DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII

AN APPROACH TOWARDS RURBANISATION

Village:- Ralol

District:- Surendranagar

PREPARED BY

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COLLEGE NAME

Silver oak college of Engineering & Technology

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COLLEGE LOGO

SILVER OAK UNIVERSITY
EDUCATION TO INNOVATION

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:- Ralol
DISTRICT:- Surendranagar
Under

Vishwakarma Yojana: Phase-VIII

In partial fulfillment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

During the academic year 2020-21.

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

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College Stamp:	

ABSTRACT

Gujarat Technological University is allocated one project on village development. The name of project is VishawakarmaYojna. In this project there are 2 phase. The first phase of project is aimed to study the present status and techno-economic survey of villages in District of the state in terms of basic and public amenities, essential commodities, and other infrastructural facilities for the need of people and to prepare report on adequacy of the available resource with reference to population of the village and growth of the area.

Our selected village is Ralol. It is a village in Limdi Taluka in Surendranagar District of Gujarat State, India. It is located 21 KM from Limdi Taluka. The Occupation of villagers according to sarpanch:-10% of population – Driver, genral work like:-small business etc.

40% of population – migrate worker

50% of population – Agriculture

In this village water supplied for drinking is comes from Valbhipur Pata canal (Narmada Canal).The ground water is available to very close but it's a salty water that's why people don't use it. Inner Road network is very bad all roads need to be renovate & the underground drainage is available but according to our survey it is not successful. The facility available include street light, education (3 schools in good condition), 3 mobile tower, drinkingwater .

For development of the village infrastructure facilities like Panchayat building (must because it's in very bad condition) & the area is little bit big where panchayat is located so we trying to give multiple building design at one place like panchayat house + awareness centre & all.Based on our survey we are trying to give first of all basic facilities to the villagers because it's the aim of our VishwakarmaYojna.& then after we are also gives the various desing of smart village facilities.

- Basic Facility
- Smart village Facility
- Connectivity With world
- Rethink Redevlop

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 are also thankful to our **Principal Dr.Saurin Shah**, faculties of our colleges for their encouragement and support to complete this project work.

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We are also thankful to all the experts who provided us their valuable guidance during the work. We express our sincere thanks to, **Dr. Jayesh Deshkar, Hon'ble Director of Vishwakarma Yojana project and Principal, V.V.P Engineering College and Core Committee member of Vishwakarma Yojana project Prof(Dr.)Jigar Sevalia**, Professor, SCET, Surat, **Prof.K.L.Timani,** Associate Professor,VGEC, **Prof.Rena Shukla**, Associate Professor, LD Engineering College, **Prof.Y.B.Bhavsar,** Associate Professor,VGEC, **Prof.Jagruti Shah**, Assistant Professor, BVM Engineering College for providing us technical knowledge of this project work.

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
PHC	Public health center
TDO	Taluka Developer Officer
DDO	District Developer Officer
NGO	Non-Government Organization
PMGSY	Pradhan Mantri Gram Sadak Yojana
PPP	Public Private Partnership
DRDA	District Rural Development Agency
GP	Gram Panchayat

Chapter 1: Ideal village visit from District of Gujarat State

1.1 Background

- Gujarat Technological University is allotted important and prestigious project of Vishwakarma Yojana by the Government of Gujarat.
- It‘s proposed to frame Vishwakarma Yojna to provide the benefit of real world experience to engineering students and simultaneously apply their technical knowledge in the development of infrastructure in villages.

  Aim of the project:-“Developing village with a „rural soul‟ but with all urban amenities that a city may have”

1.1 Study Area Location

Figure: 1.1 Map of Punsri

Figure: 1.2 Satellite View of Punsri

- Punsari village is located in Sabarkantha district in the Gujarat state, India. The village is located at about 80 km from the gujrat capital Gandhinagar. There was also a statue of sardar patel infront of the gate.Panchayati raj system followed by village. Name of this village comes from the name of one Lady PURIBEN RABARI.
- There has been use of advanced technology in various sector like education. Efforts have been made by panchyat for empowerment of women and increasing the security in the village. Some of the facilities provided by the panchayat include local mineral water supply, gutter project, health care center, banking facility etc.
- **Name:** Punsari
- **District:** Sabarkantha

- **Taluka**: Talod
- **Distance from Capital:** 80km
- **Pin code:** 383307
- **Language:** Gujrati
- **Std code:** 0277686

1.2 Concept: Ideal Village

- Village it‘s have this type facilities is known as ideal village.
- Electrification, Drinking water, Proper drainage, Good road network, Transportation facility, E-governance, Schools, Primary health Centre, Bank, Socio-culture facilities, Skill development Centre, General market, Library etc.

1.2.1 Objective

- Prevent migration from rural to urban.
- Make the model village a ―hub‖ that could attract resources for the development of other villages.
- To provide global means to local needs
- To improve social empowerment
- Analysis of the villages on various socio-economic parameters at a micro as well as macro level.
- Provide easier, faster and cheaper access to urban markets for agricultural produce .
- Improving the literacy rate of the villages by reducing the dropout rate.
- Improving the economic conditions of the Semi-skilled and Un-skilled labor by publishing their availability status on the Internet;
- Providing updated information and databanks to the Government for better analysis and individual profiling.
- Providing databases on demand to the manufacturing organizations dealing in Agro based products and implements like Tractors, Manures, and Fertilizers etc.
- To set up a Global Rural Development Grid (GRDG) by sharing information, ideas and solutions.

1.2.2 Example/Live case studies of ideal village in India/Gujrat

1) Punsari (Gujarat):

 Punsari village is a located in Sabarkantha district in the state of Gujarat, India. The village is located at about 80 km from the capital, Gandhinagar. There has

been use of new & advanced technology in education. WIFI connection for all villagers.

2) Pothnikkad (Kerala):

- Pothnikkad village, situated in Kerala is the first in the Indian village to achieve 100% literacy rate. The oldest high school in the village is St. Mary's High School, from where many prominent people in the society have been educated. There were 17,563 residents in the village in 2011 & all are educated.

3) Kolavada(Gujrat):

- Kolavada village is located in capital of gujrat (Gandhinagar).Kolavada is first smart village of Gandhinagar district. Kolavada village the facility of road and water supply & physical infrastructure are very well. This village is clean and literacy rate of village up to 85%. Kolavada village is located 3.7km from gandhinagar.

❑ **Punsri Village:**

- Punsari is a village located in Sabarkantha district in the state of Gujarat, India.
- Advance technology used in various things like education.
- In this village, first concept of improvement of village was drainage system.
- In this village 100% toilet & bathroom facility is available.
- Wi-Fi connectivity system is also available in this village.
- 25 CCTV's are installed at prime junctions of the village for the security purpose.
- 120 water-proof speakers are installed for communication purpose, which are used by the Sarpanch to inform the people of new schemes and to make important announcements.
- The speakers are connected with Sunandaben Patel‘s mobile phone when she goes out of village than she sends the important message and the people of the village listen this message carefully.
- Prayers are held every morning between 7:00 to 8:00AM and in the evening between 6:00 to 7:00 PM.
- There are four towers are provided in the village each towers range is 300meter.
- Each school has CCTV camera system in coloration with Navneet Prakashan.
- Each school has audio/video program facilities.
- Village has a Personal mineral water plant.

- Sisters who don‘t have brothers are enrolled in BHAI VANDANA Program.
- Banking facilities are provided by Sabarkantha bank and Dena bank in the village.
- The Village has its own website WWW.PUNSARIGRAMPANCHAYAT.IN

1.2.3 The Idea of a model/ Smart village

- The idea of an “Adarsh Gram” or model village has been explored earlier as well, mostly through the Pradhanmantri Adarsh Gram Yojana, launched by the Central Government in 2009.The scheme was implemented in pilot mode in 1000 villages of Assam, Bihar, Himachal Pradesh,Rajasthan and Tamil Nadu, with an allocation of Rs 10 lakh per village. This limit was later raised to Rs 20 lakh per village. The target villages under the scheme were those with more than 50% of the population belonging to Scheduled Castes (SCs). Additionally, State governments have also taken steps in this direction. Himachal Pradesh launched a Mukhya Mantri Adarsh Gram Yojana along similar lines in 2011, with the allocation of Rs 10 lakh per village.
- In Smart village‘s access to sustainable energy services acts as a catalyst for development – enabling the provision of good education and healthcare, access to clean water, sanitation and nutrition, the growth of productive enterprises to boost incomes, and enhanced security, gender equality and democratic engagement.

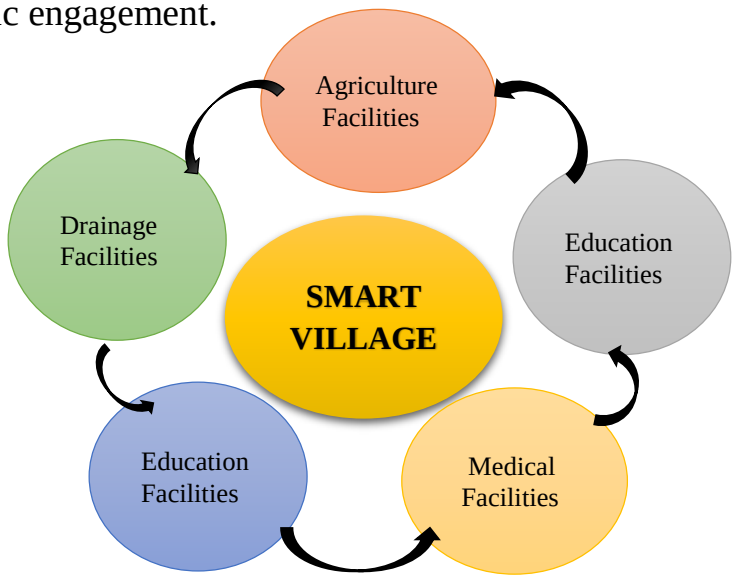

Figure: 1.3 Smart Village

1.2.4 Ancient History Civil / Electrical concept about Indian Village/Foreign Countries Perspective and its Development

Chhotkei village in Angul district of Odisha has emerged as the first smart micro grid implementing village in India. The village gets a supply of 30 kWp (kilo watt, peak) Solarpower. The village has installed a Smart Nanogrid to meet the energy demands of 140 households, 20 streetlights, a temple, and three community centres. After usage the village saves around 10 kWp which they set aside for day-time use in irrigation pumps and microenterprises to improve agricultural output, to enable value-addition to agriculture, and generate employment.

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

Resources available in village:-

- Punsri is one of the villages of state government scheme of 24 hours undisturbed supply of electricity, so 24 hours electricity is available to the whole Punsri village.
- All the houses of Punsri village are connected with RCC roads. 100% of RCC roads connectivity is available to the all the houses.
- **Funds under existing schemes** across different sectors such as health, education, skill development, livelihood etc could be utilized, and based on the specific demands of the village, resources could be channelized into the development of the village. Some important Centrally Sponsored Schemes (CSS) which could be utilized are ICDS, PMRY, PM. JAN-DHAN YOJANA, Nirmal-Gujarat, E-gram Yojana, Tirth-Gram Yojana and Mid-day Meal Scheme.
- **Sardar Patel Awas Yojana** For land less agricultural laborers and village artisan living Below Poverty line in rural areas of the State. Sardar Awas Vasahat, Rampun, dist. Vadodara Govt. has made strategic planning for solution of houses in the village. The poor has right to live new life and to turn to new culture as colony of poor population.
- **Nirmal-Gujarat** Gujarat State has undertaken to maintain villages clean under _Nirmal Gujarat Scheme work of classing village and office has been undertaken as integral part. Classification of record and classing is undertaken in the office, which stiffing of dunghills, construction of toilets are undertaken in the village
- **E-Gram Yojana** The present Gujarat government has resolved to make the rural citizens ―World Citizens‖. That is the reason for the modernization of the villages and help the rural folk enter the digital age by implementing the E-Gram plan. Gram have now entered

the ranks of cities where use of computers is part of everyday life. The state government provides the necessary hardware and software to link the Gram Panchayats, Taluka Panchayats and District Panchayats to the Secretariat, Gandhinagar.

- The Government has resolved to provide E-services at the Gram Panchayat which are at par with those provided in urban areas. Hence the E-Gram service is supposed to be the key part of the village Panchayat office. Moreover, the rural people will be able to avail accurate information quickly through the computer placed at the Gram Panchayat office. The State Government has established ―E-GramVishv Gram‖ society, to provide Eservices to the rural people at their doorstep.
- **TIRTH GRAM YOJANA** the Tirth Gram Yojana has been formulated to strengthen the goodwill amongst the people living in the rural areas of the state, to promote unity -and help the overall development of the village. The following are the areas which would be encouraged by this plan. Brotherhood, Social goodwill, Peace, Overall development of village.

Socio economic:-

Economic profile

In this village there are three major occupational are available.

1. Agriculture
2. Animal bleeding
3. Small buisness

- Most of people income source is farming. More than 85% people are involved in agriculture and dairy farming & 10% people are going to Himatnagar for work.

Social scenario /profile

- In village there is all caste people are available.
- One community hall is also available in the village.
- Panchayat meeting is occurs every 1 to 2 months.
- All people are living like as a family.
- Availability of Public Library with Daily newspaper supply.

Figure: 1.4 Mobile Library

Physical & Demographical Growth

- In the village 24 hrs. Electricity supplied for the domestic use.
- The entire road network in the village is made up of Reinforced Cement Concrete.
- Private vehicle, Auto rickshaw and bus are used for transportation.
- There is 8 Aanganwadi, 2 Primary School, 2 Secondary School, 1 Higher Secondary School and 1 Mini ITI Collage.
- All street lights are LED.

Demographical detail:-

Table 1.1 Demographical Growth

Sr. no.	Census	Population	Male	Female	Total house holds
1	2001	4,375	2,456	2,279	-
2	2011	5,100	2,653	2,447	1,109

Physical detail:-

Table 1.2 Geographical Growth

Sr no.	Description	Information/Detail
1	Area of village (approx.)	1395.65 hector
2	Agriculture land (approx.)	1015.63 hector
3	Residential area (approx.)	18.51 hector
4	Waste land (approx.)	142.06 hector
5	Other (approx.)	219.45 hector
6	Coordinates for location	23.3926° N, 73.1128° E

Infrastructures facilities (All Types)

- There are 1109 houses in village. All of houses are pucca.
- There is one post office available.
- Other facilities like Bank, ATM, Public Toilet, School, Community hall, PHC, Bus Stand, and General Market etc.
- 1 milk industry available and also some small scale industries are available.
- Village follow panchayati raj system so one Panchyat house is available in the village

Figure 1.5 Infrastructures facilities

Photographs of village:

Fig 1.6 PHC

Fig 1.7 SCHOOL

FIG 1.8 ELECTRICITY

FIG 1.9 SOLAR STREET LIGHT

FIG 1.10 SPEAKER

FIG 1.11 WASTE COLLECTION

Fig 1.12 RO PLANT

FIG 1.13 SOLAR PANEL

1.4 SWOT analysis of ideal village

Strengths:-

- Good infrastructure
- Better education
- Availability of enough agricultural land
- Availability of prolific land
- Banking facilities
- Post office
- PHC

Weakness:-

- Himanshu patel who developed this whole village but now sarpanch is another person So by our side it's big disadvantage of whole village. Rain water harvesting.

Opportunity:-

- As village has sufficient funds, more development works can be carried out.
- As there is availability of higher education facilities in village high literacy rate can be achieved
- By use of renewable energy sources like Biogas Plant, Solar Street Lights, Roof Solar Panels etc. electricity can be produced locally

1.5 Future prospects

- In Punsri village, they are going to maintenance for bio gas plant and Solar Street Light
- They are going to developed village with more technologies like rain water harvesting system.

1.6 Benefits of the visit.

- We got the opportunities to see the community closely and thus gets an experience of human nature in relation to his / her environment. Volunteered integration with the slum dwellers and villagers expose them to the realities of life and bring about a change in their social perception. Get an opportunity to meet the people from different walks of life
- It provides diversified opportunities to students in colleges and universities to develop their Personality through community service. Can bring about social change. The integration of experiential education/practical/applied dimension

to theoretical issues Increase interest and understanding as students become independent learners helping students to sensitize.

- From this village we get the actual definition idea of developed village.
- We get idea about how to develop our village.
- We know about which basic amenities should provide in village.

Chapter 2:Ralol Village Literature Review

2.1 Introduction: Urban & Rural

- **Urban:** The term "urban" includes land areas, populations and housing developments located in urbanized areas, such as cities and towns or urban clusters. Census of India 2011, defines ‗urban' as follows:
- All places with a municipality, corporation, cantonment board or notified town are committee, which satisfied the following criteria:

  - ✓ Minimum population of an Urban area is 5,000
  - ✓ At least 75 % of the male main workers engaged in non-agricultural pursuits.
  - ✓ A density of population of urban is at least 400 per sq. km.

- **Rural:** The term ―Rural‖ refers to territory, population and housing units located outside the urban area. As per Census of India 2011, defines ‗rural as follow:
  - ✓ An area with a population density of up to 400 per sq. km.
  - ✓ Villages with clear surveyed boundaries but no municipal board.
  - ✓ A minimum of 75% of the male workers engaged with agriculture activities.
  - ✓ In general, a rural area is geographic area that is located outside the cities, and all area
  - ✓ Which are not categorized as urban are consider as countryside.

Fig. 21 Rural Area

Fig. 2.2 Urban Area

2.2 Importance of the rural development

- Rural development is the process of improving the quality of life and economic wellbeing of people living in rural areas, often relatively isolated and sparsely populated areas.
- Rural development actions are intended to further the social and economic development of rural communities.
- Rural development programs have historically been top-down from local or regional authorities, regional development agencies, NGOs, national governments or international development organizations.
- Rural development aims at finding ways to improve rural lives with participation of rural people themselves, so as to meet the required needs of rural communities.
- The outsider may not understand the setting, culture, language and other things prevalent in the local area. As such, rural people themselves have to participate in their sustainable rural development.

2.3 Ancient Villages / Different Definition of: Rural area / Villages

- Rural area is also known as ―country side‖ or ―village‖ in India
- A Village can be define as a small community or group of houses in countryside area, larger than a hamlet area and smaller than the city area with a population range in between few hundred too few thousand.
- In rural area, 75% male workers are engaged with agriculture activities.
- In rural area, Facilities are less used as compared to urban area.
- A smart Village knows all information about its citizens, available resources, applicable services and schemes.

2.4 Scenario: Rural / Urban village of India Population Growth

POPULATION GROWTH OF INDIA as per Census 2011:

- For the first time since Independence, the absolute increase in population is more in urban area that in rural area.
- Rural – Urban distribution: 68.84% & 31.16%
- Level of urbanization increased from 27.81% in 2001 Census to 31.16% in 2011 Census.
- The proportion of rural population declined from 72.19% to 68.84%

Table 2.1 Population of India

Population (in Crore)

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

2.5 Scenario: Rural / Urban village of Gujrat as per Census 2011

- As per details from Census 2011, Gujarat has population of 6.04 Crores, An increase from figure of 5.07 Crore in 2001 census. Total population of Gujarat as per 2011 census is 60,439,692 of which male and female are 31,491,260 and 28,948,432 respectively. In 2001, total population was 50,671,017 in which males were 26,385,577 while females were 24,285,440.
- The total population growth in this decade was 19.28 percent while in previous decade it was 22.48 percent. The population of Gujarat forms 4.99 percent of India in 2011. In 2001, the figure was 4.93 percent.

Table 2.2 Rural urban ratio

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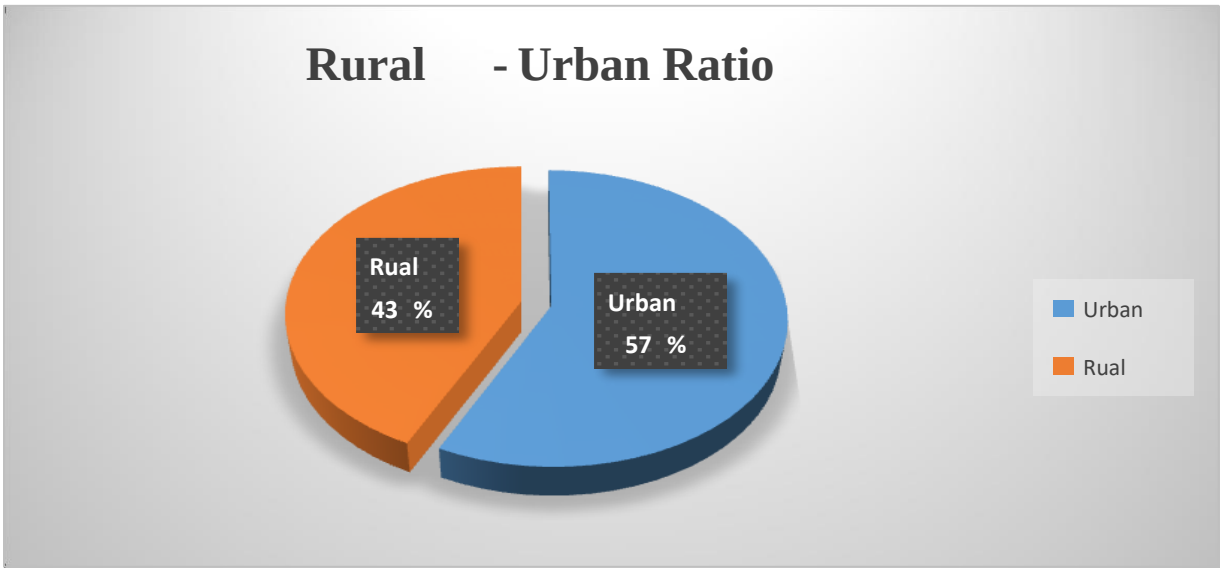


Table 2.3 Population of Gujarat

Description	2011	2001
Approximate Population	6.04 crores	5.07 crores
Actual Population	60,439,692	50,671,017
Male	31,491,260	26,385,577

Female	28,948,432	24,285,440
Population Growth	19.28%	22.48%
Percentage of Total Population	4.99%	4.93%

2.6 Rural Issues, Concerns & Measures

- As we know the 60 to 70 percent of rural population in India lives in primitive conditions. This statement exists even after 70 years of independence of India. So that Rural Development programs have urgency in the present condition also. There are many obstacles in the development programs of rural which are given below:
- Now also many rural peoples using primitive methods of cooking, living and farming and they have trust on these methods
- People have to migrate to the urban areas due to unavailability of education
- They have not any kind of new technology for the cooking and living etc.
- Economy of the people living in rural areas is low
- Very less people are employed in the rural areas
- There is no electricity supply in many villages
- Lack of physical facilities in rural areas
- No transportation facility
- Less income opportunity
- Lack of sanitation

Various Measures for Rural Development

- The main objective of rural development has been to remove poverty of the people living in the rural area and villages and fill to the wide gap between the rich and the poor
- This has been also vocalized in the policy of the government which said: Rural poverty alleviation has been the primary concern in the economic planning and development process of the country rural development which encompasses the entire gamut of improvement in the overall quality of life in the rural areas can be achieve through eradication of poverty in rural areas
- To develop rural area as whole in terms of culture, society, economy, technology and health
- The basic facilities supply to people in rural area for improve the life style
- To provide minimum facility to rural mass in terms of drinking water, education, transport, electricity and communication.

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

2.7 Various Infrastructure and Guidelines /Norms for Villages for the Provisions of Different Infrastructure Facilities.

- DRDAs must themselves be more professional and should be able to interact effectively with various other agencies. They are expected to coordinate with the line departments, the Panchayati Raj Institutions, the banks and other financial institutions, the NGOs as well as the technical institutions, with a view to gathering the support and resources required for poverty reduction effort in the district. It shall be their endeavour and objective to secure inter-sectoral and inter-departmental coordination and cooperation for reducing poverty in the district. It is their ability to coordinate and bring about a convergence of approach among different agencies for poverty alleviation that would set them apart.
- The DRDAs are expected to oversee the implementation of different anti-poverty programs of the Ministry of Rural Development in the district. This is not to be confused with actual implementation, which will be by the Panchayati Raj and other Institutions. The DRDAs will monitor closely the implementation through obtaining of periodic reports as well as frequent field visits. The purpose of the visit should be to facilitate the implementing agencies in improving implementation process, besides ensuring that the quality of Implementation of programs is high. This would include over-seeing whether the intended beneficiaries are receiving the benefits under the different programs.
- The DRDAs shall keep the Zilla Parishad, the State and the Central Government duly informed of the progress of the implementation of the programs through periodic reports in the prescribed formats. Special report, as and when called for, shall be provided.
- The DRDAs shall take necessary step to improve the awareness regarding rural development and poverty alleviation particularly among the rural poor. This would involve issues of poverty, the opportunities available to the rural

poor and generally infusing a sense of confidence in their ability to overcome poverty.

2.8 Other Schemes/Projects

1. Pradhan Mantri Adarsh Gram Sadak Yojana (PMAGSY):
   - Rural connectivity is one of major goals of Bharat Nirman.
   - About 6 lakh village located in plain, hilly, desert, tribal pocket etc.
   - Due to the improper planning some village having four road for connectivity and some village not having any single road.

2. Bharat Nirman Yojana:
   - It was launched in 2005 for building infrastructure and basic amenities in rural areas.
   - It comprises of six components—
   - rural housing,
   - irrigation,
   - drinking water,
   - rural roads,
   - electricity
   - rural telephone.

3. Indira Aawas Yojna:
   - The Indira Awaas Yojana is a public housing scheme that was introduced by the government in 1985, as a sub-scheme of the Rural Landless Employment Guarantee Program (RLEGP).
   - This program aimed to construct houses for free bonded laborers and individuals falling under the SC/ ST category. By 1994, the scheme also included non- SC/ST individuals to benefit from this scheme.
   - In 1996, the Indira Awaas Yojana became an independent scheme undertaken by the Ministry of Rural Development. The focus of this scheme has broadened to include eradication of rural poverty and providing rural people with various development program.

Chapter 3:- Smart (Cities/villages) Concepts, idea and visits

3.1 introduction: concept, definition & practice

❑ **Concept:**

 In Smart villages' access to sustainable energy services acts as a catalyst for development – enabling the provision of good education and healthcare, access to clean water, sanitation and nutrition, the growth of productive enterprises to boost incomes, and enhanced security, gender equality and democratic engagement.

❑ **Definition:**

- A city well performing in a forward-looking way in economy, people, governance, mobility, environment, and living, built on the smart combination of endowments and activities of self-decisive, independent and aware citizens.
- A city ―connecting the physical infrastructure, the IT infrastructure, the social infrastructure, and the business infrastructure to leverage the collective intelligence of the city.

❑ **Practices:**

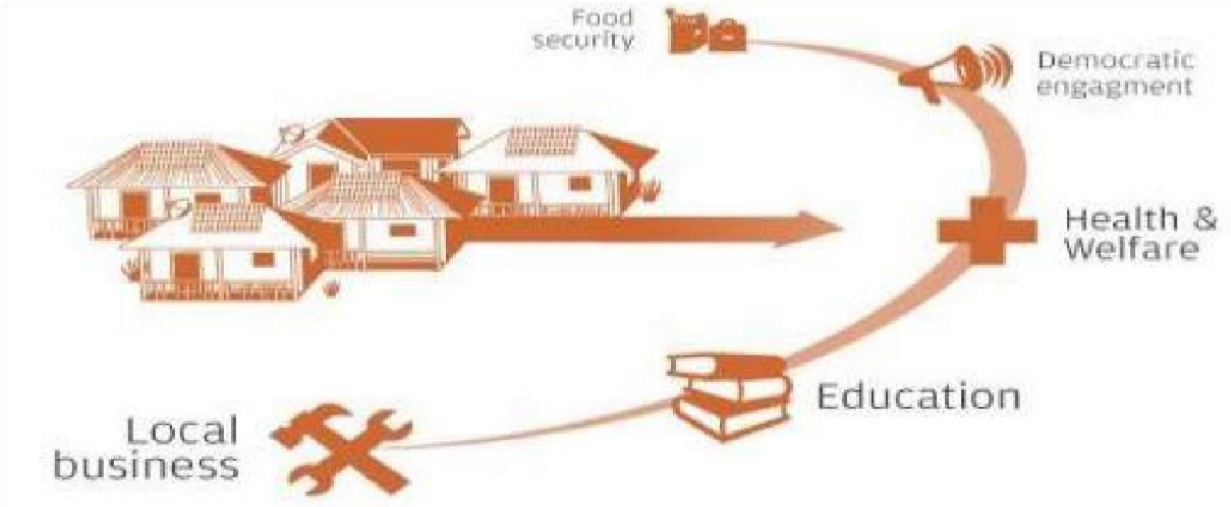


Figure: 3.1 Smart City Concept

- Strategic sustainable city planning
- Demonstration of very low-energy buildings
- Demonstration of optimized energy systems for high performance energy districts
- Demonstration of nearly zero-energy building renovation for cities and districts

- Large-scale energy systems for urban heating and cooling Sustainable energy solutions.

