DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
Rangaipura_Village

Anand_District

PREPARED BY

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
SODHA JIGAR S.	CIVIL	170010106044
KOTHARI MEET M.	CIVIL	180013106007
SHAH PARAM V.	CIVIL	180013106018

A. D Patel Institute of Technology, New V.V. Nagar

NODAL OFFICERS NAME
Ms. DRASHTI BHATT

YEAR:2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda,Ahmedabad– 382424 Gujarat

DETAIL PROJECT REPORT

ON

VishwakarmaYojana: Phase VIII

AN APPROACH TOWARDS RURBANISATION

Rangaipura Village

Anand_District

Prepared By

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
SODHA JIGAR S.	CIVIL	170010106044
KOTHARI MEET M.	CIVIL	180013106007
SHAH PARAM V.	CIVIL	180013106018

Ms. DRASHTI BHATT

NODAL OFFICERS NAME

A. D Patel Institute of Technology, New V.V. Nagar

Year: 2020-21

Gujarat Technological University,

Chandkheda,Ahmedabad– 382424 Gujarat

CERTIFICATE

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

DetailProjectReportfor,

VILLAGE-_RANGAIPURA

DISTRICT-ANAND

Under

VishwakarmaYojana: Phase-VIII

inpartialfulfillmentoftheprojectofferedby

GUJARATTECHNOLOGICALUNIVERSITY,CHANDKHEDA

Duringtheacademicyear2020-21.

Thisprojectworkhasbeencarriedoutbythemunderoursupervisionandguidance.

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
SODHA JIGAR S.	**CIVIL**	**170010106044**
KOTHARI MEET M.	**CIVIL**	**180013106007**
SHAH PARAM V.	**CIVIL**	**180013106018**

Dateof Report Submission:	
Principal Name and Signature:	**Dr.V.N.Singh**
VY-Nodal Officer Name and Signature:	**Prof. Drashti Bhatt**
Internal(Evaluator) Guide Name and Signature:	**Prof. DarshanYagnik**

College Name and Stamp:	A.D.Patel institute of Technology

ABSTRACT

VishwakarmaYojana project and how you do your vision project:

VishwakarmaYojnaisanimportantandprestigiousprojectofGovernmentofGujaratwithaimto prepare completeroadmapofurbanDevelopmentofthevillagesofGujarat.ItisallootedtoGujaratTechnological UniversitybytheGovernmentofGujaratfor the year2015-16.

About your village description:

We are allocated with a village named Rangaipuralocated in Anand District of Gujarat. It is located 24 KM towards South from District headquarters Anand and 92 KM from State capital Gandhinagar. It is situated 2km away from sub-district headquarters petlad and 15km away from district headquarters Anand.

About existing village condition:

Local Language at Rangaipura is Gujarati. As per Census 2011 total population over here is 4650 and number of houses are 1044.
Village literacy rate is 91.77% and the Female Literacy rate is 87.49%. There is no recreation facility in the village. The Water Distribution facility is also not proper. Streetlights are not available in every streets and those available are also not working properly. For Education Primary Schools are available but students have to migrate to Nearby Village or to the town for further studies.

About your proposed design your view for village development:

We can design a recreation center, a library so that dwellers do not need to migrate to nearby villages for such facility. Also we can enlighten the streets of village with less running cost by designing Solar Street Light Paths .Also we can reduce our power consumption charge by using Solar Roof top Design which will help us take the benefit of the renewable energy source at Residential and Commercial Buildings.

About future scope of the village development:

If proper education facilities are provided to children of village, literacy rate of the village will also increase. If recreation facilities are provided people don't have to go outside for recreation. They can also use solar and biogas plant as renewable resources.

Key Words:

- Rangaipura

- VY-7
- Basic needs
- Sustainable development
- Smart facilities

ACKNOWLEDGEMENT

We are highly indented to **Gujarat Technological University**, Ahmedabad for providing us such opportunity to work under VishwakarmaYojana 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.)NavinSheth**, **Hon'ble Vice Chancellor, Gujarat Technological University-Ahmedabad**, for his encouragement and giving us the wonderful project.

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

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

We express our sincere thanks to **DDO, TDO, Sarpanch, Talatiand staff members of Ahmadabad** District for providing us with requisite data whenever we approached them. Especially our thanks are to all villagers and stake holders for their support during Survey.

Above all we would like to thank our Parents, family members and Friends for their encouragement and support rendered in completion of the present this work.
We are also thankful to our **Principal Dr.V.N. SINGH,H.O.D. Dr. RAJIV BHATT**, faculties of our colleges for their encouragement and support to complete this project work.

An act of gratitude is expressed to our internal guide / Evaluator / Nodal Officer,
Prof. DARSHAN YAGNIK, Prof. DRASHTI BHATT (NODAL OFFICER) from college A.D. Patel Institute of Technology, Anandfor their invaluable guidance, constant inspiration and active involvement in our project work.

We are also thankful to all the experts who provided us their valuable guidance during the work. We express our sincere thanks to, **Dr. JayeshDeshkar, Hon'ble Director of VishwakarmaYojana project and Principal, V.V.P Engineering College and Core Committee member of VishwakarmaYojanaprojectProf(Dr.)JigarSevalia**, Professor, SCET, Surat, **Prof.K.L.Timani,** Associate Professor,VGEC, **Prof.RenaShukla**, Associate Professor, LD Engineering College, **Prof.Y.B.Bhavsar,**AssociateProfessor,VGEC,**Prof.Jagruti Shah**, Assistant Professor, BVM Engineering Collegefor providing us technical knowledge of this project work.

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

CONTENT

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

SHORT NAME /SYMBOL	FULL NAME
SC	Scheduled Caste
ST	Scheduled Tribe
APMC	Agricultural Produce Market Commity
GDP	Gross Development Project
PMGSY	Pradhanmantri Gram SadakYojana
LED	Light Emiting Diode
CCTV	Closed Circuit Television
DPR	Detailed Project Report
CAD	Computer Aided Design
WBM	Water Bound Macadam
PHC	Primary Health Center
CHC	Community Health Center
ATM	Automated Teller Machine

Chapter 1.Ideal Village Visit from Anand District of Gujarat State: -

1.1 Background

We have selected Mogri as our Ideal Village. Mogri is located in urban area of Anand district of Gujarat, it is one among the 2 town areas of Anand Block of Anand district. As per the government records, 2the town area number of Mogri is 8025621. The town area has 2096 families. According to Census 2011, Mogri's population is 9851. Out of this, 5194 are males and 4657 are females. This town area has 1169 children in the age group of 0-6 years. Out of this 608 are boys and 561 are girls.

Literacy rate in Mogri town area is 81%. 8073 out of total 9851 populations is educated here. Among males the literacy rate is 85% as 4439 males out of total 5194 are educated while female literacy rate is 78% as 3634 out of total 4657 females are literate in this Town Area.

The Negative part is that illiteracy rate of Mogri town area is 18%. Here 1778 out of total 9851 persons are illiterate. Male illiteracy rate here is 14% as 755 males out of total 5194 are illiterate. Among the females the illiteracy rate is 21% and 1023 out of total 4657 females are illiterate in this town area.

The number of employed people of Mogri town area is 3722 whereas 6129 are non-working. And out of 3722 occupied persons 177 peoples are totally dependent on cultivation.

❖ Study Area Location :-

Mogri is located in the Anand District of Gujarat, India.Mogrigeoco-ordinate are 22.5265873 Latitude and 72.9305488 Longitude.

Place :	**Mogri**
PIN Code	**388345**
District :	**Anand**
Tehsil/ Taluka :	**Anand**
State :	**Gujarat**
Latitude :	**22.5265873**
Longitude :	**72.9305488**

Table 1 Mogri Village Information

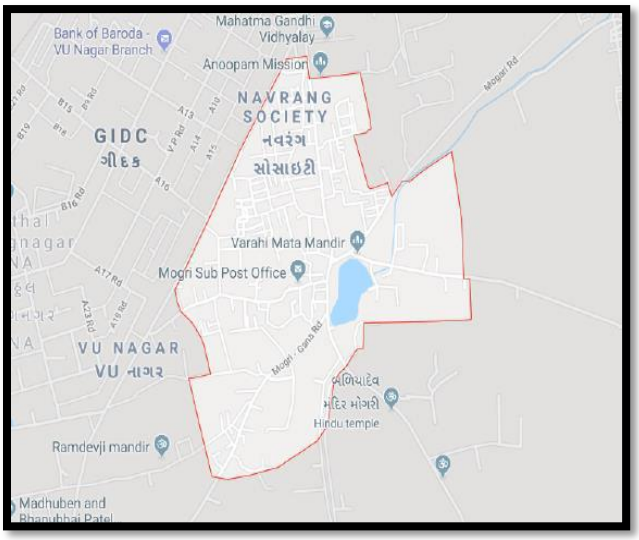


Fig.1 ENTRANCE OF VILLAGEFig.2 LOCATION /MAP OF MOGRI VILLAGE

1.2 Concept of Ideal Village: -

- Concept of an Ideal Village is a community village with a Self-Sustaining income producing projects, Independent electrification system generated from non-fuel based devices, clean water facilities for drinking and irrigation purpose, affordable quality housings, Schools, Medical facilities for human beings and animals both, proper sanitation System, Information Centre, bank, police station, retail outlet for household and agriculture needs, phone facility and connecting roads to nearby villages and towns.

1.2.1 Objectives: -

- To provide an institutional mechanism for the community to be informed of health programmes and government initiatives and to participate in the planning and implementation of these programmes, leading to better outcomes.
- To provide a platform for convergent action on social determinants and all public services directly or indirectly related to health.
- Improving the economic conditions of the Semi-skilled and Un-skilled labour by publishing their availability status on the Internet;
- Providing updated information and databanks to the Government for better analysis and individual profiling.
- 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 of India/Gujarat

❖ Paunsai Village (Gujarat): -

Punsari is a village located in Sabarkantha district in the state of Gujarat, India.[1] Punsari is considered as India's smartest village. The village is located at about 80km from the state capital, Gandhinagar. Punsari is 20km from Parvati Hills. Parvati Hills is the largest table top land of India. The village follows the Panchayati raj system. The village extent is about 65 km. The land in use of agriculture is 6 hectares. The main non farming activity is dairy in this village. The village has undergone a transformation under the panchayat. There has been use of new and advanced technology in education. This village has Wi-Fi connection for all people. Efforts have been made for the empowerment of women and increasing security in the village.

Some of the facilities are there as given below.

- There is a 66 KV sub-station that supplies power to the village. The Sarpanch aims at getting Wi-Fi connectivity in the entire village so that the villagers can use unlimited internet once they purchase the modem from the panchayat office.
- There are five primary schools in Punsari. All the five schools have CCTV cameras placed to enable parents check their wards' performance without interrupting the lectures and also to keep a watch on the teachers. The school drop-out rate is zero in Punsari.
- The panchayat has installed a reverse osmosis plant in 2010 to ensure the supply of clean drinking water to the villagers. During weddings and other ceremonies, water tankers are arranged. Drinking water taps are available for all. The village also has a proper sanitation and drainage system, which is completely underground.
- Mini-buses are used for transport purpose within the village. The panchayat has started a bus facility called the Atal Express for women which is used for the import of milk
- The panchayat in this village has made efforts to provide the best possible facilities to students. Air-conditioners and CCTV cameras are installed in the primary schools. Apart from schools, 25 CCTVs are installed at prime junctions of the village so that the litterbugs can be spotted and punished.

  Consequently, Punsari received the award of being the best Gram Panchayat in Gujarat. The village's model has been appreciated by delegates from Nairobi and they are keen to replicate this in Kenyan villages.

1.2.3 The Idea of a model/Smart Village: -

- 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. Unfortunately, it is a fact that, in the world today, 1.3 billion people remain without access to electricity.

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

❖ Resources available in IdealVillage

- Agriculture
- Schools
- College
- Hospital
- Substation
- Bank &ATMs

❖ Physical &DemographicalGrowth:

Today Mogri is a well-developed village of Anand District of Gujarat.we can see all basic facilities like Hospital, School, GoodRoads, Approach from all direction of the village, Banks, Lake, Proper water Facility, Electric Power Grid Substation, Public Transportation facility, Cleanatmoshphere, etc.

Dwellers over here are of middle class and mature enough to understand the running scenario. As per the government records, the town has 2096 families and Margi's population is 9851. Out of this, 5194 are males and 4657 are females. This town area has 1169 children in the age group of 0-6 years. Out of this 608 are boys and 561 are girls. Literacy rate in Mogri town area is 81%. Among males the literacy rate is 85% whilefemaleliteracyrateis78%.TheNegativepartisthatilliteracyrateofMogritown area is18%.

❖ Economicprofile

The number of employed people of Mogri town area is 3722 whereas 6129 are non- working. And out of 3722 occupied persons 177 peoples are totally dependent on cultivation.

Total number of workers in the village are 1131 in which 628 are main workers (earns morethan6months)and503aremarginalworkers(earninglessthan6months).Major 3 occupationsinvillage are farmers, agriculture, labour and small privatebusiness.

❖ Infrastructure Facilities (alltype):

Infrastructure of Mogri is having all primary and secondary needs for giving a better lifestyle to village people.

