:

Figure 2 Nagthada park

Figure 3 Kumar shalla Sukhpar

Figure 4 Sukhpar market

Figure 5 Post office Sukhpar

Figure 6 Sukhpar library

Figure 7 Government hospital Sukhpar

Figure 8 JMDC high school Sukhpar

Figure 9 Kanya shalla Sukhpar


Figure 10 Kutchmitra park Sukhpar

1.3.2 Madhapar smart village:

Madhapar is a village in Gujarat State, India, situated in the district of Kutch. Madhapar is considered a smart village. The village is situated about 5.5 km from Bhuj. It has an area of 4367.48 hectares.

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	28438	14335	14103	4739
2.	2011	32293	16276	16017	7630

Table 3 Madhapar census

The occupation in the village is farming, construction, and building services.
The most common crops grown are caster seed, cotton, wheat.

PHOTOGRAPHS:

Figure 11 English school Madhapar

Figure 12 Library Madhapar

Figure 13 Mahila Mandal Madhapar

Figure 14 Arogya Kendra Madhapar

Figure 15 Public garden Madhapar

Figure 16 Sarasvati Vidyalaya Madhapar

Figure 17 Grampanchayat Madhapar

Figure 18 MSV high school Madhapar

Figure 19 English school Madhapar

Figure 20Public toilet Madhapar

Figure 21 Bus stop Madhapar

Figure 22 CCTV Madhapar

1.4 SWOT analysis of Ideal village / Smart Village:

Strength	Weaknesses	Opportunities	Threats
Proper drainage facilities	lack of maintaince in public garden	Making a smart garden	Lack of funds and club to protects the place.
Transportation facilities	Less facilities in government school	Bring a better education	Lack of awareness of villagers about modern educations
Sanitation facilities	Disposal of waste after collection is not proper	Awareness about the importance of cleanliness	After few years this may turn into a birth of disease.

Table 4 SWOT analysis

1.5 Future prospects of village:

In future of Sukhpar, expectation to install solar, or some other renewable energy source in the future, according to the availability of sources in the village. If there are some other concerns in the future, then strive to fix the problem such as:

- Waste disposal system
- Water to distributed on meter counting
- Planning of trees by side of road as they are under the electricity lines then often cause issue due to big crown of tree.
- Automatic solar street lighting

1.6 Benefits of visit of ideal village:

We got an idea of an ideal village by visiting it. We have seen many kinds of modern technology that can be used in urban areas that are being used in villages. It has strengthened our communication skills through this visit to this village.
Increase curiosity and understanding as students become independent learners to help students raise knowledge. The incorporation of experiential education / practical / applied dimension to theoretical problems We get the real concept of an established village from this village.
We get ideas about how our village can be built.

1.7 Electrical concept of Ideal village / Smart Village:

Clean and sustainable energy supply is important to nearly all other rural development dimensions. Energy protection is the hidden mantra that enables rural communities to grow in agriculture, healthcare, training, and skills.
We are now seeing energy disruption and producing an abundant energy saving with a range of solar, wind, biomass, and biogas technologies available at competitive cost. Energy security is the core vision of a smart village. Energy is the golden thread which combines development, social equity, and the world’s prosperous environment.

CHAPTER 2. VILLAGE LITERATURE REVIEW

2.1 Introduction: Urban & Rural village concept

Urban area:

Urban area is the region which surrounds the city. An urban area is a human settlement, with a high population density as well as a build-up environmental facility. Urban areas are formed through urban development and are classified in the form of urban morphology including cities, towns, conurbations, or suburbs. In India, there are 7,935 cities, 4,041 legislative cities and 3,894 census towns, according to the 2011 census.

Rural area:

Rural is considerably agricultural, its settlement structure comprises villages or properties Socially, it represents greater interrelationship between people, deeply grounded community life and a slowly moving life-rhythm developed around nature and the natural phenomenon. 70 % of the population of India remains in the village. Rural citizens have poor standards of living and lack basic physical facilities. Rural region is regarded as the place where more than 75% of men are connected to agriculture.

2.2 Importance of the Rural development

For a country's successful growth, the growth of all aspects is essential within rural communities. This involves schooling, employment, infrastructure, housing, public services, and environmental standards. The key aim of the rural development program is to improve rural people's economic and social levels. The economic advancement of people and greater social change are the outcomes of rural growth. Rural development is concerned with the way people who live in rural areas change or improve their living conditions. Indians primarily live in the countryside (villages). In reality, "India 's soul is working in rural areas." India's well-being relies on the villages' stability.

2.3 Ancient Villages / Different Definition of: Rural Urban Villages

In most rural areas, agriculture is the primary industry. Most people live in farms or ranches or work on them. In or near rural areas are hamlets, farms, towns, and other small villages. A rural area is an open area with few to not too many inhabitants in houses or other structures. The population density of rural areas is very low. They have very close to one another their homes and businesses. There are less inhabitants in a rural setting and their homes and businesses are far from each other.

2.4 Scenario: Rural / Urban village of India population Growth

Population in India according to census 2011:

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

Table 5 Scenario: Rural / Urban village of India population Growth

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

Population in Gujarat according to census 2011:

Description	Rural	Urban	Rural	Urban
	2011		2019	
Population (%)	57.14	42.60%	54.94 %	46.06%
Total Population	3,46,94,609	2,57,45,083	3,85,97,765	3,07,50,602

Table 6 Rural / Urban village of Gujarat as per Census 2011 and latest

2.6 Rural Development Issues – Concerns – Measures

There is a complete inadequacy of financial, staff and management capital for implementing rural development programs. People rely on agriculture directly or indirectly and many landowners own small and medium-sized fields.

The people of the upper caste still have vast lands, while people of the lower castes have either marginal land or work as landless workers. Lack of rural physical installations. Sensitivity and lower prospects for profits.

The price the farmers earn for their goods is lower than for the work they have completed. To achieve better roads and facilities like water, sanitation etc., India must work rapidly on its infrastructure.

Measures:

- Rural development's main goal was to eradicate human suffering and bridge the widening divide between rich and poor.
- Foreign Policy for the upliftment of farmers' lifestyle.
- Farmer Industrial Cooperation and Industrial Enterprises Rural industrial growth strategy-incorporation of farmers and industries.
- Modernization of rural society, cultural policies and the preparation of loyalty and values shift to modem technology.
- We need their psychology, ability, and other skills to grow and empower the human resource.
- Rural industries must be built through the production of craftsmanship, small-scale industries, local industries, rural crafts, cottage industries, etc.
- For rural people to build their own company, we need to provide a financial source

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

People are in general, it tended to shift permanently to urban areas instead of regular to and from visits to various urban facilities. Migration is primarily due to the lack of basic facilities, such as drainage facilities, water facilities, adequate health facilities and most of them. A severe lack of a source of income.

The growth of rural areas is accidentally neglected in the development of urban areas. This is the goal of this project is to suggest the development of rural areas not only by means of infrastructure, but also by growing its scale growth in the economy.

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

GRID is an Indian start-up designed to promote economic and social sustainable growth by offering low-cost rural energy solutions. To address a multitude of problems that impact rural areas, the GRID has used solar energy beyond microgrid networks. For instance, in rural India, Grid has installed solar powered reverse-osmosis filtration plants to help eradicate water insecurity.

A GRID filtration plant will provide 20,000 to 30,000 liters of clean water per day to help mitigate the problem and the spread of waterborne disease. In addition, ease of delivery decreases the time spent harvesting water, allowing more time for production and time poverty reduction.

Finally, GRID works daily with the local people in the city.

The business model of GRID supports rural development from the ground up and aims to extend operations throughout India.

2.9 Other Projects / Schemes of Gujarat / Indian Government

Following are the projects/schemes by Govt. Sector:

1. Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)
2. Pradhan Mantri Gram Sadak Yojana (PMGSY)
3. Indira Awas Yojana (IAY)
4. Bharat Nirman Yojana (BNY)

CHAPTER 3. SMART CONCEPT IDEA AND ITS VISIT

3.1 Introduction: Concepts, Definitions and Practices

Concept:

The access to sustainable energy resources in a smart village serves as a catalyst for development providing good education and healthcare, accessing clean water, boosting the income growth of productive enterprises and enhanced protection, gender equality, and democracy.

Definition:

The significance of the intelligent village is that the facilities are all installed in the village and no requirement is required in the area.
Smart City is a developed, updated, restored and urban living ecosystem that enables optimum connectivity for sub-systems that are otherwise fragmented, while facilitating the daily lives of residents making cities livelihood and sustainable.

Practices in smart village:

The smart concepts need to be adapted to socio-cultural and environmental circumstances in geographical, rural, and urban contexts.
Therefore, different problems must be solved in towns than in rural areas, where it is important to close the gaps between relatively few people. With digitally transformed, this means that digitalization also needs adapted ideas, business models and solutions which must strive to improve rural population well-being in general.

3.2 Vision-Goals, Standards and Performance Measurement Indicators Vision-goals:

Water facilities:

• 24 / 7 water sources
• 100% household with direct supply of water
• 135 liters of water per capita
• 100% water contacts calculation

Transport:

• 30 minutes' maximum time to drive in small towns and medium towns, and 45 minutes in urban areas.
• 2 m deep, on either side of all roads continuous unimpeded footpath with Row 12 m more.
• High quality and high frequency public transit within 800 m of all houses in areas over 175 people / ha of built area (10-15 minutes' walk).

Sewerage & Sanitation

• 100% of households should have toilet access
• 100% schools should have separate girl toilets

• Houses 100% linked to the network of wastewater

Solid management

• The regular door-step collection scheme covers 100% of households.
• Municipal solid waste collection of 100%
• 100% segregation at source, i.e., 100% recycling of solid waste, biologically and non-degradable waste.

Electricity

• The power supply to 100 percent of the households is 24 x 7.
• 100% power supply calculation.
• Cost recovery at 100 percent.

Standards for Smart Cities:

Good management and effective service delivery. Benchmarking and planning for regional and local goals. Informed strategy and decision-making. Leverage in international institutions for support and recognition.

Open data and accountability on attractiveness of investment. Evaluate the effect on overall city efficiency of infrastructure programmers.

3.3 Technological Options

Smarter transportation:

An intelligent city offers multimodal transport, smart light and intelligent parking. Parking is smarter, people waste less time searching for parking spaces and surrounding city blocks. Intelligent traffic lights have traffic control cameras that are mirrored in the signals.

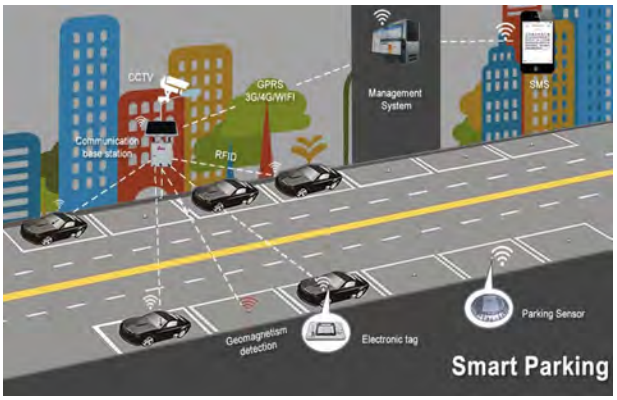


Figure 23 Smart transport System

Smart buildings:

Smart building is any structure that uses automated processes to automatically monitor the operation of the building, including heating, ventilation, air conditioning, lighting, protection and other systems.

Figure 24 Smart building

To collect data and handle it according to the functions and services of a company, an intelligent building uses sensors, actuators, and microchips. This infrastructure enhances asset efficiency, performance and increases the use of electricity, optimizes land use, and minimizes the environmental effect of buildings for the owners, operator, and facility managers.

Smart energy:
Residential and business buildings are more efficient, use less energy and evaluate the energy used and collect data in smart cities. Smart grids are part of a smart town, and smart street lighting is easily accessible to various cities since LED light saves money and pays for itself in just a few years.

3.4 Road Map and Safeguards

Smart Maps collect a wide range of detail data, such as roads, shops (types and user ratings) and other information such as roads, speed limits and curve restrictions. Smart Maps are so built to enable users to communicate easily, intuitively and without training. Intelligent maps are designed to adjust and evolve rapidly and correctly.

The accumulated information and expertise are the key to solving inefficiency, which contributes to systems optimization. Accorder plans, amongst other items, allow buses, as well as other methods to increase public transport, according to the officials of the Ministry for Urban Development (MoUD).

Figure 25 Road map and safeguards

3.5 Issues & Challenges

- When evaluating the Smart City Plan, there are a range of latent problems to remember. The most important thing is to identify the poor areas of the current city that are most required, e.g., 100% water supply and sanitation. The convergence of legacy structures previously isolated to achieve urban productivity can be a major challenge.
- Most of our cities have no master plans or urban development plans, which are the key to intelligent urban planning and execution and encapsule all the cities that must be improved and better provided to their residents. Alas, 70-80% of Indian cities have not one.
- Effective horizontal and vertical coordination between different entities providing different municipal facilities and effective coordination between central government (MoUD), state government and local government agencies on various issues related to funding and sharing of best practices and service delivery processes is required to effectively implement smart city solutions.

- The emphasis is on the efficiency of utility services for every smart city in the world, be it power, water, telephone, or broadband services. Universal access to electricity should be accessible to smart cities 24/7; this is not feasible with the current system of supply and distribution. To reduce the need for electricity, cities need to move towards renewable sources and concentrate on green buildings and green transport.

3.6 Smart Infrastructure – Intelligent Traffic Management

ATMS-Advanced Traffic Management System

Traffic authorities have shown a great tendency to implement adaptive traffic management and traffic analytics that can dramatically minimize traffic congestion and enhance safety to take care of the ever-increasing and complicated traffic situation.

You can understand that these systems will help handle additional vehicle populations as you look at the larger picture. In different intersections, several cities have begun to implement decentralized systems that use a combination of video detection and radar that help monitor traffic and modify signals using AI-driven software in real time.

Features provided by Advanced System for Road Traffic Management

The flow of smooth and seamless traffic
Increasing reliability in the traffic system
Reduced time for journeys
Enhanced experience of commuting

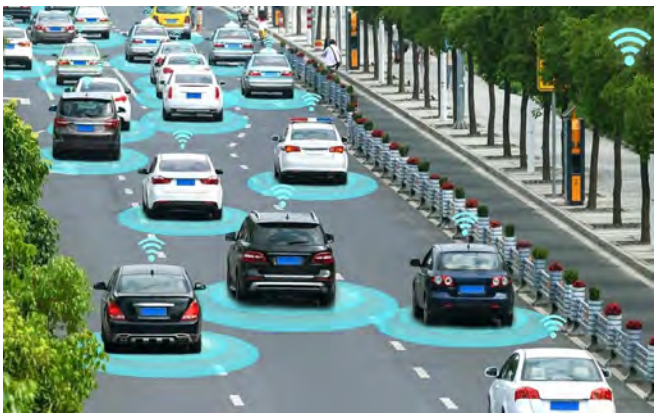


Figure 26 ATMS-Advanced Traffic Management System

3.7 Cyber Security

Cyber security is the collection of technologies, processes and practices designed to prevent threats, harm or unauthorized access to networks, devices, programmers, and data. Safety encompasses both cyber security and physical security in a computer sense.

It is necessary because unprecedented quantities of data on computers and other devices are collected, processed, and stored by government, military, corporate, financial, and medical organizations.

Sensitive information, whether in intellectual property, financial data, personal data, or other information for which unauthorized access or disclosure might have negative implications may constitute a significant portion of the information.

Organizations transfer confidential data over networks or other devices, and the discipline devoted to protecting the information and the systems used to handle or store it defines cyber security.

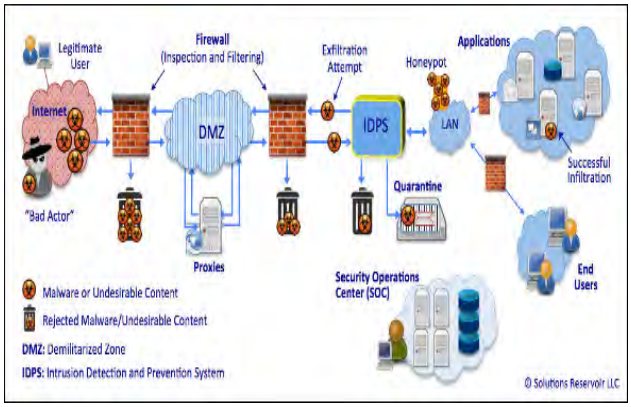


Figure 27 Block diagram for cyber security

3.8 Retrofitting- Redevelopment- Greenfield Development District Cooling

District heating is a heat distribution system for domestic and commercial heating needs such as space heating and water heating in a centralized area. Often the heat is obtained from a cogeneration plant which burns fossil fuels but also increasingly biomass, although heat stations, geothermal heating, heat pumps, solar central heating as well as nuclear power are used as well. Higher performance and better emission control than located boilers are possible for local heating plants. According to some studies, combined heat and power district heating is the cheapest way to minimize CO_2 emissions and has one of the lowest carbon footprints of all fossil generation plants.

Green building – or sustainable building – is the practice of increasing the electricity, water and material usage of buildings and their sites and decreases the effects on human health and environment over a building's life cycle. Green design principles reach beyond building walls and include aspects of site development, urban development, and land use.

Working on concepts which are generally like regional heating, local cooling provides cooling water in buildings such as offices and mills that need cooling.

In winter, sea water may also be a cooling source, so the resource is cheaper than electricity used to power cooling compressors.

3.9 Strategic Options for Fast Development

Retrofitting would implement planning to achieve smart city goals in an existing built-up environment, to make the existing environment more productive and livable. The cities will plan a strategy to become smart, based on the current level of infrastructure services in the region defined and the residents' vision.

Technologies in the transport sector (Smart Traffic Management System) and the reduction of citizens' average travel time or costs would have a positive impact on citizens' efficiency and quality of life. Another example is wastewater recycling and smart metering, which can make an immense contribution to enhancing the city's water management.

Because existing systems are to remain largely intact in this model, it is expected that the future smart city will be filled with more intensive infrastructure service levels and many smart applications.

The use of technology, information, and data to enhance infrastructure and services would be part of the implementation of Smart Solutions. For example, the use of Smart

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

The problem of hygiene is that clean drinking water and sanitation cannot eliminate fecal oral diseases, in the absence of hygienic habit. In many households, even though the original source of water is clean, unhygienic conditions and activities in homes that have adverse health consequences also contaminate the water.

Poor sanitation and contaminated water are responsible for 90 per cent of worldwide diarrheal deaths. According to the World Bank, the adverse economic effect of not investing in water and sanitation is the reduction of the gross domestic product to 6.4% in India.

Indigenous water purification technologies:

These technologies will enhance the quality of drinking water in both smaller and larger villages. The Pressure Driven Membrane processes are used. This can be converted from household or group to larger units for all capacity units. They are adaptable. Nuclear and solar energy are also used in water purification technologies.

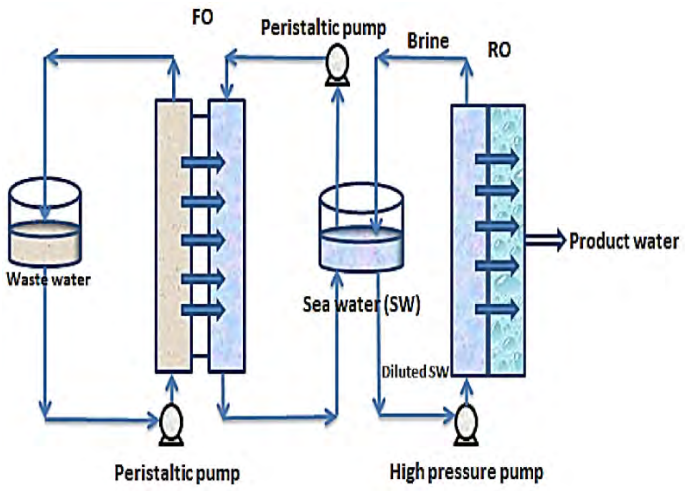


Figure 28 Indigenous water purification technologies

Unique Multistage Biological Treatment Solution:

On existing STPs that cannot process waste to maximum performance, Multistage biological treatment solution (SBT) can be introduced. On the banks of the Drains / Nalas rivers, which discharge wastewater to the shore, the MSBT can be implemented as modular or container.

It can also be built for better water management in small urban societies and residential complexes. The advantages of the MSBT are: no organic sludge surplus, no odour problem, drastic reduction in the use of electricity which minimizes operational costs, no re-sludge pumping (electro-mechanics minimizing costs).

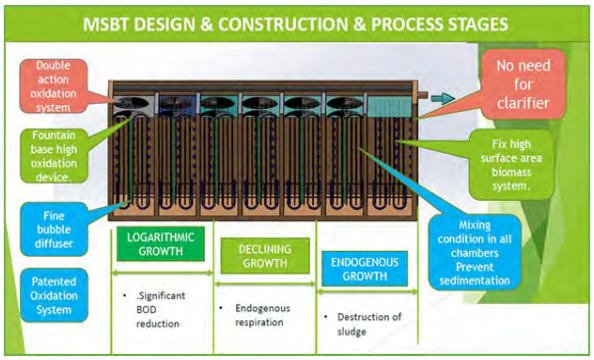


Figure 29 Unique Multistage Biological Treatment Solution

Environment friendly Plasma technologies:

Solid waste sites or waste collection sites need more land not accessible in urban areas. Solid waste incineration pollutes the atmosphere if incinerators are not properly built or controlled.

The technology for the thermal plasma is suitable for the treatment of waste. Plasma technology Breaks down hazardous and poisonous substances into elemental substances at high temperatures, inorganic materials into vitrified mass and organic materials into fluid gases (H2&CO) and lower hydrocarbon gases, when worked in low temperatures (500 – 600 OC). When used in a low temperature setting. Carcass disposal is also considered with plasma pyrolysis.

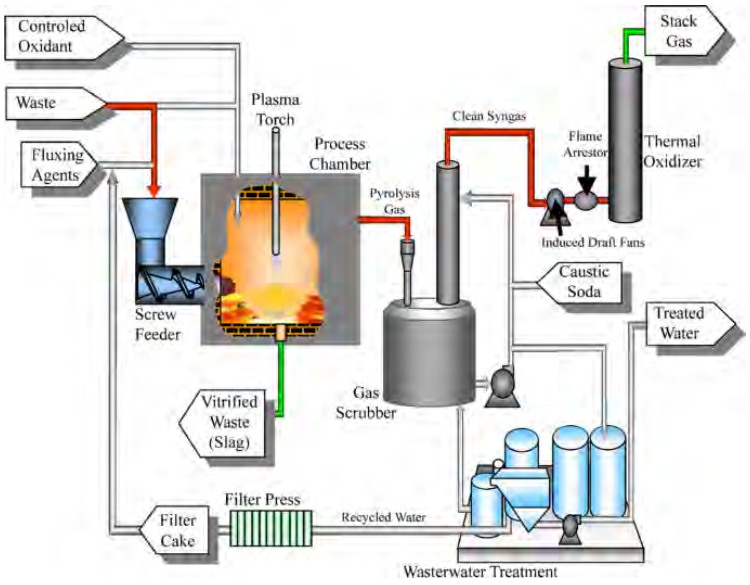


Figure 30 Thermal Plasma treatment

3.11 Initiatives in village development by local self-government

Government functions may be defined as global, state, and local. Local self-governments are those bodies which take care of the management of a small village or town and of a small community. These bodies are nominated by a local government which, through local taxation and other methods, partially raises its revenue. The Local Autonomous Government can be segregated by population into different groups such as companies, towns, cities, and towns of Panchayat. The Indian panchayat is the local body that works to protect the village. Panchayat is a type of Indian political system that unites five villages in the vicinity, called the panch.
In Panchayat, the main administrative units shake grammes of panchayats. Panchayat members are called “panch” and they decide on the conflicts between the townspeople. Panchayat has the power to function as self-government bodies, in compliance with the Indian Constitution. A crucial role in the management of the Indian rural areas is played by Panchayat.

3.12 Smart Initiatives by District Municipal Corporation

Smart Infra: Bhuj railway station too to get facelift under redevelopment program

The main goal of this project is to upgrade the station building to improve the experience of passengers. Some of the main problems that must be dealt with at the station are to provide the proper place to queue at ticket booking counters and the competition hall and wide circulation areas. Improved services will be introduced such as new waiting rooms, proper parking areas, improved toilet facilities, passenger-friendly ticket booking offices, green projects such as the harvest of rainwater and vertical gardens.

Wind Power and Smart Light LED Conversion, Ahmedabad

Solar and wind power plants with different capacities have been constructed by Ahmedabad Municipal Corporation (AMC) at different locations, such as Nakhatrana (Kutch), Sardar Patel Stadium and Veer Savarkar Complex. AMC has saved 6.24 crore units of energy with the launch of 162,000 LEDs (cost savings of ’39 crore). 6,000 smart lights have been installed at different locations under the pan-city program, replacing age-old sodium vapour lamps.

In addition, the lighting upgrade with 15,000 smart lights is under the bid evaluation phase. All streetlights are linked and controlled at the ICCC by the CCC. AMC has targeted renewable energy to meet more than 50 percent of its entire energy demand by 2022.

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

- The Arogya setu app it stated aim of this app is to raise awareness of COVID-19 and to link the citizens of India with important COVID-19-related health services. This app increases the Department of Health ‘s initiatives to include COVID-19 and shares best practices and advice. It is a monitoring software that monitors the infection of the coronavirus using the GPS and Bluetooth features of the smartphone. The software is available for the smartphone operating systems of Android and iOS. With Bluetooth, it attempts to determine the risk by scanning through a database of known cases across India if one was near (within six feet of) a COVID-19-infected person. Using location data, it decides if the location one is in, based on the available data, belongs to one of the infected areas.
- The Government of India has initiated a rural electrification scheme called “Deendayal Upadhyaya Gram Jyoti Yojana.” The DDUGJY scheme includes the former Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) scheme for village electrification and the provision of electricity distribution facilities in rural areas. The Nodal Agency for DDUGJY implementation is the Rural Electrification Corporation.
- The Digi locker service was introduced to store essential documents such as Voter ID Card, Pan Card, BPL Card, Driving License, education certificates, etc. in the cloud as a significant facility.
- Parivahan.gov.in It is the Ministry of Road Transport & Highways website that offers R.T.O office-related facilities to make work easier and convenient. The Ministry of Road Transport & Highways (MoRTH) has supported the computerization of more than 1100 offices in the country for road transport. Subject to certain provisions and permits, RTOs issue registration certificates & driving licenses that are mandatory requirements and are valid throughout the world.

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

- Friendly and cost-effective-Increasingly, online services rely on accountability and openness, in particular the use of mobile devices to minimize service costs

and the availability of services without having to go to municipal offices. With the support of cyber tour of worksites, creating e-groups to listen to individuals and receive input and use online tracking of programs and activities.

- Environmental Component: This component will address the resource and infrastructure issues available at the local level. Cleaner technology, public and alternative transport, green spaces, intelligent development, climate change, etc. could be covered.
- Social Component: This portion will fix community life problems, participatory democracy, social innovation, proximity services, etc.
- Economic Component: Local administration and economic factors will include this part. It will cover models of governance, bandwidth, connectivity, cloud storage, business, etc.

3.15 Electrical concept

Solar panels

Solar panels convert energy from solar radiation. To make solar panels cheaper, more durable, and more effective, companies and researchers around the world are working.

In recent years, solar panels have taken off, especially with the availability in many isolated, rural communities of solar home systems (SHS) and solar lights.
Solar panels, including solar drying and solar irrigation, are often used for useful purposes.

Figure 31 Solar panels

Micro-wind (electric turbine)

Wind turbines use wind forces to drive a mechanical rotor, usually linked to a generator and batteries. Wind turbines are susceptible to wind resource variability, making it a challenge that requires experience to correctly situate the turbines.
Electricity: 200 watts to 50 kilowatts.

Figure 32 Micro wind turbine

CHAPTER 4. ABOUT KUNDANPAR VILLAGE

4.1 Introduction:

4.1.1 Introduction about Kundanpar Village

Kundanpar village is situated in Gujarat, India, in the district of Kutch. It is located about 20.8 km from Bhuj 370km from State capital Gandhinagar. As per the 2011 Census of India, Kundanpar has a population of 8063. The total geographical area of village is 4055.8804 hectares.

Local Language at Kundanpar is Gujarati.

4.1.2 Justification/ need of the study

Vishwakarma Yojana is one of the Government of Gujarat Rurbanization Initiatives allocated to GTU as a pilot project. Both stakeholders in a village meet the students and faculty members and survey the current facilities. They then re-imagine and re-design the whole of the village's infrastructure. Compare the urban development with the basic facilities needed for the people and their facilities and research the entire village.

- Raise the standard of living of rural people by the provision of equipment and better facilities.
- For making the village a source of income for other neighboring villages.
- Increase the quality of living of rural people.

4.1.3 Study Area

Village	Kundanpar
Taluka	Bhuj
District	Kutch
State	Gujarat
Mean sea level	130m above sea level
Pin code	370040
Nearest Town	Bhuj (20.8km)

Table 7 Kundanpar details

Figure 33 Kundanpar map

4.1.4 Objectives of the study

- In the village, to provide basic facilities. Migration to minimize.
- The public buildings that are not accessible in the town must have the required designs.
- Existing public buildings such as school buildings and public toilets blocks & old heritage place are repaired and preserved.
- To build the village to be called a smart village.
- To facilitate integrated growth.
- To provide development that is sustainable.
- To evaluate the conditions that exist.
- To explore the problems of the village of Kundanpar.

4.1.5 Scope of the Study

- To provide a village with certain urban services without disturbing the village's spirit.
- Village growth would be possible due to the availability of urban services.
- Most people lived in the village first, according to the word Rurbanisation, to establish the village.
- Design tactics for village development will be suggested from the Gap study and recommendations for planning for the village will be suggested for physical infrastructure, social infrastructure, and renewable energy sources.

4.1.6 Methodology/ Study Framework

Methodology goes in following order

1. Concept
2. Literature review
3. Visit to ideal village
4. Visit to smart village
5. Visit to allocated village
6. Meeting with village members
7. Techno Economic Survey
8. Collection of data Analysis of data
9. Gap analysis
10. Design Proposals
11. Future Acknowledgement

4.1.7 Available Methodology for development of related to Civil/Electrical

- **Related to civil**
    1. Community toilet
    2. Public garden
    3. Multifunctional hall
    4. Protection of old heritage place
    5. Green building
- **Related to electric**
    1. Smart solar light
    2. IOT based irrigation
    3. Self-cleaning solar panels on hall

4.2 Kundanpar Study Area Profile

4.2.1 Study Area Location with brief History land use details

Village	Kundanpar
Taluka	Bhuj
District	Kutch
State	Gujarat
Mean sea level	130m above sea level
Pin code	370040
Nearest Town	Bhuj (20.8km)

Table 8 Kundanpar details

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector) Coordinates for Location:	4055.8804 23.08973N,69.59410E
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	2317.7347
4.	Residential Area (In hect.)	472.1324
5.	Other Area (In hect.)	1266.0133

Table 9 Kundanpar Area distribution

4.2.2 Base Location map, Land Map, Gram Tal Map

Figure 34 Land map Kundanpar

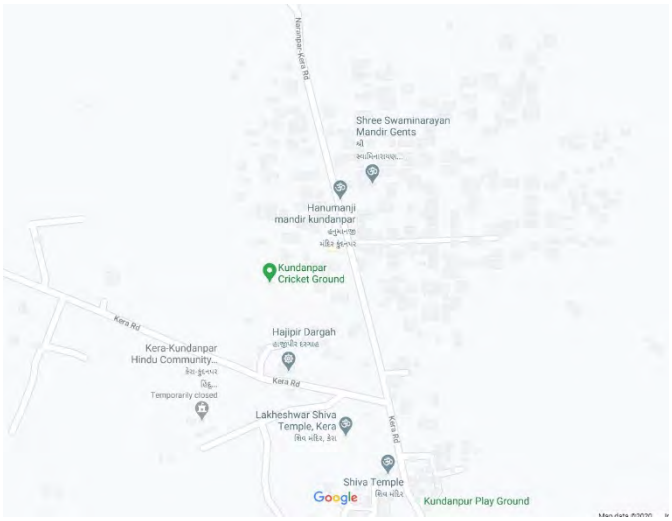


Figure 35Base map Kundanpar

4.2.3 Physical & Demographical Growth

Kundanpar village is situated in Gujarat, India, in the district of Kutch. It is located about 20.8 km from Bhuj 370km from State capital Gandhinagar. As per the 2011 Census of India, Kundanpar has a population of 8063. The total geographical area of village is 4055.8804 hectares.

Local Language at Kundanpar is Gujarati.

DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2011	8063	3998	4065	1863

Table 10 Kundanpar census

4.2.4 Economic generation profile / Banks

As for the economic profile of this village, the interests of many people at work are agriculture and labour. It has a strong electrification system that distributes 24 * 7 hours for domestic use and 8 hours for agricultural use.

The banks are located about 1.5km from the village in the nearby village Kera.

4.2.5 Actual Problem faced by Villagers and smart solution

Problems

There is an old heritage place with a Shiv temple and there is no maintaince of it. Streetlights are not available in every street. Need of a prayer hall, place to have breakfast and annual function, E-education required in school.

Smart solution

We can design a smart garden near the shiv temple that also protect the importance of old heritage structure and we can provide new techniques to maintain the garden. We can enlighten the streets of village with less running cost by designing Solar Street Light Paths. We can make a multifunctional hall that accommodate all facilities required in the school, also we can reduce our power consumption charge by using Solar Roof top Design which will help us take the benefit of the renewable energy source at building.

4.2.6 Social scenario -Preservation of traditions, Festivals, Cuisine

People are not aware of the basic facility offered by the government. Cotton, caster seeds and wheat are also grown in the village. People in the village are not so much associated with technology and digitalization. People's basic income is related to their agricultural product value and the industrial area. People are often linked to another village, and they stay connected to community. People belong to the Hindu faith and celebrate the entire Hindu festival with a good spirit like Diwali, Navratri, New Year, etc.

4.2.7 Migration Reasons / Trends

These factors can be categorized as economic, social, political, or environmental:

- Economic migration-moving to work or following a career route.
- Social migration-moving to a better quality of life or to be closer to family or friends.
- Political migration-moving to avoid political repression or war, the environmental causes of migration include natural disasters such as flood.

4.3. Data Collection in allocated village Kundanpar

4.3.1 Describe Methods for data collection

There are essentially various types of data collection methods for the collection of data from the village or town or any city as follows:

1. By filling out the survey form
2. By contact with the villagers
3. Through association with sarpanch
4. Analyzing the present state of the village
5. Visiting the different location of the village
6. Interaction with the principal of school.

The village grampanchayat provided the overall important details of the village, such as the area, population, and existing facilities in the village. And filled all the data in the techno survey forms.

4.3.2 Primary details of survey

Kundanpar village is situated in Gujarat, India, in the district of Kutch. It is located about 20.8 km from Bhuj 370km from State capital Gandhinagar. As per the 2011 Census of India, Kundanpar has a population of 8063.

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

Average size of house is 10m x 18m in developed area of village. In slum area the average size of house is 3m x 6m

Figure 36 Geo tagging map Kundanpar

4.3.4 No of Human being in One House

In the village, there are average 4-5 persons per household.

4.3.5 Material available locally in the village and Material Outsourced by the villagers

90% of the houses in the village are Pucca houses. Pucca houses are mostly made of Beam and Column design construction with Reinforced Cement Concrete Slab. Very few houses are Kachha house which are made of stones and bricks.

Locally material is not available such as standard bricks, aggregates, concrete, and reinforcements. So, this material is being carried from the nearest city to build homes. All the materials are outsourced and supplied by outside contractors.

4.3.6 Geographical Detail

Kundanpar village is situated in Gujarat, India, in the district of Kutch. It is located about 20.8 km from Bhuj 370km from State capital Gandhinagar. As per the 2011 Census of India, Kundanpar has a population of 8063. The total geographical area of village is 4055.8804 hectares.

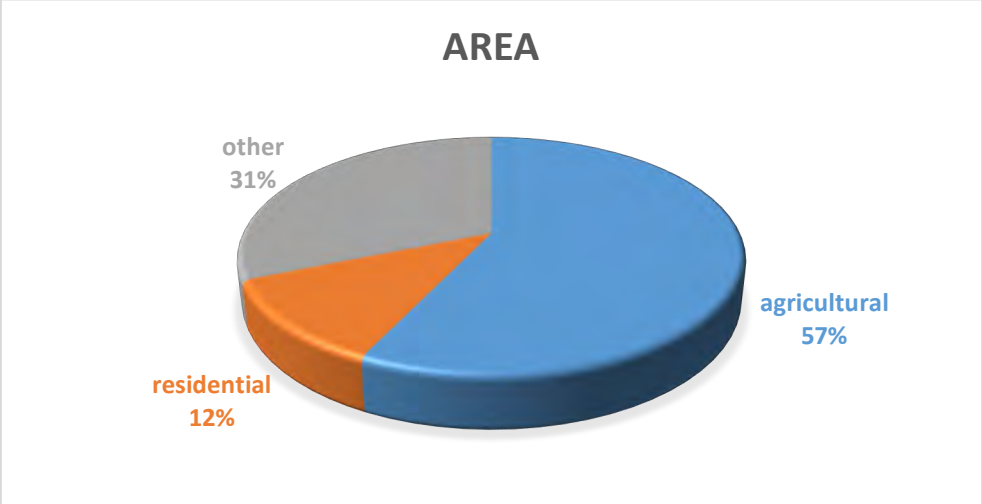


Figure 37 Land area distribution pie-chart Kundanpar

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

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2011	8063	3998	4065	1863

Table 11 Kundanpar demographical Detail

95% are Hindu and 5% are another cast.
The have ID proof of Aadhaar card issued by Indian govt and almost have a Pan card from income tax department.

4.3.8 Occupational Detail – Occupation wise Details / Majority business

In this village, 80 to 85 per cent of the people engaged in agriculture. Out of this, 42 to 50 % of the population is engaged in both agriculture and labour.

4.3.9 Agricultural Details / Organic Farming / Fishery

Farming is the main source of income in this village. Farmers use the drip irrigation method and channel irrigation to farm. The key agricultural product is caster seed, cotton, wheat. Farmers use organic manure and small amount of chemical manure.
Fishery is not available as there are no lakes and hence as a Hindu village all are vegetarians.

4.3.10 Physical Infrastructure Facilities – Manufacturing HUB / Warehouses

There are no factories or warehouses in this village.

4.3.11 Tourism development available in the village for attracting the tourist

There is a heritage Shiv temple. Its build in 10th century AD.

Figure 38 10th century AD Shiv mandir Kundanpar

4.4 Infrastructure Details

4.4.1 Drinking Water / Water Management Facilities

There are 3 overhead water tanks in the village and are also shared by Kera village.
The capacity of water tank are 2 tanks having capacity of 5lakhs liters and 1 tank of 10 lakh liters.
Most people of the village use rainwater harvesting system at home and they utilize that water for drinking and some who don’t the system use water filters in home to filter the water provide by the grampanchayat.

4.4.2 Drainage Network / Sanitation Facilities

The drainage is underground and are covered and there is one public toilet near bus station. There is lack of public toilet in the village.

Figure 39 Public toilet Kundanpar

Figure 40 Manhole Kundanpar

4.4.3 Transportation & Road Network

The village has approach roads that are made of bituminous roads and the internal streets are mostly made cement concrete.

Figure 41 Approach road Kundanpar

Figure 42 Internal street Kundanpar

4.4.4 Housing condition

According to the government data the 90% of the houses are pucca. They are made of block, masonry and of RCC. The kuccha houses are also RCC but are not finished with plaster.

Figure 43 House condition Kundanpar

4.4.5 Social Infrastructure Facilities, Health, Education, Community Hall, Library

There are private clinics in the village and have PHC. They education facilities the private schools are at good condition, but the government schools need help to give quality of education system to the society.
Village also have community hall. And they also have a library.

Figure 44 Kumar shalla Kundanpar

Figure 45 Kanya shalla Kundanpar

Figure 46 Library Kundanpar

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

The condition of the grampanchayat is in proper condition. But there is an important factor to take care of the maintaince system of the government school infrastructure. Condition of bus stop is proper.

Figure 47 Bus stop Kundanpar

Figure 48 Dead slab in school Kundanpar

4.4.7 Technology Mobile/ WIFI / Internet Usage Details

90% of the village population uses mobile Internet services. The other 10% don't use internet are elderly members of the village. Some people also personal WIFI at homes.

4.4.8 Sports Activity as Gram Panchayat

Gram panchayat with the help of some members of the village conduct cricket and volley tournaments and, they have Diwali snehmilan sports of small kids and distribution of kids.

Figure 49 Volleyball tournament Kundanpar

Figure 50 Cricket tournament Kundanpar

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

They have 2 playgrounds and 2 public gardens but there is less maintaince in public garden.

Figure 51 Playground 1 Kundanpar

Figure 52 Playground 2 Kundanpar

4.4.10 Other Facilities (e.g., like foot path development-Smart Toilets-Coin operated entry, self-cleansing, waterless, public building)

No there no smart developed facilities in the village.

4.4.11 Any other details

There is an old heritage shiv temple built in 10th century. It requires a good maintaince it a proud structure of the village.

Figure 53 10th century AD Shiv mandir Kundanpar

4.5 Electrical Concept

4.5.1 Renewable energy source planning particularly for villages

Renewable facilities like solar lights and solar water heaters are used by the village members personally at home.

4.5.2 Irrigation Facilities

The village are mostly farmers, and they use drip irrigation system and channel irrigation system.
The most common crops grown are caster seeds, cotton, and wheat.

4.5.3 Electricity Facilities with Area

Electricity Distribution	Hours
Govt. electricity provides	
Power supply for Domestic Use	24hrs
Power supply for Agricultural Use	8hrs
Power supply for Commercial Use	24hrs
Road/ Street Lights	11hrs
Electrification in Government Buildings/ Schools/ Hospitals	24hrs

Table 12 Kundanpar Electricity Facilities with Area

4.6 Existing Institution like – Village Administration – Detail Profile

4.6.1 Bachat Mandali

Village have no bachat mandali.

4.6.2 Dudh Mandali

Village have no dudh mandali.

4.6.3 Mahila forum

The mahila mandali are in the gram panchayat.0

4.6.4 Plantation for the Air Pollution

There are activities of plantation of tress in village by panchayat.

4.6.5 Rainwater Harvesting – Wastewater Recycling

The system is available at personal homes.

4.6.6 Agricultural Development

There are use of tractors for irrigation and they use drip irrigation and channel irrigation.

4.6.7 Any Other

no

CHAPTER 5. TECHNICAL OPTIONS WITH CASE STUDIES

5.1 Concept (Civil)

5.1.1 Advance Sustainable construction techniques / Practices and Quantity Surveying

IoT Integrated Automated Building Systems

The Internet of Things (IoT) provides facility managers with access to data that they have not previously had access to. These small, connected sensors can be incorporated with automated building systems to increase the sustainability of operations.

For example, IoT sensors can dynamically change the appropriate level of ventilation and lighting within the building based on temperature, weather, and CO2 readings.

The facility manager does not need to manually remain on top of these changes or input data from various sections of the equipment.

Synthetic Roof Underlayment

The underlay on roofs is usually asphalt-based, which breaks down relatively quickly. Replacing this layer is important to keep moisture out of the interior of the house.

Synthetic roof underlay provides an option that weighs less and stands up to the wear and tear of the outer environment. This material uses polymer from recycled scrap materials. It also removes VOCs from the underlay.

Greywater Plumbing Systems

Graywater systems minimize the need for fresh water for the facility, as all but toilet streams can be reprocessed for reuse. The most popular uses for this water include irrigation and water supply of toilets.

Self-healing Concrete

This material is in its early stages, but once it is commercially viable it opens many sustainable possibilities. Anything from highways to walkways will take advantage of the concrete that repairs itself. Road crews will no longer have to close busy streets and highway lanes to repair potholes and cracks.

5.1.2 Soil Liquefaction

soil liquefaction is a process in which the static balance is destroyed by static or dynamic loads in a low residual soil deposit.

Residual strength is the strength of the liquified soil. Static loading, for example, may be applied on a slope to new structures, which exert additional force on the soil underneath the foundations.

Earthquakes, explosions, and pile driving are all examples of complex loads that could cause soil liquefaction. When caused, the strength of a soil susceptible to soil liquefaction is no longer adequate to withstand the static stress that existed on the soil prior to the disturbance.

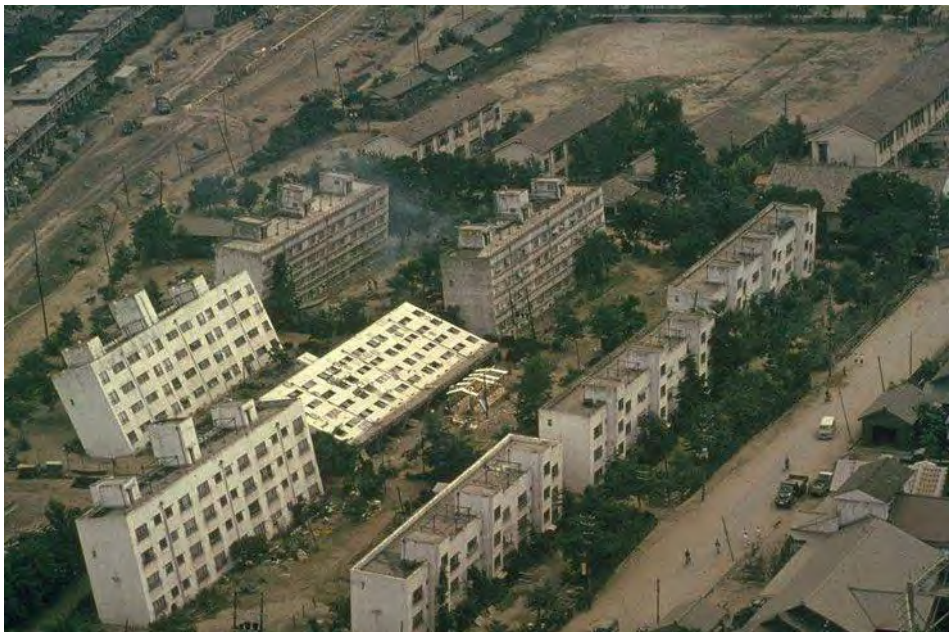


Figure 54 Buildings damaged due to soil liquification

5.1.3 Sustainable Sanitation

In general, the word “sustainable sanitation” applies to the same as ecological sanitation, but the latter has a greater emphasis on source separation. The first and foremost principle is undoubtedly to understand that excreta and wastewater is not a waste, but a valuable resource that can be reused and recycled.

The main goal of every sanitation system is to protect and promote human health by providing a safe environment and breaking the disease cycle. In order for the sanitation system to be sustainable, it must be economically feasible, socially acceptable and scientifically and institutionally relevant, and it must also protect the environment and natural resources.

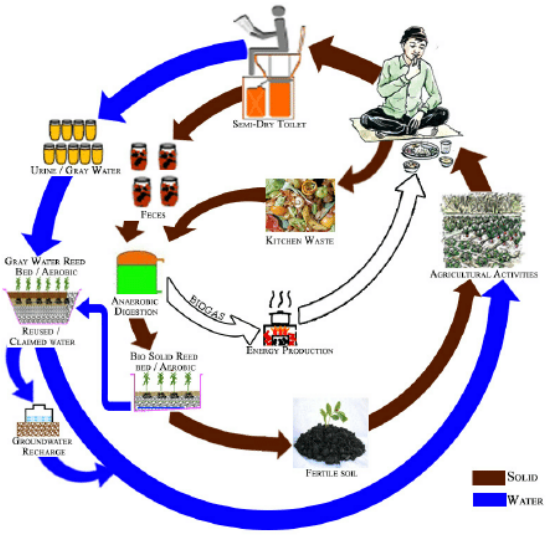


Figure 55 Cycle of sustainable sanitation

5.1.4 Transport Infrastructure / system

Smart transport systems differ in applicable technologies: automatic number plate recognition, or speed cameras to track applications such as protection CCTV systems, auto incident detection or stopped vehicle detection systems, from base control systems such as auto navigation, traffic signal monitoring systems and containers management systems. In addition, predictive techniques are being developed to enable advanced modelling and comparison with historical baseline data. Some of these technologies are listed in the sections below. For intelligent transportation networks, various types of wireless technology have been proposed. UHF and VHF radio modem connectivity is commonly used for short and long-distance ITS connectivity.

“Intelligent Transportation Systems (ITS) use a range of technology to track, analyze, and control transportation systems in order to improve performance and safety.” Leaving dreams of science fiction-style transportation aside for the moment, this term can be condensed into the following definitions for smart transportation: management, efficiency, and safety. In other words, smart transportation makes traveling around a city more convenient, cost efficient (for both the city and the individual), and safer by using new and emerging technologies.

The emergence of IoT devices and 5G networking technology. The former enables the use of low-cost sensors and controllers that can be embedded in virtually any physical system and remotely operated and managed. The latter provides the high-speed communications needed for real-time management and control of transportation systems with minimal latency.

Figure 56 Intelligent Transportation Systems

How to it works:

Public infrastructure and the automobile industry are the two broad categories of market transportation. When networked sensors are incorporated into infrastructure and vehicles to achieve the goals of remote management and control, protection, and performance, these two sectors become "smart."

Consider a busy city intersection. Pedestrians are attempting to cross the street. The traffic flow is regulated by the streetlights.

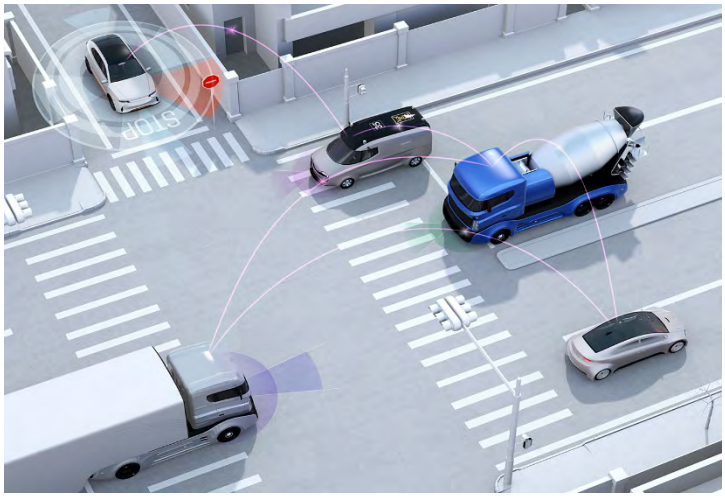


Figure 57 How smart transportation works

Drivers of automobiles are frantically attempting to reach their destination. Streetlights in conventional transportation systems are enabled by timers, pressure plates under the lane, or pedestrian buttons on the curb.
Drivers and pedestrians are also responsible for paying attention to (and obeying) traffic signals. However, if either of these nodes fails, both performance and safety suffer. A distracted driver fails to stop at a red light.
When a pedestrian fails to press the crosswalk button, they miss their turn and must wait longer. Even though there is only one car waiting and no traffic, the streetlight refuses to shift.
However, at a smart junction, something changes. To detect pedestrians, a vehicle can use a combination of Bluetooth and LIDAR (Light Detection and Ranging) and can automatically begin breaking to avoid an accident. Streetlights are much more reliable and effective than pressure plates and timers at picking up individual signals transmitted by vehicles and determining how many cars are waiting and in which direction.
Cars and streetlights may also interact to the point that, when the light turns green (or sends the “go” signal to the car's computer), the car starts moving automatically, and when the light turns red (or sends the “stop” signal), the car slows down and stops.
This is all made possible thanks to the application of technology in transportation such as IoT and 5G communication speeds for real time actions and remote sensing.

TOPIC TAKEN FOR CIVIL CONCEPT

5.1.5 Vertical Farming
Vertical Farming Automation System

Introduction
An estimated 80 % of the world’s population will live in highly significant urban areas by the year 2050, and the global population will rise by 3 billion. This would entail a 70% rise in agricultural productivity. Consequent, depending on the change in yield per hectare, a very large amount of land may be required. Scientists fear that this large quantity of land necessary for mitigating this rise is not available and that the extra land due to land degradation and soil fertility losses will cause serious damage to earth. Therefore, it is important to increase crop production with modern technology (such as automation) to optimize the use of land available.

Figure 58 Vertical farming

Engineers have advised that vertical agriculture is the solution for increasing productivity per region by increasing crop production to the vertical dimension, thereby improving the efficiency of crop production land utilization. For large-scale productions such as glasshouses and controlled environment agriculture, vertical farm building is possible in different layers and compartments.
Vertical agriculture is the practice of food processing in vertical layers. Vertical agriculture Increased crop yield, resource conservation, effects on human health, urban development, energy sustainability etc. provides several advantages compared with traditional horizontal agriculture. If built properly, vertical agriculture will remove the need in growing cities and suburbs for additional farmlands, help create a cleaner atmosphere, and address the food crisis. The modern concept of vertical agriculture utilizes CEA technology, which allows for monitoring of all environmental factors. These plants use artificial light control, environmental control (humidity, temperature, gas) and fertilization, but only aqueous crops which nullify their comparison with traditional horizontal soil planting method. However, research was carried out for vertical soil planting, where plants were grown up in upright cylindrical columns compared to traditional HHS. In comparison with the HHS more crops were developed by the vertical agriculture system (VFS) per unit of flooring, but a substantial decrease from top to base was observed between light distribution and shoot fresh weight.

The structure of vertical farming for a small garden can be made of plastic cages
Taking an example of wall area of 4m x 3m in garden for vertical farming.
The average size of a panel frame is 7-inch X 20 inch.

Figure 59 Vertical farming frame panel

The average covered by one frame is 140 inch^2 approximate to 0.1 m^2. i.e., for 4 X 3 m^2 the requirement of frame no can be calculated

1 frame = 0.1 m^2

? = 12 m^2

By calculation frames required are 120 no.

Average size of one pot is 2050 cm^3

Soil filled in one pot is 1700cm^3

Fertile soil required is 120 X 1700 cm^3 =204,000cm^3

1 m^3 = 1000 kg

0.204 m^3 =? (204 kg)

Figure 60 Vertical farming with panels

VERTICAL FARMING ESTIMATE					
ABSTRACT SHEET					
SR. NO.	**DISCRIPTION**	**QUANTITY**	**RATE**	**PER**	**AMOUNT**
1	Vertical farming frames	120	230	no.	27600
2	Flower plants	360	100	no.	36000
3	Fertile soil	204	90	kg	18360
	Approximate cost				81960

Table 13 Abstract sheet for vertical farming

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

Introduction

Reinforcement steel must be derived by smelting from their ores, from which the metal absorbs and conserves the energy required to free the metal from the ore. This metal is unstable, though, as the metal is recombined with environmental elements and returns to its natural state, thus losing the extra energy. Oxidation or corrosion is the mechanism by which a metal reverts to its natural state. Steel is naturally inclined to corrode and to return as iron oil, normally ferric oxide Fe2O3, to its natural state. The rate of corrosion in steel depends on the availability of water, oxygen, and aggressive ions, as well as the atmosphere pH, temperature, and internal steel characteristics such as composition, grain structure, and stress induced by manufacture. The high pH of a concrete pore water solution causes a passive film (oxide layer) to be shaped and preserved on the surface of the reinforcing steel.

Prevention methods

(1) Alternative reinforcement and slab construction approaches involve materials that separate the concrete steel electrically and create chloride ion barrier, steel protective materials that are galvanically shielded and materials that have considerably greater corrosion levels compared to traditional reinforcement steel. Concrete slabs without internal reinforcing have been designed.

2) Barrier procedures protect reinforced concrete from exposure to corrosion by removing the reinforcement of water, oxygen, and the chloride ions from corrosion.

3) Electric and external anode approaches use a reinforcement current and an external anode even when the chloride ion level is above the threshold of corrosion.

4) Corrosion inhibitors provide protection by increasing the chloride level threshold, reducing the concrete ‘s permeability, or both.

Steps repair measures

1. Remove the sound steel and uncover steel reinforcement all over.
2. De-sanding, cleaning, and applying rust removers by acceptable methods.
3. Restore reinforcement, wherever possible, with anchorages, i.e., shear connectors.
4. Apply polymers or Epoxy-based substance tack / binding coat.
5. To return concrete to the original surface level, use one of many stitching techniques.
6. Slure or evoxy of sufficient grade for the injection of cement or polymer-modified slurry to fill pores.
7. Protective covering suitable for use.

5.1.7 Sewage treatment plant

Sewage treatment is the method of extracting pollutants from urban wastewater, comprising mostly household sewage plus some industrial wastewater. Physical, chemical, and biological processes are used to remove contaminants and to generate treated wastewater (or treated effluent) that is safe enough to be released into the world. A by-product of the treatment of water is semi-solid waste or slurry, called sewage sludge. The sludge must be further treated before it can be disposed of or added to the property.

Sewage treatment generally involves three stages, called primary, secondary, and tertiary treatment.

- Primary treatment, where heavy solids can settle down in a soothing bowl while oil, grate, and lightweight solids float to the surface. Remove settled and floating materials and discharge or secondary treatment of residual fluids. Certain sewage treatment plants linked to a combined sewage system have a bypass after the primary treating unit. This ensures that secondary and tertiary treatment systems should be circumvented during very heavy rainfall to protect them from hydraulic overloading and only primary treatment is required for the combination of waste and stormwater.
- Secondary treatment extracts biological matter dissolved and suspended. In general, endogenous, waterborne micro-organisms conduct secondary treatment in controlled ecosystems. Secondary treatment may involve the removal of the microorganisms from treated water before disposal or tertiary treatment.
- Tertiary treatment is described as anything more than primary or secondary therapy, to permit the expulsion into a very sensitive or fragile environment. Treated waters are often chemically or physically disinfected or used for irrigation of a golf course, greenway, or park (for example by lagoon or microfiltration), prior to discharge into streams, rivers, bays, lagoons, or wetlands. It can also be used for soil water refueling or agricultural use if it is sufficiently safe.

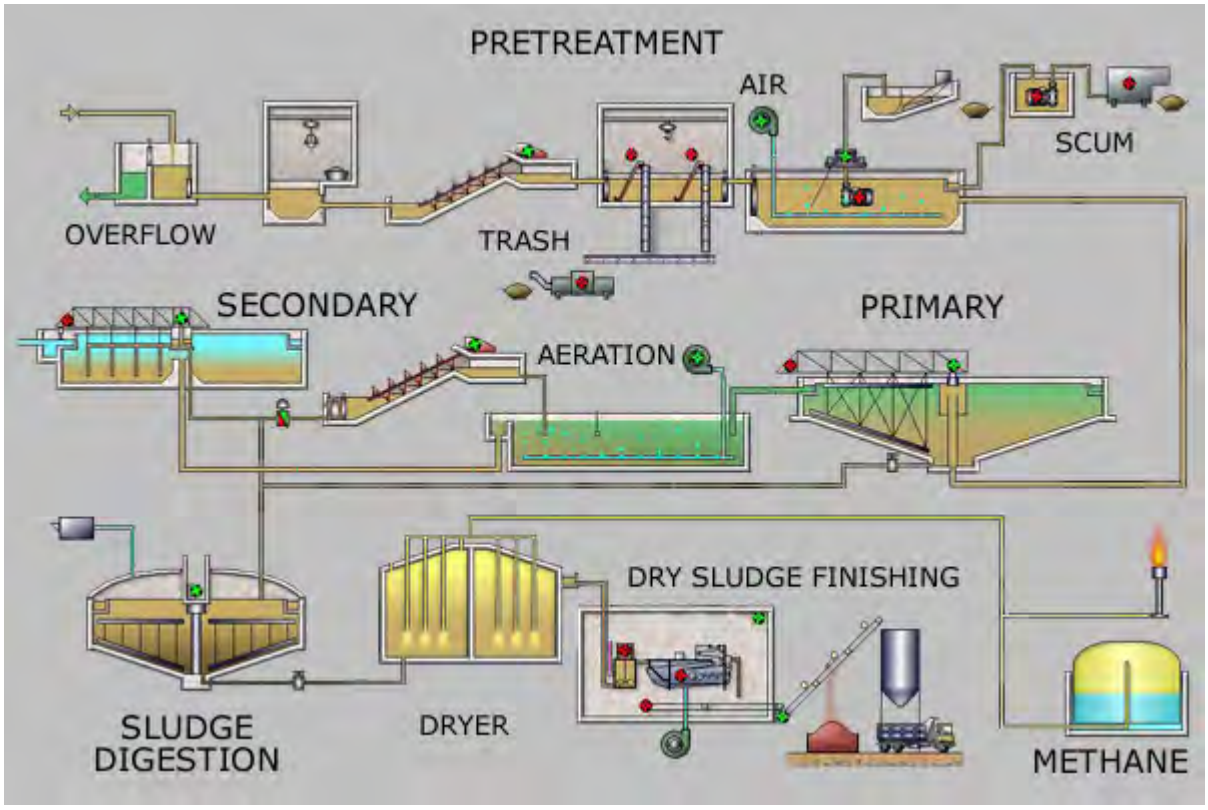


Figure 61 System's block diagram of sewage treatment plant

5.2 Concept (Electrical)

5.2.1 Programmable Load Shedding

The project is planned to run an electric load many times in conjunction with the plan. It avoids the problems of manually switching the load on / off. This proposal has a built-in real-time clock (RTC), which ensures that the time is controlled, and the load is adjusted accordingly.
Load shedding is what power companies do when electricity demand is immense and above supply. Thus, it must be precisely regulated for a certain period in a delivery system. A stable circuit that performs the manual task of switching electrical devices on /off is programmable load time shedding management system.
It uses a real time clock connected to an 8051-family microcontroller. While the set time is the same as real time, the microcontroller commands the relay to set the load to ON and then switches the OFF according to the schedule. The greatest benefit of this project is multiple ON / OFF time entry.