3.2 Vision-Goals, Standards and Performance Measurement Indicators

❑ **Vision- Goals:**

- **Transport**: Maximum travel time for village 30 minutes & 45 minutes for cities
- **Water Supply**: 24*7 water supply with 135 litre per capita supply with metering policy
- **Sewerage & Sanitation**: 100% households should have access to toilets which are directly connected to waste water network with sufficient efficiency
  Solid management: 100 % door to door daily collection of solid waste which is directly recycled in solid waste management plant
- **Electricity**: 100 % household should have 24*7 electricity supply with metering policy & if possible solar panels should be provided on the roof of each houses
- **Health care facilities**: center - 25 to 30 beds per lakh population

❑ **Standards:**

 Levels of Smart City standards

Level 1 Strategic

- These are smart city standards that aim to provide guidance to city leadership and other bodies on the ―process of developing a clear and effective overall smart city strategy‖. They include guidance in identifying priorities, how to develop a roadmap for implementation and how to effectively monitor and evaluate progress along the roadmap.

Level 2 Process

- Standards in this category are focused on procuring and managing smart city projects – in particular those that cross both organizations and sectors. These essentially offer best practices and associated guidelines.

Level 3 Technical

- This level covers the myriad technical specifications that are needed to actually implement Smart City products and services so that they meet the overall objectives.

❑ **Performance Measurement Indicators:**

 The Bureau of Indian Standards (BIS) recently developed a draft set of smart city indicators which was made available to the public for their opinion. According to BIS, the indicator set considers sustainability as its core principle and will be used to assess the performance of service provisions and the quality of life in any city, municipality or local body irrespective of size or location. Two types of indicator sets have been developed under these standards, namely the city indicators and the profile indicators. The draft provides details of indicator requirements and the source from where data can be retrieved.

3.3 Technological Options for Smart Cities

❑ **Five keys technologies of a smart city:**

1) Smart energy
2) Smart mobility
3) Smart Infrastructure
4) Smart Transportation
5) Smart Data

❑ **Civil Related Technology**

- **Modular Technology:** Modular buildings, sometimes known as _prefabricated buildings‘ are buildings which are constructed from different components, each of which is produced on an assembly line to ensure that they are all produced exactly the same. This makes this type of building much easier and cheaper to construct.
- **Green building -or sustainable building**- is the practice of increasing the efficiency with which buildings and their sites use energy, water, and materials, and of reducing impacts on human health and the environment for the entire life-cycle of a building. Green-building concepts extend beyond the walls of buildings and include site planning, community and land-use planning issues as well. Green buildings are designed to meet certain objectives such as protecting occupant health; improving employee

productivity; using energy, water, and other resources more efficiently; and reducing the overall impact to the environment.

3.4 Road Map and Safe Guards for Smart Cities

- A smart city is defined as a city that engages its citizens and connects its infrastructure electronically. A smart city has the ability to integrate multiple technological solutions, in a secure fashion, to manage the city‘s assets-the city‘s assets include, but not limited to, local departments‘ information systems, schools, libraries, transportation systems, hospitals, power plants, law enforcement, and other community services.
- The goal of building a smart city is to improve the quality of life by using technology to improve the efficiency of services and meet residents‘ needs.Business drives technology and large-scale urbanization drives innovation and new technologies. Technology is driving the way city officials interact with the community and the city‘s infrastructure.
- Through the use of real-time control systems and sensors, data are collected from citizens and sensors and then processed in real-time.
- The information and knowledge gathered are keys to tackling inefficiency, which leads to optimizing systems. A smart city offers technological solutions to tell what is happening in the city, how the city is evolving, and how to enable a better quality of life.
- The Smart City mission has two components: area-based development for smaller areas within the city and pan-city development where one idea is implemented all throughout.
- According to officials from the Ministry of Urban Development (MoUD), among other things, area-based plans allow for the purchase of buses and other means to augment public transportation.

3.5 Issues & Challenges

❑ **Key Issues in development of Human Being:**

- Human development is defined as the process of enlarging people‘s freedoms and opportunities and improving their well-being. Human development is about the real freedom ordinary people have to decide who to be, what to do, and how to live.

Figure: 3.2 Key Issues

➢ **Education/Job Opportunity:**

- Smart learning is an important support to bridge educational systems and citizen living experience. The building of smart learning environments for citizen will provide individuals more opportunities to learning easy, engaged and effective, and therefore provide wisdom into the creativity of the whole city.
- The future of a smart city is reliant on human talent and skills, making job creation one of the biggest benefits. These jobs will obviously be _smart' and focus on skills including data analytics, programming, high-end consulting, and system and network integration. With IT infrastructure being the backbone of any smart city, IT professionals will certainly be in greater demand.
- We are already seeing a shift towards the creation of technologically strong business sectors with more and more mid-sized technology teams (10+ people) being established. This shift creates new employment opportunities and a more competitive market for the top _tech' talent. But to play a significant role and carve a space for yourself within a smart city, you need to be willing to develop and maintain _smart' skills, engage in learning and be ready to adapt.

➢ **Governmental Issues:**

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

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

3.6 Smart Infrastructure

 Smart infrastructure provides the foundation for all the key themes related to a smart city, including smart people, smart mobility, smart economy, smart living, smart governance and smart environment. The central characteristic that underlies most of these components is that they are connected and that they generate data, which may be used intelligently to ensure the optimal use of resources and improve performance. This section introduces some key Components of smart city infrastructure and concludes by highlighting the need for a combined method in dealing with such infrastructure.

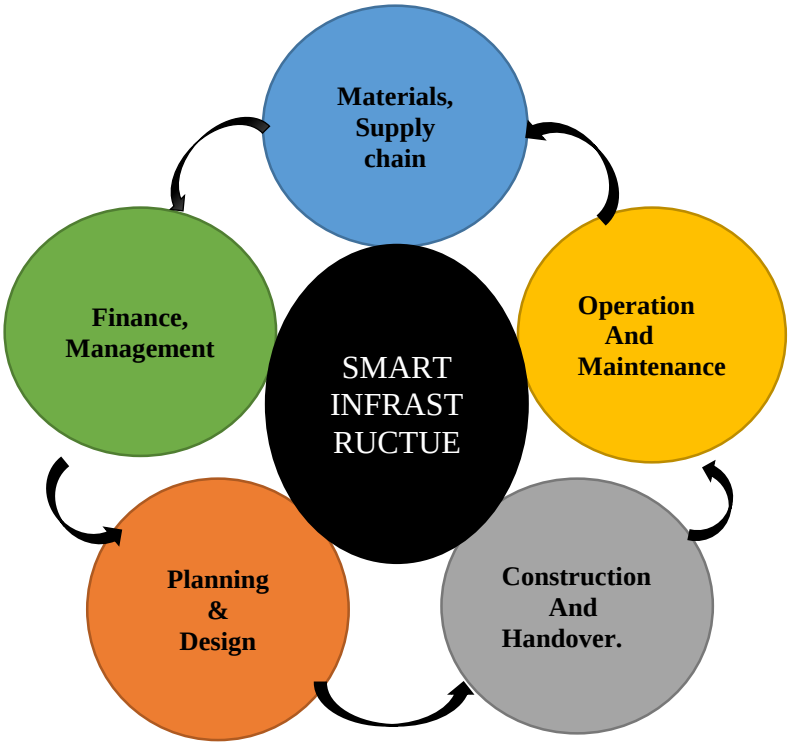


Figure: 3.3 Smart Infrastructure

❑ **Smart infrastructure includes following:**

- Smart building

- Smart mobility
- Smart energy
- Smart waste management
- Smart health

3.7 Retrofitting – redevelopment District Cooling

- A cooling network is a centralized system that provides chilled water to supply an air conditioning system. In practice, it includes chilled water production and distribution facilities to provide cooling services to all connected buildings. Operating as a closed circuit, the cooling network always includes two pipelines: one supplying chilled water to users, and the other returning the water to the production plants.

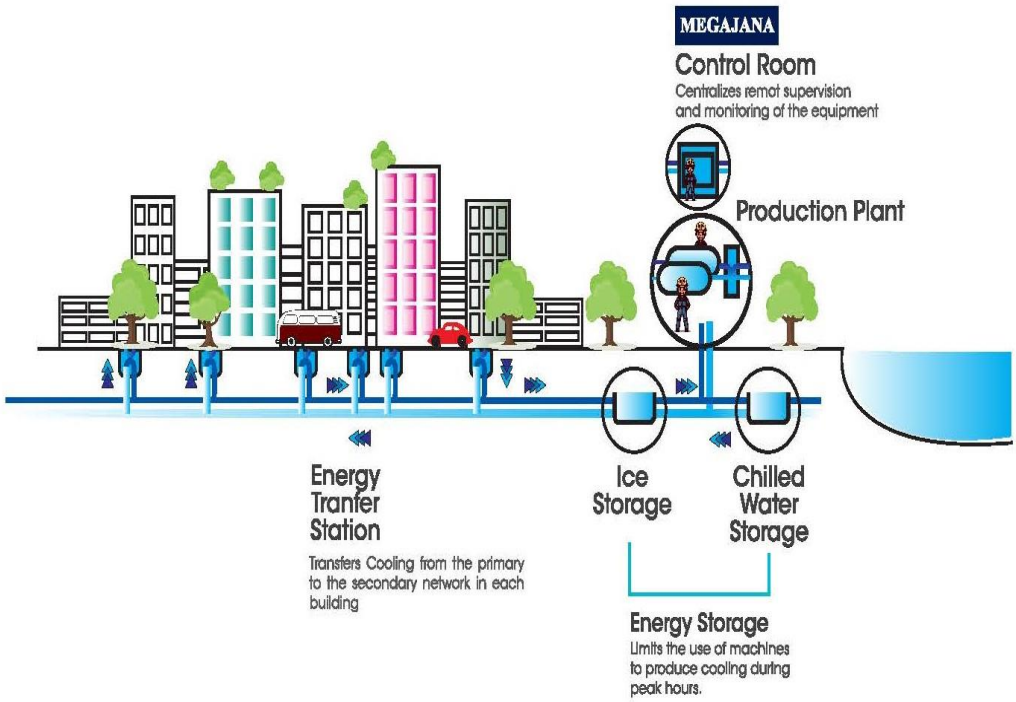


Figure: 3.4 Cooling

3.8 Strategic Options for Fast Smart Cities Development

- The strategic components of area-based development in the Smart Cities Mission are city improvement (retrofitting), city renewal (redevelopment) and city extension (Greenfield development) plus a Pan-city initiative in which Smart Solutions are applied covering larger parts of the city.
- Retrofitting will introduce planning in an existing built-up area to achieve smart city objectives, along with other objectives, to make the existing area more efficient and live able.
- Redevelopment will effect a replacement of the existing built-up environment and enable co-creation of a new layout with enhanced infrastructure using mixed land use and increased density.
- Green field development will introduce most of the smart solution in a previously vacant area using innovative planning, plan financing and plan implementation tools with provision for affordable housing, especially for the poor.
- Pan-city development envisages application of selected smart solution to the existing city- wide infrastructure. Application of smart solution will involve the use of technology, information and data to make infrastructure and service better.
- The smart city proposal of each short listed city is expected to encapsulate either a retrofitting or redevelopment or green filed development model, or a mix there of and a pan city future with smart solution.

Funding of Smart Cities Development:

Sources of Finance:-

- Property tax
- Profession tax
- Entertainment tax
- Advertisement tax
- Octroi and entry taxes

Additional Resources for Financing Smart Cities:- User Charges

- Public-Private Partnerships (PPPs)
- FFC recommendations (incl land-based instruments)
- Municipal bonds
- Borrowings from bilateral and multilaterals
- National Investment and Infrastructure Fund (NIIF) & Convergence with other Government schemes

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

- Traditionally water supply in India was limited to the major cities within the spread of the process of urbanization. Declining health standards in the rural areas urged the post-Independence government to take serious initiatives to improve the rural drinking water and sanitation. Now, one of the most important aims of the government is to ensure safe water supply to the rural areas. This initiative was first taken up by Accelerated Rural Water Supply Programme (ARWSP) in 1972-73. Between the years 1972 to 1986, the aim of ARWSP was to ensure safe water supplies to rural areas. ARWSP was renamed Rajiv Gandhi National Drinking Water Mission in 1991-92 with further stress on rural water supply coupled with community planning and management of drinking water. Five factors were kept in focus:

- Sustainability of water supply
- Portability
- Adequacy
- Convenience
- Affordability & equity

Indigenous water purification technologies:

- These technologies can improve the drinking water quality of smaller villages as well as larger cities. It uses the Pressure Driven Membrane Processes. These are suitable for all capacity units e.g. they are adaptable from household level unit or community level unit to large scale unit. Water purification technologies make use of the nuclear energy and solar energy also.

Environment friendly Plasma technologies:

- Solid waste dumping sites or landfill sites need more amount of land which is not available in urban areas. Incineration of solid waste pollutes the environment if the incinerators are not designed or operated properly. Thermal Plasma Technology is ideally suited for waste treatment. By plasma technology Hazardous & toxic compounds are broken down to elemental constituents at high temperatures; Inorganic materials are converted to

Vitrified Mass; and Organic materials are Pyrolysed or Gasified, converted to flue gases (H2 & CO) & Lower hydrocarbon gases when operated at low temperature (500 – 600OC). Disposal of carcass is also being thought of using plasma pyrolysis.

Unique Multi Stage Biological Treatment Solution:

- Multi Stage Biological Treatment Solution (MSBT) can be implemented on existing STP which is not able to process Sewage to optimum efficiency. MSBT can be implemented as a modular or container on the banks of rivers on Drains/Nalas which discharge waste water to the river. It can also be implanted in small urban societies and housing complex for better water management.
- Benefits of MSBT are: No Surplus of Organic Sludge, No Odour problem, Drastic reduction of electrical Power usage which minimizes operating costs, No need for return sludge pumping.

3.10 Initiatives in village development by local self-government

- Under the Saansad Adarsh Gram Yojana (SAGY), 478 and 218 Members of Parliament have identified Gram Panchayats, under Phase-II and Phase-III respectively as on 25 July 2018. 32 and 22 union ministers have identified Gram Panchayats, under Phase-II and Phase-III respectively under Saansad Adarsh Gram Yojana (SAGY) as on 25 July 2018.
- Developed a 35 point outcome indicator covering basic amenities, education, health, sanitation, livelihood, women empowerment, financial inclusion, food security, social security and e-governance to gauge the impact of SAGY in the Gram Panchayats.
- Coordinated with other Central Ministries/ Departments for ensuring provision of four key basic services viz. power, drinking water, roads and education in all SAGY Gram Panchayats.

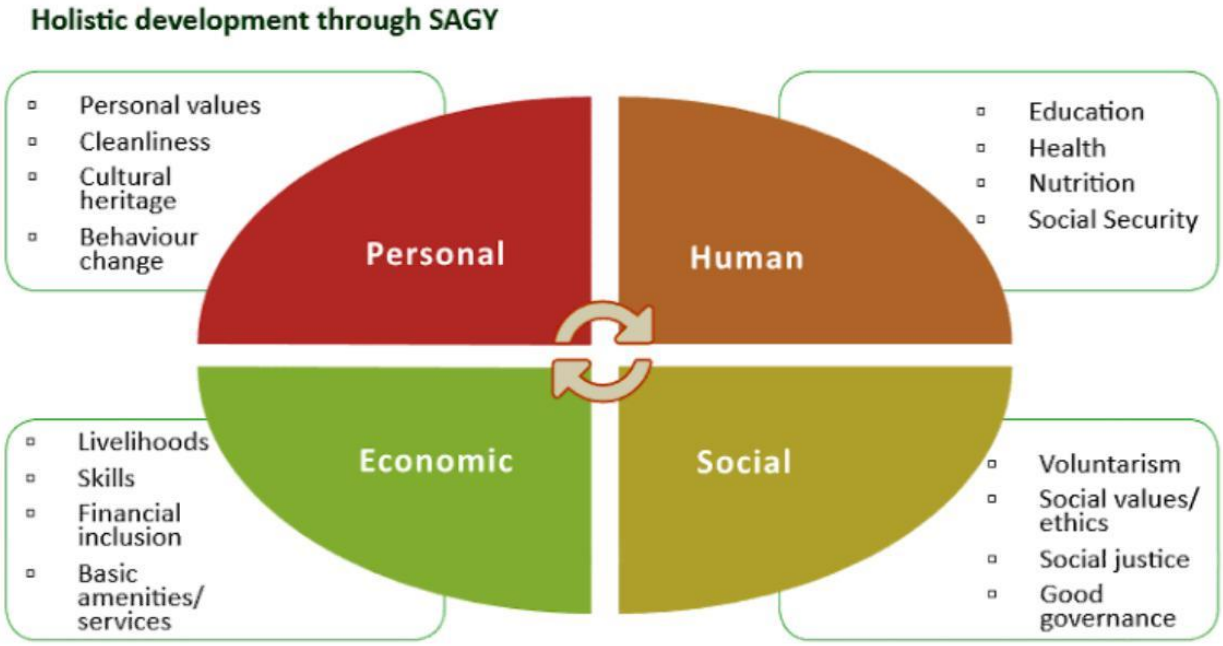


Figure: 3.5 SAGY

3.11 Smart Initiatives by District Municipal Corporation

- There is several works initiatives which are taken by municipal corporation on the basis of public requirements, various studies of plans, topography factors & other regarding aspects.
- A Chief Officer along with other officers like an Engineer, Sanitary Inspector, Health officer and education officer who come from the State Public service and are appointed by the state government to control the executive and administrative affairs of the Municipality.

❑ **Some initiatives of works listed as below:**

- Water supply
- Hospitals
- Roads
- Street lighting
- Drainage
- Fire brigade
- Market places and
- Records of births and deaths
- Solid waste management

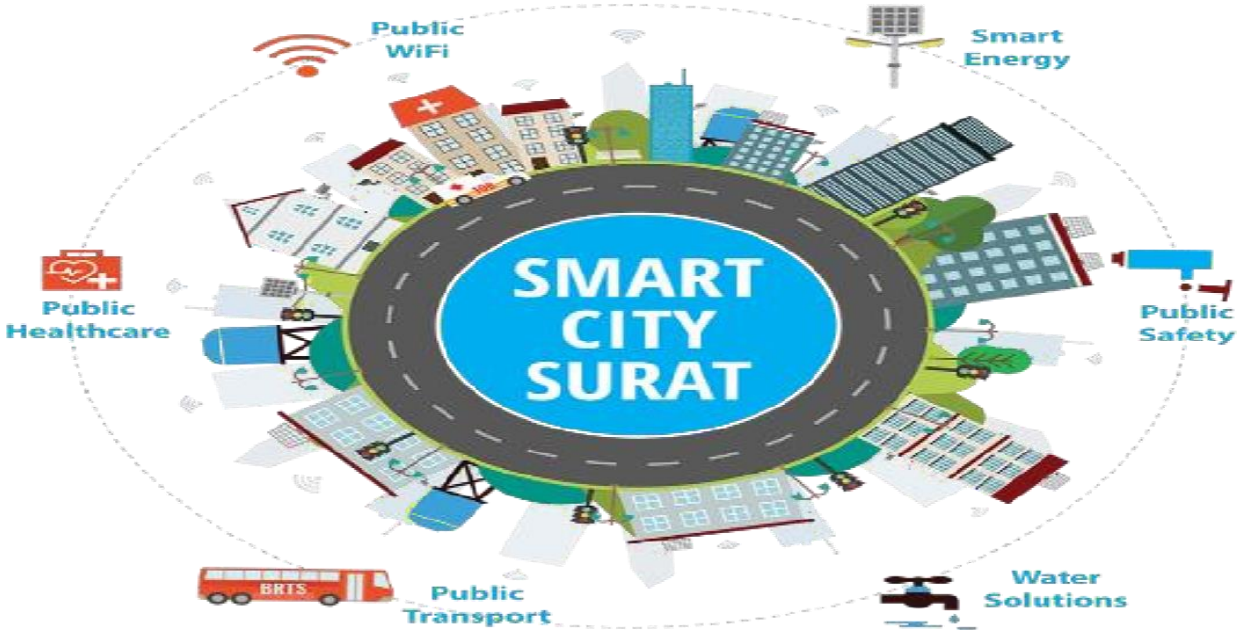


Figure: 3.6 District Initiatives

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

- Government of India has launched the scheme "Deendayal Upadhyaya Gram Jyoti Yojana" for rural electrification. The erstwhile Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) scheme for village electrification and providing electricity distribution infrastructure in the rural areas has been subsumed in the DDUGJY scheme. Rural Electrification Corporation is the Nodal Agency for implementation of DDUGJY.
- Under DDUGJY-RE, Ministry of Power has sanctioned 921 projects to electrify 1,21,225 un-electrified villages, intensive electrification of 5,92,979 partially electrified villages and provide free electricity connections to 397.45 lakh BPL rural households. As on 30th June 2015, works in 1,10,146 un-electrified villages and intensive electrification of 3,20,185 partially electrified villages have been completed and 220.63 lakh free electricity connections have been released to BPL households

Chapter 4: Introduction about Ralol

4.1.1 Introduction about Ralol Village

 We visited Ralol village which is allocated to us. Ralol is located in limdi taluka 21 km from limdi taluka in surendranagar district. In the village lack of facilities like public toilet, poor conditions of road, public garden, bus stand, waste managment etc. Redevelopment (new building) required in the village of panchayat building, bus stand, phc centre, medical shop. Maintenance required --Drains in the entire village & the waste management in entire village, Inner road of the village and many more.

Fig 4.1 Satellite view of village

4.1.2 Study justification/ need of the study

- The basic need of this study is to provide facilities in the villages for the Rurban Development. Implement the different Physical and Social infrastructural facilities in the villages and to lessen the urban migration of people of the village. So, for this purpose information of village is to be collected like Drainage Facility, Education Facilities, Health Facilities, Transportation Facilities, Banking Facilities, and Public Toilets etc. It will also provide so many job opportunities. Development of the village will

indirectly affect the GDP of India. So, it is very important to develop the villages of India.

- Sustainable Infrastructures (Rain water harvesting, Biogas plant, Eco Toilets, Solar Street lights & other)
- Socio-cultural Infrastructure (Community hall, Public library, recreation facilities)
- Physical infrastructure facilities (Water, Drainage, Road, Electricity, Solid waste Management, Storm Water Network, Telecommunication & other),
- Social infrastructure facilities (Education, Health, Sanitation) for effective development of Villages.

4.1.3 Study Area (Broadly define)

- The Vishwakarma Yojana is aimed to development of the rural area villages. For that purpose study area is decided for taking detail information of the village.
- Present status and techno-economic survey of villages in given District of the state in terms of basic and public amenities, essential commodities, other infrastructural facilities for the need of people and on the adequacy of the available resource with reference to the population of the village and growth of the area with the consultation of Local revenue authorities, TDO and DDO the future need of the village keeping to mind the need of days, future targeted population growth, growth of surrounding town or Taluka places etc.

4.1.4 Objectives of Study

- Reduce migration of people from rural to urban due to lack of basic facilities Development of the villages with a rural soul and all other facilities.
- To study the existing growth, characteristics and development of villages.
- To study the existing infrastructure facilities and its management issues phasing by villages.
- To analyse all feasibility parameters and relevant factors for sustainable development of villages
- To evolve strategic planning proposal in the form of physical, social, and renewable infrastructure facilities for the development of villages, channelizing urban growth and to sustain future.
-

4.1.5 Scope of Study

- To provide an urban amenities to a village without affecting the soul of village.

- Due to providing urban facilities development of village will be possible.
- The study will focus the development trend, intensity of growth of the village and find out the problems related to the physical development of the area and infrastructure services of the village. The project proposal and sustainability aspect is not considered in micro level, it is only guiding way.
- From the gap analysis, development strategies for village development will be proposed and planning proposals for Physical infrastructure, Social Infrastructure and Renewable energy Source will be suggested for the village.

4.1.6 Methodology Frame Work for development of village

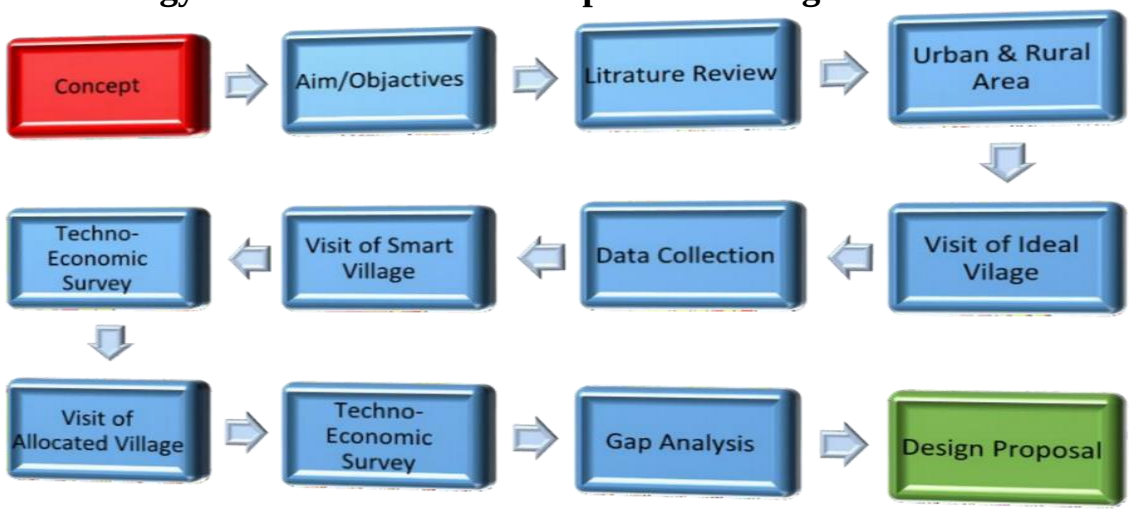


Table 4.1 Methodology Frame Work

4.1.7 List of Objects Available Related To Civil Methodology:

- Gram Panchayat
- Temple
- Drainage System
- Bus Stop
- R.C.C Roads
- Electricity 24*7 Ø Milk Co-Operative Society. Ø General Provision Street.
- Water Supply System

4.2 Ralol Study Area Profile

4.2.1 Study area location with brief history land use details

Village: Ralol
Taluka Name: Limdi
District: Surendranagar
State: Gujarat
Pin code: 363423
Area: 7320.1hector
Population: 9351
Household: 1827

4.2.2 Base Location map, Land map, Gram Tal Map

FIG 4.2 Base location map

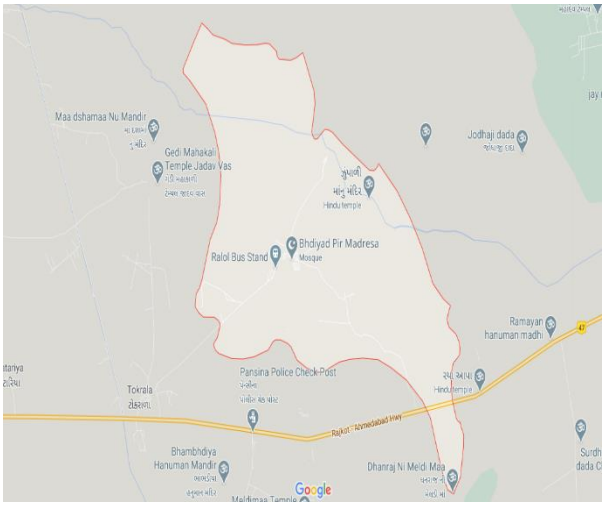


Fig 4.3 map of Ralol

Gram tal map & land map is not available …..

4.2.3 Physical & Demographical Growth

Table 4.2 Demographical Growth

Sr. no.	Census	Population	Male	Female	Total house holds
1	2001	Information	not	available	
2	2011	9351	4723	4628	1827

Table 4.3 Geographical Growth

sr no.	Description	Information/Detail
1	Area of village (approx.)	7320.1hector
2	Agriculture land (approx.)	5000.00 hector
3	Residential area (approx.)	70.00 hector
4	Waste land (approx.)	--
5	Other (approx.)	--
6	Coordinates for location	22.3611° N, 71.5911° E

4.2.4 Economic generation profile / Banks

- There are no ATM facilities available in this village.