- **Primary Infrastructuralneed:**

  All primary infrastructure needs are fulfilled here. They have pukka houses, and necessary government buildings. All this are well developed and well maintained. Amongst this all buildings newly constructed houses are havingproper wiring scheme and earthing, while in old constructed government building there is no proper earthing. Even roads over here are of good condition.

- **Secondary Infrastructuralneed:**

  Mogri have School and Anganwadi for better development of Childrens also with midday meal facilities.It also have a Hospital,so that people of mogricanvget the treatment ither very own village only

1.4 SWOT analysis of Ideal village: -

SWOT: Strength-Weakness-Opportunity-Threats.

Strength: -
-High growth rate
-Door to door collection of waste
-Employment
-Proper water supply and sewage drainage system
-Education facilities available upto higher secondary level

Weakness: -
-Job insecurity*Fig.3 SWOAT ANALYSIS*

-Less sustainable ecofriendly environment in terms of green nature development

Opportunity: -

-Involvement of government initiated health program.
- WIFI spots development in future
- As there is availability of higher education facilities in village high literacy rate can be achieved
- Developed green infrastructures like, solar panels, rain water harvesting, waste management etc.

Threats: -
-Very less sustainability to environment life in village.
- Poor wastage management leads too many disease occurs on village peoples.

1.5 Future Prospects:-

-We are not going to visit that village due to COVID-19 situation, but as per information get, some new structures and facilities are made.

- ✓ Solar street light
- ✓ Bio Gas Plant
- ✓ Waste water treatment plant
- ✓ Blood Bank
- ✓ Water Meter

1.6 Benefits of the visit:-

-As per the above mansion, Due to COVID-19 situation we can't visit the ideal village. But as per the previous information we got as below.

- ➢ 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.

Chapter 2. Literature Review

2.1: Introduction:Urban&Rural

➢ **Rural area :-**

- The word 'Rural' means anare
- A rural area is an open swath of land that has few homes or other buildings, and not very many people.

Rural is noticeably agricultural, its settlement system consists of villages or homesteads Socially it signifies greater inter dependence among people, more deeply rooted community life and a slow moving rhythm of life built around nature and natural phenomenon; and occupationally it is highly dependent on crop farming, animal enterprises, tree crops and relatedactivities.

Urban area:-

- An urban area or urban agglomeration is a human settlement with high population density and infrastructure of built environment. Urban areas are created through urbanization and are categorized by urban morphology as cities, towns, conurbationsorsuburbs.
- An urban area is the region surrounding a city. Most inhabitants of urban areas have nonagricultural jobs. Urban areas are very developed, meaning there is a density of human structures such as houses commercial buildings, roads, bridges, and railways. "Urban area" can refer to towns, cities, and suburbs.

NAME	POPULATION
CITY	50000to100000
GREAT CITY	100000and over
SUPER CITY	More than 300000
METROPOLIS	1000000andabove
MEGA POLIS	5000000 and above

Fig.5 URBAN AREAS

2.2 Importance of Rural Development:

➢ Rural development is important not only for the majority of the population residing in a rural area but the growth of rural activities is necessary to stimulate the speed of overall economic expansion of the nation.

➢ Rural development is pretended to be noticeable importance in the country today than in the olden days in the process of the evolution of the nation. It is a strategy trying to obtain improved rural creation and productivity, higher socio-economic equality, and ambition, stability in social and economic development.

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

2.3 Ancient Villages / Different Definition of: Rural Urban Villages: -

- BytheNumbersintheUnitedStates,theCensusBureauclassifiesaruralareaasatown with lesser than 1,000 people per 2.6 square kilometers (square mile), and surrounding areas with lesser than 500 people per 2. Square kilometers (squaremile).
- A rural area is an open swath of land that has few homes or other buildings, and not very many people. A rural areas population density is very low. Many people live in a city, or urban area. Their homes and businesses are located very close to oneanother.

- In a rural are a, there are fewer people, and their homes and businesses are located far away from oneanother.
- Agriculture is the primary industry in most rural areas. Most people live or work on farms or ranches. Hamlets, villages, towns, and other small settlements are in or surrounded by ruralareas.

2.4 Scenario: Rural / Urban India &Gujaratas per Census 2011

- As per Official Census, Population of India has reached 1.21 Billion (121 Crore) in 2011 which is an increase of 17% from the earlier figure of 103 Crore of 2001.And the current situation this number is raised by 1.30 Billion above. Although population growth rate has decreased but actual population continue to rise. As per estimates, it is expected that India would be most populous country by 2025 overtaking china.

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

TABLE 3RURAL AND URBAN POPULATION

  - For the first time since Independence, the absolute increase in population is more in Urban areas that in rural areas
  - 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%
- Gujarat Population Census Data shows that it has Total Population of 6.03 Crore which is approximately 4.99% of total Indian Population. Literacy rate in Gujarat has seen upward trend and is 79.31% as per 2011 population census. Of that, male literacy stands at 87.23% while female literacy is at 70.73%.
- .Urban Population of the State is 42.6%, which used to be at 37.4% in 2001. Rural population in the state in 2011 fell to 57.4% from 62.6% in 2001.

- Ahmedabad is the most populated District in the State, with 7.20 million people, up 11.94% from 2001, followed by Surat with 6.07 million people, up 10.07%, asperGujarat's Directorate of census operations.

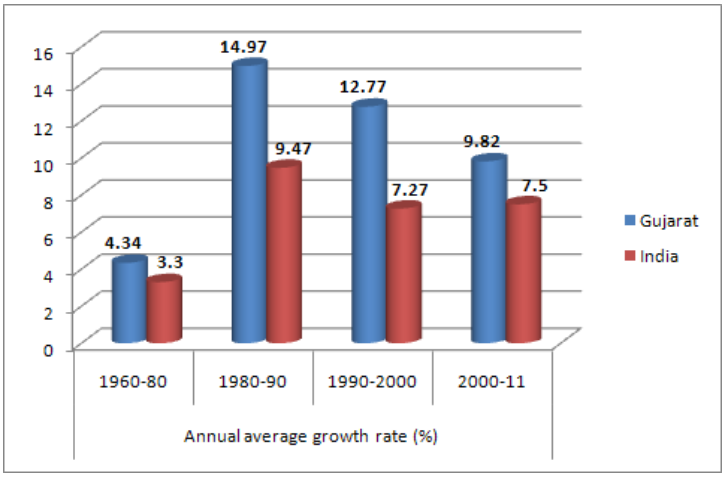


FIG.6 RURAL AND URBAN POPULATION GROWTH (GUJARAT)

2.6 Rural Development Issues & Concerns

Education.

- Education is an empowering right and one of the most powerful tools by which economically and socially marginalized children and adults can lift themselves out of poverty.

Unemployment.

- Unemployment is the condition, When the individuals aren't engaged in any work or occupation, either within their homes or outside at home. This is apparent that individuals get engaged in employment opportunities to generate income.

Environment.

- Environmentalisthemajorissueinruralareaaswellasurbanarea.Nowadaypeoples andgovernmentsareverywellawareandtakingthenecessarystepstowardsustainable cities.

Gender Discrimination.

- Despite the fact that women in developing countries provide nearly 70 percent of the agricultural labor.

Health.

- In2016,therewerealmost36.7millionpeoplelivingwithHIV/AIDS.Worldwide,1.8 millionpeoplebecamenewlyinfectedwithHIV.Thisisthescenarioofcurrentsociety.

Hunger.

- About 795 million people suffering from chronic hunger, 98 percent live in the developing

world. Unlike famines that receive emergency-aid, chronic hunger is a silent, invisible, day-after-day condition

Poverty.

- Poverty, food prices and hunger are inextricably linked. Poverty causes hunger. Not every poor person is hungry, but almost all hungry people are poor

Various Measures for Rural development:

Rural development in general is used to denote the actions and initiatives taken to improve the standard of living in non-urban neighborhoods, countryside, and remote villages. These communities can be exemplified with a low ratio of inhabitants to open space. Agricultural activities may be prominent in this case whereas economic activities would relate to the primary sector, production of foodstuffs and raw measures. These are these various measures for village development:

- Physical infrastructure development
- Social infrastructure development
- Socio cultural infrastructure development.
- Policy for developing uplifting the lifestyle of thefarmers.
- Policy of rural industrial development - integration of farming and industries, farmer's Industrial co-operatives and industrialenterprises.
- Modernizationofruralsocietyandculturalpoliciesandplanningfortransferofloyalty and values from traditional technology to modemtechnology.

2.7 Various infrastructure guidelines with the 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 Panchayat 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 endeavor 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.
- It shall be the duty of the DRDAs to oversee and ensure that the benefits specifically earmarked for certain target groups (SC/ST, women and disabled) reach them. They shall take all necessary steps to achieve the prescribed norms.
- 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.

- Implementation of programs is high. This would include over-seeing whether the intended beneficiaries are receiving the benefits under the different programs.

2.8 Other Projects / Schemes of Gujarat / Indian Government

1. PradhanMantriAdarsh Gram SadakYojana(PMAGSY):

- Rural connectivity is one of major goals of BharatNirman.
- About 6 lakh village located in plain, hilly, desert, tribal pocketetc.
- Duetotheimproperplanningsomevillagehavingfourroadforconnectivityandsome village not having any singleroad

2.BharatNirmanYojana:

It was launched in 2005 for building infrastructure and basic amenities in rural areas. It comprises of six components.

- rural housing,
- irrigation,
- d.rinking water,
- rural roads,
- electricity
- rural telephone.

3.IndiraAawasYojna:

- The Indira AwaasYojana 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 AwaasYojana 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.

4. Jawaharlal Nehru National Urban Renewal Mission (JNNURM):

It was launched on 3rd December, 2005. The main objective of this scheme was fast track development of cities across the country. It was focused especially on developing efficient urban infrastructure service delivery mechanism, community participation and accountability of urban local bodies and other agencies towards citizen.

5. Rajiv AwasYojana (RAY):

This programme was announced in June 2009 with an objective to make the country slum-free

6. National Rural Health Mission:

It was launched to make basic health care facilities accessible to the rural people.

7. National Rural Livelihood Mission:

It is meant to eradicate poverty by 2014-15.

Chapter: - 3 Smart (Cities / Village) Concept Idea and its visit:

3.1 Introduction: Concepts, Definitions and Practices

Smart city may be a city which has been provided with all types of facilities such as Educational facilities, Health facilities, Infrastructure, communication, internet services, Transportation facilities, sanitation facilities with improved method of disposal (waste management), etc.

Smart city is an urban area that uses different types of electronics data collection sensor to supply information used to manage assets and resources efficiently. The smart city concept integrates information and communication technology and various physical devices connected to networks to optimize efficiency of operation and services. The smart city may also be defined as the application of electronics and digital technologies to communities and cities.

Concept of smart village: -

The basic concept of smart village is to collect community efforts and strength of people from various streams and integrate it with information technology to provide benefits to the rural community. According to Mahatma Gandhi's philosophy and thoughts smart village project provides, "Global means to the local needs."

S	Social, Skilled and Simple	Zero Tolerance for Caste and Creed or better no caste & creed and no discrimination on Gender and Religion Everyone is Literate and skilled Simple living and high thinking
M	Moral, Methodical and Modern	Moral values of Gandhiji, Swami Vivekananda etc Methodical using Total Literacy and latest techniques Modern like cities
A	Aware, Adaptive and Adjusting	Highest level of awareness on global social & economic issues Adaptive and adjusting to fast changing environments
R	Responsive and Ready	Responsive to collective wisdom, cooperative movement & larger social issues Ready to generate own resources for self-sufficiency and self-reliance
T	Techno-Savvy and Transparent	Techno-savvy for IT and Mobile usage Transparent in harmonic relations and delivery of services

Fig. 7 Smart village concept

3.2 Vision-Goals, Standards and Performance Measurement Indicators

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

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

Standards of smart villages: -

- Effective governance and efficient delivery ofservices.
- International and Local targets, benchmarking andplanning.
- Informed decision making and policyformulation.
- Leverage for funding and recognition in internationalentities.
- Transparency and open data for investmentattractiveness.
- Evaluate the impact of infrastructure projects on the overall performance of acity.

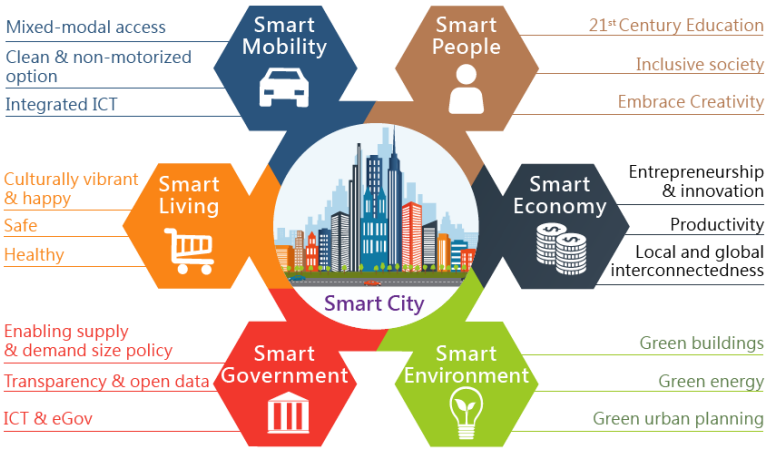


Fig 8 standard performance

Performance MeasurementIndicators:-

- Smart primary health care
- Metaled road and streets
- Smart primary and secondary education
- Proper sanitation, disposal of sewage and conservation system of rain water
- Hygienic drinking water and R.O. system.
- Availability of Banks, ATMs, And post offices.
- Rural market with access to all basic facilities.
- Area of solid waste and liquid waste disposal.