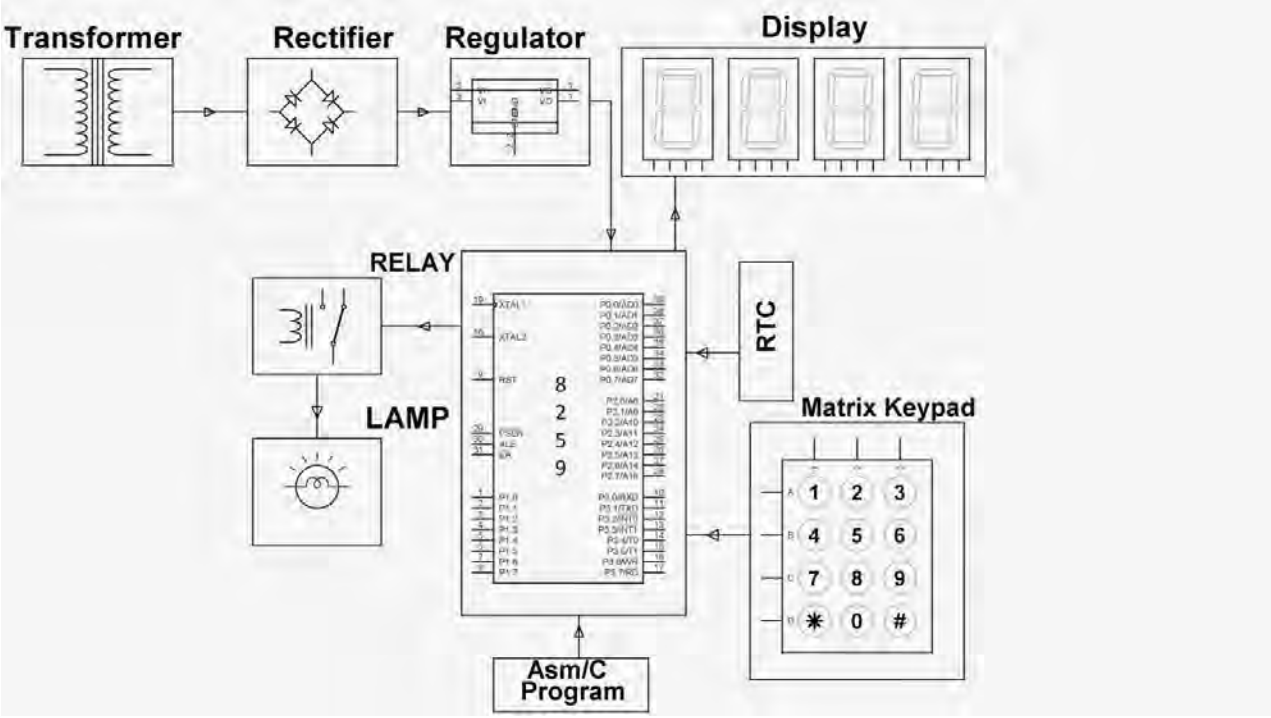


Figure 62 Circuit diagram of Programmable Load Shedding

5.2.2 Railway Security System using IoT

Railways are known to be one of the most common modes of transport around the globe. There is an immense rise in road and rail traffic today. This rapid development has resulted in more and more incidents at crossings.
This is a major problem for users of both rail and road transport. There are no simple ways to tackle this issue, but the main concern is its viability on changing environmental conditions. In this paper, we suggest an IoT-based technique as an alternative and efficient solution for manned and unmanned crossings.
The project aims to establish a safety mechanism for goods transported in open top freight trains. A constant observation is the most effective way to protect something against criminals. Camera Module2 was used to continuously track the open top freight train.
To detect movement or feel movement of people, animals, or something else, the Passive Infrared Sensor (PIR)1 was used. So, every time the PIR sensor senses a movement, this instance is pictured in the frame.
This image is sent to the Raspberry PI that contains Skin Detection Algorithms and indicates whether a human movement has been produced.
This picture is then sent to the drop box if a person does. Every officer will see the same thing. The current system is equipped with a CCTV at different sensitive sites such as bridges, rail stations etc. but there is no permanent monitoring.

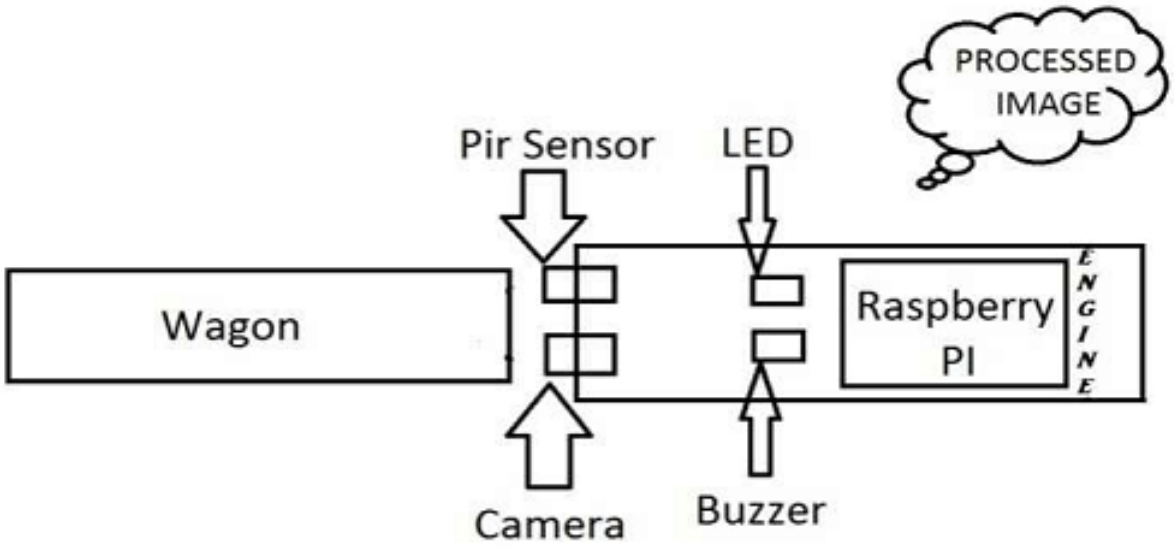


Figure 63 System's block diagram of Railway Security System using IoT

5.2.3 Management through Energy Harvesting Concept:

The purpose of the project Power Management through Energy Harvesting Concept work was designed and implemented by the energy collection concept for power savings and optimization in power management. The control system is based on light and temperature sensors.

The process becomes automatic after installation of the components. If a load is increased in each region, the control flows. We planned and implemented the circuit to address these disadvantages.

The goal is to reduce the cost of power supplied to the load point. One mode of use in an energy-recovery node is to treat the collected energy as a battery energy replacement, and a potential power-management goal is to optimize the life of the energy.

But in the case of node harvest, another mode of use is possible at an acceptable rate by using the extracted resources, so that the device continues to run permanently. In this mode, the concerns of power management design vary greatly from those of optimizing life.

There are two conception considerations:

1. Energy-neutral operation: How can the energy used to be operated

Ever less than the collected energy? Each of the distributed components of the device can harvest its own energy, and the performance depends not only on the spatiotemporal profiles of the available energy, but also on the way in which this power is used to guarantee the network ‘s large output.

2. Maximum efficiency: What maximum performance can be supported in each harvesting setting while maintaining energy-neutral operation? Again, the energy stored in many distributed components depends on this.

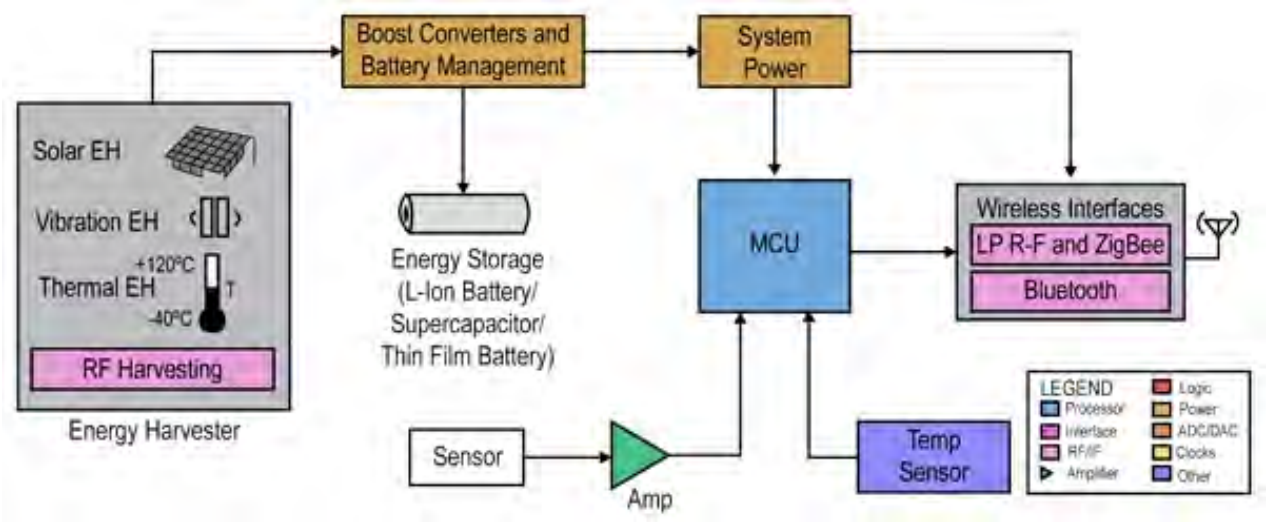


Figure 64 System’s block diagram of Management through Energy Harvesting

5.2.4 Moisture Monitoring System

ELECTRIC CONCEPT IN VERTICAL FARMING

Automation is recently regarded as a technology necessary to regulate and track various phenomena such as the provision of water, room temperature, voltage fluctuation, etc., in many fields and projects. This project is therefore intended to build a low-cost vertical farm automation (VFAS) system that enables food production to be effective by using low-voltage captive technology to minimize resource wastage and optimize returns.

The actual output of the plant can be monitored using humidity sensors, light sensors, and temperature sensors, thus deciding the appropriate time to supply the plants with water and light. The scope of this work will cover the design and building of the vertical farm, programming micro controller for its automation, actual testing with live plants, and implementation of the completed work.

RESEARCH MATERIALS AND METHODS

The vertical farm built for this project includes two distinct soil layers with separate lighting, water supply unit, sensor of moisture and sensor of temperature. The front end has solenoid valves that provide water from an overhead water tank through a low voltage water pump. Based on the light level in the field, the lighting devices for the farm will automatically lighten up or become weaker.

In the context, the farmer can display live data on the output of the plant. To manually track irrigation, the farmer can switch between automated and manual modes to allow him to perform routine maintenance on the farm.

The materials used to realize this design include:

a. Sensors

The soil moisture sensor is to be mounted in the soil with analogue and digital output and optimized for reading. To evaluate the on and out of the solenoid valves, the output from these sensors is used. The light sensor on the vertical farm structure measures the ambient light intensity and adjusts the internal lighting for plant requirements. ATM Sensor provides output data used for monitoring of the fans' ON and OFF switching to control the farm temperature.

b. Water pump

12-volt water pump is controlled by the micro-controller, based on analogue readings from the soil moisture sensor, and it is used to feed the solenoid valves which in turn activate water sprinklers.

c. Power supply

The phase voltage of the AC mains to the VAFS is stepped down from 239.6V to 15V and rectified to 12V DC (to power solenoid valves, water pump and fans) and 5V DC (to power micro-controller and liquid crystal display).

Systems design

This design demands that the soil moisture level can be continually felt by the automatic irrigation system. When the necessary amount of Moisture is reached, the device will react correctly by watering and then shutting down the water supply. Different subsystems have been incorporated into this project system design. Three subsystems are available. They are a sub-system, a sub-system and a subsystem for sensing and control.

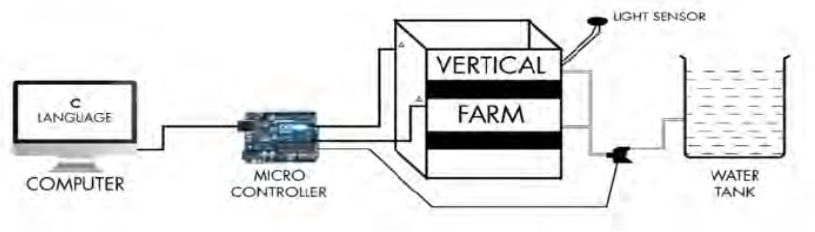


Figure 65 Schematic diagram of vertical farm automation

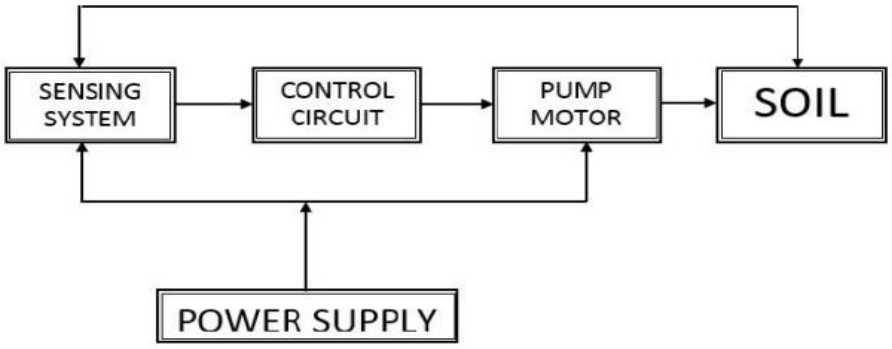


Figure 66 System's block diagram of vertical farm automation

VERTICAL FARMING ESTIMATE					
ABSTRACT SHEET					
SR. NO.	**DISCRIPTION**	**QUANTITY**	**RATE**	**PER**	**AMOUNT**
1	Automatic control circuit				
	Arduino	1	450	no.	450
	Soil moisture sensor	2	380	no.	760
	GSM module	1	840	no.	840
	Relay module	1	80	no.	80
	Other Arduino electronics	1	200	no.	200
	Total				2330
2	Drip irrigation system				
	Water pump	1	3500	no.	3500
	Drip pipe	100	20	m	2000
	Other drip material	1	3000	no.	3000
	Total				9500
	Total approximate cost approximate				12000

Table 14 Abstract sheet for vertical farming

5.2.5 Home Automation using IoT

The Home Automation concept seeks to place your regular electrical appliances at your fingertips to monitor the process, offering users affordable illuminating solutions, increased energy consumption and optimized energy consumption.

As the name suggests it is intended to monitor all devices in your smart home using network protocols or cloud-based computer services, the Internet of Things (or also called IoT) based Home Automation System.

The IoT based Home Automation system provides more versatility over wired systems, offering a variety of advantages such as ease of use, easy configuration, avoiding cables and electricity connexons, easy detection and triggering and even easy mobility. Home Automation system based on IoT consists of servers and sensors.

These servers are Internet-based remote servers that allow you to manage and process the information without the need for custom computers. You can configure the internet-based servers to manage and track multiple sensors mounted at the desired position.

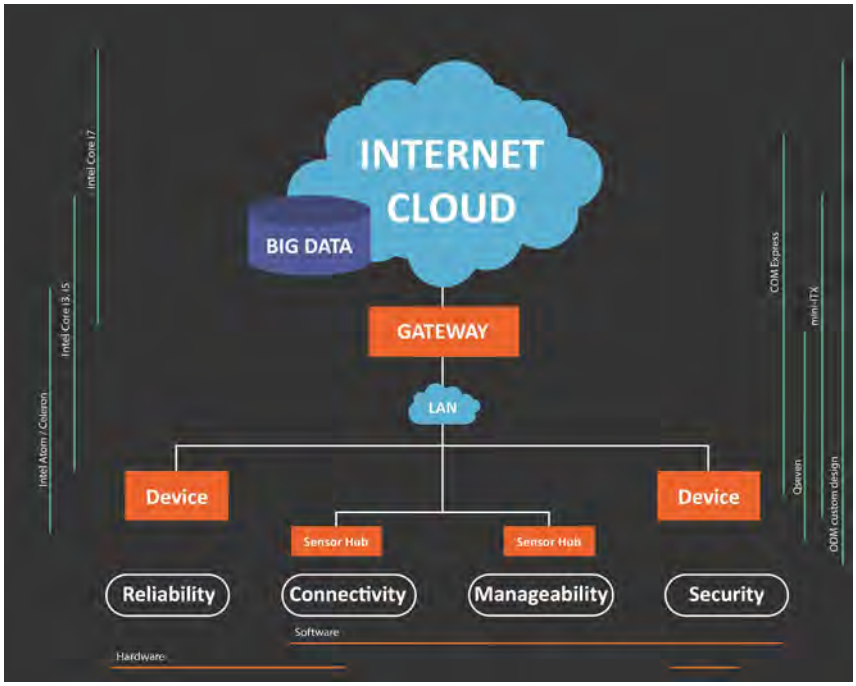


Figure 67 System's block diagram of Home Automation using IoT

5.2.6 PC Based Electrical Load Control

The goal of the project is to monitor electrical devices by a PC. For example, for better stage administration, theatre lighting can be managed centrally from the PC. The goal of the project is to monitor electrical devices by a PC. For example, for better stage administration, theatre lighting can be managed centrally from the PC.
They are usually handled manually, making the synchronization of the light with the respective scene difficult. This device enables one to monitor the ON / OFF electrical equipment just by sitting in one position with a PC.
This system is built into the electric charges and linked to the PC where central control is carried out. The microcontroller uses an RS-232 protocol to communicate with the PC. We use Hyper Terminal on PC to switch on / off the computers. The device begins work once the connexon has been formed to the PC. The microcontroller used in this project belongs to 8051 family.

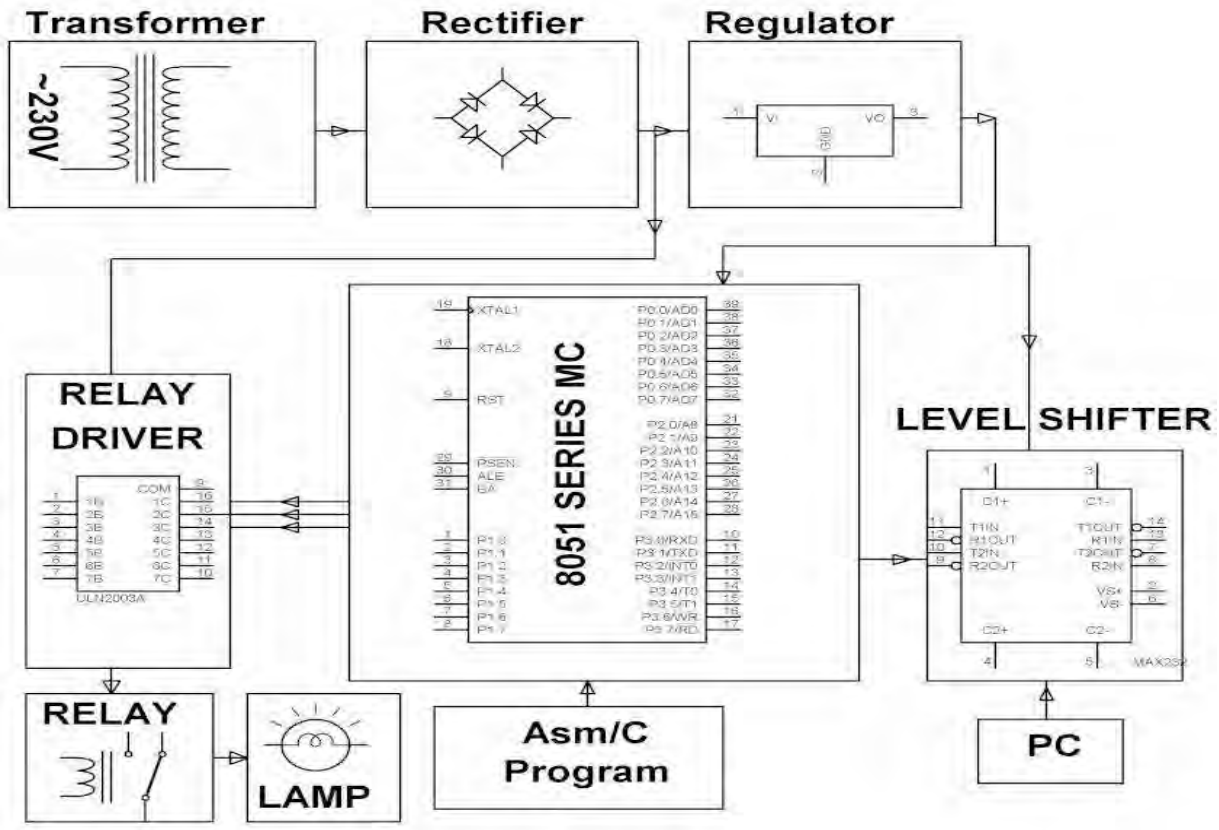


Figure 68 Circuit diagram of PC Based Electrical Load Control

5.2.7 Electrical Parameters Measurements

ELECTRICAL PARAMETER	MEASURING UNIT	SYMBOL	DESCRIPTION
Voltage	Volt	V or E	Unit of Electrical Potential **V = I × R**
Current	Ampere	I or i	Unit of Electrical Current **I = V ÷ R**
Resistance	Ohm	R or Ω	Unit of DC Resistance **R = V ÷ I**
Conductance	Siemen	G or ʊ	Reciprocal of Resistance **G = 1 ÷ R**
Capacitance	Farad	C	Unit of Capacitance **C = Q ÷ V**
Charge	Coulomb	Q	Unit of Electrical Charge **Q = C × V**
Inductance	Henry	L or H	Unit of Inductance $\mathbf{V_L = -L(di/dt)}$
Power	Watts	W	Unit of Power $\mathbf{P = V \times I}$ or $\mathbf{I^2 \times R}$
Impedance	Ohm	Z	Unit of AC Resistance $\mathbf{Z^2 = R^2 + X^2}$
Frequency	Hertz	Hz	Unit of Frequency $\boldsymbol{f = 1 \div T}$

Table 15 Electrical Parameters Measurements

CHAPTER 6. SWACHH BHARAT ABHIYAN (CLEAN INDIA)

Swachh Bharat Abhiyan (SBA) (SBM) and Clean India Mission in India are campaigns designed to clean up Indian cities, towns, smaller cities, and rural areas on the streets, highways, and infrastructure. The goal of Swachh Bharat is to eradicate open defecation by building household and community toilets and developing a responsible toilet control mechanism. Managed by the Government of India, the mission is intended by building 12 million rural toilet facilities in India, at an approximate cost of Rs. 1,96 lakh Crore, by October 2, 2019, the 150th anniversary of the birth of Mahatma Gandhi.

6.1 Swachhta needed in allocated village

The village of Kundanpar is clean. The inner roads and streets are very tidy. There is a door-to – door waste collection system for industrial and residential uses.

Figure 69 Clean bus stop Kundanpar

Figure 70 Clean internal street Kundanpar

6.2 Guidelines – Implementation in allocated village

These are the guidelines for maintaining the clean village.

- During the ride, no wrappers, paper, or dry waste is thrown into the lane.
- Take it in your pocket or bag (you should leave it in your bag / bag because it’s dry waste).
- Keep wet wastepaper bags with you and dump them just in the dustbin.
- Roads spitting prohibited.
- Stop plastic bag use.
- Meet the laws and regulations of the government.
- Make them aware if someone breaks the law.
- If they make those mistakes, stop your mates.
- Make our village clean and spread knowledge.

Figure 71 Clean main road Kundanpar

6.3 Activities Done by Students for allocated village

There are no tasks carried out by students to clean the village of Kundanpar. As it is not required the village is relatively clean. Because there are salaried based workers who clean the village on alternate days. The workers are appointed by the grampanchayat itself. And there is a door-to-door system of waste collection there is no possibilities of throwing waste outside on streets.
We made drew banner charts and placed them in public place.

Figure 72 Swachh Bharat banner made by us

CHAPTER 7. VILLAGE CONDITION DUE TO COVID-19

7.1 Taken steps in allocated village related to existing situation

The guidelines were implemented by the grampanchayat of wearing masks, sanitizing.
The public areas were closed for few months like garden, grounds, and schools. There were strict rules of cleaning in villages and draining out stagnant water as that may become the cause of breed place of the virus.
There were announcements made on how to deal with the pandemic time and what to do or not to. Nowdays the some freedom is given by government to do work so people go outside with precaution. Any caught breaking rules are fined.

Guidelines to be follow were:

- To stay at home.
- Stay separate and well-ventilated room.
- Regularly wash hand with soap and water.
- Use tissue or handkerchief for sneeze or cough.
- Maintain a distance of at least 1m between the public
- Try not to crowd in place
- Try not to visit any house or allow visitors at home
- Keep doors and windows open for proper air circulation
- Wear mask if need to go out.
- Avoid use pf share objects.
- When feeling uncomfortable call helpline, no and contact doctor.
- Clean wet surface reduces the breeding process of virus.
- Sanitize the house alternate days and hands
- Wash vegetables properly before cooking.
- Avoid street food and avoid online deliveries of goods.

Figure 73 Covid-19 situation Kundanpar

7.2 Activities Done by Students for allocated village

we discussed the current situation with the staff members of panchayat and principal of school. We gathered our point of views and to deal with situation there some banners also put in village by us.

Figure 74 Covid-19 banner made by us

7.3 Any other steps taken by the students / villagers

As almost all rules were followed by villagers given by the government. No many things were required to be done.

CHAPTER 8. SUSTAINABLE DESIGN PLANNING PROPOSAL

8.1 Design Proposals

8.1.1 Sustainable Design (Civil)

Rainwater harvesting application in school

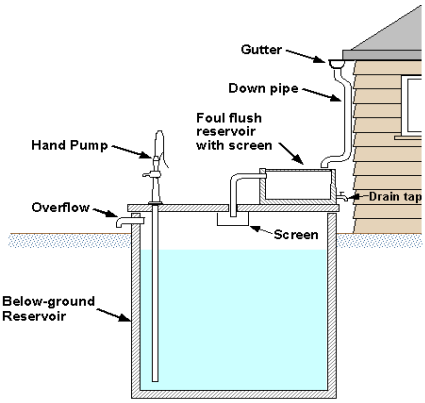


Figure 75 Rainwater harvesting system

DESIGN PROCEDURE:

Following details are available:
Area of the catchment (A) = 166 sq. m.
Average annual rainfall (R) = 358 mm (0.358 m)
Runoff coefficient (C) = 0.85
1. Calculate the maximum amount of rainfall that can be harvested from the rooftop: Annual water harvesting potential = 166 x 0.358 x 0.85
= 50.5138 cu. m. (50,514 liters)
2.Determine the tank capacity: This is based on the dry period, i.e., the period between the two consecutive rainy seasons i.e., 245 days.
3.Calculate drinking water requirement for 40 students the for the dry season
= 245 x 40x 5
= 49,000 liters
As a safety factor, the tank should be built 20 per cent larger than required, i.e., 58,800 liters.
4. Size of tank required as per design

1000 liters = 1 m^3

58,800 liters =? (58.8 m^3)

= 18750 x 1/1000 =58.8 m^3

A typical size of a rectangular tank constructed in the basement will be about 3.5 m x 3.5 m x 5 m. into dimension.
This volume is about twice the annual drinking water requirement of 40 students. The average daily drinking water requirement per student in school time is 5 liters.

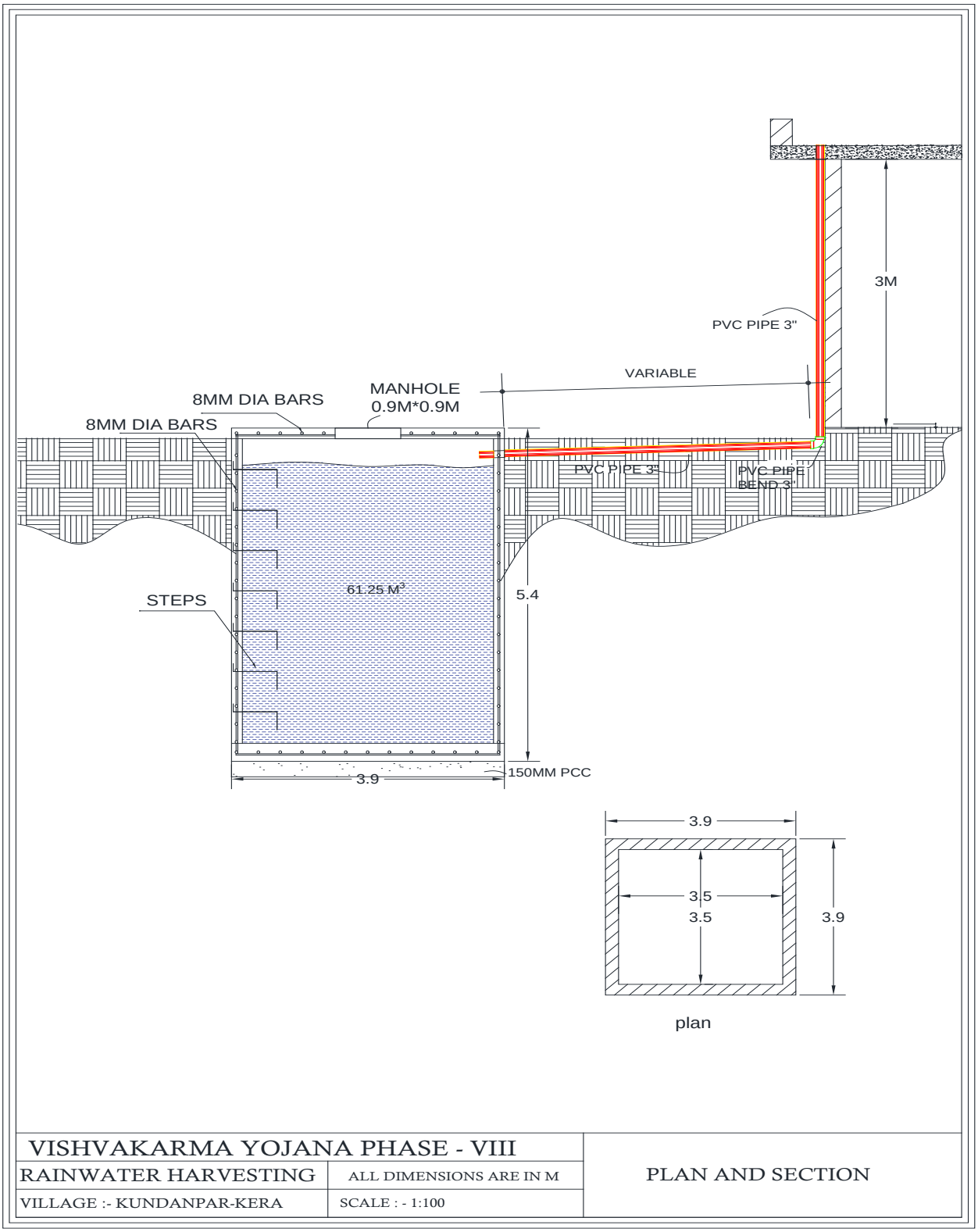


Figure 76 Plan and section of rainwater harvesting system

RAINWATER HARVESTING ESTIMATE							
QUANTITY SHEET FOR WATER TANK							
SR. NO.	**DISCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	Excavation	1	3.9	3.9	5.55	84.4155	m^3
2	RCC in water tank						
	Wall 1	2	3.9	0.2	5.4	8.424	
	Wal 2	2	3.5	0.2	5.4	7.56	
	Slab	2	3.9	3.9	0.2	6.084	
	Deduction of manhole	1	0.9	0.9	0.2	0.162	
	Total					21.906	m^3
3	PCC in water tank	1	3.9	3.9	0.15	2.2815	m^3
4	Steel required	1				2235.5073	kg
	Taking 1.3% of RCC						
	Steel density = 7850						
5	Plaster						
	Inside wall	4	3.5	-	5	70	
	Slab inside	2	3.5	3.5	-	24.5	
	Slab on top outside	1	3.9	3.9	-	15.21	
	Deduction of manhole	2	0.9	0.9	-	1.62	
	Total plaster					108.09	m^2
6	Plumbing system						
	PVC pipe 3"	2	3			6	m
	PVC pipe bend 3"	2				2	no
	Iron mesh screen water	2	0.1	0.1		0.02	m^2

Table 16 Quantity sheet for Rainwater harvesting

RAINWATER HARVESTING ESTIMATE					
ABSTRACT SHEET					
SR. NO.	**DISCRIPTION**	**QUANTITY**	**RATE**	**PER**	**AMOUNT**
1	Excavation	84.4155	90	m^3	7597.395
2	RCC in water tank	21.906	3800	m^3	83242.8
3	PCC in water tank	2.2815	3000	m^3	6844.5
4	Steel required	2235.5073	45	kg	100664.89
5	Plaster	108.09	160	m^2	17294.4
6	PVC pipe 3"	6	430	m	2580
7	PVC pipe bend 3"	2	150	nos	300
8	Iron mesh screen of water	0.02	1940	m^2	38.8
	Total cost				218562.79
	5% water and electric charges				229490.93
	Approx. cost				229500

Table 17 Abstract sheet for Rainwater harvesting

8.1.2 Physical design (Civil)

A new Aaganwadi built.

Figure 77 Elevation of Aaganwadi

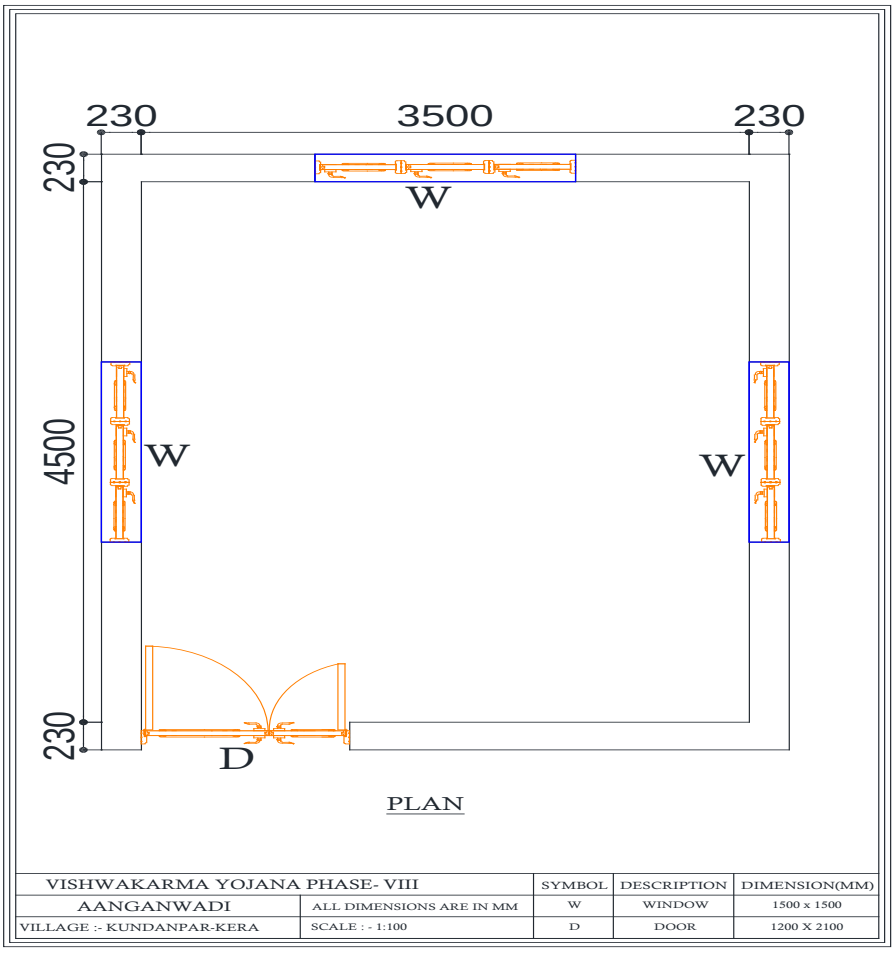


Figure 78 Plan of Aaganwadi

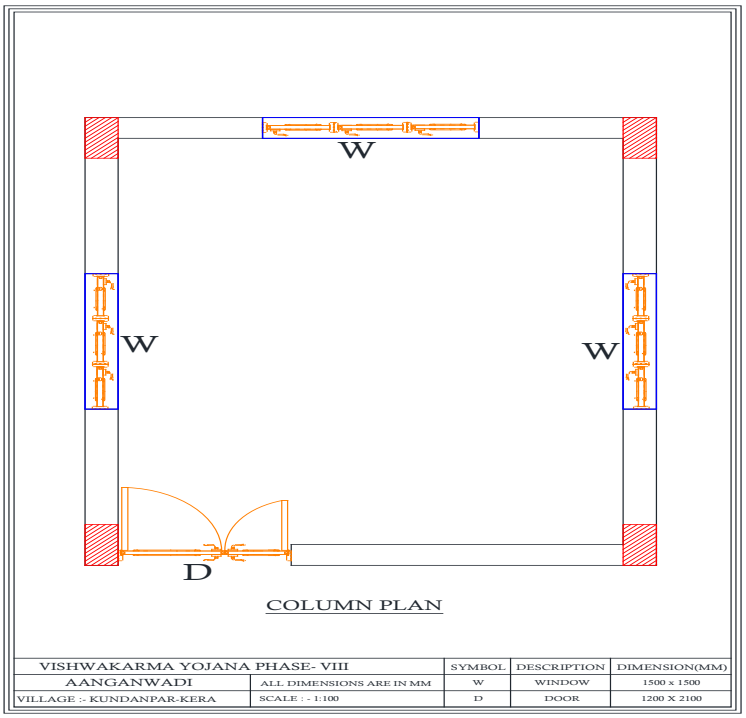


Figure 79 Column plan of Aaganwadi

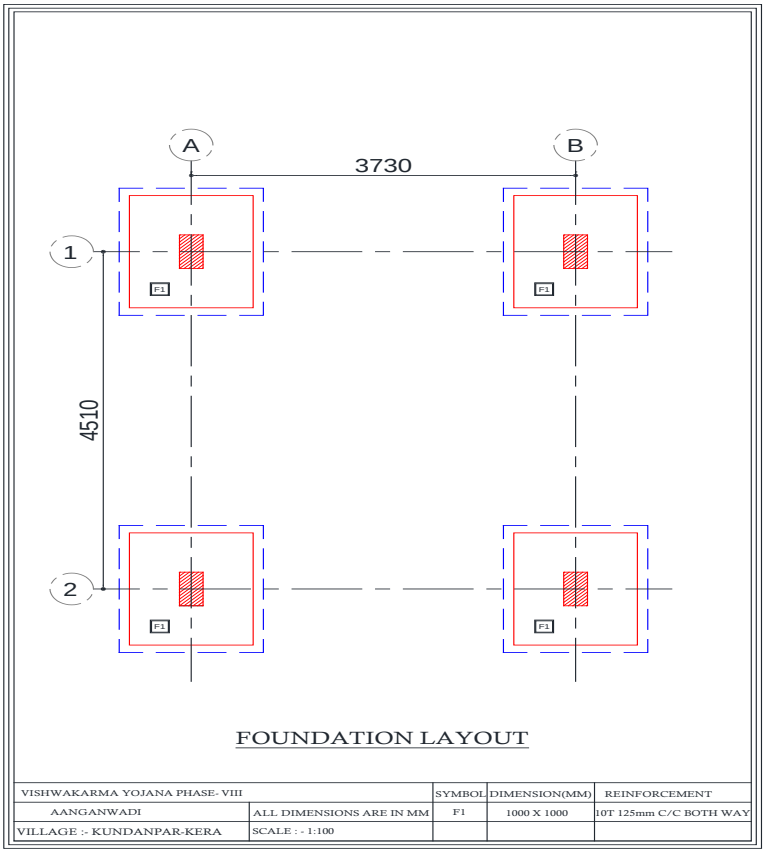
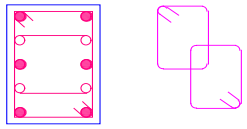
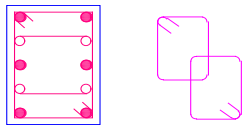


Figure 80 Foundation layout of Aaganwadi

SCHEDULE OF COLUMN REINF.

SECTION - B-B	PLINTH LVL. TO TERRACE FLOOR LVL.	
		● 6-16T ○ 4-12T
	SIZE	230 X 450
	STIRRUP SET	2- SET
	CONFINEMENT ZONE	8T @ 125 C/C
	REST	8T @ 150 C/C
SECTION - A-A	FOUNDATION TO TO PLINTH LVL.	
		● 6-16T ○ 4-12T
	SIZE	230 X 450
	DEPTH - D	300
	CONF. ZONE	8T @ 125 C/C
	REST	8T @ 150 C/C
	COLUMN NUMBER	F1 TYPE FOOTINGS ALL COLUMN

TYPICAL COLUMN REINF. SECTION

VISHWAKARMA YOJANA PHASE- VIII	
AANGANWADI	ALL DIMENSIONS ARE IN MM
VILLAGE :- KUNDANPAR-KERA	SCALE : - 1:100

Figure 81 Typical column details of Aaganwadi

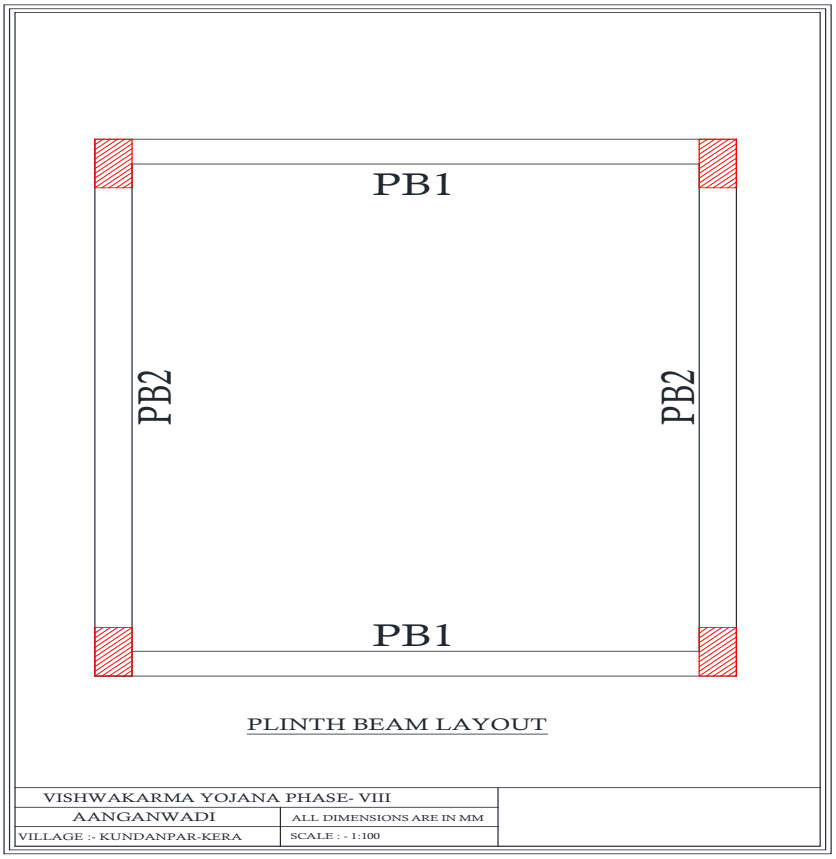


Figure 82 Plinth beam layout of Aaganwadi

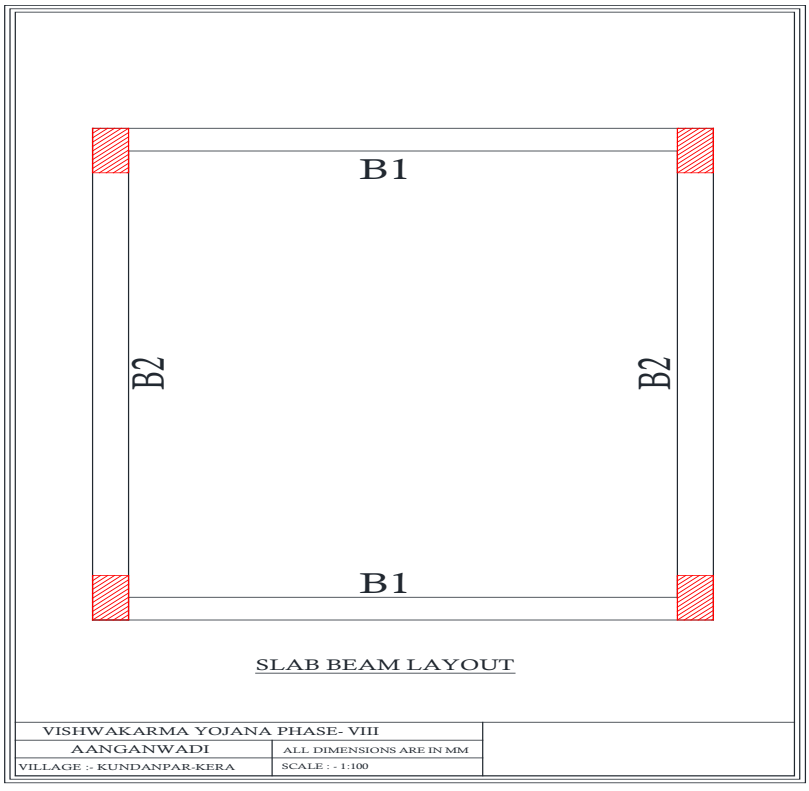
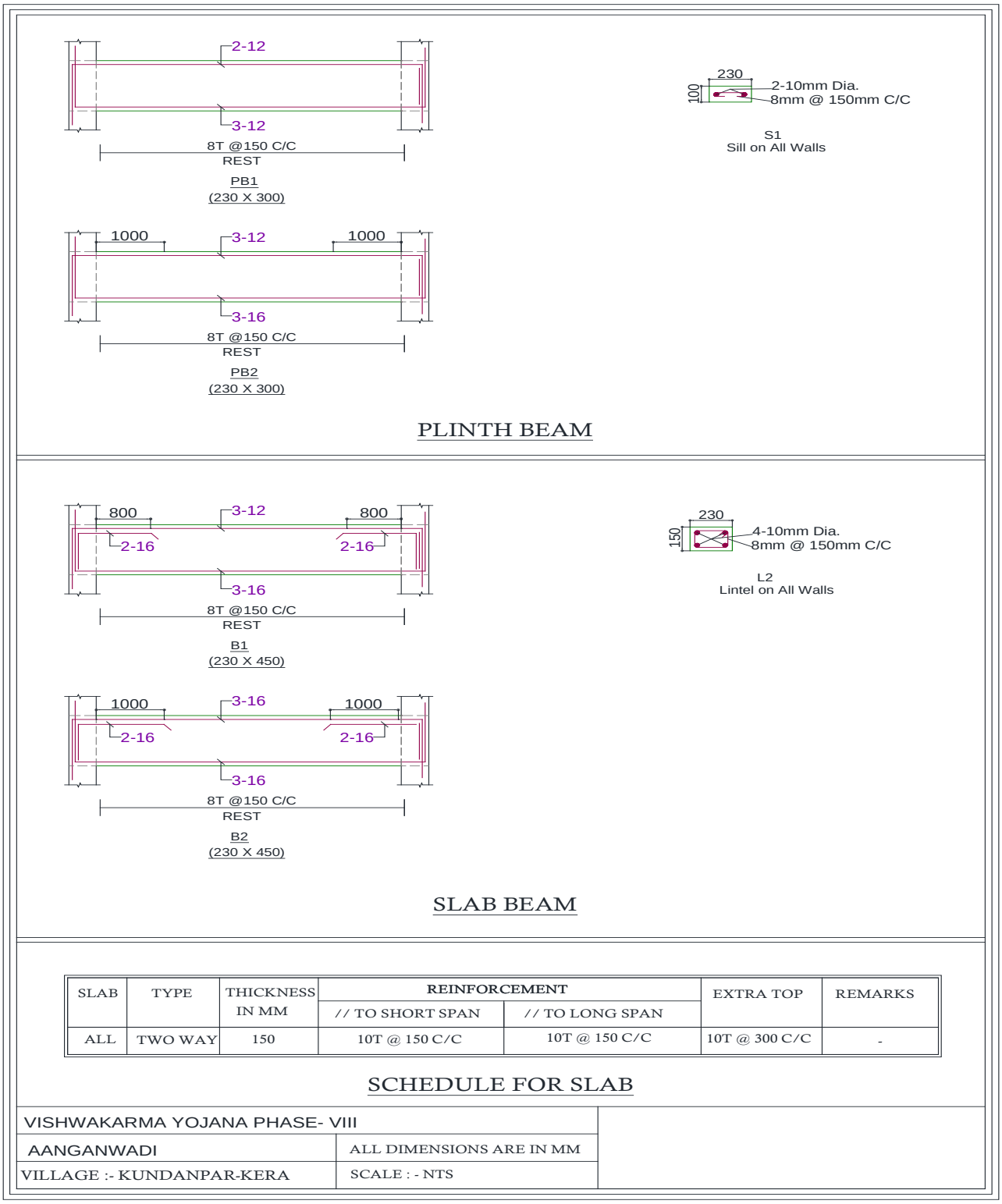


Figure 83 Slab beam layout of Aaganwadi



SLAB	TYPE	THICKNESS IN MM	REINFORCEMENT		EXTRA TOP	REMARKS
			// TO SHORT SPAN	// TO LONG SPAN		
ALL	TWO WAY	150	10T @ 150 C/C	10T @ 150 C/C	10T @ 300 C/C	-

Figure 84 Plinth beam and slab beam details of Aaganwadi

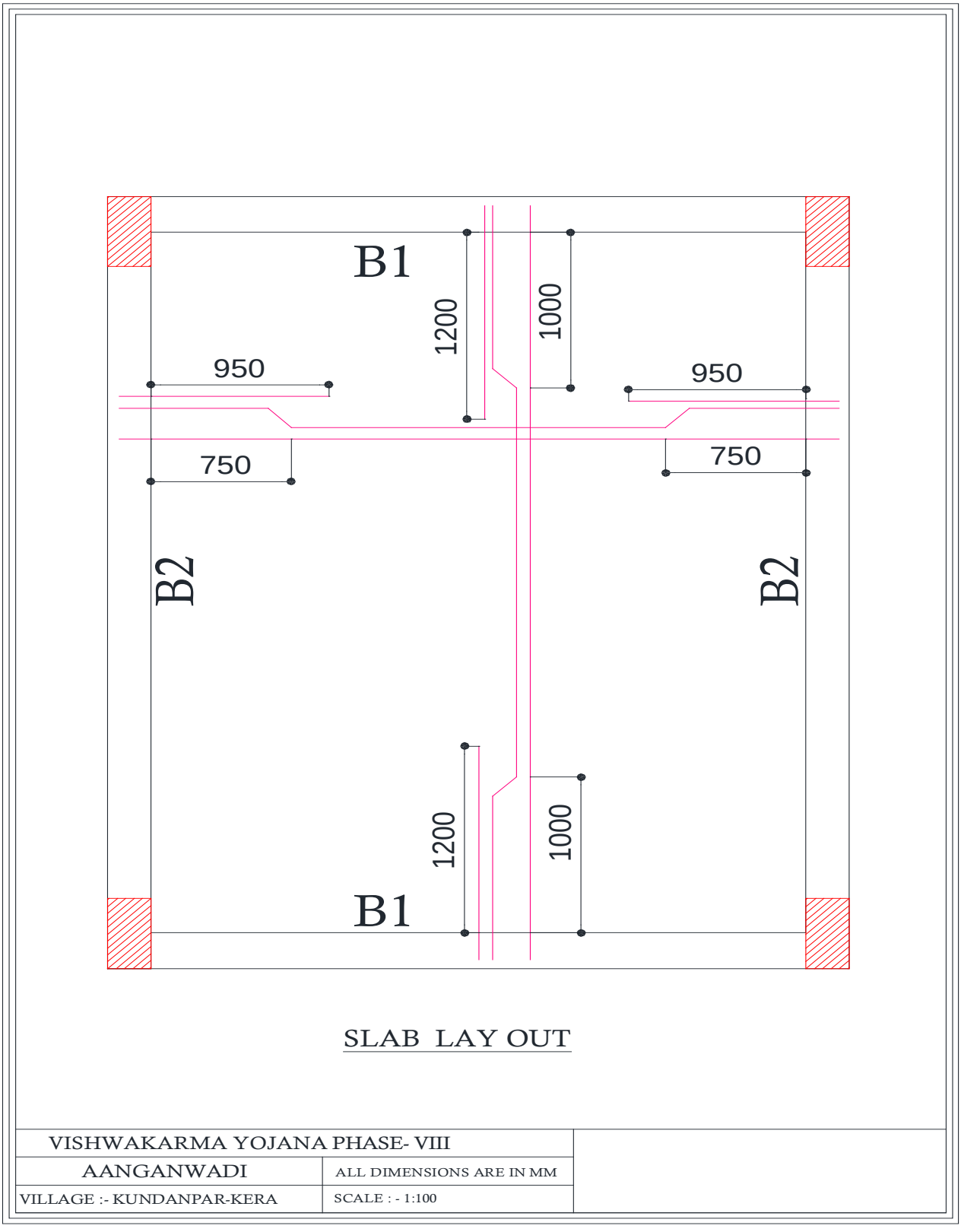


Figure 85 Slab layout of Aaganwadi

AANGANWADI ESTIMATE							
QUANTITY SHEET FOR COLUMN							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	Excavation	4	1	1	2	8	m^3
2	PPC in foundation	4	1	1	0.1	0.4	m^3
3	RCC in foundation	4	0.9	0.9	0.3	0.972	m^3
4	RCC in column	4	0.23	0.45	5.05	2.0907	m^3
	Total					3.0627	
5	Steel in column and footing						
	Take 2.5% of steel approx.					600.9175	kg
	S = (2.5%*3.062) * 7850						

QUANTITY SHEET FOR PLINTH BEAM PB1							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in PB1	2	3.96	0.23	0.3	0.546	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*0.546) * 7850					85.7	kg

QUANTITY SHEET FOR PLINTH BEAM PB2							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in B2	3	4.96	0.23	0.23	0.787	m^3
2	Steel in beam 2						
	Take 2% steel approx.						
	S = (2%*0.787) * 7850					123.56	kg

QUANTITY SHEET FOR SLAB BEAM B1							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in B1	2	3.96	0.23	0.45	0.820	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*0.820) * 7850					128.74	kg

QUANTITY SHEET FOR SLAB BEAM B2							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in B3	2	4.96	0.23	0.45	1.027	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*1.027) * 7850					161.23	kg

QUANTITY SHEET FOR SUPER STRUCTURE							
By centre line method							
Total c/c length:							
L= (0.115+4.96+0.115) *2+(0.115+3.96+0.115) *2							
18.76							
Total c/c length= 18.76							
No. Of junction = 0							
Net length = total c/c length -0.5 X wall thickness X no. Of junction							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	PCC in plinth	1	3.96	4.96	0.1	1.96416	m^3
2	Earth filling						
	Inside	1	3.5	4.5	0.25	3.9375	
	Total					3.9375	m^3

3	Masonry work in super structure						
	For 0.23 wall	1	18.76	0.23	2.9	12.51292	
	Net length=18.76						
	18.76						
	Deduction						
	Door	1	1.2	0.23	2.1	0.5796	
	Window	3	1.5	0.23	1.5	1.5525	
	Total					2.7261	
	Total masonry work					9.78682	m^3
4	Plaster						
	Outside plaster 16mm						
	Wall 1	2	4.96	-	3.275	32.488	
	Wall 2	2	3.96	-	3.275	25.938	
	Slab top	1	5.96	4.96	-	29.5616	
	Inside plaster						
	Wall 1	2	4.5	-	3	27	
	Wall 2	2	3.5	-	3	21	
	Inner slab	1	8.03	-	3.05	24.4915	
	Deduction						
	Door	1	1.2	-	2.1	2.52	
	Window	3	1.5	-	1.5	6.75	
	Total plaster					151.2091	m^2
5	Tile’s flooring						
	Inside	1	3.5	4.5	-	15.75	
	Total tiles flooring					15.75	m^2
6	Paint						
	Outside paint						
	Wall 1	2	3.96	-	3.275	25.938	
	Wall 2	2	4.96	-	3.275	32.488	
	Slab top	1	5.96	4.96	-	29.5616	
	Inside paint						
	Wall 1	2	3.5	-	3	21	
	Wall 2	2	4.5	-	3	27	

	Inner slab	1	3.5	-	4.5	15.75	
	Deduction						
	Door	1	1.2	-	2.1	2.52	
	Window	3	1.5	-	1.5	6.75	
	Total paint					142.4676	m^2
7	RCC chajja and lintel						
	In lintel	4	1.8	0.23	0.15	0.2484	m^3
	In chajja	4	1.8	0.6	0.08	0.3456	m^3
	Total					0.594	m^3
	Steel required approx.	4				41.92	kg
	($1m^3$ =70.588 kg) (10mm,8mm)						

QUANTITY SHEET FOR RCC SLAB							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in super structure						
	Slab	1	5.96	4.96	0.15	4.434	m^3
	L=0.5+4.96+0.5						
	5.96						
	W=0.5+3.96+0.5						
	4.96						
2	Take 0.8% steel approx.						
	S = (0.8%*4.434) * 7850					278.445	kg

Table 18 Quantity sheet for Aaganwadi

AANGANWADI ESTIMATE					
ABSTRACT SHEET					
SR. NO.	**DESCRIPTION**	**QUANTITY**	**RATE**	**PER**	**AMOUNT RS.**
1	Excavation for foundation	8	90	m^3	720
2	PCC	2.36416	3000	m^3	7092.480
3	RCC in column, footing and beam	6.242772	3800	m^3	23722.53360
4	Earth filling	3.9375	60	m^3	236.25
5	Masonry brick work	9.78682	3400	m^3	33275.188
6	Plaster	151.2091	160	m^2	24193.456
7	Paint	142.4676	37	m^2	5271.3012
8	RCC in slab	4.43424	3800	m^3	16850.112
9	Tile’s flooring	15.75	450	m^2	7087.5
10	Steel	1421	45	kg	63968
11	Doors	0.168	3078	m^3	517.104
12	Window	6.75	280	m^2	1890
13	Lighting tubes with wiring	3	700	nos	2100
14	Furniture	1	9000	nos	9000
	Total cost				195924
	5% water and electric charges				205720
	Total Approx. Amount				205800

Table 19 Abstract sheet for Aaganwadi

8.1.3 Social design (Civil)

According to the norms of UDPFI there was a lack of public toilet.