4.2.5 Actual problem faced by villagers

- Kutchha house
- Failure in Drainage
- lack of resources
- awerness of various things
- lack of skills
- Solutions:- we design our physical infrastructure according to this above problem.

4.2.6 Social scenario

- It was found that all the people of this village are not connected with today‘s technology.
- Environment rather than their main major working area. The major crops produced in the village are cotton, cumin(jeeru), chickpea(chana), wheat etc.
- The major population is get income through the farming and labour work and there are no other job opportunities.
- The education facility is too good according to principal sir. There are available facilities into the schools include :- Ro plant (drinking water), Huge playground & many more.
- Here total 3 schools available – kumar shala , kanya shala & another one all are in good condition by the structurewise and all..
- But our side we want to give one suggestion to this village introduce the swachta abhiyan in whole village because one major problem we identify is waste management.

4.2.7 Migration reason / Trends

- Lack of facilities
- Lack of opportunities
- Lack of resources
- Education
- People want to economic growth in personal life

4.3 Data Collection Ralol (Graphs/Charts/Table)

4.3.1 Methods for data collection

Data collection is carried out following two stages:

1) Primary data collection
2) Secondary data collection

- **Primary Data Collection**: - Primary data collection includes visit of village, overview of village and document collection, information of village population, village map and other details from village authority. Organized the meeting with talati, sarpanch, deputy sarpanch and collect the rural issues from them.
- **Secondary Data Collection**:- Secondary data collection includes the techno economic survey. In techno economic survey questionnaires which are filled by sarpanch, talati, panchayat member, school principal, village dweller and local guardian. By the techno economic survey and visit of village Nani Devti the following problems are identified. Drinking water supply system, Drainage facility, Health facility, Sanitation, Sewage system, Rain water drainage there is no arrangement of rain water drainage and storage of rain water. Socio cultural facilities are also not available in village like; Playground, Public, Community hall, Garden.

4.3.2 Primary survey & Secondary survey details

- Due to COVID we visited village in this (7TH) same only 2 times but we carry all the data which is necessary for the our project. Acoording to primary survey we observed each & every prospect of the village & notice the problem & than after We conducted the techno economic survey of Ralol village. We collected the detail data of the village. In which the basic amenities are available in the village like drainage facilities, Education, Road network, Health facilities, etc.

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

- Ralol village is located at Limdi taluka in Surendranagar district of Gujarat state. People of this village having good nature with positive response. Agriculture, migration labour work are the main profession of this village. Still this village waiting for basic & smart development. Education, drinking water, road and electricity are the main concern of this village. If banks and finance institutions proved loan and other financial support to the villagers, this village will see the real development. A medical and health service has to be implemented.

4.3.4 No of Human being in One House

- Approximately 4-5 persons lived in the village of one house. As per census of 2011,1827 Household in the village.

4.3.5 Which Material used locally & out Sourced Material

- Pucca house the materials used for the construction like stone, brick, cement, concrete or timber.
- Houses made from mud, thatch, unburnt bricks, bamboos, grass, reeds or other lowquality materials are called katcha houses.
- All Industries based materials were taken from the limdi taluka & major from surendranagar or ahemdabad city which includes all construction materials, equipments, technological items etc.

4.3.6 Geographical Detail

- I mention above in table 4.3

4.3.7 Demographical Detail

- I mention above in table 4.2

Cast Wise Population Details

Table 4.6 Cast wise Details

	Total	General	Schedule Caste	Schedule Tribe
Total	9351	4080	130	3950
Male	4723	2080	69	1975
Female	4628	2000	61	1975

ID PROOF:- Mostly Aadhar card & Election card is used for the id proof

4.3.8 Occupation wise Details

Table 4.7 Occupation wise Details

	Total	Male	Female
Total Workers	3924	2446	1478
Main Workers	3287	--	--
Marginal Woker	637	218	419

4.3.9 Agricultural Details / Organic Farming / Fishery

- Main source of income in this village is farming.
- Farmer make small lake to do farming because the ground water is too salty and it's available to very near if we use advance technique to convert salty water into sweet water than it's beneficial but it's too costly .
- The main agriculture product is wheat, cotton, cumin, and chickpea**.** 5000(**approx. with Google map analytics**) hec area covered in the agriculture activity out of 7320.1 hectare.

4.3.10 Physical Infrastructure Facilities

❑ There are many types of physical infrastructure facilities available in our village

- Aanganwadi
- Primary School
- Seconday school
- Sub Post Office
- Panchayat Building
- Bus Stand
- Water Storage Tanl & There is no manufacturing hub in the house but small genral market is available in the village.

4.3.11 Tourism Devlopment in the village for attracting the tourist

- There is 2 lack available and they both are not developed but the use of one lack is many more compare to another one.
- And the beauty of this village is TEMPLES & MASJID both are available in this village.

4.4 Infrastructure details with photographs

4.4.1 Drinking Water

- For the drinking purpose water is distributed in the village from storage tank.
- The water is come from valbhipur pata canal because the ground water of the village is salty.
- There are 2 storage tank with the storage facility of 7 lac & 3 lac.
- Overhead tank is required in the village.
-

Fig. 4.4 storage tank condition

4.4.2 Drainage Network

 This village is having closed pucca drainage approx in 70% area of the village remaining area have open drainage The drainage line clogged due to waste. Every alternate day need cleaning of drainage. Somewhere drainage cove broken, so it‘s need a maintenance.

Fig. 4.5 Drainage Condition

4.4.3 Transportation & Road Network

 The Entrance road is made up of damer & some portion of entrance road is made up of R.c.c.Portion of r.c.c is not in good condition.

All inner road are made up of r.c.c so some portion of road need to redevelopment and some portion of road need to maintainance.

Fig 4.6 Road condition

4.4.4 Housing condition

Fig 4.7 housing condition

- Kutchha house figure.
- Generally 65% kutchha house in the village.
- Mainly total only 2 rooms in whole house in kutchha house category.
- Some rural housing scheme need to apply in this village for better living of the villagers.

Fig 4.7 housing condition

- 35% pakka house in the village.
- Generally 3 room include Drawing room, Kitchen, Bed room.

4.4.5 Social infrastructure facility:-

In social infrastructure below things available:-

- Health (phc)
- Education (3 schools)
- Community hall(but castwise)

PHC:

Fig 4.8 phc

- Phc is running into the rental house.
- The population of village is above 9000 so here the need of the phc with available advance facility.

Education:

Fig 4.9 schools

- Due to covid we didn't go into the inside of all the room but accordintg to principal sir and outer look of the school all 3 schools in good condition.
- There are 3 schools into the village.
- Primary , secondary schools available into the village.
- According to principal sir the computer lab maintenance of computer is required.

4.4.6 Existing condition of the public building into the village

Maintenance required into building:

1) panchayat building
2) post office
3) Bus stand

Fig 4.10 panchayat building &
Fig 4.11 post office

Fig 4.12 bus stand

4.4.7 Technology mobile/WI fi/internet usage details:-

- Generally all youngster have smart phone
- There are 3 towers in the village
- And 10% people are also connected with small business we thought they have also the mobile phone

4.4.8 Sport activity as gram panchayat

- None

4.4.9 Scoio culture facilities (public garden, pond with development , playground)

- Playground is available into the scool and lake is also available but development is require.

4.4.10 Any other facility (footpath, smart toilet)

- none

4.4.11 other facility - none

4.5 Electrical facility

4.5.1 Renewable energy source planning particularly for village

- Note available but we wiil described more about this in second phase

4.5.2 Irrigation facilities

- Irrigation facilities for crops :- Canal, Khettalavdi into the farm.
- The ground water is available at only 2m depth but the water is salty water so people don't use it …

4.5.3 Electricity facility with area

- Electricity is available into the village by 24x7 but one common problem occur is low voltage.

4.6 Existing Institution like - Village Administration – Detail Profile

4.6.1 Bachat mandali:

- No bachat mandali in village.

4.6.2 Dudh mandali:

- Dudh mandali is available in the village and one is private and another is one govt.
- Renovation of building is required.
- Mahila forum is not available in this Village.

Fig 4.13 Dudh mandali

4.6.4 Plantation for air pollution:

- for reducing pollution panchayat has stated planting trees over the areas on which plantation is possible.

4.6.5 Rain water harvesting:

- Rainwater harvesting required in village.

4.6.6 Agriculture development

- One awerness centre is required for agriculture development
- And one agriculture shop is also available into the village for the seeds and all.

Chapter 5. Sustainable Technical Options with Case Studies of the Existing Village

5.1 Concept (civil)

5.1.1 Advance construction techniques

Researchers Discover Additive to Help Concrete Withstand 9.0 Earthquakes
Concrete is an extremely strong building material, but has a notoriously weak tensile strength. In order to resist tension, bending, and shear forces, steel rebar or other reinforcement materials are added either prior to the placement or into the mix. Even with reinforcement, concrete is still extremely rigid and prone to cracking. In the event of a major earthquake, the uneven and horizontal forces can cause structures to crack and, in the worst case, cause failure.
To help keep buildings and their occupants safe in major earthquakes, researchers at the University of British Columbia have discovered a spray-on concrete reinforcement that greatly improves concrete's resistance to earthquakes up to a magnitude of 9.1.Concrete walls are sprayed with the reinforcement, which is made up of "polymer-based fibers, flyash, and other industrial additives," in a 0.4 inch (10mm) thick layer. The retrofit reinforcement allows the concrete to bend with the movement of the earthquake, making it much more ductile. The product is being called Eco-Friendly Ductile Cementitious Composite, or EDCC, due to its heavy reliance on flyash, with is an industrial byproduct of coal."By replacing nearly 70 per cent of cement with flyash, an industrial byproduct, we can reduce the amount of cement used," said UBC civil engineering professor NemyBanthia in a press release. "This is quite an urgent requirement as one tonne of cement production releases almost a tonne of carbon dioxide into the atmosphere, and the cement industry produces close to seven per cent of global greenhouse gas emissions." This is an extremely interesting product to me, because, traditionally, reinforcement has

Fig .5.1 Fly ash concrete

always been added prior to the concrete placement or within the concrete mixture. Since this material is meant as a retrofit for existing walls, it can help save many lives in the event of an earthquake, because it won't require extremely expensive and time consuming demolitionand rebuilding of exterior walls on at-risk structures. Imagine the impacts retrofit reinforcement could have on failing infrastructure around the world.

Within the next couple months, EDCC will be installed in its first official real world application at the Dr. Annie B. Jamieson Elementary School in Vancouver, Canada

5.1.2 Soli Liqueficaiton

Soil liquefacation can be defined as when soil occurs when a saturated soli or partially saturated soil substantially loses strength and stiffness in response to an applied stress such as shaking during an earthquake or other sudden change in stress condition , in which material that is ordinary a solid behave like liquid is known as soil liquefication.

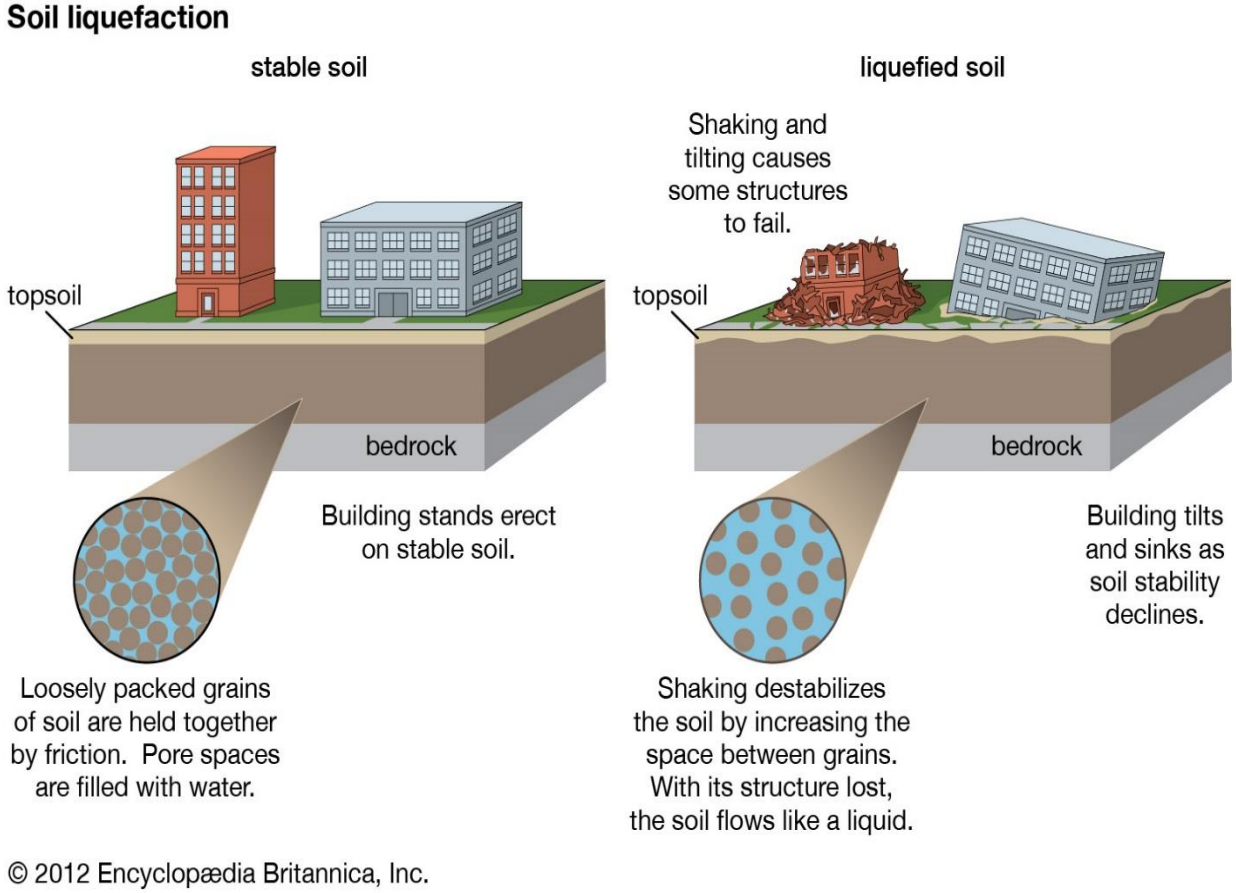


Fig 5.2 soil liquefaction

5.1.3 Sustainable sanitation

Sustainable sanitation can be defined as the waste water & excreta not as a waste but useful resource so we convert into the useful resources is called the sustainable sanitation.

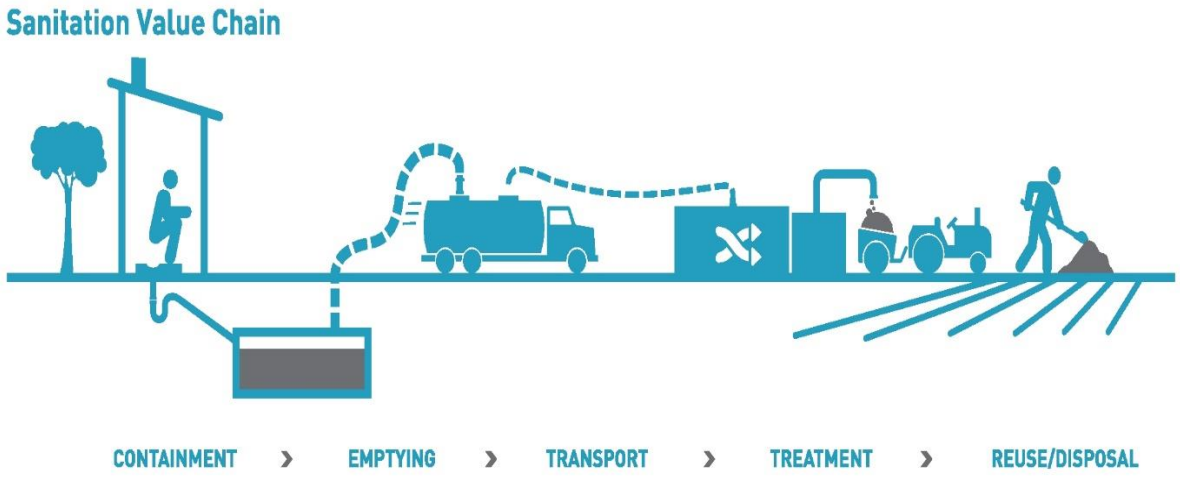


Fig 5.3 sanitation

5.1.4 Transport infrastructure

 Types of Roads Based on Materials

❑ **Earthen roads** earthen roads are laid with soil. They are cheaper of all types of roads. This type of road is provided for less traffic areas and or for countryside areas. Good drainage system should be required which reflects good performance for longer period.

Figure: 5.4 Earthen Road

❑ **Gravel roads** Gravel roads are also low quality roads but they are good when compared to earthen roads. Compacted mixture of gravel and earth is used as pavement material in this case.

Figure: 5.5 Gravel Road

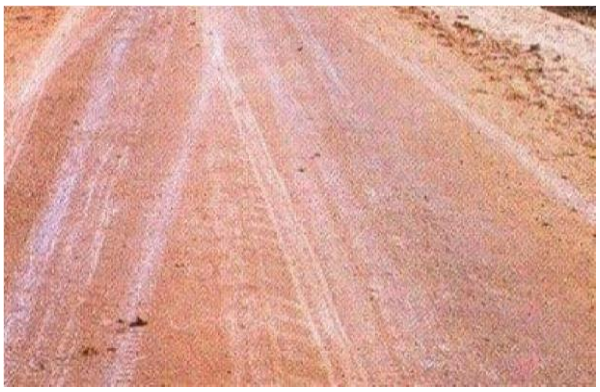


Figure: 5.6 Murrum Road

- **Murrum roads** Murrum is a matter obtained from the disintegration of igneous rocks by weathering agencies. This is used to make roads called as murrum roads.

Figure: 5.7 Kankar Road

- **Kankar roads** Kankar is nothing but impure form of lime stone. Kankar roads are provided where lime is available in good quantity. These are also low quality and performance wise they are similar to gravel and murrum roads.

Figure: 5.8 WBM Road

- **WBM roads** Water Bound Macadam (WBM) roads contain crushed stone aggregate in its base course. The aggregates are spread on the surface and these are rolled after sprinkling water. WBM roads provides better performance compared to earthen, gravel, murrum and kankar roads. WBM roads are laid as layers about 10cm thickness of each layer. They are very rough and may disintegrate immediately under traffic.

❑ **Bituminous roads** are very popular roads around the world. They are most used roads in the world. They are low in cost and good for driving conditions. They are flexible and thickness of bituminous roads depends upon the subgrade soil conditions.

Figure: 5.9 Bituminous Road

❑ **Concrete roads** Cement concrete is used to construct the pavements in case of concrete roads. These are very popular and costlier than all other types of roads. They are not flexible so, they require less maintenance. Concrete roads are suitable for high traffic areas.

Figure: 5.10 Concrete Road

5.1.5 Vertical Farming

Vertical farming can be defined as with the usage of small amount of place we can produce more crops.

Benefits:-

- Small use of place
- More amount of crops produce
- Maintain quality

Limitation:-

- Advance technologies required
- It's not economical for all farmers
- Knowledge of various things are required

Fig 5.11 vertical farming

5.1.6 Sewage treatment plant

Sewage treatment plant mean the waste from the various places like residential , industrial , institutional, commercial are treat in the plant because it is necessary to treated the water before it will meet any water body so now a days various technique is used for the sewage treatment.

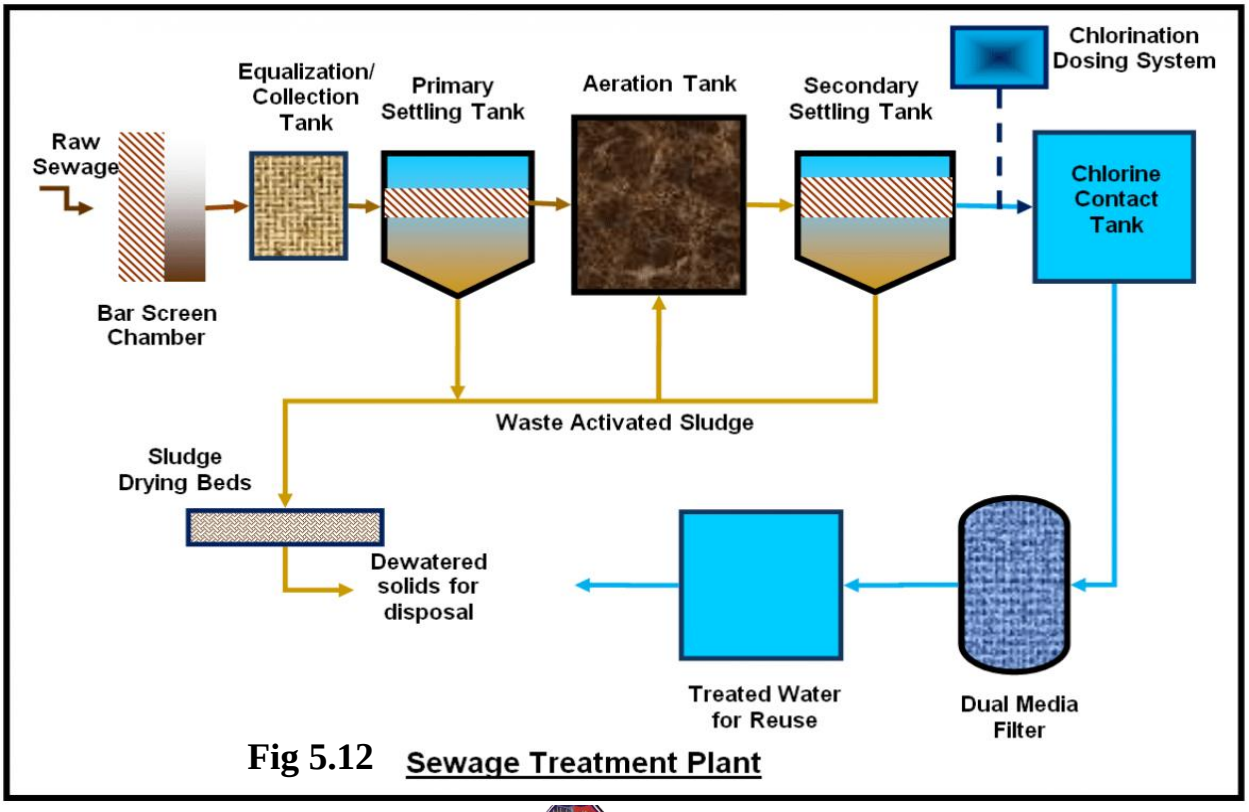


Fig 5.12 **Sewage Treatment Plant**

Chapter 6: Swatch Bharat Abhiyan (Clean India)

In our village the waste management and drainage both are in the bad condition so we want to introduce swatch Bharat abhiyan in our village. We provided the photographs of the waste & drainage condition of village in 4 chap & below I mentioned some advance technique to clean the village in very efficient way.

6.1 Strategic Technology options for Swatch Bharat Abhiyan (SBA) (Clean India) with photograph

The BARC is playing a pivotal role in the development of these technologies.
Some of these technologies are as follows:

- **Indigenous water purification technologies:** These technologies can improve the drinking water quality of smaller villages as well as larger cities. It uses the Pressure Driven Membrane Processes. These are suitable for all capacity units e.g. they are adaptable from household level unit or community level unit to large scale unit. Water purification technologies make use of the nuclear energy and solar energy also.
- **Environment friendly Plasma technologies:** Solid waste dumping sites or landfill sites need more amount of land which is not available in urban areas. Incineration of solid waste pollutes the environment if the incinerators are not designed or operated properly. Thermal Plasma Technology is ideally suited for waste treatment. By plasma technology Hazardous & toxic compounds are broken down to elemental constituents at high temperatures; Inorganic materials are converted to Vitrified Mass; and Organic materials are Pyrolysis or Gasified, Converted to flue gases (H2 & CO) & Lower hydrocarbon gases when operated at low temperature (500 – 600OC).Disposal of carcass is also being thought of using plasma pyrolysis.
- **Unique Multi Stage Biological Treatment Solution:**
- **Radiation Hygienization of Municipal Sewage Sludge**

Other options:

- **YOUR OWN BACKYARD**
  - You can become a part of the mission by starting from your own house. Start segregating dry and wet waste. The dry waste can be utilized to make compost in your backyard.
- **INFORM**
  - If you see a pothole, non – functioning street light or pile of garbage in your vanity, take a photo and upload it on the swatch bharat clean app.

- **TECHNOLOGY**
  - Technology and cleanliness mission go hand in hand. Through technology one can track welter garbage is picked up or not. Tech can also treat sewage water, clean roads and dispose biodegradable and non-biodegradable waste.
- **COMMUNITY PARTICIPATION**
  - Meghalaya is classic example in this regard. Meghalaya umthli village observes _Swachh Saturdays‘ and becomes litter free for day. The villagers take part in this initiative and even sweep footpaths and roads.
- **EDUCATE**
  - Spread awareness and important of cleanliness. PM Modi said this is social movement and people should become _swachhagrahis‘, people who work for cleanliness. You can join a NGO or start new group, distribute pamphlets, ask booth – level officer to conduct awareness drives and observer litter-free days every week.

6.2 Guidelines for the process of the implementation of SBA

- Behavior change has been the key differentiator of Swachh Bharat Mission and therefore emphasis is placed on Behavior Change Communication (BCC).
- BCC is not a 'stand-alone' separate activity to be done as a 'component' of SBM-G, but about mobilizing and nudging communities into adopting safe and sustainable sanitation practices through effective BCC.
- **Collective Behavior Change**: The suggested approach would be to adopt Community Approaches to Sanitation (CAS) focusing heavily on triggering entire communities and on achieving collective behavioral change. Emphasis is to be placed on awareness generation, triggering mindsets leading to community behavior change and demand generation for sanitary facilities in houses, schools, Anganwadis, places of community congregation, and for Solid and Liquid Waste Management activities. Since Open Defecation Free villages cannot be achieved without all the households and individuals conforming to the desired behavior of toilet use every day and every time, community action and generation of social norms are key.
- **Inter Personal Communication (IPC):** Focus will be on use of Inter Personal Communication (IPC), especially for triggering of demand and use of toilets through social and behavioral change communication and house-to house interventions. Hygiene and sanitation intervention to

include an essential element of social behavior change, alongside infrastructure, without which the desired outcomes cannot be achieved.

6.3 Action for making your village Clean

- ✓ Household Toilet: Making a toilets in all houses of the village under government schemes to make village clean.
- ✓ Solid Waste Management: We are observing that in our village a big problem is solid waste so by providing a solid waste management with fixed dustbins in village and also giving a dustbin collection management system to make village clean
- ✓ Ban on plastic bag, use paper bags
- ✓ Avoiding of chewing of tobacco, gutka etc.
- ✓ Giving a proper education of cleaning village to the villagers
- ✓ Motivate villagers to make clean village and improve the habit of use of dustbin in stand of throwing waste on ground

Chapter 7: Village condition due to covid-19

7.1 Taken step in allocated village realted to

- First of all we faced many difficulties to visit our village because it's far away from our home around 110km.
- So we sited 2 times in the 7 sem.
- But we observed whole village and the covid situation is normal into the village because cases are not found inside the village & all people are follow the government rules regarding to covid – 19.

Fig discussion with sarpanch

7.2 Activites done by student

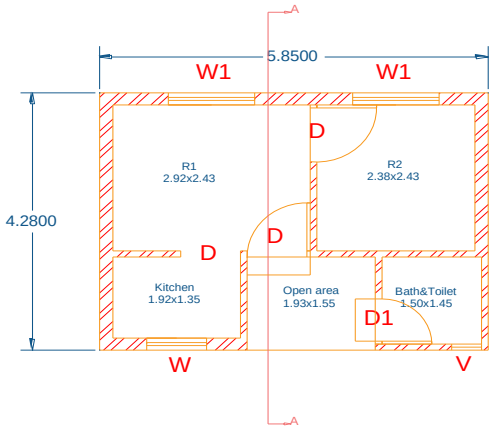
We done all the survey in our village which I meantioned in above chapter.
We met people and ask various questions about the village and all.