3.3 Technological Options: -

1. **Smart buildings:** - Automated Intelligent Buildings, Advanced Heating Ventilation and Air conditioning systems (HVAC), Lighting Equipment.

2. **Smart mobility:** - Intelligent mobility; Advanced traffic management system (ATMS), Parking management, ITS-enabled transportation pricing system.

3. **Smart governance and smart education:** - Government-on-the-Go; e-Government-Education, Disaster management solutions.

4. **Smart healthcare: -** Intelligent Healthcare, Technology, Use of e-Health and m-Health systems, Intelligent and connected medical devices.

3.4 Road Map and Safe Guards for Smart Cities

- 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 resident's 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.Publictransportation.

Key Application Sectors for Smart Cities

Fig 9 Road map of smart city

3.5 Smart Cities: Issues & Challenges

➢ Capacity building programme:

Building capacity for 100 smart cities is not an easy task and most ambitious projects are delayed owing to lack of quality manpower, both at the center and state levels. In terms of funds, only around 5 per cent of the central allocation may be allocated for capacity building programs that focus on training, contextual research, knowledge exchange and a rich database. Investments in capacity building programs have a multiplier effect as they help in time-bound completion of projects and in designing programs, developing faculty, building databases as well as designing tool kits and decision support systems. As all these have a lag time, capacity building needs to be strengthened right at the beginning.

➢ Reliability of utility services:

For any smart city in the world, the focus is on reliability of utility services, whether it is electricity, water, telephone or broadband services. Smart cities should have universal access to electricity 24×7; this is not possible with the existing supply and distribution system. Cities need to shift towards renewable sources and focus on green buildings and green transport to reduce the need for electricity.

➢ Retrofitting existing legacy city infrastructure to make it smart:

There are a number of latent issues to consider when reviewing a smart city strategy. The most important is to determine the existing city's weak areas that need utmost consideration, e.g. 100- per-cent distribution of water supply and sanitation. The integration of formerly isolated legacy systems to achieve citywide efficiencies can be a significant challenge.

➢ Financing smart cities:

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

3.6 Smart Infrastructure - Intelligent Traffic Management

What is Smart Infrastructure?

- Smart Infrastructure is the result of combining physical infrastructure with digital infrastructure, providing improved information to enable better decision making, faster and cheaper.

- Smart Infrastructure will shape a better future. Greater understanding of the performance of our infrastructure will allow new infrastructure to be designed and delivered more efficiently and to provide better whole life value.

- Smart infrastructure provides the foundation for all of the key themes related to a smart city, including smart people, smart mobility, smart economy, smart living, smart governance and smart environment. The core 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.

3.7Cyber Security: -

- Cyber security in the context of Smart Cities is a hot topic. The objective of Smart Cities is to optimize the city in a dynamic way to offer a better quality of life to the citizens through the application of information and communication technology (ICT). The range of areas where cities can become smarter is extensive: it is an evolution of "Connected Cities" with the prevalence of data exchange at a larger scale.
- Data is the key – the ownership of it and the ability to understand and act on it. Industry, organizations and professionals need to be ready to adjust in order to take advantage of the emerging opportunities. Early adopters stand to gain the most benefit. Everyone in the infrastructure sector has a choice as to how fast they respond to the changes that Smart Infrastructure will bring. But everyone will be affected.
- It is important because government, military, corporate, financial, and medical organizations collect, process, and store unprecedented amounts of data on computers and other devices.
- Ensuring cyber security requires coordinated efforts throughout an information system.
  Elements of cyber security include:
  - Application security
  - Information security
  - Network security
  - Disaster recovery / business continuity planning
  - End-user education
  - Operational security

3.8 Retrofitting- Redevelopment- Greenfield Development District Cooling

Retrofitting is one of the strategic components which when will be introduce planning in an existing built-up area, will help us to achieve several objectives for smart city like making the existing area more efficient and livable along with others. In this method, generally an area more than 500 acres will be identified by the city in consultation with citizens.

After identification and observation of the current situation of infrastructure services in the identified area and the vision of the residents, the cities will prepare a strategy to become smart. Since existing structures are largely to remain intact in this model, it is expected that more intensive infrastructure service levels and a large number of smart applications will be packed into the retrofitted smart city. The whole process of retrofitting must be completed in a shorter time frame, as it will lead to help and assistance in other part of city or another city of similar condition.

Redevelopmentcauses the tremendous development in infrastructure by using the mixed land use patterns and also increasing the density at the same time. When the area is more than 50 acres,

then for the sake of concerns of citizen's redevelopment is adopted. For example, by implementing high ground coverage, mixed land use is done by preparing new layout for the area.

Displacementcanoccur directly throughpropertyclearanceand conversion tonewuses,orindirectly through gentrification when land prices and rents are bid-up to a level unaffordable to the neighborhood's long-term residents.

The redevelopment process can create winners and losers, with the loser's too often racial and ethnic minorities and the economically disadvantaged. Physical and economic redevelopment are virtual imperatives for cities, but paths to redevelopment that minimize displacement and offset its negative consequences are unsure. Redevelopment has created new, vibrant central city areas.

District heating is a system for distributing heat generated in a centralized location for residential and commercial heating requirements such as space heating and water heating. The heat is often obtained from a cogeneration plant burning fossil fuels but increasingly also biomass, although heat-only boiler stations, geothermal heating, heat pumps and central solar heating are also used, as well as nuclear power. District heating plants can provide higher efficiencies and better pollution control than localized boilers. According to some research, district heating with combined heat and power is the cheapest method of cutting carbon emissions, and has one of the lowest carbon footprints of all fossil generation plants.

3.9 Strategic Options for Fast Development

➢ Global outlook and political will

Smart city leaders, like their counterparts in private industry, must benchmark their cities against the very best – particularly in the application of digital technologies to city operations and urban services delivery.

➢ Smart standards

Smart cities must establish radical new standards to ensure the effective use of technology for delivering services and managing complex civic problems. For example, in physical infrastructure management, a city could set standards for all new city assets (lights, parking meters, snow plows, and buildings) that they be equipped with sensors to monitor performance and signal when maintenance is required. Similarly, a city may choose to establish open data standards for various urban departments to enable an innovation economy focused on urban service apps, ensuring that entrepreneurs have access to data on public transportation, energy use, traffic, crime, and so on, from which to create valuable data-driven apps for citizen use.

➢ Smart regulations

City authorities must also use their political will to mandate – via regulation – the use of smart technology while safeguarding citizen security and privacy. Some regulatory actions may be

fairly straightforward: where the technology is available and economical, cities or states may mandate that utilities and consumers install smart meters

However, cities will also need to build a more complex regulatory framework to address complex liability, security and privacy issues. For example, when a service provider monitors a smart home using video and sensor technology, how much of that data can it sell and monetize? Cities must also examine the unexpected connections between traditional regulation and its effect on technology

➢ Public private partnerships

Cities will have to rely on public-private partnerships (PPPs) to build and operate both physical and digital infrastructure – especially given increasingly tight municipal, state, and federal budgets and huge global infrastructure requirements. Models are already being leveraged to build digital infrastructure and to ensure that ubiquitous broadband and Wi-Fi connectivity is available across city landscapes. Effective PPPs will take advantage of the private sector's risk-taking capacity and access to funding, while ensuring that the economics of the deal still serve the public good.

➢ Local innovation

The final pillar supporting smart city success is the encouragement of a local innovation economy. In a technology-intensive future, jobs and GDP growth will be dependent on the steady incubation of new, innovative companies that scale and go global. Cities can encourage local innovation by investing in technology education, establishing start-up incubators in partnership with the private sector, and by helping startups access financing. Cities can also encourage partnerships between educational institutions and start-ups, which might entail, for instance, getting a university to provide a physical space or mentorship for a promising new firm.

3.10 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 197273. 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

➢ 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:

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.

➢ 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.

3.11 Initiatives in village development by local self-government

- Under the scheme, during 2019-24, MPs will be able select one village every year for integrated development aimed at improving the overall quality of rural life. The project also envisages turning villages into model villages not just through infrastructure development but gender equality, peace and harmony.
- It also aims to instill the spirit of community service, mutual cooperation, self-reliance, local self-government and drive transparency and accountability in public life.
- In 1957, BalwantRai Mehta Committee studied the Community Development Projects and the National Extension Service and assessed the extent to which the movement had succeeded in

utilizing local initiatives and in creating institutions to ensure continuity in the process of improving economic and social conditions in rural areas. The Committee held that community development would only be deep and enduring when the community was involved in the planning, decision-making and implementation process.

- The blueprint of the project, which is likely to be unveiled by Prime MinisterNarendraModi on Saturday, will have the gram panchayat as the basic unit for development. While a population size of 3,000-5,000 per development unit has been fixed for plain areas, for hilly, tribal and difficult areas the population base for each of these selected villages will be between 1,000 and 3,000. According to the document, while LokSabha MPs will have to choose a gram panchayat from within their constituencies, RajyaSabha MPs will be able to select a gram panchayat from a district of their choice in the state from which they have been elected.

3.12 Smart Initiatives by District Municipal Corporation

- Pile Method, NADEP Method, Bangalore Method, Indoor Method and Coimbatore
- Method
- Vermi composting
- Windrow Composting
- Thermophilic Composting
- MARC Method
- Biogas Technology
- Toilet Linked Biogas Plant
- Anaerobic Decentralized Waste Water Treatment System
- Aerobic DEWATS
- Study Technological Options at Household Level Management like
- Kitchen Garden with Piped Root Zone System, Kitchen Garden without Piped Root
- Zone System and Leach Pit
- Root zone treatment system
- Stabilization pond system for waste water treatment

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

- Government of India has launched the scheme “DeendayalUpadhyaya Gram JyotiYojana” for rural electrification. The erstwhile Rajiv Gandhi GrameenVidyutikaranYojana (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 of Allocated Village- Rangaipura

4.1 Introduction

4.1.1-Introduction about RANGAIPURAvillage

Weareallocated with a villagenamedRangaipuralocatedinAnandDistrictofGujarat.Itislocated24KM towardsSouthfromDistrictthe headquartersAnandand92KMfromStatecapitalGandhinagar.Itissituated2KMawayfromsub-district headquarterPetladand15KmawayfromdistrictheadquarterAnand.

LocalLanguageatRangaipuraisGujarati.AsperCensus2011totalpopulationover hereis4650and numberof houses are1044

Connectivity of Rangaipura
Public Bus Service is Available with in village
Private Bus Service is Available within 5 - 10 km distance
Railway Station is Available within <5 km distance

- There is no recreation facility in the village. The Water Distribution facility is also not proper. Streetlights are not available in every streets and those available are also not working properly. For Education Primary Schools are available but students have to migrate to Nearby Village or to the town for furtherstudies.
- If proper education facilities are provided to children of village, literacy rate of the village will also increase. If recreation facilities are provided dwellers don't have to go outside for recreation. They can also use solar and biogas plant as a mean of renewable resources.
- We can design a recreation center, a secondary school and a library so that dwellers do not need to migrate to nearby villages to take benefit of such facility. Also we can enlighten the streets of village with less running cost by designing Solar Street Light Paths .Also we can reduce our power consumption charge by using Solar Roof top Design which will help us take the benefit of the renewable energy source at Residential and Commercial Buildings.

4.1.2 Justification/ need of the study

For development of village compare to the city area in the basic facility to needed for people and their amenities and to study whole village. For development the basic needed and their Requirement. It should have development of gram-panchayat, anganvadi, road, drainage, school, Hospital, etc...

- To reduce migration from rural to 1urban areas.
- To provide basic and sustainable facilities to rural area to reduce the pressure on urban areas.

- Giving urban touch to the rural soul
- To uplift the living standard of rural people by providing facilities and better infrastructure.

4.1.3 Study Area (Broadly define)

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 collection of Local revenue income and 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 ofStudy

Creation of infrastructure – connectivity, civic and social infrastructure along with Provision of alternative livelihood generation are the key pillars.

- Basic Social infrastructure –Health and Education facilities should be provided and ensure proper delivery of facilities to village dwellers.
- Water distribution system of village is in bed condition and needed to provide technical system.
- Wiring of primary school is a trap type.
- Internal roads and streets are better in better condition (95%) and other roads and streets are kuccha type (5%).
- Drainage system of village is well covered but outlet water is going in river which is waste of water.
- Electricity connection is make power loss because of components and system of power distribution system.
- It should be needed proper maintenance of leakage in water supply.
- Street lights are provided but it should be needed proper maintenance and energy efficient design.