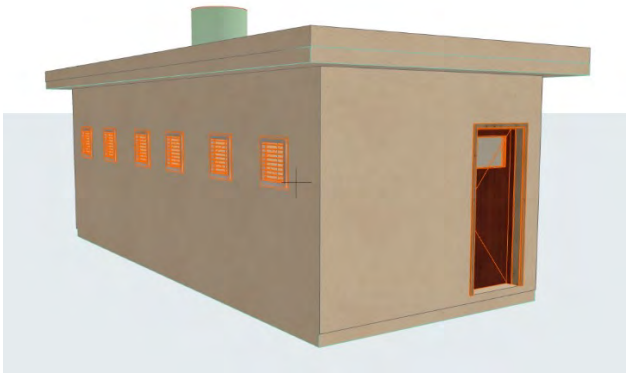


Figure 86 Elevation back view of public toilet

Figure 87 Elevation front view of public toilet

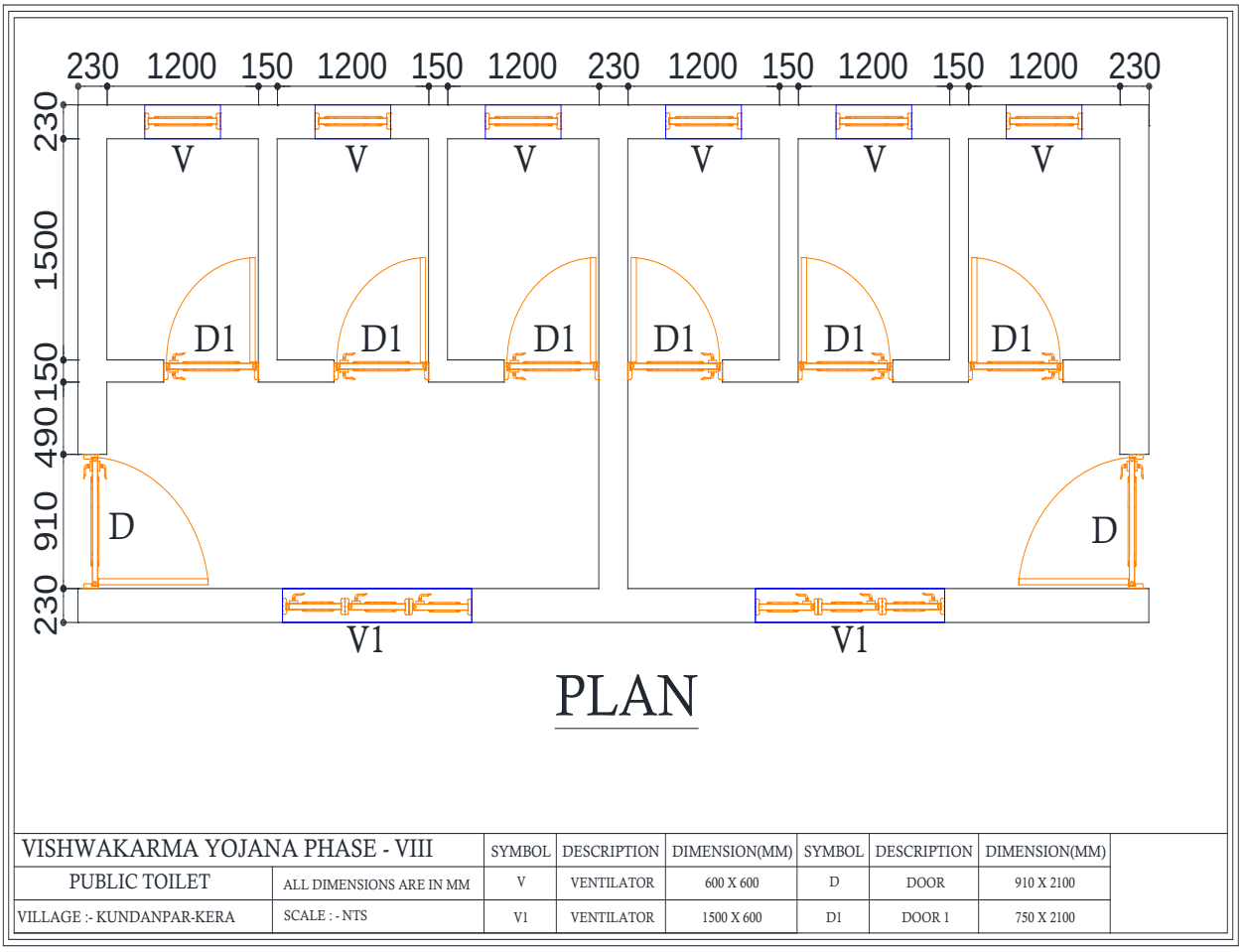


Figure 88 Plan of public toilet

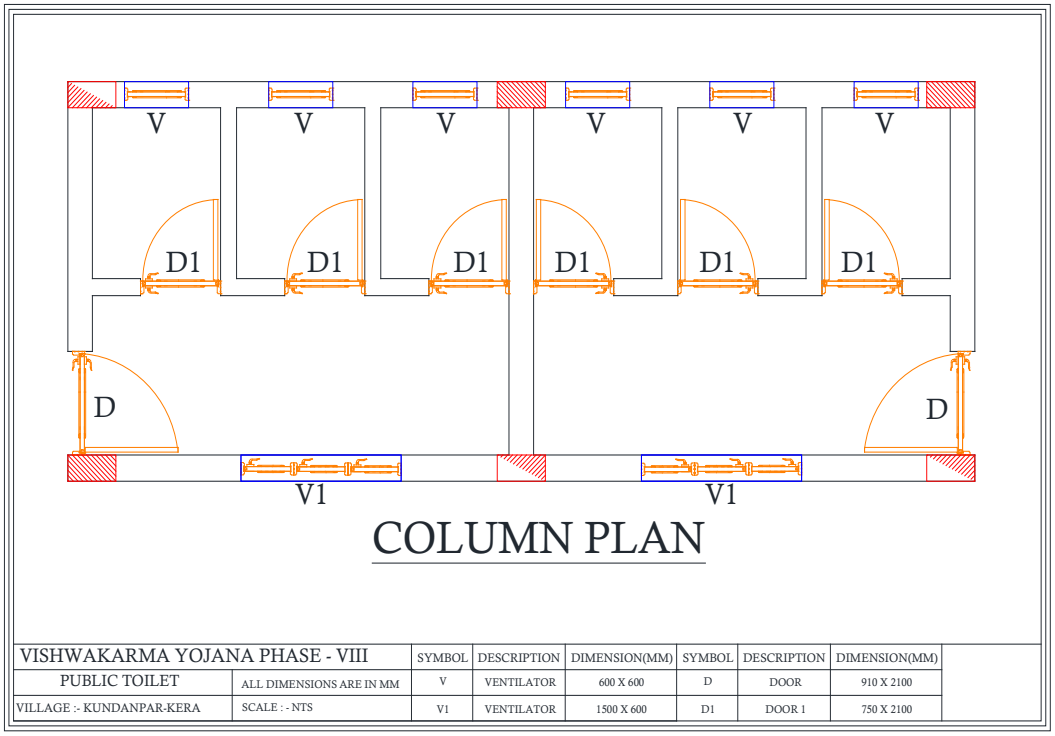


Figure 89 Column plan of public toilet

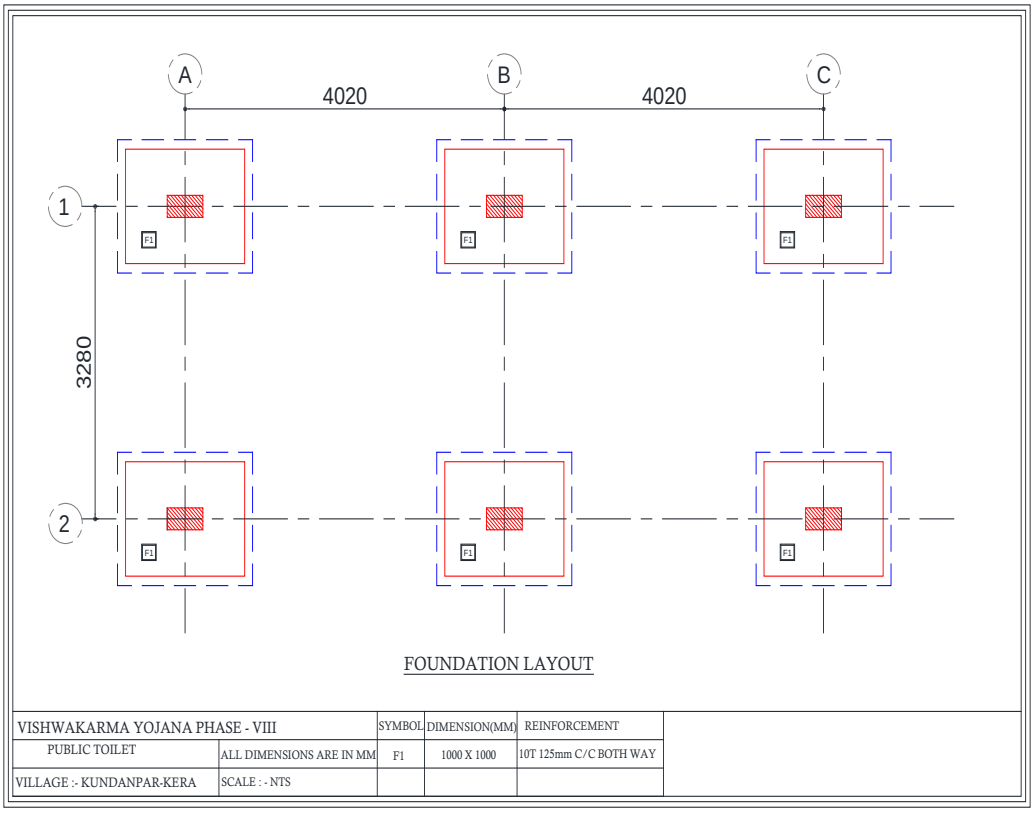
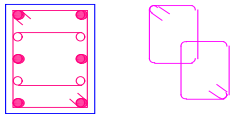
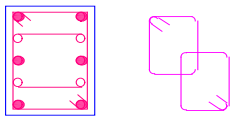


Figure 90 Foundation layout of public toilet

SCHEDULE OF COLUMN REINF.

SECTION - B-B	PLINTH LVL. TO TERRACE FLOOR LVL.	
		● 6-16T ○ 4-12T
	SIZE	230 X 450
	STIRRUP SET	2- SET
	CONFINEMENT ZONE	8T @ 125 C/C
	REST	8T @ 150 C/C
SECTION - A-A	FOUNDATION TO TO PLINTH LVL.	
		● 6-16T ○ 4-12T
	SIZE	230 X 450
	DEPTH - D	450
	CONF. ZONE	8T @ 125 C/C
	REST	8T @ 150 C/C
	COLUMN NUMBER	F1 TYPE FOOTINGS ALL COLUMN

TYPICAL COLUMN REINF. SECTION

VISHWAKARMA YOJANA PHASE- VIII	
PUBLIC TOILET	ALL DIMENSIONS ARE IN MM
VILLAGE :- KUNDANPAR-KERA	SCALE : - 1:100

Figure 91 Typical column details of public toilet

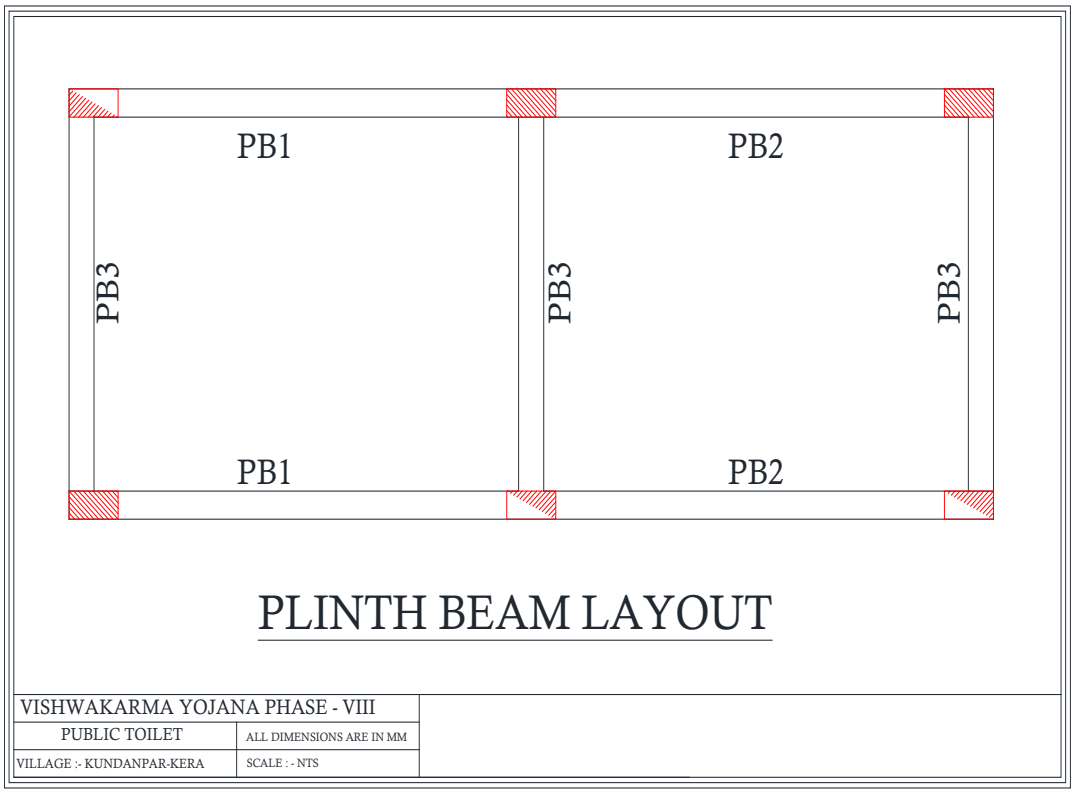


Figure 92 Plinth beam layout of public toilet

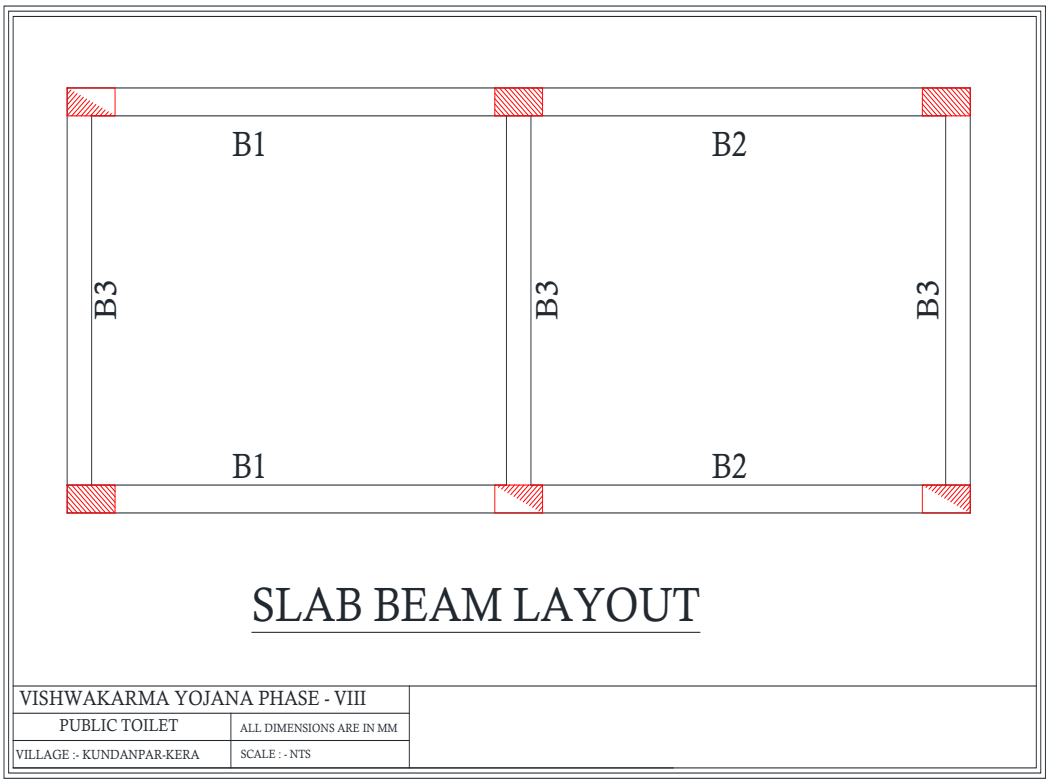
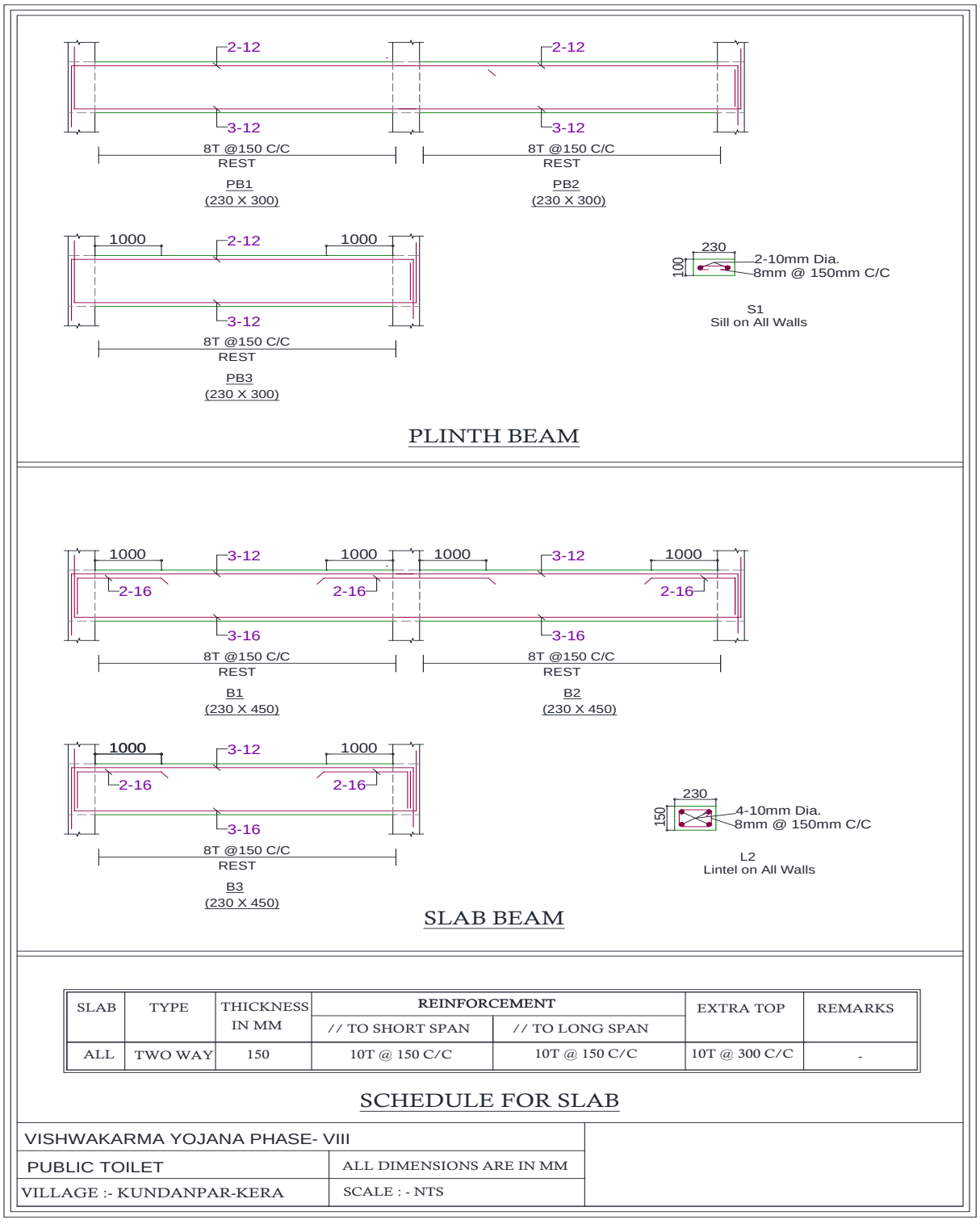


Figure 93 slab beam layout of public toilet



SLAB	TYPE	THICKNESS IN MM	REINFORCEMENT		EXTRA TOP	REMARKS
			// TO SHORT SPAN	// TO LONG SPAN		
ALL	TWO WAY	150	10T @ 150 C/C	10T @ 150 C/C	10T @ 300 C/C	-

SCHEDULE FOR SLAB

VISHWAKARMA YOJANA PHASE- VIII	
PUBLIC TOILET	ALL DIMENSIONS ARE IN MM
VILLAGE :- KUNDANPAR-KERA	SCALE : - NTS

Figure 94 Plinth beam and slab beam details of public toilet

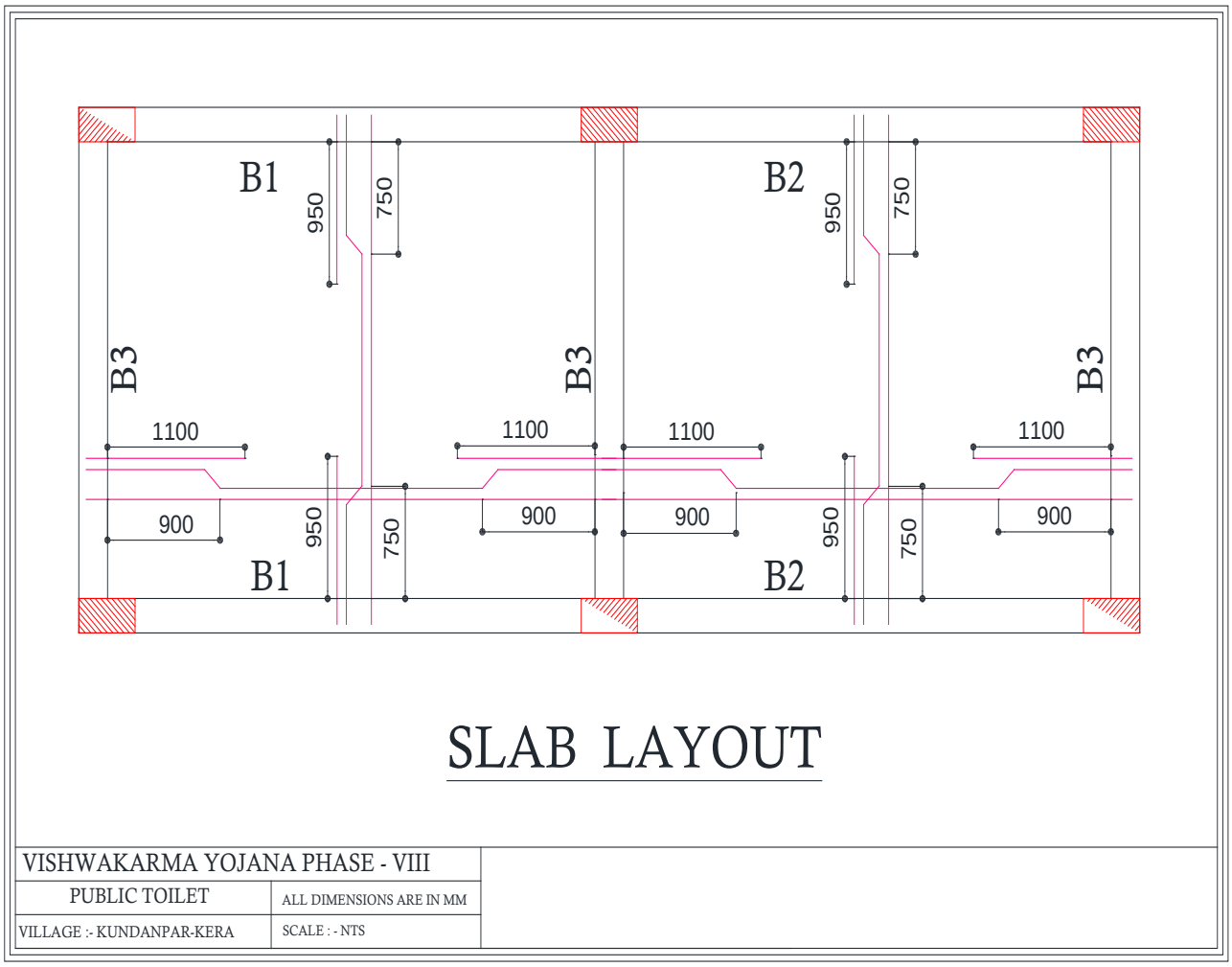


Figure 95 Slab layout of public toilet

PUBLIC TOILET ESTIMATE							
QUANTITY SHEET FOR COLUMN							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	Excavation	6	1	1	2	12	m^3
2	PCC in foundation	6	1	1	0.1	0.6	m^3
3	RCC in foundation	6	0.9	0.9	0.45	2.187	m^3
4	RCC in column	6	0.23	0.45	4.9	3.0429	m^3
	Total					5.23	
5	Steel in column and footing						
	Take 2.5 % approx. steel						
	S = (2.5%*5.23) * 7850					1026.3875	kg

QUANTITY SHEET FOR PLINTH BEAM PB1 AND PB2							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in PB1 AND PB2	2	8.49	0.23	0.3	1.172	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*1.172) * 7850					184.004	kg

QUANTITY SHEET FOR PLINTH BEAM PB3							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in PB3	3	3.51	0.23	0.23	0.557	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*0.557) * 7850					87.44	kg

QUANTITY SHEET FOR SLAB BEAM B1 AND B2							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in b1 and b2	2	8.49	0.23	0.45	1.757	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*1.757) * 7850					275.84	kg

QUANTITY SHEET FOR SLAB BEAM PB3							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in B3	3	3.51	0.23	0.45	1.090	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*1.09) * 7850					171.13	kg

QUANTITY SHEET FOR SUPER STRUCTURE							
By centre line method							
Total c/c length:							
L= (0.115+8.03+0.115) *2+(0.115+3.05+0.115) *3							
26.36							
Total c/c length= 26.36							
No. Of junction = 2							
Net length = total c/c length -0.5 X wall thickness X no. Of junction							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	PCC in plinth	1	8.49	3.51	0.1	2.97999	m^3
2	Earth filling						
	Bathroom	6	1.2	1.5	0.25	2.7	
	Near wash basin	2	3.9	1.4	0.25	2.73	
	Total					5.43	m^3

3	Masonry work in super structure						
	For 0.23 wall	1	26.13	0.23	2.9	17.42871	
	Net length=26.36-0.5*0.23*2						
	26.13						
	For 0.15 wall	1	13.23	0.15	2.9	5.75505	
	L=1.3*4+8.03						
	13.23						
	Total					23.18376	
	Deduction						
	Door	6	0.85	0.15	2.1	1.6065	
	Door1	2	1	0.23	2.4	1.104	
	Ventilator	6	0.6	0.23	0.6	0.4968	
	Ventilator1	2	2	0.23	0.6	0.552	
	Total					3.7593	
	Total masonry work					19.42446	m^3
4	Plaster						
	Outside plaster 16mm						
	Wall 1	2	8.49	-	3.275	55.6095	
	Wall 2	2	3.51	-	3.275	22.9905	
	Slab top	1	9.45	4.51	-	42.6195	
	Inside plaster						
	Bathroom wall	12	1.2	-	3	43.2	
		12	1.5	-	3	54	
	Near wash basin wall	4	1.4	-	3	16.8	
		4	3.9	-	3	46.8	
	Inner slab	1	8.03	-	3.05	24.4915	
	Deduction						
	Door	4	0.85	-	2.4	8.16	
	Door 1	12	1	-	2.1	25.2	
	Total plaster					273.151	m^2
5	Tile’s flooring						
	Bathroom	6	1.2	1.5	-	10.8	
	Near wash basin	2	3.9	1.4	-	10.92	

	Total tiles flooring					21.72	m^2
6	Paint						
	Outside paint						
	Wall 1	2	8.49	-	3.275	55.6095	
	Wall 2	2	3.51	-	3.275	22.9905	
	Slab top	1	9.45	4.51	-	42.6195	
	Inside paint						
	Bathroom wall	12	1.2	-	3	43.2	
		12	1.5	-	3	54	
	Near wash basin wall	4	1.4	-	3	16.8	
		4	3.9	-	3	46.8	
	Inner slab	1	8.03	-	3.05	24.4915	
	Deduction						
	Door	4	0.85	-	2.4	8.16	
	Door 1	12	1	-	2.1	25.2	
	Total paint					273.151	m^2

QUANTITY SHEET FOR RCC SLAB							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in super structure						
	Slab	1	9.49	4.51	0.15	6.419985	m^3
	L=0.5+8.49+0.5						
	9.49						
	W=0.5+3.51+0.5						
	4.51						
2	Take 0.8% steel approx.						
	S = (0.8%*6.42) * 7850					403.176	kg

Table 20 Quantity sheet for public toilet

PUBLIC TOILET ESTIMATE					
ABSTRACT SHEET					
SR. NO.	**DESCRIPTION**	**QUANTITY**	**RATE**	**PER**	**AMOUNT RS.**
1	Excavation for foundation	12	90	m^3	1080
2	PCC	3.57999	3000	m^3	10739.97
3	RCC in column, footing and beam	9.805842	3800	m^3	37262.1996
4	Earth filling	5.43	60	m^3	325.8
5	Masonry brick work	19.42446	3400	m^3	66043.164
6	Plaster	273.151	160	m^2	43704.16
7	Paint	273.151	37	m^2	10106.587
8	RCC in slab	6.419985	3800	m^3	24395.943
9	Tile’s flooring	21.72	450	m^2	9774
10	Steel	2148.00	45	kg	96724.24
11	Doors	0.54285	3078	m^3	1670.8923
12	Ventilator	2.16	150	m^2	324
13	Plumbing system	8	7500	nos	60000
14	Water tank (1000 litres)	1	8000	nos	8000
15	Lighting bulb with wiring	10	130	nos	1300
	Total cost				371451
	5% water and electric charges				390024
	Total approx. Amount				390000

Table 21 Abstract sheet for public toilet

8.1.4 Socio-Cultural design (Civil)

We designed a multifunctional hall in the school campus. According to requirement of the principal we tried to accommodate a prayer hall, stage for celebration of festivals, place to have breakfast, and E-education facility. Electricity of the hall can be used from solar panel as no night of school are made. We implemented this design in the multifunctional hall where the festivals, dances and programs can be made. The reason for combine design was to give best facility with proper economic funds.

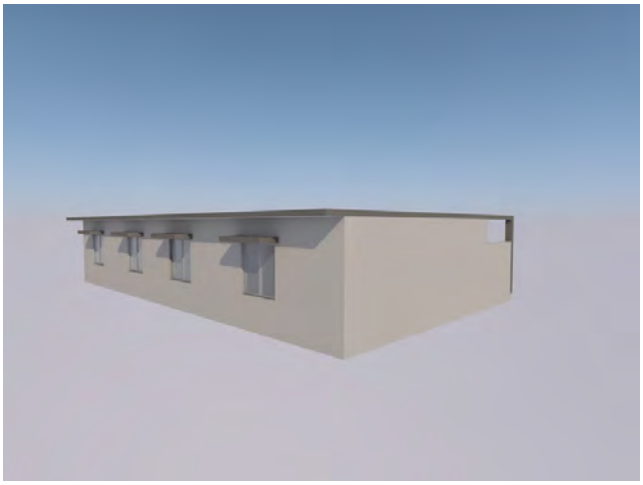


Figure 96 Back view of multifunctional hall

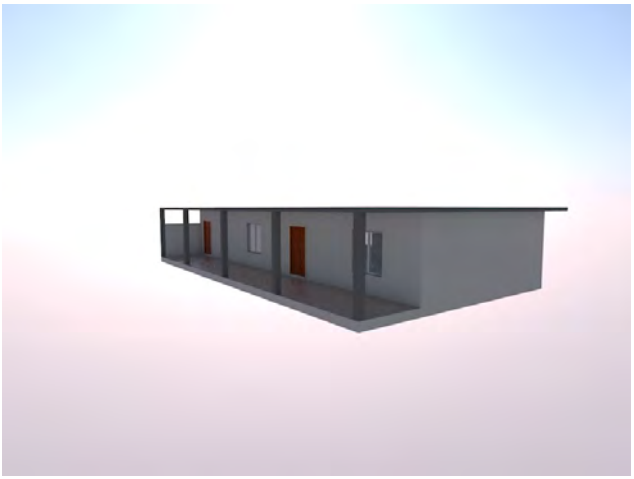


Figure 97 Front view of multifunctional hall

Figure 98 Inner view of multifunctional hall

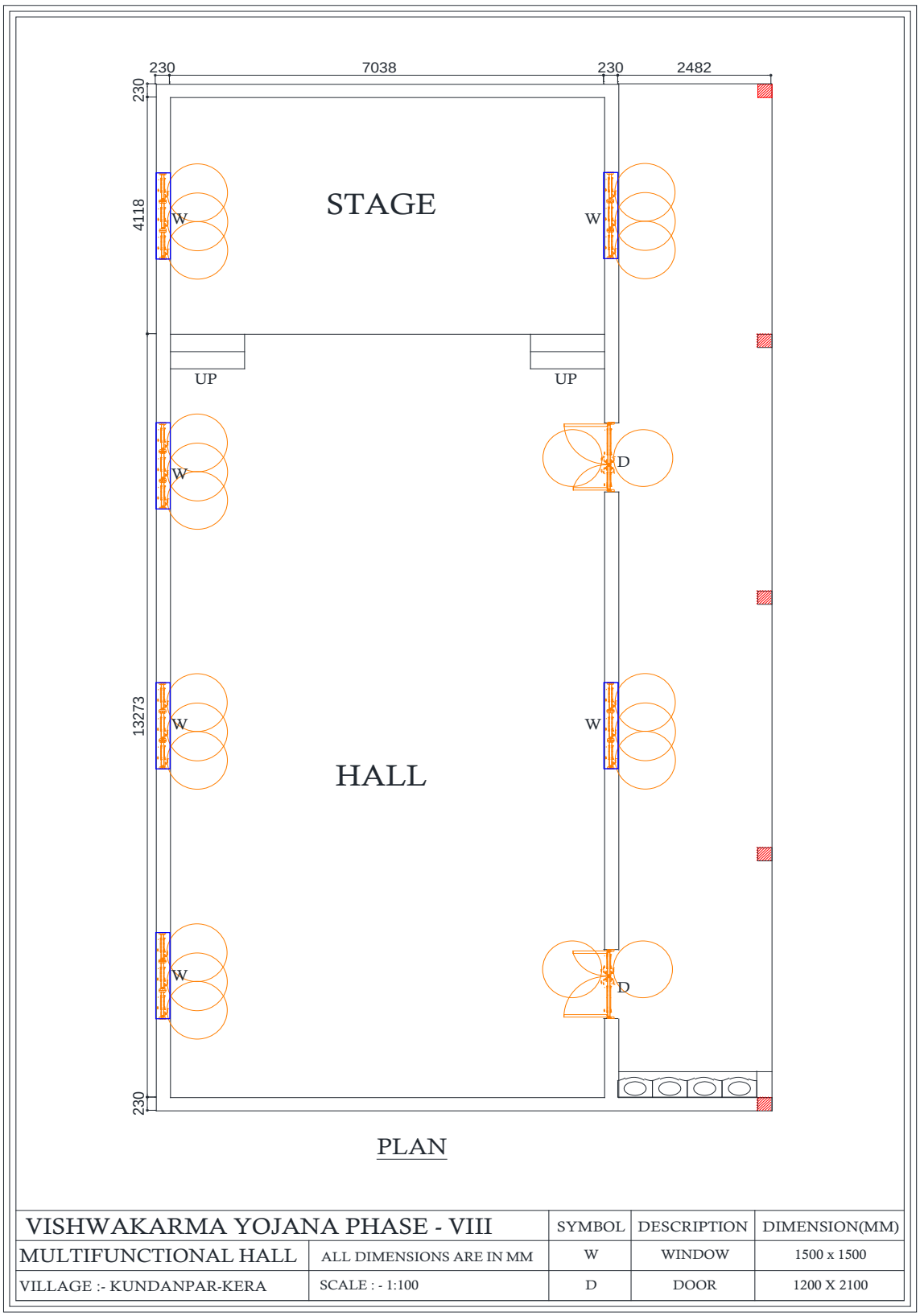
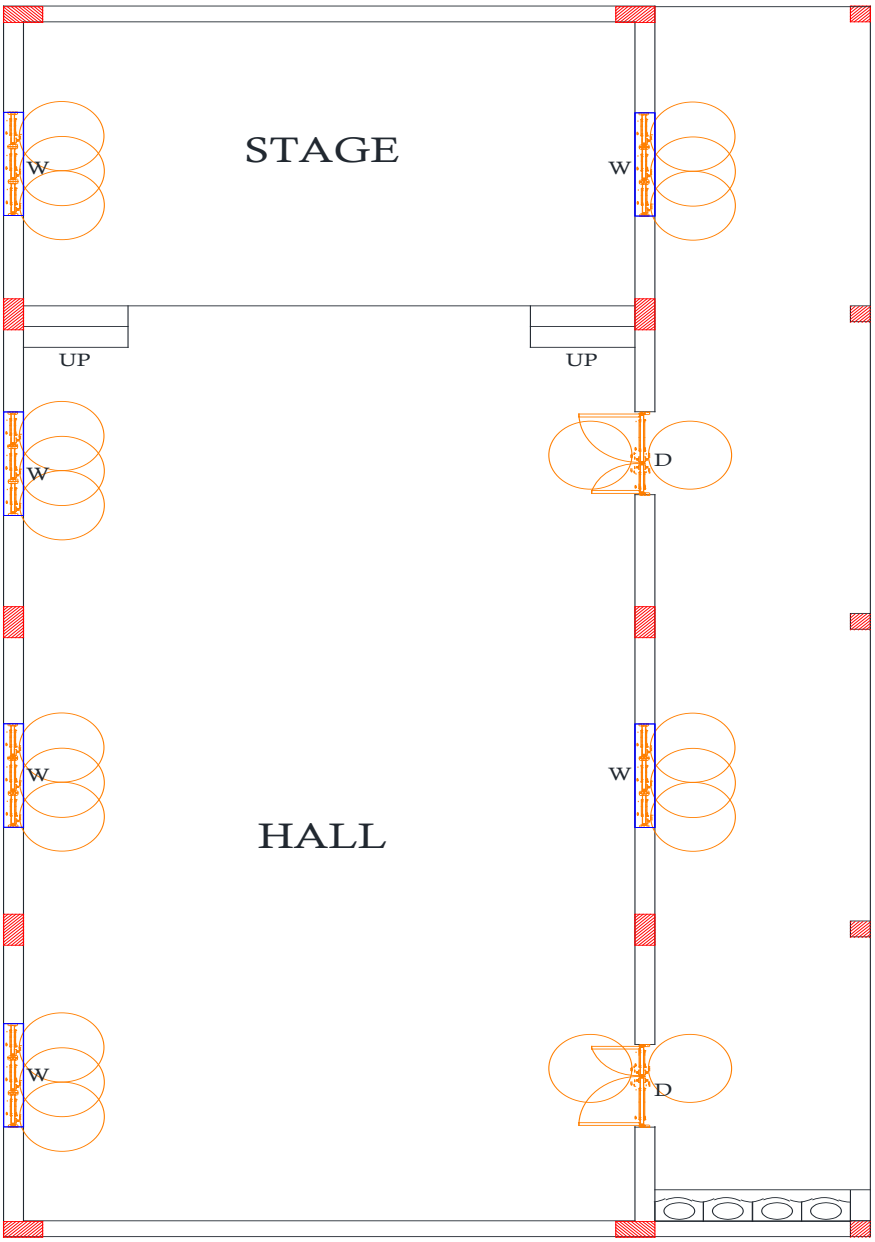


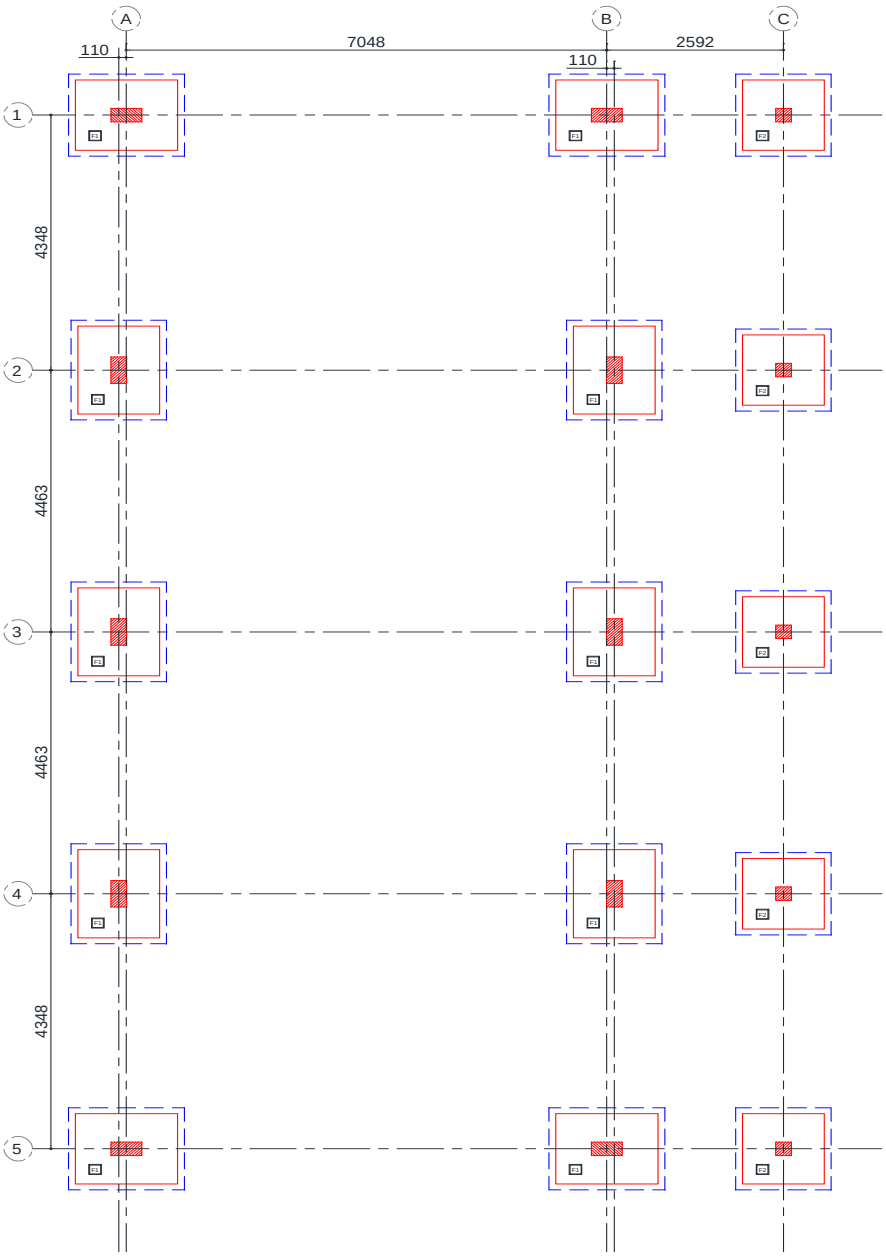
Figure 99 Plan of multifunctional hall



COLUMN PLAN

VISHWAKARMA YOJANA PHASE - VIII		SYMBOL	DESCRIPTION	DIMENSION(MM)
MULTIFUNCTIONAL HALL	ALL DIMENSIONS ARE IN MM	W	WINDOW	1500 x 1500
VILLAGE :- KUNDANPAR-KERA	SCALE : - 1:100	D	DOOR	1200 X 2100

Figure 100 Column plan of multifunctional hall



FOUNDATION LAY OUT

VISHWAKARMA YOJANA PHASE - VIII		SYMBOL	DIMENSION(MM)	REINFORCEMENT
MULTIFUNCTIONAL HALL	ALL DIMENSIONS ARE IN MM	F1	1000 X 1000	10T 100mm C/C BOTH WAY
VILLAGE :- KUNDANPAR-KERA	SCALE : - 1:100	F2	1000 X 1000	10T 150mm C/C BOTH WAY

Figure 101 Foundation layout of multifunctional hall

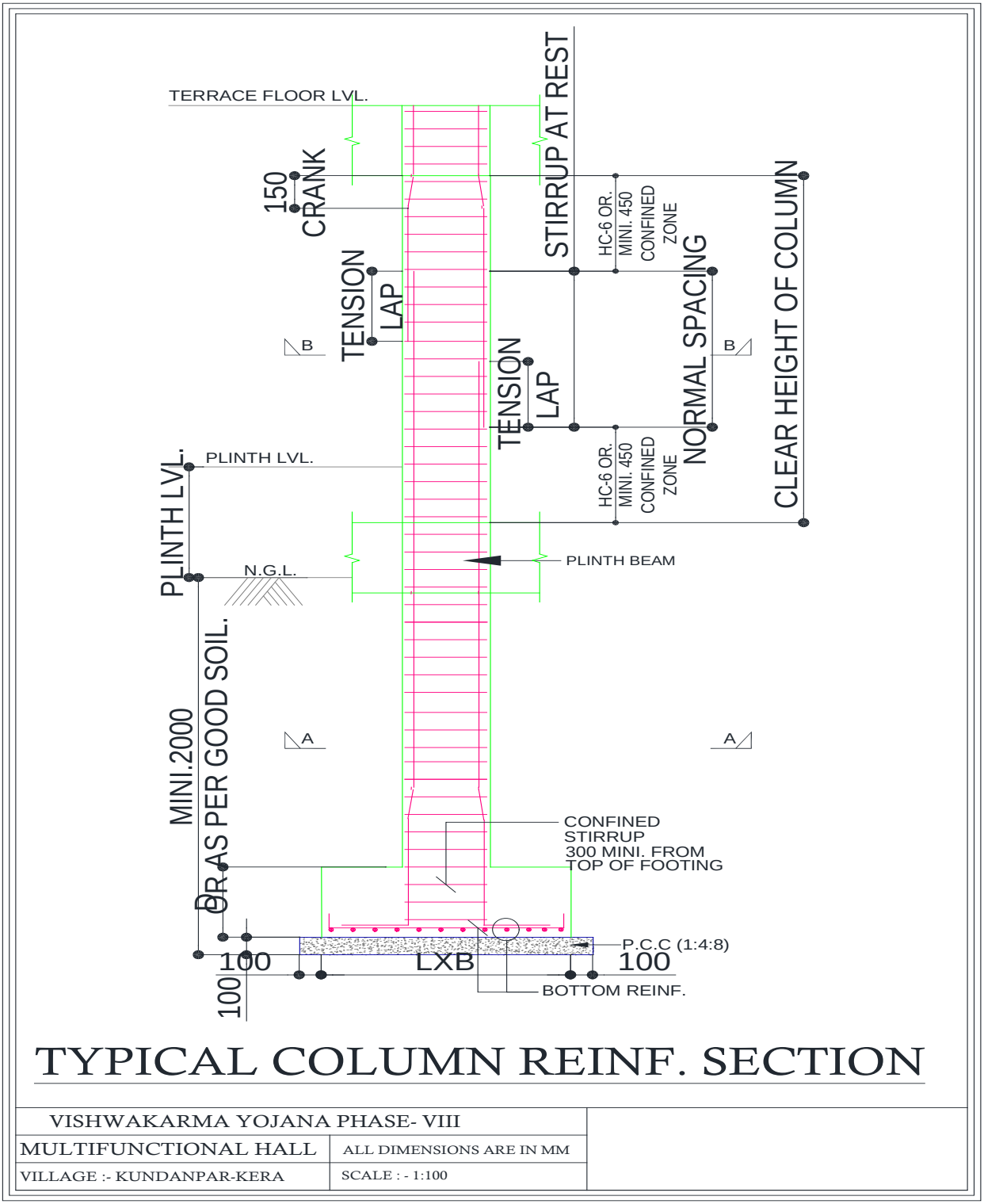
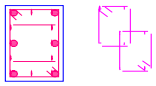
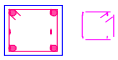
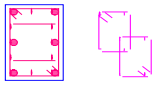
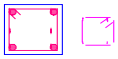


Figure 102 Typical column reinforced section of multifunctional hall

SCHEDULE OF COLUMN REINF.

SECTION - B-B	PLINTH LVL. TO TERRACE FLOOR LVL.		
		6-20T 6-16T	4-16T 2-12T
	SIZE	230 X 450	230 X 230
	STIRRUP SET	2- SET	1- SET
	CONFINEMENT ZONE	8T @ 100 C/C	8T @ 100 C/C
	REST	8T @ 150 C/C	8T @ 150 C/C
SECTION - A-A	FOUNDATION TO TO PLINTH LVL.		
		6-20T 6-16T	4-16T 2-12T
	SIZE	230 X 450	230 X 230
	DEPTH - D	500	300
	CONF. ZONE	8T @ 100 C/C	8T @ 100 C/C
	REST	8T @ 150 C/C	8T @ 150 C/C
	COLUMN NUMBER	F1 TYPE FOOTINGS ALL COLUMN	F2 TYPE FOOTINGS ALL COLUMN

TYPICAL COLUMN REINF. SECTION

VISHWAKARMA YOJANA PHASE- VIII	
MULTIFUNCTIONAL HALL	ALL DIMENSIONS ARE IN MM
VILLAGE :- KUNDANPAR-KERA	SCALE : - 1:100

Figure 103 Typical column details of multifunctional hall

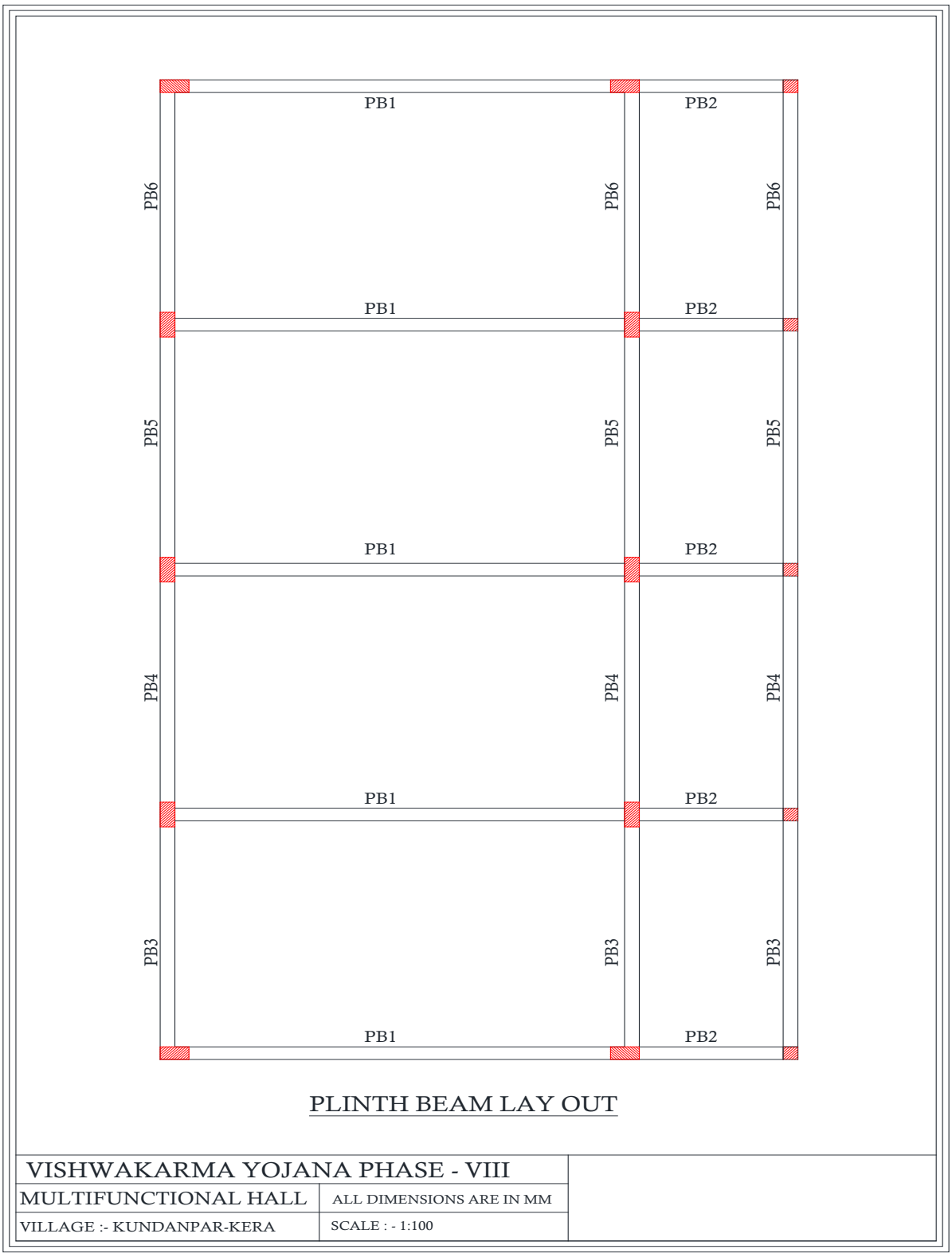


Figure 104 Plinth beam layout of multifunctional hall

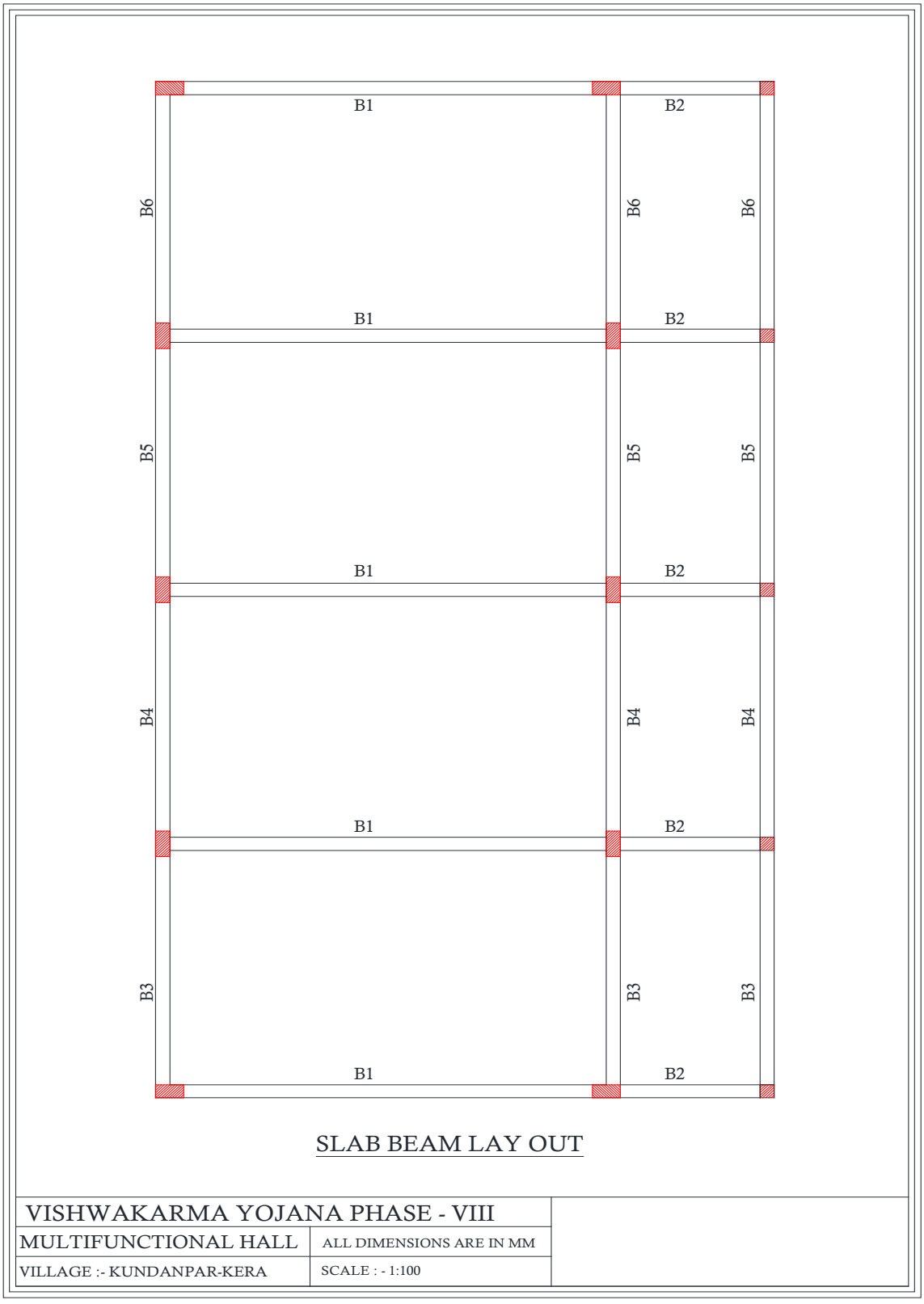
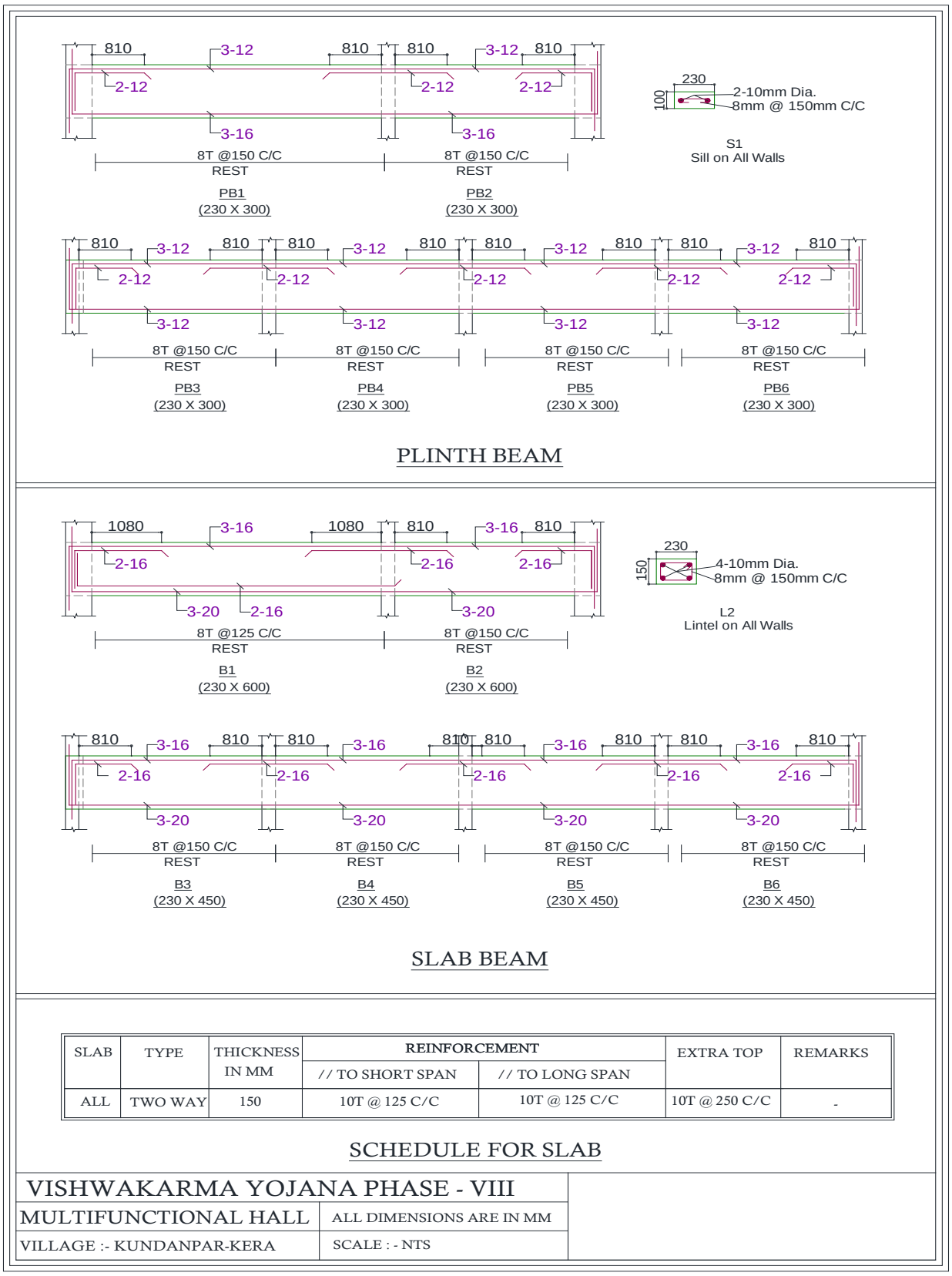