7.3 any other step taken by student

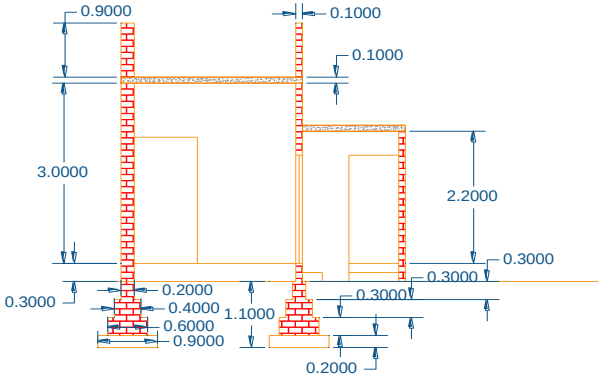
none

Chapter 8 sustainable design

Low Cost House (Smart design)

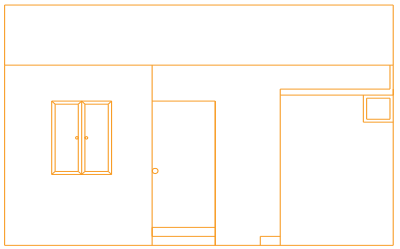


PLAN

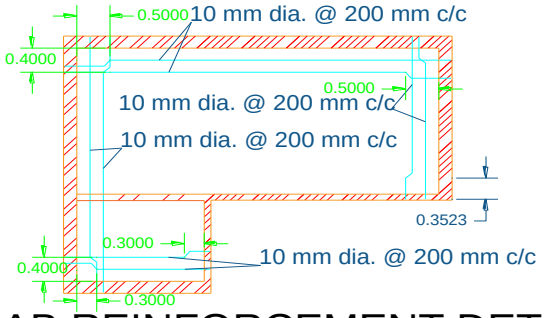


SECTION A-A

SECTION OF SLAB



ELEVATION



SLAB REINFORCEMENT DETAIL

DOOR & WINDOW SCHEDULE	
D	0.90 x 2.10
D1	0.75 x 1.80
W	0.90 x 1.22
W1	1.23 x 1.22
V	0.45 x 0.45

NOTES:-

1. ALL DIMENSION SHOWN IN THESE DRAWING IS IN METER.
2. THE LENGTH OF BENTS ARE GIVEN IN GREEN COLOR.
3. GRADE OF CONCRETE IS M25.
4. GRADE OF REINFORCEMENT BARS ARE Fe415.
5. STEEL BARS USE IN THIS STRUCTURE IS TMT BARS.
6. CLEAR COVER OF SLAB IS 15mm.

VISHWAKARMA YOJNA PHASE - VIII	
VILLAGE	RALOL
STRUCTURE	LOW COST HOUSE
NODAL OFFICER	PARTH DANANI
STUDENT NAME	RUDRA CHAUDHARY (170770106009) KOTADIYA DHRUV (180773106014)
SILVER OAK COLLAGE OF ENGINEERING & TECHNOLOGY	

3D VIEW

TABLE 8.1 MESURMENT SHEET OF LOW COST HOUSE

Sr. No	Description	No	Length	Breadth	Height	Total	U
1	**Excavation**						
	L1	2	6.55	0.9	1.1	12.87	m^3
	L2	1	3.02	0.9	1.1	2.98	m^3
	S1	1	3.18	0.9	1.1	62.9	m^3
	S2	2	1.73	0.9	1.1	1.71	m^3
TOTAL QUANTITY OF EXCAVATION IS=23.85 m^3							
2	**P.C.C**						
	L1	2	6.55	0.9	0.2	2.35	m^3
	L2	2	3.18	0.9	0.2	1.14	m^3
	S1	2	1.73	0.9	0.2	0.31	m^3
	S2	2	3.02	0.9	0.2	0.54	m^3
TOTAL QUANTITY OF P.C.C IS=4.34 m^3							
3	**B.W. UP TO G.L**						

	FOR 0.6 THICK WALL						
	L1	2	6.25	0.6	0.3	2.25	m^3
	L2	1	3.02	0.6	0.3	0.54	m^3
	S1	2	3.48	0.6	0.3	1.25	m^3
	S2	1	2.03	0.6	0.3	0.36	m^3
	FOR 0.4 THICK WALL						
	L1	2	6.05	0.4	0.3	1.45	m^3
	L2	1	2.82	0.4	0.3	0.33	m^3
	S1	2	3.68	0.4	0.3	0.88	m^3
	S2	1	2.23	0.4	0.3	0.26	m^3
	FOR 0.2 THICK WALL						
	L1	2	5.85	0.2	0.3	0.70	m^3
	L2	1	2.62	0.2	0.3	0.15	m^3
	S1	2	3.88	0.2	0.3	0.46	m^3
	S2	1	2.43	0.2	0.3	0.14	m^3
TOTAL QUANTITY OF B.W UP TO G.L IS=8.77 m^3							
4	**EARTH FILLING**						
	R1	1	2.92	2.43	0.25	1.71	m^3
	R2	1	2.38	2.43	0.25	1.44	m^3
	KIT.	1	1.92	1.35	0.25	0.64	m^3
	T&B	1	1.50	1.45	0.25	0.54	m^3
	IN FOUNDATION =EXCAVATION-BW IN FOUNDATION =23.85-8.77-4.34 =10.74 m^3						
TOTAL QUANTITY OF EARTH FILLING IS=15.1							
5	**D.P.C**						
	L1	1	5.85	0.2	-	1.17	m^2
	L2	1	5.85	0.1	-	0.58	m^2
	L3	1	2.12	0.2	-	0.42	m^2
	S1	2	2.43	0.1	-	0.48	m^2
	S2	1	2.43	0.1	-	0.24	m^2
	S3	1	1.35	0.1	-	0.135	m^2
	DEDUCTION	3	0.9	0.1	-	0.27	m^2

TOTAL QUANTITY OF D.P.C IS=2.93 m^2							
6	**B.W**						
	UP TO SLAB						
	L1	1	5.85	0.2	3.3	3.86	m^3
	L2	1	5.85	0.1	3.3	1.92	m^3
	L3	1	2.12	0.2	3.3	1.39	m^3
	L4	1	1.70	0.2	2.5	0.85	m^3
	S1	2	2.43	0.2	3.3	3.2	m^3
	S2	1	2.43	0.1	3.3	0.8	m^3
	S3	1	1.35	0.1	3.3	0.44	m^3
	S4	2	1.45	0.1	2.5	0.72	m^3
	BW IN IN PERAPITH WALL						
	H	2	5.85	0.9	0.2	2.16	m^3
	V	2	3.38	0.9	0.2	1.39	m^3
						16.73	m^3
	DEDUCTION FOR DOOR & WINDOW						
	D	3	0.9	0.1	2.1	0.56	m^3
	D1	1	0.75	0.1	1.8	0.135	m^3
	W	1	0.9	0.2	1.22	0.21	m^3
	W1	4	1.23	0.2	1.22	1.2	m^3
	V	1	0.45	0.1	0.45	0.02	m^3
	For Lintel						
	D	3	1.1	2.1	0.1	0.69	m^3
	D1	1	0.95	1.8	0.1	0.17	m^3
	W	1	1.1	1.22	0.2	0.26	m^3
	W1	4	1.43	1.22	0.2	1.39	m^3
	V	1	1.65	0.45	0.1	0.03	m^3
						4.66	m^3
TOTAL QUANTITY OF BW IS=12.07 m^3							
7	**PLASTER**						
	IN SIDE OF ROOM						
	R1						
	H	2	2.92	-	3	17.52	m^2
	V	2	2.43	-	3	14.59	m^2
	R2						
	H	2	2.38	-	3	14.28	m^2

	V	2	2.43	-	3	14.58	m^2
	KIT.						
	H	2	1.92	-	3	11.52	m^2
	V	2	1.29	-	3	7.78	m^2
	T&B						
	H	2	2.2	-	2	6.6	m^2
	V	2	2.2	-	2	6.38	m^2
	OUT SIDE						
	H	2	5.58	-	4.2	49.14	m^2
	V	2	4.28	-	4.2	35.95	m^2
	OPEN AREA						
	V1	1	1.55	-	4.2	6.51	m^2
	V2	1	2.5	-	1.55	3.87	m^2
						188.7	m^2
	PLASTER ON SILLING						
	R1	1	2.92	2.43	-	7.1	m^2
	R2	1	2.38	2.43	-	5.78	m^2
	KIY.	1	1.92	1.35	-	2.59	m^2
	T&B	1	1.5	1.45	-	2.17	m^2
						17.6	m^2
	PLASTER INERSIDE PERAPITH WALL						
	H	2	5.45	-	0.9	9.81	m^2
	V	2	3.88	-	0.9	6.98	m^2
						16.79	m^2
	Deduction						
	D	3	0.9	-	2.1	5.67	m^2
	D1	1	0.75	-	1.8	1.39	m^2
	W	1	0.9	-	1.22	1.09	m^2
	W1	4	1.23	-	1.32	6.49	m^2
	V	1	0.45	-	0.45	0.20	m^2
						14.84	m^2
TOTAL QUANTITY OF PLASTER IS= 208 m^2							
8	**R.c.c Work**						
	FOR LINTEL & CHAJJA						
	W	1	1.1	0.5	0.1	0.05	m^3
	W1	4	1.43	0.5	0.1	0.28	m^3
	D	3	1.1	0.1	0.1	0.33	m^3

	D1	1	0.95	0.1	0.1	0.01	m^3
	FOR SLAB	1	5.85	4.28	0.1	2.5	m^3
TOTAL QUANTITY OF R.C.C WORK IS=3.17 m^3							
9	**Flooring**						
TOTAL QUANTITY OF FLOORING IS SAME AS PLASTER IN SILING=17.64m^2							
10	**Dedo**						
	H	2	1.5	-	2.2	6.6	m^2
	V	2	1.45	-	2.2	6.38	m^2
TOTAL QUANTITY OF DEDO IS= 12.9 m^2							
11	**Skurting**						
	(2.92x2)+(2.43x4)+(2.38x2)+(1.92x2)+(1.35x2) =26.86m						
	DEDUCTION=(0.9X6) =5.4m						
TOTAL QUANTITY OF SKURTING IS=21.46 m							
TOTAL QUANTITY OF STEEL IS=640 KG							

Table 8.2 Rate analysis

No.	Particulars	Quantity	Rate	Per	Amount
1	**Excavation in foundation for 23.85 m^3**				
	Labour				
	Male coolie	8	300	Day	2400
	Female coolie	8	300	Day	2400
	Sundries				150
				Total	**4950**
2	**PCC (1:4:8) for foundation for 4.34^3 work**				
	Materials				
	Cement	15	380	Bag	5700
	Sand	2.05	850	m^3	1743
	Aggregate	4.11	1100	m^3	4521
	Sundries				75
	Labour				
	Main coolie	0.5	700	Day	350

	Mason	1	650	Day	650
	Male coolie	5	300	Day	1500
	Female coolie	5	300	Day	1500
	Bhishti	2	300	Day	600
	Sundries				150
				Total	**16789**
3	**1st class brick masonry up to G.L, CM (1:6) in foundation for 8.77 m^3 work**				
	Material				
	Brick	4605	4.5	Nos.	20723
	Cement	11	380	Bag	4180
	Sand	2.25	850	m^3	1913
	Sundries				75
	Labour cost				
	Main mason	1	700	Day	700
	Mason	5	650	Day	3250
	Male coolie	10	300	Day	3000
	Female coolie	10	300	Day	3000
	Bhishti	5	300	Day	1500
	Sundries				150
				Total	**38491**
4	**Earth filling**				
	Soil				
	In foundation	10.74	500	m^3	5370
	In all room	4.33	500	m^3	2165
	Sundries				75
	Labour				
	Mail coolie	4	300	Day	1200
	Female coolie	4	300	Day	1200
	Sundries				100
				Total	**10110**
5	**DPC (1:1.5:3)**				
	Material				
	Cement	3	380	m^3	1140
	Sand	0.12	800	m^3	96
	Aggregate	0.24	1100	m^3	264
	Labour				

	Mason	1	650	Day	650
	Male coolie	1	300	Day	300
				Total	**2450**
6	**1st class brick masonry in super structure, CM (1:6) for 12.07 m^3 work**				
	Material				
	Brick	6337	4.5	Nos.	28517
	Cement	11	380	Bag	4180
	Sand	3.10	850	m^3	2635
	Sundries				75
	Labour cost				
	Main mason	2	700	Day	1400
	Mason	6	650	Day	3900
	Male coolie	8	300	Day	2400
	Female coolie	8	300	Day	2400
	Bhishti	5	300	Day	1500
	Sundries				200
				Total	**47207**
7	**12mm thick plaster in CM 1:4 for 208 m^2**				
	Materials				
	Cement	24	380	Bag	9120
	Sand	3.22	850	m^3	2737
	Sundries				75
	Labour cost				
	Main mason	3	700	Day	2100
	Mason	12	650	Day	7800
	Male coolie	12	300	Day	3600
	Female coolie	12	300	Day	3600
	Bhishti	5	300	Day	1500
	Sundries				200
				Total	**30532**
8	**RCC (1:1.5:3) for 3.17 m^3**				
	Materials				
	Cement	21	380	m^3	7980
	Sand	1.08	800	m^3	864
	Aggregate	2.16	1100	m^3	2376
	Steel	310	50	Kg	15500
	Binding wire	3.1	55	Kg	170

	Sundries				75
	Labour cost				
	Mixing, transporting and placing of concrete, including curing	20	300	Day	6000
	Mason	2	650	Day	1300
	Cutting, Binding, Placing,	310	6.0	Kg	1860
	Rent of mixture and vibrator machine	-	-	L.S.	4000
	cantering and shuttering	-	-	L.S.	8000
	Sundries				200
				Total	**48320**
9	**Flooring & dado & skirting**				
	Material				
	Cement	2	380	bag	760
	Tiles	34	375	m^2	12750
	Labour cost				
	Main mason	3	700	Day	2100
	Mason	3	650	Day	1950
	Male coolie	6	300	Day	1800
	Female coolie	6	300	Day	1800
	Sundries				100
				Total	**21260**
10	**2 cot white washing for 195.1m^2 work**				
	Primer coat				
	Primer	12	185	Lit.	2220
	Painter	2	350	Day	700
	Helper	2	300	Day	600
	Sundries				75
	1st coat painting				
	Lime mixture	18	300	Lit	5400
	Painter	2	350	Day	700
	Helper	2	300	Day	600
	Sundries				75

	2nd coat painting				
	Lime mixture	13	300	Lit.	3900
	Painter	2	350	Day	700
	Helper	2	300	Day	600
	Sundries				75
				Total	**15645**
11	**Doors & Windows with wooden frame**				
	Doors	4	2500	Nos.	1000
	Windows	5	1250	Nos.	6250
	Carpenter	1	600	day	600
	Helper	1	300	day	300
	Sundries				75
				Total	**8225**
				Total cost	**243907**
				Water charge 1.5% of total cost	**3659**
				Contingency charges 5% of total cost	**12196**
				Electric fitting charge 7% of total cost	**17074**
				Plumbing & sanitation fitting charges 7% of total cost	**17074**
				Contractor's profit 10% of total cost	**24390**
				Grand total	**318300**
				Round up	**350000**

Calculation for material:-

1) PCC (1:4:8) for foundation for 4.34m^3 work

For 4.34 m^3 wet concrete, 54% add of dry concrete = 6.68 m^3 dry concrete is
Proportion:- 1:4:8,
Cement:- (1/13) x 6.68 = 0.51 m^3 , No. of bags = 0.51/0.053, = 15 Bags
Sand:- (4/13) × 6.68 = 2.05 m^3, Aggregate:- (8/13) x 6.68 = 4.11 m^3

2) 1st class brick masonry up to G.L, CM (1:6) in foundation for 8.77m^{3}work

For 1m^3 of Brickwork, 500 bricks are required.
For 8.77m^3= 4385 bricks are required.
Add 5% wastage=220 Total brick=4605 nos.
1 m^3 brick work = Volume of mortar 0.23 m^{3}Volume of dry mortar 0.30 m^3

8.77 m^{3}brick work = volume of mortar 2.63 m^3

Cement:- (1/7) x 2.63= 0.37 m^3 = 11 bags
Sand:- (6/7) x 2.63 = 2.25 m^3

3) D.P.C (1:1.5:3) 100mm thick for 2.93m^2 = 0.29m^3

For 0.29m^3 wet mortar, Dry mortar =0.44 m^3

Proportion:- (1:1.5:3)

Cement:- (1/5.5) x 0.44 = 0.08 m^3 = 3 bag

Sand:- (1.5/5.5) x 0.44 = 0.12 m^3

Aggregate :- (3/5.5) x 0.44= 0.24 m^3

4) 1st class brick masonry in super structure, CM (1:6) for 12.07 m^3 work

For 1m^3 of Brickwork, 500 bricks are required. For 12.07m^3= 6035 bricks are required
Add 5% wastage=302
Total brick=6337 nos.

1 m^3 brick work = Volume of mortar 0.23 m^3

Volume of dry mortar 0.30 m^3

12.07 m^3brick work = volume of mortar 3.62 m^3
Cement:- (1/7) x 3.62= 0.51 m^3 = 11 bags

Sand:- (6/7) x 3.62 = 3.10 m^3

5) 12mm thick plaster in CM 1:4 for 208 m^2

Area of plaster=208m^2, thickness =12mm
∴Volume of wet mortar=208×0.012=2.49m^3
For uneven surface of masonry and for filling joints 30% more mortar is required
∴quantity of wet mortar = 3.23m^3
Again, volume of dry mortar required is about 25% more than that of wet Quantity of mortar Quantity of mortar=4.03m^3
Mortar proportion:- (1:4)
Cement:- (1/5) x 4.03 = 0.80 m^3 = 24 bags required
Sand:- (4/5) x 4.03 = 3.22 m^3 required

6) RCC (1:1.5:3) for 3.17 m^3 work

For 1m^3 wet concrete, 1.25 m^3dry concrete is required. For 3.17m^3= 3.96m^3 dry

Proportion:- (1:1.5:3)

Cement:- (1/5.5) x 3.96 = 0.72 m^3 = 21 bags

Sand:- (1.5/5.5) x 3.96 = 1.08

Aggregate:- (3/5.5) x 3.96=2.16m^3 Assume 1% steel of the volume of concrete as

Volume of steel = (1/100) x 3.96 = 0.0396m^3,

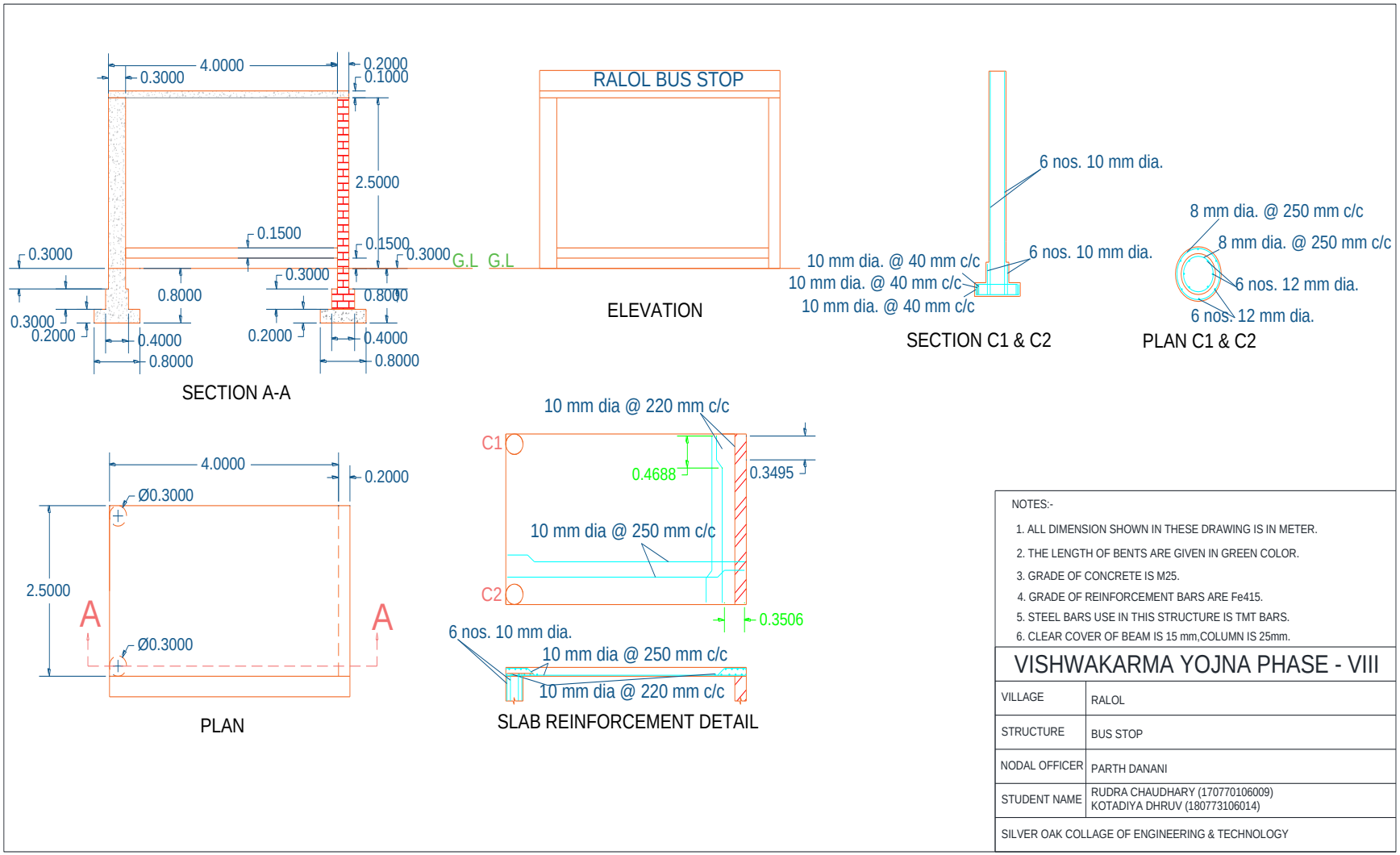
Density of steel=7850kg/m^3, Density=Mass/Volume

∴ Mass of steel=0.0396 x 7850 =310kg

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

∴ For 310 kg of steel, 3.1kg binding wire is required.

8.2 Bus stop (Social Design):-



NOTES:-

1. ALL DIMENSION SHOWN IN THESE DRAWING IS IN METER.
2. THE LENGTH OF BENTS ARE GIVEN IN GREEN COLOR.
3. GRADE OF CONCRETE IS M25.
4. GRADE OF REINFORCEMENT BARS ARE Fe415.
5. STEEL BARS USE IN THIS STRUCTURE IS TMT BARS.
6. CLEAR COVER OF BEAM IS 15 mm,COLUMN IS 25mm.

VISHWAKARMA YOJNA PHASE - VIII

VILLAGE	RALOL
STRUCTURE	BUS STOP
NODAL OFFICER	PARTH DANANI
STUDENT NAME	RUDRA CHAUDHARY (170770106009) KOTADIYA DHRUV (180773106014)
SILVER OAK COLLAGE OF ENGINEERING & TECHNOLOGY	

3D VIEW

TABLE 8.3 MEASURMENT SHEET

Sr.No	Description	No	Length	Breadth	Height	Total	U
1	Excavation						
	Vertical wall	1	2.5	0.8	0.8	1.6	m3
	Beam	2	3.9	0.3	0.3	0.70	m3
	Column	2	0.8	0.8	0.8	1.02	m3
TOTAL QUANTITY OF EXCAVATION IS = 3.32 m3							
2	P.C.C						
	For wall	1	2.5	0.8	0.2	0.4	m3
	For column	2	0.8	0.8	0.2	0.25	m3
TOTAL QUANTITY OF PLANE CEMENT CONCRETE IS= 0.65 m3							
3	B.W UP TO GL.						
	For 0.4 m thick wall	1	2.5	0.4	0.3	0.3	m3

	For 0.2 m thick wall	1	2.5	0.2	0.3	0.15	m3
TOTAL QUANTITY OF REINFORCED CEMENT CONCRETE IS= 0.45 m3							
4	B.W UP TO SLAB						
	For wall	1	2.5	0.2	2.5	1.25	m3
	For step	1	0.3	3.7	0.15	0.16	m3
TOTAL QUANTITY OF B.W UP TO SLAB IS=1.41 m3							
5	R.C.C WORK						
	For slab	1	2.5	4.2	0.1	1.05	m3
	For beam	2	3.9	0.3	0.3	0.70	m3
	For column						
	0.4 m thickness	2	1.25	0.3	0.75	m3	
	0.2 m thickness	2	0.94	2.8	2.63	m3	
TOTAL QUANTITY OF R.C.C WORK ABOVE GL. IS=5.13 m3							
6	EARTH FILLING						
In foundation **=Total excavation - p.c.c - B.w up to GL- R.c.c below GL** **=3.32-0.65-0.45-0.7-0.75-0.56** **= 0.21**							
In plinth **=2.23x3.9x0.3** **=2.69**							
TOTAL QUANTITY OF BRICK WORK IS= 2.9m3							
7	PLASTER						
	For wall	2	0.2	-	2.5	12.5	m2
	For wall	2	0.2	-	2.5	10	m2
	For plinth H wall	1	4.3	-	0.3	1.29	m2
	For plinth V wall	1	2.5	-	0.3	0.75	m2
	For slab H side	2	4.3	-	0.1	0.86	m2
	For slab V side	2	2.5	-	0.1	0.5	m2

8	STEEL						
Assume quantity steel as 2.5% of r.c.c work=0.128 m3							
TOTAL QUANTITY OF STEEL IS = 130 KG							
9	PAINT						
	For column	2	0.94	2.5	4.7	m2	
TOTAL QUANTITY OF PAINT IS SAME AS PLASTER =30.7m2							
10	FLOORING						
		1	2.5	4	-	10 m2	
TOTAL QUANTITY OF FLOORING=10m2							

TABLE 8.4 Rate analysis

No.	Particulars	Quantity	Rate	Per	Amount in (INR)
1	**Excavation in foundation for 3.32 m^3**				
	Male coolie	1	300	Day	300
	Female coolie	1	300	Day	300
	Sundries				75
				Total	**675**
2	**PCC (1:4:8) for foundation for 0.65 m^3 work**				
	Materials				
	Cement	2	380	Bag	760
	Sand	0.308 m^3	850	m^3	262
	Aggregate	0.616 m^3	1100	m^3	678
	Sundries				75
	Labour				
	Main coolie	0.5	700	Day	350
	Mason	1	650	Day	650
	Male coolie	1	300	Day	300
	Female coolie	1	300	Day	300
	Bhishti	1	300	Day	300
	Sundries				75
				Total	**3750**

3	**1st class brick masonry up to G.L, CM (1:6) in foundation for 0.45 m^3 work**				
	Material				
	Brick	237	4.5	Nos.	1067
	Cement	1	380	Bag	380
	Sand	0.11	850	m^3	94
	Sundries				75
	Labour cost				
	Main mason	1	700	Day	700
	Mason	1	650	Day	650
	Mane coolie	1	300	Day	300
	Female coolie	1	300	Day	300
	Bhishti	5	300	Day	1500
	Sundries				75
				Total	**5141**
4	**1st class brick masonry up to slab, CM (1:6) for 1.41 m^3 work**				
	Brick	741	4.5	Nos.	3335
	Cement	2	380	Bag	760
	Sand	0.36	850	m^3	306
	Sundries				75
	Labour cost				
	Main mason	1	700	Day	700
	Mason	1	650	Day	650
	Mane coolie	2	300	Day	600
	Female coolie	1	300	Day	300
	Bhishti	5	300	Day	1500
	Sundries				75
				Total	**8301**
5	**RCC (1:1.5:3) 5.13 m^3 work**				
	Materials				
	Cement	34	380	Bag	12920
	Sand	1.74	850	m^3	1479
	Aggregate	3.5	1100	m^3	3850
	Steel	482	50	Kg	24100
	Binding wire	4.82	55	Kg	265
	Sundries				75
	Labour cost				

	Mixing, transporting and placing of concrete, including curing	15	300	Day	4500
	Mason	1	650	Day	650
	Cutting, Binding, Placing,	460	6.0	Kg	2760
	Rent of mixture and vibrator machine	-	-	L.S.	2000
	cantering and shuttering	-	-	L.S.	3500
	Sundries				75
				Total	**56174**
6	**Earth filling**				
	Soil 2.9 m^3	2.9	500	m^3	1450
	Sundries				75
	Labour cost				
	Male coolie	1	300	Day	300
	Female coolie	1	300	Day	300
	Sundries				75
				Total	2200
7	**12mm thick plaster in CM 1:4 for 26 m^2**				
	Materials				
	Cement	3	380	Bag	1140
	Sand	0.4	850	m^3	340
	Sundries				75
	Labour cost				
	Main mason	0.5	700	Day	350
	Mason	2	650	Day	1300
	Male coolie	1	300	Day	300
	Female coolie	1	300	Day	300
	Bhishti	5	300	Day	1500
	Sundries				75
				total	5380
8	**CC (1:2:4) for 5cm floor thick 10m^2**				
	Materials				
	Cement	3	380	Bag	1140

	Sand	0.20	850	m^3	170
	Aggregate	0.40	1100	m^3	440
	Sundries				75
	Labour				
	Main coolie	0.5	700	Day	350
	Mason	1	650	Day	650
	Male coolie	1	300	Day	300
	Female coolie	1	300	Day	300
	Bhishti	3	300	Day	900
	Sundries				75
				Total	**4400**
9	**2 Cot Paint 30.7 m^2**				
	Primer coat				
	Primer	5.0	185	Lit.	925
	Painter	2	350	Day	700
	Helper	2	300	Day	600
	Sundries				75
	1st coat painting				
	Paint	8	300	Lit	2400
	Painter	3	350	Day	1050
	Helper	3	300	Day	900
	Sundries				75
	2nd coat painting				
	Paint	5	300	Lit.	1500
	Painter	3	350	Day	1050
	Helper	3	300	Day	900
	Sundries				75
				Total	**10250**
				Total cost	**88716**
				Water charge 1.5% of total cost	**1331**
				Electric city charge 2% of total cost	**1775**
				Contractor's profit 10% of total cost	**8872**
				Grand total	**100694**
				Round up	**101000**

Calculation for material:-

1) PCC (1:4:8) for foundation for 0.65 m^3 work

For 0.65 m^3 wet concrete, 54% add of dry concrete = 1.001 m^3 dry concrete is
Proportion:- 1:4:8,
Cement:- (1/13) x 1.001 = 0.077 m^3 , No. of bags = 0.077/0.053, = 2 Bags
Sand:- (4/13) × 1.001 = 0.308 m^3, Aggregate:- (8/13) x 1.001 = 0.616 m^3

2) 1st class brick masonry up to G.L, CM (1:6) in foundation for 0.45 m^3work

For 1m^3 of Brickwork, 500 bricks are required.
For 0.45m^3= 225 bricks are
Required Add 5% wastage=12
Total brick=237 nos.
1 m^3 brick work = Volume of mortar 0.23 m^3
Volume of dry mortar 0.30 m^3
0.45 m^3brick work = volume of mortar 0.135 m^3
Cement:- (1/7) x 0.135 = 0.02 m^3 = 1 bags

Sand:- (6/7) x 0.135 = 0.1157 m^3

3) First class brick work up to Slab, CM (1:6), for 1.41 m^3work

For 1m^3 of Brickwork, 500 bricks are required.
∴For 7.05 m^3= 705 bricks are required

Add 5% wastage=36

Total brick=741nos.