4.1.5 Scope of the Study

1. Sustainability:
    - Clean drinkingwater
    - Sanitation
    - Primary &secondaryeducation
    - Drainage
    - Electricity
    - Solid wastemanagement
    - utilizing renewablesource
    - Housing&livelihood
    - PHC

2. Technology:

- Irrigationfacilities
- Delivery of governmentservices
- Telecommunication &internetfacilities
- ATMMachines

3. Connectivity:
   - Physical connectivity to towns and other places throughroads
   - Easy and cheap means oftransportation
   - Financialconnectivity

4. CommunityInvolvement:
   - Planning for villagedevelopment
   - Stable panchaytiraj
   - Influencing personal and communitybehavior

4.1.6 Methodology Frame Work

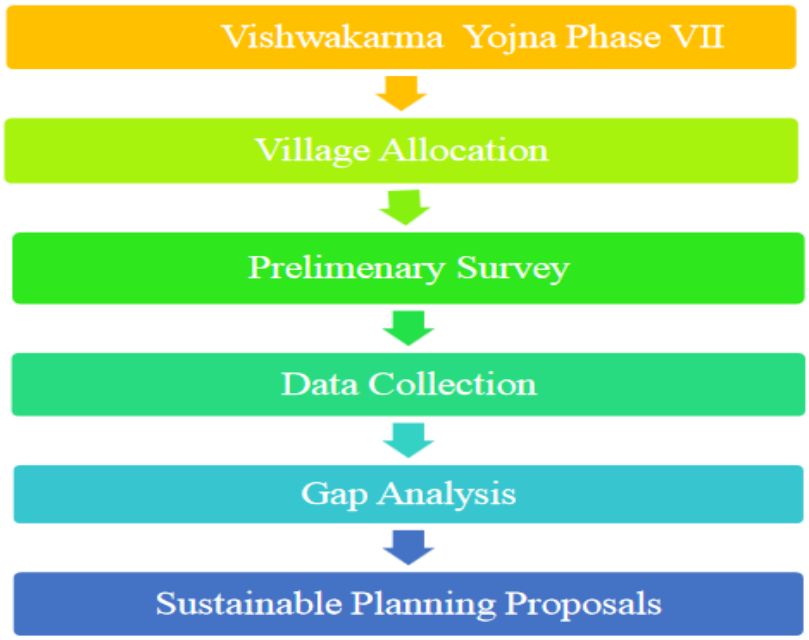


Fig.11Methodology/Framework

4.1.7. Available Methodology for development of related to Civil

- Gram Panchayat
- Temple

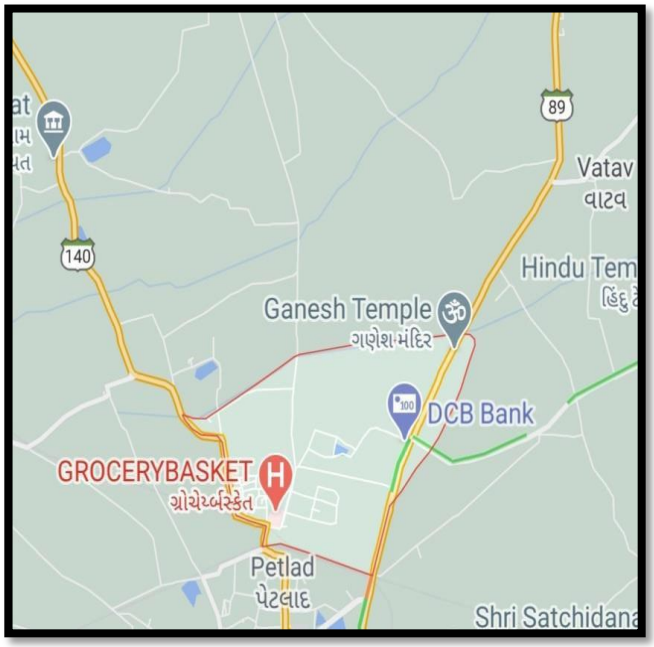
- Drainage System\
- Overhead Water Tank
- Bus Stop
- R.C.C Roads
- Paver Blocks
- Electricity 24*7
- Milk Co-Operative Society.
- General Provision Street
- Water Supply System
- Solid Waste Collection

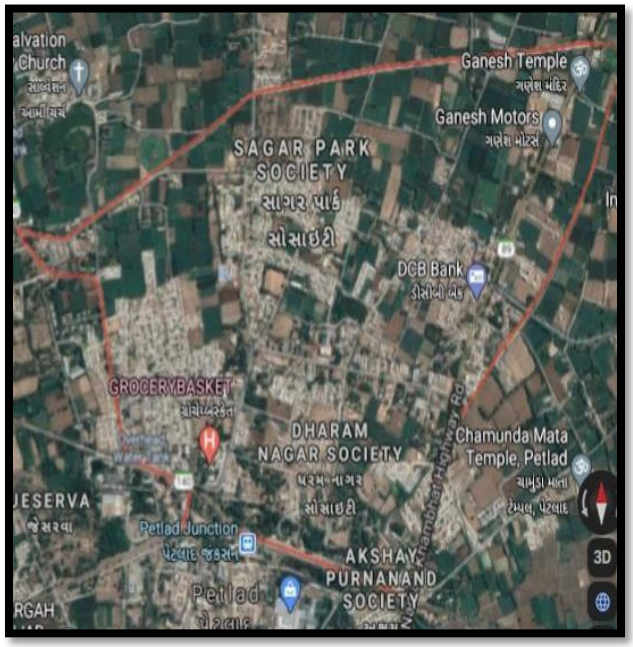
4.2 Rangaipura Study Area Profile

4.2.1 Study Area Location with brief History land use details

1. Village Name-Rangaipura
2. Taluka:-Petlad
3. District:-Anand
4. State: - Gujarat
5. Language:-GujaratiandHindi

4.2.2 Base Location map, Land Map, Gram Tal Map





4.2.3 Physical & Demographical Growth

LocalLanguageatRangaipuraisGujarati.AsperCensus2011totalpopulationover hereis4650and numberofhousesare1044.ItislocatedSKMtowardsSouthfromDistrictheadquartersAnandand102K

MfromState capitalGandhinagar.ThisPlaceisontheborderoftheAnandandVadodaraDistricts.Itissituated5km awayfromAnand,whichisbothdistrict&sub-districtheadquarterofRangaipura

4.2.4 Economic generation profile / Banks

In Rangaipura village out of total population, 4650 were engaged in work activities. 46.90% of workersdescribetheirworkasMainWork (EmploymentorEarningmorethan6Months)while0.94% were involvedinMarginalactivityprovidinglivelihood for lessthan 6months.Of 745workers engaged in MainWork,120werecultivators(ownerorco-owner)while468wereAgriculturallabourer.

4.2.5 Actual Problem faced by Villagers and smart solution

There is no recreation facility in the village. The Water Distribution facility is also not proper. Streetlights are not available in every streets and those available are also not working properly. For Education Primary Schools are available but students have to migrate to Nearby Village or to the town for further studies. And proper solid waste system is not there. Public toilets are not there.

We can design public toilet, Gram panchayat office, and post-office so that dwellersdonotneedtomigratetonearbyvillagesforsuchfacility. Also we can make some houses designs for proper houses for villages as per under Government schemes.

4.3. Data Collection Rangaipura :-

4.3.1 Describe Methods for data collection

There are basically different types of data collection methods for collection of data from village or city or any of the town is as follows:

- By filling of surveyform
- By interaction withvillagers
- By interaction withsarpanch
- By observing the current condition ofvillage
- Visiting different location ofvillage

- In all above method of data collection, we can have visited the different location of village. Due to COVID-19 pandemic, home interview survey is not possible, So For the data collection of therangaipura village we can meet the sarpanch and Talati mantra, collect information's from that The sarpanch, Talatiof the village wasgivingtheoverallimportantdetailsofthevillagelikearea,population,andexisting facility in the village. In Techno Economic Survey form fill the all data which are required.

4.3.2 Primary details of survey details

- The Primary survey was conducted to identify the various general problems of the villagers by interacting with them and enquiring about the problems faced by them in daily life. They were asked to suggest the possible and desirable solutions for these problems as well as other infrastructural facilities they would like to have in their village.

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.					
2.	2011	4650	2446	2204	1044

4.3.4 No of Human being in One House

There are Total 1044 Households, then each of average 5 members are in each household.

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

Basically, houses are made with the clay and brick, and some houses are made with concrete or R.C.C. structures.

4.3.6 Geographical Detail

Total area of village	**247.5 hectares**
Forest area	-
Agricultural area	205.75
Residential area	150.23
Other area	-

Table.8 Geographical details of rangaipura

4.3.7 Demographical Detail

Sr no	**Census**	**Total Population**	**Male**	**Female**
1	2001	-	-	-
2	2011	5426	2852	2572

Table.9 Demographical details of rangaipura

4.3.8 Occupational Detail

Major occupation in the village	Agriculture Labour work Small scale business

Table.10 Occupational details of rangaipura

4.3.9 Agricultural Details

The total agricultural land area in Rangaipuravillage is 285.75 hectares. This area is more area of agricultural land so This village is main profession of village is farming,

4.3.10 Physical Infrastructure Facilities

1. PrimarySchool
2. Under Ground Water Tank
3. Overhead WaterTank
4. Electricity24*7
5. Angandwadi
6. Main Road C.C
7. Street Road Block
8. Veterinary hospital
9. Sub health center

4.4 Infrastructure Details

4.4.1 Drinking Water / Water Management Facilities

There are 3 bore wells for drinking water Purpose inside Rangaipuravillage, there are 3 overhead Water Tank in Village. Water from the bore well is supplied to the overhead water tank. Water from overhead water tank is supplied to different areas of the village for 4-5 hours per day.

4.4.2 Drainage Network / Sanitation Facilities

In Rangaipuravillage there is no proper drainage facility available. Every house in Rangaipurahave not proper sanitation facilities but there are no public latrines in the village, and there is open sewage disposal system. And this sewage is directly disposed in ponds which makes for disposal.

4.4.3 Transportation & Road Network

There is no bus stand in the village. All the roads in the village are in well condition. There isgoodapproachroadisavailable. But street roads are not proper. There is no railway station in the village. People use their own vehicles for the localtransportation.

4.4.4 Housing condition

- There are 60 % puchha house and 40 % kucchahouse.

Fig.17 Kuccha house

4.4.5 Social Infrastructure Facilities

Health Facilities:

- There is no any type of Health center is available such as clinic, PHC centeretc.

Education system:

- There is 2Anganwadiin the and 2 Primary school.For the higher study like collage,medicalcollege,engineeringcollageareno tavailablenearthevillage,itis 11 km away from thisvillage.

Community Hall:

- There is no community Hall in thevillage.

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

1. Maintenance of existing PublicInfrastructures:

- It is required to maintain and repair the water tanks.
- Required to maintain the village pond recreation and water supply systems

2. Existing Condition of PanchayatBuilding:

- The condition of public buildings is not good. There is one Panchayat building which also has no goodcondition.

3. Existing Electricity Facilities withArea:

- Village has the no 24*7 electricity in the all the houses of the village, and electricity is provided by thegovernment.

4.4.7 Technology Mobile/ WIFI / Internet Usage Details

- There is personal Wi-Fi in the village. From the total population 50% people are used mobile phone and used their own internet. There is no any other Wi-Fi facility available for public usage

4.4.8 Sports Activity as Gram Panchayat

- There is no sports activity in the village. Sometimes cricket match is organized by GramPanchayat.

4.4.9 Socio-Cultural Facilities

- Public Library: There is no Public Library in thevillage.
- Public Garden: There is no Public Garden in thevillage.
- Village Pond: There is Two pond or lake in thevillage.
- Community Hall: There is no community Hall in thevillage.

4.4.10 Other Facilities

- There is one Panchayat Building in thevillage.
- There is no Bank in thevillage.
- There is one Milk Co-operative Society in thevillage.
- There is one Post-Office in the village.
- There is One Sub-Health center and One Veterinary health center in thevillage.

4.6 Existing Institution like - Village Administration – Detail Profile

4.6.1 BachatMandali

- No bacchatmandaliinvillage.

4.6.2 DudhMandali

- One Dudhmandaliis available and total Dudh issupplied to theAmul Dairy.

Fig.24.Dudh Mandal

4.6.3 Mahila forum

- No Mahila Forum in village

4.6.4 Plantation for the Air Pollution

- For reducing pollution panchayat has stated planting treesover the areas on which plantation ispossible

4.6.5 Rain Water Harvesting - Waste Water Recycling

- There is no Rainwater Harvesting system in the village.Rainwater harvesting required invillage.

4.6.6 Agricultural Development

- Rangaipuravillage 80% of people are farmers and agricultural activity in village.

Chapter-5. Technical Options with Case Studies

5.1 Concept (Civil)

5.1.1 Advance Sustainable construction techniques / Practices and Quantity Surveying

Surveying

- **Prefabricating Materials in Controlled Environments:-**

With **prefabrication**, there is less risk for problems with dirt, moisture, and other environmental hazards because workers create sub-assemblies in factory-**controlled environments**. Recently, **prefabricated materials** and engineering have improved to make the structures and assemblies as strong as traditional buildings.

- **Construction waste management:-**

The broad intent of the **Construction Waste Management** credit is to avoid materials going to landfills during **construction** by diverting the **construction waste**, demolition, and land clearing **debris** from landfill **disposal**; redirect recyclable recovered resources back to the manufacturing process; and redirect reusable.