Figure 105 Slab beam layout of multifunctional hall



SLAB	TYPE	THICKNESS IN MM	REINFORCEMENT		EXTRA TOP	REMARKS
			// TO SHORT SPAN	// TO LONG SPAN		
ALL	TWO WAY	150	10T @ 125 C/C	10T @ 125 C/C	10T @ 250 C/C	-

SCHEDULE FOR SLAB

VISHWAKARMA YOJANA PHASE - VIII	
MULTIFUNCTIONAL HALL	ALL DIMENSIONS ARE IN MM
VILLAGE :- KUNDANPAR-KERA	SCALE : - NTS

Figure 106 Plinth beam and slab beam details of multifunctional hall

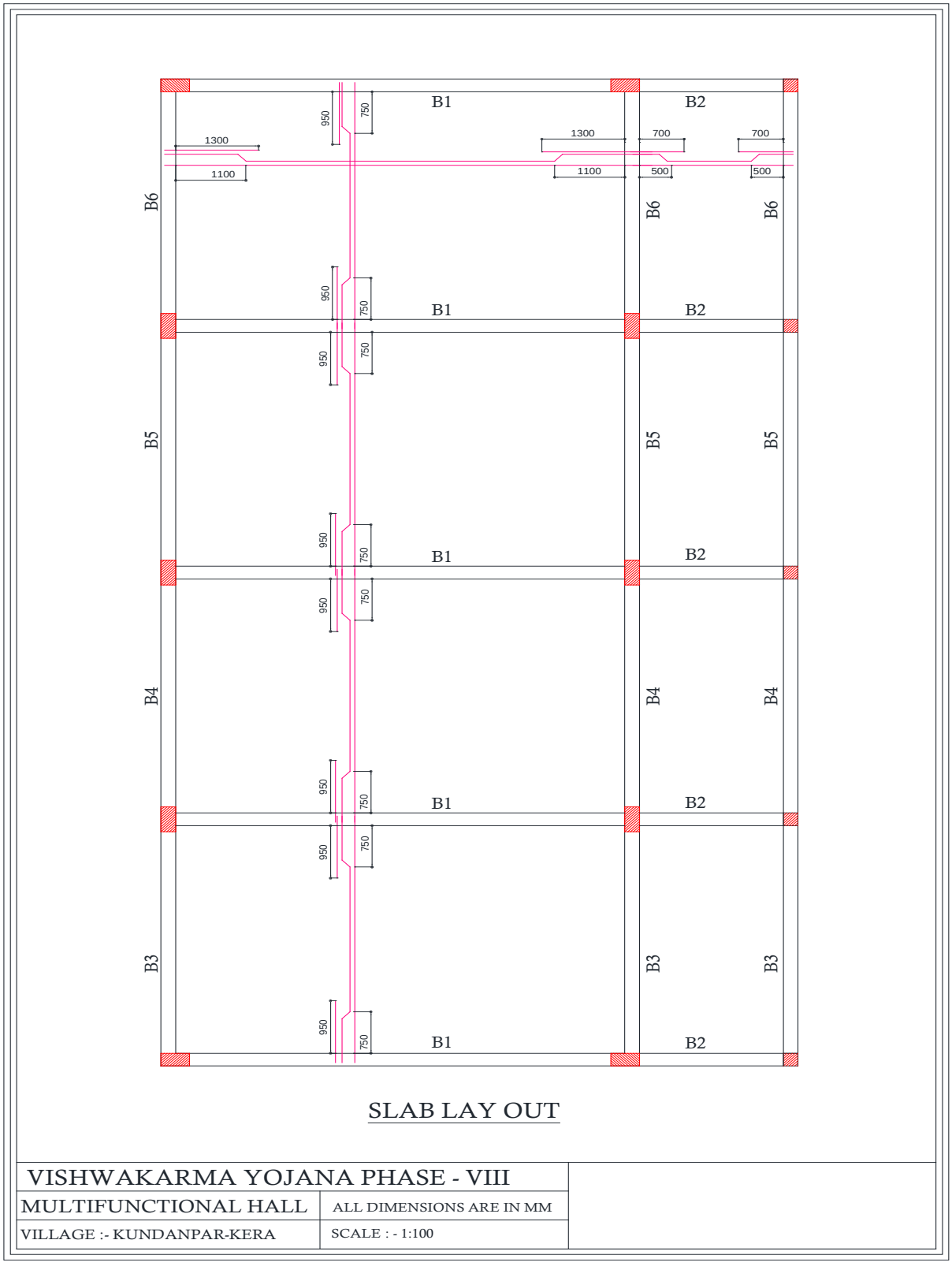


Figure 107 Slab layout of multifunctional hall

MULTIFUNCTINAL HALL ESTIMATE							
QUANTITY SHEET FOR COLUMN F1							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	Excavation	10	1	1	2	20	m^3
2	PCC in foundation	10	1	1	0.1	1	m^3
3	RCC in foundation	10	0.9	0.9	0.5	4.05	m^3
4	RCC in column	10	0.23	0.45	4.85	5.023	m^3
	Total					9.07	
5	Steel in column and footing						
	Take 2.5% stell approx.						
	S = (2.5%*9.07) * 7850					1779.99	kg

QUANTITY SHEET FOR COLUMN F2							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	Excavation	5	1	1	2	10	m^3
2	PCC in foundation	5	1	1	0.1	0.5	m^3
3	RCC in foundation	5	0.9	0.9	0.5	2.025	m^3
4	RCC in column	5	0.23	0.23	4.85	1.28	m^3
	Total					3.31	
5	Steel in column and footing						
	Take 2.5% steel approx.						
	S = (2.5%*3.31) * 7850					649.58	kg

QUANTITY SHEET FOR PLINTH BEAM PB1 AND PB2							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in PB1 and PB2	5	9.98	0.23	0.3	3.443	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*3.443) * 7850					540.55	kg

QUANTITY SHEET FOR PLINTH BEAM PB3, PB4, PB5 AND PB6							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in PB3, PB4, PB5, PB6	3	17.85	0.23	0.3	3.695	m^3
2	Steel in PB3, PB4, PB5, PB6						
	Take 2% steel approx.						
	S = (2%*3.695) * 7850					580.12	kg

QUANTITY SHEET FOR SLAB BEAM B1 AND B2							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in B1, B2	5	9.98	0.23	0.6	6.886	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*6.886) * 7850					1081.1	kg

QUANTITY SHEET FOR SLAB BEAM B3, B4, B5 AND B6							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in B3, B4, B5, B6	3	17.85	0.3	0.6	9.639	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*9.639) * 7850					1513.32	kg

QUANTITY SHEET FOR SUPER STRUCTURE							
By centre line method							
Total c/c length:							
L= (0.115+7.038+0.115) *2+(0.115+17.39+0.115) *2+2.482							
52.258							
Total c/c length= 52.258							
No. Of junction = 1							
Net length = total c/c length -0.5 X wall thickness X no. Of junction							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	PCC in plinth	1	9.98	17.85	0.1	17.8143	m^3
2	Earth filling						
	In lobby	1	2.482	17.85	0.15	6.645555	
	In stage	1	7.038	4.118	0.6	17.38949	
	Remaining area	1	7.038	13.273	0.25	23.353844	
	Total					47.389	m^3
3	Masonry work in super structure						
	For 0.23 wall	1	52.143	0.23	2.9	34.779	
	Net length=52.258-0.5*0.23*1						
	52.143						
	Total					34.779	
	Deduction						
	Door	2	1.2	0.23	2.1	1.1592	
	Window	6	1.5	0.23	1.5	3.105	

	Total					4.6098	
	Total masonry work					30.170	m^3
4	Plaster						
	Outside plaster 16mm						
	Wall 1	2	17.85	-	3.275	116.9175	
	Wall 2	2	7.498	-	3.275	49.1119	
	Wall 3	1	2.482	-	3.275	8.12855	
	Slab top	1	9.98	17.85	-	178.143	
	Inside plaster 12mm						
	Wall	2	7.038	-	3	42.228	
		2	17.39	-	3	104.34	
	Inner slab	1	7.498	-	17.85	133.8393	
	Deduction						
	Door	4	1.2	-	2.1	10.08	
	Window	12	1.5	-	1.5	27	
	Total plaster					595.87665	m^2
5	Tile’s flooring						
	Inside	1	7.038	17.39	-	122.39082	
	Lobby	1	2.482	17.85	-	44.3037	
	Total tiles flooring					166.69452	m^2
6	Paint						
	Outside paint						
	Wall 1	2	17.85	-	3.275	116.9175	
	Wall 2	2	7.498	-	3.275	49.1119	
	Wall 3	1	2.482	-	3.275	8.12855	
	Slab top	1	9.98	17.85	-	178.143	
	Inside paint						
	Wall	2	7.038	-	3	42.228	
		2	17.39	-	3	104.34	
	Inner slab	1	7.498	-	17.85	133.8393	
	Deduction						
	Door	4	1.2	-	2.1	10.08	
	Window	12	1.5	-	1.5	27	

	Total paint					595.62825	m^2
7	RCC chajja and lintel						
	In lintel	4	1.8	0.23	0.15	0.2484	m^3
	In chajja	4	1.8	0.6	0.08	0.3456	m^3
	Total					0.594	m^3
	Steel required approx.	4				41.929272	kg
	($1m^3$ =70.588 kg) (10mm,8mm)						

QUANTITY SHEET FOR RCC SLAB							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in super structure						
	Slab	1	10.98	18.85	0.15	31.04595	m^3
	L=0.5+9.98+0.5						
	10.98						
	W=0.5+17.85+0.5						
	18.85						
2	Take 0.8% steel approx.						
	S = (0.8%*31.05) * 7850					1997.04	kg

Table 22 Quantity sheet for multifunctional hall

MULTIFUNCTINAL HALL ESTIMATE					
ABSTRACT SHEET					
SR. NO.	**DESCRIPTION**	**QUANTITY**	**RATE**	**PER**	**AMOUNT RS.**
1	Demolishing of dead structure RCC	49.048	648	m^3	31783.104
2	Demolishing of masonry	30.6	337	m^3	10312.2
3	Excavation for foundation	30	90	m^3	2700
4	PCC	19.3143	3000	m^3	57942.9
5	RCC in column, footing and beam	36.041	3800	m^3	136955.135
6	Earth filling	47.389	60	m^3	2843.333334
7	Masonry brick work	30.169581	3400	m^3	102576.5754
8	Plaster	595.87665	160	m^2	95340.264
9	Paint	595.62825	37	m^2	22038.24525
10	RCC in slab	31.04595	3800	m^3	117974.61
11	Tile’s flooring	166.69452	450	m^2	75012.534
12	Steel	8136.54	45	kg	366388.18
13	Doors	0.2016	3078	m^3	620.5248
14	Window	13.5	170	m^2	2295
15	Projector and pc system	1	25000	nos	25000
16	Plumbing system	1	7500	nos	7500
17	Water tank (1000 litres)	1	8000	nos	8000
18	Lights tube with wiring	8	600	nos	4800
	Total cost				1070083
	5% water and electric charges				1123587
	total Approx. amount				112400

Table 23 Abstract sheet for multifunctional hall

8.1.5 Smart Village Design (Civil)

A design of control room for CCTV and it can also be used as cyber cafe if required

Figure 108 Elevation of control room

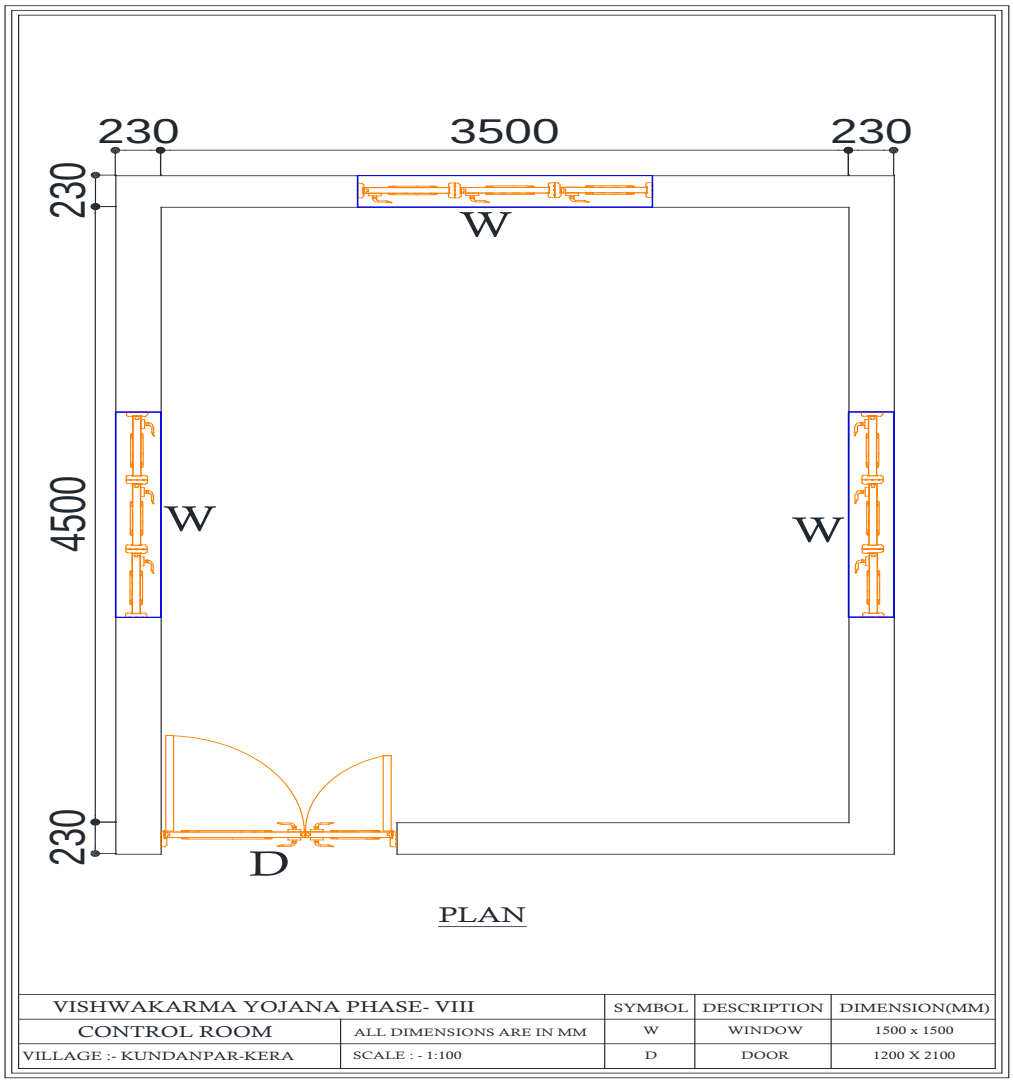


Figure 109 Plan of control room

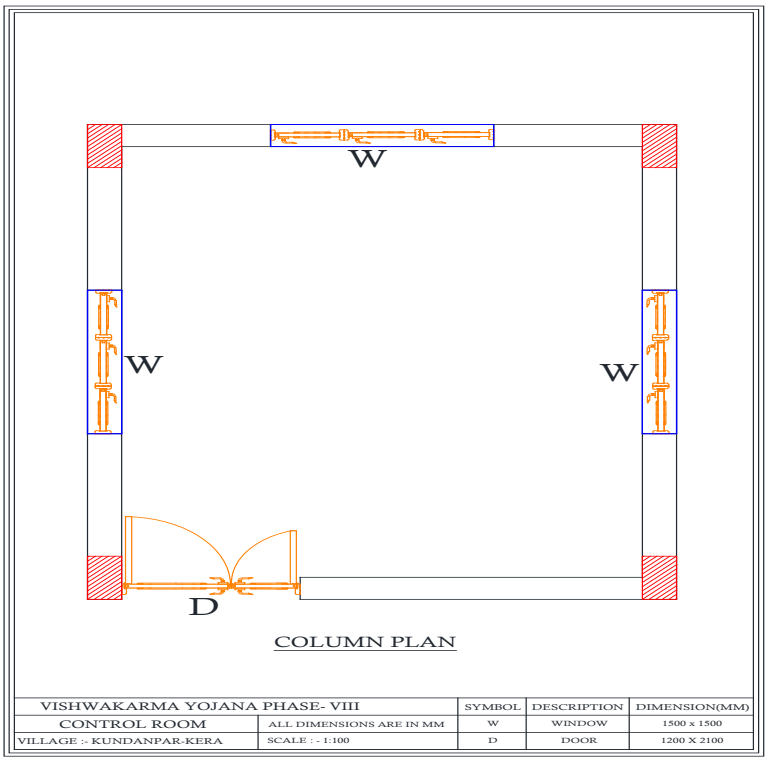


Figure 110 Column plan of control room

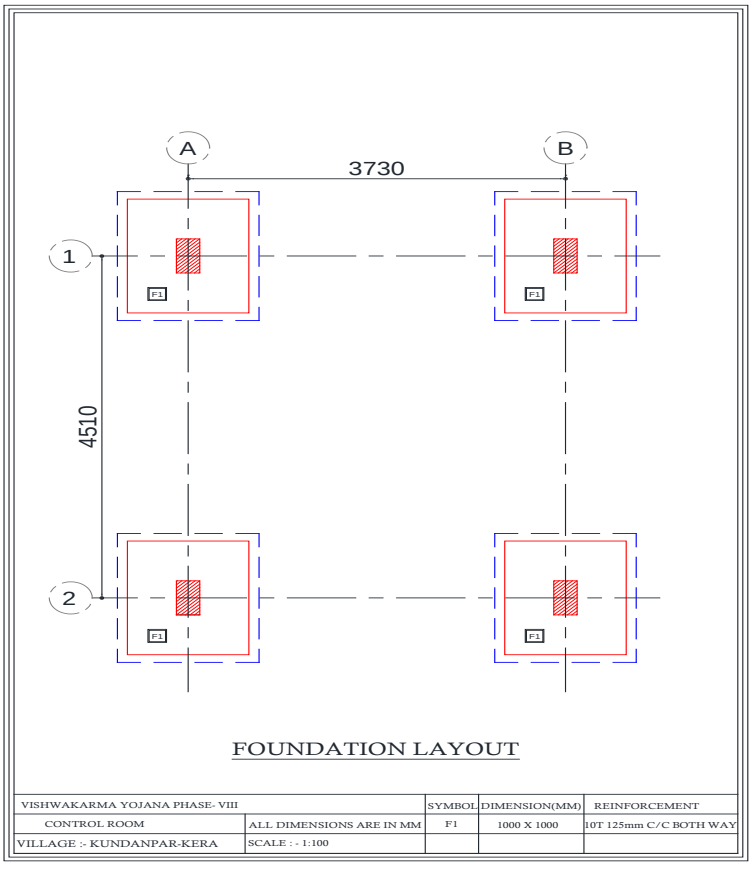
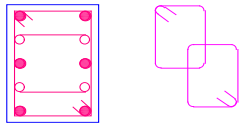
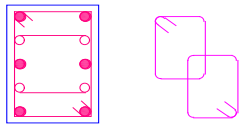


Figure 111 Foundation layout of control room

SCHEDULE OF COLUMN REINF.

SECTION - B-B	PLINTH LVL. TO TERRACE FLOOR LVL.	 ● 6-16T ○ 4-12T
	SIZE	230 X 450
	STIRRUP SET	2- SET
	CONFINEMENT ZONE	8T @ 125 C/C
	REST	8T @ 150 C/C
SECTION - A-A	FOUNDATION TO TO PLINTH LVL.	 ● 6-16T ○ 4-12T
	SIZE	230 X 450
	DEPTH - D	300
	CONF. ZONE	8T @ 125 C/C
	REST	8T @ 150 C/C
	COLUMN NUMBER	F1 TYPE FOOTINGS ALL COLUMN

TYPICAL COLUMN REINF. SECTION

VISHWAKARMA YOJANA PHASE- VIII	
CONTROL ROOM	ALL DIMENSIONS ARE IN MM
VILLAGE :- KUNDANPAR-KERA	SCALE : - 1:100

Figure 112 Typical column details of control room

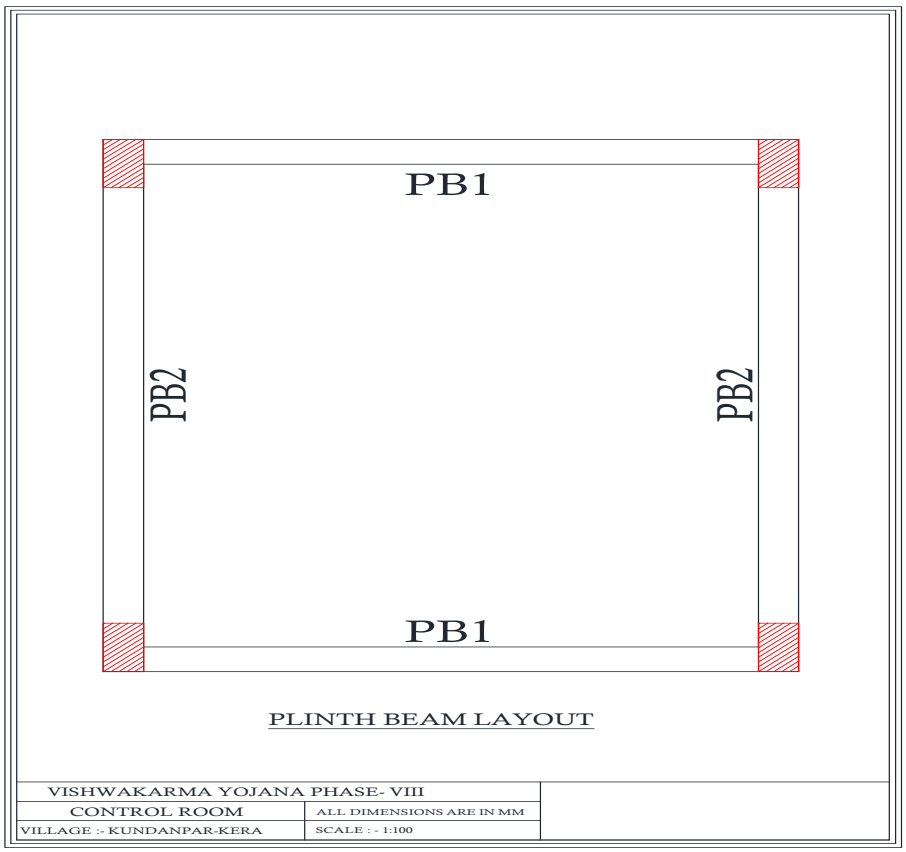


Figure 113 Plinth beam layout of control room

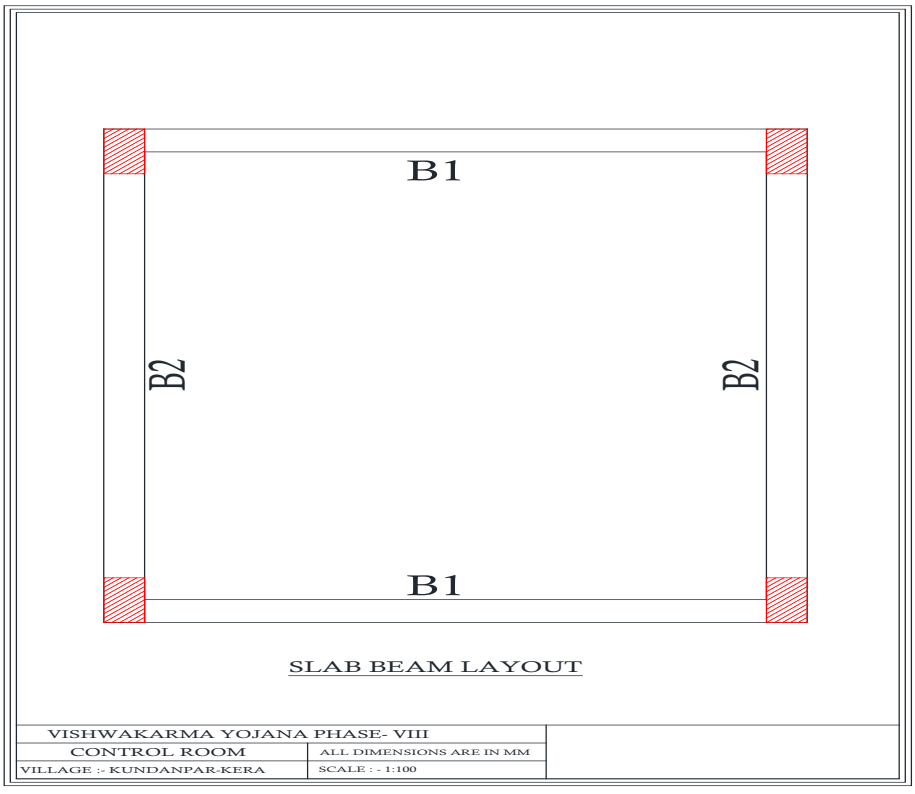
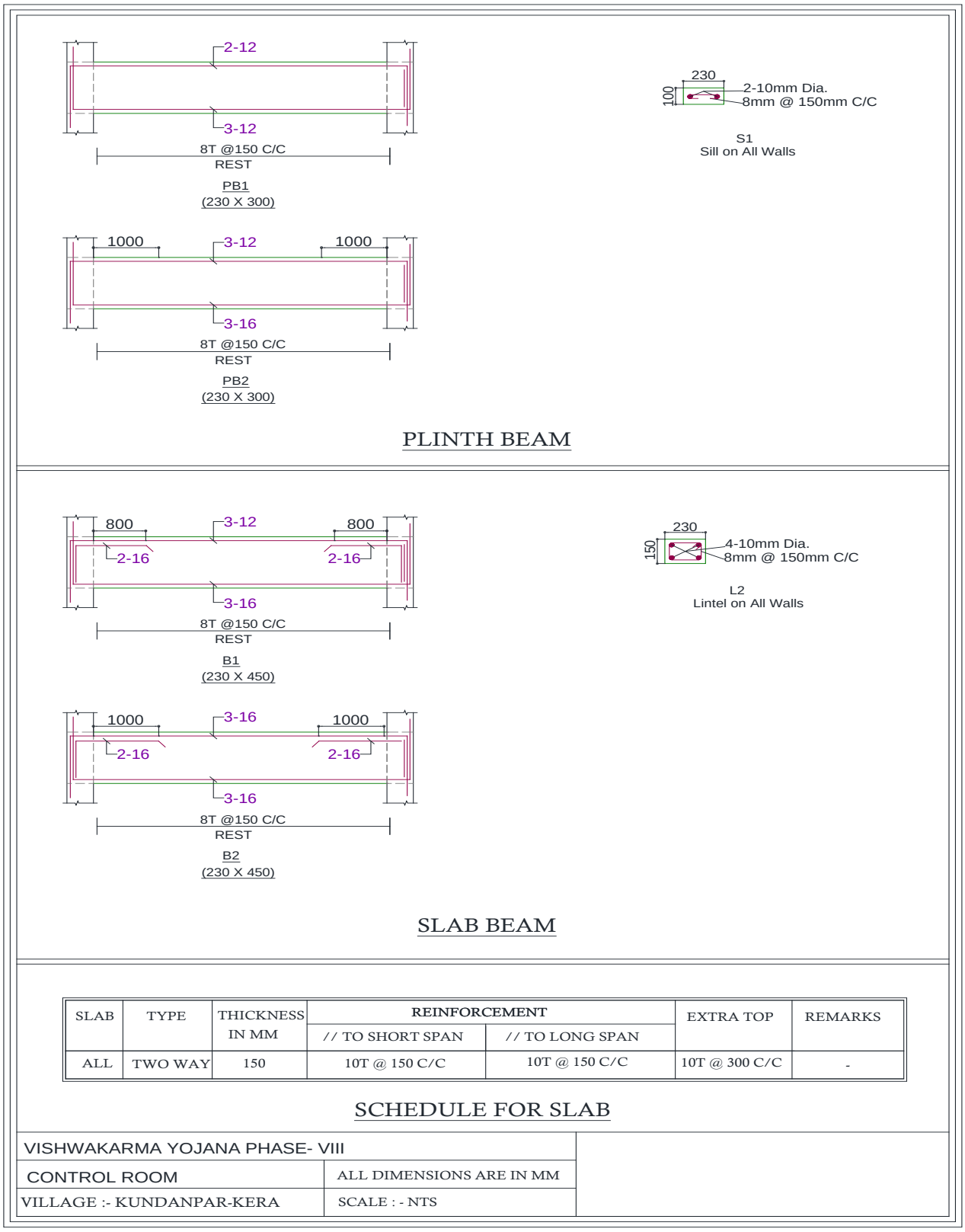


Figure 114 Slab beam layout of control room



SLAB	TYPE	THICKNESS IN MM	REINFORCEMENT		EXTRA TOP	REMARKS
			// TO SHORT SPAN	// TO LONG SPAN		
ALL	TWO WAY	150	10T @ 150 C/C	10T @ 150 C/C	10T @ 300 C/C	-

SCHEDULE FOR SLAB

VISHWAKARMA YOJANA PHASE- VIII	
CONTROL ROOM	ALL DIMENSIONS ARE IN MM
VILLAGE :- KUNDANPAR-KERA	SCALE : - NTS

Figure 115 Plinth beam and slab beam details of control room

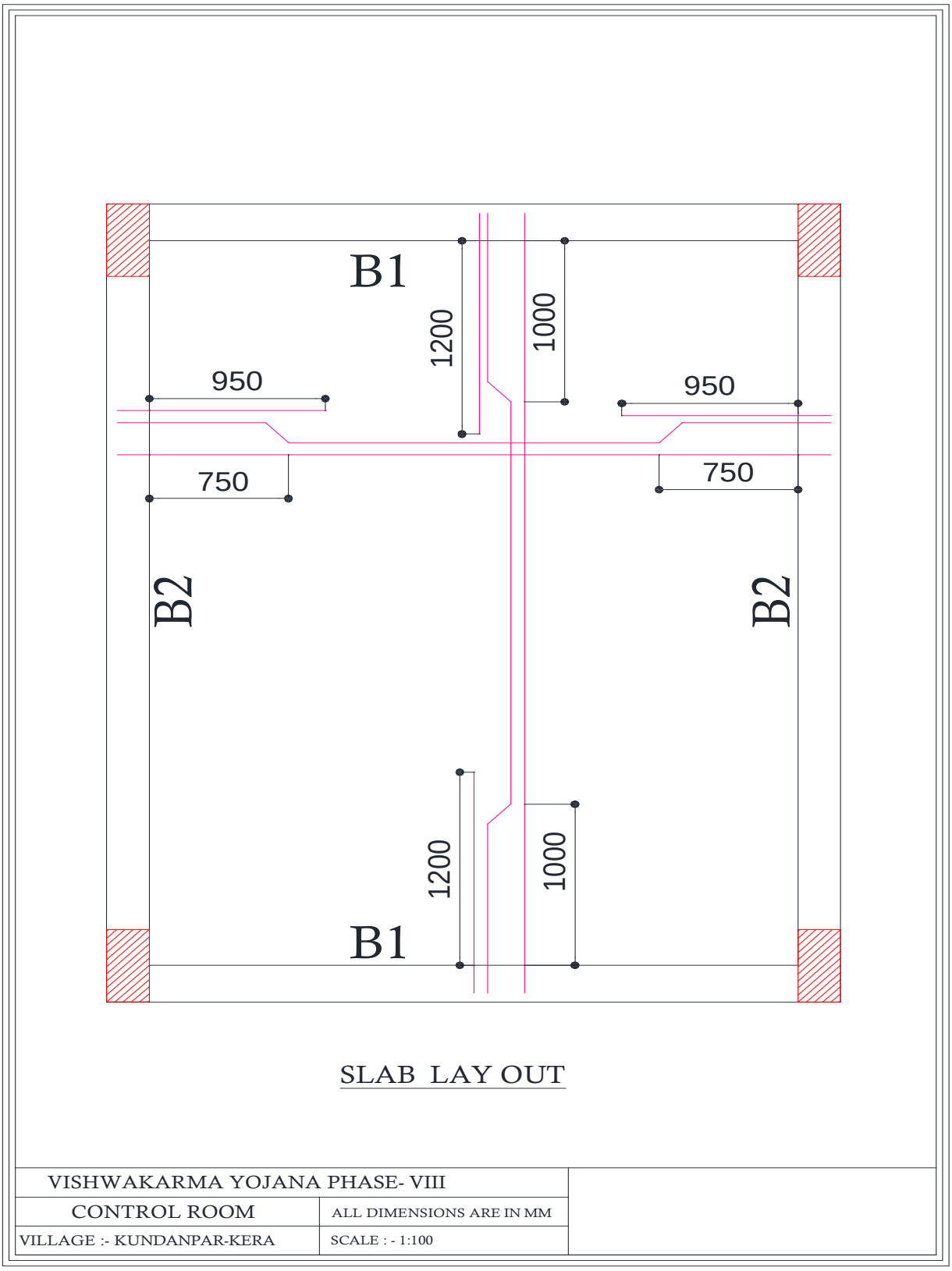


Figure 116 Slab layout of control room

CONTROLROOM FOR CCTV ESTIMATE							
QUANTITY SHEET FOR COLUMN							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	Excavation	4	1	1	2	8	m^3
2	PCC in foundation	4	1	1	0.1	0.4	m^3
3	RCC in foundation	4	0.9	0.9	0.3	0.972	m^3
4	RCC in column	4	0.23	0.45	5.05	2.0907	m^3
	Total					3.0627	
5	Steel in column and footing						
	Take 2.5% steel approx.						
	S = (2.5%*3.063) * 7850					601.11	kg

QUANTITY SHEET PLINTH BEAM PB1							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in PB1	2	3.96	0.23	0.3	0.546	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*0.546) * 7850					85.7	kg

QUANTITY SHEET FOR PLINTH BEAM PB2							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in B2	3	4.96	0.23	0.23	0.787	m^3
2	Steel in beam 2						
	Take 2% steel approx.						
	S = (2%*0.787) * 7850					123.559	kg

QUANTITY SHEET FOR SLAB BEAM B1							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in B1	2	3.96	0.23	0.45	0.820	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*0.82) * 7850					128.74	kg

QUANTITY SHEET FOR SLAB BEAM B2							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in B3	2	4.96	0.23	0.45	1.027	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*1.027) * 7850					161.239	kg

QUANTITY SHEET FOR SUPER STRUCTURE							
By centre line method							
Total c/c length:							
L= (0.115+4.96+0.115) *2+(0.115+3.96+0.115) *2							
18.76							
Total c/c length= 18.76							
No. Of junction = 0							
Net length = total c/c length -0.5 X wall thickness X no. Of junction							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	PCC in plinth	1	3.96	4.96	0.1	1.96416	m^3
2	Earth filling						
	Inside	1	3.5	4.5	0.25	3.9375	
	Total					45.866772	m^3

3	Masonry work in super structure						
	For 0.23 wall	1	18.76	0.23	2.9	12.51292	
	Net length=18.76						
	18.76						
	Deduction						
	Door	1	1.2	0.23	2.1	0.5796	
	Window	3	1.5	0.23	1.5	1.5525	
	Total					2.4777	
	Total masonry work					10.03522	m^3
4	Plaster						
	Outside plaster 16mm						
	Wall 1	2	4.96	-	3.275	32.488	
	Wall 2	2	3.96	-	3.275	25.938	
	Slab top	1	5.96	4.96	-	29.5616	
	Inside plaster						
	Wall 1	2	4.5	-	3	27	
	Wall 2	2	3.5	-	3	21	
	Inner slab	1	8.03	-	3.05	24.4915	
	Deduction						
	Door	1	1.2	-	2.1	2.52	
	Window	3	1.5	-	1.5	6.75	
	Total plaster					151.2091	m^2
5	Tile’s flooring						
	Inside	1	3.5	4.5	-	15.75	
	Total tiles flooring					15.75	m^2
6	Paint						
	Outside paint						
	Wall 1	2	3.96	-	3.275	25.938	
	Wall 2	2	4.96	-	3.275	32.488	
	Slab top	1	5.96	4.96	-	29.5616	
	Inside paint						

	Wall 1	2	3.5	-	3	21	
	Wall 2	2	4.5	-	3	27	
	Inner slab	1	3.5	-	4.5	15.75	
	Deduction						
	Door	1	1.2	-	2.1	2.52	
	Window	3	1.5	-	1.5	6.75	
	Total paint					142.4676	m^2
7	RCC chajja and lintel						
	In lintel	4	1.8	0.23	0.15	0.2484	m^3
	In chajja	4	1.8	0.6	0.08	0.3456	m^3
	Total					0.594	m^3
	Steel required approx.	4				41.92	kg
	($1m^3$ =70.588 kg) (10mm,8mm)						

QUANTITY SHEET FOR RCC SLAB							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in super structure						
	Slab	1	5.96	4.96	0.15	4.43424	m^3
	L=0.5+4.96+0.5						
	5.96						
	W=0.5+3.96+0.5						
	4.96						
2	Take 0.8% steel approx.						
	S = (0.8%*4.434) * 7850					272.55	kg

Table 24 Quantity sheet for control room

CONTROL ROOM FOR CCTV ESTIMATE					
ABSTRACT SHEET					
SR. NO.	**DESCRIPTION**	**QUANTITY**	**RATE**	**PER**	**AMOUNT RS.**
1	Excavation for foundation	8	90	m^3	720
2	PCC	2.36416	3000	m^3	7092.480
3	RCC in column, footing and beam	6.242772	3800	m^3	23722.53360
4	Earth filling	45.866772	60	m^3	2752.00632
5	Masonry brick work	10.03522	3400	m^3	34119.748
6	Plaster	151.2091	160	m^2	24193.456
7	Paint	142.4676	37	m^2	5271.3012
8	RCC in slab and lintel chajja	5.02824	3800	m^3	19107.312
9	Tile’s flooring	15.75	450	m^2	7087.5
10	Steel	1420.76	45	kg	63976.7
11	Doors	0.1008	3078	m^3	310.2624
12	Window	6.75	280	m^2	1890
13	Lighting tubes with wiring	3	700	nos	2100
14	Pc system for records	1	20000	nos	20000
15	Furniture	1	9000	nos	9000
	Total cost				221343
	5% water and electric charges				232411
	Total Approx. Amount				232500

Table 25 Abstract sheet for control room

8.1.6 Heritage Village Design (Civil)

There is an old Shiv temple in the village which was built in the 10th century AD. We designed the garden in that place. the benefits of choosing that place were:

- Tourists would increase in the place
- Protection of the heritage of the country would be made.
- As there was a need of a public garden we thought if develop the garden in the temple it could have dual benefits both to the village and history of the temple.
- Making a garden there is a reason logic that more people come in garden, more the knowledge of the temple of the temple will be given to people and automatically proudness of having an old heritage place will increase in the village

Figure 117 3D model of public garden

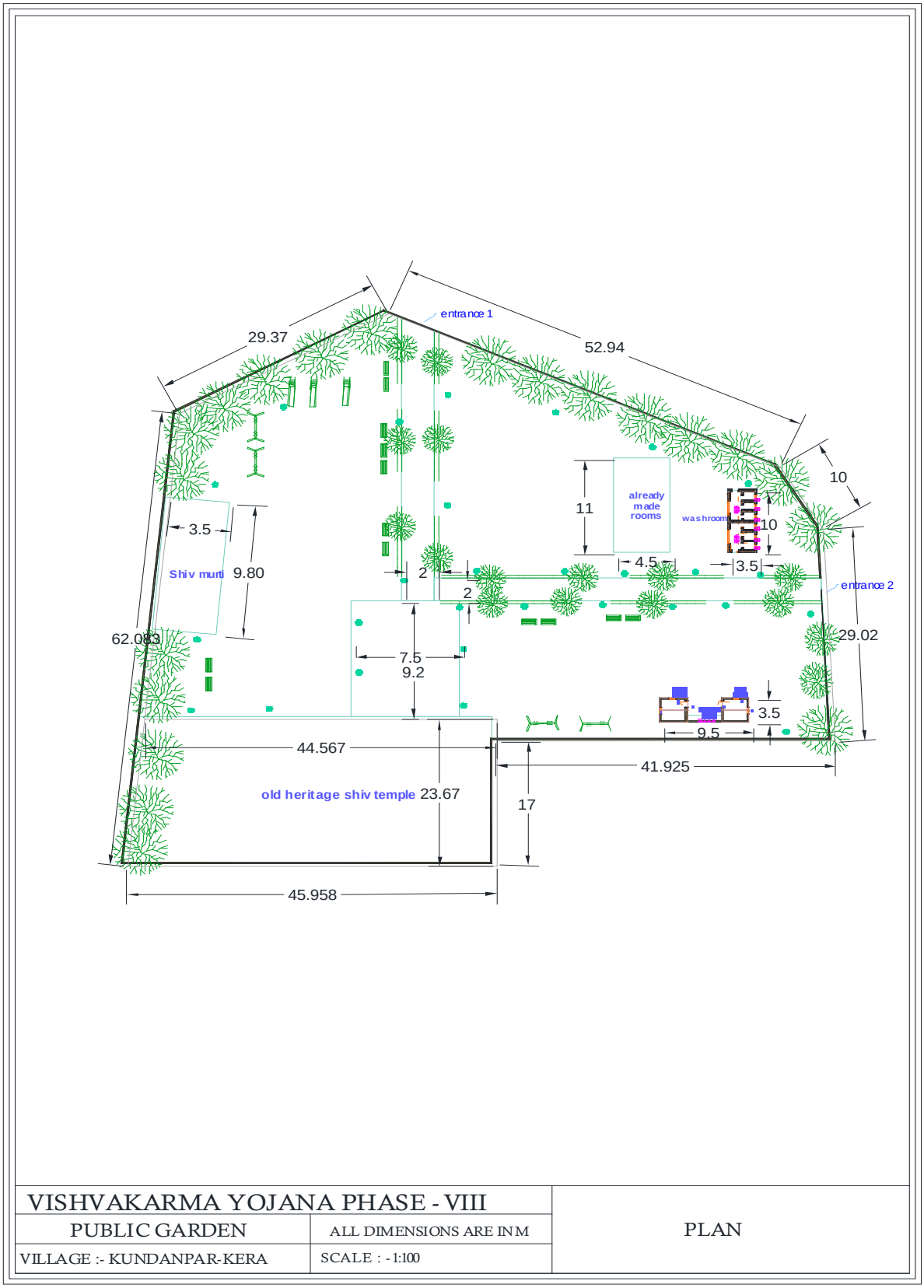


Figure 118 Plan of public garden

PUBLIC GARDEN ESTIMATE					
ABSTRACT SHEET					
SR. NO	**DESCRIPTION**	**QUANTITY**	**RATE**	**PER**	**AMOUNT RS**
1	Washroom	1	376000	no.	376000
2	Pavement blocks	385.52	450	m^2	173484
3	Iron sheets to cover room	30.45	300	m^2	9135
4	R.O. plant filter (100 LPH)	1	20,000	no.	20000
5	Drinking water basin with tap	3	2500	no.	7500
6	Demolish old dead toilet	6	648	m^2	3888
7	Iot based irrigation	1	10950	no.	10950
8	Smart solar light	22	3150	no.	69300
9	Pole for light	22	2500	no.	55000
10	Garden UV lights	10	3300	no.	33000
11	Clearing bush area	8	450	days	3600
12	Tree planation and maintain	20	55	no.	1100
13	Benches	20	4600	no.	92000
14	Slides and swings	5	7000	no.	35000
15	Fence painting	586.8	37	m^2	21711.6
16	2 iron gates	8	7600	m^2	60800
17	Water tank 500 litres	1	3500	no.	3500
	Total cost				975968.6
	Approx. cost				976000

Table 26 Abstract sheet for public garden

8.1.7 Automatic solar panel cleaning robot. (Electrical)

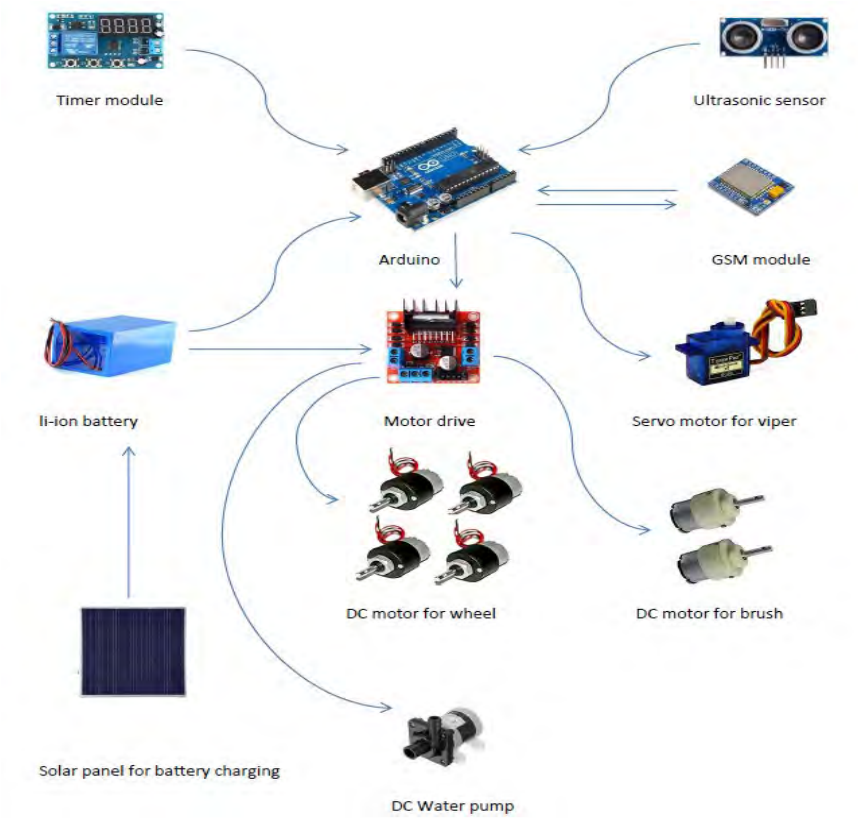


Figure 119 System's block diagram of Automatic solar panel cleaning robot

Solar array is installation at rooftop of school or houses. It is converting solar energy to electrical energy. It is used in school to operate electrical loads. Sometimes decrease efficiency of solar array due to dust on the panel. So, there is used solar cleaning robot to clean solar array at regular time interval. There is no needs manpower to clean the solar array. This is fully automatic solar cleaning robot.

Working

Solar panel efficiency decreases due to dust on the panel. So, cleaning solar panel at regular interval. We are making automatic solar cleaning robot to use clean solar arrays at regular time. This cleaning robot controlled by Arduino and sensors.

The frame carrying this cleaning brush with water spray is moved along the length of the solar panel in vertical direction of some and vice-versa, which results in mopping action on the solar panel cleaning the panels.

This frame is also consisting of DC motors which will produce the rotational motion which is converted into linear motion through rack system. This action is also controlled by signal generated by Arduino. There is ultrasonic sensor for detect the ends of solar array and Timer module is use for robot clean solar panel in regular time.

All this cleaning actions will consume a time of within minute for mopping action for both movements of cleaning system. And last GSM module sends the massage after cleaning the solar panel to solar array installation persons.

- ARDUINO: This is microcontroller to controlled cleaning robot. It generates signal to control wheel motor, brush motor, water spray. It also interfacing with ultrasonic sensor and timer module.
- MOTOR DRIVE: Motor drive is controlled by Arduino to run motor forward and reverse. Motor drive used for all dc motor controlled by microcontroller.
- DC MOTOR FOR WHEEL: This is DC gear motor to use for linear motion of the cleaning robot. it is run forward or revers by motor drive. There is total 4 number of DC motors used.
- DC MOTOR FOR BRUSH: This is DC gear motor to use for rotating the brush on surface of solar panel. This brush is clean the dust on the panel using water.
- DC WATER PUMP: DC water pump is used to spray of water on the surface of solar panel and rotating brush.
- SERVO MOTOR: Servo motor is used for adjustment the viper position. This viper position is up or down according to linear motion of the cleaning robot.
- BATTERY: This is lithium-ion battery to use power supply of the solar cleaning robot. It is also charged by small solar panel mounted on the solar cleaning robot.
- SOLAR PANEL: This is 10-watt solar panel. It is for only battery charging of the solar cleaning robot.
- ULTRASONIC SENSOR: This sensor is use for detecting the end of the solar array to stop the solar cleaning robot. It is interfacing with Arduino.
- TIMER MODULE: Timer module is used for solar cleaning robot clean the solar array at regular time interval. We are adjusted time interval according to use clean the solar array.
- GSM MODULE: GSM module is used for sends the message to owner after cleaning the solar array.

Automatic solar panel cleaning robot Estimate

COMPONENT	QUANTITY	PE PER PRICE P	T TOTAL PRICE
100 r.p.m d.c. gear motor	4	480	1920 /-
1000 r.p.m motor	2	1660	3320 /-
Ultrasonic sensor	4	150	600 /-
Arduino	1	460	460 /-
Motor drive	4	200	800 /-
10 r.p.m motor	2	480	960 /-
Circular brush	1	3000	3000 /-
Wiper	6	150	900 /-
Pump	1	1200	1200 /-
Wheel	4	315	1260 /-
Wire (in meter)	10 meters	10/meter	100/-
Aluminum frame	-	7000 /-	7000 /-
Dual channel relay module	1	190 /-	190 /-
Lithium-ion cell	15	170 /-	2550 /-
GSM module	1	850/-	850/-
TOTAL AMOUNT	**-**	**-**	**25110 /-**

Table 27 Abstract sheet for Automatic solar panel cleaning robot

INSTALLATION	QUANTITY	TOTAL COST
Solar panel	19 nos.	152000
inverter	1 no.	70000
Structure	1 no.	10000
installation	6000 watts	15000
miscellaneous		15000
Total cost of installation		262000
Government subsidy		-78600
Final cost		**183400**

Table 28 Abstract sheet for installation Automatic solar panel cleaning robot

8.1.8 IoT based irrigation (Electrical)

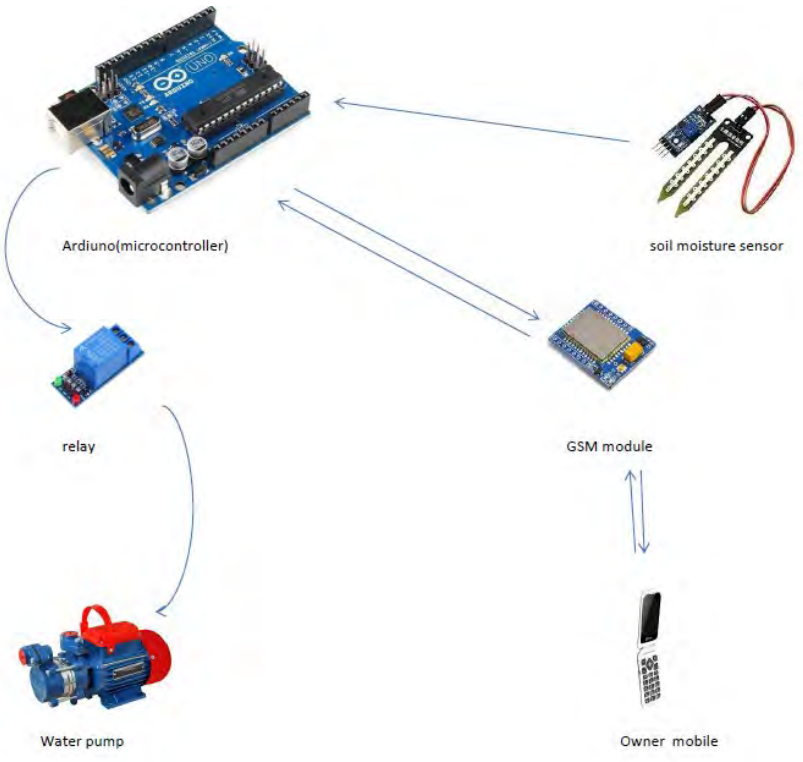


Figure 120 System's block diagram of IoT based irrigation

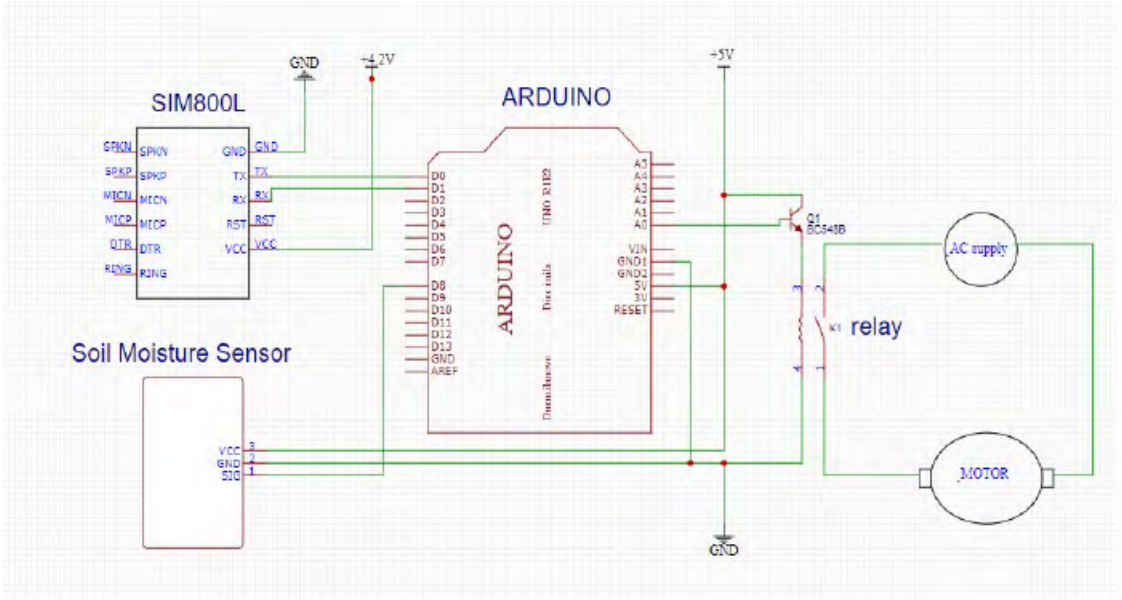


Figure 121 Circuit diagram of IoT based irrigation

IOT based automatic irrigation system estimate
Automatic control circuit

COMPONENT	QUANTITY / RATING	PRICE
Arduino	1	450/-
Soil moisture sensor	2	380/-
GSM module	1	840/-
Relay module	1	80/-
Other Arduino electronics		200/-
Total cost		1950 /-

Table 29 Abstract sheet for Automatic control circuit

Drip irrigation system

COMPONENT	QUANTITY / RATING	PRICE
Water pump	1	3500/-
Drip pipe	300 meters	2500/-
Other drip material		3000/-
Total cost		9000 /-

Table 30 Abstract sheet for Drip irrigation system

Total estimation

COMPONENTS	PRICE
Automatic control circuit	1950/-
Drip irrigation system	9000/-
Total cost	10950 /-

Table 31 Abstract sheet for total estimation of IoT based irrigation

Working

Iot based automatic irrigation system which is operated by microcontroller and moisture sensor. Soil moisture sensor is measured humidity in soil when moisture level down then microcontroller is on the irrigation system by on the water pump. And sensor measured moisture level high then off the irrigation. This irrigation data sends to owner of garden or farm via SMS using GSM module. And controlled irrigation by owner sends the SMS via GSM module to microcontroller.

- ARDIUNO UNO: It is microcontroller which controlled irrigation system in garden and agriculture. It is interfacing with Soil moisture sensor and GSM module.
- SOIL MOISTURE SENSOR: Its sensor device is measured percentage of moisture in soil. And send the soil data in Arduino.
- GSM MODULE: This device interfacing with Arduino. This is sent and receive data from owner mobile.
- RELAY: It is electric switch which operated by Arduino.
- WATER PUMP: This water pumps on by relay. It is irrigating in garden and farm by water pump.

8.1.9 Automatic and smart solar light for garden, street, and agriculture (Electrical)

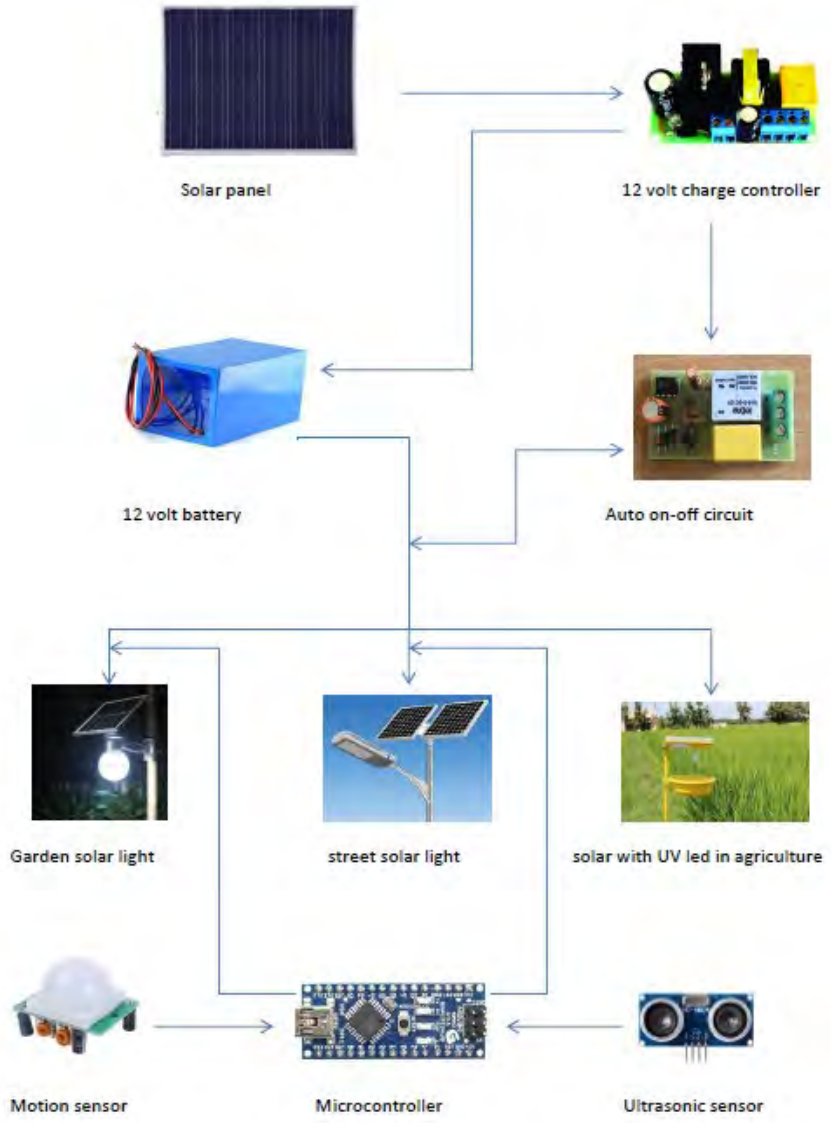


Figure 122 System's block diagram of Automatic and smart solar light

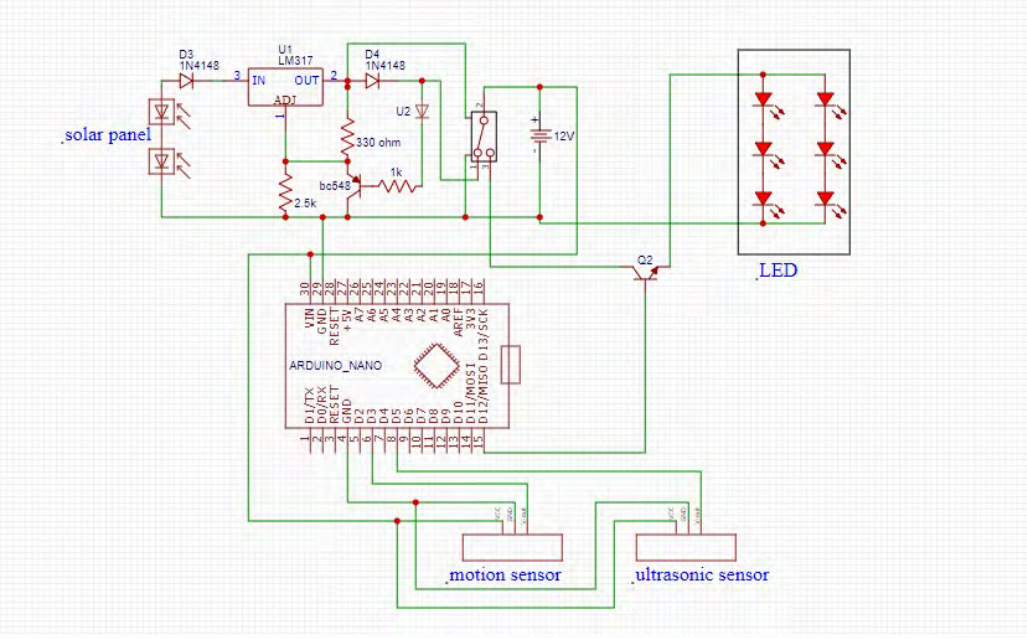


Figure 123 Circuit diagram of Automatic and smart solar light

Working

Automatic solar light is used in garden light, streetlight, and agriculture. It is worked on solar energy stored in battery and it's on night. Garden light and streetlight are connected with motion sensor and ultrasonic sensor. Peoples are in garden then light on if there is nobody then light off. Streetlight also working same but there is used ultrasonic sensor. When vehicle or peoples passed there then light on and nobody passed there then light off.