1 m^3 brick work = Volume of mortar 0.23 m^3

Volume of dry mortar 0.30 m^3

1.41 m^3 brick work = volume of mortar 0.423m^3
Cement:- (1/7) x 0.423= 0.06 m^3= 2 bags

Sand:- (6/7)x0.423 =0.36 m^3

4) RCC (1:1.5:3) work

For 1m^3 wet concrete, 1.25 m^3dry concrete is required. For 5.13m^3= 6.41m^3 dry
Proportion 1:1.5:3=5.5

Cement:- (1/5.5)x 6.41 = 1.16 m^3 = 34 bags
Sand:- (1.5/5.5) x 6.41 = 1.74
Aggregate:- (3/5.5)x6.41=3.5m^3

Assume 1% steel of the volume of concrete as Volume of steel = (1/100) x 6.14 = 0.0641m^3 Density of steel=7850kg/m^3

Density=Mass/Volume

∴ Mass of steel=0.0614 x 7850 =482kg

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

∴ For 482 kg of steel, 4.8kg binding wire is required.

5) 12mm thick cement plaster in C.M. 1:4

Area of plaster=26m^2, thickness =12mm

∴Volume of wet mortar=26×0.012=0.312m^3

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

∴quantity of wet mortar =0.312+ 0.0936 =0.40m^3

Again, volume of dry mortar required is about 25% more than that of wet Quantity of mortar Quantity of mortar=0.4+ 0.1=0.5 m^3

Mortar proportion=1:4=5

Cement:- (1/5) x 0.5=0.1m^3= 3 bags required

Sand:- (4/5) x 0.5= 0.4 m^3 required

6) CC (1:2:4) for floor base 5cm. thick

Quantity of wet concrete = 10x0.05 = 0.5 m^3

Dry material required = 0.5+ 0.15 = 0.65 m^3

Add 10% for filling uneven surface = 0.65+0.065 = 0.71 m^3

Total quantity = 0.71 m^3

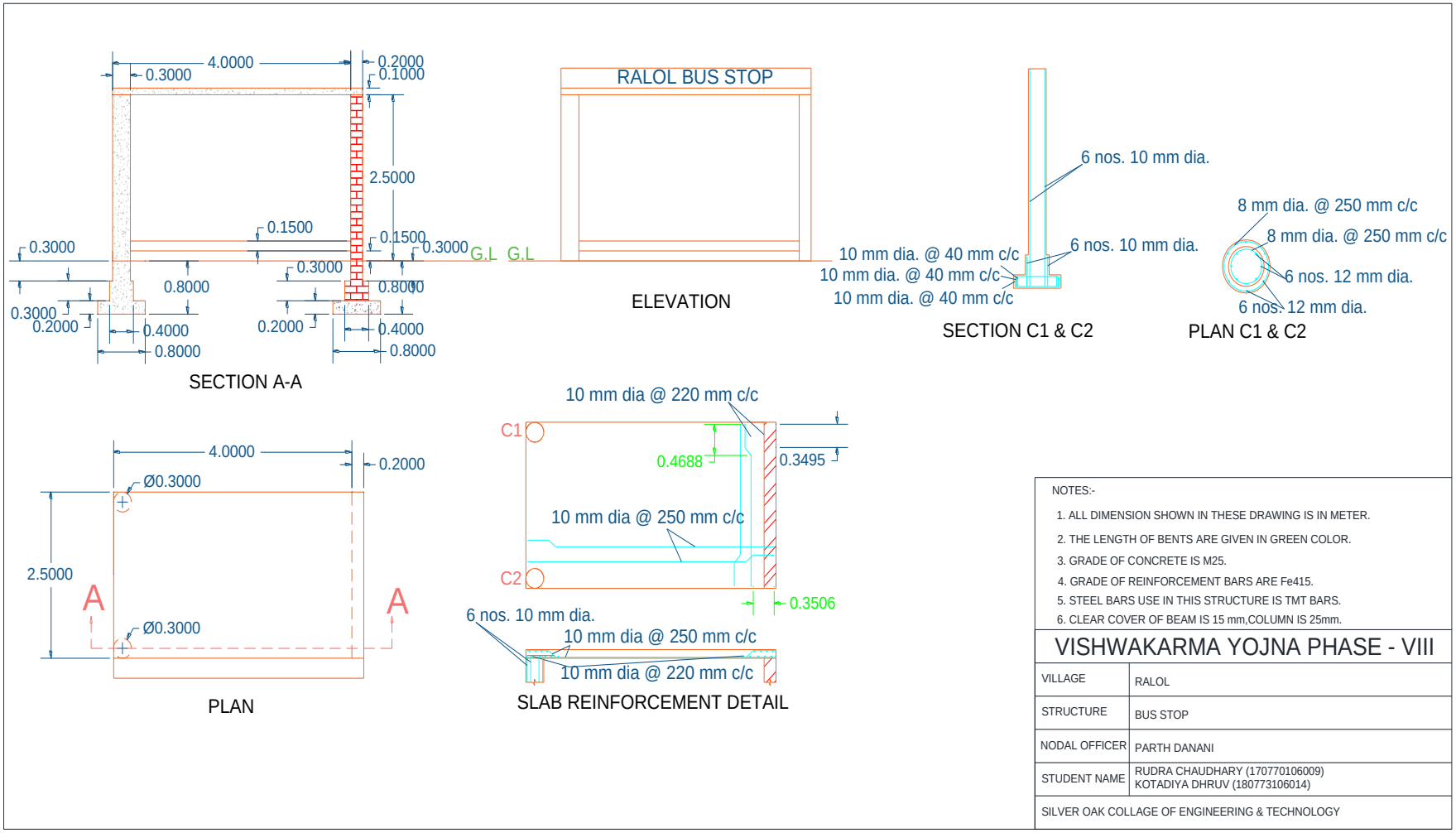
Proportion = (1:2:4)

Cement = (1/7) x 0.71 = 0.1/0.035 = 3bag

Sand = (2/7) x 0.71= 0.20 m^3

Aggregate = (4/7) x 0.71 = 0.40 m^3

8.3 Entry gate(Heritage Design):-

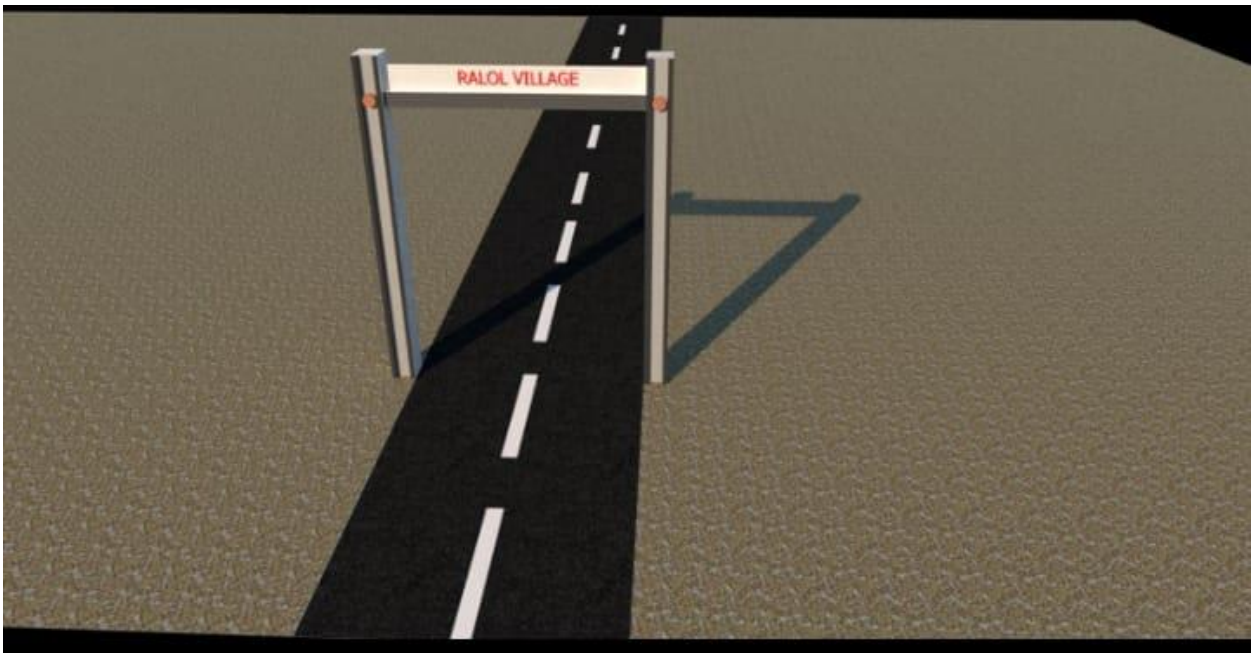


NOTES:-

1. ALL DIMENSION SHOWN IN THESE DRAWING IS IN METER.
2. THE LENGTH OF BENTS ARE GIVEN IN GREEN COLOR.
3. GRADE OF CONCRETE IS M25.
4. GRADE OF REINFORCEMENT BARS ARE Fe415.
5. STEEL BARS USE IN THIS STRUCTURE IS TMT BARS.
6. CLEAR COVER OF BEAM IS 15 mm,COLUMN IS 25mm.

VISHWAKARMA YOJNA PHASE - VIII

VILLAGE	RALOL
STRUCTURE	BUS STOP
NODAL OFFICER	PARTH DANANI
STUDENT NAME	RUDRA CHAUDHARY (170770106009) KOTADIYA DHRUV (180773106014)
SILVER OAK COLLAGE OF ENGINEERING & TECHNOLOGY	



3D VIEW

TABLE 8.5 MEASURMENT SHEET

Sr.No	Description	No	Length	Breadth	Height	Total	U
1	**EXCAVATION**						
		2	1.7	1.7	1.5	**8.6**	**m^3**
TOTAL QUANTITY OF EXCAVATION IS = 8.6 m^3							
2	**P.C.C**						
		2	1.7	1.7	0.3	**1.73**	**m^3**
TOTAL QUANTITY OF PLANE CEMENT CONCRETE IS= 1.73 m^3							
3	**R.C.C UP TO GL.**						
	For 1.1 m thick wall	2	1.1	1.1	0.3	0.72	m^3
	For 0.8 m thick wall	2	0.8	0.8	0.6	0.38	m^3
	For 0.5 m thick wall	2	0.5	0.5	0.6	0.30	m^3
TOTAL QUANTITY OF REINFORCED CEMENT CONCRETE IS= 1.41 m^3							
4	**EARTH FILLING IN FOUNDATION**						

=EXCAVATION-P.C.C-R.C.C UP TO GL **=8.6-1.73.1.41** =5.46							
TOTAL QUANTITY OF EARTH FILLING IS=5.46 m^3							
5	**R.C.C WORK ABOVE GL.**						
	For column	2	0.5	0.5	7	3.5	m^3
	For beam	1	5	0.5	0.3	0.75	m^3
TOTAL QUANTITY OF R.C.C WORK ABOVE GL. IS=5.66 m^3							
6	**B.W**						
		1	5	0.1	0.7	**0.35**	**m^3**
TOTAL QUANTITY OF BRICK WORK IS= 0.35 m^3							
7	**PLASTER**						
	For column	8	0.5	-	7	28	m^2
	For wall	2	5	-	1	10	m^2
	For beam	1	5	0.5	-	2.5	m^2
TOTAL QUANTITY OF PLASTER IS= 40.5 m^2							
8	**STEEL**						
Assume quantity steel as 2.5% of r.c.c work=0.141							
TOTAL QUANTITY OF STEEL IS = 142 KG							
9	**PAINT**						
TOTAL QUANTITY OF PAINT IS SAME AS PLASTER =40.5 m^2							

TABLE 8.6 Rate analysis

No.	Particulars	Quantity	Rate	Per	Amount in
1	**Excavation in foundation for 8.6 m^3**				
	Labour				
	Male coolie	4	300	Day	1200

	Female coolie	4	300	Day	1200
	Sundries				75
				Total	**2475**
2	**PCC (1:4:8) for foundation for 4.34^3 work**				
	Materials				
	Cement	6	380	Bag	2280
	Sand	0.81	850	m^3	690
	Aggregate	1.62	1100	m^3	1782
	Sundries				
	Labour				
	Main coolie	0.5	700	Day	350
	Mason	1	650	Day	650
	Male coolie	2	300	Day	600
	Female coolie	2	300	Day	600
	Bhishti	2	300	Day	600
	Sundries				150
				Total	**7772**
3	**R.C.C work (1:1.5:3), for 7.07 m^3**				
	Materials				
	Cement	46	380	m^3	17480
	Sand	2.40	800	m^3	1920
	Aggregate	4.81	1100	m^3	5291
	Steel	700	50	Kg	35000
	Binding wire	7	55	Kg	385
	Sundries				75
	Labour cost				
	Mixing, transporting and placing of concrete, including curing	20	300	Day	6000
	Mason	3	650	Day	1950
	Cutting, Binding, Placing,	700	6.0	Kg	4200
	Rent of mixture and vibrator machine	-	-	L.S.	4000

	cantering and shuttering	-	-	L.S.	5000
	Sundries				200
				Total	**81501**
4	**Earth filling 1.73 m^3**				
	Soil	1.73	500	m^3	865
	Sundries				75
	Labour				
	Mail coolie	1	300	Day	300
	Female coolie	1	300	Day	300
	Sundries				50
				Total	**1590**
5	**B.W, CM(1:6) for 0.35 m^3**				
	Material				
	Brick	184	4.5	Nos.	828
	Cement	1	380	m^3	380
	Sand	0.09	800	m^3	72
	Labour				
	Mason	1	650	Day	650
	Male coolie	1	300	Day	300
	Female coolie	1	300	Day	300
	Sundries				75
				Total	**2605**
6	**12mm thick plaster in CM 1:4 for 40.5m^2**				
	Materials				
	Cement	5	380	Bag	1900
	Sand	0.616	850	m^3	524
	Sundries				75
	Labour cost				
	Main mason	1	700	Day	700
	Mason	1	650	Day	650
	Male coolie	2	300	Day	600
	Female coolie	2	300	Day	600
	Bhishti	5	300	Day	1500
	Sundries				100
				Total	**6659**
7	**2 Cot Paint, for 40.5m^2 work**				

	Primer coat				
	Primer	6.0	185	Lit.	1110
	Painter	1	350	Day	350
	Helper	1	300	Day	300
	Sundries				75
	1st coat painting				
	Paint	9	300	Lit	2700
	Painter	1	350	Day	350
	Helper	1	300	Day	300
	Sundries				75
	2nd coat painting				
	Paint	6	300	Lit.	1800
	Painter	1	350	Day	350
	Helper	1	300	Day	300
	Sundries				75
				Total	**7735**
				Total cost	**110337**
				Water charge 1.5% of total cost	**1656**
				Electric fitting charge 2% of total cost	**2207**
				Contractor's profit 10% of total cost	**11034**
				Grand total	**125234**
				Round up	**126000**

Calculation for material:-

1) PCC (1:4:8) for foundation for 1.73m^3 work

For 1.73 m^3 wet concrete, 54% add of dry concrete = 2.64 m^3 dry concrete is
Proportion:- 1:4:8,
Cement:- (1/13) x 2.64 = 0.20 m^3 , No. of bags = 0.20/0.053, = 6 Bags
Sand:- (4/13) × 2.64 = 0.81 m^3, Aggregate:- (8/13) x2.64 = 1.62 m^3

2) RCC (1:1.5:3) for 7.07 m^3 work

For 1m^3 wet concrete, 1.25 m^{3}dry concrete is required. For 7.07m^3= 8.83m^3 dry
Proportion:- (1:1.5:3)

Cement:- (1/5.5) x 8.83 = 1.60 m^3 = 46 bags
Sand:- (1.5/5.5) x 8.83 = 2.40 m^3
Aggregate:- (3/5.5) x 8.83 = 4.81 m^3

Assume 1% steel of the volume of concrete as Volume of steel =

(1/100) x 8.83 = 0.0883m^3, Density of steel=7850kg/m^3
Density=Mass/Volume

∴ Mass of steel=0.0883 x 7850 =700kg

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

∴ For 700 kg of steel, 7 kg binding wire is required.

3) B.W, CM(1:6) for 0.35 m^3

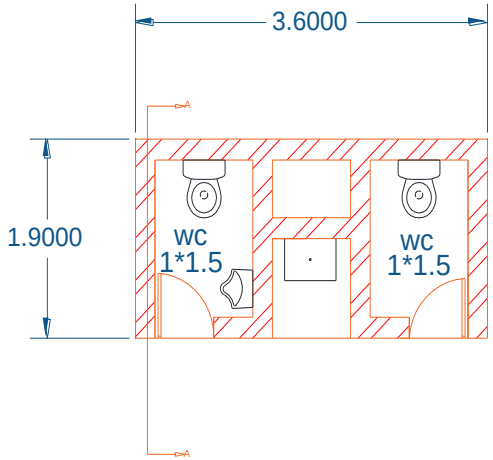
For 1m^3 of Brickwork, 500 bricks are required. For 0.35m^3 = 175
Add 5% wastage = 9.Total brick = 184 nos.
1 m^3 brick work = Volume of mortar 0.23 m^3 ,Volume of dry mortar 0.30 m^3 0.35 m^3 brick work = volume of mortar 0.105 m^3
Cement:- (1/7) x 0.105= 0.0.015 m^3 = 1bags

Sand:- (6/7) x 0.105 = 0.09 m^3

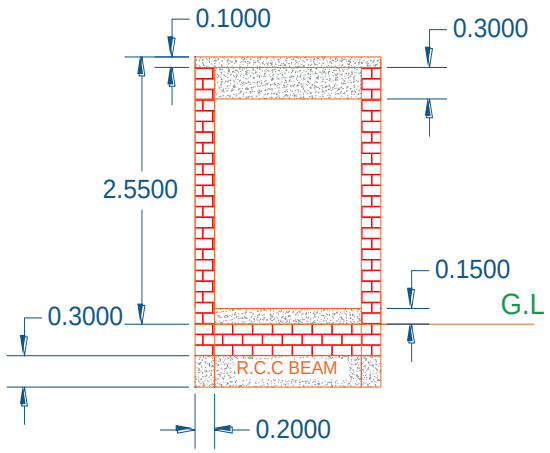
4) 12mm thick plaster in CM 1:4 for 208 m^2

Area of plaster=40.5m^2, thickness =12mm
∴Volume of wet mortar=40.5×0.012=0.48m^3
For uneven surface of masonry and for filling joints 30% more mortar is required
∴quantity of wet mortar = 0.62m^3
Again, volume of dry mortar required is about 25% more than that of wet Quantity of mortar Quantity of mortar=0.77m^3
Mortar proportion:- (1:4)
Cement:- (1/5) x 0.77 = 0.0.154 m^3 = 5 bags required
Sand:- (4/5) x 0.77 = 0.616 m^3 required

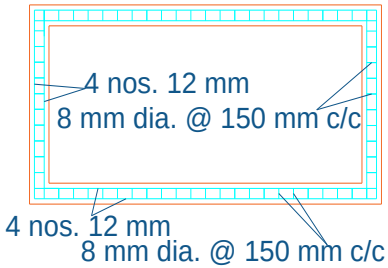
8.4 Public toilet (Sustainable Design)



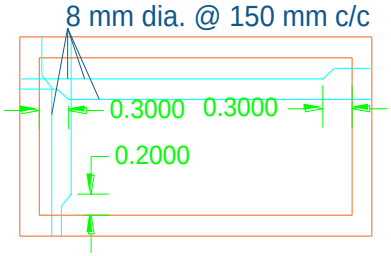
Plan



Section A-A



BEAM REINFORCEMENT DETAIL



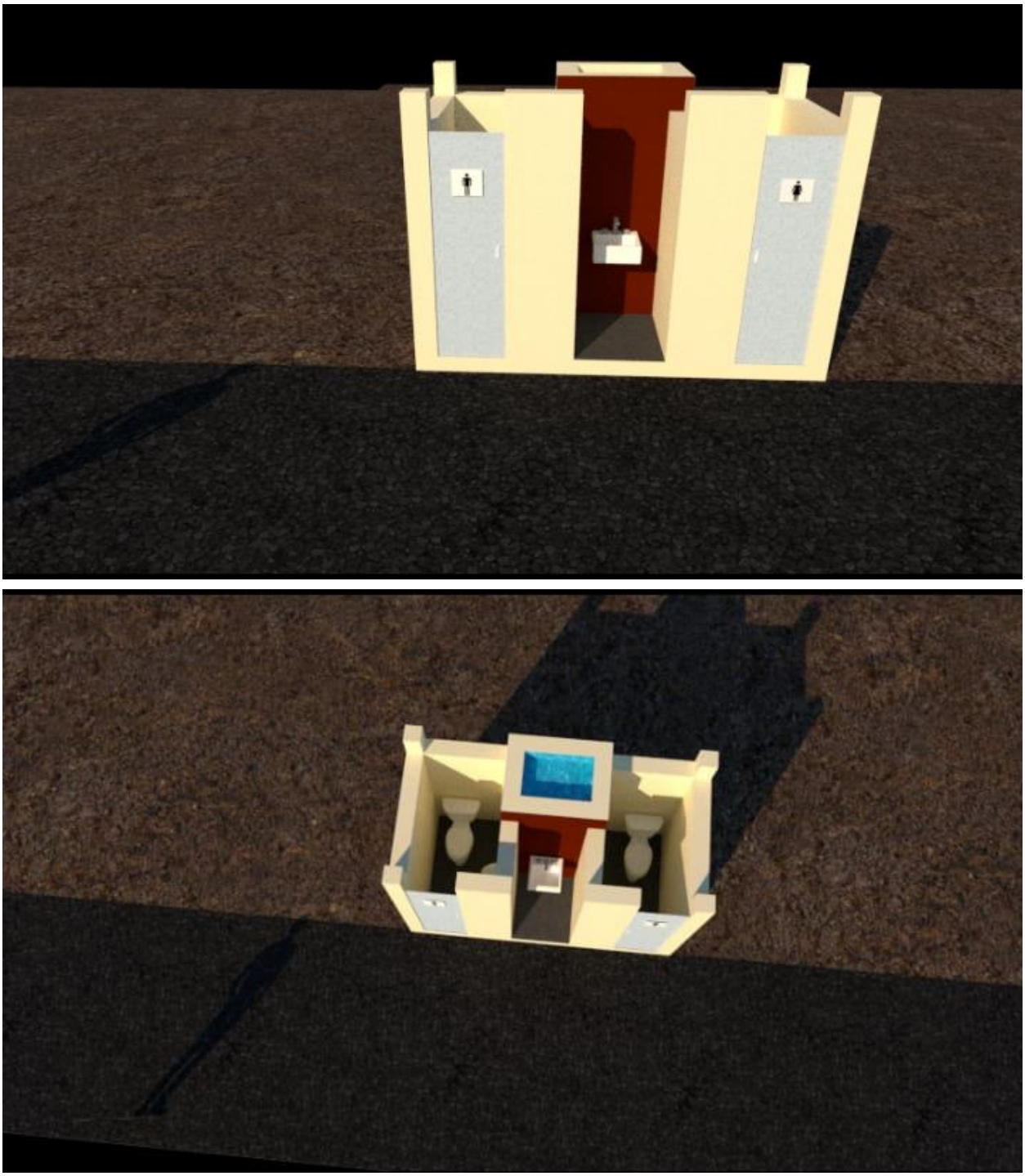
SLAB REINFORCEMENT DETAIL

BEAM SECTION

NOTES:-
1. ALL DIMENSION SHOWN IN THESE DRAWING IS IN METER.
2. THE LENGTH OF BENTS ARE GIVEN IN GREEN COLOR.
3. GRADE OF CONCRETE IS M25.
4. GRADE OF REINFORCEMENT BARS ARE Fe415.
5. STEEL BARS USE IN THIS STRUCTURE IS TMT BARS.
6. HEIGHT OF BASIN IS 1.2m, TOILET POD IS 0.5m AND URIN POD IS 0.8m.
7. CLEAR COVER OF SLAB IS 15mm BEAM IS 10mm

VISHWAKARMA YOJNA PHASE - VIII

VILLAGE	RALOL
STRUCTURE	PUBLIC TOILET
NODAL OFFICER	PARTH DANANI
STUDENT NAME	RUDRA CHAUDHARY (170770106009) KOTADIYA DHRUV (180773106014)
SILVER OAK COLLAGE OF ENGINEERING & TECHNOLOGY	



3d view

8.7 MESERMENT SHEET OF PUBLIC TOILET

Sr.No	Description	No	Length	Breadth	Height	Total	U
1	**EXCAVATION.**						
	H wall	2	3.6	2	0.6	0.86	m^3
	V wall	2	1.5	0.2	0.6	0.36	m^3
TOTAL QUANTITY OF EXCAVATION IS= 1.20 m^3							
2.	**R.C.C WORK**						
	H beam	2	3.6	0.2	0.3	0.43	m^3
	V beam	2	1.5	0.2	0.3	0.18	m^3
	For slab	1	3.6	1.9	0.1	0.68	m^3
TOTAL QUANTITY OF R.C.C WORK IS= 1.3 m^3							
3	**B.W**						
	Up to G.L.						
	H wall	2	3.6	0.2	0.3	0.43	m^3
	V wall	2	1.5	0.2	0.3	0.18	m^3
	UP to slab						
	H wall	2	3.6	0.2	2.15	3.1	m^3
	V wall	4	1.5	0.2	2.15	2.58	m^3
	For support of slab	8	0.2	0.2	0.3	0.1	m^3
	DEDUCTION IN B.W (DOOR)	2	0.6	0.2	2	0.48	m^3
TOTAL QUANTITY OF B.W IS= 5.91 m^3							
4	**PLASTER**						
	Outside of wall						
	H wall	2	3.6	2.55	-	18.36	m^2
	V wall	2	1.9	2.55	-	9.7	m^2
	Inside of wall						
	H1 wall	4	1	2.55	-	10.24	m^2
	H2 wall	2	0.8	2.55	-	4.1	m^2
	V wall	6	1.5	2.55	-	23	m^2