- **Managing the Site for Improved Environment:-**

Serves as a tool, or process, to **improve environmental** performance and information mainly "design, pollution control and waste minimization, training, reporting to top **management**, and the setting of goals" Provides a systematic way of **managing** an organization's **environmental**affairs.

- **Material Selection:-**

Material selection is a step in the process of designing any physical object. In the context of product design, the main goal of **material selection** is to minimize cost while meeting product performance goals.

5.1.2 Transport Infrastructure /system:-

Transport: Transport (British English) or transportation (American English) is the movement of people and goods from one place to another. The term is derived from the Latin Trans ("across") and porter ("to carry").Modes of transport: The means of transport are classified on the basis of the way, the vehicle and the motive power used and terminals.

Land Transport: Pathways: In remote villages, forest and hilly areas pathways are still an

important amongst the different modes of transport. It further be subdivided into Head loads (is also known as human transport. It is used in the hilly areas where even animals cannot reach) and Pack animals (is also known as animal transport. It is used in the backward areas.

Roadways: Road Transport is one of the most important modes of transport. The history of Road Transport started from ancient civilizations. Gradually it becomes more and more popular means of transport. Road Transport further subdivided into Vehicular Transport (Cars, Trucks, Buses, and Lorries, Auto rickshaw, Bullock Carts, Tonga's, and Hand Carts etc.) and Non-vehicular Transport (Hamals, Animals like Camel, Dogs, Elephant, Horse, Mules etc.)

Tramways: Tramway is one of the cheaper, longer, quicker and safer modes of Land Transport which is suitable in large cities. However due to certain limitations like slowness, huge investment, inflexibility etc. gradually it replaced by other means of Land Transport.

Railways: Railway has been the pioneer of modern mechanical transport. It has brought the greatest revolution in transport. It accelerated commercial and industrial development of various countries. Until the introduction of Motor Transport, Railway had the monopoly as the Land Transport. In India, it is the principal means of transport. It carries over 80 per cent of goods traffic and over 70 per cent of passenger traffic. It provides for more than 60000 kilometers of railways all over the country.

Water Transport: Water transport is the cheapest and the oldest form of transport for heavy goods and bulk cargoes. Waterways are the natural gifts, hence it does not required large amount of capital expenditure for the construction of road and railway tracks, except canal transport, as in the case of land transport. Water transport may be classified as under:Inland Waterways

River Transport: Rivers are the water highways given by nature. River Transport is suitable for small boats and steamers. It was highly developed in the pre-railway days. But with the development of railways, river transport was neglected and decayed gradually.

.

Canal Transport: Canals are the artificial waterways constructed for the purpose of navigation and irrigation.

Coastal Shipping: Coastal shipping is a cheaper, speedy, flexible and economical form of transport for the movement of bulky and heavy cargoes. Usually coastal shipping trade is reserved for the nationalshipping.

Overseas Shipping: On the basis of their working, overseas shipping may be divided into The Liner (those ships which follow defined routes with fixed places and fixed time table), The Tramps (those ships which have no set routes or fixed time table) and The Oil Tanker (special sea carriers of crude oil in very largequantity).

Air Transport: Air transport is the gift of twentieth century to the world. It is the latest means

of transport. The first flight in the air was made in 1903.only for twelve seconds. Successfully it was used as a means of transport after the First World War (1914-1918). The first air service was started in 1919 between London and Paris.

Case study

URBAN TRANSPORT SYSTEMS AND CONGESTION:

ABSTRACT

Traffic congestion is a public policy issue and solicits a policy response which can strike a balance between urbanization and urban mobility. In the case of India, several policy initiatives have been undertaken but have not yielded desired outcomes. This is primarily because the focus has only been on public transport improvement measures, while traffic demand management measures have largely been neglected. This paper studies the traffic scenario in select Asian cities and the policy measures undertaken by their respective governments. It revisits relevant policies in India and assesses the gaps that deter the desired impact of such policies on reducing traffic congestion. It also suggests policy measures to overcome these gaps and the way ahead.

INTRODUCTION

Most cities in Asian countries are experiencing multi-faceted problems as result of rapid urbanization. Urban congestion is one such problem afflicting urban agglomerations in Asia and has multiple effects on urban economies. Urban congestion is broadly defined as excess demand for travel over its supply. In fact, the reason why governments are forced to revisit their policies for urban mobility is because of growing demand for travel with limited supply of services. The presence of urban congestion prevents free movement of traffic. For example, according to the International Association of Public Transport (UITP) in 2001, the average speed of vehicles on Bangkok streets was 15 km/h, while that in Manila, Jakarta and Singapore was 18 km/h, 19 km/h and 20 km/h respectively (BOQUET Yves, 2010).

There are various policies and initiatives underway to improve urban mobility in Asian cities, primarily aiming to enhance and strengthen urban infrastructure. In addition, some Asian countries have also adopted congestion pricing and policies to restrict private car ownership. However, some of the conventional causes of congestion are still rooted in growing cities owing to policy overlaps and distorted policy implementation. These include insufficient and inefficient public transportation, mixed use of dedicated roads, low-price parking policies, lack of connectivity between modes, poor driving behaviour, lack of transport planning, and the absence of intelligent transport systems, among others. In addition, the presence of informal operators in public transport system also has a critical impact on congestion. Therefore, it is certain that the creation of new infrastructure alone will not solve the problems, and that other aspects also deserve consideration.

CONGESTION IN ASIAN CITIES

In many respects, rapid urbanization is an indicator of economic growth in Asia, and it is expected to continue. As per an estimate by the Asian Development Bank (ADB), about 44 million people are added to Asia's urban population every year.1 Asian cities are also characterized by high population density. For instance, Dhaka, Bangladesh, grew rapidly during the last decade and became the most densely populated city in the world, whereas Mumbai stands at number two. Also, With such a rapid increase in urban population, there has been an increase in demand for mobility, and with it, an increase in motorised vehicle ownership. As per a report by Wards Auto Research.the overall vehicle population growth in China was27.5% in 2010 as compared to the preceding year. The estimates show that the total vehicles in operation in China "climbed by more than 16.8 million units, to slightly more than 78 million, accounting for nearly half the year's global increase" (Sausanis, 2011). Similarly, "India's vehicle population underwent the second-largest growth rate, up by 8.9% to 20.8 million units, compared with 19.1 million in 2009" (Sausanis, 2011). The vehicle population in China has been increasing at more than 30%, and at around 10% in India. However, this has recently dropped to negative growth in the first quarter of 2013.

Similarly there were more than 11.3 million motor vehicles in Jakarta in 2011, while the city population is below the population of motor vehicles i.e. 9.6 million (Arditya, 2011). It is said that 70% of city households own motor vehicles. Moreover, it is expected that the number would increase to 12 million as around 1500 new motorcycles and 500 new motor cars will continue to be injected into the city on a daily basis (Arditya, 2011).

In terms of mobility, there are 21.9 million trips taking place daily in Jakarta, of which motorcycles occupy a major chunk (Slamet, 2012). It is also estimated that only 2% of the trip is covered by public transport in the city. As a result, speed flow decreases to 10-20 km/h (Slamet, 2012). The scenario is not much different in Bangkok, Manila and other cities like New Delhi and Mumbai. During peak hours, the speed flow on roads in Delhi and Mumbai also drops to 10-20 km/h.The causes of traffic congestion are categorised in terms of micro-level factors and macro-level factors (Rao and Rao, 2012). Asian countries have devised several policies to tackle congestion problems which encompass both level of factors. Many countries define congestion in terms of lower speed of vehicle on a particular stretch and accordingly devised policies. However, the benchmark of low-level speed of vehicle varies from country to country. Even within a country, this benchmark varies significantly. For instance, in California, if the speed falls to the level of 35 km continuously for 15 minutes then it is referred to as congestion; whereas in Minnesota, congestion occurs when the average speed falls from the speed limit is 45 km per hour during 6 a.m. to 9 a.m (Rao and Rao, 2012).. In the Republic of Korea, traffic congestion is said to be occurring when traffic flow is below 30 km/h or congestion continues for more than 2 hours a day. This implies that different practices are prevailing to measure congestion across various cities.

Table 1: Congestion Related Demand Side Policies in Asia

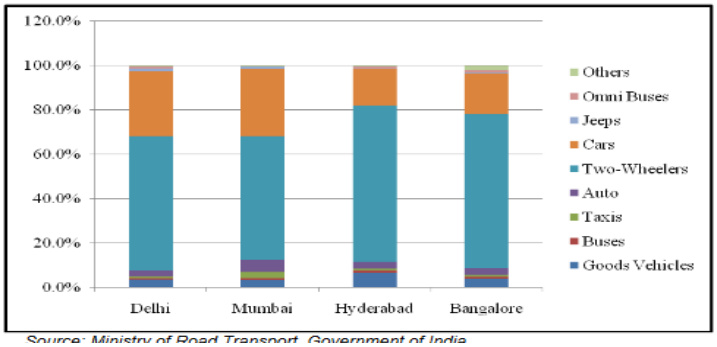
Year	City	Policy	Features
1975	Singapore	Area Licensing Scheme	System of tolls to enter the restricted zones
1991	Singapore	Weekend Car Scheme	Encouraging public transport use
1994	Singapore	Of Peak Car Scheme	Encouraging public transport use
1995/1998	Singapore	Road Pricing Scheme and Electronic Road Pricing	Congestion pricing
1998	Shanghai	Quota for New Car Registration	Setting yearly or monthly quota for new cars in the city
1996	Seoul	Toll Fee on private cars passing through Namsan Tunnels 1 and 3	Congestion pricing based on occupancy
2004	Seoul	Use of integrated payment system for transport services such as T-Money in Seoul	Discounts on travel in using t-money on public transport system

Source: Author's compilation from various sources

➢ CONGESTION IN INDIAN CITIES AND POLICY RESPONSES

As per the 2011 census, India's urban population has grown from 290 million in 2001, to 377 million in 2011, and accounts for over 30% of India's total population. Rapid urbanization has come with several problems, including increased congestion. Policies are now committed to the development of urban infrastructure. In particular, India is passing through the same phase of early urbanization which has already occurred in countries like Japan, Republic of Korea, and Singapore. The growth scenario in Indian cities is not commensurate with the conditions for sustainable transport. The per capita trip rate for all modes of transport is expected to increase from 0.8%-1.55% in 2007 to 1%-2% by 2030 (Planning Commission, 2011). Moreover, the share of public transport is also expected to decrease as there is a likely decrease in the speed flow of public transport from 26-17km/h to 8-6 km/h during the same period (Planning Commission, 2011). Figure 1 shows the city-wise ownership of motorized vehicles.

Figure 1: Share of Types of Motorised Vehicles in 2011



Source: Ministry of Road Transport, Government of India

The average journey speed in Indian cities is also low, particularly in cities which have high car volumes (Ghate and Sundar, 2013, p. 34). In 2007, a study commissioned for the Ministry of Urban Development, Government of India, found that the average journey speed in Delhi was around 16 km/h and only slightly higher in Mumbai. The study found the average journey speed to be below 20 km/h in Hyderabad, Chennai and Bangalore, as well as low in cities with slow moving vehicles such as Varanasi and Bhubaneswar (Wilbur Smith Associates, 2008).

Chapter 6.Swatchh Bharat Abhiyan (Clean India)

6.1 Swatchhta needed in allocated village -Existing Situation with photograph

❖ Swatchh Bharat Abhiyan

- On October 2nd 2014, Prime Minister NarendraModi officially launched the Swachh Bharat Abhiyan (SBA) at Rajpath, New Delhi, by taking up the broom to clean a road.
- The SBA was launched with eight core objectives. The principal objective was to ensure a healthy life for Indian citizens and to improve India's semblance globally.
- SBA has specific goals aimed for the rural as well as urban areas.
- Gramin SBA, i.e., for the rural areas has a target of 11 crore household latrines to be installed in villages by 2019. The central agency for this work is the Drinking Water and Sanitary Ministry.
- The Urban SBA has a target to build 1 crore household toilets, 2.5 lakhs community toilets, 2.6 lakh public toilets and solid waste management. Ministries are to build 50,000 toilets in schools by August 2015.The central agency for this work is the Urban Development and Housing Ministry.
- SBA has to achieve its ultimate goal by 2019, the 150th birth anniversary of Mahatma Gandhi, to ensure a clean and green India (every city and village). The intention and expected results of SBA undoutterly are remarkable however, apt implementation remains as a significant challenge.

❖ Strategic: -

- The focus of the Strategy is to move towards a ‘Swachh Bharat’ by providing flexibility to State Governments, as Sanitation is a state subject, to decide on theirimplementationpolicyandmechanisms,takingintoaccountStatespecific requirements.
- It is suggested that Implementation Framework of each State be prepared with a road map

of activities covering the 3 important phases necessary for the Programmer:

- PlanningPhase
- ImplementationPhase
- SustainabilityPhase
- Each of these phases will have activities that need to be specifically catered for with concrete Plans of Action, which shall need specific preparation and planning.
- A schematic representation of the SBM Programmer Implementation Diagram is represented below as an illustrativemodel.
- A schematic representation of the SBM Programmed Implementation Diagram is represented below as an illustrativemodel.