Solar based light is used in agriculture. There is UV led used to reduce pesticides in crop. UV light attract the insect and pest. So, we can reduce level of insect and pest in crop. That's why we increased crop yield.

- SOLAR PANEL: solar panel is converting the solar energy to electric energy. For the battery charging.
- CHARGE CONTROLLER: charge controller is used to charge battery from solar panel.
- BATTERY: store the electrical energy for used led on at night.
- GARDEN LIGHT: automatic solar light used in garden and there used motion sensor for smart lighting in garden.
- STREETLIGHT: automatic solar light used in road light and there is used ultrasonic sensor for capture vehicle then on light.
- UV light in agriculture: UV led solar light is used in farm for reduce insect and pest in crop.
- MOTION and ULTRASONIC SENSOR: These sensors are used in automatic solar light for smart light in garden and road.
- MICROCONTROLLER: Microcontroller is interfacing with motion and ultrasonic sensor for smart automatic solar light.

Automatic and smart solar estimate

Garden solar light

COMPONENTS	QUANTITY/RATTING	PRICE
Solar panel	10 watts	900 /-
Charge controller	12-volt, 3 amp	350 /-
li-ion battery	12-volt, 5 amp	700 /-
Auto on-off circuit	1	100/-
Arduino Nano	1	300/-
Motion sensor	1	150/-
LED light	9 watts	150/-
miscellaneous		500 /-
Total cost		**3150/-**

Table 32 Abstract sheet for automatic garden solar light

Street solar light

COMPONENTS	QUANTITY/RATTING	PRICE
Solar panel	30 watts	2000 /-
Charge controller	12-volt, 3 amp	350 /-
li-ion battery	12-volt, 10 amp	1500 /-
Auto on-off circuit	1	100/-
Arduino Nano	1	300/-
Ultrasonic sensor	1	150/-
LED light	20 watts	200/-
miscellaneous		1000 /-
Total cost		**5600/-**

Table 33 Abstract sheet for automatic street solar light

Agriculture light

COMPONENTS	QUANTITY/RATTING	PRICE
Solar panel	10 watts	900 /-
Charge controller	12-volt, 3 amp	350 /-
li-ion battery	12-volt, 7 amp	1000 /-
Auto on-off circuit	1	100/-
UV LED light	9 watts	250/-
miscellaneous		700/-
Total cost		**3300/-**

Table 34 Abstract sheet for automatic agricultural solar light

8.2 Reason for Students Recommending this Design

For the residents of the village, the design proposed should be sufficiently convenient, cost efficient and useful. The proposed design is based on the use, importance and cost suggested by the villagers. The most critical part to be looked after is the expense of the design.
Therefore, we tried to combine the design together so that with a less economic more facilities can be given.
As suggested by the principal, there was requirement of a prayer hall, a place for students to eat, a place to perform festivals. So, we designed a multifunctional hall that has all these facilities and we added E-education in the hall and made the hall a renewable use of electricity.
Then we designed a smart a garden in that we planned the place that it can also protect the old heritage of the village and become a recreational area for the village.
We made design of public toilet to increase the hygiene and it is also a component of Swachh Bharat Abhiyan.

8.3 About designs Suggestions / Benefit of the villagers

- The hall will increase the facilities for students and education will also improve.
- Tourists would increase in the place
- Protection of the heritage of the country would be made.
- As there was a need of a public garden we thought if develop the garden in the temple it could have dual benefits both to the village and history of the temple.
- Making a garden there is a reason logic that more people come in garden, more the knowledge of the temple of will be given to people and automatically proudness of having an old heritage place will increase in the village
- Design of public toilet to increase the hygiene and it is also a component of Swachh Bharat Abhiyan.

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

After survey and data collected from village, we decide to fulfill some of their requirements, and we listed them as follows for the next semester:

- We think of providing and entrance gate for the village and provide CCTV camera on it so, it can have control on security system of the village.
- Provide solar automatic streetlights near bridge of the approach road of village as it can reduce the chances of accidents.
- Provide more facilities in the education system in the government school.
- Provide seating arrangement in the playground
- Provide a vegetable market to easy the market flow

As all this will be first discussed with the villagers and then it will be implemented as per there requirement. If they have more plans, they will tell us will help them with solution and design in part II.

Civil design:

- Entrance gate
- Street light layout
- Seating arrangement in grounds (movable stadium)
- Vegetable market
- Computer couching class
- Govt. scheme office

Electric design:

- Automatic water supply system
- Smart agriculture system
- Face mask detection & Automatic sanitizer sprayer

CHAPTER 10. CONCLUSION OF THE ENTIRE VILLAGE ACTIVITIES OF THE PROJECT

Vishwakarma Yojana is a Gujarat government project assigned to GTU, in which we GTU students who have been interested in this project have been assigned to a village in our Rurbanisation district.
After carrying out physical survey and comparing the existing facilities of village with the basic amenities needed by a village based on population norms given by government of India and personal interface many of the villagers of Kundanpar.
we carried out Gap analysis.
We examined the problems and the requirements of our assigned village from this and began to find the solution.
We planned to prepare design solutions in the terms of civil and electric point of view, research projects and discussion groups. And we were ready for the proposal at the end of the semester with these plans.
We made awareness of covid-19 and Swachh Bharat Abhiyan by making banners and placed them near the bus station.

We made design in Part 1 are:

- Rainwater harvesting
- Public toilet
- Multifunctional hall
- CCTV room
- Anganwadi
- Public garden
- Automatic solar panel cleaning robot
- IoT based irrigation
- Automatic and smart solar light for garden, street, and agriculture

We tried to give design that can solve their problems and enhance the village towards smart village.
The design provided by us are based on the best economical way. The design was shown by us to the grampanchayat and were approved.

CHAPTER 11. REFERENCES REFEREED FOR THIS PROJECT

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

https://www.researchgate.net/

www.censusindia.gov.in

http://www.census2011.co.in/

www.google.com

www.youtube.com

http://www.wikipedia.com/

https://www.amazon.in/

https://earth.google.com/

https://www.indiamart.com/

https://www.google.co.in/maps

https://circuitdigest.com/

https://www.ripublication.com/

https://www.learntocivilfield.com/

Professional Practices & Valuation book by Dr. R.P. Rethaliya

S.O.R. of Kutch 2015-2016

UDPFI Guidelines, Ministry of Urban Development

ATMS website and research papers.

CHAPTER 12. ANNEXURE ATTACHMENT

12.1 Ideal village survey form

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	Sukhpar
Name of Taluka:	Bhuj
Name of District:	Kutch
Name of Institute:	HJD Institute of technical education and research, Kutch
Nodal Officer Name & Contact Detail:	Mr. Dinesh Bhuva +91 7990912209
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Mdasgar Langai Talati
Date of Survey:	1/10/2020

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	10505	5310	5195	2501
ii)	2011	13303	6442	6861	3005

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	2335 23.2141 N, 96.6125 E
	Forest Area (In hect.)	–
	Agricultural Land Area (In hect.)	902
	Residential Area (In hect.)	275
	Other Area (In hect.)	739
	Water bodies	–
	Nearest Town with Distance:	Bhuj, 7 km

Figure 124 Ideal village survey form

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

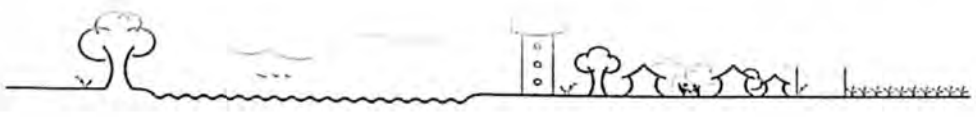
3. **Occupational Details:**

Name of Three Major Occupation groups in Village	1. Farming 2. masonry 3. Building civil service

4. **Physical Infrastructure Facilities:**

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated)	By panchayat	yes	–	proper
	• RO Water	personal filter	Average	–	Average
	• Well (Covered/ Uncovered)	–	–	–	–
	• Hand pumps	–	–	–	–
	• Tube well/ Borehole	–	–	–	–
	• River/ Canal/ Spring/ Lake/ Pond	–	–	–	–
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	1 x 50,000 liters		
	Underground Sump	Capacity:	2 x 5 lakh liters		
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	yes			
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	closed			
	If Open than Pucca / Kutchcha	–			
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	sewer drains			
Suggestions if any:					

E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	yes	–	–	–
	Main road	yes	–	–	–
	Internal streets	yes	–	–	–
	Nearest NH/SH/MDR/ODR Dist. in kms.	ODR road passes at center of village	–	–	–
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO	Nearest Bhuj 9.5 km	–	–
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	yes	–	–	–
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	All availabe	–	–	–
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	yes	24 hrs	–	–
	Power supply for Domestic Use	yes	24 hrs	–	–
	Power supply for Agricultural Use	yes	8 hrs	–	–
	Power supply for Commercial Use	yes	24 hrs	–	–
	Road/ Street Lights	yes	10-11 hrs	–	–



	Electrification in Government Buildings/ Schools/ Hospitals	yes	24 hrs	–	–
	Renewable Energy Source Facilities (Y/ N)	NO	–	–	–
	LED Facilities	~~AFO~~ Yes	–	–	–
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	NO	–	–	–
	Location Condition	–	–	–	–
	Community Toilet (With bath/ without bath facilities)	yes	without Bath	–	–
	Solid & liquid waste Disposal system available	NO	–	–	–
	Any facility for Waste collection from road	yes	–	–	collected daily as per scheduled area
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Tube well	–	–	–
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	0.05	–	–	–

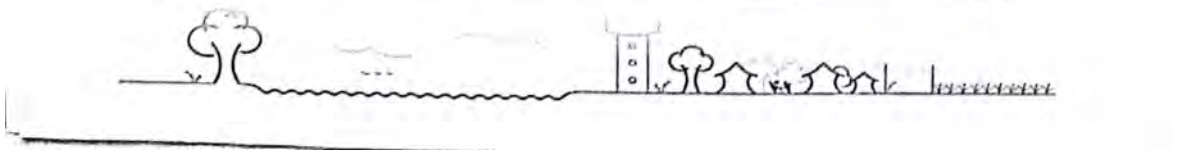
5. Social Infrastructural Facilities:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	yes NO	3 beds Bhuj 8km	–	–
	Private Clinic/Private Hospital/ Nursing Home	yes	–	–	–
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
L.	**Education Facilities:**				
	Aaganwadi/ Play group	yes	10	–	–
	Primary School	yes	4	–	–
	Secondary school	yes	4	–	–
	Higher sec. School	yes	#I	–	–
	ITI college/ vocational Training Center	NO	ITI. Bhuj 7.1Km	–	–
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	NO	Govt. Eng. Clg. 6 km commerce clg. 6.1 km Medical clg. 9 km	–	–
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	yes At samajwadi	without TV	–	–



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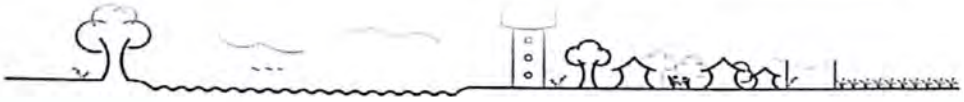
Techno Economic Survey

	Condition:	Proper	–	–	–
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	yes Near Moti seri Proper	–	–	–
	Public Garden Location: Condition:	kutch mitru park sukhpar average	–	–	–
	Village Pond Location: Condition:	– – –	–	–	–
	Recreation Center Location: Condition:	Neighbord Near sukhpar good	–	–	–
	Cinema/ Video Hall Location: Condition:	NO – –	Seven sky Bhuj 5.1 km good	–	–
	Assembly Polling Station Location: Condition:	yes At Prathmic shala Proper	–	–	–
	Birth & Death Registration Office Location: Condition:	yes At Grum-Panchayat 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	yes	–	–	–
	Telecommunication Network/ STD booth	yes	No std booth	–	–



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	General Market	yes	-	-	-
	Shops (Public Distribution System)	yes	-	-	-
	Panchayat Building	yes	-	-	-
	Pharmacy/Medical Shop	yes	-	-	-
	Bank & ATM Facility	yes	-	-	-
	Agriculture Co-operative Society	-	-	-	-
	Milk Co-operative Soc.	-	-	-	-
	Small Scale Industries	yes	-	-	-
	Internet Cafes/ Common Service Center/Wi Fi	-	-	-	-
	Other Facility	Basic requirement available	If not then from thuj town	-	-
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	-	-	-	-
P.	Bio-Gas Plant	-	-	-	-
	Solar Street Lights	-	-	-	-
	Rain Water Harvesting System	yes Almost 50% of every house		-	-
		-	-	-	-
Q.	Any Other	-	-	-	-

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	yes Both

Recent Projects going on for Development of Village	small ~~bridge~~ construction of road(C.C). on river, on road going to Nagthada
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)	Common Public Toilet.	2 no's in village
2.	Additional Information/ Requirement	–	–

9. **Smart Village Proposal Design**

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	~~Bridge~~ construction of CC road by gram-Panchayat	~~half~~ completed	–

> **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

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તલાટી સહ મંત્રી
(પંચાયત)
શ્રી સુખપર ગ્રામ પંચાયત

12.2 smart village survey form

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	Kutch
Name of Taluka:	Bhuj
Name of Village:	Madhapar
Name of Institute:	HJD Institue of technical education and research, Kutch
Nodal Officer Name & Contact Detail:	Mr. Dinesh Bhuva +91 79909122909
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Mr. Kiran Chauhan Panchayat member
Date of Survey:	5/10/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	28438	14335	14103	4739
2.	2011	32293	16276	16017	7630

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	4367.48 23.2397 N, 69.6691 E
2.	Forest Area (In hect.)	137.69
3.	Agricultural Land Area (In hect.)	1296.37
4.	Residential Area (In hect.)	2786.58
5.	Other Area (In hect.)	146.84
6.	Distance to the nearest railway station (in kilometers):	Bhuj 8.7 km

Figure 125 Smart village survey form

7.	Name of Nearest Town with Distance:	Bhuj 5.5 km
8.	Distance to the nearest bus station (in kilometers):	In village center
9.	Whether village is connected to all road for the any facility or town or City?	Yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. construction 2. Business (own shop) 3. farming
Major crops grown in the village:	1. wheat 2. caster seed 3. cotton

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	Near local boats	yes	–	water stored and supplied
	Public Tap/Standpipe	–	–	–	–
	Tube Well Or Bore Well	–	–	–	–
2.	**DUG WELL**				
	Protected Well	–	–	–	–
	Un Protected Well	–	–	–	–
3.	**WATER FROM SPRING**				
	Protected Spring	–	–	–	–
	Unprotected Spring	–	–	–	–
	Rainwater	Private home	yes	–	Stored in underground tank
	Tanker Truck	–	–	–	–
	Cart With Small Tank	–	–	–	–
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/**				
	Irrigation Channel	–	–	–	–
	Bottled Water	3 companies	yes	–	e.g. Amrutjal company
	Hand Pump	–	–	–	–
	Other(Specify)**Lake/ Pond**	–	–	–	–

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:						
B.	**Water Tank Facility**					
	Overhead Tank	Capacity:	2X7 10KH			
	Underground Sump	Capacity:	2X7 10KH			
Suggestions if any:						
C.	**The Type of Drainage Facility**					
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	closed	yes	-	-	
Suggestions if any:						
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**					
	Village approach road	WBM	yes	-	-	
	Main road	WBM	yes	-	-	
	Internal streets	RCC	yes	-	-	
	Nearest NH/SH/MDR/ODR Dist. in kms.	WBM (ODR)	yes	-	pass from center of village	
Suggestions if any:						
E.	**Transport Facility**					
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	BHUJ 8.7 km	yes	-	-	
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	ST BUS and city BUS	yes	-	-	
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	all	yes	-	-	
Suggestions if any:						
F.	**Electricity Distribution**					
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Govt.	yes	-	24 hrs	

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Power supply for Domestic Use	-	yes	-	24 hrs
	Power supply for Agricultural Use	-	yes	-	8 hrs
	Power supply for Commercial Use	-	yes	-	24 hrs
	Road/ Street Lights	-	yes	-	10 hrs
	Electrification in Government Buildings/ Schools/ Hospitals	-	yes	-	24 hrs
	Renewable Energy Source Facilities (Y/ N)	-	yes	-	private homes
	LED Facilities	-	yes	-	partial road lights
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	2	yes	-	-
	Location Condition	proper	-	-	Near bus station
	Community Toilet (With bath/ without bath facilities)	without Bath	yes	-	-
	Solid & liquid waste Disposal system available	-	NO	-	-
	Any facility for Waste collection from road	Door to Door service	yes	-	special mini truck
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND	-	yes		
	STREAM/RIVER	-	yes		
	CANAL	-	yes		
	WELL	-	yes		
	TUBE WELL.	-	yes		
	OTHER (SPECIFY)	-	-		
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	0.09			

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	8	yes	-	-
	Sub-Centre	-	NO	-	-
	PHC	1	yes	-	At local board
	BLOCK PHC	1	yes	-	At local board
	CHC/RH	1	yes	-	At local board
	District/ Govt. Hospital	1	yes	-	At local board
	Govt. Dispensary	1	yes	-	At local board
	Private Clinic	15	yes	-	-
	Private Hospital/	-	NO	-	Bhuj 6 km
	Nursing Home	-	NO	-	Bhuj 7 km
	AYUSH Health Facility	-	NO	-	-
	sonography /ultrasound facility	-	NO	-	Bhuj 6.7 km
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	8	yes	-	-
	Primary School	16	yes	-	-
	Secondary school	10	yes	-	-
	Higher sec. School	6	yes	-	-
	ITI college/ vocational Training Center	1	yes	-	-
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	0	NO	-	Bhuj 7 km
	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)	without TV proper	Trust marble	yes	-
	Public Library (With daily newspaper supply: Y/N)	yes daily newspaper	swami-narayan mandir	yes	-
	Public Garden	proper	kesar bag	yes	-
	Village Pond	proper	Apnu ghar	yes	-
	Recreation Center	proper	kori-moti talav	yes	-
	Cinema/ Video Hall	-	-	-	NO
	Assembly Polling Station	proper	sarsuxiti school	yes	-
	Birth & Death Registration	proper	gram-panchayat	yes	-

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

Suggestions if any:

M.	**Other Facilities**	Condition	Location	Available (YES)	Available (NO)
	Post-office	proper	thakur mandir	yes	-
	Telecommunication Network/ STD booth	-	-	-	NO
	General Market	proper	panchayat	yes	-
	Shops (Public Distribution System)		vishal nagar	yes	-
	Panchayat Building	proper	axis bank	yes	-
	Pharmacy/Medical Shop	proper	navi line	yes	-
	Bank & ATM Facility	proper	gandhi circle	yes	-
	Agriculture Co-operative Society	proper	navi line	yes	-
	Milk Co-operative Soc.	proper	Mother dairy	yes	-
	Small Scale Industries	proper	perfect glaze	yes	-
	Internet Cafes/ Common Service Center/Wi Fi	proper	Main road	yes	-
	Youth Club	proper	Lions club	yes	-
	Mahila Mandal	proper	Shakti nagar	yes	-

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	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries	private bussmess	1 1 - - 12	-	-
	Other Facility				ch some sheet

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)				NO
	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)			yes	
	12. Rajiv Gandhi National Drinking Water Mission			yes	
	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)			yes	
	18. Jawahar Rozgar Yojana (JRY)				NO
	19. Indira Awas Yaojna (IAY)			yes	
	20. Samagra Awas Yojana (SAY)			yes	No
	21. Sanjay Gandhi Niradhar Yojana (SGNY)			yes	
	22. Jawahar Gram Samridhi Yojana (JGSY)			-	
	23. Other (SPECIFY)				

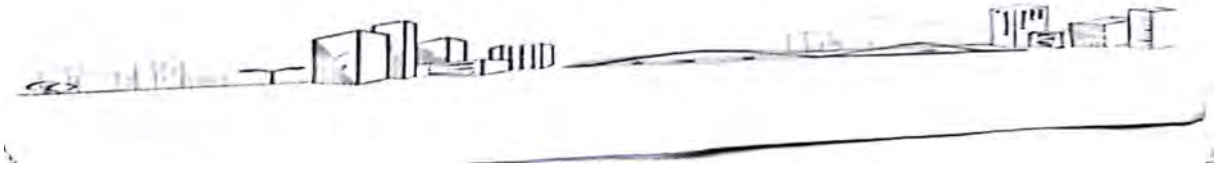
VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	solar panels	yes		private homes
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	- check dam and also privately at home	- yes	-	-
3.	Any Other	-	-	-	-

VII. DATA COLLECTION FROM VILLAGE

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Village Base Map Available: Hard Copy/Soft Copy	-	yes	-	-
2.	Recent Projects going on for Development of Village	Road work Drainage work	yes	-	-
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	- -	- -

8



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Vishwakarma Yojana: Phase VIII
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VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks
	Repair & Maintenance of Existing	–	–
	Public Infrastructure facilities,	–	–
	School Building	Sarswati Vidhyalaya	Renovation
	Health Center	–	–
	Panchayat Building	–	–
	Public Toilets & any other	–	–
2.	Additional Information/ Requirement	–	–
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?	 Daily monthly	 – –

IX. Smart Village / Heritage Details

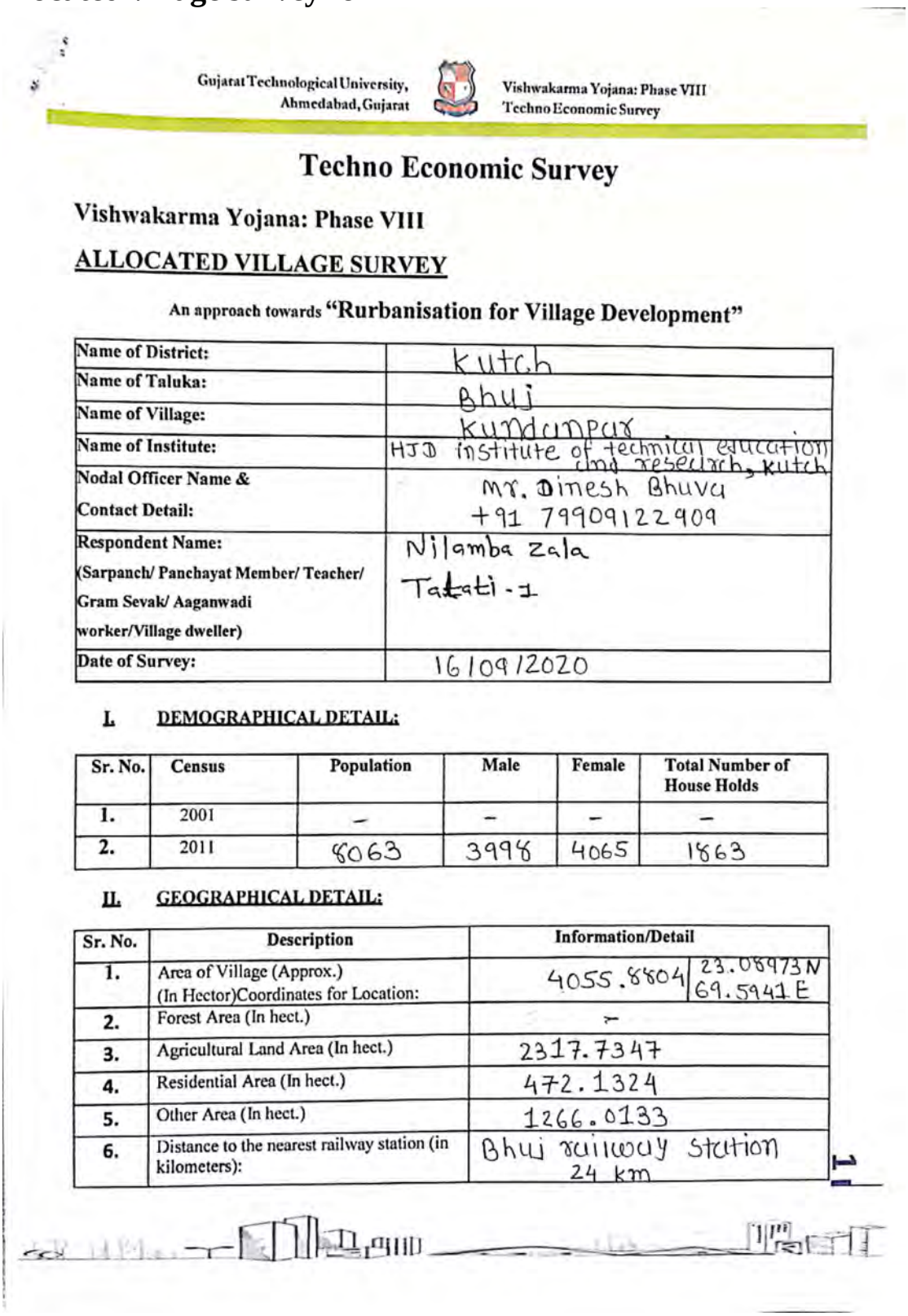
Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	–	–

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

માધાપર નવાવાસ ગ્રામ પંચાયત
માધાપર, તા. ભુજ-કચ્છ
મંત્રીશ્રી

12.3 Allocated village survey form



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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	Kutch
Name of Taluka:	Bhuj
Name of Village:	Kundanpar
Name of Institute:	HJD Institute of technical education and research, Kutch
Nodal Officer Name & Contact Detail:	Mr. Dinesh Bhuva +91 79909122909
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Nilamba Zala Talati-1
Date of Survey:	16/09/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	-	-	-	-
2.	2011	8063	3998	4065	1863

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	4055.8804 | 23.08973 N 69.5941 E
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	2317.7347
4.	Residential Area (In hect.)	472.1324
5.	Other Area (In hect.)	1266.0133
6.	Distance to the nearest railway station (in kilometers):	Bhuj railway station 24 km

Figure 126 Allocated village survey form

7.	Name of Nearest Town with Distance:	Bhuj 20.8 km
8.	Distance to the nearest bus station (in kilometers):	Kera bus station 1.5 km
9.	Whether village is connected to all road for the any facility or town or City?	yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. Farmer 2. Masonry 3. Building service works

Major crops grown in the village:	1. cotton 2. wheat 3. custer seeds

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

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Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Other(Specify)Lake/ Pond	–	–	–	–
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	2X5 lakh	1X10 lakh	–
	Underground Sump	Capacity:	–	–	–
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1.	closed	yes	–	–
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	WBM	yes	–	Proper
	Main road	Blacked topped Pucca	yes	–	average
	Internal streets	RCC	yes	–	–
	Nearest NH/SH/MDR/ODR Dist. in kms.	1 km Mundra road (ODR)	yes	–	Proper
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	N	Bhuj	24 km	
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	N	kera	1.5 km	It has bus stop but no bus station
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Y	Private vehicles	–	–
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Govt.	24 hrs	–	–

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Gujarat Technological University, Ahmedabad, Gujarat

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	Power supply for Domestic Use	–	24 hrs	–	–
	Power supply for Agricultural Use	–	8 hrs	–	–
	Power supply for Commercial Use	–	24 hrs	–	–
	Road/ Street Lights	–	11 hrs	–	–
	Electrification in Government Buildings/ Schools/ Hospitals	–	24 hrs	–	–
	Renewable Energy Source Facilities (Y/ N)	y	private at few homes	–	–
	LED Facilities	–	–	–	–
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	–	–	–	–
	Location Condition	–	–	–	–
	Community Toilet (With bath/ without bath facilities)	yes	without Bath	–	–
	Solid & liquid waste Disposal system available	–	–	–	–
	Any facility for Waste collection from road	yes	–	–	daily as per scheduled area
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND	–	–	–	–
	STREAM/RIVER	–	–	–	–
	CANAL	–	–	–	–
	WELL	–	–	–	–
	TUBE WELL	yes	–	–	personal farms
	OTHER (SPECIFY)	–	–	–	–
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	0.111	–	–	–

4

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	–	–	–	Bhuj 20 km
	Sub-Centre	–	–	–	–
	PHC	Proper condi.	1	–	–
	BLOCK PHC	–	–	–	–
	CHC/RH	–	–	–	Bharudar 66 km
	District/ Govt. Hospital	Proper condi.	1	–	–
	Govt. Dispensary	Proper condi.	1	–	–
	Private Clinic	Proper condi.	2	–	–
	Private Hospital/	Proper condi.	1	–	–
	Nursing Home	Proper condi.	1	–	Bhuj 21 km
	AYUSH Health Facility	–	–	–	–
	sonography /ultrasound facility	–	–	–	Bhuj 20 km
	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	Proper cond	5	–	–
	Primary School	Proper cond	3	–	–
	Secondary school	Proper cond	1	–	–
	Higher sec. School	Proper cond	1	–	–
	ITI college/ vocational Training Center	Proper cond	1	–	–
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	Proper condition Medical Clg. Bhuj 22 km	1	–	–

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

L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)	Proper without tv	patel vas	yes	-
	Public Library (With daily newspaper supply: Y/N)	yes	near kundanpar school	yes	-
	Public Garden	average	shiv temple	yes	-
	Village Pond	-	-	-	NO
	Recreation Center	average	23.093112 69.592158 N	yes	-
	Cinema/ Video Hall	-		-	NO
	Assembly Polling Station	Proper	At govt. school	yes	-
	Birth & Death Registration Office	proper	At gram. office	yes	-
If any of the above Facility is not available in village than approx. distance from village: .....kms.					
Suggestions if any:					

M.	Other Facilities	Condition	Location	Available (YES)	Available (NO)
	Post-office			yes	-
	Telecommunication Network/ STD booth	NO STD booth	Few offices, home	yes	-
	General Market	average	near swaminarayan mandir.	yes	-
	Shops (Public Distribution System)	proper	Near vishapiy	yes	-
	Panchayat Building	proper	near bus stathum	yes	-
	Pharmacy/Medical Shop	proper	Near mandir	yes	-
	Bank & ATM Facility	proper	Near bus stathum	yes	-
	Agriculture Co-operative Society	-	-	-	NO
	Milk Co-operative Soc.	-	-	-	NO
	Small Scale Industries	-	-	-	NO
	Internet Cafes/ Common Service Center/Wi Fi	-	-	-	NO
	Youth Club	-	-	-	NO
	Mahila Mandal	-	Gram-Panchayat office	yes	-

9

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

Suggestions if any:

N.	Other Facilities	Condition		Available (YES)	Available (NO)
	1. Have these programme implemented the village?			yes	
	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)				NO
	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)			yes	
	12. Rajiv Gandhi National Drinking Water Mission			yes	
	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)			yes	
	18. Jawahar Rozgar Yojana (JRY)				NO
	19. Indira Awas Yaojna (IAY)			yes	
	20. Samagra Awas Yojana (SAY)				NO
	21. Sanjay Gandhi Niradhar Yojana (SGNY)			yes	
	22. Jawahar Gram Samridhi Yojana (JGSY)			yes	
	23. Other (SPECIFY)			-	

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

8

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

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

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	repair of govt. kumar shall. maintenance of public garden	we will consider it ryzal development

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

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

Vaghas
તલાટી / સહ મંત્રી
ડેરા, તા. ભુજ-કચ્છ.

9

12.4 Gap Analysis of the Allocated Village

Village gap analysis					
Village Facilities	**Planning Commission/UDPFI Norms**	**Village Name:**	Kundanpar		
		Population:			8063
		Existing	**Required as per Norms**	**Smart Village / Cities / Heritage Future Projection Design**	**Gap**
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	5	1		4
Primary School	Each Per 2500 population	3	1		2
Secondary School	Per 7,500 population	1	1		0
Higher Secondary School	Per 15,000 Population	1	1		0
College	Per 125,000 Population	0	1		0
Tech. Training Institute	Per 100000 Population	1	1		0
Agriculture Research Centre	Per 100000 Population	0	1		0
Skill Development Center	Per 100000 Population	0	1		0
Health Facility					
Govt/Panchayat Dispensary or Sub PHC or Health Centre	Each Village	1	1		0
Primary Health & Child Health Center	Per 20,000 population	0	0		0
Child Welfare and Maternity Home	Per 10,000 population	0	0		0
Multispecialty 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)	1	3		-2
Physical Infrastructure Facilities					
Transportation		**Adequate / Inadequate**	adequate		
Pucca Village Approach Road	Each village	2	1	0	1
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	inadequate	Only ST bus		
Drinking Water (Minimum 70 lpcd)		**Adequate / Inadequate**	adequate		0
Over Head Tank	1/3 of Total Demand	adequate	3		0
U/G Sump	2/3 of Total Demand	Not available	1	0	0
Drainage Network - Open		**Adequate /**			

		Inadequate			
Drainage Network - Cover		cover	adequate		
Waste Management System		**Adequate / Inadequate**	adequate		
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	2	1		1
community hall and Public Library	Per 15000 Population	1	1		0
Cremation Ground	Per 20,000 population	1	1		0
Post Office	Per 10,000 population	1	1		0
Gram Panchayat Building	Each individual/group panchayat	1	1		0
APMC	Per 100000 Population	0	1		0
Fire Station	Per 100000 Population	0	1		0
Public Garden	Per village	1	2		-1
Police post	Per 40,000Population	0	0		0
Shopping Mall		Small shops			
Electrical Design					
Electricity Network		**Adequate / Inadequate**			
Govt	available	Adequate			
Any Smart Village Facility					
Technology					
-	-	-	-	-	-
-	-	-	-	-	-
		ESR cap	0		
		Sump cap	0		
		Lat	0		

Table 35 Gap analysis of Kundanpar village with Planning Commission/UDPFI Norms

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

NO	VILLGAE NAME	BRANCH	PART 1 DESIGN	PART 2 DESIGN
1	Kundanpar	Civil	Rainwater harvesting	Entrance gate
2			Aaganwadi	Movable stadium
3			Public toilet	Govt. scheme office
4		Civil	Multifunctional hall	Vegetable market
5			Control room	Street light layout
6			Public garden	Computer couching classes
7		Electric	Automatic solar panel cleaning robot	Automatic water supply system
8			IoT Based Irrigation	Smart agriculture system
9			Automatic and smart solar light for garden, and agriculture	Face mask detection & Automatic sanitizer sprayer
1	Meghpar	Civil	Sewage treatment plant	Bio gas plant
2			Development of Main Chock	Development of play ground
3			Public Toilet	Library
4		Civil	Community Health center	Community hall
5			Rainwater harvesting	Overhead water tank
6			Utilization of dam water	Shopping mall
7		Electric	Automatic street light control	Automatic water level control
8			Solar system	Smart street light
9			Smart Water Supply System	Smart irrigation system

Table 36 Summary Details of All the Villages Designs

12.6 Summary of Good Photographs

Ideal village Sukhpar	
	
Nagthada park	Nagthada park
	
Kumar shalla Sukhpar	Post office Sukhpar
	
Sukhpar market	Government hospital Sukhpar
	
JMDC high school Sukhpar	Kutchmitra park Sukhpar

Table 37 Ideal village Sukhpar

Smart village Madhapar	
	
Arogya Kendra Madhapar	Mahila Mandal Madhapar
	
Public garden Madhapar	Sarasvati Vidyalaya Madhapar
	
Grampanchayat Madhapar	Post office Madhapar
	
Bus stop Madhapar	CCTV Madhapar

Table 38 Smart village Madhapar

Allocated village Kundanpar	
	
Kanya shalla Kundanpar	Shiv mandir Kundanpar
	
Farms Kundanpar	Kumar shalla Kundanpar
	
Kanya shalla Kundanpar	Public toilet Kundanpar
	
Library Kundanpar	Bus stop Kundanpar

Table 39 Allocated village Kundanpar

12.7 Village Interaction with sarpanch Report

As per the circular GTU guideline, the VY Section told all Vishwakarma Yojana teams to present their work in the village for the successful implementation of Vishwakarma Yojana. Under this guide, the Student team presented the Village Development Plan for Design Specifications & Benefits at Kundanpar Village.
After going through the techno economic survey forms and doing field surveys, we presented our design proposal to people.
During this time, we interacted with the following people and sarpanch, principal and talati to get a good picture of the different design implementation of our designs listed in our paper.
After communicating with them, identifying the problems and the necessary designs in the UDPFI Guidelines / Gap Review, we chose the key design proposal to be of primary importance. From all the designs, we explained the advantages and how this would lead to village growth by addressing unnecessary situations in everyday life.


Figure 127 Meeting in panchayat office Kundanpar

12.8 Sarpanch Letter giving information about the village development

HJD INSTITUTE OF TECHNICAL EDUCATION & RESEARCH
AFFLITATED TO
GUJARAT TECHNOLOGICAL UNIVERSITY

To
The Grampanchayat
Kundanpar, 370430
Date:28/10/2020

TOPIC: APPROVAL LETTER FOR VISHWAKARMA YOJANA

Respected Sir/Madam;
Project: Vishwakarma Yojana-VIII
Subject: Approval of propose design for village

HJD Institute of Technical Education & Research affiliated to Gujarat Technological University-GTU. GTU has been assigned to Vishwakarma Yojana-Phase VIII in which students survey various village and designs various amenities to deliver it to them making them ideal for living better life as per requirements & village problem statements.

We designed the following structure:
1. Multifunctional hall
2. Smart public garden
3. Public toilet.
4. Control room for CCTV
5. Aanganwadi
6. Rain water harvesting
7. IoT based irrigation
8. Self-cleaning solar panel robot
9. Smart solar light

Guided by nodal officer:
Mr. Dinesh Bhuva

Name of students:
Dhanani Nilesh
Halai Ritesh
Vekariya Alpesh

Thank you.

Nodal officer sign

Talati/Sarpanch sign and stamp
Kundanpar village

Figure 128 Sarpanch Letter

CHAPTER 13 FROM THE CHAPTER- 9 FUTURE DESIGNS

13.1 Design proposals civil

13.1.1 Movable stadium

As there is no availability of stadium in the playgrounds, we decide to design a movable stadium. The stadium is made of square and rectangular hollow sections of steel. Playground 1 has a small stadium and seat arrangements at some places.

Figure 129 Existing stadium and seats in ground 1

We designed another stadium for both playground 1 and playground 2.

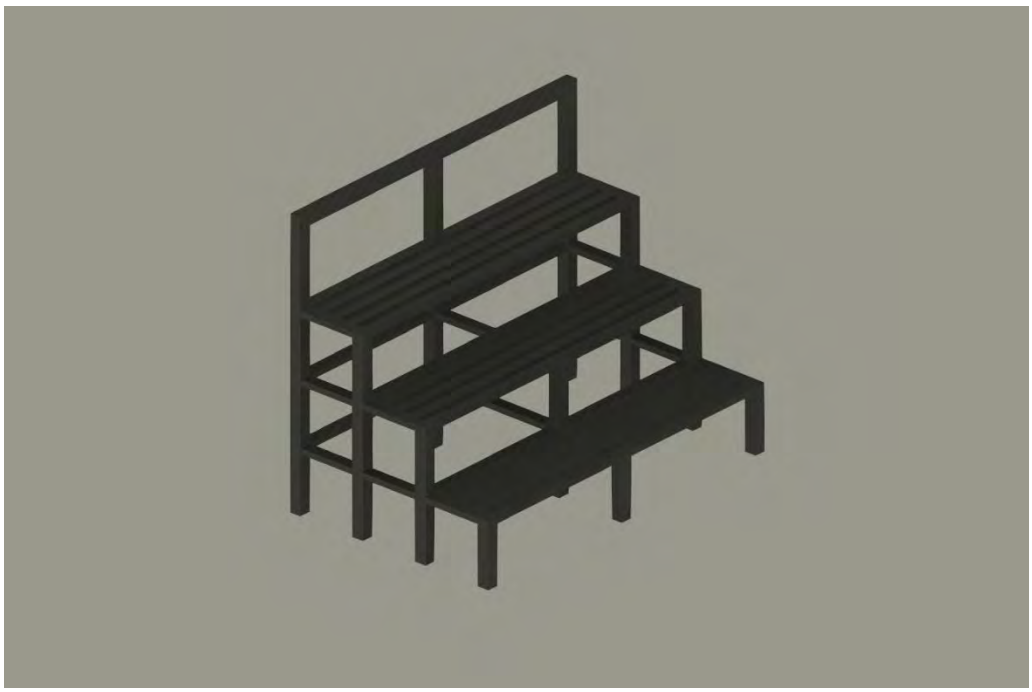


Figure 130 3D view of movable stadium.

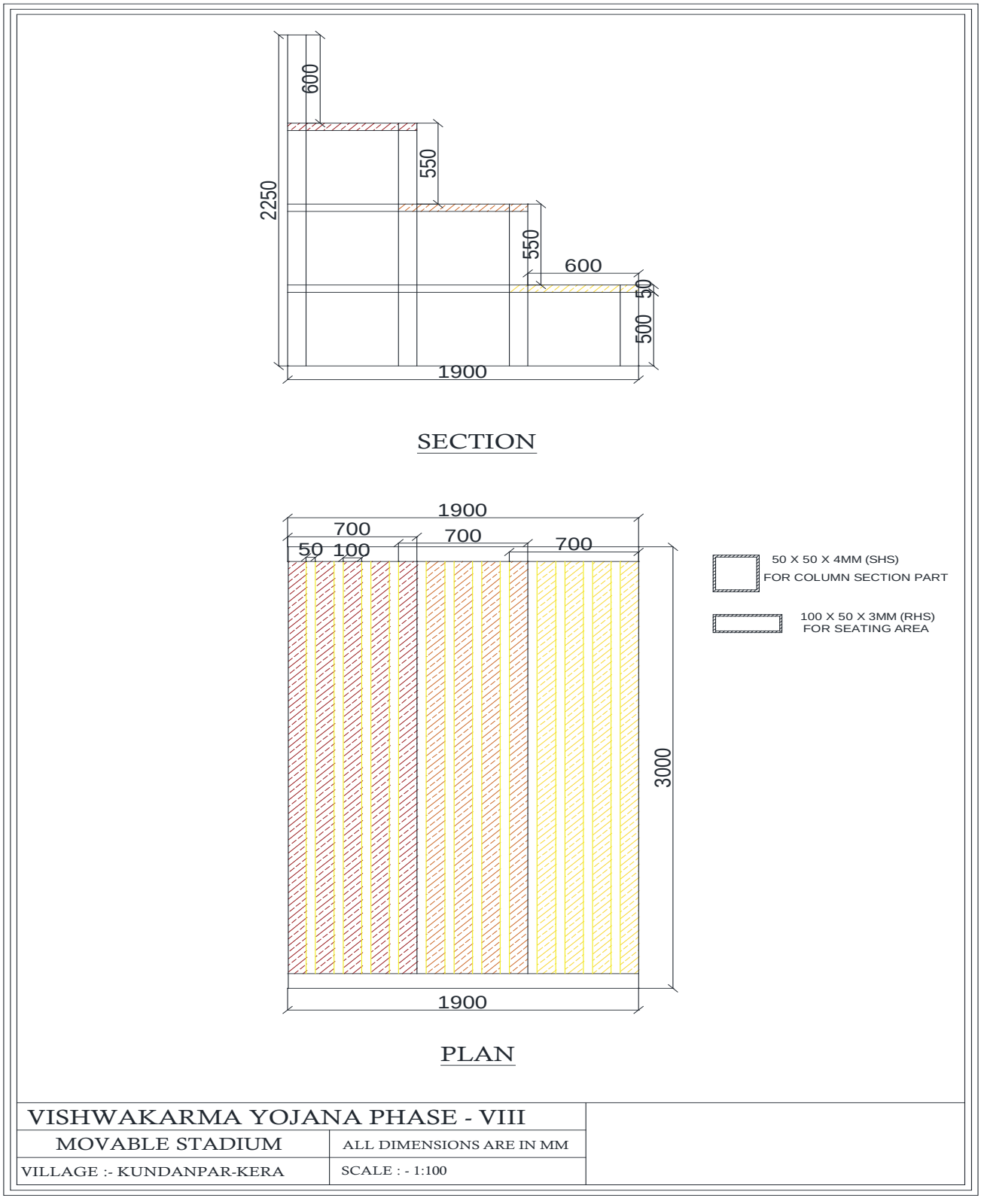


Figure 131 Plan and section of movable stadium

MOVABLE STADIUM ESTIMATE							
QUANTITY SHEET							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	Column section part	2	5.5	-	-	11	m
	50 X 50 X 4 mm (SHS)						
	5.72 KG/M	11		@	5.72	62.92	kg
2	Seating area section	15	3	-	-	45	m
	100 X 50 X 3mm (RHS)						
	6.60 KG/M	45		@	6.6	297	kg
3	Connector sections	4	4			16	m
	100 X 50 X 3mm (RHS)	2	3			6	m
	6.60 KG/M	22		@	6.6	145.2	kg

Table 40 Quantity sheet for movable stadium

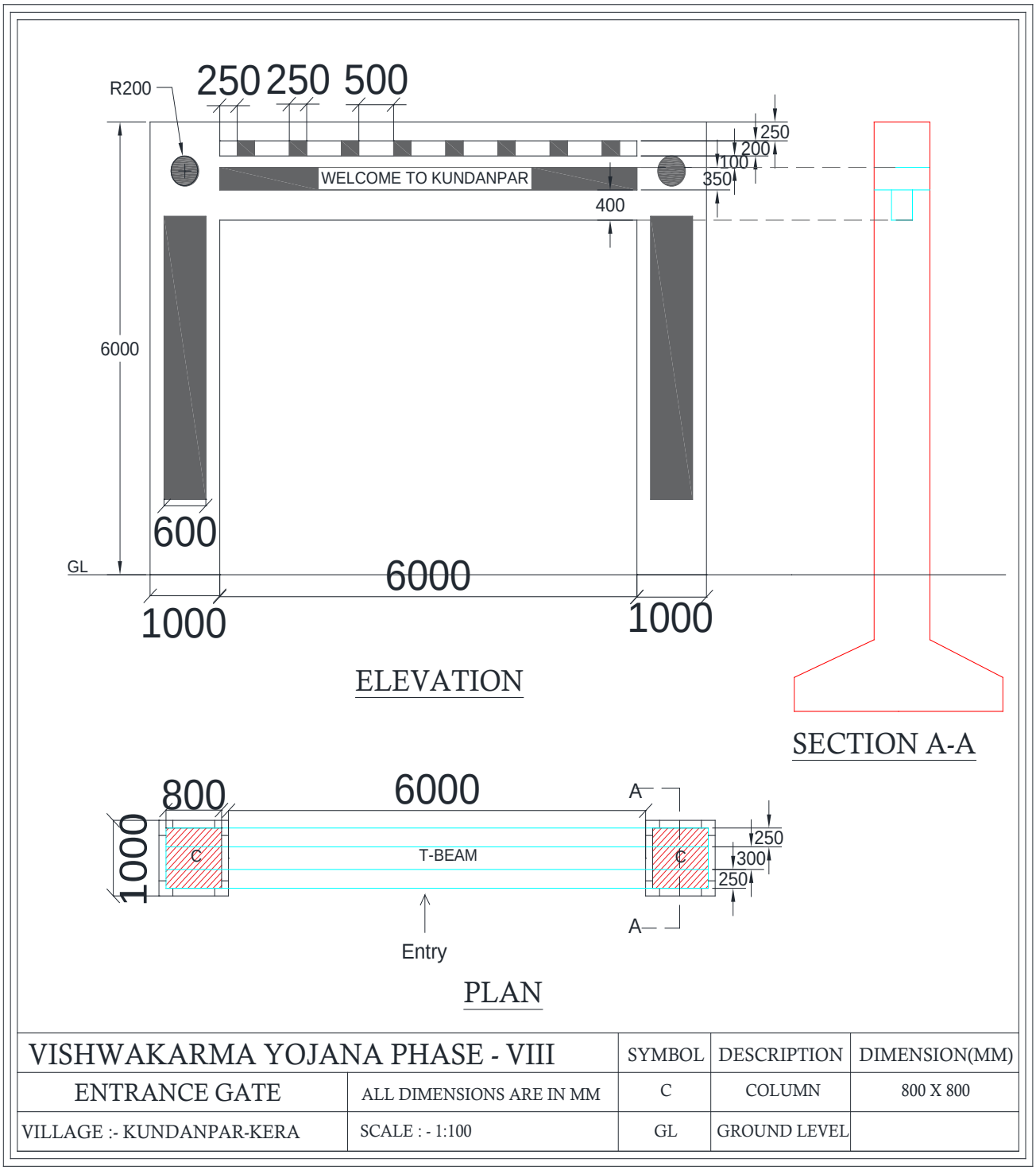
MOVABLE STADIUM ESTIMATE					
ABSTRACT SHEET					
SR. NO.	**DESCRIPTION**	**QUANTITY**	**RATE**	**PER**	**AMOUNT RS.**
1	50 X 50 X 4 mm (SHS)	62.92	45	kg	2831.4
2	100 X 50 X 3mm (RHS)	442.2	45	kg	19899
3	Welding cost	30	42	joint	1260
	Total cost				23990
	5% electric charges				25190
	Total Approx. Amount				26000

Table 41 Abstract sheet for movable stadium

13.1.2 Village entrance gate

We designed a village entrance gate; it enhances the look of village.
It is also provided with CCTV it provides a security on the vehicles entering the village.
It may also help the police in case of any investigation.

Figure 132 3D view of entrance gate of village



VISHWAKARMA YOJANA PHASE - VIII		SYMBOL	DESCRIPTION	DIMENSION(MM)
ENTRANCE GATE	ALL DIMENSIONS ARE IN MM	C	COLUMN	800 X 800
VILLAGE :- KUNDANPAR-KERA	SCALE : - 1:100	GL	GROUND LEVEL	

Figure 133 Plan and elevation of entrance gate

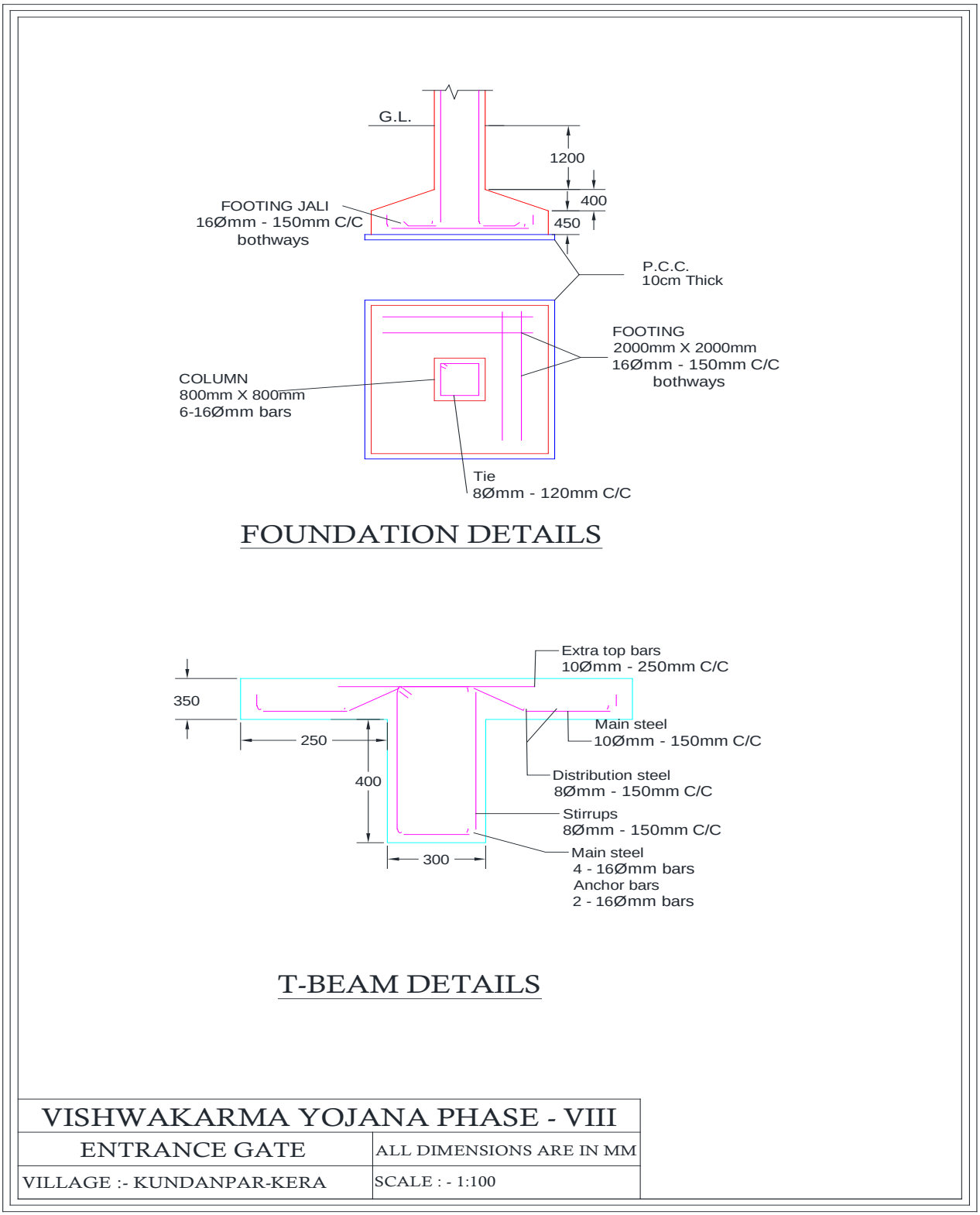


Figure 134 Structural details of entrance gate

ENTRANCE GATE ESTIMATE							
QUANTITY SHEET FOR COLUMN							
SR. NO	DESCRIPTION	NO.	LENGTH	WIDTH	HEIGHT	QUANTITY	UNIT
1	Excavation	2	2	2	2.06	16.48	m^3
2	PPC in foundation	2	2	2	0.1	0.8	m^3
3	RCC in foundation						
	For rectangular portion	2	1.9	1.9	0.45	3.249	m^3
	For trapezoidal section	2			0.77	1.54	m^3
	V=h/3(a1+a2+√(a1a2))						
	For one footing						
	A1	1	1.9	1.9	-	3.61	
	A2	1	0.8	0.8	-	0.64	
	H/3	1	-	-	0.133		
	V=					0.77	m^3
	Total RCC in foundation					4.79	m^3
4	RCC in column	2	0.8	0.8	7.2	9.22	m^3
5	Steel in column and footing						
	Take 3.5% steel approx.						
	S = (3.5%*(9.22+4.79) * 7850					3847.5074	kg

QUANTITY SHEET FOR T-BEAM							
SR. NO	DESCRIPTION	NO.	LENGTH	WIDTH	HEIGHT	QUANTITY	UNIT
1	RCC in T-BEAM						
	Upper portion	1	8	0.8	0.35	2.240	
	Lower portion	1	8	0.3	0.4	0.960	m^3
	Total RCC					3.200	
2	Steel in beam						
	Take 3% steel approx.						
	S = (3%*3.2) * 7850					753.6	kg

QUANTITY SHEET FOR SUPER STRUCTURE							
SR. NO	DESCRIPTION	NO.	LENGTH	WIDTH	HEIGHT	QUANTITY	UNIT
1	PPC in plinth	2	1	1	0.1	0.2	m^3
2	Masonry work in super structure						
	For 0.15 extra cover						
	Decorative works	8	1	0.1	1.28	1.024	
		8	0.4	0.1	5	1.600	
		2	6	0.1	0.4	0.480	
		2	1	0.1	1.3	0.260	
	Cuboid structure component	8	0.25	1	0.2	0.400	
	Total masonry work					3.764	m^3
3	Plaster 12mm						
		8	1	-	6	48	
		2	6	-	1.3	15.6	
	Total plaster					63.6	m^2
4	Paint						
		8	1	-	6	48	
		2	6	-	1.3	15.6	
	Total paint					63.6	m^2
	Total masonry work					127.200	m^3

QUANTITY SHEET FOR RCC SLAB							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in super structure						
	Slab 1	1	6	1	0.25	1.5	
	Slab 2	1	6	1	0.1	0.6	
	Slab 3	1	6	0.7	0.4	1.68	
	Total RCC					3.78	m^3
2	Take 1% steel approx.						
	S = (1%*3.78) * 7850					296.73	kg

Table 42 Quantity sheet for entrance gate

ENTRANCE GATE ESTIMATE					
ABSTRACT SHEET					
SR. NO.	**DESCRIPTION**	**QUANTITY**	**RATE**	**PER**	**AMOUNT RS.**
1	Excavation for foundation	16.48	90	m^3	1483.2
2	PPC	1	3000	m^3	3000
3	RCC in column, footing and beam	17.204	3800	m^3	65373.93
4	Masonry brick work	3.76	3400	m^3	12797.6
5	Plaster	63.6	160	m^2	10176.0
6	Paint	63.6	37	m^2	2353.2
7	RCC in slab	3.78	3800	m^3	14364
8	Steel	4601.11	45.03	kg	207187.9
	Total cost				316736
	5% water and electric charges				332573
	Total Approx. amount				333000

Table 43 Abstract sheet for entrance gate

13.1.3 Computer couching class

In today's life the importance of computer skill is a big requirement of a person in job and personal life to make work easy.
We designed a place it contains two classes each class with 18 pc and one main pc with projector.
It proposed to that schedules should be in such a way that it also all people to use the classes.

Things to be taught:

- Tally
- Cad 2D and 3D
- Microsoft office
- Animation and editing
- Allow students to complete their project works
- Allow time for people to learn computers even youth who are not skilled.
- Any software required in education should be taught.