	DEDUCTION IN PLASTER (DOOR)	2	0.6	2	-	2.4	m^2
TOTAL QUANTITY OF PLASTER IS= 63 m^2							
5	**STEEL**						
	Assume quantity of steel as 2.5% of R.C.C work= 0.0325						
TOTAL QUANTITY OF STEEL IS= 33 KG							
6	**PAINT**						
TOTAL QUANTITY OF PAINT IS SAME AS PLASTER =63 m^2							
7	**FLOORING**						
	WC	2	1	1.5	-	3	m^2
	OPEN SPACE	1	0.8	0.95		0.76	m^2
TOTAL QUANTITY OF FLORRING IS =3.76 m^2							
8	**WESTAN CUMMOD**	2	-	-	-	**2**	**Nos.**
9	**MAIL URINARY**	1	-	-	-	**1**	**Nos.**

TABLE 8.8 Rate analysis

No.	Particulars	Quantity	Rate	Per		Amount in (INR)
1	**Excavation in foundation for 3.32 m^3**					
	Male coolie	1	300	Day		300
	Female coolie	1	300	Day		300
	Sundries					75
				Total		**675**
2	**RCC (1:4:8) for foundation for 0.65 m^3 work**					
	Materials					
	Cement	10	380	Bag		3800
	Sand	0.48 m^3	850	m^3		408
	Aggregate	0.95 m^3	1100	m^3		1045
	Steel	140	50	Kg		7000
	Binding wire	1.5	55	Kg		83
	Sundries					75

	Labour					
	Mixing, transporting and placing of concrete, including curing	10	300	Day		3000
	Mason	1	650	Day		650
	Cutting, Binding, Placing,	140	6.0	Kg		840
	Rent of mixture and vibrator machine			L.S.		2000
	cantering and shuttering			L.S.		3500
	Sundries					75
				Total		**22476**
3	**1st class brick masonry up to slab, CM (1:6) for 5.75 m^3 work**					
	Material					
	Brick	3019	4.5	Nos.		13586
	Cement	8	380	Bag		3040
	Sand	1.47	850	m^3		1250
	Sundries					75
	Labour cost					
	Main mason	2	700	Day		1400
	Mason	2	650	Day		1300
	Mane coolie	4	300	Day		1200
	Female coolie	4	300	Day		1200
	Bhishti	5	300	Day		1500
	Sundries					75
				Total		**24626**
4	**12mm thick plaster in CM 1:4 for 63m^2**					
	Cement	7	380	Bag		2660
	Sand	0.96	850	m^3		816
	Sundries					75
	Labour cost					
	Main mason	1	700	Day		700
	Mason	3	650	Day		1950
	Male coolie	2	300	Day		600
	Female coolie	2	300	Day		600

	Bhishti	5	300	Day		1500
	Sundries					75
				Total		**8976**
5	**2 Cot whit washing 63 m^2**					
	Primer coat					
	Primer	5.0	185	Lit.		925
	Painter	2	350	Day		700
	Helper	2	300	Day		600
	Sundries					75
	1st coat painting					
	Paint	8	300	Lit		2400
	Painter	3	350	Day		1050
	Helper	3	300	Day		900
	Sundries					75
	2nd coat painting					
	Paint	5	300	Lit.		1500
	Painter	3	350	Day		1050
	Helper	3	300	Day		900
	Sundries					75
				Total		**10250**
6	**Flooring for 3.76m^2**					
	Soil 2.9 m^3	0.188	500	m^3		100
	White tiles	3.76	300	m^2		1128
	Sundries					75
	Labour cost					
	Mason	1	650	Day		650
	Male coolie	1	300	Day		300
	Sundries					75
				Total		**2328**
7	**Western commode, urinal, wash basin**					
	Materials					
	Commode	2	4000	Nos.		8000
	Urinal	1	1500	Nos.		1500
	Wash basin	1	1000	Nos.		1000
	Sundries					75
	Labour cost					

	Plumber	1	700	Day		1000
	Sundries					75
				Total		**5380**
8	**Plumbing work**					
	Material					
	Gully trap	2	420	Nos.		840
	Inspection chamber	1	L.S	-		4000
	Bib cork	3	450	Nos.		900
	Stop cork	2	500	Nos.		1000
	Ball valve	1	300	Nos.		600
	Flush valve	2	600	Nos.		1200
	Plumbing pipes	L.S	L.S	-		3000
				Total		**11540**
9	Door & ventilation					
	Doors (P.V.C)	2	1500	Nos.		3000
	Vents	6	600	Nos.		3600
				Total		**6600**
Total cost						**92851**
Water charge 1.5% of total cost						**1394**
Electric city charge 2% of total cost						**1858**
Contractor's profit 10% of total cost						**9285**
Grand total						**1,05,388**
Round up						**1,10,000**

Calculation for material:-

1) RCC (1:1.5:3) work for slab

For $1m^3$ wet concrete, 1.25 m^3dry concrete is required. For $1.4m^3 = 1.75m^3$ dry

Proportion 1:1.5:3=5.5

Cement:- (1/5.5)x 1.75 = $0.32m^3$ = 10 bags

Sand:- (1.5/5.5) x 1.75 =0.48

Aggregate:- (3/5.5)x1.75=$0.95m^3$

Assume 1% steel of the volume of concrete as Volume of steel=(1/100) x 1.75 =$0.0175m^3$ Density of steel=$7850kg/m^3$

Density=Mass/Volume

∴ Mass of steel=0.0175 x 7850 =140kg

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

∴ For 140 kg of steel, 1.48 = 1.5kg binding wire is required.

2) 1st class brick masonry up to slab, CM (1:6) for 5.75 m^3work

For 1m^3 of Brickwork, 500 bricks are required. For 5.75m^3= 2875 bricks are required
Add 5% wastage=144

Total brick=3019nos.

1 m^3 brick work = Volume of mortar 0.23 m^3

Volume of dry mortar 0.30 m^3

5.75 m^3brick work = volume of mortar 1.72 m^3
Cement:- (1/7) x 1.72 = 0.25 m^3 = 8 bags

Sand:- (6/7) x 1.72 = 1.47 m^3

3) 12mm thick cement plaster in C.M. 1:4

Area of plaster=63m^2, thickness =12mm

∴Volume of wet mortar=63×0.012=0.756m^3

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

of wet mortar =0.756+ 0.2268 =0.97m^3

Again, volume of dry mortar required is about 25% more than that of
wet Quantity of mortar Quantity of mortar=0.97+ 0.24=1.21 m^3

Mortar proportion=1:4=5

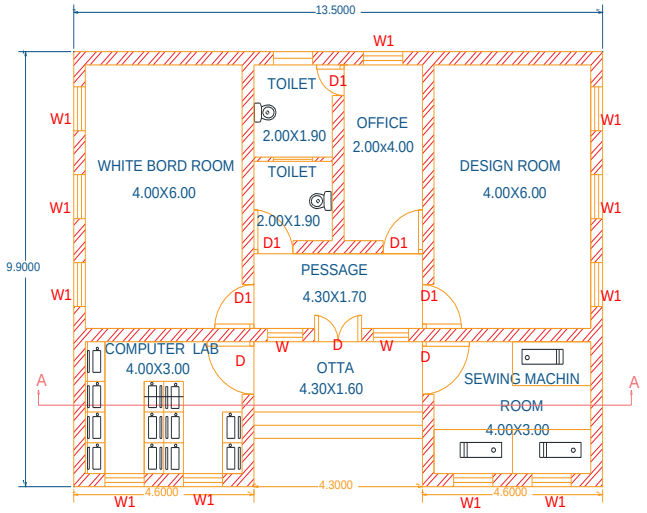
Cement:- (1/5) x 1.21 = 0.24m^3= 7 bags required

Sand:- (4/5) x 1.21 = 0.96 m^3 required

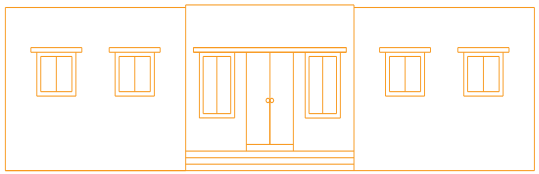
4) Flooring

For 50mm thick earth filling soil = 0.05 x 3.76 =0.18m^3

8.5 Skill development centre (SMART DESIGN)



PLAN



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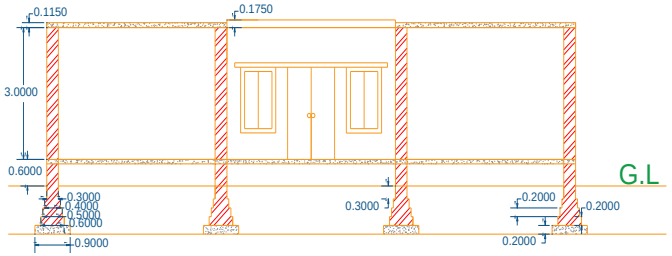
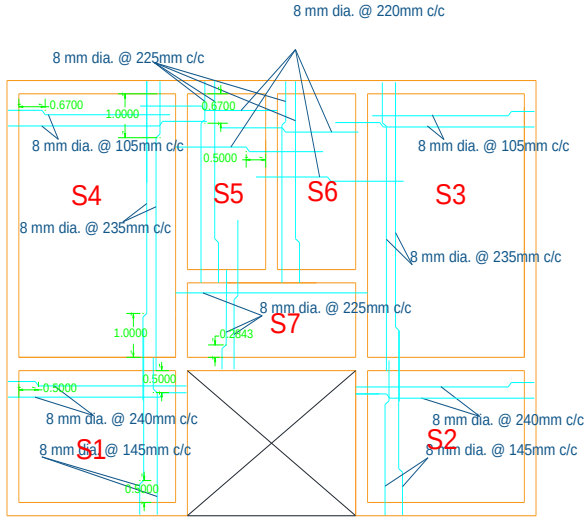


SECTION



SLAB REINFORCEMENT DETAIL

DOOR & WINDOW SCHEDULE	
D	1.30 x 2.10
D1	1.00 x 2.10
W	0.90 x 1.50
W1	1.00 x 1.00
V	1.00 x 0.50

NOTES:-
1. ALL DIMENSION SHOWN IN THESE DRAWING IS IN METER.
2. THE LENGTH OF BENTS ARE GIVEN IN GREEN COLOR.
3. GRADE OF CONCRETE IS M25.
4. GRADE OF REINFORCEMENT BARS ARE Fe415.
5. STEEL BARS USE IN THIS STRUCTURE IS TMT BARS.
6. ALL THE SLAB IS DESIGN AS INDIVIDUALLY.
7. CLEAR COVER OF SLAB IS 15mm.

VISHWAKARMA YOJNA PHASE - VIII	
VILLAGE	RALOL
STRUCTURE	SKILL DEVELOPMENT CENTER
NODAL OFFICER	PARTH DANANI
STUDENT NAME	RUDRA CHAUDHARY (170770106009) KOTADIYA DHRUV (180773106014)
	SILVER OAK COLLAGE OF ENGINEERING & TECHNOLOGY

3d view

8.9 MESERMENT SHEET OF SKILL DVELOPMENT CENTRE

Sr.No	Description	No	Length	Breadth	Height	Total	U
1	**EXCAVATION**						
	FOR ALL WALLS	1	80.5	0.9	1.1	79.69	m^3
TOTAL QUANTITY OF EXCAVATION IS 77.66 m^3							
2	**P.P.C**						
	FOR ALL WALLS	1	80.5	0.9	0.2	14.49	m^3
	P.C.C BELOW FLOORING						
	WHITE BOARD ROOM	1	4	6	0.1	2.4	m^3
	DESIGN ROOM	1	4	6	0.1	2.4	m^3
	OFFICE	1	2	4	0.1	0.8	m^3
	PESSAGE	1	4.3	1.7	0.1	0.731	m^3
	COMPUTER LAB	1	4	3	0.1	1.2	m^3
	SEWING MACHIN ROOM	1	4	3	0.1	1.2	m^3
	OTTA	1	4	1.6	0.1	0.64	m^3
	TOILET	2	2	1.9	0.1	0.76	m^3
TOTAL QUANTITY OF P.C.C IS 24.62 m^3							
3	**B.W. UP TO PLINTH**						
	FOR 0.6 THICK WALL	1	80.5	0.6	0.2	9.66	m^3
	FOR 0.5 THICK WALL	1	80.5	0.5	0.2	8.05	m^3
	FOR 0.4 THICK WALL	1	80.5	0.4	0.2	6.44	m^3
	FOR 0.3 THICK WALL	1	80.5	0.3	0.3	7.24	m^3
	STEPS	1	0.9	4.3	0.15	0.58	m^3
					TOT.	31.97	
	FOR 0.3 THICK WALL	1	80.5	0.3	0.5	12.07	m^3
TOTAL QUANTITY OF B.W. UP TO PLINTH IS 44.1 m^3							
4	**D.P.C**						
	FOR ALL WALLS	1	80.5	0.3		24.15	m^2
TOTAL QUANTITY OF D.P.C IS 24.15 m^2							

5	**LINTEL & CHAJJA**						
	D	3	1.60	0.75	0.1	0.36	m^3
	D1	5	1.30	0.75	0.1	0.487	m^3
	W	11	1.20	0.75	0.1	0.99	m^3
	W1	2	1.30	0.75	0.1	0.195	m^3
	V	2	1.30	0.75	0.1	0.195	m^3
TOTAL QUANTITY OF LINTEL & CHAJJA IS 2.227 m^3							
6	**B.W. UP TO SLAB**						
	WALLS	1	80.5	0.3	3	72.45	m^3
	PARTITION WALL	1	2	0.1	3	0.6	m^3
	DEDUCTION						
	D	3	0.3	1.30	2.10	2.45	m^3
	D1	5	0.3	1.00	2.10	3.15	m^3
	W	11	0.3	0.90	1.50	4.45	m^3
	W1	2	0.3	1.00	1.00	0.6	m^3
	V	2	0.3	1.00	0.50	0.3	m^3
	LINTTEL	=0.89					
TOTAL QUANTITY OF B.W. UP TO SLAB IS 61.21 m^3							
7	**EARTH FILLING**						
	IN FOUNDATION=79.69-31.97					47.72	m^3
	WHITE BORD ROOM	1	4	6	0.5	12	m^3
	DESIGN ROOM	1	4	6	0.5	12	m^3
	OFFICE	1	2	4	0.5	4	m^3
	PESSAGE	1	4.3	1.7	0.5	3.6	m^3
	COMPUTER LAB	1	4	3	0.5	6	m^3
	SEWING MACHIN ROOM	1	4	3	0.5	6	m^3
	OTTA	1	4	1.6	0.5	3.2	m^3
	TOILET	2	2	1.9	0.5	3.8	m^3
TOTAL QUANTITY OF EARTH FILING IS 98.32 m^3							
8	**FLOORING**						
	WHITE BORD ROOM	1	4	6		24	m^2
	DESIGN ROOM	1	4	6		24	m^2
	OFFICE	1	2	4		8	m^2

	PESSAGE	1	4.3	1.7		7.31	m^2
	COMPUTER LAB	1	4	3		12	m^2
	SEWING MACHIN ROOM	1	4	3		12	m^2
	OTTA	1	4	1.6		6.4	m^2
	TOILET	2	2	1.9		7.6	m^2
TOTAL QUANTITY OF FLOORING IS 101.33 m^2							
9	**PLASTER**						
	INSIDE						
	WHITE BORD ROOM	1	20		3	60	m^2
	DESIGN ROOM	1	20		3	60	m^2
	OFFICE	1	12		3	36	m^2
	PESSAGE	1	12		3	36	m^2
	COMPUTER LAB	1	14		3	42	m^2
	SEWING MACHIN ROOM	1	14		3	42	m^2
	TOILET	2	7.8		3	23.4	m^2
	OUTER SIDE	1	53.4		3.775	201.6	m^2
	CELING	QUANTITY CELING IS SAME AS FLOORING =101.33 m^2					
	DEDUCTION						
	D	3	1.30	2.10		8.19	m^2
	D1	5	1.00	2.10		10.5	m^2
	W	11	0.90	1.50		14.85	m^2
	W1	2	1.00	1.00		2	m^2
	V	2	1.00	0.50		1	m^2
TOTAL QUANTITY OF PLASTER IS 565.8 m^2							
10	WHIGHT WASHING						
TOTAL QUANTITY OF WHITE WASHING IS 565.8 m^2							
11	**R.C.C WORK**						
	S1&S2	2	4.6	3.45	0.115	3.65	m^3
	S3,S4,S5,S6,S7	1	13.5	6.45	0.175	15.23	m^3
	LINTEL& CHAJJA					2.27	m^3
TOTAL QUANTITY OF R.C.C WORK IS 21.15 m^3							

TABLE 8.10 Rate analysis

No.	Particulars	Quantity	Rate	Per	Amount in (INR)
1	**Excavation in foundation for 77.66 m^3**				
	Labour				
	Male coolie	15	300	Day	4500
	Female coolie	15	300	Day	4500
	Sundries				200
				Total	**9200**
2	**PCC (1:4:8) for foundation for 24.62m^3 work**				
	Materials				
	Cement	84	380	Bag	31920
	Sand	11.66	850	m^3	9911
	Aggregate	23.32	1100	m^3	25652
	Sundries				100
	Main coolie	2	700	Day	1400
	Mason	4	650	Day	2600
	Male coolie	10	300	Day	3000
	Female coolie	10	300	Day	3000
	Bhishti	5	300	Day	1500
	Sundries				200
				Total	**79283**
3	**1st class brick masonry up to G.L, CM (1:6) up to plinth for 44.1 m^3 work**				
	Material				
	Brick	22050	4.5	Nos.	99225
	Cement	36	380	Bag	13680
	Sand	7.56	850	m^3	6426
	Sundries				75
	Labour cost				
	Main mason	3	700	Day	2100
	Mason	8	650	Day	5200
	Male coolie	16	300	Day	4800
	Female coolie	16	300	Day	4800
	Bhishti	5	300	Day	1500

	Sundries				200
				Total	**138006**
4	**Earth filling**				
	Soil				
	In foundation	47.72	500	m^3	23860
	In all room	50.06	500	m^3	25030
	Sundries				
	Labour				
	Mail coolie	8	300	Day	2400
	Female coolie	8	300	Day	2400
	Sundries				150
				Total	**53840**
5	**DPC (1:1.5:3)**				
	Material				
	Cement	13	380	m^3	4940
	Sand	1.01	800	m^3	808
	Aggregate	2.02	1100	m^3	2222
	Labour				
	Mason	4	650	Day	2600
	Male coolie	4	300	Day	1200
	Female coolie	4	300	Day	1200
				Total	**12970**
6	**1st class brick masonry in super structure, CM (1:6) for 62.1 m^3 work**				
	Material				
	Brick	31250	4.5	Nos.	140625
	Cement	50	380	Bag	19000
	Sand	10.64	850	m^3	9044
	Sundries				
	Labour cost				
	Main mason	10	700	Day	7000
	Mason	20	650	Day	13000
	Male coolie	20	300	Day	6000
	Female coolie	20	300	Day	6000
	Bhishti	5	300	Day	1500
	Sundries				200
				Total	**202369**
7	**12mm thick plaster in CM 1:4 for 565.8m^2**				

	Materials				
	Cement	42	380	Bag	15960
	Sand	8.8	850	m^3	7480
	Sundries				
	Labour cost				
	Main mason	5	700	Day	3500
	Mason	15	650	Day	9750
	Male coolie	15	300	Day	4500
	Female coolie	15	300	Day	4500
	Bhishti	5	300	Day	1500
	Sundries				300
				Total	**47490**
8	**RCC (1:1.5:3) for 21.15 m^3**				
	Materials				
	Cement	91	380	m^3	34580
	Sand	7.20	800	m^3	5760
	Aggregate	14.4	1100	m^3	15840
	Steel	2100	50	Kg	105000
	Binding wire	21	55	Kg	1155
	Sundries				75
	Labour cost				
	Mixing, transporting and placing of concrete, including curing	20	300	Day	6000
	Mason	2	650	Day	1300
	Cutting, Binding, Placing,	2100	6.0	Kg	12600
	Rent of mixture and vibrator machine	-	-	L.S.	4000
	cantering and shuttering	-	-	L.S.	20000
	Sundries				500
				Total	**206810**
9	**Flooring**				
	Material				
	Cement	15	380	bag	5700

	Tiles	101.33	375	m^2	37999
	Labour cost				
	Main mason	7	700	Day	4900
	Mason	7	650	Day	4550
	Male coolie	14	300	Day	4200
	Female coolie	14	300	Day	4200
	Sundries				150
				Total	**61699**
10	**2 cot white washing for 195.1m^2 work**				
	Primer coat				
	Primer	40	185	Lit.	7400
	Painter	16	350	Day	5600
	Helper	16	300	Day	4800
	Sundries				100
	1st coat painting				
	Lime mixture	100	300	Lit	30000
	Painter	16	350	Day	5600
	Helper	16	300	Day	4800
	Sundries				100
	2nd coat painting				
	Lime mixture	80	300	Lit.	24000
	Painter	16	350	Day	5600
	Helper	16	300	Day	4800
	Sundries				100
				Total	**92900**
11	**Doors & Windows with wooden frame**				
	Doors	8	2500	Nos.	20000
	Windows	15	1250	Nos.	18750
	Carpenter	6	600	day	3600
	Helper	6	300	day	1800
	Sundries				150
				Total	**44300**
				Total cost	**9,48,867**
				Water charge 1.5% of total cost	**14,234**
				Contingency charges 5% of total cost	**47,444**
				Electric fitting charge 7% of total cost	**66,421**
				Plumbing & sanitation fitting charges 7% of total cost	**66,421**

Contractor's profit 10% of total cost	**94,887**
Grand total	**12,85,508**
Round up	**13,00,000**

Calculation for material:-

1) PCC (1:4:8) for foundation for 24.62m^3 work

For 4.34 m^3 wet concrete, 54% add of dry concrete = 37.91 m^3 dry concrete is
Proportion:- 1:4:8
Cement:- (1/13) x 37.91 = 2.91 m^3 , No. of bags = 2.91/0.053, = 84 Bags
Sand:- (4/13) × 37.91 = 11.66 m^3, Aggregate:- (8/13) × 37.91 = 23.32 m^3

2) 1st class brick masonry up to G.L, CM (1:6) in foundation for 44.1m^{3}work

For 1m^3 of Brickwork, 500 bricks are required. For 44.1m^3= 22050 bricks are required. Add 1% wastage=200.Total brick=22250 nos.
1 m^3 brick work = Volume of mortar 0.23 m^3
Volume of dry mortar 0.30 m^3
44.1m^{3}brick work = volume of mortar 13.23 m^3
Cement:- (1/7) x 13.23 = 1.89 m^3 , No. of bags = 1.01/0.053, = 36 Bags
Sand:- (4/7) × 13.23 =7.56 m^3

3) D.P.C (1:1.5:3) 100mm thick for 24.15m^2 = 2.41m^3

For 2.41m^3 wet mortar, Dry mortar =3.71 m^3
Proportion:- (1:1.5:3)
Cement:- (1/5.5) x 3.71 = 0.67 m^3 = 13 bag
Sand:- (1.5/5.5) x 3.71 = 1.01 m^3, Aggregate :- (3/5.5) x 3.71= 2.02 m^3

4) 1st class brick masonry in super structure, CM (1:6) for 62.1 m^3 work

For 1m^3 of Brickwork, 500 bricks are required. For 62.1m^3= 31050 bricks are required. Add 1% wastage=200
Total brick=31250 nos.

1 m^3 brick work = Volume of mortar 0.23 m^3

Volume of dry mortar 0.30 m^3

62.1m^{3}brick work = volume of mortar 18.63 m^3
Cement:- (1/7) x 18.63 = 1.43 m^3 , No. of bags = 1.01/0.053, = 50 Bags
Sand:- (4/7) × 18.63= 10.64m^3

5) 12mm thick plaster in CM 1:4 for 565.8 m^2

Area of plaster=565.8m^2, thickness =12mm

∴Volume of wet mortar=565.8×0.012=6.78 m^3

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

∴quantity of wet mortar = 8.81m^3

Again, volume of dry mortar required is about 25% more than that of wet Quantity of mortar Quantity of mortar=11.01m^3

Mortar proportion:- (1:4)

Cement:- (1/5) x11.01 = 2.2m^3 = 42 bags required

Sand:- (4/5) x 11.01 = 8.8 m^3 required

6) RCC (1:1.5:3) for 21.15 m^3 work

For 1m^3 wet concrete, 1.25 m^3dry concrete is required. For 21.15m^3= 26.43m^3 dry

Proportion:- (1:1.5:3)

Cement:- (1/5.5) x 26.43 = 4.80 m^3 = 91 bags

Sand:- (1.5/5.5) x 26.43 = 7.20 m^3

Aggregate:-(3/5.5) x 26.43= 14.41m^3

Assume 1% steel of the volume of concrete as Volume of steel = (1/100) x 26.43= 0.264m^3, Density of steel=7850kg/m^3

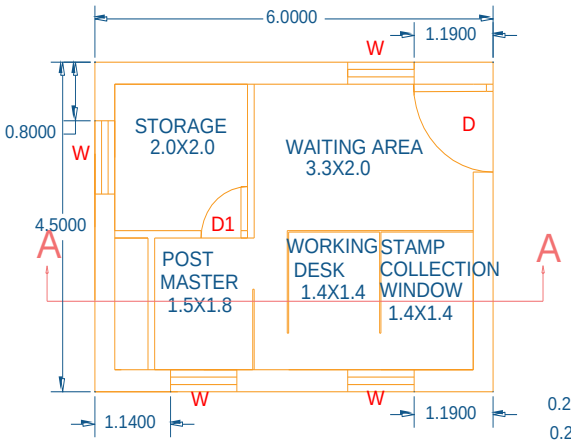
Density=Mass/Volume

∴ Mass of steel=0.2643 x 7850 =2100kg

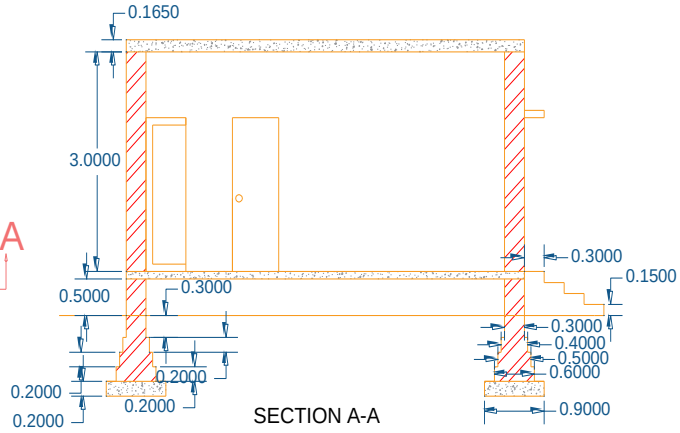
For 100kg of steel,1kg binding wire is required.

∴ For 2100 kg of steel, 21 kg binding wire is required.