6.2 Guidelines - Implementation in allocated village

- Implementation of SBM (G) is proposed with 'District 'as the base unit, with the goal of creating ODFGPs.
- A project proposal shall be prepared by a District, and scrutinized and consolidated by the State Government into a StatePlan
- In our village, Door-to-door collection of the solid waste generated facilities are there and this activity is to be taken weekly effectively.
- This solid waste is deposited in the ground for separation of wastes and natural waste is used in agricultural filed.
- In our village, Sewage disposal system is inadequate and some open street sewage lines are there.
- And proper sewage treatment unit is not there for treatment of sewage.
- Villagers are taking care about the cleanliness around the own houses and streets also.

6.3. Activities Done By Students For Allocated Village With Photograph:-

- Due to the covid-19 situation we are not in a situation to visit our allocated village so we had not done any physical activities in our allocated village but we had talk to our surpanch and they had taken some cleanliness measure as per swatch bharatabhiyan.
- We don't have any photos due to this situation.

Chapter 7. Village condition due to Covid-19

7.1 Taken steps in allocated village related to existing situation

- In Rangaipuravillage, till now no cases of COVID-19 because of having well care taken by villagers.
- In our village, we have discussed with sarpanch and TalatiMantri of village, mostly all the villagers are following the instructions which are given by Government for this pandemic situation related to COVID-19.
- Government is given the instructions like wearing the mask, Maintain Social distancing while meet, and say 'Namaste' other than shack hand, washing hand with soap, etc. this instruction is strictly followed by villagers.
- Even whole village is sanitized weekly and regular checkups were there in village.
- So, above instructions are taken by villagers and Sarpanch has to give instructions regarding the care and precautions take for COVID-19 pandemic.

Chapter 8. Sustainable Design Planning Proposal (Prototype Design)- Part- I

8.1 Design Proposals

Sustainabledesignseekstoreducenegativeimpactsontheenvironment,andthehealth and comfort and amenities of building occupants, thereby improving the building performance, like strength, life span. The necessary objectives of sustainability are to reduce consumption of non-renewable resources, minimize waste, and create healthy, productive environments.

Sustainable design principles include the ability to:

- optimize sitepotential
- minimize non-renewable energy consumption use environmentally preferable products protect and conservewater
- enhance indoor environmentalquality
- Optimize operational and maintenancepractices.
- Some of the goals we need to fulfill for the sustainable design:
- Achieve and maintain annual reductions in building energy use, and implement energy efficiency measures that reducecosts.
- Reduce potable and non-potable water consumption, and comply with storm water managementrequirements.
- Ensurethatnewconstructionandmajorrenovationsconformtoapplicablebuilding energy efficiency requirements and sustainable design principles. RevisedGuiding Principles for Sustainable Federal Buildings were issued by the Council on Environmental Quality in2016.

❖ DesignProposal

- Asperthe requirementsofthevillagersandtheconditionsofthevillagewhichneedto be rectified and provide them with good amenities and services which can be advantageous for thevillagers.
- As per our data collection and requirements of the villagers we are going to proposed some designs with due permission of Sarpanch and Talati.

❖ Recommendations of theDesign

Design to be proposed should be convenient enough, cost effective and valuable to the residents of the villagers. The design proposed is designed according to the use, value, costingrecommendedbythevillagers.Thecostofthedesignisthemostimportantpart which needto be taken care of. Costing should be value for money. Design should be

designedaccordingtonumberofpeoplevisiting,numberofpeoplegoingtouseit,number of people wants the building or not.

Our Allocated village Meghakui has most of the amenities and facilities needed by the residents and villagers for daily needs. Some amenities like Public garden, Public Library, Strong Store Room, Maternity home, and some requirements which are like basic plus facilities to the village need to be provided for their use. This all are some amenities which can be beneficial to them in the long run and might also connect them to the fast running world. Knowledge can be gained through public library, children canhavesomeprivatestudyareaforthem,busstandconnectsthemtothenearbycities and many more facilities. Some of this might be not needed but might be as an entertainment and which can be used in thefuture.

❖ Suggestion/Benefits ofVillagers

Villagersalsoneedtobeprovidedwithbestamenitiesandservicesfordailyneeds,and good life forliving.

Some Amenities needed by villagers:

- Banking facility in villages. Primary health care in eachvillage.
- High school level education to eachvillage.
- Scientific agriculture practices easily accessible to each village.Connectivity
- Cold storage and grain storagefacility.
- Encourage villagers to open cooperative so that they can speak as one. Electricity supply which ofcourseis different fromelectrification.
- Skill development which might help them diversify. Water managementpractice.

❖ A StrongPanchayat:

Most essential without which no village can grow.Essential to take decisions and implement them.This is the body that should watch the finances and the financial strength of thevillage.

❖ VillageCo-operatives:

Co-operative societies play a significant role in the growth of rural sector. Co-operativesprovidecredittothefarmers,themostneededthinginthefarming.They cover more than 97% of Indian villages, some run by its members and some bythe government: Many co-ops are mismanaged and lack motivation. But that's not an argument against them. There should be more female participation in village co- operatives.

❖ Power andWater:

The present power ministry is busy electrifying many more villages than one had expected. But we need to look at solar power for rural areas. It can transform villages in areas of irrigation and domestic needs. Irrigation should get priority which will sort out domestic needs. Needs substantial funding. Villages live by farming and if irrigation works farming willboom.

❖ Healthcare:

Basic health care is what Sri Lanka has managed to introduce in its villages. India has failed in providing health care and medical facilities. More than 60-70% of villagers are abjectly dependent on nearby cities for basic medication. Villages require at least 1-2 man clinics to start with, expanding to medium sizehospitals.

❖ Hygiene:

Potable water.Public toilets if not a toilet for each accommodation.Health and hygiene areinextricable.

❖ Education:

India'soverallilliteracycanbetracedtoitsvillages.Overcrowdedschoolsinsome villages (Arunachal Pradesh) low attendance in many village schools (Bihar, UP). Some villages lack even primary schools. It's often difficult to get parents to send their children to schools. It's themindset.

Infrastructure.Roads.Accessibilitytourbancentres.Accessibilitytoothervillages. Prime the village for onlineactivities

❖ Banks, Postoffice:

The federal government decision to set up the Indian Post Payment Bank willhave substantial impact on villages. It will become operational nextyear.

The department plans to set up 5,000 ATMs all over the country -- apart from third party insurance and other services by the bank. India Post Payment Bank is likely to also facilitate payments of central and state governments as well as municipal duesandfeesofeducationalinstitutions.Avillagewithsuchafacilitywillradically change the way it does business and execute itsprojects.

In India there are villages within villages, there are villages that exist at a stone's throwfromeachother.Oftenoneofthevillagesisaghetto.Peoplefromtherecan't use even the basic facilities of the nearby village. They can't enter it. To get to someplace they have to take a detour of the village. Hindu temples, the focal point ofsocialactivityinaHinduvillage,arebarredtotheresidentsoftheghetto village

8.1.1 Sustainable Design (Civil)

CONSTRUCTION OF NEW PUBLIC TOILETBLOCK.

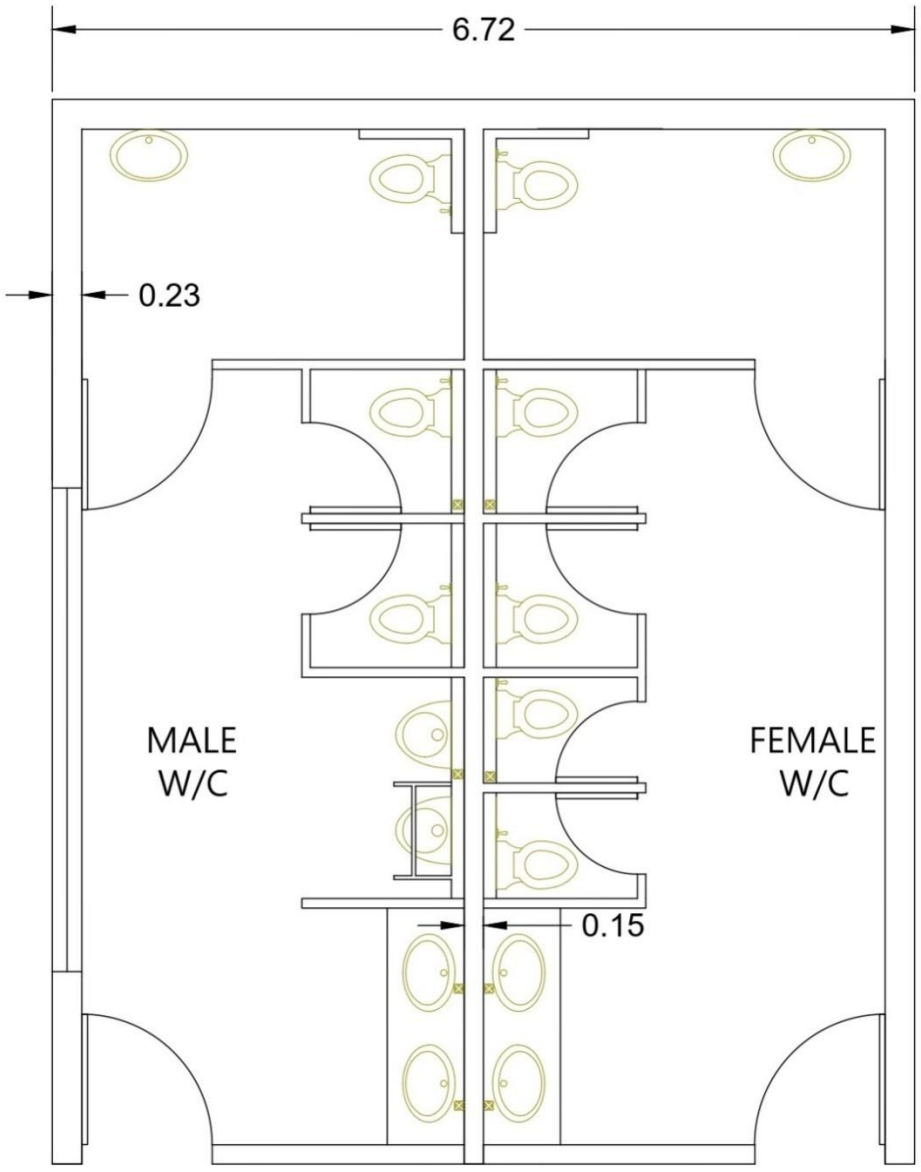


Fig.31 Plan of Public Toilet

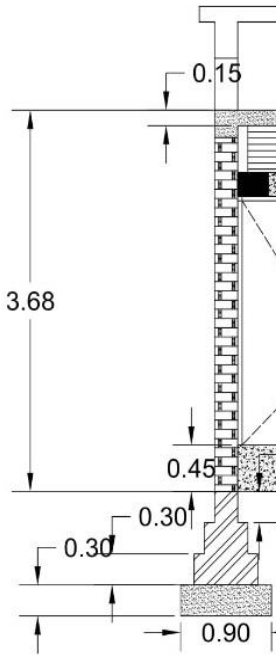


Fig.33Section of Public Toilet

	Item description	No.	Length L (m)	Width B (m)	Height H (m)	Quantity	Total
1	Excavation for foundation	1	46.48	0.9	1.2	$50.112m^3$	$50.112m^3$
2	Foundation concrete used in P.C.C [1:3:6]	1	46.48	0.9	0.3	$12.52m^3$	$12.52m^3$
3	Brick masonry used in cement mortar [1;4] for Foundation upto plinth						
	For 0.65m offset	1	47.44	0.65	0.3	$9.25m^3$	
		1	48.6	0.35	0.3	$5.103m^3$	$22.819m^3$
	For 0.23m offset	1	49.08	0.23	0.75	$8.466m^3$	
4	Earth filling						
	Male W/C	1	20.38	-	0.45	$9.171m^3$	
	Female W/C	1	20.38	-	0.45	$9.171m^3$	$21.34m^3$
	W/C Working Chamber	1	6.664	-	0.45	$2.99m^3$	
5	Brick work up to slab level	1	49.08	0.23	3.08	$34.76m^3$	
	Deduction D V1 V2	4 6 2	1.01 0.74 4	0.23 0.23 0.23	2.1 0.78 0.78	$1.951m^3$ $0.79m^3$ $1.43m^3$	$30.59m^3$
	Total deduction	-	-	-	-	$4.17m^3$	
6	R.C.C slab	1	8.07	6.53	0.15	$7.90m^3$	$7.9m^3$
7	Providing fixing shutter doors, ventilator including frame						
	1) Door 2) Ventilator V1 V2	4 6 2	1.01 0.74 4	- - -	2.1 0.78 0.78	$8.48m^2$ $3.46m^2$ $6.24m^2$	$18.18m^2$