Figure 135 Front view of computer couching classes

Figure 136 Inside view of computer couching classes

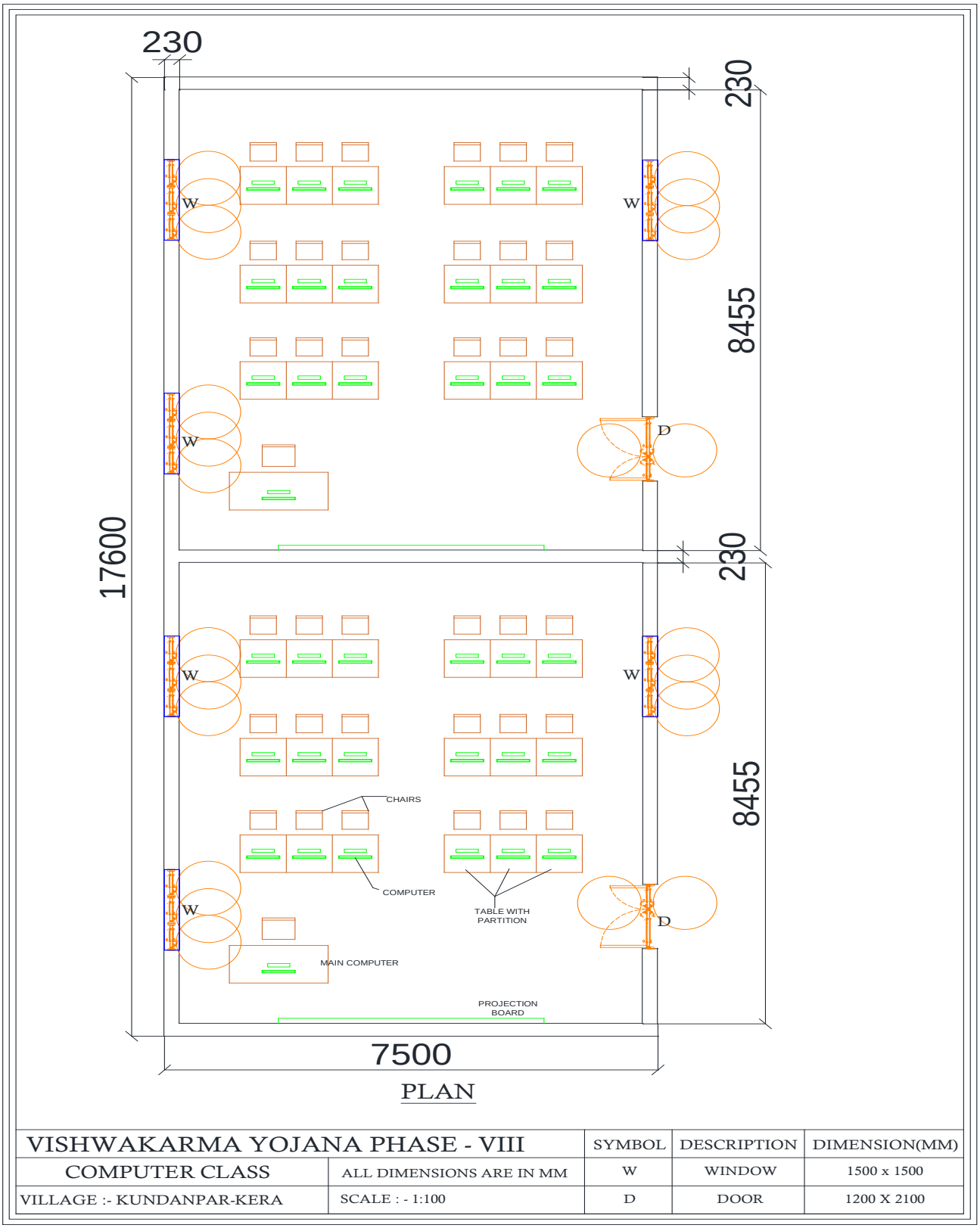
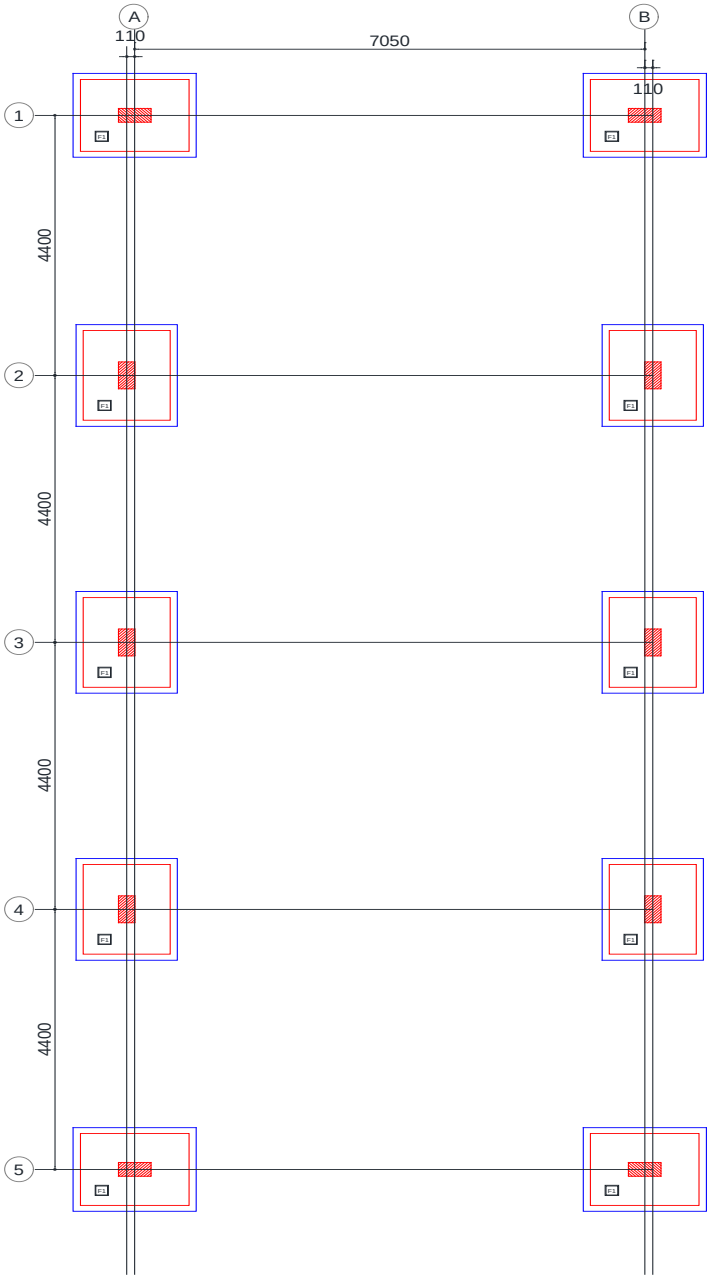


Figure 137 Plan of computer class

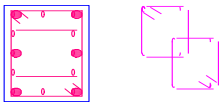
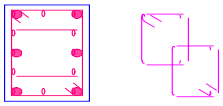


FOUNDATION LAY OUT

VISHWAKARMA YOJANA PHASE - VIII		SYMBOL	DIMENSION(MM)	REINFORCEMENT
COMPUTER CLASS	ALL DIMENSIONS ARE IN MM	F1	1000 X 1000	10T 100mm C/C BOTH WAY
VILLAGE :- KUNDANPAR-KERA	SCALE : - 1:100			

Figure 138 Foundation layout of computer class

SCHEDULE OF COLUMN REINF.

SECTION - B-B	PLINTH LVL. TO TERRACE FLOOR LVL.	
		6-20T 6-16T
	SIZE	230 X 450
	STIRRUP SET	2- SET
	CONFINEMENT ZONE	8T @ 100 C/C
	REST	8T @ 150 C/C
SECTION - A-A	FOUNDATION TO TO PLINTH LVL.	
		6-20T 6-16T
	SIZE	230 X 450
	DEPTH - D	500
	CONF. ZONE	8T @ 100 C/C
	REST	8T @ 150 C/C
	COLUMN NUMBER	F1 TYPE FOOTINGS ALL COLUMN

TYPICAL COLUMN REINF. SECTION

VISHWAKARMA YOJANA PHASE - VIII	
COMPUTER CLASS	ALL DIMENSIONS ARE IN MM
VILLAGE :- KUNDANPAR-KERA	SCALE : - NTS

Figure 139 Typical column details of computer class

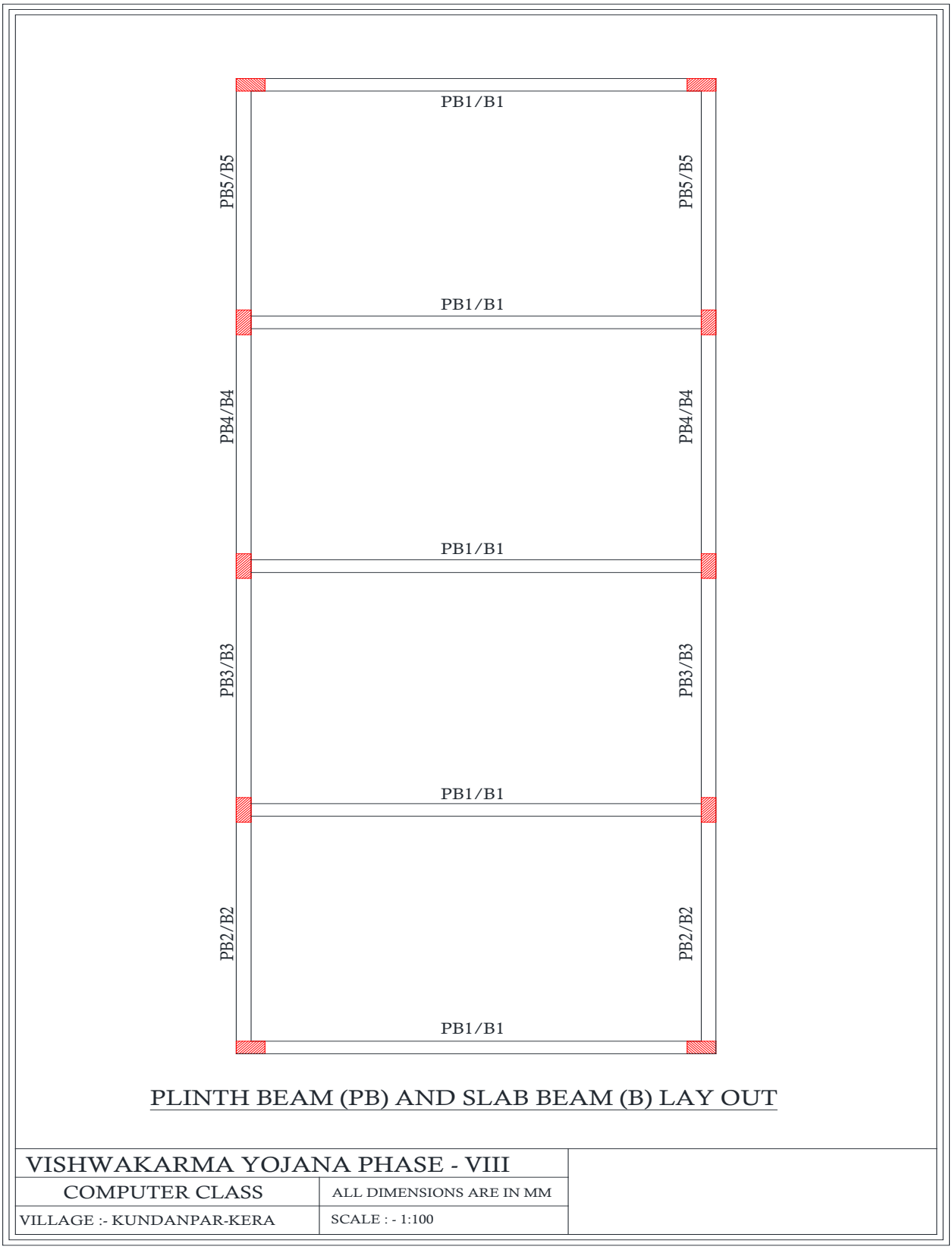
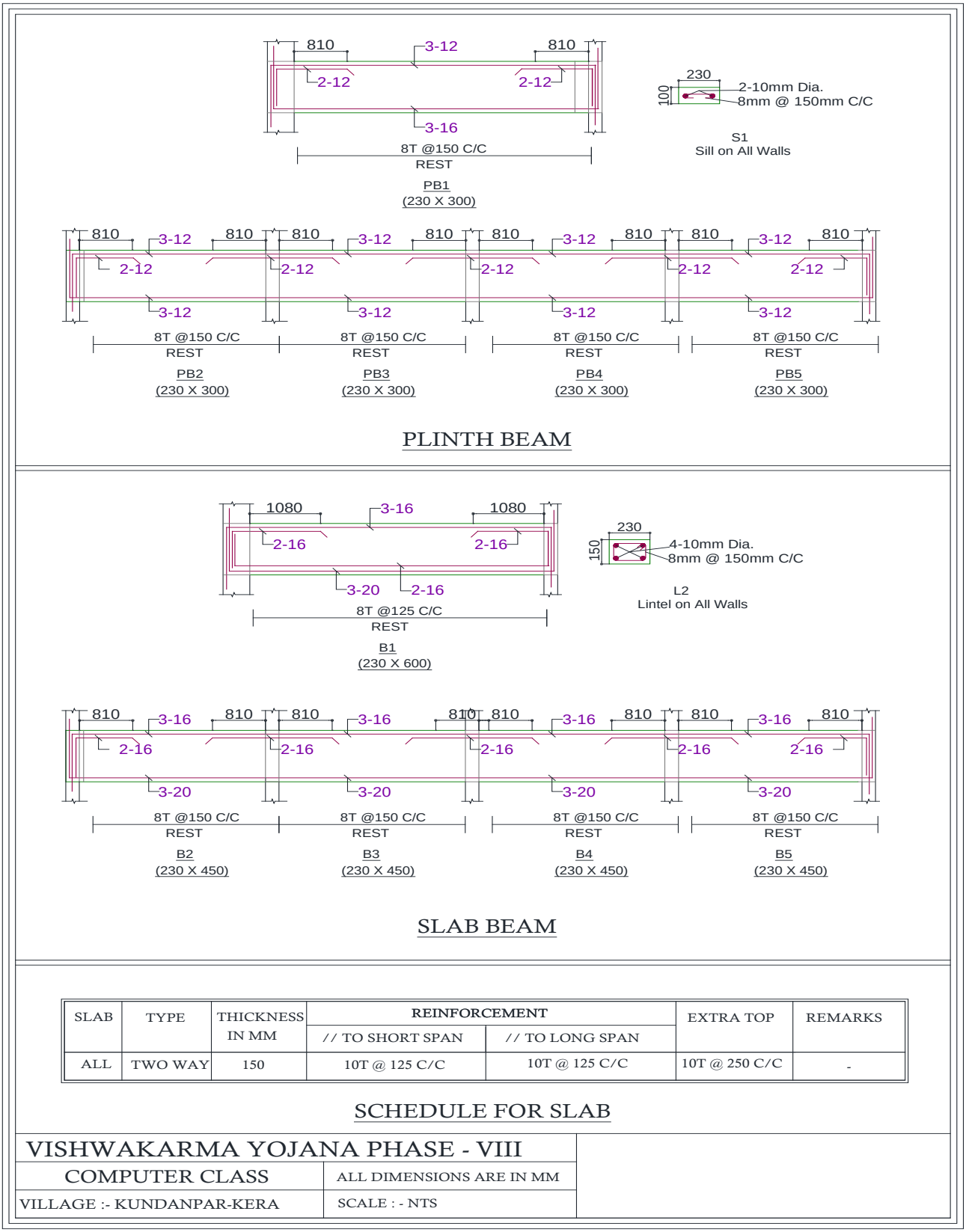


Figure 140 Plinth and slab beam layout of computer class



SLAB	TYPE	THICKNESS IN MM	REINFORCEMENT		EXTRA TOP	REMARKS
			// TO SHORT SPAN	// TO LONG SPAN		
ALL	TWO WAY	150	10T @ 125 C/C	10T @ 125 C/C	10T @ 250 C/C	-

Figure 141 Plinth beam and slab details of computer class

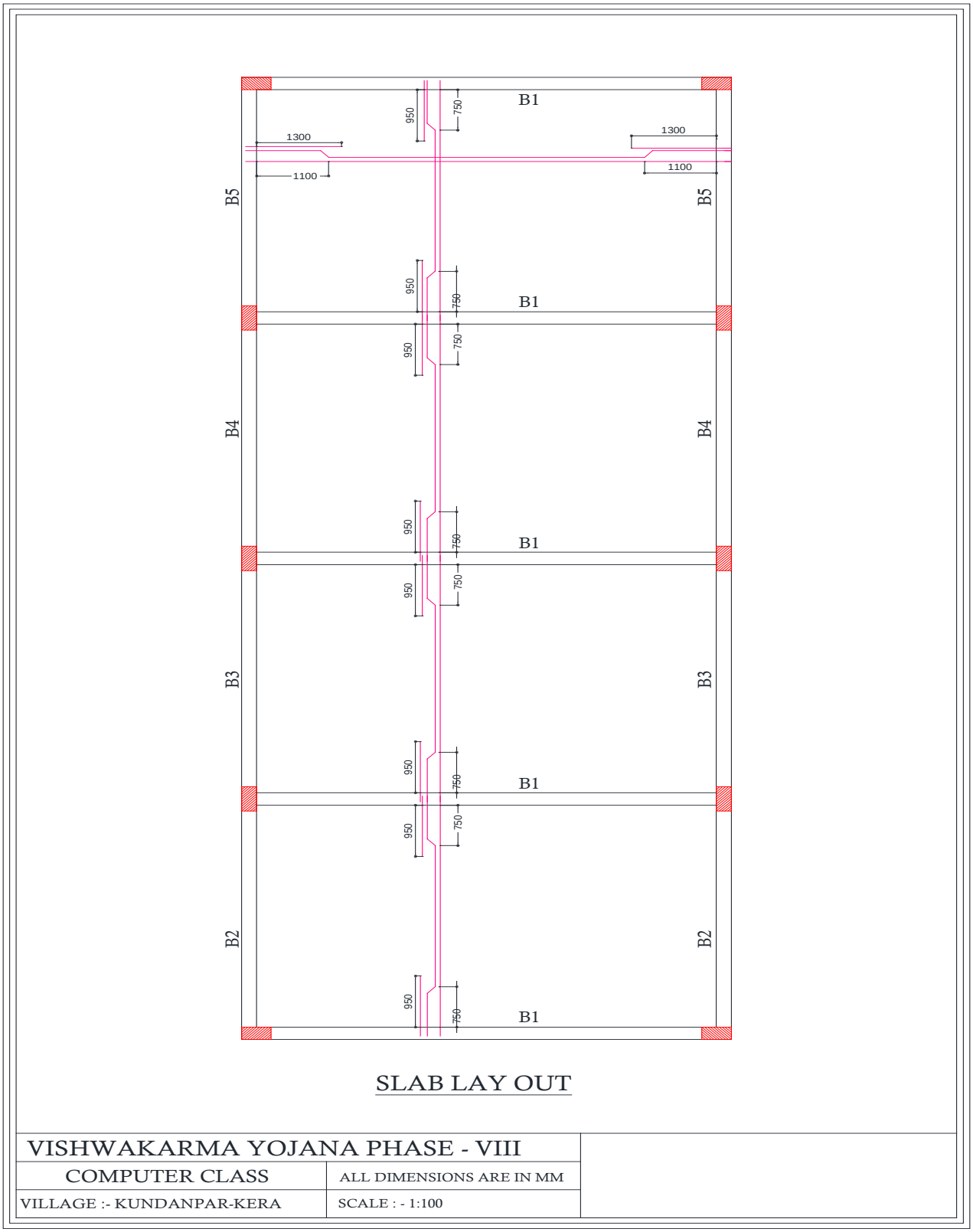


Figure 142 Slab layout of computer class

COMPUTER COUCHING CLASS ESTIMATE							
QUANTITY SHEET FOR COLUMN F1							
SR. NO	DESCRIPTION	NO.	LENGTH	WIDTH	HEIGHT	QUANTITY	UNIT
1	Excavation	10	1	1	2	20	m^3
2	PPC in foundation	10	1	1	0.1	1	m^3
3	RCC in foundation	10	0.9	0.9	0.5	4.05	m^3
4	RCC in column	10	0.23	0.45	4.85	5.02	m^3
5	Steel in column and footing						
	Take 3.5% steel approx.						
	S = (3.5%*(5.02+4.05) * 7850					2491.9138	kg

QUANTITY SHEET FOR PLINTH BEAM PB1							
SR. NO	DESCRIPTION	NO.	LENGTH	WIDTH	HEIGHT	QUANTITY	UNIT
1	RCC in PB1	5	7.05	0.23	0.3	2.432	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*2.432) * 7850					381.86325	kg

QUANTITY SHEET FOR PLINTH BEAM PB2, PB3, PB4 AND PB5							
SR. NO	DESCRIPTION	NO.	LENGTH	WIDTH	HEIGHT	QUANTITY	UNIT
1	RCC in PB2, PB3, PB4, PB5	2	17.6	0.23	0.3	2.429	m^3
2	Steel in PB2, PB3, PB4, PB5						
	Take 2% steel approx.						
	S = (2%*3.643) * 7850					381.3216	kg

QUANTITY SHEET FOR SLAB BEAM B1							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in B1	5	7.05	0.23	0.6	4.865	m^3
2	Steel in beam 1						
	Take 2% steel approx.						
	S = (2%*4.865) * 7850					763.7265	kg

QUANTITY SHEET FOR SLAB BEAM B2, B3, B4 AND B5							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in B2	2	17.6	0.3	0.6	6.336	m^3
2	Steel in beam 1						
	Take 2% steel approx.						
	S = (2%*9.504) * 7850					994.752	kg

Quantity sheet for super structure							
By centre line method							
Total c/c length:							
L= (0.115+7.27+0.115) *2+(0.115+17.37+0.115) *2							
50.2							
Total c/c length= 50.2							
No. Of junction = 2							
Net length = total c/c length -0.5 X wall thickness X no. Of junction							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	PPC in plinth	1	7.5	17.6	0.1	13.2	m^3
2	Earth filling	1	7.5	17.6	0.25	33.000	m^3
3	Masonry work in super structure						
	For 0.23 wall	1	50.028	0.23	2.9	33.369	
	Net length=50.258-0.5*0.23*2						
	50.028						

	Total					33.369	
	Deduction						
	Door	2	1.2	0.23	2.1	1.1592	
	Window	6	1.5	0.23	1.5	3.105	
	Total					4.6098	
	Total masonry work					28.759	m^3
4	Plaster						
	Outside plaster 16mm						
	Wall 1	2	17.6	-	3.275	115.28	
	Wall 2	2	7.5	-	3.275	49.125	
	Slab top	1	7.5	17.6	-	132	
	Inside plaster 12mm						
	Wall	2	7.04	-	3	42.24	
		2	17.4	-	3	104.4	
	Inner slab	1	7.4	-	17.4	128.76	
	Deduction						
	Door	4	1.2	-	2.1	10.08	
	Window	12	1.5	-	1.5	27	
	Total plaster					534.9734	m^2
5	Tile’s flooring						
	Inside	1	7.04	17.4	-	122.496	
	Total tiles flooring					122.496	m^2
6	Paint						
	Outside paint						
	Wall 1	2	17.6	-	3.275	115.28	
	Wall 2	2	17.5	-	3.275	114.625	
	Slab top	1	9.98	17.85	-	178.143	
	Inside paint						
	Wall	2	7.04	-	3	42.24	
		2	17.4	-	3	104.4	
	Inner slab	1	7.04	-	17.4	122.496	
	Deduction						

	Door	4	1.2	-	2.1	10.08	
	Window	12	1.5	-	1.5	27	
	Total paint					640.104	m^2
7	RCC chajja and lintel						
	In lintel	4	1.8	0.23	0.15	0.2484	m^3
	In chajja	4	1.8	0.6	0.08	0.3456	m^3
	Total					0.594	m^3
	Steel required approx.	4				41.92	kg
	($1m^3$ =70.588 kg) (10mm,8mm)						

QUANTITY SHEET FOR RCC SLAB							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in super structure						
	Slab	1	8.5	18.6	0.15	23.715	m^3
	L=0.5+7.5+0.5						
	8.5						
	W=0.5+17.6+0.5						
	18.6						
2	Take 0.8% steel approx.						
	S = (0.8%*23.715) * 7850					1489.302	kg

Table 44 Quantity sheet for computer couching classes

COMPUTER COUCHING CLASS ESTIMATE					
ABSTRACT SHEET					
SR. NO.	**DESCRIPTION**	**QUANTITY**	**RATE**	**PER**	**AMOUNT RS.**
1	Excavation for foundation	20	90	m^3	1800
2	PPC	14.2	3000	m^3	42600
3	RCC in column, footing and beam	25.131	3800	m^3	95498.94
4	Earth filling	33.000	60	m^3	1980
5	Masonry brick work	28.76	3400	m^3	97780.2
6	Plaster	534.9734	160	m^2	85595.7
7	Paint	640.104	37	m^2	23683.8
8	RCC in slab	23.715	3800	m^3	90117
9	Tile’s flooring	122.496	450	m^2	55123.2
10	Steel	6544.81	45.03	kg	294712.7
11	Doors	0.2016	3078	m^3	620.52
12	Window	13.5	170	m^2	2295
13	Projector and pc system	2	30000	nos	60000
14	Pc systems	36	25000	nos	900000
15	Lights tube with wiring	8	600	nos	4800
	Total cost				1756607
	5% water and electric charges				1844438
	Total Approx. amount				1844500

Table 45 Abstract sheet for computer couching classes

13.1.4 Vegetable market

In present the vegetable market in done by vendors using vehicle known as Rakdi, some stand on the sides of road with decreases the width of the road and increases the traffic on the road and increases the chances the accidents. Sometimes animals throw down the vegetables nearby as it is an open market area.
So, we designed a vegetable market it provides the solution the problems discussed above. It has steel grid fence on the entry and exit of the market which helps to the nuisance of animals.

Figure 143 Outer view of vegetable market

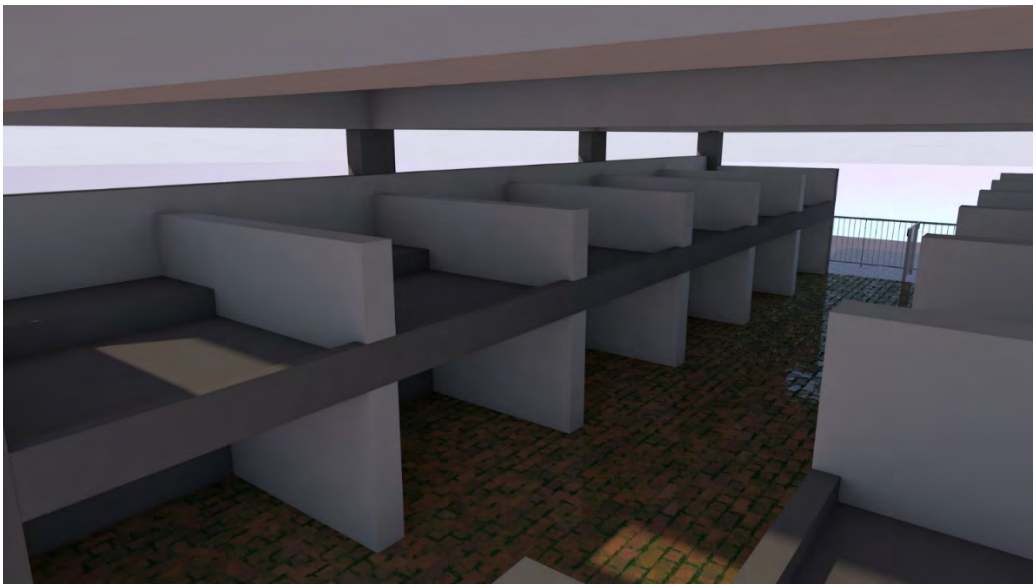


Figure 144 Inner view of vegetable market

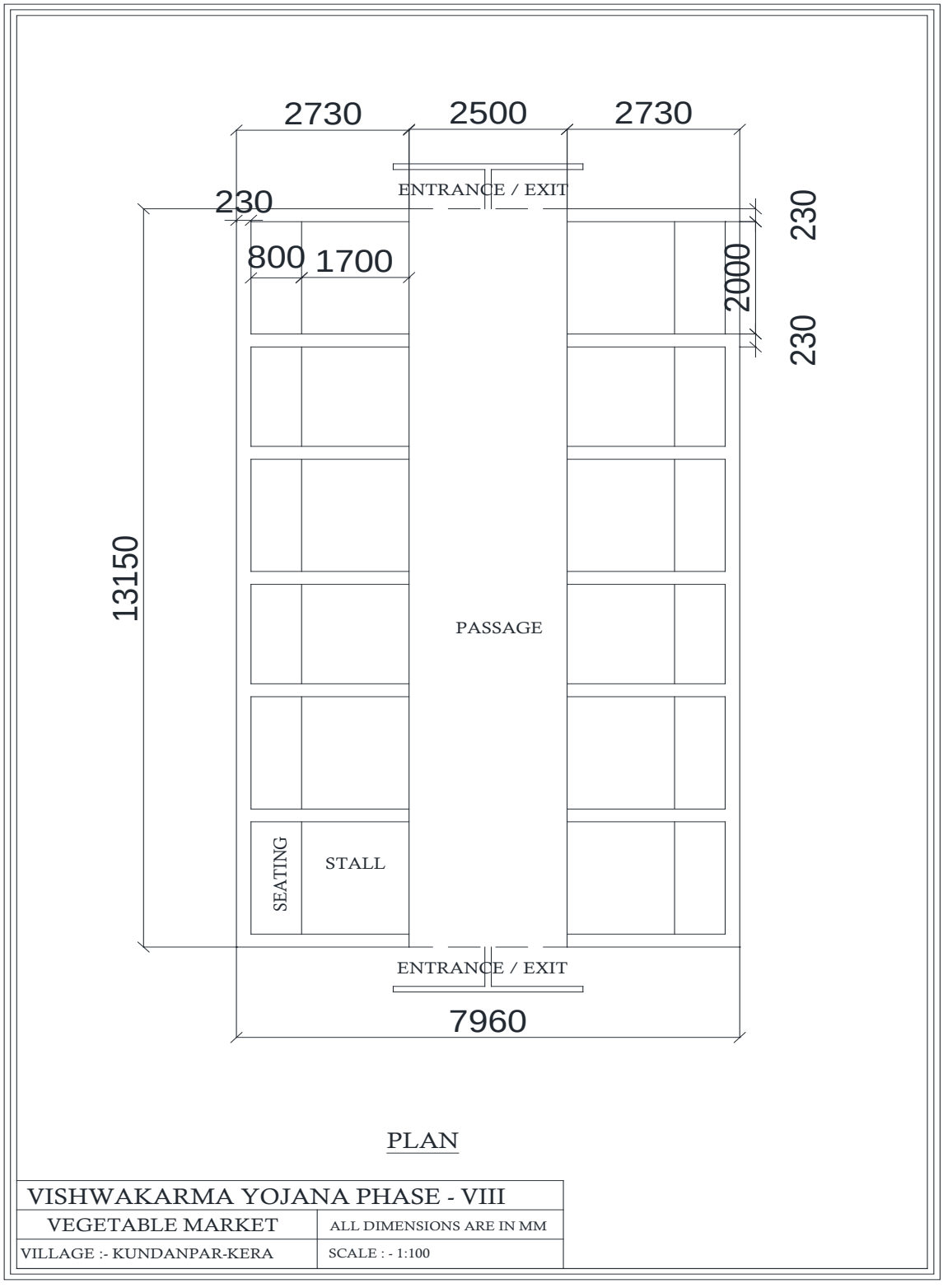
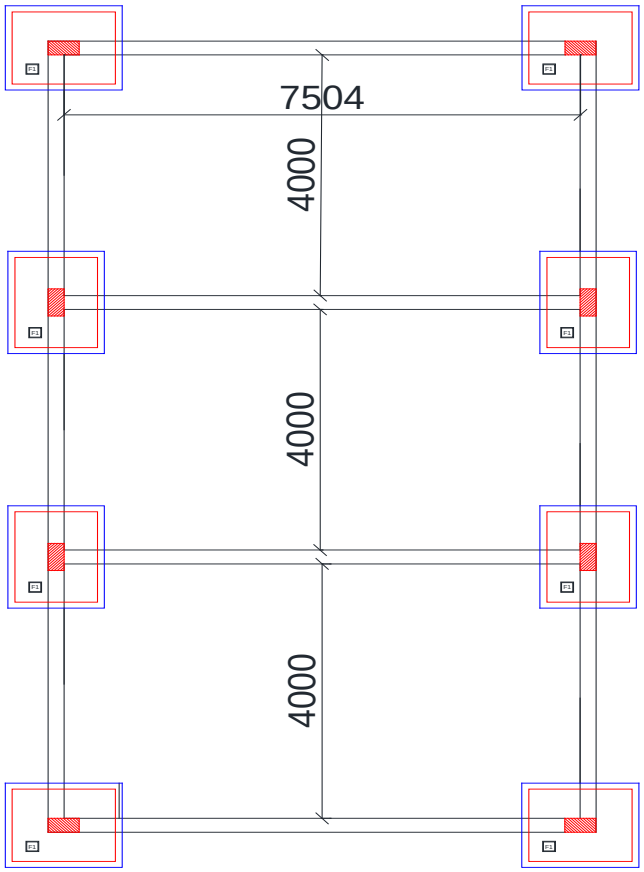


Figure 145 Plan of vegetable market



FOUNDATION LAY OUT

SCHEDULE OF COLUMN REINF.

F1	PLINTH LVL. TO TERRACE FLOOR LVL.	6-20T 6-16T
	SIZE	230 X 450
	STIRRUP SET	2- SET
	CONFINEMENT ZONE	8T @ 100 C/C
	REST	8T @ 150 C/C

COLUMN DETAILS

VISHWAKARMA YOJANA PHASE - VIII		SYMBOL	DIMENSION(MM)	REINFORCEMENT
VEGETABLE MARKET	ALL DIMENSIONS ARE IN MM	F1	1000 X 1000	10T 100mm C/C BOTH WAY
VILLAGE :- KUNDANPAR-KERA	SCALE : - 1:100			

Figure 146 Foundation layout and column details of vegetable market

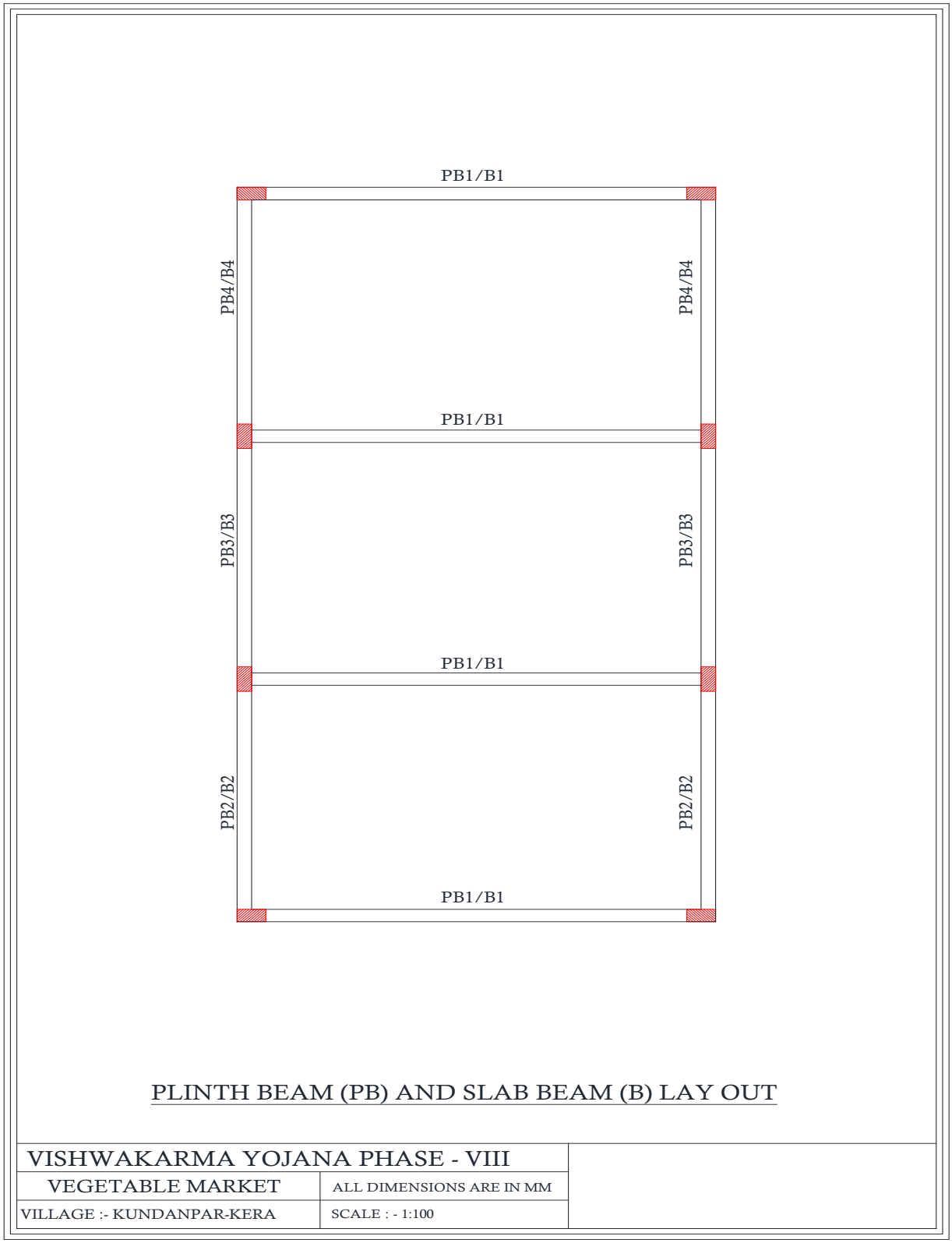
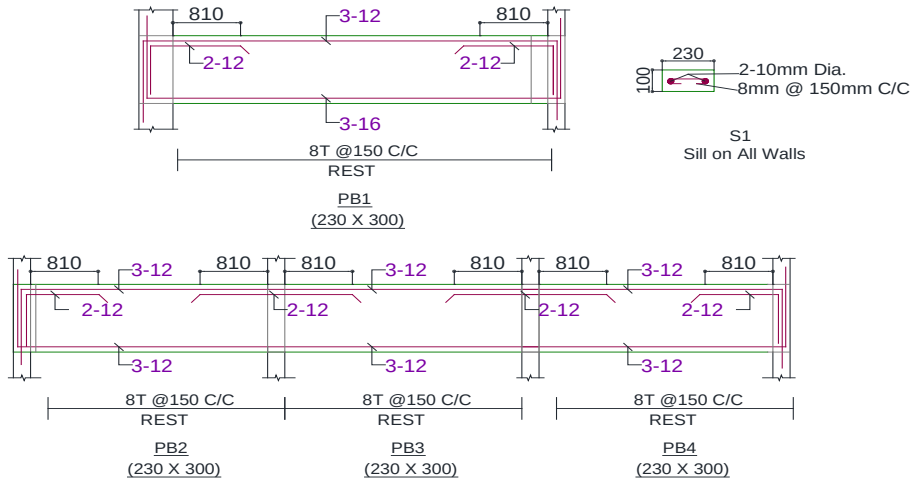
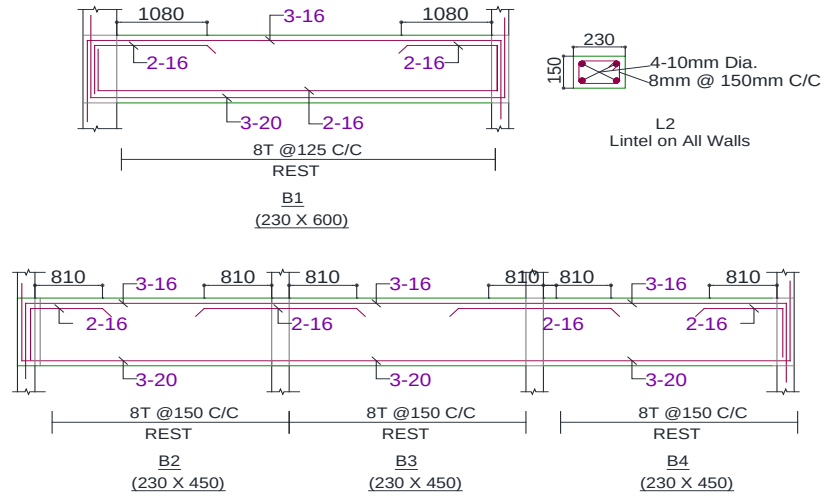


Figure 147 Plinth beam and slab beam layout of vegetable market



PLINTH BEAM



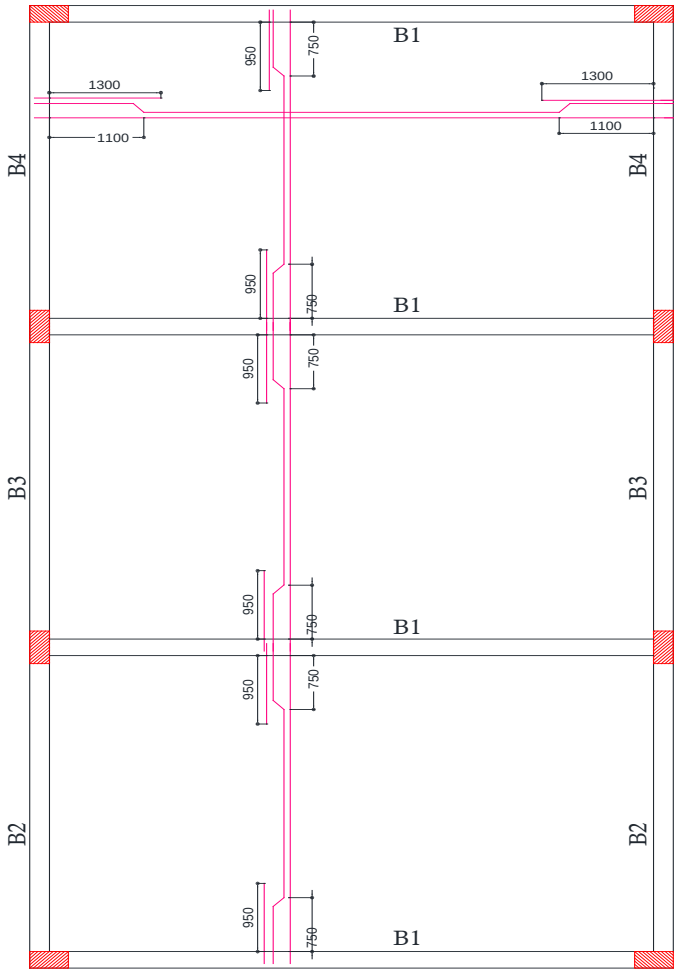
SLAB BEAM

SLAB	TYPE	THICKNESS IN MM	REINFORCEMENT		EXTRA TOP	REMARKS
			// TO SHORT SPAN	// TO LONG SPAN		
ALL	TWO WAY	150	10T @ 125 C/C	10T @ 125 C/C	10T @ 250 C/C	-

SCHEDULE FOR SLAB

VISHWAKARMA YOJANA PHASE - VIII	
VEGETABLE MARKET	ALL DIMENSIONS ARE IN MM
VILLAGE :- KUNDANPAR-KERA	SCALE : - NTS

Figure 148 Details of beams and slab of vegetable market



SLAB LAY OUT

VISHWAKARMA YOJANA PHASE - VIII	
VEGETABLE MARKET	ALL DIMENSIONS ARE IN MM
VILLAGE :- KUNDANPAR-KERA	SCALE : - 1:100

Figure 149 Slab layout of vegetable market

VEGETABLE MARKET ESTIMATE							
QUANTITY SHEET FOR COLUMN F1							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	Excavation	8	1	1	2	16	m^3
2	PPC in foundation	8	1	1	0.1	0.8	m^3
3	RCC in foundation	8	0.9	0.9	0.5	3.24	m^3
4	RCC in column	8	0.23	0.45	4.85	4.02	m^3
5	Steel in column and footing						
	Take 3.5% steel approx.						
	S = (3.5%*(4.02+3.24) * 7850					1993.5311	kg

QUANTITY SHEET FOR PLINTH BEAM PB1							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in PB1	4	7.05	0.23	0.3	1.946	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*1.946) * 7850					305.4906	kg

QUANTITY SHEET FOR PLINTH BEAM PB2, PB3, PB4							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in PB2, PB3, PB4	2	13.15	0.23	0.3	1.815	m^3
2	Steel in PB2, PB3, PB4						
	Take 2% steel approx.						
	S = (2%*1.815) * 7850					284.9079	kg

QUANTITY SHEET FOR SLAB BEAM B1							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in B1	4	7.05	0.23	0.6	3.892	m^3
2	Steel in beam 1						
	Take 2% steel approx.						
	S = (2%*3.892) * 7850					610.9812	kg

QUANTITY SHEET FOR SLAB BEAM B2, B3, B4							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in B2, B3, B4	2	13.15	0.3	0.6	4.734	m^3
2	Steel in beam 1						
	Take 2% steel approx.						
	S = (2%*4.734) * 7850					743.238	kg

Quantity sheet for super structure
By centre line method
Total c/c length:
L= (0.115+7.96+0.115) *2+(0.115+13.15+0.115) *2
43.14
Total c/c length= 43.14
No. Of junction = 0
Net length = total c/c length -0.5 X wall thickness X no. Of junction

SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	PPC in plinth	1	7.96	13.15	0.1	10.4674	m^3
2	Earth filling	1	7.96	13.15	0.25	26.169	m^3
3	Masonry work in super structure						
	For 0.23 wall	1	43.14	0.23	2.5	24.806	
	Net length=43.14						
	Extra middle walls	10	2.5	0.23	1.5	8.625	
	Total					33.431	

	Deduction						
	Door	2	2.5	0.23	2.5	2.875	
	Total masonry work					30.556	m^3
4	RCC in seating area and stall slab	12	0.8	2	0.2	3.84	
		12	1.7	2	0.15	6.12	
	Total					9.96	m^3
	Steel take 0.8% of RCC						
	S = (0.8%*9.96) * 7850					625.488	kg
4	Plaster						
	Outside plaster 16mm						
	Wall 1	2	13.15	-	2.5	65.75	
	Wall 2	2	7.96	-	2.5	39.8	
	Slab top	1	7.96	13.15	-	104.674	
	Inside plaster 12mm						
	Wall	2	7.5	-	2.5	37.5	
		2	12.69	-	2.5	63.45	
	Inner slab	1	7.5	-	12.69	95.175	
	Extra middle walls	20	2.5		1.5	75	
	Deduction						
	Door	4	2.5	-	2.5	25	
	Total plaster					456.349	m^2
5	Tile’s flooring						
	Inside	1	7.5	13.15	-	98.625	
	Total tiles flooring					98.625	m^2
6	Paint						
	Outside paint						
	Wall 1	2	13.15	-	2.5	65.75	
	Wall 2	2	7.96	-	2.5	39.8	
	Slab top	1	7.96	13.15	-	104.674	
	Inside paint						
	Wall	2	7.5	-	2.5	37.5	
		2	12.69	-	2.5	63.45	
	Inner slab	1	7.5	-	12.69	95.175	

	Extra middle walls	20	2.5		1.5	75	
	Deduction						
	Door	4	2.5	-	2.5	25	
	Total paint					456.349	m^2

QUANTITY SHEET FOR RCC SLAB							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in super structure						
	Slab	1	8.96	14.15	0.15	19.0176	m^3
	L=0.5+7.96+0.5						
	8.96						
	W=0.5+13.15+0.5						
	14.15						
2	Take 0.8% steel approx.						
	S = (0.8%*19.0176) * 7850					1194.3053	kg

Table 46 Quantity sheet for vegetable market

VEGETABLE MARKET ESTIMATE					
ABSTRACT SHEET					
SR. NO.	**DESCRIPTION**	**QUANTITY**	**RATE**	**PER**	**AMOUNT RS.**
1	Excavation for foundation	16	90	m^3	1440
2	PPC	11.2674	3000	m^3	33802.2
3	RCC in column, footing and beam	19.642	3800	m^3	74639.22
4	Earth filling	26.169	60	m^3	1570.11
5	Masonry brick work	30.56	3400	m^3	103888.7
6	Plaster	456.349	160	m^2	73015.8
7	Paint	456.349	37	m^2	16884.9
8	RCC in slab	19.0176	3800	m^3	72266.88
9	Tile’s flooring	98.625	450	m^2	44381.25
10	Steel	5757.94	45.03	kg	259280.1
11	Railings	2	8000	m^3	16000.00
	Total cost				697169
	5% water and electric charges				732028
	Total Approx. amount				732100

Table 47 Abstract sheet for vegetable market

13.1.5 Street lighting layout

In current condition the streetlights start from the starting of village. But there is a bridge at the starting of village and there are no streetlights.
We think that many accidents can be caused at night at the starting of bridge it also has a curve then the road enters to the bridge.

In the image it shows the bridge place. On satellite image red colour shows bridge and the yellow colour shows existing streetlights, orange colour shows the required new streetlights

Figure 150 Existing condition of bridge and streetlights

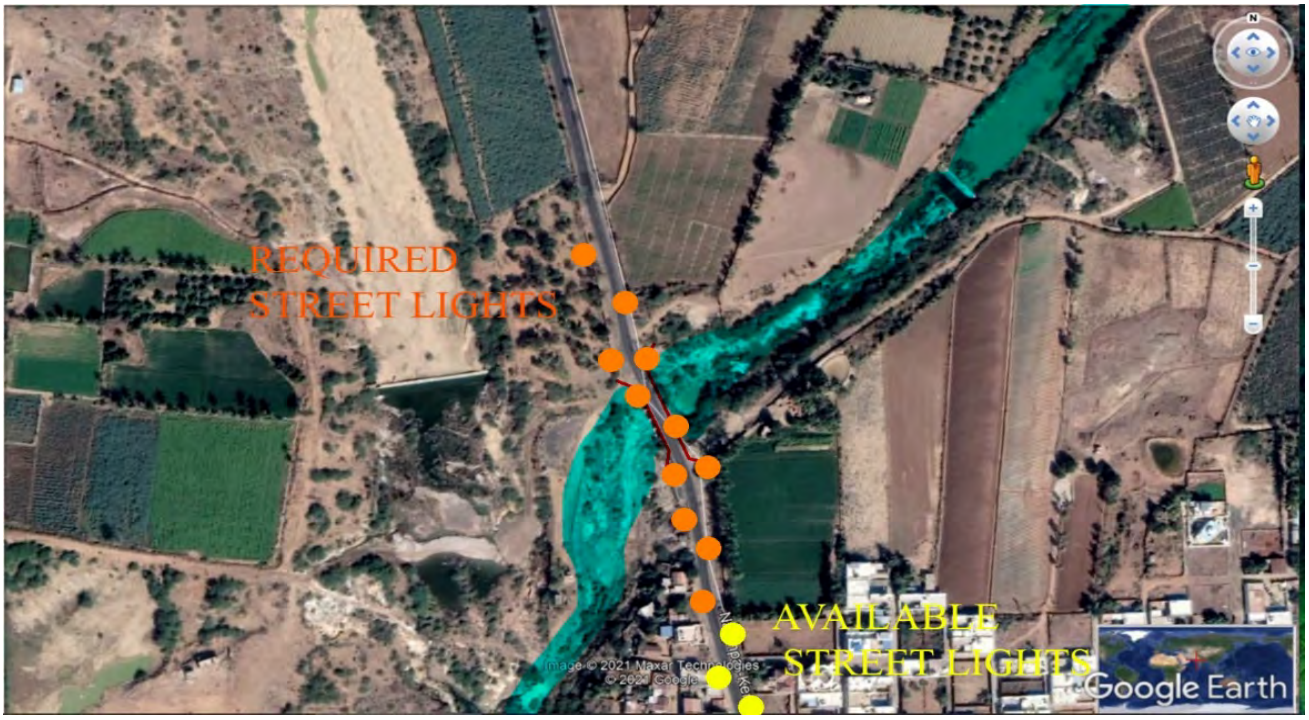


Figure 151 New streetlights layout

STREET LIGHTING							
QUANTITY SHEET							
SR. NO	DESCRIPTION	NO.	LENGTH	WIDTH	HEIGHT	QUANTITY	UNIT
1	RCC Column foundation	11	0.2	0.2	1	0.44	m3

Table 48 Quantity sheet for street lighting

STREET LIGHTING		
ONE LAMP SYSTEM ESTIMATE		
COMPONENTS	QUANTITY/RATTING	PRICE
Solar panel	30 watts	2000
Charge controller	12-volt, 3 amp	350
li-ion battery	12-volt, 10 amp	1500
Auto on-off circuit	1	100
Arduino Nano	1	300
Ultrasonic sensor	1	150
LED light	20 watts	200
miscellaneous		1000
Total cost		5600

STREET LIGHTING					
ABSTRACT SHEET					
SR. NO.	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT RS.
1	RCC Column foundation	0.44	4200	m3	1848
2	Street light pole	11	4200	no	46200
	H=5 meters				
	mild steel with hot dip galvanized				
3	Lamp system	11	5600	no	61600
	Total cost				48048
	5% electric and water charges				50450
	total Approx. amount				50500

Table 49 Abstract sheet for street lighting

13.1.6 Government scheme office

There are scheme and benefits provide by the government to the nation. As people are not aware of them, they are benefited by schemes.
Many village youths leave education due higher fees, but they are not aware of scholarships provide to them. Some people are illiterate and do not know how to read and fill the forms, there are scammed by scammers in fraud scholarships and farming schemes or any other schemes.
We designed this office in which all scheme information and forms can be filled, it's the best option for people to be aware of those benefits and mostly farmers and students of the village.