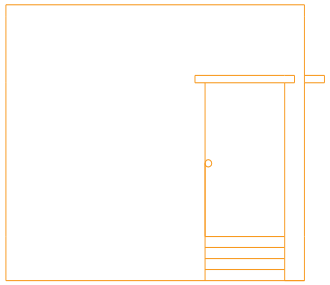
8.6 Post office (Physical design)



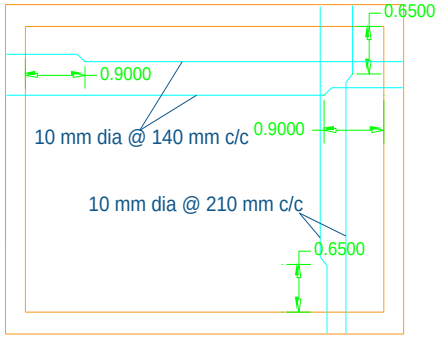
PLAN



SECTION A-A



ELEVATION

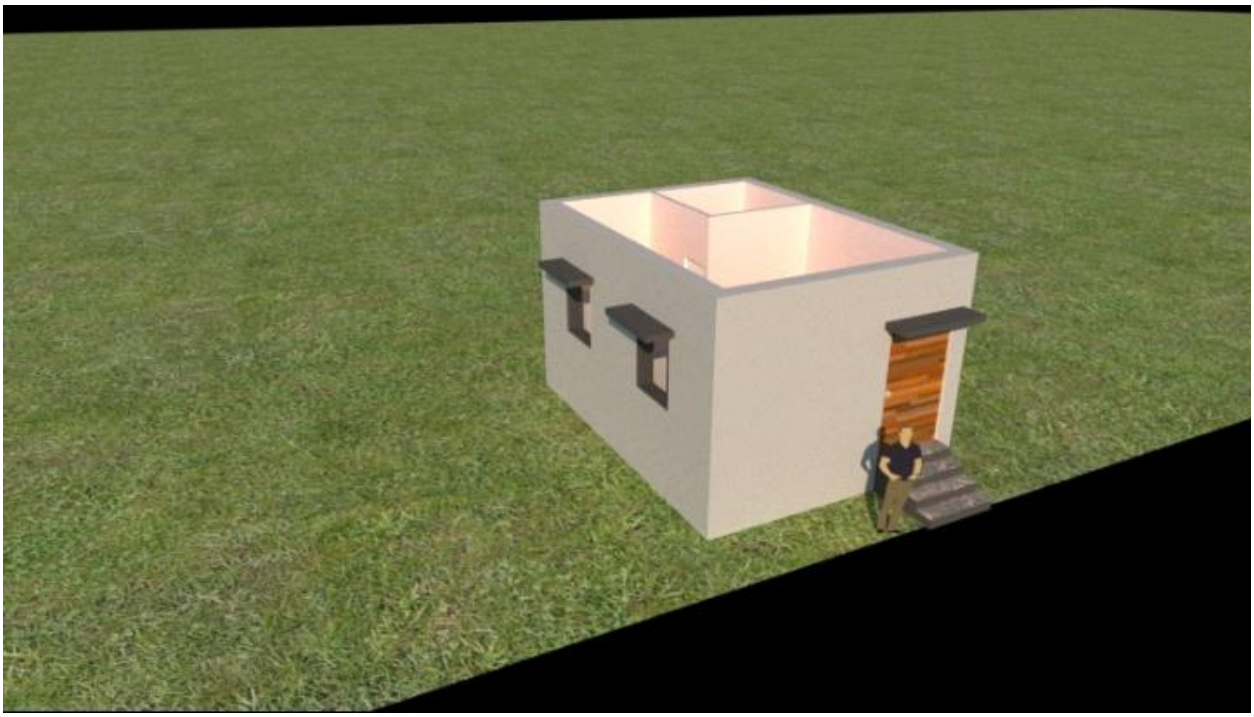


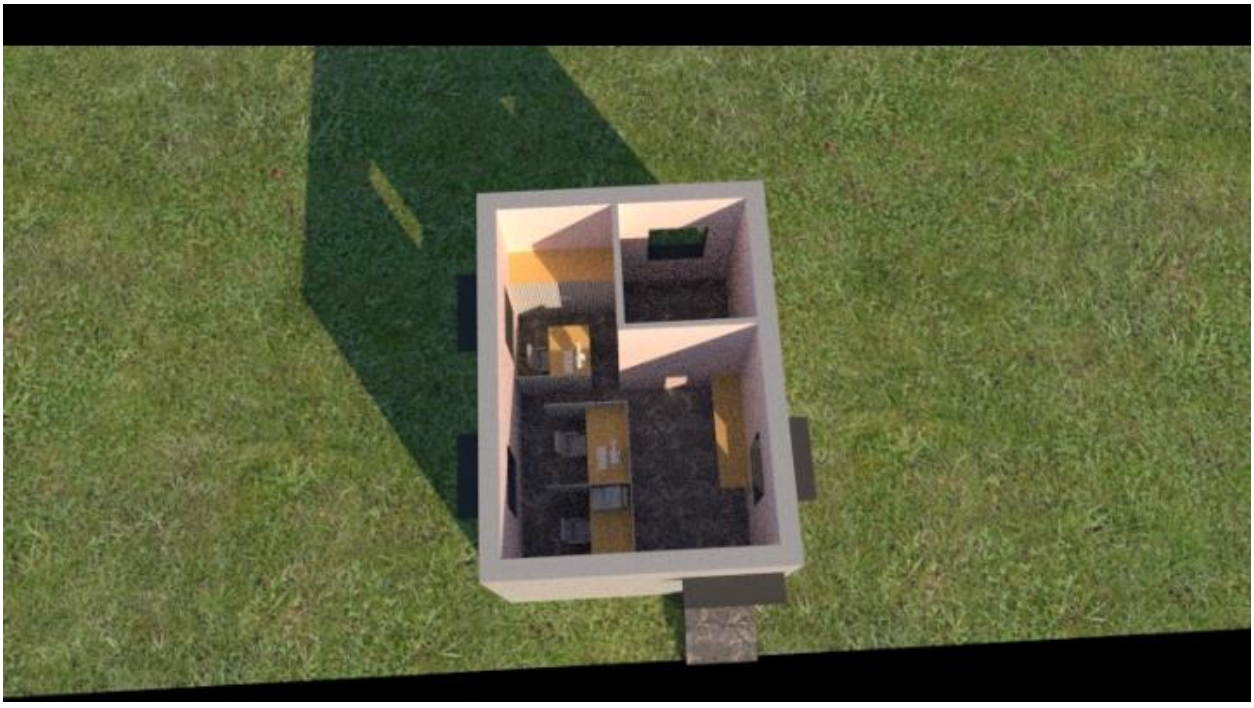
SLAB REINFORCEMENT DETAIL

DOOR & WINDOW SCHEDULE	
D	1.20 x 2.10
D1	0.70 x 2.10
W	1.00 x 1.20

NOTES:-
1. ALL DIMENSION SHOWN IN THESE DRAWING IS IN METER.
2. THE LENGTH OF BENTS ARE GIVEN IN GREEN COLOR.
3. GRADE OF CONCRETE IS M25.
4. GRADE OF REINFORCEMENT BARS ARE Fe415.
5. STEEL BARS USE IN THIS STRUCTURE IS TMT BARS.
6. THE WALLS OF PARTITION BETWEEN WORKING DESK, STAMP COLLECTION WINDOW ARE MADE OF WOOD.
7. CLEAR COVER OF SLAB IS 15mm.

VISHWAKARMA YOJNA PHASE - VIII	
VILLAGE	RALOL
STRUCTURE	POST OFFICE
NODAL OFFICER	PARTH DANANI
STUDENT NAME	RUDRA CHAUDHARY (170770106009) KOTADIYA DHRUV (180773106014)
SILVER OAK COLLAGE OF ENGINEERING & TECHNOLOGY	





3d VIEW

8.11 MESERMENT SHEET OF POST OFFICE

Sr.No	Description	No	Length	Breadth	Height	Total	U
1	**EXCAVATION**						
	FOR EXCAVATION	1	19.8	0.9	1.1	19.60	m^3
TOTAL QUANTITY OF EXCAVATION IS 19.60 m^3							
2	**P.P.C**						
	FOR WALLS	1	19.8	0.9	0.2	3.56	m^3
TOTAL QUANTITY OF P.C.C IS 3.56 m^3							
3	**B.W. UP TO PLINTH**						
	FOR 0.6 THICK WALL	1	19.8	0.6	0.2	2.37	m^3
	FOR 0.5 THICK WALL	1	19.8	0.5	0.2	1.98	m^3
	FOR 0.4 THICK WALL	1	19.8	0.4	0.2	1.58	m^3
	FOR 0.3 THICK WALL	1	19.8	0.3	0.8	4.75	m^3
	STEPS	1	1.2	0.9	0.3	0.32	m^3
TOTAL QUANTITY OF B.W. UP TO PLINTH IS 11.01 m^3							
4	**D.P.C**						
	FOR ALL WALLS	1	19.8	0.3		5.94	m^2
TOTAL QUANTITY OF D.P.C IS 24.15 m^2							
5	**B.W. UP TO SLAB**						
	WALLS	1	19.8	0.3	3	17.82	m^3
	PARTITION WALL	1	4.2	0.1	3	1.26	m^3
	DEDUCTION						
	D	1	1.2	0.3	2.1	0.756	m^3
	D1	1	0.7	0.1	2.1	0.147	m^3
	W	4	1	0.3	1.2	1.44	m^3
	LINTEL						
	D	1	1.5	0.3	0.1	0.036	m^3
	D1	1	1	0.1	0.1	0.001	m^3
	W	4	1.5	0.3	0.1	0.18	m^3
TOTAL QUANTITY OF B.W. UP TO SLAB IS 16.62 m^3							

6	**EARTH FILLING**						
		1	3.9	5.4	0.5	10.53	m^3
TOTAL QUANTITY OF EARTH FILING IS 10.53 m^3							
7	**P.C.C BELOW FLOORING**						
		1	3.9	5.4	0.075	1.58	m^3
8	**FLOORING**						
	INSIDE	1	3.9	5.4		21.06	m^2
	D	1	1.3	0.3		0.36	m^2
TOTAL QUANTITY OF FLOORING IS 21.42 m^2							
9	**PLASTER**						
	INSIDE						
	CELING	1	5.3	4.9		25.97	m^2
	WALLS	1	27.3	3		81.9	m^2
	OUT SIDE	1	21	3.765		79	m^2
	DEDUCTION						
	D	1	1.2	2.1		2.52	m^2
	D1	1	0.7	2.1		1.47	m^2
	W	4	1	1.2		4.8	m^2
TOTAL QUANTITY OF PLASTER IS 178.1 m^2							
10	**WHIGHT WASHING**	SAME AS PLASTER					
TOTAL QUANTITY OF WHITE WASHING IS 178.1 m^2							
11	**R.C.C**						
	SLAB	1	6	4.5	0.165	2.97	m^3
	LINTEL & CHAJJA						
	D	1	1.2	0.45	0.1	0.054	m^3
	W	4	1	0.45	0.1	0.18	m^3
TOTAL QUANTITY OF R.C.C WORK IS 3.20							

TABLE 8.12 RATE ANALISYS

No.	**Particulars**	**Quantity**	**Rate**	**Per**	**Amount in (INR)**
1	**Excavation in foundation for 19.60 m^3**				
	Labour				
	Male coolie	2	300	Day	4500

	Female coolie	15	300	Day	4500
	Sundries				200
				Total	**9200**
2	**PCC (1:4:8) for foundation for 3.56m^3 work**				
	Materials				
	Cement	8	380	Bag	3040
	Sand	1.62	850	m^3	1377
	Aggregate	3.7	1100	m^3	4070
	Sundries				50
	Labour				
	Main coolie	0.5	700	Day	350
	Mason	1	650	Day	650
	Male coolie	1	300	Day	300
	Female coolie	1	300	Day	300
	Bhishti	5	300	Day	1500
	Sundries				75
				Total	**11712**
3	**1st class brick masonry up to G.L, CM (1:6) up to plinth for 44.1 m^3 work**				
	Material				
	Brick	5705	4.5	Nos.	25673
	Cement	9	380	Bag	3420
	Sand	2.82	850	m^3	2397
	Sundries				75
	Labour cost				
	Main mason	1	700	Day	700
	Mason	2	650	Day	1300
	Male coolie	4	300	Day	1200
	Female coolie	4	300	Day	1200
	Bhishti	5	300	Day	1500
	Sundries				75
				Total	**37540**
4	**Earth filling**				
	Soil	10.53	500	m^3	5265
	Sundries				20
	Labour				

	Mail coolie	2	300	Day	600
	Female coolie	2	300	Day	600
	Sundries				50
				Total	**6535**
5	**DPC (1:1.5:3) FOR**				
	Material				
	Cement	4	380	m^3	1520
	Sand	0.24	800	m^3	192
	Aggregate	0.49	1100	m^3	539
	Labour				
	Mason	1	650	Day	650
	Male coolie	1	300	Day	300
	Female coolie	1	300	Day	300
				Total	**1250**
6	**1st class brick masonry in super structure, CM (1:6) for 62.1 m^3 work**				
	Material				
	Brick	8500	4.5	Nos.	38250
	Cement	14	380	Bag	5320
	Sand	4.32	850	m^3	3672
	Sundries				50
	Labour cost				
	Main mason	2	700	Day	1400
	Mason	2	650	Day	1300
	Male coolie	4	300	Day	1200
	Female coolie	4	300	Day	1200
	Bhishti	5	300	Day	1500
	Sundries				100
				Total	**53992**
7	**12mm thick plaster in CM 1:4 for 178.1m^2**				
	Materials				
	Cement	14	380	Bag	5320
	Sand	2.77	850	m^3	2355
	Sundries				
	Labour cost				
	Main mason	2	700	Day	1400
	Mason	2	650	Day	1300
	Male coolie	4	300	Day	1200

	Female coolie	4	300	Day	1200
	Bhishti	5	300	Day	1500
	Sundries				150
				Total	**14425**
8	**RCC (1:1.5:3) for 21.15 m^3**				
	Materials				
	Cement	14	380	m^3	5320
	Sand	1.09	800	m^3	872
	Aggregate	2.19	1100	m^3	2409
	Steel	300	50	Kg	1500
	Binding wire	3	55	Kg	275
	Sundries				50
	Labour cost				
	Mixing, transporting and placing of concrete, including curing	5	300	Day	1500
	Mason	1	650	Day	650
	Cutting, Binding, Placing,	300	6.0	Kg	1800
	Rent of mixture and vibrator machine	-	-	L.S.	2500
	cantering and shuttering	-	-	L.S.	2000
	Sundries				100
				Total	**18976**
9	**Flooring**				
	Material				
	Cement	4	380	bag	1520
	Tiles	21.42	375	m^2	8033
	Labour cost				
	Main mason	0.5	700	Day	350
	Mason	1	650	Day	650
	Male coolie	1	300	Day	300
	Female coolie	1	300	Day	300
	Sundries				
				Total	**11153**

10	**2 cot white washing for 178.1m^2 work**				
	Primer coat				
	Primer	15	185	Lit.	2775
	Painter	2	350	Day	700
	Helper	2	300	Day	600
	Sundries				50
	1st coat painting				
	Lime mixture	25	300	Lit	7500
	Painter	2	350	Day	700
	Helper	2	300	Day	600
	Sundries				50
	2nd coat painting				
	Lime mixture	20	300	Lit.	6000
	Painter	2	350	Day	700
	Helper	2	300	Day	600
	Sundries				50
				Total	**20325**
11	**Doors & Windows with wooden frame**				
	Doors	2	2500	Nos.	5000
	Windows	4	1250	Nos.	5000
	Carpenter	1	600	day	600
	Helper	1	300	day	300
	Sundries				50
				Total	**10950**
				Total cost	**196058**
				Water charge 1.5% of total cost	**2941**
				Contingency charges 5% of total cost	**9803**
				Electric fitting charge 7% of total cost	**13725**
				Plumbing & sanitation fitting charges 7% of total cost	**13725**
				Contractor's profit 10% of total cost	**19606**
				Grand total	**255858**
				Round up	**2,60,000**

Calculation for material:-

1) PCC (1:4:8) for foundation for 3.56m^3 work

For 3.56 m^3 wet concrete, 54% add of dry concrete = 5.48 m^3 dry concrete is
Proportion:- 1:4:8

Cement:- (1/13) x 5.48 = 0.42 m^3 , No. of bags = 0.42/0.053, = 8 Bags
Sand:- (4/13) × 5.48 = 1.62 m^3, Aggregate:- (8/13) × 5.48 = 3.37 m^3

2) 1st class brick masonry up to G.L, CM (1:6) in foundation for 11.01m^3wor

For 1m^3 of Brickwork, 500 bricks are required. For 11.01m^3= 5505 bricks are required. Add 5% wastage=200
Total brick=5705 nos.

1 m^3 brick work = Volume of mortar 0.23 m^3

Volume of dry mortar 0.30 m^3

11.01m^3brick work = volume of mortar 3.30 m^3
Cement:- (1/7) x 3.3 = 0.47 m^3 , No. of bags = 0.47/0.053, = 9 Bags
Sand:- (6/7) × 3.3 =2.82 m^3

3) D.P.C (1:1.5:3) 100mm thick for 5.94m^2 = 0.59m^3

For 0.59 m^3 wet mortar, Dry mortar =0.90 m^3
Proportion:- (1:1.5:3)
Cement:- (1/5.5) x 0.9 = 0.67 m^3 = 4 bag
Sand:- (1.5/5.5) x 0.9 = 0.24 m^3, Aggregate :- (3/5.5) x 0.9= 0.0.49 m^3

4) 1st class brick masonry in super structure, CM (1:6) for 62.1 m^3 work

For 1m^3 of Brickwork, 500 bricks are required. For 16.62m^3= 8310 bricks are required. Add 1% wastage=190.Total brick=8500 nos.
1 m^3 brick work = Volume of mortar 0.23 m^3

Volume of dry mortar 0.30 m^3

16.62m^3brick work = volume of mortar 4.98 m^3
Cement:- (1/7) x 4.98 = 0.71m^3 , No. of bags = 0.71/0.053, = 14 Bags
Sand:- (6/7) × 4.98= 4.23m^3

5) 12mm thick plaster in CM 1:4 for 178.1 m^2

Area of plaster=178.1m^2, thickness =12mm
∴Volume of wet mortar=178.1×0.012= 2.13m^3
For uneven surface of masonry and for filling joints 30% more mortar is required
∴quantity of wet mortar = 2.76m^3

Again, volume of dry mortar required is about 25% more than that of wet Quantity of mortar Quantity of mortar=3.45m^3
Mortar proportion:- (1:4)
Cement:- (1/5) x3.45 = m^3 = 14 bags required
Sand:- (4/5) x 3.45 = 2.76 m^3 required

6) RCC (1:1.5:3) for 3.20 m^3 work

For 1m^3 wet concrete, 1.25 m^3dry concrete is required. For 3.25m^3 = 4 m^3 dry mortar req.

Proportion:- (1:1.5:3) ,

Cement:- (1/5.5) x 4 = 0.72 m^3 = 14 bags,

Sand:- (1.5/5.5) x 4 = 1.09 m^3

Aggregate:-(3/5.5) x 4= 2.19m^3

Assume 1% steel of the volume of concrete as Volume of steel = (1/100) x 3.20 = 0.032m^3, Density of steel=7850kg/m^3
Density=Mass/Volume

∴Mass of steel=0.032 x 7850 =300kg

For 100kg of steel,1kg binding wire is required.
∴ For 300 kg of steel, 3 kg binding wire is required.

Chapter-9. Proposing designs for Future Development of the Village for the PART-II Design

After completion of visit & data collection the project carried out in the current semester. By the help of this data we predict the future development of Ralol village in the field are:

- The village still lacks in many building and various structures. Taking this into consideration the estimation of its rehabilitation with other necessary amenities will be designed in the next semester.
- Renewable energy sources can be used for the purpose of energy conservation in every structure to
- Reduce load on conventional energy sources.
- To Facilitate Good Health trough PHC.
- Solar Energy Sources can be used for electricity purposes in Post office, Gov. Dispensary and Aganwadi infrastructure
- Internal road quality can be improved to provide better transportation facilities by using waste material as filling material which is produced within the village.
- One Common Community hall should be in village to organize various events and function

Chapter 10. Conclusion of the Entire Village Activities of the Project

- We discussed with the village authorities after that we filled the different types of survey and analysis form. In the techno economic survey conclude about Introduction of village, Geographical details, Demographical detail, and occupational detail and different types of Infrastructure facilities like about sanitation , transportation, road network, drainage line ,water supply, education viability, irrigation etc.
- In a sense, both represent the utilization of labor as a resource. Why, then, does thinking about efficiency focus on one and neglect the other It is important to reflect on this question.
- It can be help to develop the other village as increase basic amenities and after that smart amenity on any country with the help Smart (Ideal) Village visit and solid and liquid waste water management system Survey and Analysis. And it‘s also help to increase GDP Of state And Also increase country image in front of world as Good infrastructure; Good Economic Profile and Good Employment Solution; Good (Ideal Example) Smart Example of New infrastructure with Uses Of renewable energy Solution Country.
- With help Gap Analysis we conclude that some of different Smart Village facilities are required as basic or primary level which still lack in village .so according to Gap Analysis of Ralol village, we observed condition of existing infrastructure facilities in village such as- Primary school, Water tank, Road network, Drainage network, etc. Smart Village can solve their problem itself can become a smart village example to other village too.

 According to UDPFI norms, lacking in basic amenities And Smart Amenities provided as:

1) Low cost house
2) Bus station
3) Entry gate
4) Public toilet
5) Skill development Centre
6) Post office

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Chapter 12. Annexure attachment

12.1 Survey form of Ideal Village Scanned copy attachment in the report for Part-I

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	PUNSARI
Name of Taluka:	TALOD
Name of District:	SABARKANTHA
Name of Institute:	SILVER OAK COLLEGE OF ENGI.
Nodal Officer Name & Contact Detail:	PARTH DANANI 94285 - 96503
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	
Date of Survey:	

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	4375	2456	2273	
ii)	2011	5100	2653	2447	1109

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	1395.65 23 39 26 N 73 11 28 E
	Forest Area (In hect.)	
	Agricultural Land Area (In hect.)	1015.63
	Residential Area (In hect.)	18.54
	Other Area (In hect.)	219.60
	Water bodies	
	Nearest Town with Distance:	28 KM MODASA

3. **Occupational Details:**

Name of Three Major Occupation groups in Village	1. ANIMAL HUSBANDARY 2. FARMING 3. MARGINAL WORKER.

4. **Physical Infrastructure Facilities:**

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated) • RO Water • Well (Covered/ Uncovered) • Hand pumps • Tube well/ Borehole • River/ Canal/ Spring/ Lake/ Pond	RO PLANT	✓		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:			
	Underground Sump	Capacity:			
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	YES 2 NOS	✓		
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				
Suggestions if any:					

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E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	5 NOS	✓		
	Main road	5 NOS	✓		
	Internal streets	6 16	✓		
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH-8			10-15 KM
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO 30KM			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	YES			0 KM
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	MINI BUS JEEP			
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	YES GOVT >6HRS	✓		
	Power supply for Domestic Use	YES	✓		
	Power supply for Agricultural Use	YES	✓		
	Power supply for Commercial Use	YES	✓		
	Road/ Street Lights	YES	✓		

	Electrification in Government Buildings/ Schools/ Hospitals	YES			
	Renewable Energy Source Facilities (Y/ N)	YES			SOLAR PANEL
	LED Facilities	YES			
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	YES 8 NOS	✓		
	Location Condition	GOOD	✓		
	Community Toilet (With bath/ without bath facilities)	NO			
	Solid & liquid waste Disposal system available	YES	✓		DUMP 2 KM AWAY FROM VILLAGE
	Any facility for Waste collection from road	YES	✓		DUSTBIN
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	BORE WELL	✓		
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	100% PUCCA	✓		

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

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Techno Economic Survey

K.	Health Facilities:				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	PHC 24 HRS	✓		
	Private Clinic/Private Hospital/ Nursing Home	private hospitals	✓		
	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	8 NOS	✓		
	Primary School	2 NOS	✓		
	Secondary school	2 NOS	✓		
	Higher sec. School	1 NOS	✓		
	ITI college/ vocational Training Center	1 MINI ITI	✓		VAVUSHAYA VADHVAN
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	0			
	If any of the above Facility is not available in village than approx. distance from village: 30.....kms.				
Suggestions if any:					

M.	Socio- Culture Facilities				
	Community Hall (With or without TV) Location: 0-5KM Bus Stand	GOOD WITH TV	✓		

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	Condition:	GOOD	✓		
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	GOOD ✓	✓		
	Public Garden Location: Condition:	–	–	–	–
	Village Pond Location: Condition:	YES Outside the village GOOD	✓		
	Recreation Center Location: Condition:	YES	✓		
	Cinema/ Video Hall Location: Condition:	–	–	–	–
	Assembly Polling Station Location: Condition:	YES School GOOD	✓		
	Birth & Death Registration Office Location: Condition:	YES 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	GOOD	✓		
	Telecommunication Network/ STD booth	NO	-	-	-

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

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

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
O.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	BIO-GAS		NO	
P.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	SOLAR STREET LIGHT	✓		
Q.	Any Other	GREEN BUILDING (SOLAR)			

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	

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

8. Additional Information/ Requirement:

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

9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

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

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

12.2 Survey form of Smart Village Scanned copy attachment in the report for Part-I

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Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	GANDHINAGAR
Name of Taluka:	KALOL
Name of Village:	Nandipur.
Name of Institute:	SILVER OAK COLLEGE OF ENG.
Nodal Officer Name & Contact Detail:	PARTH - PANDYA 94285 - 96503
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	7758	3985	3772	1643

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1703
2.	Forest Area (In hect.)	0
3.	Agricultural Land Area (In hect.)	1500
4.	Residential Area (In hect.)	37
5.	Other Area (In hect.)	147
6.	Distance to the nearest railway station (in kilometers):	15 KM

1

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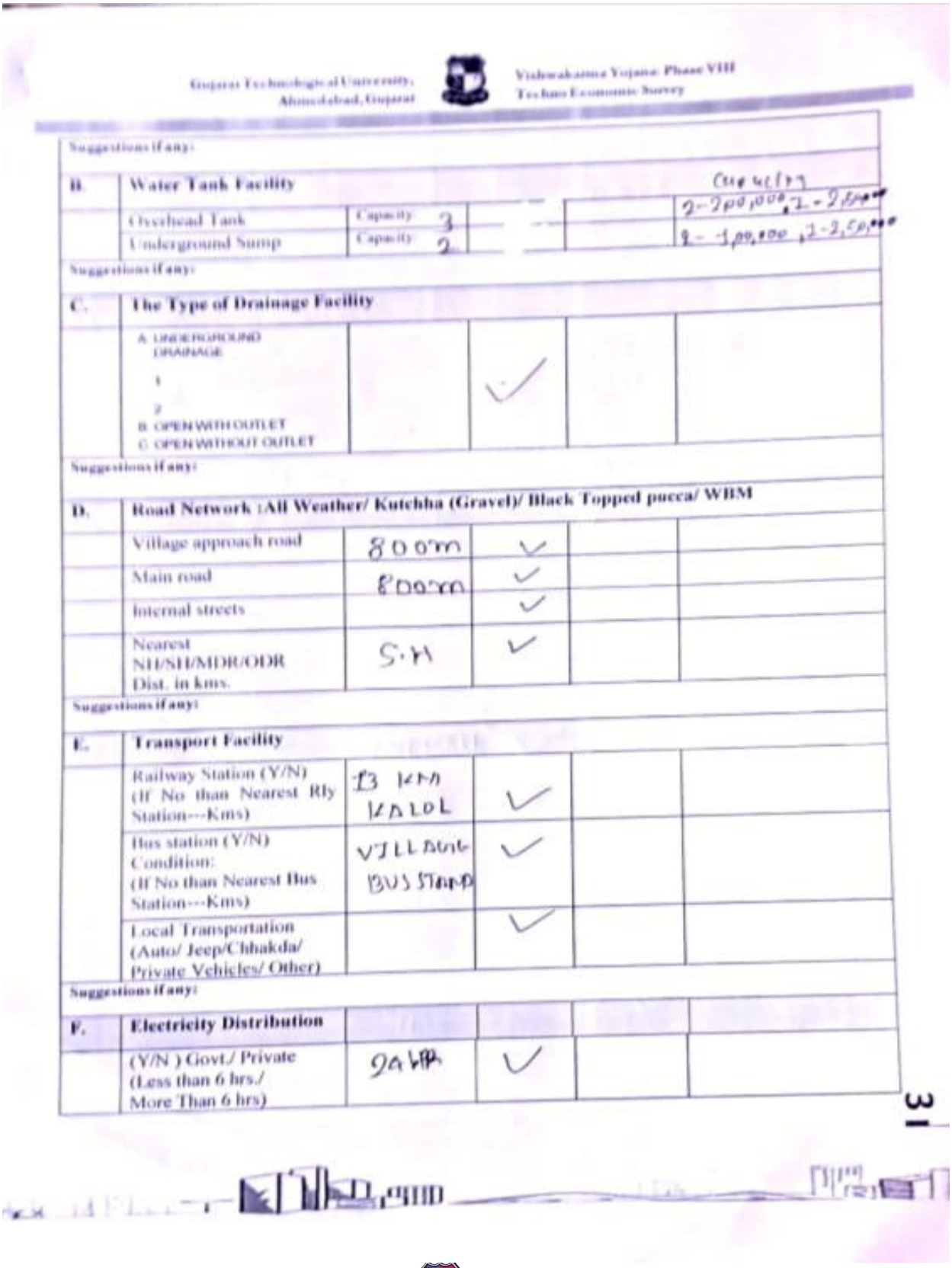
7.	Name of Nearest Town with Distance:	Gandhinagar
8.	Distance to the nearest bus station (in kilometers):	16 KM
9.	Whether village is connected to all road for the any facility or town or City?	YES

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Agriculture
	2.	Animal husbendary
	3.	labour.
Major crops grown in the village:	1.	MILLET (Bajari)
	2.	Wheat
	3.	CASTOR.