8	C.C .work						7.9m^3
	1)R.C.C slab	1	8.07	6.53	0.15	7.90m^3	
9	Providing glazed tiles Dado upto lintel level						
	Male W/C	1	2.6	7.84	-	20.38m^2	40.7 m^2
	Female W/C	1	2.6	7.84	-	20.98m^2	
10	Smooth Plaster 12mm thick C.M (1:6)						
	A) Ceiling						
	1) Male W/C	1	2.6	7.84	-	20.384m^2	
	2) Female W/C	1	2.6	7.84	-	20.384m^2	47.42m^2
	3) Working Chamber	1	0.85	7.84	-	6.664 m^2	
	B) Walls						
	1) Male W/C	1	20.86	-	3.08	64.31m^2	
	2) Female W/C	1	20.86	-	3.08	64.31m^2	182.15m^2
	3) Working Chamber	1	17.38	-	3.08	53.53m^2	
11	20 mm thick Sand face plaster on outer walls	1	30.04	-	4.62	138.78m^2	124.88m^2
	Deduction D V1 V2	4 6 2	1.01 0.74 4	- - -	2.1 0.78 0.78	1.951m^3 0.79m^3 1.43m^3	1142.64m^3

Item Number	Item description	Quantity	Rate in Rs	Per	Amount in Rs.
1	Excavation work	50.112	120	M^3	6013.4
2	Foundation concrete	12.52	827	M^3	10354
3	RCC Work total	7.9	300	M^3	2370
4	Steel	596.76	45	kg	26854.2
5	2nd class brick work upto slab	30.59	800	M^3	24472
6	Earth filling	21.34	45	M^3	958.5
7	Brick masonry up to plinth	23.21	800	M^3	18568
8	Glazed tiles	40.768	120	Sq.feet	60000
9	Plaster	124.88	40	M^2	50000

Total cost =199590 rs

Lump sum =200000 rs

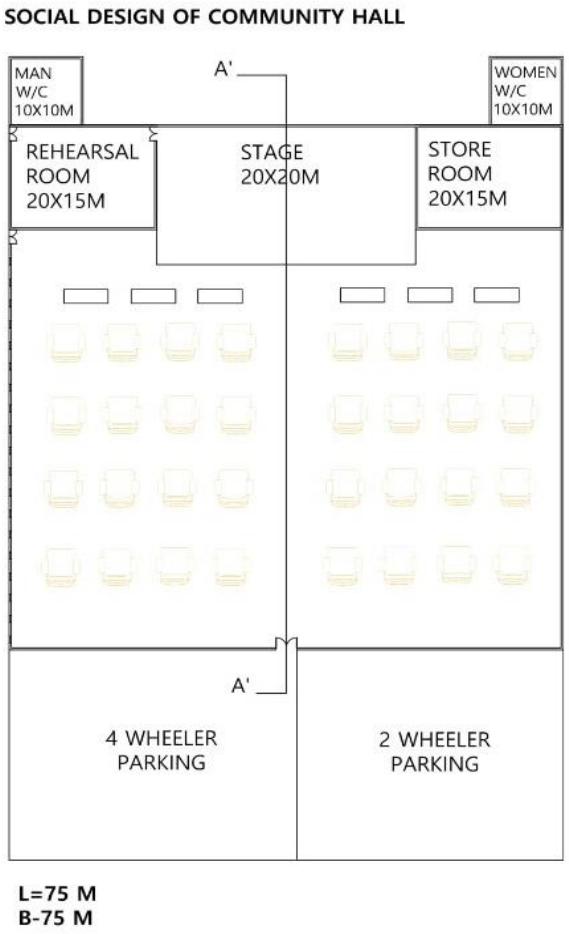
10% contractor charges = +20000 rs

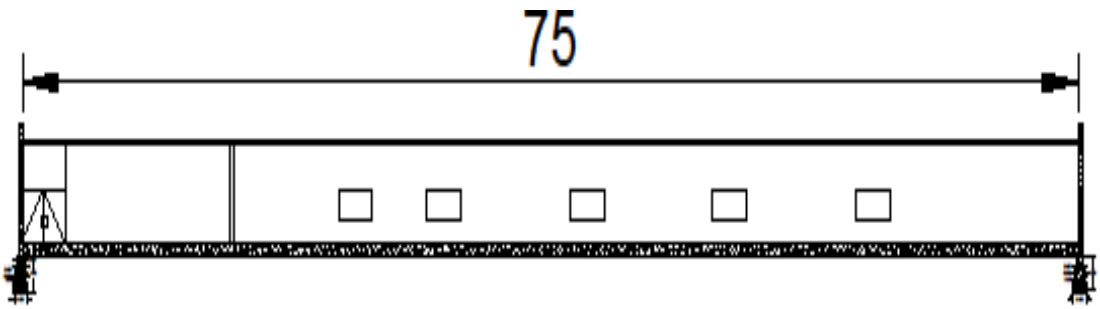
5 % extra charges like painters, mixer, transport & labor charges= +10000 rs

overall cost =2,30,000 rs

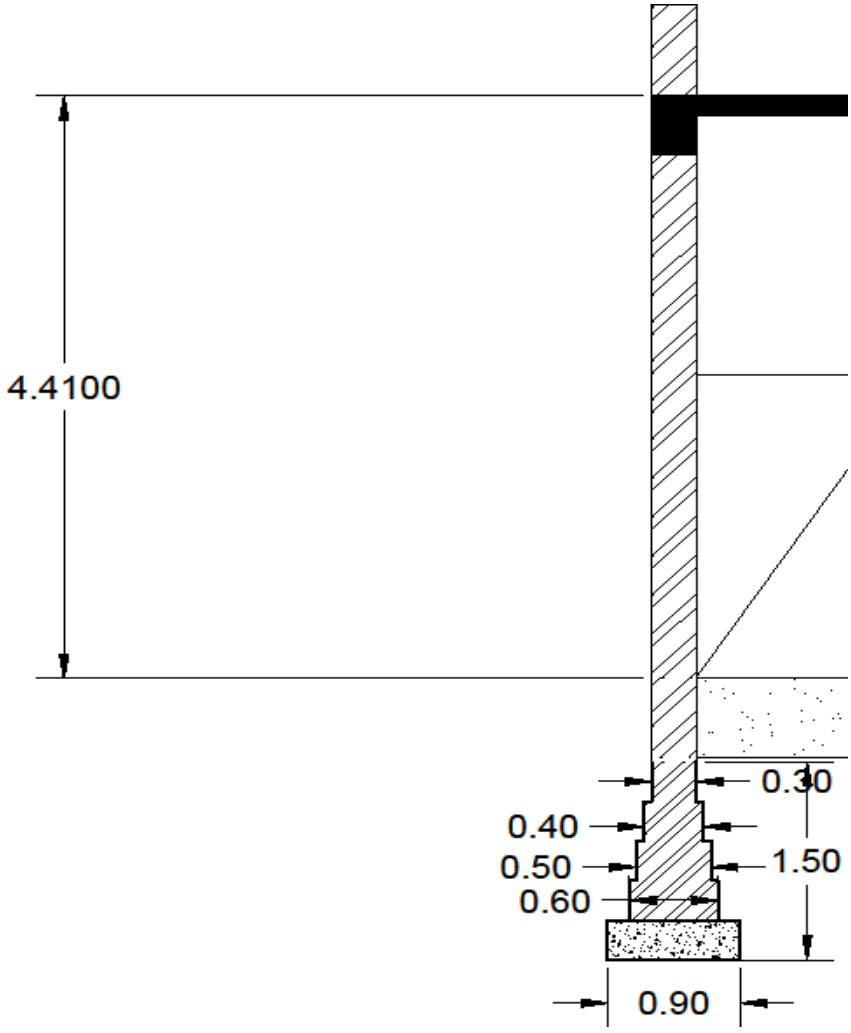
8.1.4 Socio-cultural Design (Civil)

CONSTRUCTION OF NEW COMMUNITY HALL





SECTION AA'



	Item description	No.	Length L (m)	Width B (m)	Height H (m)	Quantity	Total
1	Excavation for foundation	1	378.9	0.9	1.5	511.51m^3	511.51m^3
2	Foundation concrete used in P.C.C [1:3:6]	1	378.9	0.9	0.3	102.303m^3	102.303m^3
3	Brick masonary used in cement mortar [1;4] for Foundation upto plinth						
	For 0.9m offset	1	379.5	0.9	0.3	102.4m^3	236.67m^3
		1	379.7	0.6	0.3	68.346m^3	
	For 0.4m offset	1	378.9	0.4	0.75	45.468m^3	
	For 0.3m offset	1	378.5	0.3	0.9	20.465m^3	
4	Earth filling						
	Hall	1	55	75	0.6	2475m^3	3111m^3
	Store room	1	22	15	0.6	198m^3	
	Rehearsal room	1	22	15	0.6	198m^3	
	Stage	1	20	20	0.6	240m^3	
5	Brick work up to slab level	1	228.42	0.3	5.1	349.48m^3	
	Deduction D W1 D2	 2 16 1	 3 2.4 8.7	 0.3 0.3 0.3	 2.3 1..4 2.3	 4.14m^3 16.128m^3 6.003m^3	323.21
	Total deduction	-	-	-	-	26.27m^3	
6	R.C.C slab	1	75	75	-	5625m^2	
7	Providing fixing shutter doors, ventilator including frame						
	1) Door 2) Ventilator V1	4 6	1.0 1	- -	2.1 0.78	8.48m^2 3.46m^2	18.18m^2

	V2	2	0.7 4 4	-	0.78	6.24m^2	
8	Parapet Wall	1	75	75	0.6 9	3881.25 m^3	
9	Providing fixing shutter for window , doors						
	Doors D1 D2	 2 1	 3 8.7	 - -	 2.3 2.3	 13.8m^2 20.01m^2	87.57m^2
	Window W1	16	2.4	-	1.4	53.76m^2	
10	Smooth Plaster 12mm thick C.M (1:6)						
	A) Ceiling						
	1) Hall 2) Storeroom 3) Rehearsalroom 4) Stage	1 1 1 1	75 22 22 20	75 15 15 20	- - - -	5625m^2 330m^2 330m^2 400m^2	6685m^2
	B) Walls						
	1) Hall 2) Storeroom 3) Rehearsalroom 4) Stage	1 1 1 1	260 74 74 60	- - - -	5.1 5.1 5.1 5.1	1326m^2 377.4m^2 377.4m^2 306m^2	2386m^2
	Total deduction	-	-	-	-	87.57m^2	2299.23m^2
11	20 mm thick Sand face plaster on outer walls	1	300	-	5.73	1719m^2	
	Deduction Window Door D1 D2	16 1 1	2.4 3 8.7	- - -	1.4 2.3 2.3	53.76m^2 6.9m^2 20.01m^2	1638.33m^2
12	Flooring Marble flooring 20mm thick mortar(1:6)						

	Hall	1	75	55	-	4125m^2	
	Store room	1	22	15	-	330m^2	4785m^2
	Rehearsal room	1	22	15	-	330m^2	
13	Wooden Flooring on Stage	1	10	10	-	100m^2	
14	White Washing	Plaster's quantity					

Item Number	Item description	Quantity	Rate in Rs	Per	Amount in Rs.
1	Excavation work	511.51	120	M^3	61381.2
2	Foundation concrete	102.303	827	M^3	84602.1
3	RCC Work total	5625	300	M^3	1687500
4	Steel	63736.87	45	kg	2868159.15
5	2^{nd}class brick work upto top	349.48	800	M^3	279584
6	Earth filling	3111	45	M^3	139995
7	Brick masonry up to plinth	236.75	800	M^3	189400
8	Smooth cement plaster	2299.23	40	m^2	91963.2
9	Face Plaster outer wall	1719	40	M^2	68760
10	Wooden Flooring	100	500	m^2	50000
11	Tiles work	4785	52	m^2	248820
12	Eco friendly toilet blocks	10	7000	block	70000