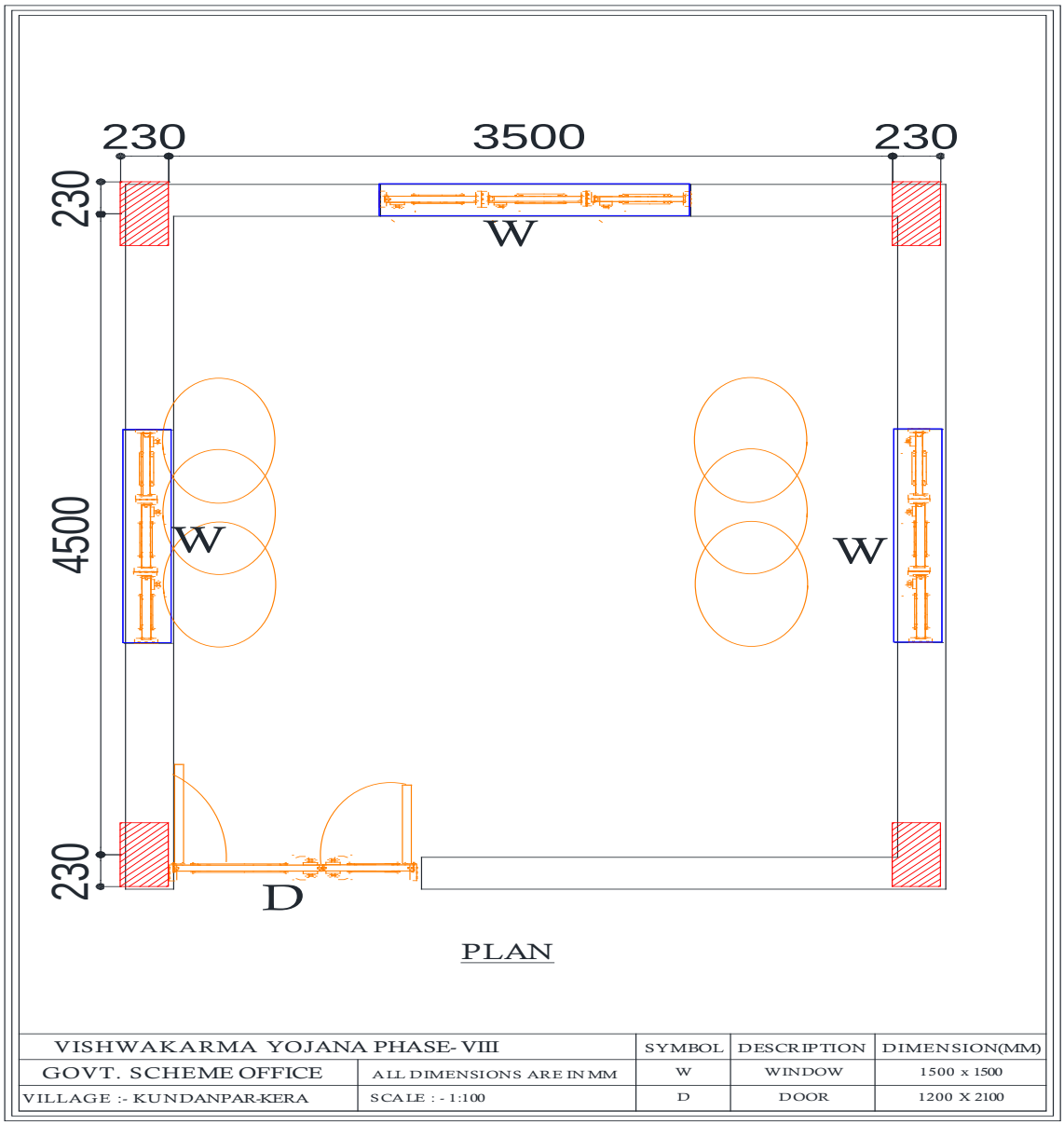


Figure 152 Plan of Govt. scheme office

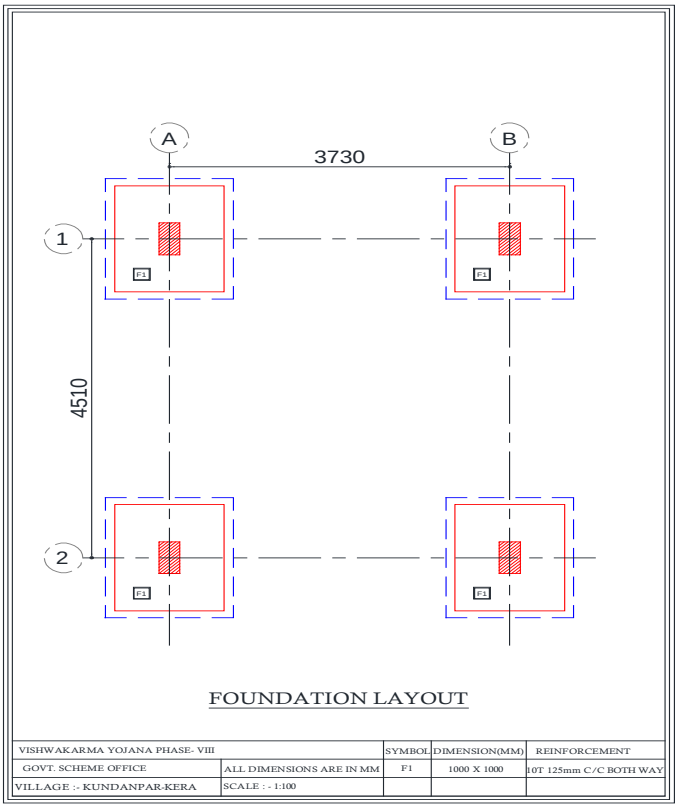


Figure 153 Foundation layout of Govt. scheme office

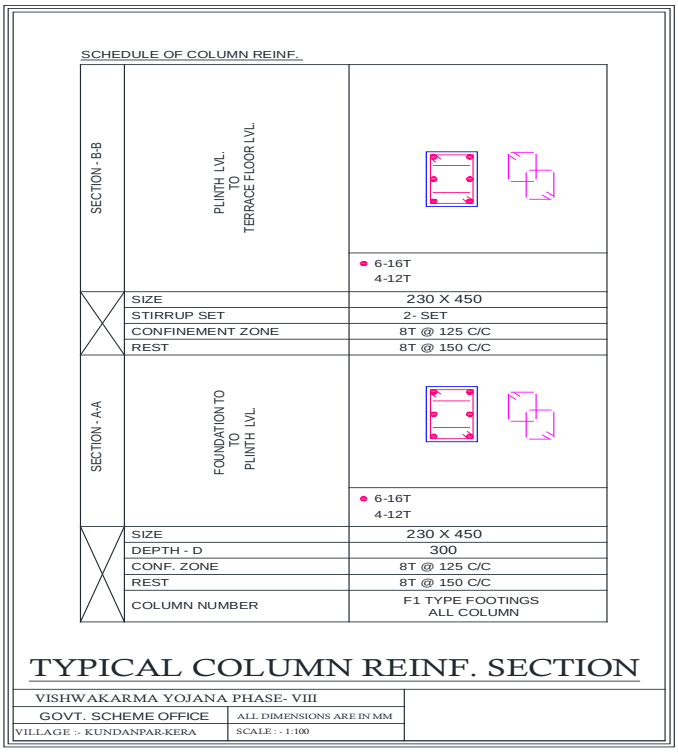


Figure 154 Typical column details of Govt. scheme office

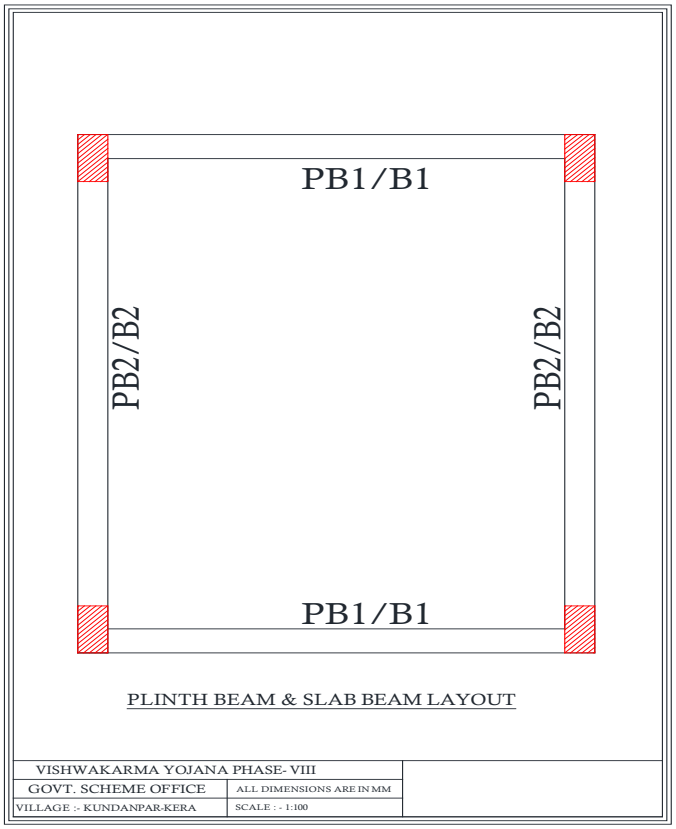


Figure 155 Plinth beam and slab beam layout of Govt. scheme office

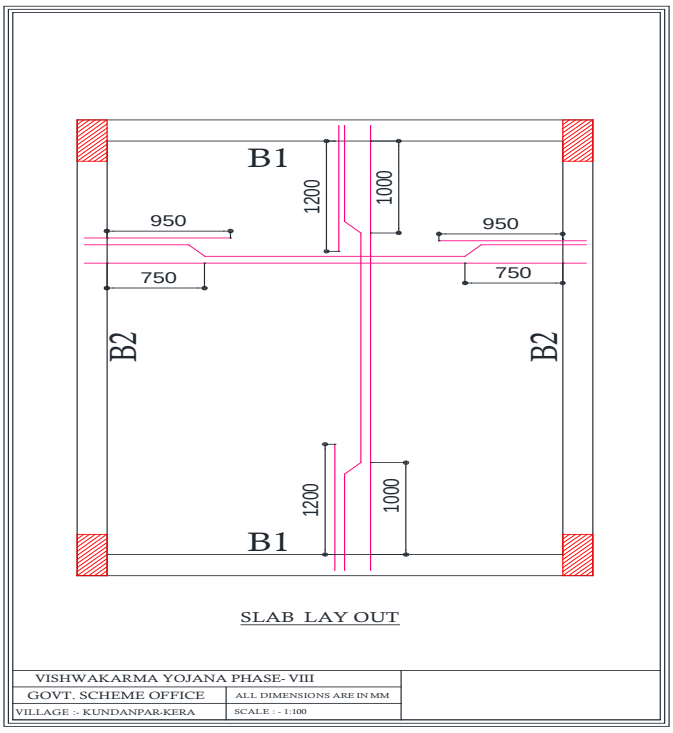
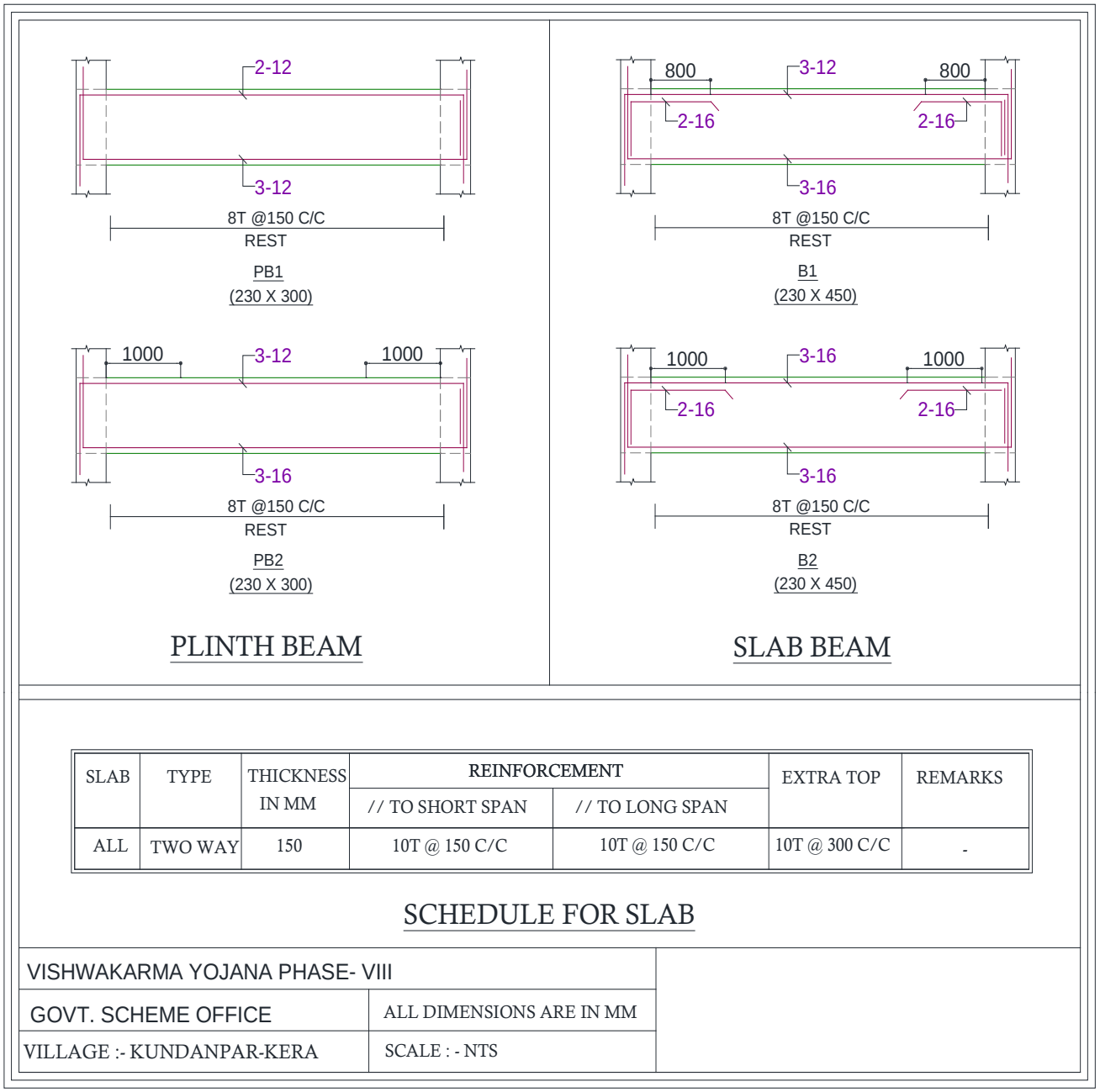


Figure 156 Slab layout of Govt. scheme office



SLAB	TYPE	THICKNESS IN MM	REINFORCEMENT		EXTRA TOP	REMARKS
			// TO SHORT SPAN	// TO LONG SPAN		
ALL	TWO WAY	150	10T @ 150 C/C	10T @ 150 C/C	10T @ 300 C/C	-

SCHEDULE FOR SLAB

VISHWAKARMA YOJANA PHASE- VIII	
GOVT. SCHEME OFFICE	ALL DIMENSIONS ARE IN MM
VILLAGE :- KUNDANPAR-KERA	SCALE : - NTS

Figure 157 Details of beams and slab of Govt. scheme office

GOVT. SCHEME OFFICE ESTIMATE							
QUANTITY SHEET FOR COLUMN							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	Excavation	4	1	1	2	8	m^3
2	PPC in foundation	4	1	1	0.1	0.4	m^3
3	RCC in foundation	4	0.9	0.9	0.3	0.972	m^3
4	RCC in column	4	0.23	0.45	5.05	2.0907	m^3
5	Steel in column and footing						
	Take 3.5% steel approx.						
	S = (3.5%*(2.09+0.972)) * 7850					841.47683	kg

QUANTITY SHEET FOR PLINTH BEAM PB1							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in PB1	2	3.96	0.23	0.3	0.546	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*0.546) * 7850					85.722	kg

QUANTITY SHEET FOR PLINTH BEAM PB2							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in B2	3	4.96	0.23	0.23	0.787	m^3
2	Steel in beam 2						
	Take 2% steel approx.						
	S = (2%*0.787) * 7850					123.559	kg

QUANTITY SHEET FOR SLAB BEAM PB1							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in B1	2	3.96	0.23	0.45	0.820	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*0.82) * 7850					128.74	kg

QUANTITY SHEET FOR SLAB BEAM B2							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in B3	2	4.96	0.23	0.45	1.027	m^3
2	Steel in beam						
	Take 2% steel approx.						
	S = (2%*1.027) * 7850					161.239	kg

Quantity sheet for super structure							
By centre line method							
Total c/c length:							
L= (0.115+4.96+0.115) *2+(0.115+3.96+0.115) *2							
18.76							
Total c/c length= 18.76							
No. Of junction = 0							
Net length = total c/c length -0.5 X wall thickness X no. Of junction							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	PPC in plinth	1	3.96	4.96	0.1	1.96	m^3
2	Earth filling						
	Inside	1	3.5	4.5	0.25	3.94	
	Total					3.94	m^3
3	Masonry work in super structure						

	For 0.23 wall	1	18.76	0.23	2.9	12.51	
	Net length=18.76						
	18.76						
	Deduction						
	Door	1	1.2	0.23	2.1	0.58	
	Window	3	1.5	0.23	1.5	1.55	
	Total					2.73	
	Total masonry work					9.79	m^3
4	Plaster						
	Outside plaster 16mm						
	Wall 1	2	4.96	-	3.275	32.488	
	Wall 2	2	3.96	-	3.275	25.938	
	Slab top	1	5.96	4.96	-	29.56	
	Inside plaster						
	Wall 1	2	4.5	-	3	27	
	Wall 2	2	3.5	-	3	21	
	Inner slab	1	8.03	-	3.05	24.49	
	Deduction						
	Door	1	1.2	-	2.1	2.52	
	Window	3	1.5	-	1.5	6.75	
	Total plaster					151.2091	m^2
5	Tile’s flooring						
	Inside	1	3.5	4.5	-	15.75	
	Total tiles flooring					15.75	m^2
6	Paint						
	Outside paint						
	Wall 1	2	3.96	-	3.275	25.938	
	Wall 2	2	4.96	-	3.275	32.488	
	Slab top	1	5.96	4.96	-	29.5616	
	Inside paint						
	Wall 1	2	3.5	-	3	21	
	Wall 2	2	4.5	-	3	27	
	Inner slab	1	3.5	-	4.5	15.75	

	Deduction						
	Door	1	1.2	-	2.1	2.52	
	Window	3	1.5	-	1.5	6.75	
	Total paint					142.47	m^2
7	RCC chajja and lintel						
	In lintel	4	1.8	0.23	0.15	0.2484	m^3
	In chajja	4	1.8	0.6	0.08	0.3456	m^3
	Total					0.594	m^3
	Steel required approx.	4				41.93	kg
	($1m^3$ =70.588 kg) (10mm,8mm)						

QUANTITY SHEET FOR RCC SLAB							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	RCC in super structure						
	Slab	1	5.96	4.96	0.15	4.43424	m^3
	L=0.5+4.96+0.5						
	5.96						
	W=0.5+3.96+0.5						
	4.96						
2	Take 0.8% steel approx.						
	S = (0.8%*4.434) * 7850					278.4552	kg

Table 50 Quantity sheet for govt. scheme office

GOVT. SCHEME OFFFICE ESTIMATE					
ABSTRACT SHEET					
SR. NO.	**DESCRIPTION**	**QUANTITY**	**RATE**	**PER**	**AMOUNT RS.**
1	Excavation for foundation	8	90	m^3	720
2	PPC	2.36416	3000	m^3	7092.5
3	RCC in column, footing and beam	6.242772	3800	m^3	23722.5
4	Earth filling	3.9375	60	m^3	236.25
5	Masonry brick work	9.78682	3400	m^3	33275.2
6	Plaster	151.2091	160	m^2	24193.5
7	Paint	142.4676	37	m^2	5271.3
8	RCC in slab	4.43424	3800	m^3	16850.1
9	Tile’s flooring	15.75	450	m^2	7087.5
10	Steel	1661.12	45.03	kg	74800.3
11	Doors	0.168	3078	m^3	517.1
12	Window	6.75	280	m^2	1890
13	Lighting tubes with wiring	3	700	nos	2100
14	Furniture	1	9000	nos	9000
	Total cost				206756
	5% water and electric charges				217094
	Total Approx. amount				217100

Table 51 Abstract sheet for govt. scheme office

13.2 Design proposals electric

13.2.1 Automatic water supply system

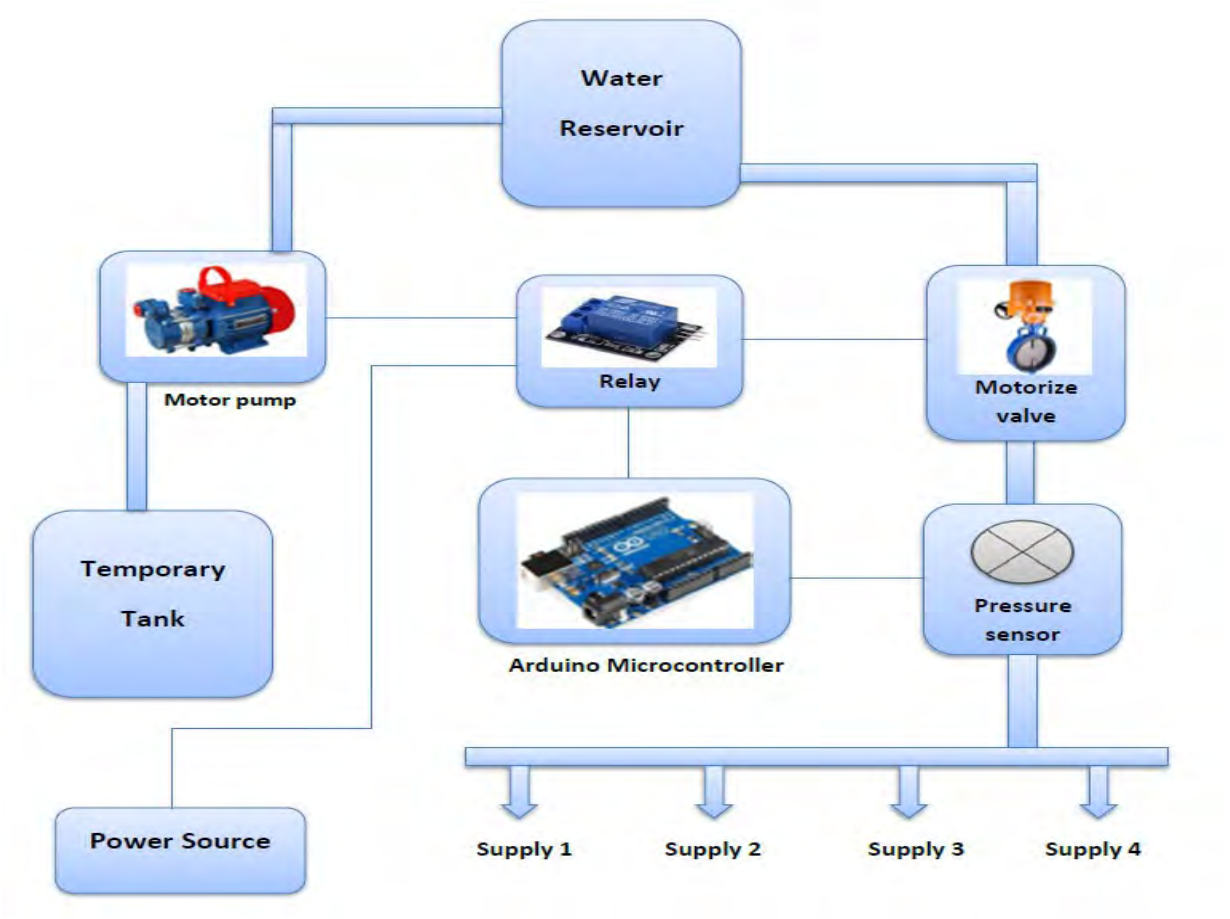


Figure 158 Block diagram of Automatic water supply system

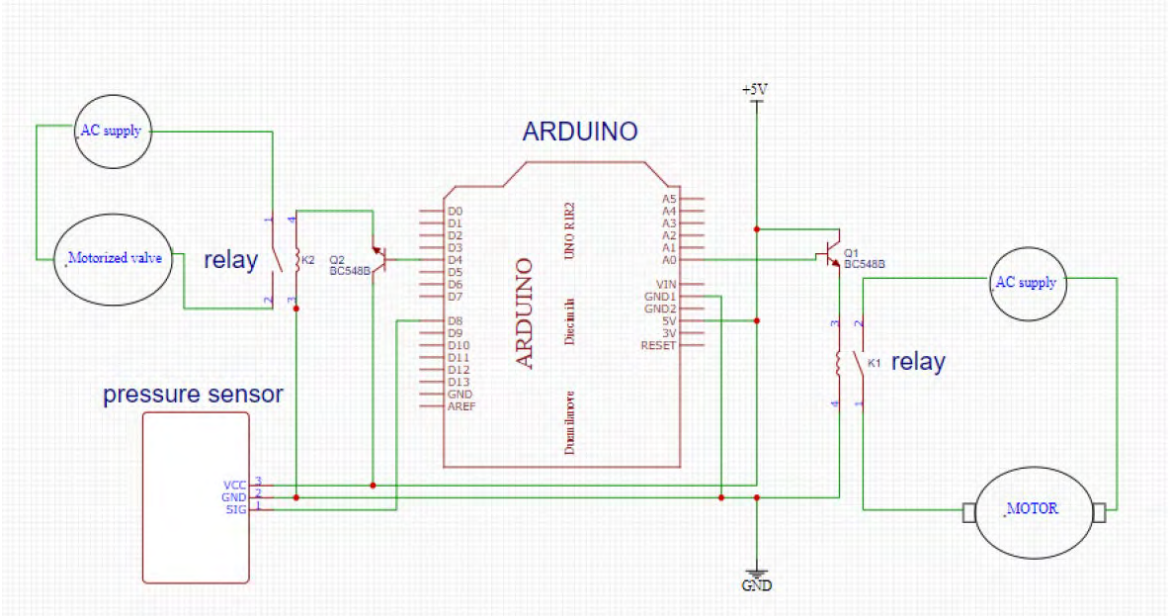


Figure 159 Circuit Block diagram of Automatic water supply system

Working:
The Automatic water supply system is IOT based model for controlling water distribution. The controlling system using micro-controller, motorized valve, pressure sensor and water pump. This module is composed of Arduino UNO micro-controller, 220v 2-way Motorized valve, analog water pressure sensor, 5v Ultrasonic sensor, 240v relay switch and 220v water-pump for supply. And they're used ultrasonic sensor for measured water level in the water tank. Arduino UNO micro-controller and the signal send by sensors are interpreted and processed by the micro-controller to evaluate the level in the water tank. When water tank level is low then sensor send signal to Arduino UNO. It will be switch on the relay and motor pump is filling the water in the water tank. And level high then motor pump will be stop by relay. The motorized valve is on when the signal sends by Arduino UNO with relay. Relay is on then motorized valve on and running the water supply to needed places.

- Water reservoir: It is reserved the Water from the source of water. There is arranging the ultrasonic sensor to measure the level of the water in the tank. And water filling by the pump.
- Arduino UNO: It is the microcontroller to monitoring this system. Arduino UNO is interference sensors and motorized valve and water pump.
- Sensors: Ultrasonic sensor is measuring the level of water in the water tank. And pressure sensor is sensing the pressure of water when the water supply in the distribution system.
- Motorized valve: This butterfly valve is 220v 0.5amp electric valve. Its butterfly plate is rotated 90 degree. It is controlled by the microcontroller and relay.
- Water pump: This pump is water filling in the water reservoir to the water temporary tank. It can ON-OFF by relay when microcontroller sends the signal to relay.

Estimation:

Sr.	Components	Price
1	Arduino UNO	500
2	Ultrasonic sensor	225
3	Water pressure sensor	400
4	Relay module	60
5	Motorized valve	18000
6	Water pump (2 hp)	12000
Total cost		**31185 /-**

Table 52 Cost estimation of automatic water supply system

13.2.2 Smart Agriculture system

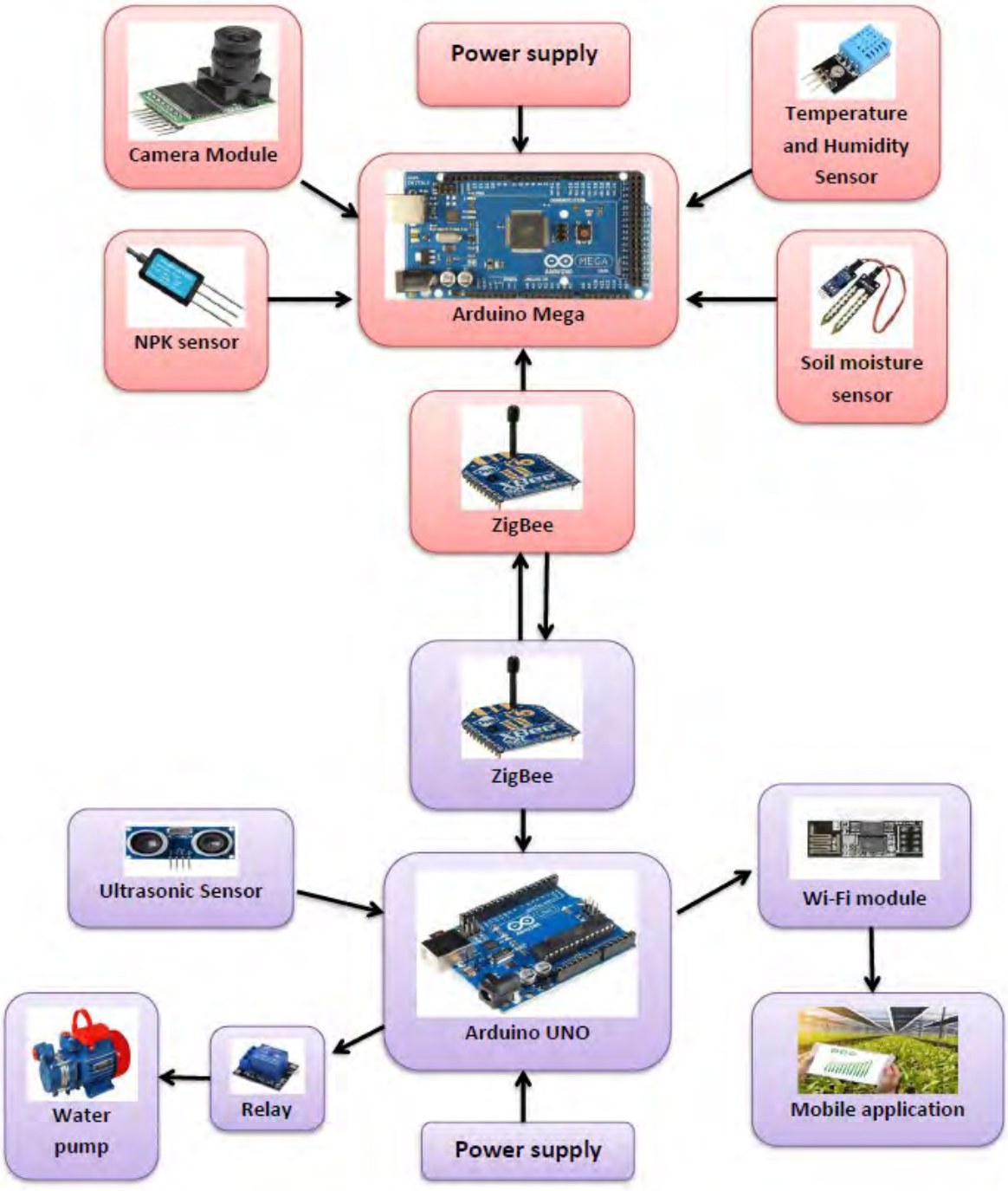
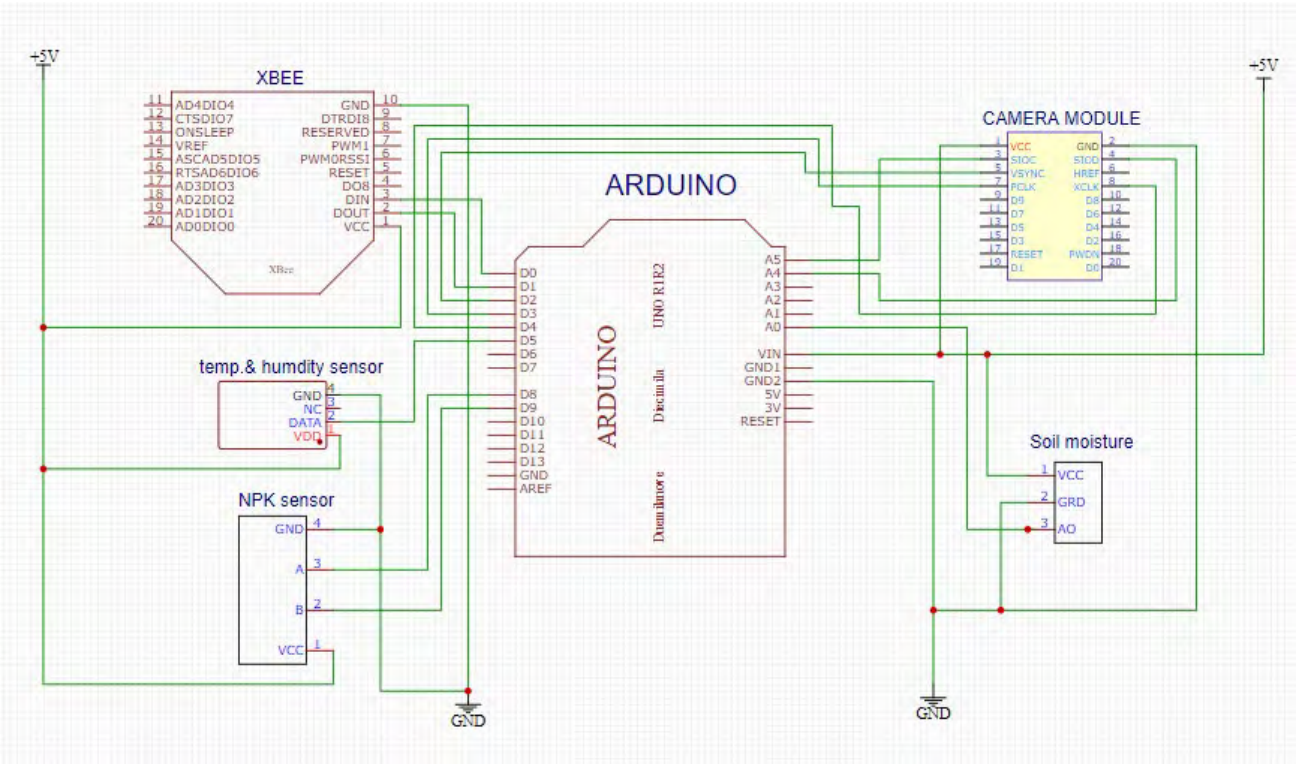


Figure 160 Block diagram of smart agriculture system



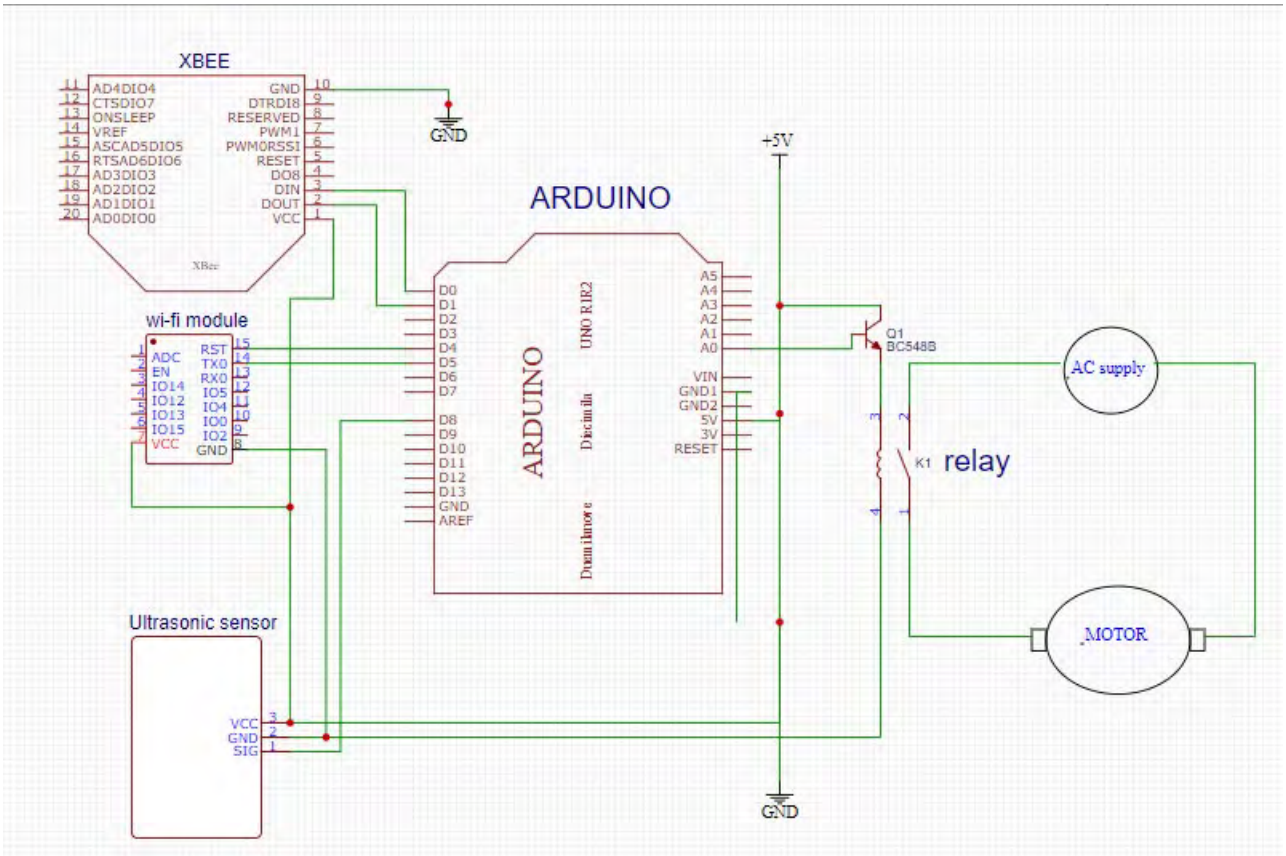


Figure 161 Circuit diagram of smart agriculture system

The smart agriculture system is monetarizing the soil components and health of soil, plant monetarizing and shows which fertilizers are needed of the plants. There sensors are used to capture the image of leave of plant and shows that plant health, measured the moisture in soil and also shows that which fertilizer is needed in the soil. This all are monetarizing by microcontroller mobile application.

Figure 162 Smart agriculture system

And also indicate the weather condition using sensors and satellite data. Its application is easy to use to farmers.

This Agriculture system is based on an IOT monetarizing using sensors and microcontroller. IOT components are sensors, Arduino as microcontroller, Wi-Fi modules, ZigBee module and mobile application.

There are two modules of IOT system. First one is arranging between the crops. Second one is fix arrangement is set to room. It has automatic irrigation system and monetarizing of plant and soil.

First module is monetarizing the plant by camera module, measure soil moisture level by soil moisture sensor, sense the temperature and humidity, and check the NPK level in the soil use by NPK sensor. It all is interfacing with Arduino Mega.

The camera module is capturing the image of leave of plant and data send to micro controller. The Arduino Mega is processing the image according then indicates the health of plant. And also indicate pests are infected of the plant. This

data send in mobile application by ZigBee and second module. There is used NPK sensor which is measured level of NPK fertilizer in the soil and shows which amount of needed to plant.

It helps full for farmer to the saving money from buying the fertilizer. The soil moisture sensor is measured the level of moisture in the soil.

It is used in automatic irrigation in the farm. The plant is needed water the then the start the irrigation. This is use full for the saving water.

Temperature and humidity sensor are used the indicate weather condition. There is ZigBee technology used for the transfer data between two modules of system. It is XBEE module to use commutation between modules.

Second module is receiving data from first module by XBEE. This data transfer to mobile application use by Wi-Fi module. There is Arduino UNO as a microcontroller.

It is connected by XBEE, Wi-Fi module, ultrasonic sensor, and relay to pump. The ultrasonic sensor is measure level of water in the water reservoir.

The relay connected with microcontroller which is ON-OFF water pump for the irrigation. And Wi-Fi module is interface with Arduino.

The mobile connected the system through Wi-Fi. The microcontroller is processed all data and send the data in mobile application.

Estimation:

Sr.	Components	Price (INR)
1	Arduino Mega	1100
2	Arduino UNO	500
3	NPK sensor	4300
4	Soil moisture sensor	180
5	Temp. & humidity sensor	150
6	Ultrasonic sensor	250
7	Relay	60
8	Wi-Fi module	350
9	ZigBee (2 nag)	2500
10	Camera module	4500
11	Solar + battery for module supply	2000
Total		**15890**

Table 53 Estimation of smart agriculture system

13.2.3 Face mask detection & Automatic sanitizer sprayer

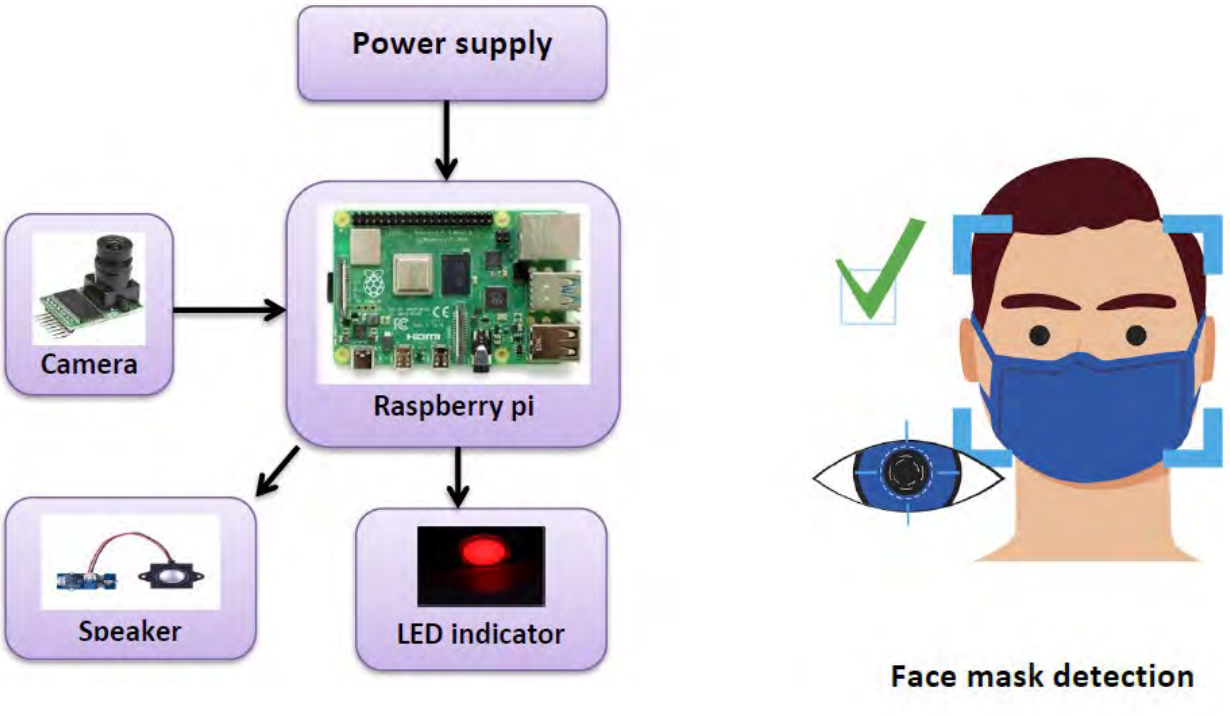


Figure 163 Block diagram of face mask detection

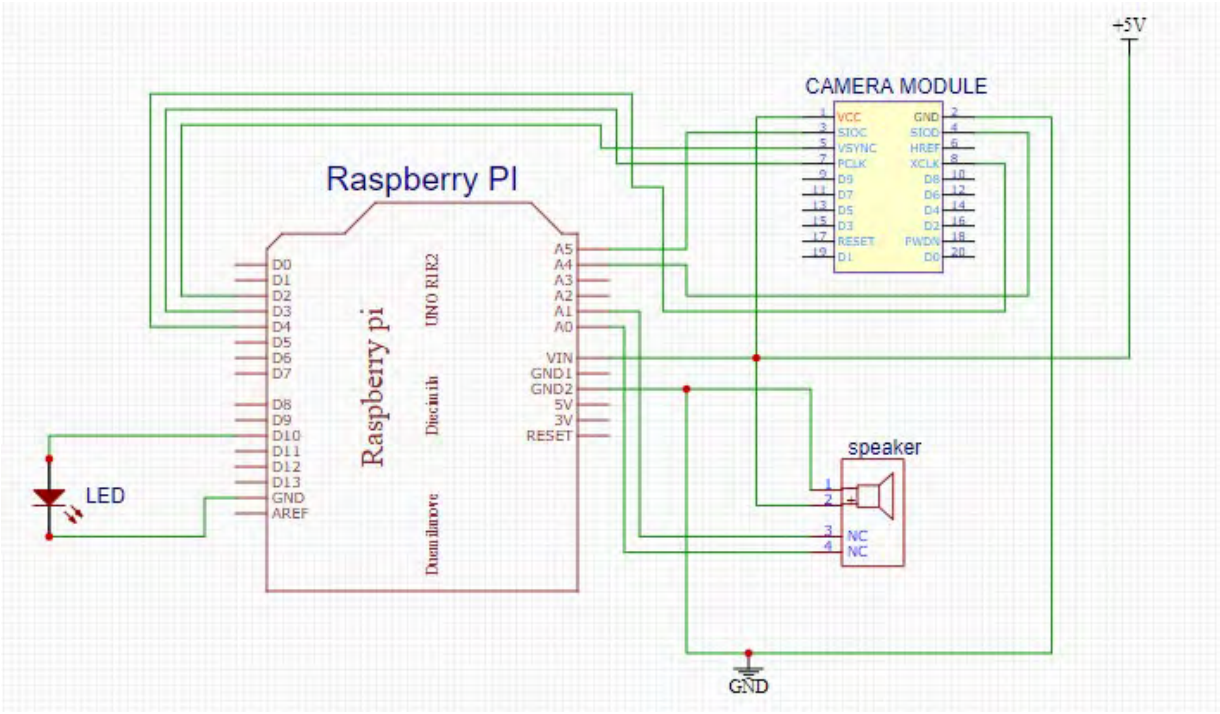


Figure 164 Circuit diagram of face mask detection

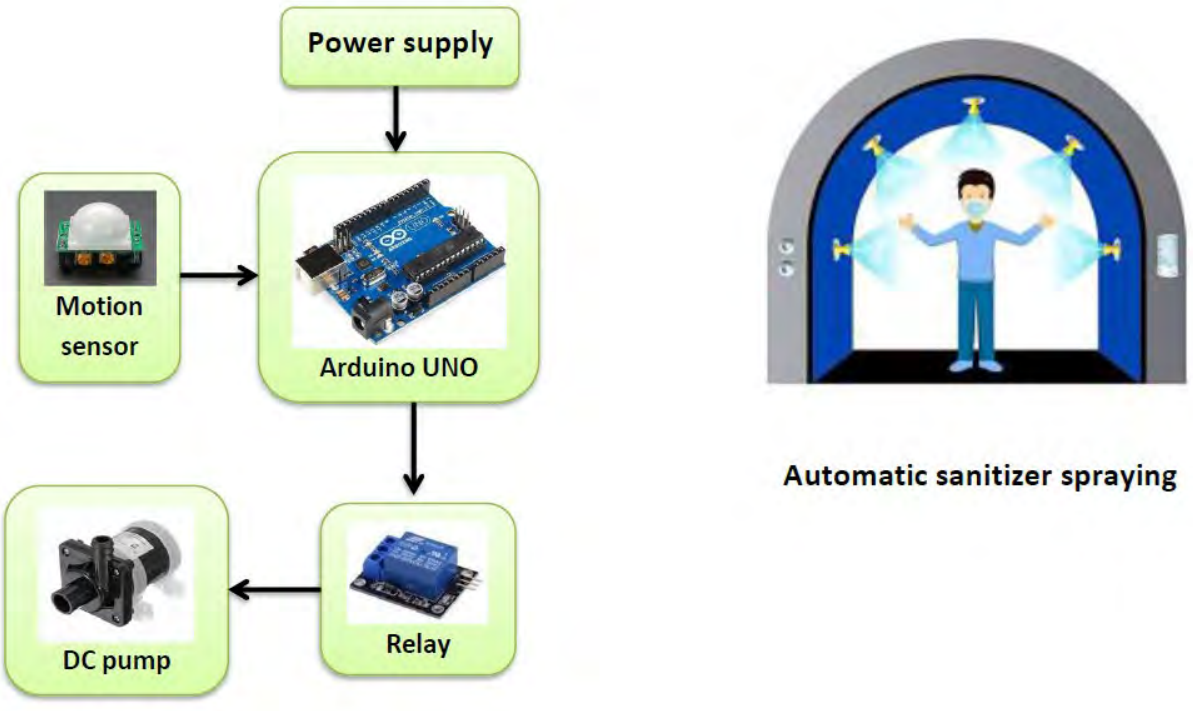


Figure 165 Block diagram of automatic sanitizer sprayer

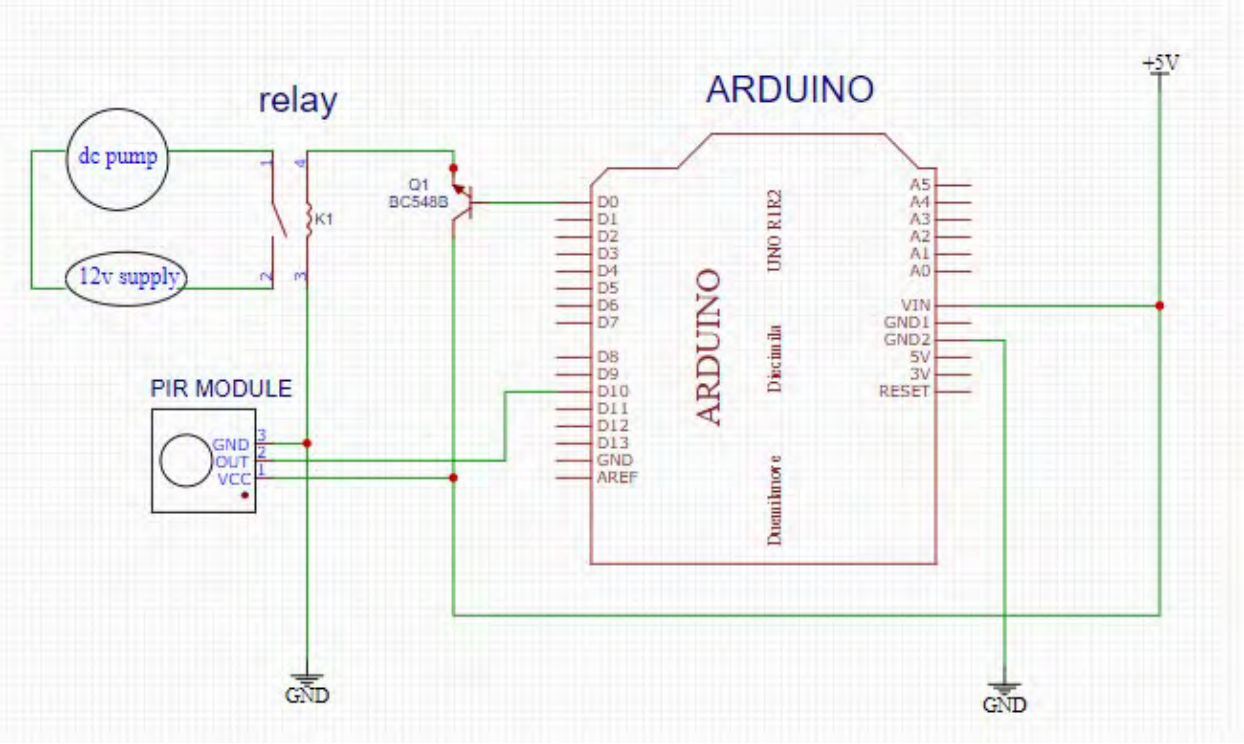


Figure 166 Circuit diagram of automatic sanitizer sprayer

The face mask detection and automatic sanitizer spraying is AI and IOT based project. There is monitoring the faces of person and indicate that person is wearing mask or not. Automatic sanitizer spraying is spraying a sanitizer who entered in the door. There are many components used, Raspberry pi, camera, indicate led, speaker, Arduino UNO, Motion sensor and spraying nozzle with DC pump. There are two modules used for this system.

The first module is face mask detected. It is detected person who not wearing mask or not wearing properly. There is used Raspberry pi and camera to detect faces. It has to use python code utilizing TensorFlow, OpenCV, and inutile package detect if person is wearing a face mask or not. When system is detect not wearing mask or not properly wearing mask then LED indicate to wearing mask. And processor send voice message “please wear the mask” using speaker module. The Raspberry pi is processing an image capturing by camera to determine the person is wearing mask or not using AI TensorFlow algorithm.

The second module is Automatic sanitizer spraying. There is Arduino UNO, motion sensor and DC pump for spraying sanitizer. It is spraying a sanitizer when person entered inside. The motion sensor is sensing the human moment. Then Arduino is ON a DC pump through relay and spraying is started. Its spraying starts few second because of timing set in the Arduino. The Arduino is use as microcontroller in system. It is interference with motion sensor and DC pump and controlled sanitizer spraying system.

The faced mask detection and automatic sanitizer spraying system is used in hospitals, schools, malls, theaters, playground etc. We are thought how to prevent from corona wires. Prevention is better than cure; it is one of the effective to prevent the spreading of covid-19. This project is based on the protecting form wires using sanitizer and indicate wearing mask.

In village, we are arranging this system in a school, hospital, garden, grampanchayat and public places. We are also talk with school principal, doctor and sarpanch about this project. They are ready for set this system because everyone wish we prevent from covid-19.

Estimation

Sr.	Components	Price (INR)
1	Raspberry pi	3800
2	Arduino UNO	500
3	Camera module	4500
4	Speaker	740
5	Led indicator	200
6	Motion sensor	150
7	DC pump + relay	750
8	Power supply	1000
9	Frame + spraying	6000
Total		**17640 /-**

Table 54 Estimation of face mask detection & automatic sanitizer sprayer

13.3 Reason for Students Recommending this Design

Movable stadium: As there is no availability of stadium in the playgrounds, we decide to design a movable stadium. The stadium is made of square and rectangular hollow sections of steel.
Village entrance gate: It enhances the look of village.

Computer couching classes: In today's life the importance of computer skill is a big requirement of a person in job and personal life to make work easy. Hence computer education is required.

Vegetable market: In present the vegetable market in done by vendors using vehicle known as Rakdi, some stand on the sides of road with decreases the width of the road and increases the traffic on the road and increases the chances the accidents. Sometimes animals throw down the vegetables nearby as it is an open market area.

New streetlights: In current condition the streetlights start from the starting of village. But there is a bridge at the starting of village and there are no streetlights. We think that many accidents can be caused at night at the starting of bridge it also has a curve then the road enters to the bridge.

Govt scheme office: There are scheme and benefits provide by the government to the nation. As people are not aware of them, they are benefited by schemes. Many village youths leave education due higher fees, but they are not aware of scholarships provide to them. Some people are illiterate and do not know how to read and fill the forms, there are scammed by scammers in fraud scholarships and farming schemes or any other schemes.

13.4 About designs Suggestions / Benefit of the villagers

It is also provided with CCTV it provides a security on the vehicles entering the village. It may also help the police in case of any investigation.

Increase the skill of people in computer and a place of students to do their project works. Learning of new software that are related to their career.

we designed a vegetable market it provides the solution the problems discussed above.
It has steel grid fence on the entry and exit of the market which helps to the nuisance of animals.

Streets lights to reduce the chances of accidents in the hazardous place like bridge and it also improves the look of village

We designed this office in which all scheme information and forms can be filled, it's the best option for people to be aware of those benefits and mostly farmers and students of the village.

As designed automatic water supply can be used as it has no time limits it can in day or night as per the schedule.

Smart agriculture techniques can be used and more production of crops can be done with help of remoting sensing satellites.

14. TECHNICAL OPTIONS WITH CASE STUDIES

14.1 Civil Engineering

14.1.1 Advanced Earthquake Resistant

Earthquake resistant systems are intended to secure buildings from earthquakes to some degree. This means that for rare earthquakes, the loss of life should be reduced by preventing building collapse, while for more common ones, the loss of functionality should be minimal.
Among the most important advanced techniques of earthquake resistant design and construction are:
1.Base Isolation
2.Energy Dissipation Devices

Base Isolation Method of Earthquake Resistant Design:

A base isolated structure is supported by a set of bearing pads located between the building and the foundation. Base isolation bearing pads of various types have now been produced. In the vertical direction, the bearing is very rigid and solid, but in the horizontal direction, it is very flexible.

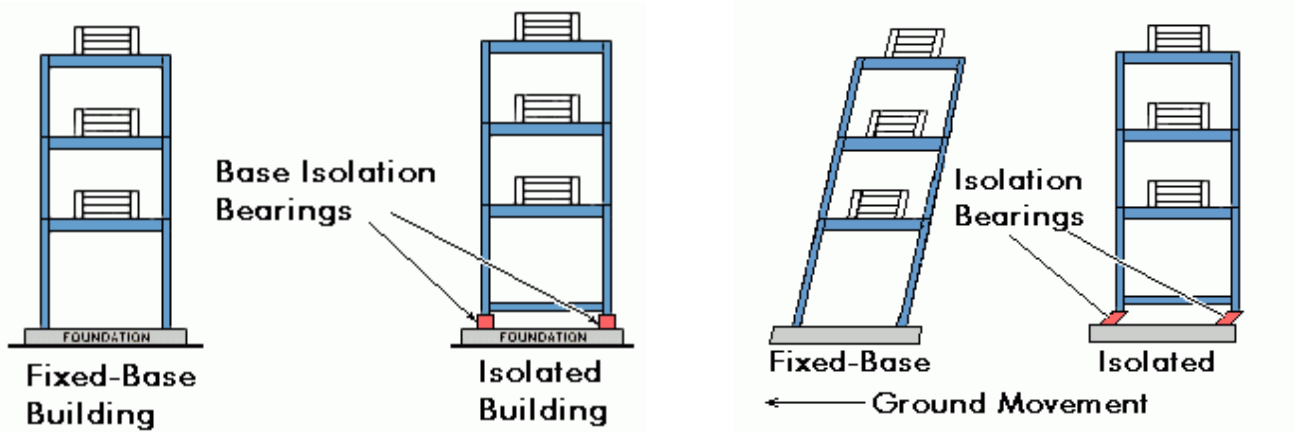


Figure 167 Base isolated method and its behavior in earthquake

Energy Dissipation Devices:

The energy dissipation technique is a form of passive structural control. The primary function of passive energy dissipation devices is to absorb or consume a portion of the input energy from an earthquake or wind, thus reducing structural response and protecting structural members.

Figure 168 Energy dissipation technique

14.1.2 Seismic Retrofitting of Buildings

Seismic Retrofitting Techniques are needed for concrete structures that are vulnerable to damage and failure because of seismic forces. Every year for the past thirty years, there have been moderate to major earthquakes all over the world. Such occurrences cause damage to concrete buildings as well as failures. Thus, the aim is to concentrate on a few basic procedures that may enhance practice for assessing the seismic vulnerability of existing reinforced concrete buildings of greater significance and retrofitting them with various groundbreaking techniques such as base isolation and mass reduction.

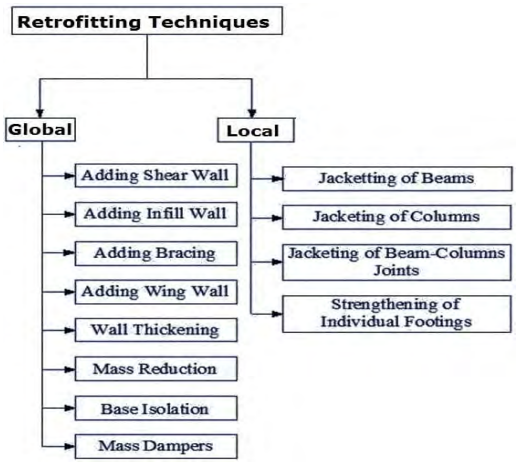


Figure 169 Types of retrofitting

Adding New Shear Walls:

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

Figure 170 Adding new shear wall

Adding Steel Bracings:

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

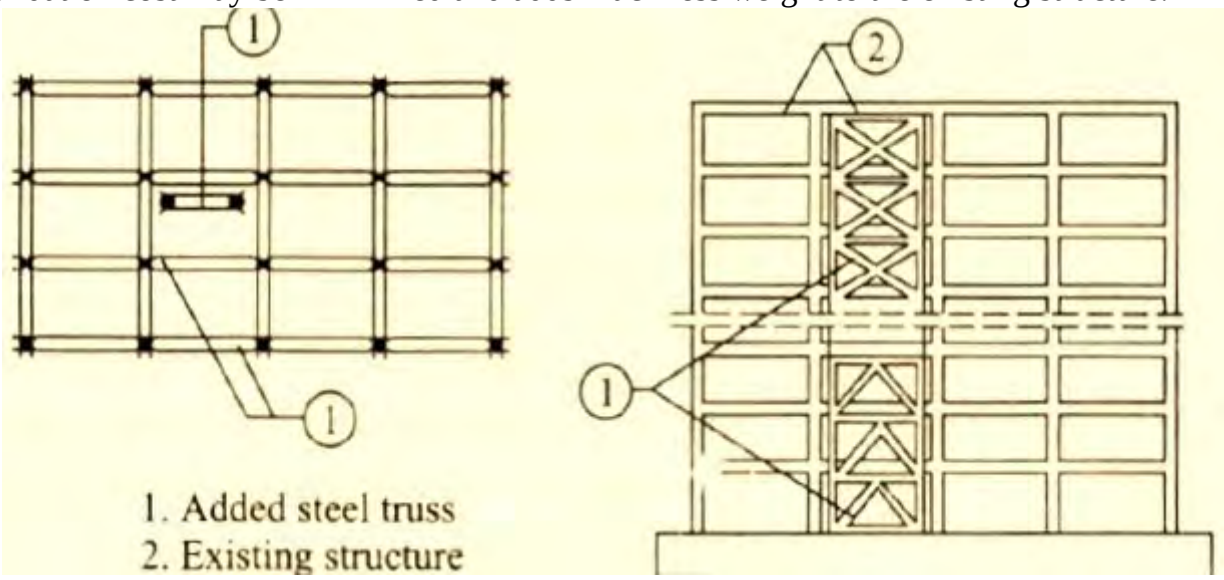


Figure 171 Adding of steel bracings

Jacketing:

This is the most popular method for strengthening of building columns**.**

Types of Jacketing are: Steel jacket, Reinforced Concrete jacket, and Fiber Reinforced Polymer Composite (FRPC) jacket.

Purpose for jacketing:

To increase concrete confinement

To increase shear strength

To increase flexural strength

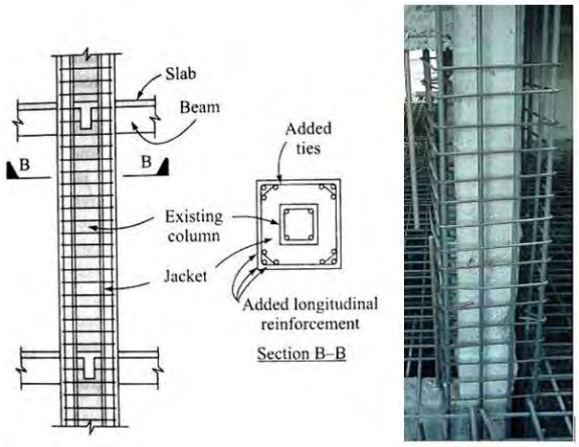


Figure 172 Jacketing of old column

TOPIC TAKEN FOR CIVIL CONCEPT

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

we made design of new equipment:

As we have seen the welding equipment in this presently workshop being used.it is difficult to weld a 90˚ in sections like RHS, SHS, etc.

Most commonly the use a 90-degree angle scale to weld and place the section properly but there are chances of shaking of angle while welding which may make a change in angle to be welded.

So, we made an equipment that solve problem and makes it easy to weld 90-degree.

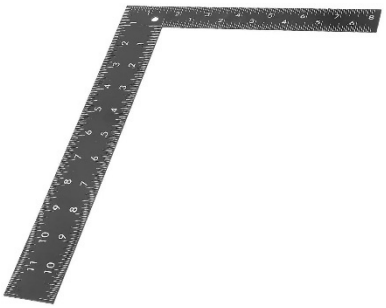


Figure 173 90-degree scale

Here are the images of the equipment:

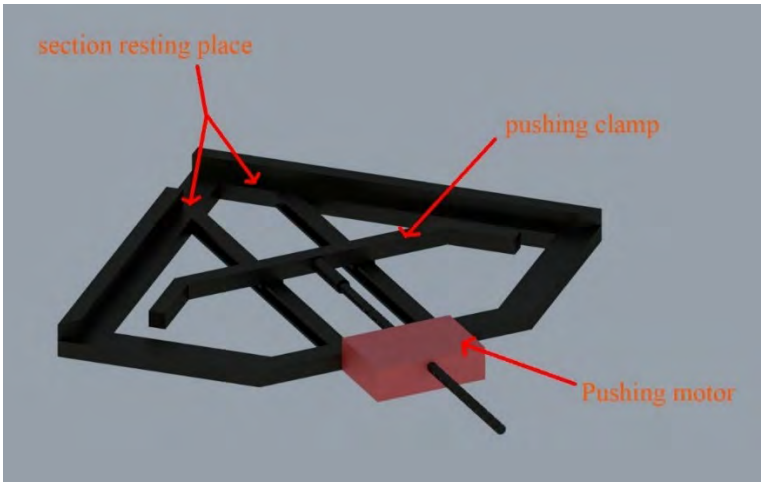


Figure 174 Components of welding equipment

Steps to weld:

Step 1:

In the initial position the pushing clamp is pulled down by the motor and space is created between the pushing clamp and section resting place.