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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



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Techno Economic Survey

Suggestions if any:

B.	Water Tank Facility					
	Overhead Tank	Capacity: 3				2-2,00,000 2-2,50,000
	Underground Sump	Capacity: 2				2-1,00,000 2-2,50,000

Suggestions if any:

C.	The Type of Drainage Facility				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET		✓		

Suggestions if any:

D.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	800m	✓		
	Main road	800mm	✓		
	Internal streets		✓		
	Nearest NH/SH/MDR/ODR Dist. in kms.	S.H	✓		

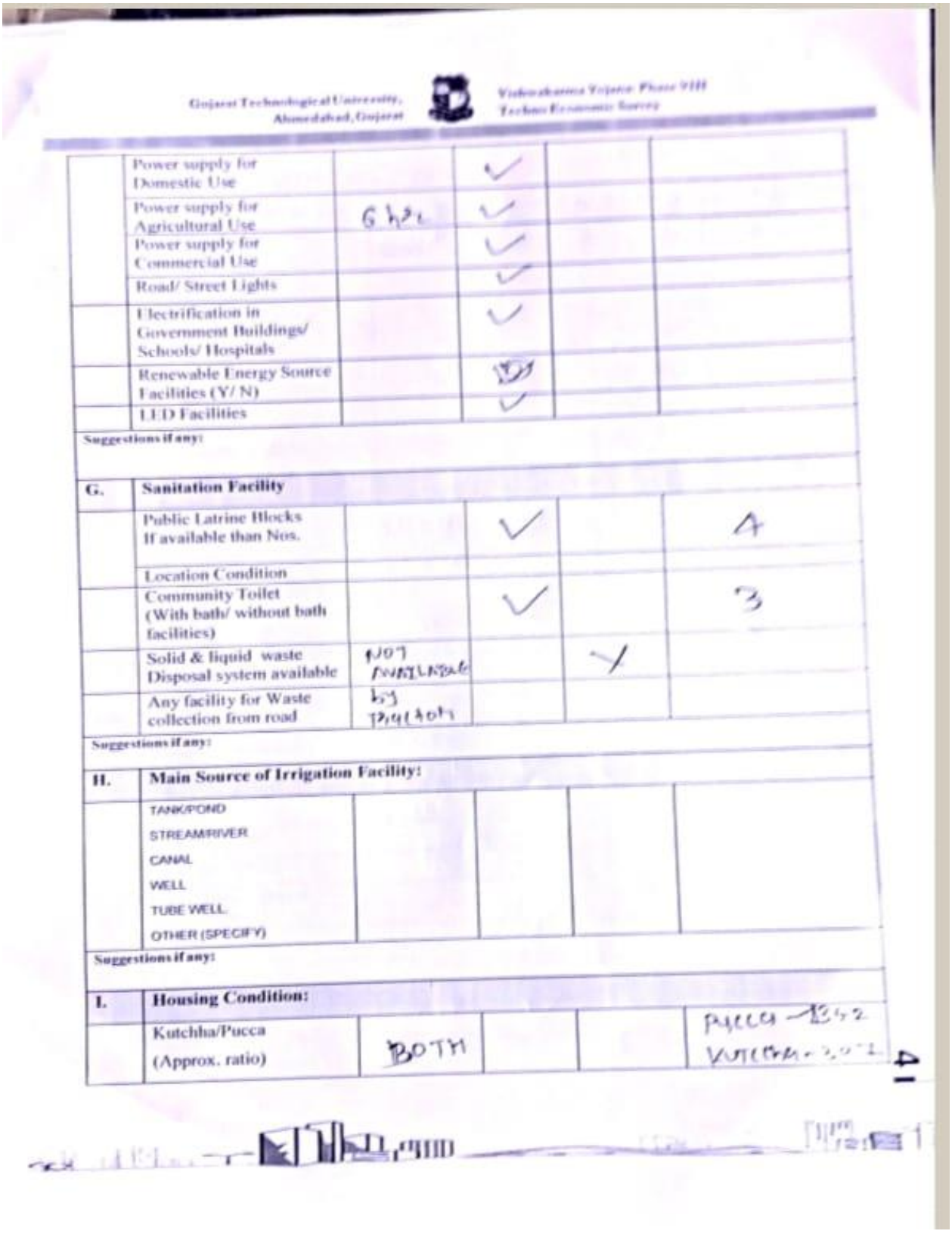
Suggestions if any:

E.	Transport Facility				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	13 KM RALOL	✓		
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	VILLAGE BUS STAND	✓		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)		✓		

Suggestions if any:

F.	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	24 HR	✓		

3



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	Power supply for Domestic Use		✓		
	Power supply for Agricultural Use	6 hrs	✓		
	Power supply for Commercial Use		✓		
	Road/ Street Lights		✓		
	Electrification in Government Buildings/ Schools/ Hospitals		✓		
	Renewable Energy Source Facilities (Y/ N)		✓		
	LED Facilities		✓		

Suggestions if any:

G.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.		✓		4
	Location Condition				
	Community Toilet (With bath/ without bath facilities)		✓		3
	Solid & liquid waste Disposal system available	NOT AVAILABLE		✓	
	Any facility for Waste collection from road	by TRACTORS			

Suggestions if any:

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

Suggestions if any:

I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	BOTH			PUCCA - 80% KUTCHA - 20%

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	8	✓		
	Sub-Centre				
	PHC	1	✓		
	BLOCK PHC				
	CHC/RH				
	District/ Govt. Hospital	✓			
	Govt. Dispensary	✓			
	Private Clinic	✓			
	Private Hospital/ Nursing Home				
	AYUSH Health Facility				
	sonography /ultrasound facility				
	If any of the above Facility is not available in village than approx. distance from village: ...3...kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	8	✓		
	Primary School	3	✓		
	Secondary school	2	✓		
	Higher sec. School	1	✓		only girls
	ITI college/ vocational Training Center			✓	
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	1	✓		
	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)	Well	2-on rows	Yes	
	Public Library (With daily newspaper supply: Y/N)	Well	MAIN BAJAR	Yes	
	Public Garden	Well		Yes	
	Village Pond	Well	outside village	Yes	
	Recreation Center				No
	Cinema/ Video Hall				NO
	Assembly Polling Station	Well	In School	Yes	
	Birth & Death Registration	Well	In 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	Well		Yes	
	Telecommunication Network/ STD booth				NO
	General Market	Well		Yes	
	Shops (Public Distribution System)	Well			
	Panchayat Building	Well			
	Pharmacy/Medical Shop	Well			
	Bank & ATM Facility	Well			
	Agriculture Co-operative Society				No
	Milk Co-operative Soc.	Well		Yes	
	Small Scale Industries	Well		Yes	
	Internet Cafes/ Common Service Center/Wi Fi	Well		Yes	
	Youth Club				No
	Mahila Mandal	Well		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			Yes	
	Other Facility			Yes	

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	NO
	4. Kishori Shakti Yojana			Yes	
	5. Balika Samriddhi Yojana			Yes	NO
	6. Mid-day Meal Programme			Yes	NO
	7. Intergrated Child Development Scheme (ICDS)				
	8. Mahila Mandal Protsahan Yojana (MMPY)				
	9. National Food for work Programme (NFFWP)				
	10. National Social Assistance Programme				
	11. Sanitation Programme (SP)			Yes	
	12. Rajiv Gandhi National Drinking Water Mission			Yes	
	13. Swarnjayanti Gram Swarozgar Yojana			Yes	NO
	14. Minimum Needs Programme (MNP)				NO
	15. National Rural Employment Programme				NO
	16. Employee Guarantee Scheme (EGS)			Yes	
	17. Prime Minister Rojgar Yojana (PMRY)			Yes	
	18. Jawahar Rozgar Yojana (JRY)			Yes	
	19. Indira Awas Yaojna (IAY)				No
	20. Samagra Awas Yojana (SAY)			Yes	
	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				
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	Rain water	✓		Image Store
3.	Any Other				

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

8

1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other		well
2.	Additional Information/ Requirement	B20-495 plan	
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?	4 time in week	

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	B20-495 Solar-street.	

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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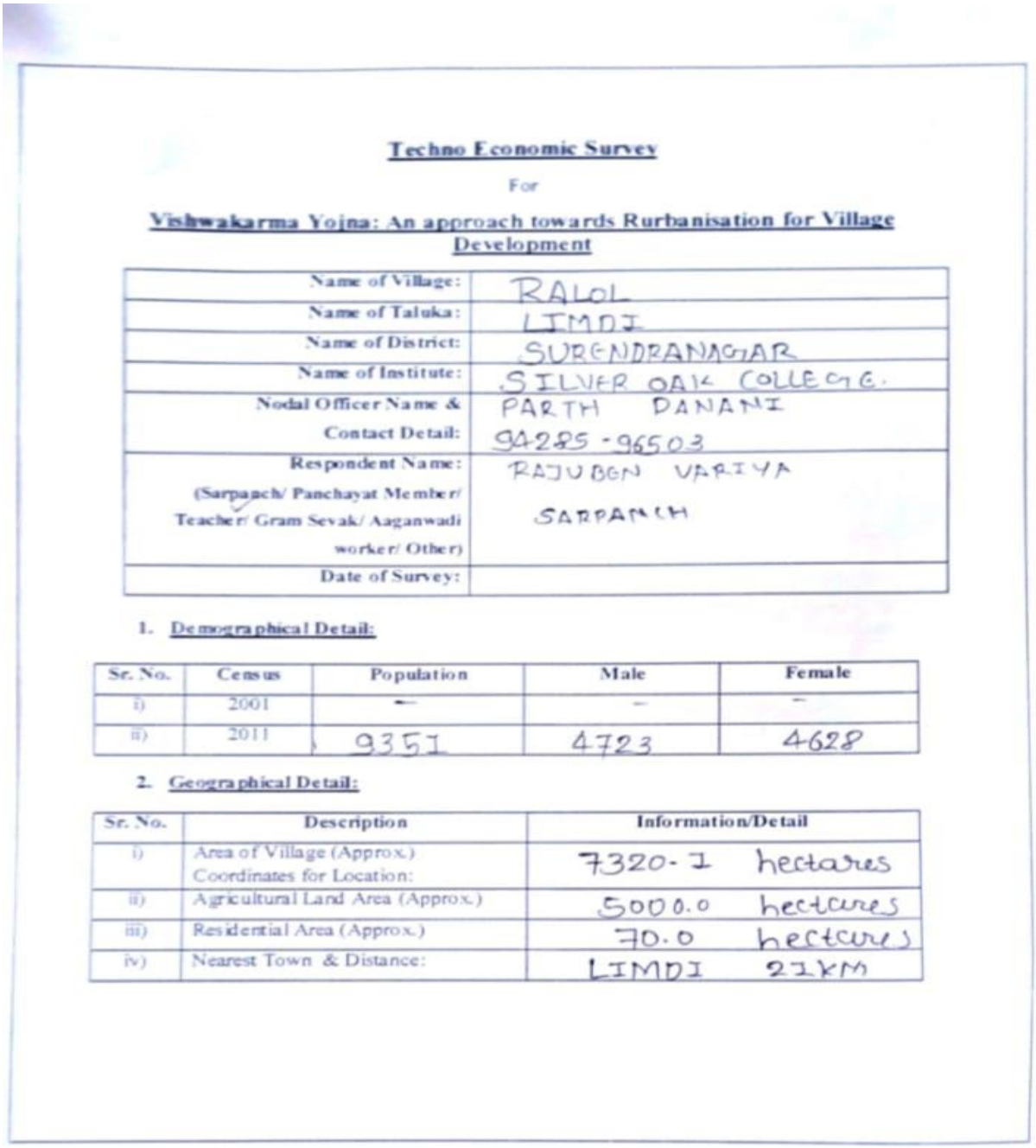
12.3 Survey form of Allocated Village Scanned copy attachment in the report for part I



Techno Economic Survey

For

Vishwakarma Yojna: An approach towards Rurbanisation for Village Development

Name of Village:	RALOL
Name of Taluka:	LIMDI
Name of District:	SURENDRANAGAR
Name of Institute:	SILVER OAK COLLEGE
Nodal Officer Name & Contact Detail:	PARTH DANANI 94285-96503
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/ Other)	RAJUBEN VARIYA SARPANCH
Date of Survey:	

1. Demographical Detail:

Sr. No.	Census	Population	Male	Female
i)	2001	–	–	–
ii)	2011	9351	4723	4628

2. Geographical Detail:

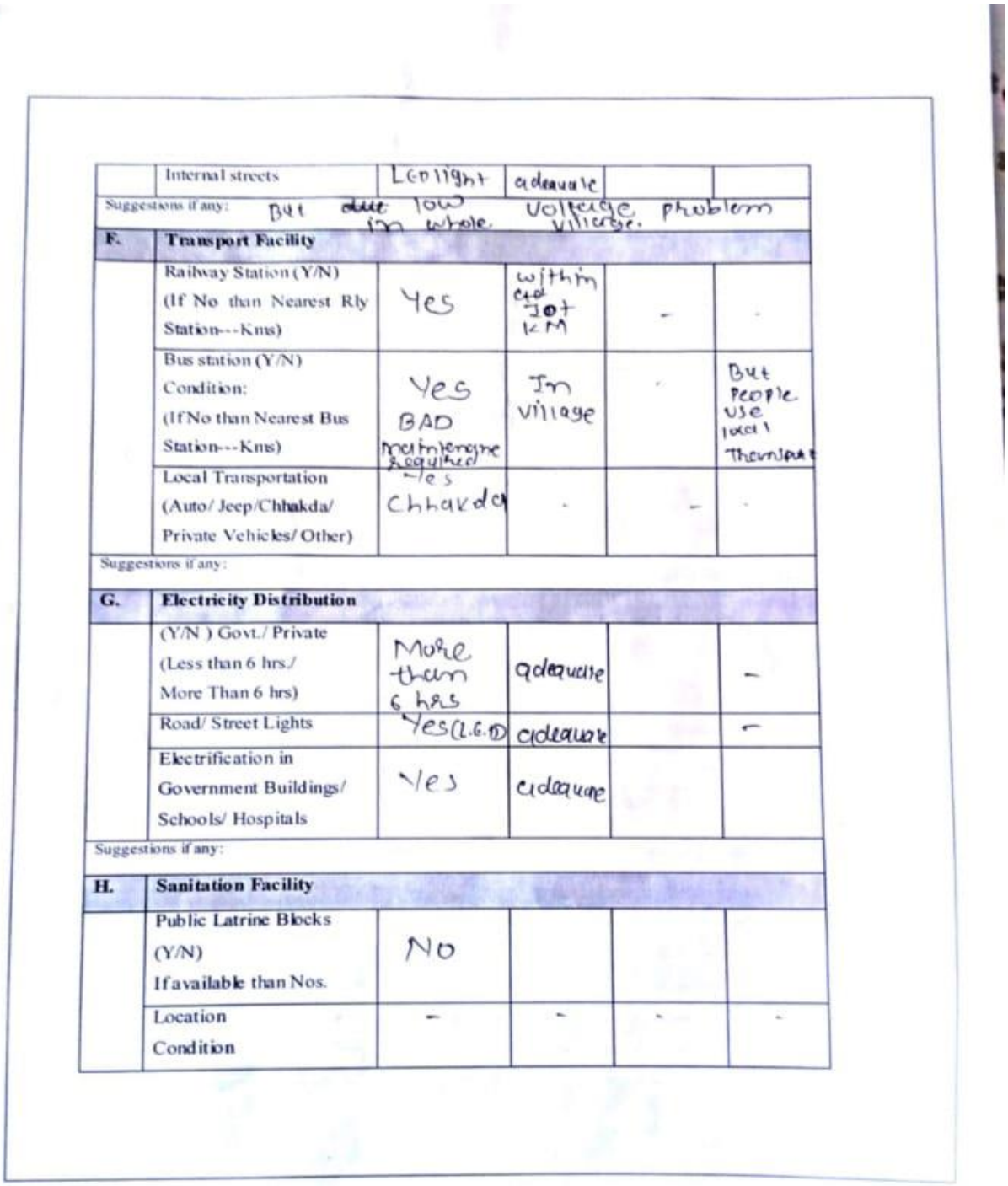
Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) Coordinates for Location:	7320.1 hectares
ii)	Agricultural Land Area (Approx.)	5000.0 hectares
iii)	Residential Area (Approx.)	70.0 hectares
iv)	Nearest Town & Distance:	LIMDI 21KM

3. **Occupational Details:**

Name of Three Major Occupation groups in Village	1. 50% — Agriculture 2. 40% - Migrate workers 3. 10% - Small Business

4. **Physical Infrastructure Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	[Piped water/ Dug well/ water from spring/ Surface Water(River/ Dam/ Lake/ Pond/ Stream Canal)]	surface water (CANAL)	Adequate		-
Suggestions if any:					
B.	**Water tank Facility**				
	Overhead Tank	Capacity:	—	—	Required
	Underground Sump	Capacity:	Adequate		
Suggestions if any:	The population of village is 9351 so overhead tank is required.				
C.	**Drainage Facility**				
	Available (Yes/ No)	Yes		Inadequate	
Suggestions if any:	But we observed the whole village without drainage need to maintenance.				
D.	**Type of Drainage**				
	(Underground Drainage/ Open with outlet/ Open without outlet)	Underground		Inadequate	maintenance is required
Suggestions if any:					
E.	**Road Network (All weather road/ Kutchha/ Pucca)**				
	Village approach road Main road	Pucca road (DAMAR Road)	adequate		



	Internal streets	LED light	adequate		
Suggestions if any:	But due low in whole.	Voltage problem village.			
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Yes	within dist 1 KM	-	-
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes BAD maintenance required	In village	-	But people use local Transport
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes Chhakda	-	-	-
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	More than 6 hrs	adequate		-
	Road/ Street Lights	Yes (L.E.D)	adequate		-
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	adequate		
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks (Y/N) If available than Nos.	No			
	Location Condition	-	-	-	-

Suggestions if any					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Other. & canal	adequate		
Suggestions if any.	People	made lake	for	Irrigation	
J.	**Housing Condition:**				
	Kutchha/Pucca	Both	adequate		

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital (If Yes than specify No. of Beds) Condition:	PHC The clinic is known as Rural hospital.		Inadequate	
	Private Clinic/Private Hospital/ Nursing Home	Yes	adequate		
	If any of the above Facility is not available in village than approx. distance from village: ....?.....kms.				
Suggestions if any:					
L.	**Education Facilities:**				
	Anganwadi/ Play group		adequate		
	Primary School		adequate		
	Secondary school		adequate		
	Higher sec. School		-		
	ITI college		-		

	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 Location: Condition:	Cast Viz different			
	Public Library Location: Condition:	NO			
	Public Garden Location: Condition:	NO			
	Village Pond Location: Condition:	Yes Entrance Besides the village	adequate		But development is Required
Suggestions if any:					
N.	**Other Facilities**				
	Post-office	Yes		Building Inadequate	
	Telecommunication Network/ STD booth	3Tower	adequate		
	General Market	Yes	adequate		
	Panchayat Building	Yes		Building Inadequate	
	Pharmacy/Medical Shop	Yes		Building Inadequate	
	Bank Facility	Yes	adequate		ATM is Required
	Agriculture Co-operative Society	NO	-	-	-
	Milk Co-operative Soc.	Yes	adequate		
	Small Scale Industries	NO	-	-	-
	Other Facility	—	-	-	-

Suggestions if any

6. Sustainable /Green Infrastructure Facilities:

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

7. Data Collection From Village

Village Base Map Available: Hard Copy/Soft Copy	GOOGLE MAP Copied
Recent Projects going on for Development of Village	BLOCKS Fitting
Any NGO working for village development	-

8. Additional Information/ Requirement:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

Note: Photographs of all existing Infrastructure facilities should be taken by all students for respective villages.

Video should be taken for better view in planning by students.

Village Representative's Details

For

Vishwakarma Yojna: An approach towards Rurbanisation for Village Development

Name Of Village:	RALOL	**Taluka:**	LIMDI
District:	SURENDRANAGAR	**Pin code:**	363423
Details of Sarpanch:	**Name:**	RAJUBEN VARIYA	
	Contact Address:	RALOL Village. 98242 - 96009	

	Contact Number:
Details of TDO	Name:
	Contact Address:
	Contact Number:
Details of DDO	Name:
	Contact Address:
	Contact Number:
Details of Nodal Officer	Name: PARTH DANANI
Institutes Stamp:	Institute Address:
	Contact Number:
	Email ID:
Details of Students	Name: RUDRA CHAUDHARY Enrollment No. 170770106004 Contact No. 97260-83302 Email ID: Rudrachaudhary.1304@gmail.com
Details of Students	Name: DHRUV KOTADIYA Enrollment No. 180773106014 Contact No. 99049-25080 Email ID:
Details of Students	Name:

	Enrollment No. Contact No. Email ID:
Details of Students	Name: Enrollment No. Contact No. Email ID:
Details of Students	Name: Enrollment No. Contact No. Email ID:
Details of Students	Name: Enrollment No. Contact No. Email ID:
Details of Students	Name: Enrollment No. Contact No. Email ID:

For Any Administration queries/ Difficulties:
Ms. Usha Banker, Deputy Director
Contact No. 9909944891
Email ID: usha_osd@gtu.edu.in

For Any Technical queries/ Difficulties:
Jagruti Shah, Project Coordinator
Contact no. 9978980170
Email ID: jagruti@gtu.edu.in

Dr Indrajit Patel, Hon. Director ,Vishwakarma Project ,GTU

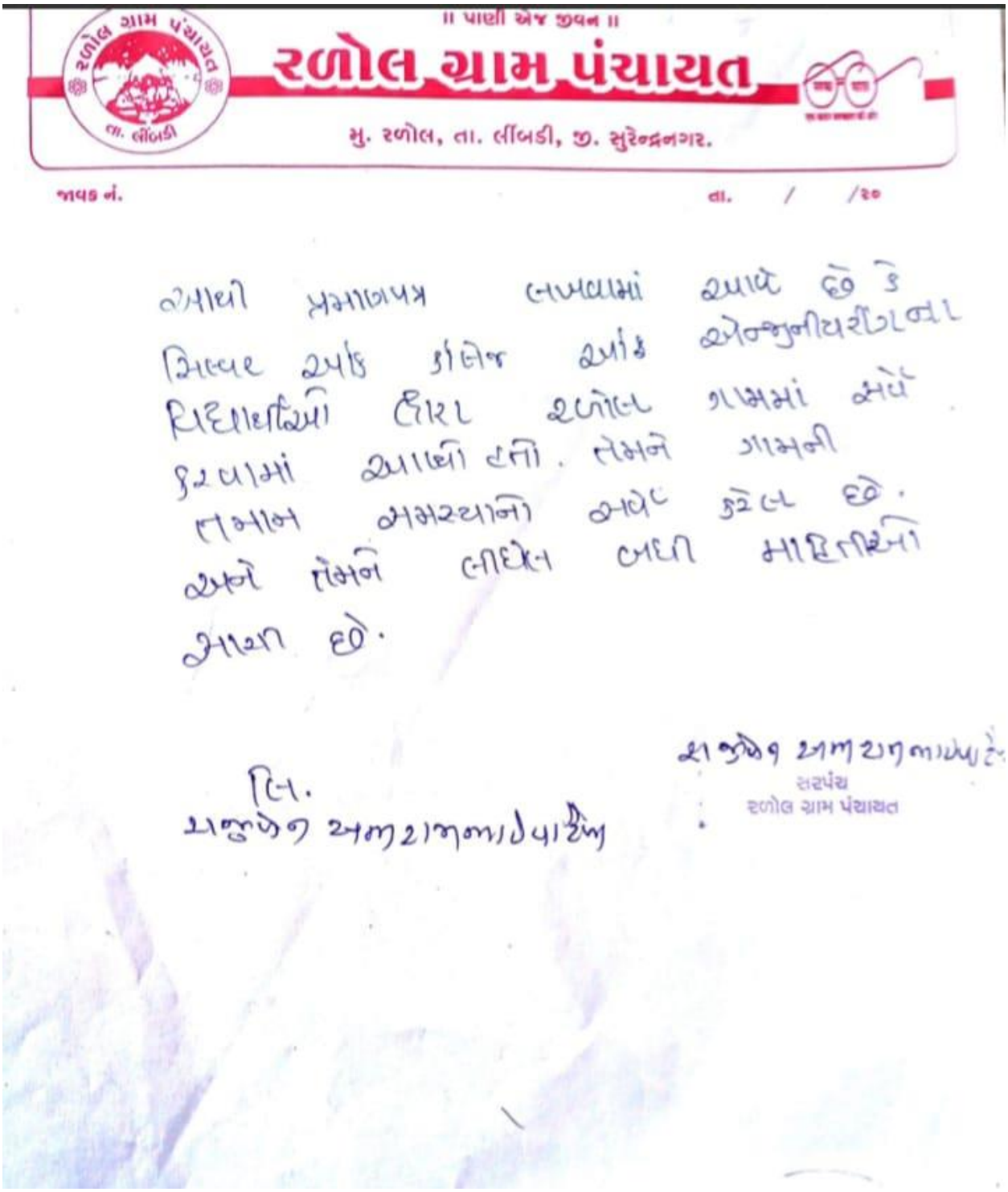
સરપંચ
ઠળોલ ગ્રામ પંચાયત

12.4 Gap Analysis

VILLAGE GAP Analysis					
Village Facilities	**Planning Commission/UDPFI Norms**	**Village Name:**	Ralol , Surendranagar		
		Population:			
		Existing	**Required as per Norms**	**Smart Vilage / Cities / Heritage Future Projection Design**	**Gap**
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	2	4		
Primary School	Each Per 2500 population	2	4		
Secondary School	Per 7,500 population	1	1		
Higher Secondary School	Per 15,000 Population	0	0		
College	Per 125,000 Population	0	0		
Tech. Training Institute	Per 100000 Population	0	0		
Agriculture Research Centre	Per 100000 Population	0	0		
Skill Development Center	Per 100000 Population	0	0		
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	Running into private house so required with well infrastructure	1		
Primary Health & Child Health Center	Per 20,000 population	0	0		
Child Welfare and Maternity Home	Per 10,000 population	0	1		
Multispeciality Hospital	Per 100000 Population	0	0		
Public Latrines	1 for 50 families (if toilet is not there in home, especially for slum pockets & kutcha house)	0	5(approx)		Because the small toilet scheme is applied in some portion village
Physical Infrastructure Facilities					
Transportation		**Adequate / Inadequate**			
Pucca Village Approach Road	Each village	Inadequate			
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	Indequate			
Drinking Water (Minimum 70 lpcd)		**Adequate / Inadequate**			
Over Head Tank	1/3 of Total Demand	Not Available			
U/G Sump	2/3 of Total Demand				
Drainage Network - Open		**Adequate / Inadequate**			
Drainage Network - Cover		Inadequate			
Waste Management System		**Adequate / Inadequate**			
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	2			
community hall and Public Library	Per 15000 Population	0	0		
Cremation Ground	Per 20,000 population	0	0		

Post Office	Per 10,000 population	1	1		But in bad condition so we provide design
Gram Panchayat Building	Each individual/group panchayat	1	1		
APMC	Per 100000 Population	0	0		
Fire Station	Per 100000 Population	0	0		
Public Garden	Per village	0	1		
Police post	Per 40,000Population	0	0		
Shopping Mall					
Electrical Design					
Electricity Network		**Adequate / Inadequate**			
		Adequate			
Any Smart Village Facility					
Technology					
		ESR cap	0		
		Sump cap	0		
		Lat	0		

12.5 SARPANCH LETTER



॥ પાણી એજ જીવન ॥

રળોલ ગ્રામ પંચાયત

મુ. રળોલ, તા. લીંબડી, જી. સુરેન્દ્રનગર.

જાવક નં. તા. / /૨૦

આથી પ્રમાણપત્ર લખવામાં આવે છે કે સિલ્વર ઓક કોલેજ ઓફ એન્જીનીયરીંગના વિદ્યાર્થીઓ દ્વારા રળોલ ગામમાં સર્વે કરવામાં આવ્યો હતો. તેમને ગામની તમામ સમસ્યાનો સર્વે કરેલ છે. અને તેમને લીધેલ બધી માહિતીઓ આપી છે.

સંજીવન અમરાજીભાઈ પાટેલ
સરપંચ
રળોલ ગ્રામ પંચાયત

લિ.
સંજીવન અમરાજીભાઈ પાટેલ