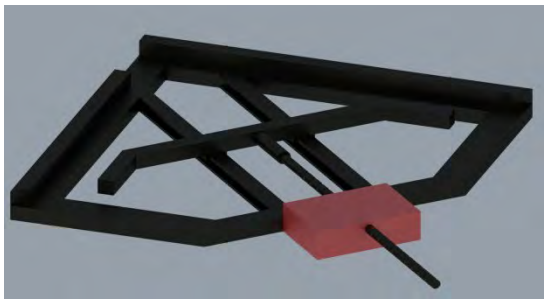


Figure 175 Initial position of welding equipment

Step 2:

The sections are placed on the resting place.
The section can be of different sizes it does not matter.
The red components indicate the 2 section to be welded.

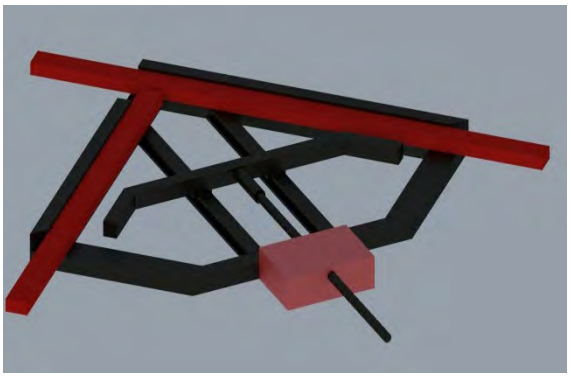


Figure 176 Second step of welding equipment

Step 3:

With the help of motor, the pushing clamp is pushed up and the section tightens up in 90-degree. The pushing clamp pushes the section to the boundary part of the equipment and section holds up in 90-degree. And hence the welding process can be carried out easily as there are no changes of shaking of section's angle.

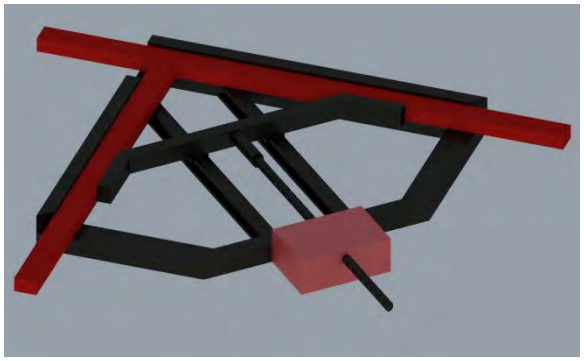


Figure 177 Final step of welding equipment

Cost estimation:

WELDING EQUIPMENT ESTIMATE							
QUANTITY SHEET							
SR. NO	**DESCRIPTION**	**NO.**	**LENGTH**	**WIDTH**	**HEIGHT**	**QUANTITY**	**UNIT**
1	Part 1	4	1	-	-	4	m
	50 X 50 X 4 mm (SHS)						
	5.72 kg/m	4		@	5.72	22.88	kg

2	Part 2	4	1	-	-	4	m
	100 X 50 X 3mm (RHS)						
	6.60 kg/m	4		@	6.6	26.4	kg
3	MS, I beam light as girder	2	1			2	m
	100 X 50 X 3mm						
	5.3 kg/m	2		@	5.3	10.6	kg

Table 55 Quantity sheet of welding equipment

WELDING EQUIPMENT ESTIMATE					
ABSTRACT SHEET					
SR. NO.	**DESCRIPTION**	**QUANTITY**	**RATE**	**PER**	**AMOUNT RS.**
1	50 X 50 X 4 mm (SHS)	22.88	45	kg	1029.6
2	100 X 50 X 3mm (RHS)	26.4	45	kg	1188
3	MS, I beam	10.6	45	kg	477
4	Welding cost	34	42	joint	1428
5	Motor	1	3000	no	3000
	Total cost				7123
	5% electric charges				7479
	total Approx. amount				7500

Table 56 Abstract sheet of welding equipment

14.1.4 Engineering Aspects of Soil mechanics Environmental Impact Assessment

An Environmental Impact Assessment is a systematic method of determining the impact of any proposed construction project on the environment and its constituents. This may include changes to the physical aspects of established geography caused by the project, chemical changes to the environment including air and water, biological changes affecting plant, animal, and human life, the cultural impact of a project on the culture in the region, and other socioeconomic effects that the project may have.

In the context of soil management, impact evaluation is critical in order to recognize the possible impacts of management decisions on social and natural environments across spatial and temporal scales. The assessment assesses and compares the effects of various soil management options.

This includes scientifically suggested management options (e.g., fertilization schemes, tillage technologies, biocontrol and microorganism use, crop rotations and catch cropping, sensor technology application, irrigation), as well as those resulting from bioeconomic developments. (e.g., new cultivars and harvesting technologies, on-site harvest processing) and those derived

from policy implementation at local, national and international levels (e.g., greening measures, carbon certificates).
The six phases of impact assessment connect the socioeconomic structure of social goal setting and decision-making to the natural system of biological, physical, and chemical process interactions.

Adapted to soil science, the steps are as follows:
(1) Recognition of challenges and analysis of potential patterns and driving factors for soil management choices.
(2) Define human activities and options for soil management practices that exert pressure on soil systems.
(3) Review of the impact of human activity on the condition of soil processes and functions. This analytical phase focuses on the soil system and depicts how soil management affects soil processes, which in turn affects the ensemble of soil functions.
(4) Assessing and valuing the direct and indirect effects of soil management in relation to social, economic, and environmental goals.

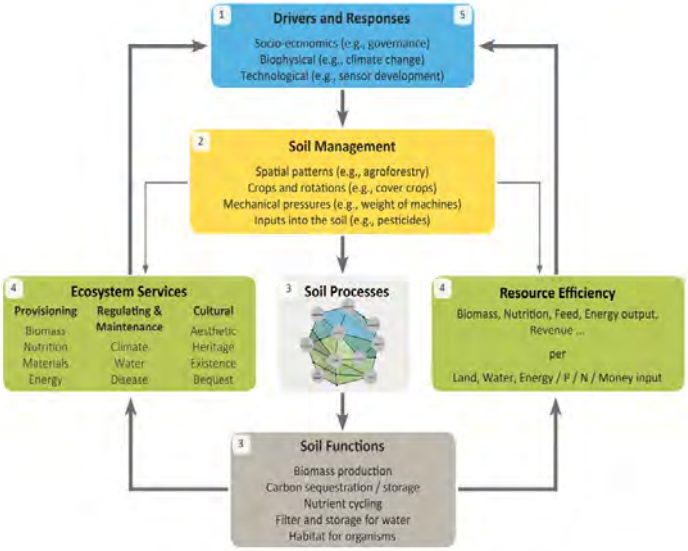


Figure 178 EIA block diagram

(5) Evaluating the impact of various options, including co-benefits and trade-offs. At this stage, case-specific priorities may be allocated to the various impact areas, allowing for a ranking of the options under consideration.
(6) Recommendations for assessment indicators, reporting processes, and policy implementation evaluation

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

Sewerage is the infrastructure that uses sewers to transport sewage or surface runoff. Sewerage is terminated at the point of entry into a sewage treatment system or at the point of discharge into the atmosphere. It is the network of pipes, chambers, manholes, and so on that transport's sewage or storm water.
A sewerage system is made up of pipes and pumps that collect wastewater, or sewage, from a city. Domestic and commercial sewers, as well as storm sewers, are the two types of modern sewerage systems.
Sewers are critical components of urban infrastructure that help keep the urban environment protected from flooding and prevent the spread of waterborne diseases by safely transporting waste water to the waste water treatment plant works and through the transport of rain water from urban surfaces.

There is a need for sustainable wastewater treatment systems that can handle sewage locally while still allowing for reuse/recycling. Decentralized sewage treatment may be electromechanical systems with a high energy requirement or natural systems with a low or no energy requirement.
Water resource production that is sustainable refers to reducing water use and recycling wastewater for various purposes such as cleaning, processing, and agricultural irrigation in such a way that future generations' water demands are not affected.

Waste water treatment procedure:

Step 1: Screening and Pumping
Things such as rags, wood fragments, plastics, and grease are separated from the incoming wastewater by screening devices. The removed material is cleaned, pressed, and disposed of in a landfill. The screened wastewater is then pumped to the grit removal level.

Step 2: Grit Removal
Heavy but fine material, such as sand and gravel, is extracted from the wastewater in this process. This waste is also dumped in a landfill.

Step 3: Primary Settling
The stuff, which settles at a slower rate than in phase two, is removed using large circular tanks known as clarifiers. The settled fluid, known as primary sludge, is drained to the tank's bottom, while the wastewater escapes from the top. Floating debris, such as grease, is skimmed off the surface and sent to digesters with the settled stuff. Chemicals are often used in this step to extract phosphorus.

Step 5: Secondary Settling
At this point, large circular tanks known as secondary clarifiers allow the treated wastewater to differentiate from the biology in the aeration tanks, resulting in an effluent that is now more than 90% treated. In phase four, the biology (activated sludge) is continuously drained from the clarifier bottoms and returned to the aeration tanks.

Step 6: Filtration
This phase polishes the clarified effluent by filtering it through 10-micron polyester media. The material captured on the surface of the disc filters is backwashed on a regular basis and returned to the plant's head for treatment.

Step 7: Disinfection
After the filtration process, ultraviolet disinfection is used to ensure that the treated wastewater is practically bacteria-free. The ultraviolet treatment process destroys any residual bacteria to levels that are within the limits of our discharge permit.

Step 8: Oxygen uptake
The processed water, which is now very stabilized and of high quality, is aerated if necessary, to get the dissolved oxygen level up to the allowable level. Following this, the treated water flows into the effluent outfall and into the Oconomowoc River. The water discharged into the

river must meet the DNR's stringent specifications. Pollutant elimination is held at 98 percent or higher.

Sludge Treatment

In step three, the primary sludge pumped from the bottom of the primary clarifiers, as well as the continuous flow of waste activated sludge from the aeration / activated sludge phase in step four, must be managed to minimize volume and provide a usable end product.

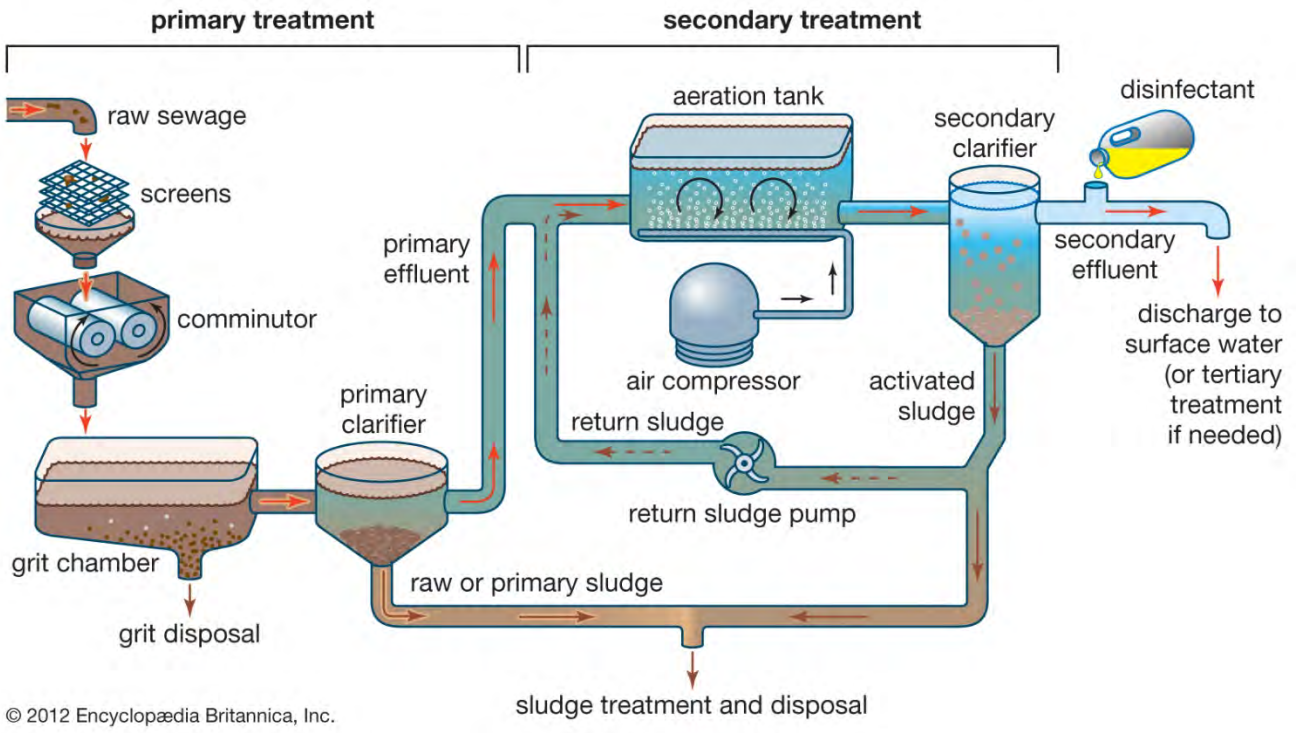


Figure 179 Block diagram of Sewerage System-Waste Water treatment

14.2 Electrical Engineering

14.2.1 Design of Power Electronics converter

The primary role of power electronics is to process and control current by delivering voltage and current in a form most suitable for consumer loads. Modern power electronic converters are used, for example, in a variety of applications.
About switching power supplies, active power filters, motion control for electric motors, conversion systems for renewable energy, distributed power generation, flexible AC transmission systems, vehicles.
Power electronic converters are classic electronic devices that use current and voltage to transmit information when transmitting electricity in power electronics, and can be found wherever you need to change the form of electrical energy.
Some examples of the use of power electronics systems are DC-to-DC converters used in many mobile devices such as cell phones and PDAs, and AC / DC converters in computers and televisions. In our country, power electronics are widely used to control hundreds of megawatts of power.

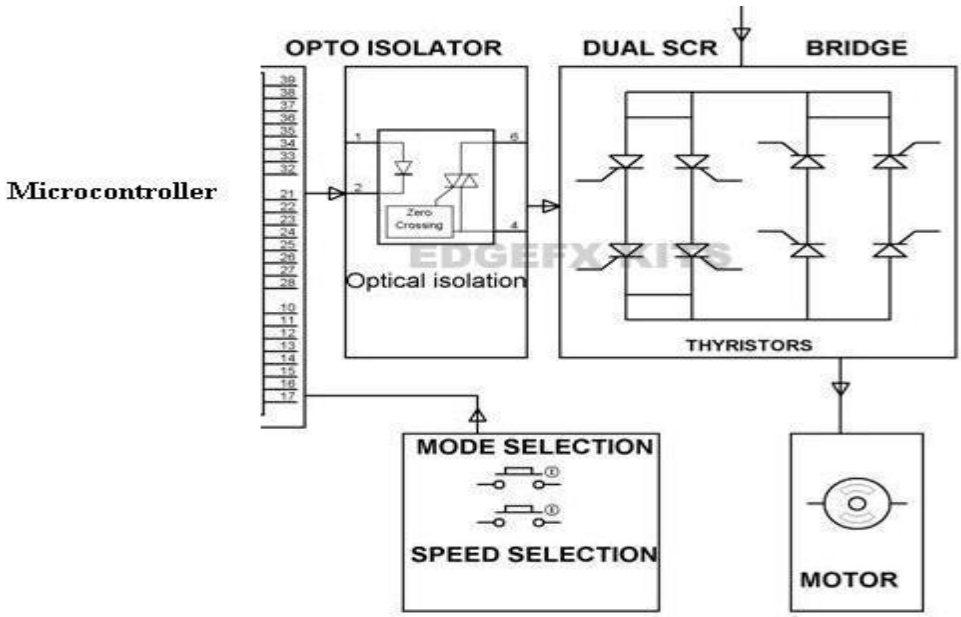


Figure 180 Circuit diagram of power electronics converter

14.2.2 Electronic Soft Starter for 1/3 Phase Induction Motor for Agriculture

The soft starter controls the acceleration of the electric motor by applying an under voltage to the stator windings of a three-phase induction motor. The three-phase induction motor is a self-propelled motor, and the electromagnetic torque is based on the interaction between the magnetic field rotating around the rotor and the rotor current.
The soft starter supplies undervoltage, so the motor torque is reduced. Soft starters are made up of solid-state devices such as thyristors. The motor supply voltage is regulated by a power semiconductor element, such as a thyristor.

For a three-phase induction motor, the torque is proportional to the square of the starting current, which is again proportional to the applied voltage. The starter works according to the principles described above.
Therefore, the torque and current can be controlled by applying a reduced voltage when starting the engine. Two types of soft starter control are possible. The first is open-loop control and the second is closed-loop control.

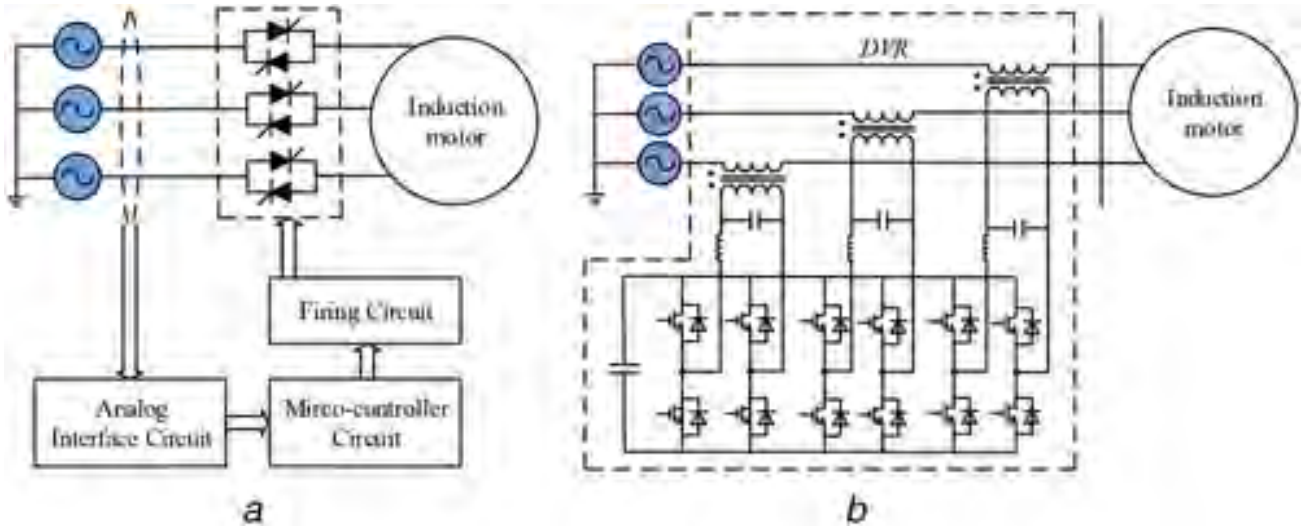


Figure 181 Circuit diagram of electronic soft starter induction motor for agriculture

TOPIC TAKEN FOR ELECTRIC CONCEPT

14.2.3 Advanced Wireless Power Transfer System

The definition of Wireless Power Transmission of power from one point to another trough vacuum or an atmosphere without the use of wire.
Advance wireless electrical power transfer system is the technologies for transmit of power without conductor. The several technologies which are developed for transmission of electricity over long distance wireless.
In wireless power transfer system is power transmitted from source by electromagnetic field across intervening space to one or more receiver, where it is converted back to electrical power and utilization.

EM Radiation

This is long distance wireless power transfer system. There are two type transmission systems.
1) Laser 2) Microwave

1) Laser power transmission:
This technology the power concentrated in a small area by utilizing the mirror. This technology also produces high powers that are coherent and not dispersed for very long but gets attenuated when it propagates through atmosphere.

2) Microwave power transmission:
Microwave power transmission technology transfers high power from the base station to the receiving station or mobile devices with two places being in line of sight via radio waves whose wavelength are conveniently measure in small number of centimeters.

Electromagnetic Induction
This is short distance wireless power transfer system. There are two type transmission systems. 1) Inductive coupling 2) Resonant inductive

1) Inductive coupling:
Electromagnetic Inductive Power Transfer or inductive coupling is a popular technique of transferring power wirelessly over a short range. This technique of transferring power derives its capability from the two fundamental laws of physics: Ampere's law and Faraday's law.

2) Resonant inductive:
In order to increase range of Inductive WPT, Resonance inductive coupling is used. Resonance is a property can be explained as a natural frequency of the system at which if the system oscillates maximum energy transfer takes place.

Electrostatic Induction
Electric induction In Capacitive Power Transfer the energy is transmitted between the two electrodes of a capacitor assembly. 1) Capacitive coupling 2) Resonant capacitive coupling

1) Capacitive coupling:
In capacitive coupling, the energy is transmitted by electric fields between electrodes such as metal plates Transmitter and receiver electrodes form a capacitor which can hold a charge, attaches to each end of the coil.
2) Resonant capacitive coupling: Resonance can also be used with capacitive coupling to extend the range. At the turn of the 20th century, Nikola Tesla did the first experiments with both resonant inductive and capacitive coupling. Used in order to increase large rang.

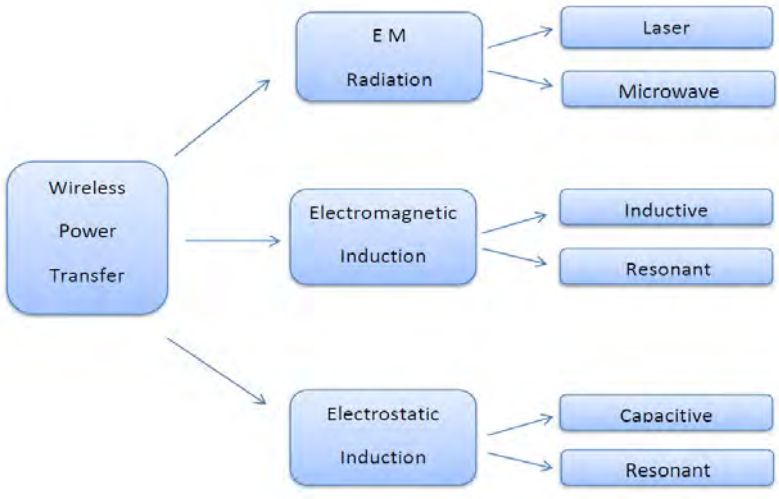


Figure 182 Block diagram of wireless power transfer

Estimation of Wireless charger:

Sr.	Components	Price (INR)
1	Rectifier (Ac to Dc)	200
2	Dc-Dc convertor	400
3	Transmission coil module	750
4	TX controller	100
5	RX controller	100
6	Rectifier and filter	400
7	Electronic components	300
8	Other components	400
Total		**2650**

Table 57 Estimation of Wireless charger

14.2.4 Industrial Temperature Controller

Temperature controllers are used in most manufacturing industries. In industries such as textile factories, pharmaceutical industry, oil refineries, etc., temperature control is required. Thermostats are used to maintain a constant temperature in any process, installation or material.

This temperature control system has a reference temperature called a target or target temperature, which is the temperature you want to maintain. This reference temperature is set outside.

You can also customize it at any time according to your needs. After setting this temperature, the system will try to maintain it by recording the current temperature and monitoring it using a heater, chiller or compressor.

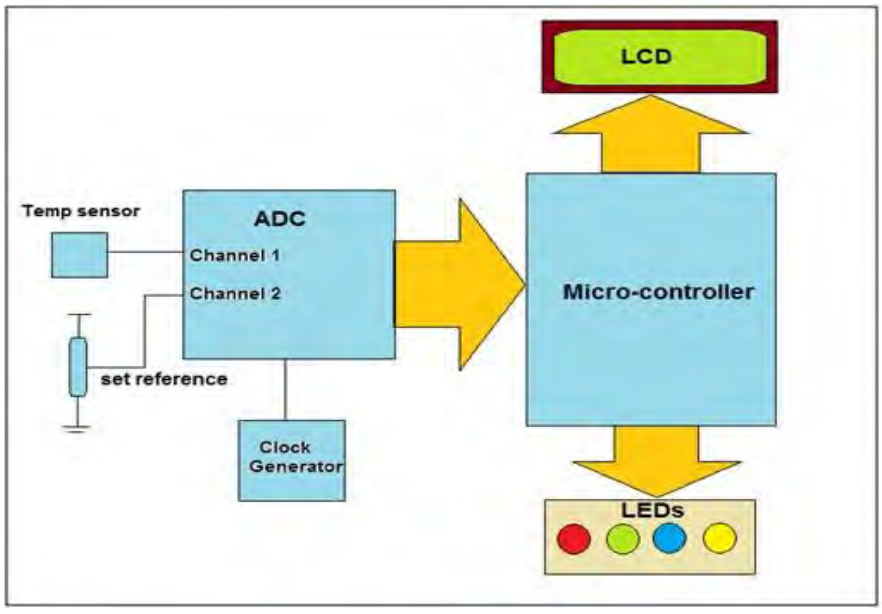


Figure 183 Block diagram of industrial temperature controller

It records the current temperature and compares it to the reference temperature to generate an error signal. It controls the heating element (or cooling element) based on this error signal. If the set temperature is higher, the error signal is negative and vice versa.
So, I installed a temperature monitoring system that uses a temperature sensor to record the current temperature. It is compared to the target temperature set by an external reference. Displays the error signal as positive or negative.

14.2.5 Accident Alerts in Modern Traffic Signal Control System -Camera Surveillance System

This system is designed to provide the users of modern transport systems with an emergency signal. This device can be used in many random areas and curved handles to prevent accidents. First, the transmitter is connected and the receiver is positioned directly opposite the transmitter. The other transmitter is connected to the same side and the receiver is positioned directly opposite the second transmitter.
When the car passes through the first transmitter and receiver, it detects that the Car is passing by. He felt it while driving through the second block. The microcontroller calculates speed. When speeds exceed the set value, a warning signal is sent to other vehicles.
It also warns of approaching vehicles if someone crosses it. This includes high speed vehicles. This is a great way to quickly track high speed transport.

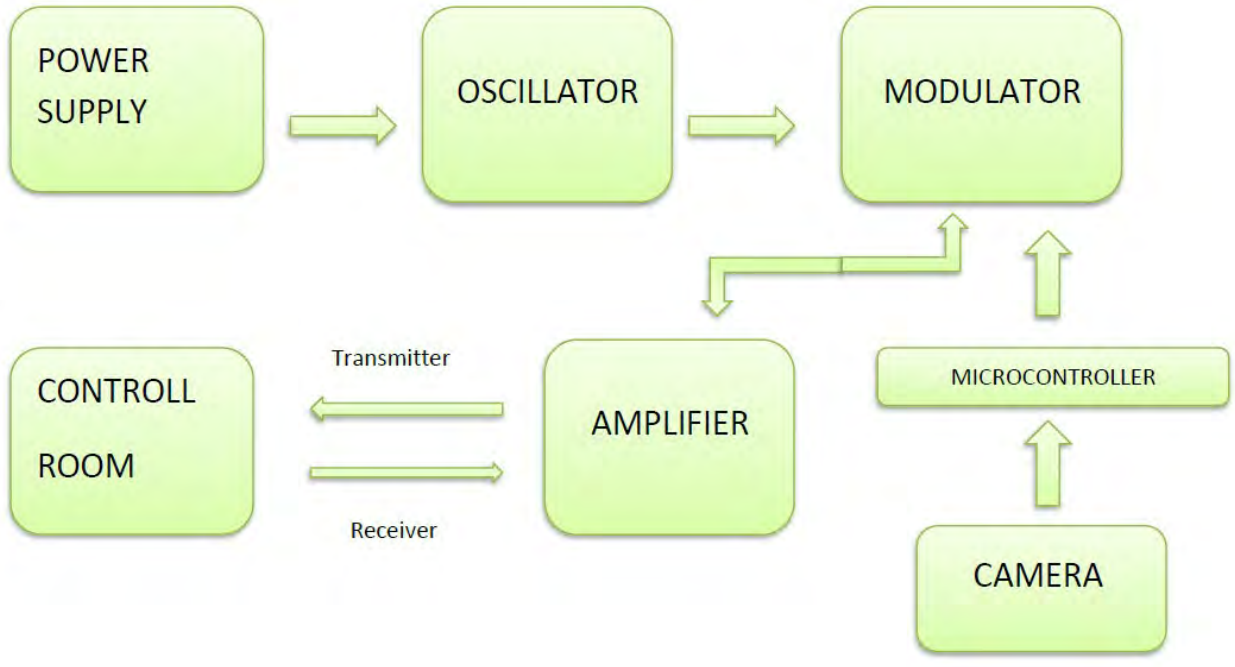


Figure 184 Block diagram of accident alerts in modern traffic signal control system

15. SMART AND SUSTAINABLE FEATURES OF CHAPTER 8 & 13 DESIGNS, IMPACT ON SOCIETY.

Smart and sustainable features:

- Rainwater harvesting is sustainable future as it controls the demand of water.
- Public garden is built to maintain the environment around it.
- Automatic solar cleaning robot is smart device that make the man work easy.
- IOT based irrigation is a smart feature that helps in agriculture and it works on the soil moisture content.

Impact of designs in village:

- Rainwater harvesting is a method to low down the demand of water
- The multifunctional hall will increase the facilities for students and education will also improve.
- Provision of CCTV, will provide security to the village
- As there was a need of a public garden we thought if develop the garden in the temple it could have dual benefits both to the village and history of the temple. Protection of the heritage of the country would be made. Making a garden there is a reason logic that more people come in garden, more the knowledge of the temple of will be given to people and automatically proudness of having an old heritage place will increase in the village
- Design of public toilet to increase the hygiene and it is also a component of Swachh Bharat Abhiyan.
- Movable stadium or it be moved and hence the arrangement of the can be changes according to the requirement.
- Computer couching will brin a big change in the skill of the village members and will give them a new career option.
- Street lighting layout must be made as it will control the chances of accidents near the bridge.

Period to develop:

a) Immediate:

SR.NO	DESIGN	COST (Rs)
1	Street lighting	50,500/-
2	Multi-functional hall	1,12,400/-
3	Rainwater harvesting	2,29,500/-
4	Automatic solar cleaning robot	1,83,400/-

b) Within 1 year:

SR.NO	DESIGN	COST (Rs)
1	Public garden	9,76,000/-
2	Computer couching classes	18,44,500/-
3	Govt. scheme office	2,17,100/-

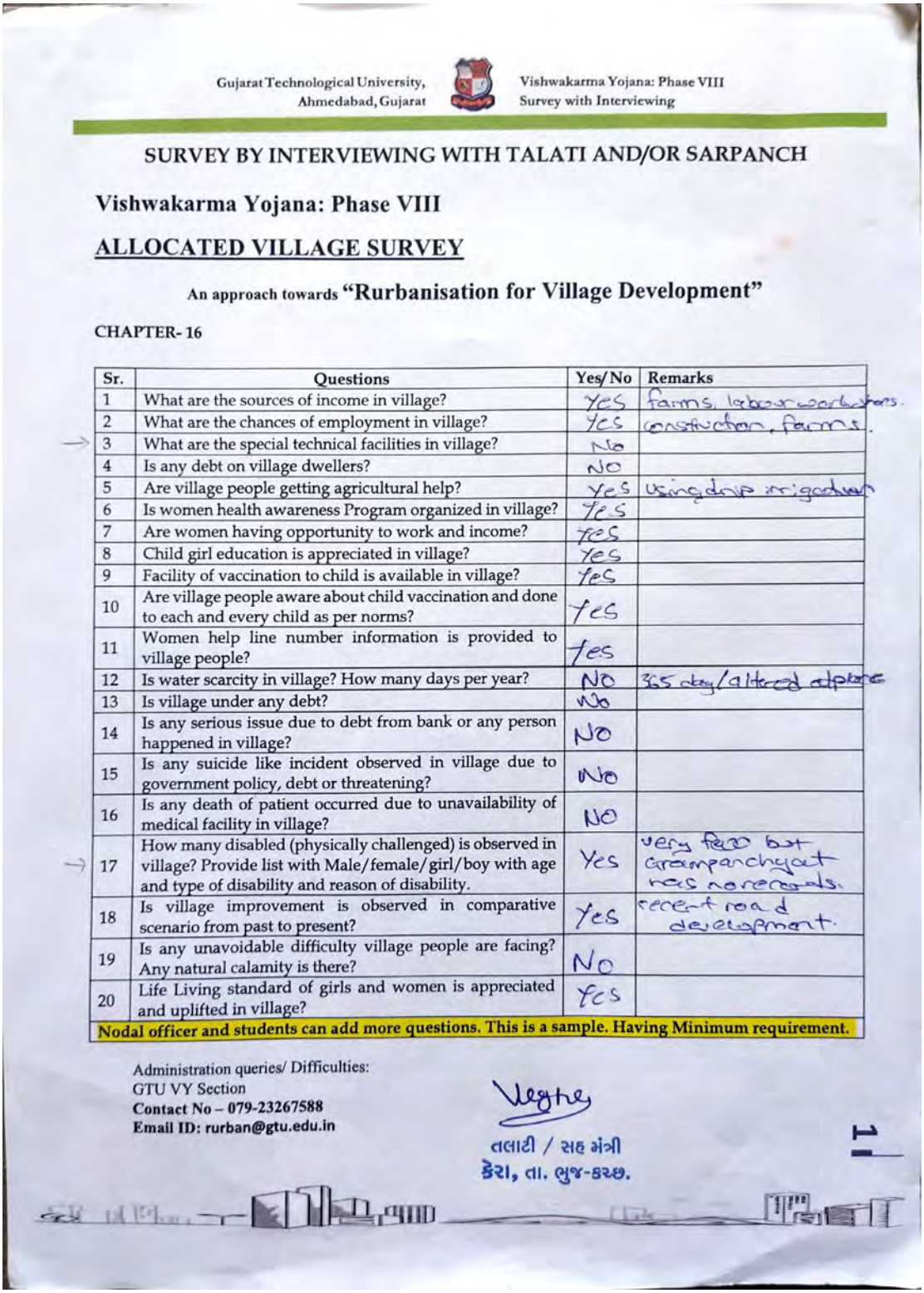
c) Long term (3-5 years):

SR.NO	DESIGN	COST (Rs)
1	Aaganwadi	2,05,800/-
2	Control room	2,32,500/-
3	Village gate with CCTV	3,33,000/-
4	Movable stadium	26,000/-
5	Vegetable market	7,32,100/-
6	Public toilet	3,90,000/-

Funding sources:

No NGOs are working for village and all the developments in the village bills are passed to the government.
Only small funding can be collected from village members as negligible amount.
Some amount can be funded by the grampanchayat.

16. SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

CHAPTER- 16

Sr.	Questions	Yes/No	Remarks
1	What are the sources of income in village?	Yes	farms, labour work, ...
2	What are the chances of employment in village?	Yes	construction, farms.
3	What are the special technical facilities in village?	No	
4	Is any debt on village dwellers?	NO	
5	Are village people getting agricultural help?	Yes	using drip irrigation
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	
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	365 day/altered alphone
13	Is village under any debt?	No	
14	Is any serious issue due to debt from bank or any person happened in village?	NO	
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	No	
16	Is any death of patient occurred due to unavailability of medical facility in village?	NO	
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	Yes	very few but Grampanchyat has no records.
18	Is village improvement is observed in comparative scenario from past to present?	Yes	recent road development.
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

તલાટી / સહ મંત્રી
કેરા, તા. ભુજ-કચ્છ.

17.IRRIGATION / AGRICULTURE ACTIVITIES AND AGRO INDUSTRY, ALTERNATE TECHNICS AND SOLUTION

In the village the irrigation is done in following ways:

- Drip irrigation
- Canal irrigation
- Bore-well
- Water from grampanchayat

There no Agro industry in the village.
The farmers harvest their crops and sell them in village or to the main market in Bhuj.
They also trade the products to the nearby families and relatives.
They use tractors for irrigation and planting of crops.
Technics that can be used in irrigation are:

IOT based irrigation:
Iot based automatic irrigation system which is operated by microcontroller and moisture sensor. Soil moisture sensor is measured humidity in soil when moisture level down then microcontroller is on the irrigation system by on the water pump.
And sensor measured moisture level high then off the irrigation. This irrigation data sends to owner of garden or farm via SMS using GSM module. And controlled irrigation by owner sends the SMS via GSM module to microcontroller.

Precision agriculture:
Precision agriculture (PA), satellite farming or site-specific crop management (SSCM) is a farming management concept focused on monitoring, measuring, and reacting to inter and intra-field variability in crops. The goal of precision agriculture research is to define a decision support system (DSS) for whole farm management with the goal of optimizing returns on inputs while preserving resources.
Precision agriculture has been made possible by the introduction of GPS and GNSS. The capacity of a farmer or researcher to precisely locate their location in a field enables the production of maps of the spatial variability of as many variables as can be calculated Sensor arrays installed on GPS-equipped combine harvesters collect similar data. These arrays are made up of real-time sensors that track everything from chlorophyll levels to plant water status, as well as multispectral imagery.
Variable rate technology (VRT), such as seeders and sprayers, uses this data in combination with satellite imagery to optimally distribute resources. Recent technological developments, however, have allowed the use of real-time sensors directly in soil that can wirelessly transmit data without the need for human intervention.

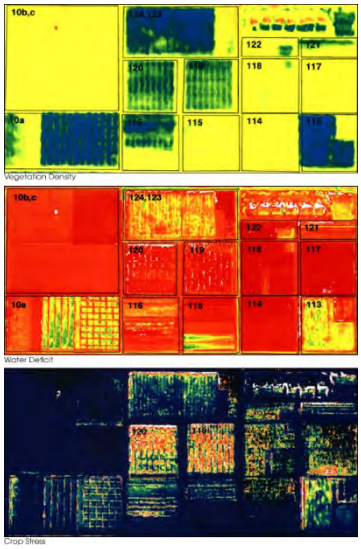


Figure 185 Remote sensing farming

18. SOCIAL ACTIVITIES – ANY ACTIVATES PLANNED BY STUDENTS

According to Covid-19 situation it was not allowed to gather people and schools were closed. So, we had no option of planning social activities and encourage the people. Therefore, we made banners and placed them in the market area.

We made drew banner charts and placed them in public place.

Figure 186 Swachh Bharat banner made by us

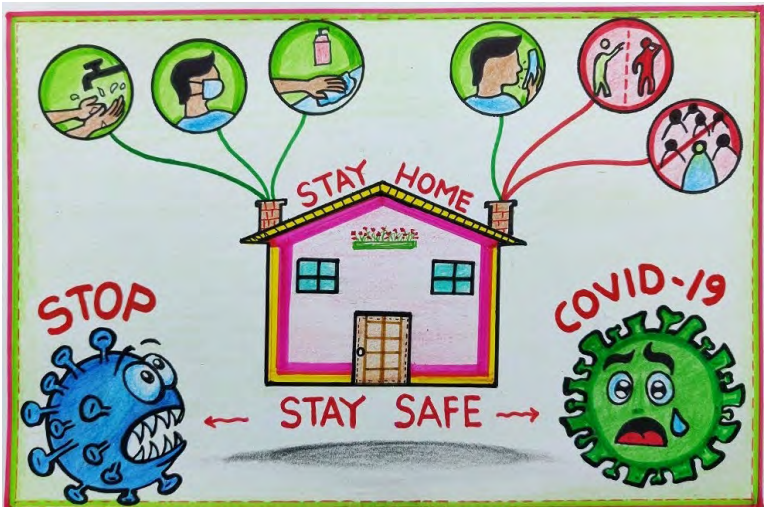
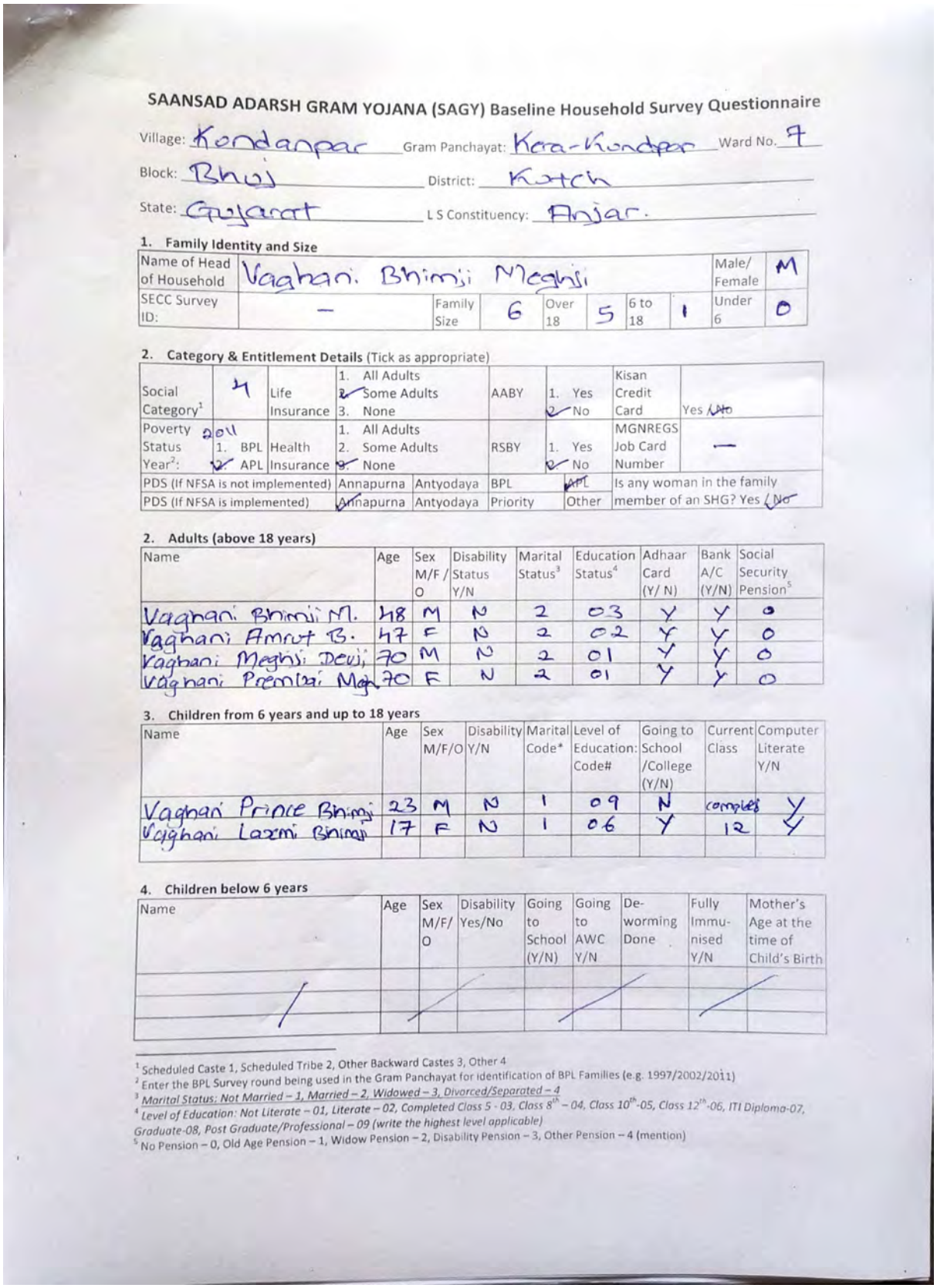


Figure 187 Covid-19 banner made by us

19. KUNDANPAR SAGY QUESTIONNAIRE SURVEY FORM



SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Kondanpar Gram Panchayat: Kera-Kundapar Ward No. 7

Block: Bhuj District: Kutch

State: Gujarat L S Constituency: Anjar.

1. Family Identity and Size

Name of Head of Household	Vaghani Bhimji Meghji							Male/ Female	M
SECC Survey ID:	–	Family Size	6	Over 18	5	6 to 18	1	Under 6	0

2. Category & Entitlement Details (Tick as appropriate)

Social Category[1]	4	Life Insurance	1. All Adults 2. Some Adults 3. None	AABY	1. Yes 2. No	Kisan Credit Card	Yes / No
Poverty Status Year[2]: 2011	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]
Vaghani Bhimji M.	48	M	N	2	03	Y	Y	0
Vaghani Amrut B.	47	F	N	2	02	Y	Y	0
Vaghani Meghji Devji	70	M	N	2	01	Y	Y	0
Vaghani Premlai Mgh	70	F	N	2	01	Y	Y	0

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
Vaghani Prince Bhimji	23	M	N	1	09	N	completed	Y
Vaghani Laxmi Bhimji	17	F	N	1	06	Y	12	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
/								

[1] Scheduled Caste 1, Scheduled Tribe 2, Other Backward Castes 3, Other 4

[2] Enter the BPL Survey round being used in the Gram Panchayat for identification of BPL Families (e.g. 1997/2002/2011)

[3] Marital Status: Not Married – 1, Married – 2, Widowed – 3, Divorced/Separated – 4

[4] Level of Education: Not Literate – 01, Literate – 02, Completed Class 5 - 03, Class 8th – 04, Class 10th-05, Class 12th-06, ITI Diploma-07, Graduate-08, Post Graduate/Professional – 09 (write the highest level applicable)

[5] No Pension – 0, Old Age Pension – 1, Widow Pension – 2, Disability Pension – 3, Other Pension – 4 (mention)

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

5. Hand washing

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

6. Use of Mosquito Net

Children: Yes / ~~No~~ ✓ Adults: Yes / ~~No~~

Mosquito repellent used.

7. Do members take Regular Physical Exercise

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

8. Consumption of Tobacco

	Smoking	Chewing
Adults	—	—
Children	—	—

9. House & Homestead Data

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

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

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

11. Source of Lighting and Power

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

12. Landholding (Acres)

1. Total	11	2. Cultivable Area	10
3. Irrigated Area	10	4. Uncultivable Area	0

13. Principal Occupations in the Household

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

14. Migration Status

Does any member of the household migrate for Work: ~~Yes~~ ✓ / No. If Yes ~~Entire Year~~ ✓ / Seasonal

Does anyone below 18 years migrate for work: Y/~~N~~ ✓

15. Agriculture Inputs

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

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

Name	Unit	Quantity
Wheat	Maund	70
Bhajra	Maund	60
castor seed	maund	40

17. Livestock Numbers

Cows: 2	Bullocks: —	Calves: 1
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): 9		

18. What games do Children Play

Cricket, Volleyball, Football.

19. Do children play musical instrument (mention)

No.

Schedule Filled By: Halai Rajesh

Principal Respondent: Vaghani Prince Bhimji

Date of Survey: 22/03/21

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Kundanpar Gram Panchayat: Kera-Kundanpar Ward No. 5

Block: Bhuj District: Kutch

State: Gujarat L S Constituency: Anjar

1. Family Identity and Size

Name of Head of Household	Hala: Dhanji Ravji							Male/ Female	M
SECC Survey ID:	-	Family Size	6	Over 18	2	6 to 18	3	Under 6	1

2. Category & Entitlement Details (Tick as appropriate)

Social Category[1]	4 (General)	Life Insurance	1. All Adults 2. Some Adults 3. None	AABY	1. Yes 2. No	Kisan Credit Card	Yes / No
Poverty Status Year[2]: 2011	1. BPL 2. APL	Health Insurance	1. All Adults 2. Some Adults 3. None	RSBY	1. Yes 2. No	MGNREGS Job Card Number	NO
PDS (If NFSA is not implemented)	Annapurna	Antyodaya	BPL	APL	Is any woman in the family member of an SHG? Yes / No		
PDS (If NFSA is implemented)	Annapurna	Antyodaya	Priority	Other			

2. Adults (above 18 years)

Name	Age	Sex M/F/O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/ N)	Bank A/C (Y/N)	Social Security Pension[5]
Hala: Dhanji Ravji	39	M	N	2	05	Y	Y	0
Hala: Kanta Dhanji	37	F	N	2	05	Y	Y	0

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
Hala: Hensi Dhanji	16	F	No	1	05	Y	11	Y
Hala: Ritika Dhanji	12	F	No	1	03	Y	7	Y
Hala: Dhruvi Dhanji	9	F	No	1	03	Y	4	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
Hala: Hitansh Dhanji	5	M	No	1	N	Yes	Y	32

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

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

5. Hand washing

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

6. Use of Mosquito Net

Children: Yes / No Adults: Yes / No

7. Do members take Regular Physical Exercise

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

8. Consumption of Tobacco

	Smoking	Chewing
Adults	—	—
Children	—	—

9. House & Homestead Data

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

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

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

11. Source of Lighting and Power

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

12. Landholding (Acres)

1. Total	12.7	2. Cultivable Area	12
3. Irrigated Area	12	4. Uncultivable Area	00

13. Principal Occupations in the Household

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

14. Migration Status

Does any member of the household migrate for Work: Yes / No. If Yes Entire Year / Seasonal

Does anyone below 18 years migrate for work: Y/N

15. Agriculture Inputs

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

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

Name	Unit	Quantity
Wheat	maund	60
corn	maund	30
Mango	maund	100

17. Livestock Numbers

Cows: 0	Bullocks: 0	Calves: 0
Female Buffalo: 0	Male Buffalo: 0	Buffalo Calves: 0
Goats/ Sheep: 0	Poultry/ Ducks: 0	Pigs: 0
Any other: Type 0		No. 0
Shelter for Livestock: Pucca / Kutcha / None		
Average Daily Production of Milk(Litres): 0		

18. What games do Children Play

Cricket, volleyball, kho-kho

19. Do children play musical instrument (mention)

Piano, droms(dhol).

Schedule Filled By: Hala Ritesh.

Principal Respondent: Hala Dhanji Rausi

Date of Survey: 22/03/21

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: Kera

b. Block: Bhuj

c. District: Kutch

d. State: Gujarat

e. Lok Sabha Constituency: Anjar

f. Number of Wards in the Gram Panchayat: 12

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages:
Kera-Kondanpar

Demographic Information

Number of Households 1863 Total Population 8063 Male 3998 Female 4065

SC HHs 17 ST HHs 211 OBC HHs 36 Other HHs 1,599

I. Access to Infrastructure / Facilities / Services

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
a.	ANM/ Health Sub Centre	N	20Km bhuj
b.	Nearest Primary Health Centre (PHC)	Y	
c.	Nearest Community Health Centre (CHC)	N	6.6KM bhadreshwar
d.	Nearest Post Office	Y	
e.	Nearest Bank Branch (Any)	Y	
f.	Nearest Bank with CBS Facility	Y	
g.	Nearest ATM	Y	
h.	Nearest Primary School	Y	
i.	Nearest Middle School	Y	
j.	Nearest Secondary School	Y	
k.	Nearest Higher Secondary School / +2 College	Y	
l.	Nearest Graduate College	Y	
m	Nearest ITI / Polytechnic Centre	Y	
n	Kisan Seva Kendra	N	

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

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b. Block: Bhuj

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Number of Households 1863 Total Population 8063 Male 3998 Female 4065

SC HHs 17 ST HHs 211 OBC HHs 36 Other HHs 1,599

I. Access to Infrastructure / Facilities / Services

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
a.	ANM/ Health Sub Centre	N	20Km bhuj
b.	Nearest Primary Health Centre (PHC)	Y	
c.	Nearest Community Health Centre (CHC)	N	6.6KM bhargar.
d.	Nearest Post Office	Y	
e.	Nearest Bank Branch (Any)	Y	
f.	Nearest Bank with CBS Facility	Y	
g.	Nearest ATM	Y	
h.	Nearest Primary School	Y	
i.	Nearest Middle School	Y	
j.	Nearest Secondary School	Y	
k.	Nearest Higher Secondary School / +2 College	Y	
l.	Nearest Graduate College	Y	
m	Nearest ITI / Polytechnic Centre	Y	
n	Kisan Seva Kendra	N	

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society	N	20KM bhuj
p	Nearest Agro Service Centre	N	11
p	MSP based Government Procurement Centre	N	11
q	Milk Cooperative /Collection Centre	N	11
r	Veterinary Care Centre	N	11
s	Ayurveda Centre	N	11
t	E – Seva Kendra	N	11
u	Bus Stop	Y	
v	Railway Station	N	bhuj 24KM
w	Library	X	
x	Common Service Centre	N	bhuj 20KM

IV. Sports Facilities in the Gram Panchayat

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

b. Mini Stadium : Yin 1 Yes(Y) /No (N) *(Playground with equipment and sitting arrangement)*

V. Education, ICDS

a. Number of Angan Wadi Centres: 5

b. Number of villages without Angan Wadi Centres –

Names of such villages: –

c. Schools (Number)

Primary Private: 1 Primary Govt.: 4

Middle Private: 1 Middle Govt.:

Secondary Private: 1 Secondary Govt.:

Higher Secondary Private: 1 Higher Secondary Govt:

VI. Public Distribution System

	Item	Private Contractor	Women's SHG	Gram Panchayat	Cooperative	Other (Mention)	Location in GP (mention Location)	If outside GP, Location & distance from GP HQrs)
a.	Cereal (Rice/ Wheat/ Millets)	4	–	Associated with contact	–	–	near Swaminarayan	–
b.	Kerosene	4	–	Associated with contact	–	–	mandir	–
c.	Other (mention) salt	4	–	Associate with contact	–	–	11	–

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 1 / Not Covered —	Kera-Kundanpar	
b.	Hand Pump Coverage in Villages:	Covered — / Not Covered —		
c.	Coverage under Covered Drains:	Covered 1 / Not Covered —	Kera-Kundanpar	
d.	Coverage under Open Drains:	Covered — / Not Covered —		
e.	Villages with Household Electricity Connection (Numbers)	Connected 1 / Not Connected —	Kera-Kundanpar	

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	2317.73	d.	Pasture / Grazing Land	—	g.	Check Dam	1
b.	Irrigated Land	2317.73	e.	Forests/ Plantations	—	h.	Wells/Bore Wells	13
c.	Un-irrigated Land	0	f.	Other Common Land	1266.133	i.	Tanks /Ponds	4

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

3

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

IX. Parameters relating to Households & Institutions

		Number
a)	Number of eligible Households for pension (old age, widow, disability)	–
b)	Number of Households receiving pension (old age, widow, disability)	–
c)	Number of eligible Households who are not receiving pension	1863
d)	Number of Households eligible for Ration Card	982
e)	Number of eligible HHs having ration cards	982
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	123
l)	Number of landless households	–
m)	Number of IAY beneficiaries	–
n)	Number of FRA[2] beneficiaries	–
o)	Number of Community Sanitary Complexes	1
p)	Number of Households headed by single women	–
q)	Number of Households headed by physically handicapped persons	–
r)	Total number of Persons with Disability in the village	No records.
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'

N.L. Dharani Dharani Nilesh Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably senior most Government official in the Gram Panchayat)	12/4/21 Date of Survey

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

4

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: Kundanpar
b. Ward Number: 12
c. Gram Panchayat: Kera-Kundanpar
d. Block: Bhuj
e. District: Kutch
f. State: Gujarat
g. Lok Sabha Constituency: Anjar.
h. Number of Habitations / Hamlets in the Gram Panchayat: 2
i. Names of Habitations / Hamlets:
1- Kera
2 - Kundanpar.

Demographic Information

Number of Households 1863 Total Population 8063 Male 3998 Female 4065

SC HHs 17 ST HHs 211 OBC HHs 36 Other HHs 1599

II. Access to Infrastructure/Amenities etc.

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
a.	Nearest Primary School	Y	
b.	Nearest Middle School	Y	
c.	Nearest Secondary School	Y	
d.	Kisan Seva Kendra	N	Bhuj 20KM
e.	Milk Cooperative /Collection Centre	N	Bhuj 20KM
g.	Health Sub Centre	N	Bhuj 20KM
h.	Bank	Y	
i.	ATM	Y	
j.	Bus Stop	Y	-
k.	Railway Station	N	Bhuj 27KM

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

1

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
l	Library	Y	
m	Common Service Centre	N	Bhuj 20KM
n	Veterinary Care Centre	N	Bhuj 20KM

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: 1 *(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: 7

v. Coverage of Habitations under Electrification

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

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

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

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

vi. Sports Facilities in the Village

a.Number of Play Grounds in the Village (minimum size 200 square meters): 2

b.Mini Stadium : Yin1 Yes(Y) /No (N)

vii. Education, ICDS

a. Number of Anganwadi Centres: 5

c. Schools (Number)

Primary Private: 1 Primary Govt.: 4

Middle Private: 1 Middle Govt.: _____

Secondary Private: 1 Secondary Govt.: _____

Higher Secondary Private: 1 Higher Secondary Govt: _____

2

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

viii. Land Category		Area in Acres		Land Category	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	231773	d.	Pasture / Grazing Land	–	g.	Check Dam	1
b.	Irrigated Land	231773	e.	Forests/ Plnatations	–	h.	Wells/Bore Wells	43
c.	Un-irrigated Land	0	f.	Other Common Land	1266.093	I	Tanks /Ponds	4

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	123
5	Number of landless households	–
6	Number of IAY beneficiaries	–
7	Number of FRA beneficiaries	–
8	Number of common sanitation complexes	1
9	Number of SHGs	–
10	Number of active SHGs	–
11	Existence of SHG Federation in the Village (Yes / No)	NO
12	Number of Youth Clubs	–
13	Number of Bharat Nirman Volunteers	–

Name and Signature of Surveyor and Respondent'

N.L Dharani Dharani Nilesh Surveyor	PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	Official Respondent (Preferably the most senior Government official in the Gram Panchayat)	12/4/21 Date of Survey

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

21. COMPREHENSIVE REPORT FOR THE ENTIRE VILLAGE

CONCEPT

Vishwakarma Yojana offers special GTU and the Gujarat Government village development schemes in which students collaborate with the help of panchayat and stakeholders to gather the data and knowledge about village development. We would also make a recommendation on renewable sources of energy and on solutions to infrastructure issues.
In this project efforts were put into identifying and preparing some of the below facilities for village sustainable growth and meeting potential population requirements. Vishwakarma Yojana is one of the projects for residential growth of the Gujarat Government, which GTU has been allocated as a real-time project.
One of the strategies for reducing urban stresses and reducing migration rates by creating a rural-soul village, but all the urban comforts that can be offered by the region. In this project, the students will meet with the local village residents and evaluate existing facilities. The village then designs the sustainable infrastructure to be updated. This involves the execution of technical skills for the preparation of village comprehensive project reports as part of the final project year. This project recreates a certain number of interactions and requires individual technological skills to be used to solve any current problems. We tried to build simple infrastructures to meet their needs based on the survey. By supplying these basic infrastructures to the village, which is Vishwakarma Yojana's ultimate objective to minimize urban pressure and reduce migration.

LIST OF DESIGNED PREPARED IN PART 1 AND PART 2

NO	VILLGAE NAME	BRANCH	PART 1 DESIGN	PART 2 DESIGN
1	Kundanpar	Civil	Rainwater harvesting	Entrance gate
2			Aaganwadi	Movable stadium
3			Public toilet	Govt. scheme office
4		Civil	Multifunctional hall	Vegetable market
5			Control room	Street light layout
6			Public garden	Computer couching classes
7		Electric	Automatic solar panel cleaning robot	Automatic water supply system
8			IoT Based Irrigation	Smart agriculture system
9			Automatic and smart solar light for garden, and agriculture	Face mask detection & Automatic sanitizer sprayer

NODAL OFFICER STATEMENT

The development and growth of the village can be accomplished by providing this requisite facility for the village. This effectively decreases the rate of migration and urban pressure and increases the living standards of villagers.
The above-mentioned design helps greatly to boost and encourage the future growth of the village and village residents. I respect these students doing civil engineering work and hope that this work is helpful in enhancing and recognizing their qualifications and even battering them. I am sure they have a good understanding of village growth and village design infrastructure. Finally, the knowledge and practical tour of civil engineering practices was enjoyed by all of us.

Nodal officer
Prof. Dinesh Bhuva
Assistant professor Civil department
HJD Institute of Technical Education and Research, Kutch