Total cost = 5840164 rs

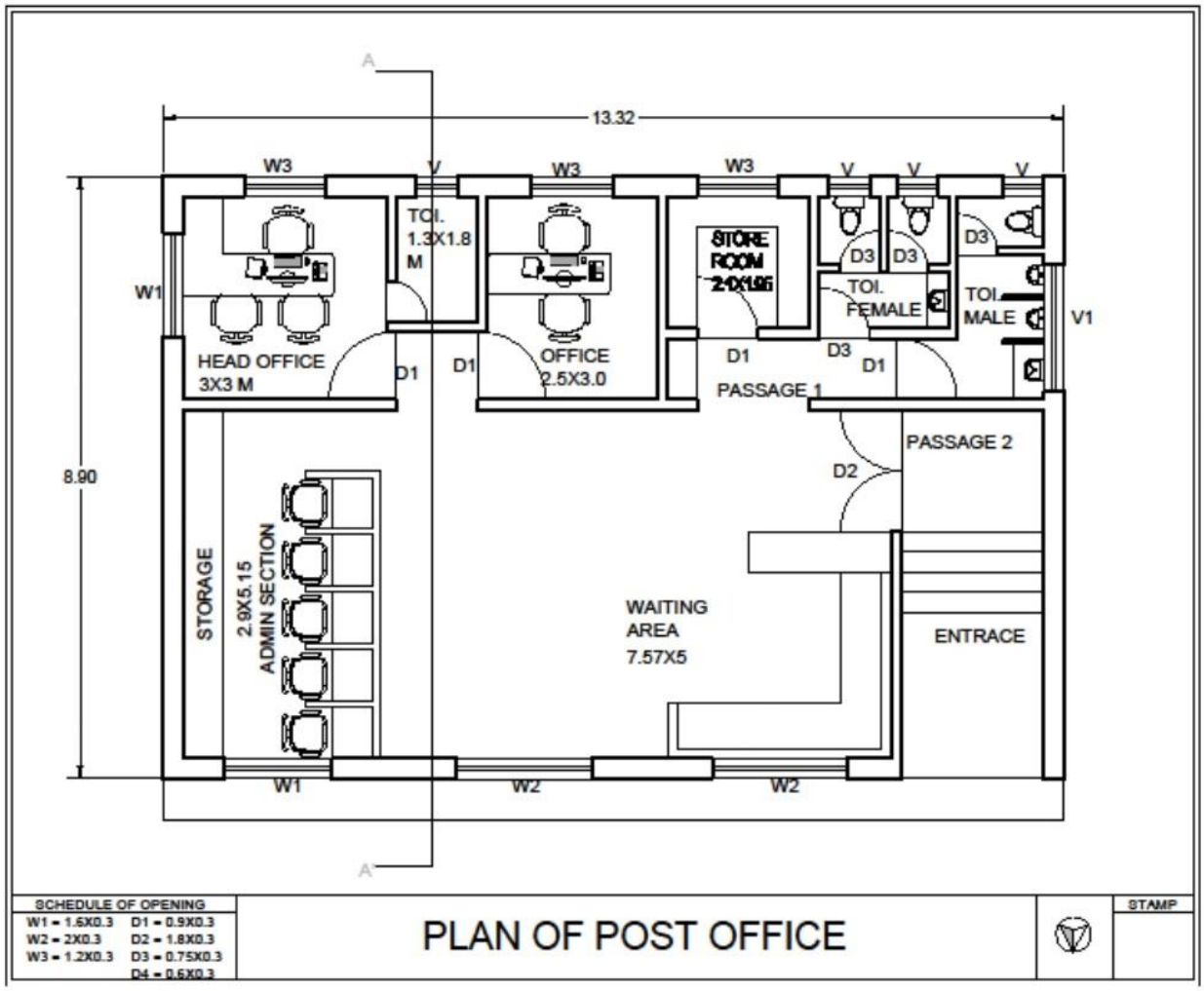
10% contractor charges = +5840164rs

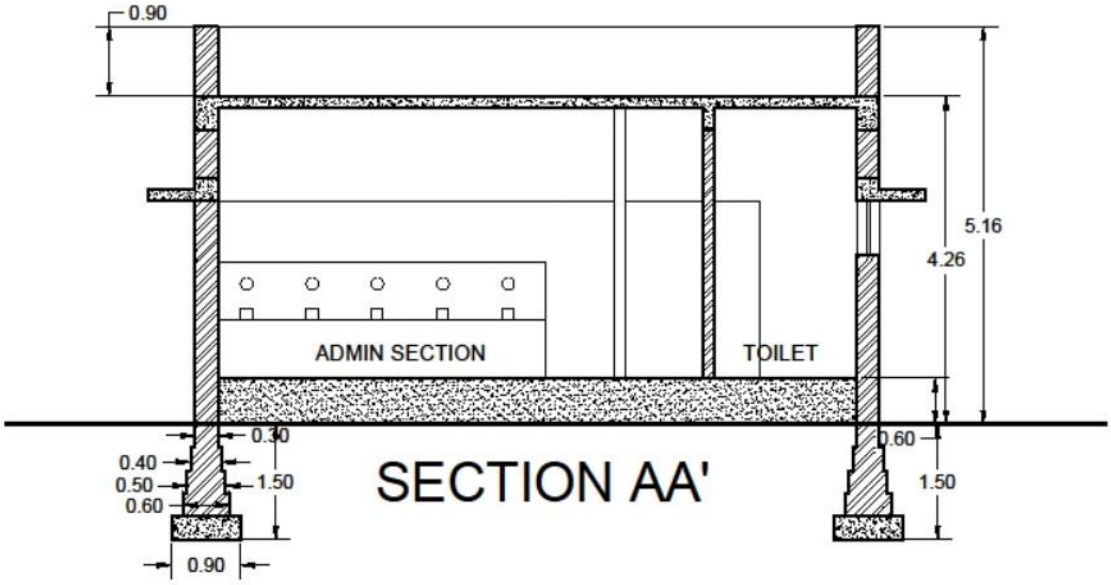
5 % extra charges like painters, mixer, transport & labor charges= +288508 rs

Overall cost = 6135672 rs

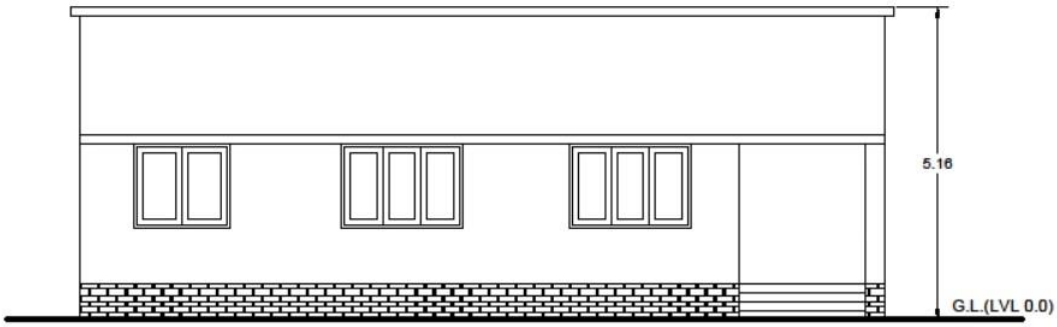
8.1.1 Sustainable Design (Civil)

NEW DESIGN OF POST OFFICE





SECTION AA'



ELEVATION

Item Number	Itemdescription	No.	Length L(m)	Width B (m)	Height H(m)	Quantity	Total
1	Excavationforfoundation	1	70.95	0.9	1.5	95.78m^3	95.78m^3
2	Foundationconcreteusedin P.C.C[1:3:6]	1	70.95	0.9	0.3	19.15m^3	19.15m^3
3	Brickmasonryusedincementmortar[1;4]for Foundationuptoplinth						
	For0.6moffset	1	73.62	0.6	0.3	13.25m^3	33.484m^3
	For0.5moffset	1	74.55	0.5	0.3	11.18m^3	
	For0.4moffset	1	75.45	0.4	0.3	9.054m^3	
4	Earthfilling Adminsection	1	2.9	5.15	0.48	7.16m^3	39.56m^3
	Waitingarea	1	7.57	5	0.48	18.16m^3	
	Headoffice	1	3	3	0.48	4.32m^3	
	Head officetoilet	1	1.3	1.8	0.48	1.12m^3	
	Office	1	1	1.75	0.48	0.84m^3	
	Femaletoilet	1	1.9	2.1	0.48	1.91m^3	
	Male toilet	1	1.28	3	0.48	1.4m^3	
	Passage2	1	5.57	0.9	0.48	2.4m^3	
	Passage1	1	2.1	1.8	0.48	1.81m^3	
5	DPC	1	10.32	0.3	-	3.096m^3	3.096m^3
6	R.C.Cworkforslab	1	13.02	8.6	0.15	16.79m^3	16.79m^3

Item Number	Itemdescription	No.	Length L(m)	Width B (m)	Height H(m)	Quantity	Total
7	P.C.Cworkforfloorbase insuperstructure						
	1)Adminsection	1	2.6	5.12	0.015	0.99m^3	
	2)Waitingarea	1	7.27	2	0.075	1.09m^3	
	3)Head office	1	2.7	2.7	0.075	0.56m^3	
	4)Headofficetoilet	1	1	1.5	0.075	0.11m^3	
	5)Storeroom	1	0.7	1.45	0.075	0.07m^3	3.656m^3
	6)FemaleToilet	1	1.6	1.8	0.075	0.216m^3	
	7)MaleToilet	1	0.98	2.7	0.075	0.19m^3	
	8)Passage2	1	5.27	0.6	0.075	0.23m^3	
	9)Passage1	1	1.8	1.5	0.075	0.20m^3	
8	2nd class brick work in C.M[1:4]uptoslablevel	1	76.35	0.3	3.81	87.26m^3	77.43m^3
	Deductions Doors D1 D2 D3 D4	 3 1 1 3	 0.9 1.8 0.75 0.6	 0.3 0.3 0.3 0.3	 2.3 2.3 2.3 2.3	 1.863m^3 1.242m^3 0.517m^3 1.242m^3	
	Window W1 W2 W3	 2 2 3	 1.6 2 1.2	 0.3 0.3 0.3	 1.4 1.4 1.4	 1.344m^3 1.68m^3 1.512m^3	
	Ventilator V V1	2 1	0.6 1.87	0.3 0.3	0.5 0.5	0.18m^3 0.28m^3	
	Total deduction	-	-	-	-	9.83m^3	

Item Number	Itemdescription	No.	Length L (m)	Width B (m)	Height H (m)	Quantity	Total7
9	C.C.work						26.89m3
	1)R.C.Cslab	1	13.02	8.6	0.15	16.79m3	
	2)lintel	1	76.35	0.3	0.3	6.87m3	
	3)chhajja	1	76.35	0.3	0.15	3.43m3	
10	R.C.Csteelquantity	Wt.	@ 2046.37	kg			
11	Providing glazed tiles Dadouptolintellevel						
	Toiletheadoffice	1	6.2	-	2.3	14.26m2	
	ToiletFemale	1	6.8	-	2.3	15.64m2	46.46m2
	ToiletMale	1	7.2	-	2.3	16.56m2	
12	Parapet	1	70.95	0.3	0.9	19.15m3	19.15m3
13	Providinglayingofmosaic tiles on flooring						
	1)Waitingarea2)Adminsection 3) Head Office 4) Office 5) Store Room6)Passage1 7)Passage2	1 1 1 1 1 1 1	7.57 2.9 3 2.5 2.1 1.8 5.27	- - - - - - -	- - - - - - -	7.57m 2.9m 3m2.5m 2.1m 1.8m 5.27m	25.14m
14	Smoot Plaster 12mm thickC.M(1:6)						
	A)Ceiling						
	1) WaitingArea 2) Adminsection 3) Headoffice 4) Head officetoilet 5) Office 6) Storeroom	1 1 1 1 1 1	7.5 2.9 3 1.3 2.5 2.1	5 5.15 3 1.8 3 1.95	- - - - - -	37.5m3 14.93m3 9m3 2.34m3 7.5m3 4.095m3	

Item Number	Itemdescription	No.	Length L(m)	Width B (m)	Height H(m)	Quantity	Total
	7) ToiletMale 8) ToiletFemale 9) Passage1 10) Passage2	1 1 1 1	0.98 1.6 1.8 5.27	2.7 1.8 1.5 0.6	- - - -	2.646m^3 2.88m^3 2.7m^3 3.162m^3	86.753m^3
	B) Wall						
	1) Waiting Area 2) Adminsection 3) Headoffice 4) Head officetoilet 5) Office 6) Storeroom	1 1 1 1 1 1	25 16.1 12 6.2 11 8.1	- - - - - -	2.3 2.3 2.3 2.3 2.3 2.3	57.5m^3 37.03m^3 27.6m^3 14.26m^3 25.3m^3 18.63m^3	235.05m^3
	7) ToiletMale 8) ToiletFemale 9) Passage1 10) Passage2	1 1 1 1	7.36 6.8 6.6 11.74	- - - -	2.3 2.3 2.3 2.3	16.928m^3 15.64m^3 15.18m^3 27.002m^3	
	Deductions Doors D1D2 D3D4	 3 1 1 3	 0.9 1.8 0.75 0.6	 0.3 0.3 0.3 0.3	 2.3 2.3 2.3 2.3	 1.863m^3 1.242m^3 0.517m^3 1.242m^3	225.22m^3
	Window W1 W2 W3	2 2 3	1.6 2 1.2	0.3 0.3 0.3	1.4 1.4 1.4	1.344m^3 1.68m^3 1.512m^3	
	Ventilator V V1	2 1	0.6 1.87	0.3 0.3	0.5 0.5	0.18m^3 0.28m^3	
	Total deduction	-	-	-	-	9.83m^3	

Item Number	Itemdescription	Quantity	Rate in Rs	Per	Amount in Rs.
1	Excavationwork	95.78	120	M^3	11493.6
2	Foundationconcrete	19.15	827	M^3	52552.5
3	RCCWork total	16.79	300	M^3	5037
4	Steel	2046.37	45	kg	92086.65
5	DPC	3.096	2200	M^3	6811.2
6	Concretework	10.4	3800	M^3	3810.4
7	2^{nd}class brickwork	96.58	800	M^3	77264
8	Earthfilling	39.55	45	M^3	1779.75
9	Brickmasonryuptoplinth	66.96	800	M^3	53568
10	P.C.Cat floor base	3.656	2750	M^3	10054
11	Glazedtiles	46.46m^2	120	Sq.feet	60000
12	Mosaictiles	25.14m	240	M^2	6033
13	Plaster	311.973	40	M^2	12478.8

Totalcost=392965.6rs

Lump sum = 392965 rs

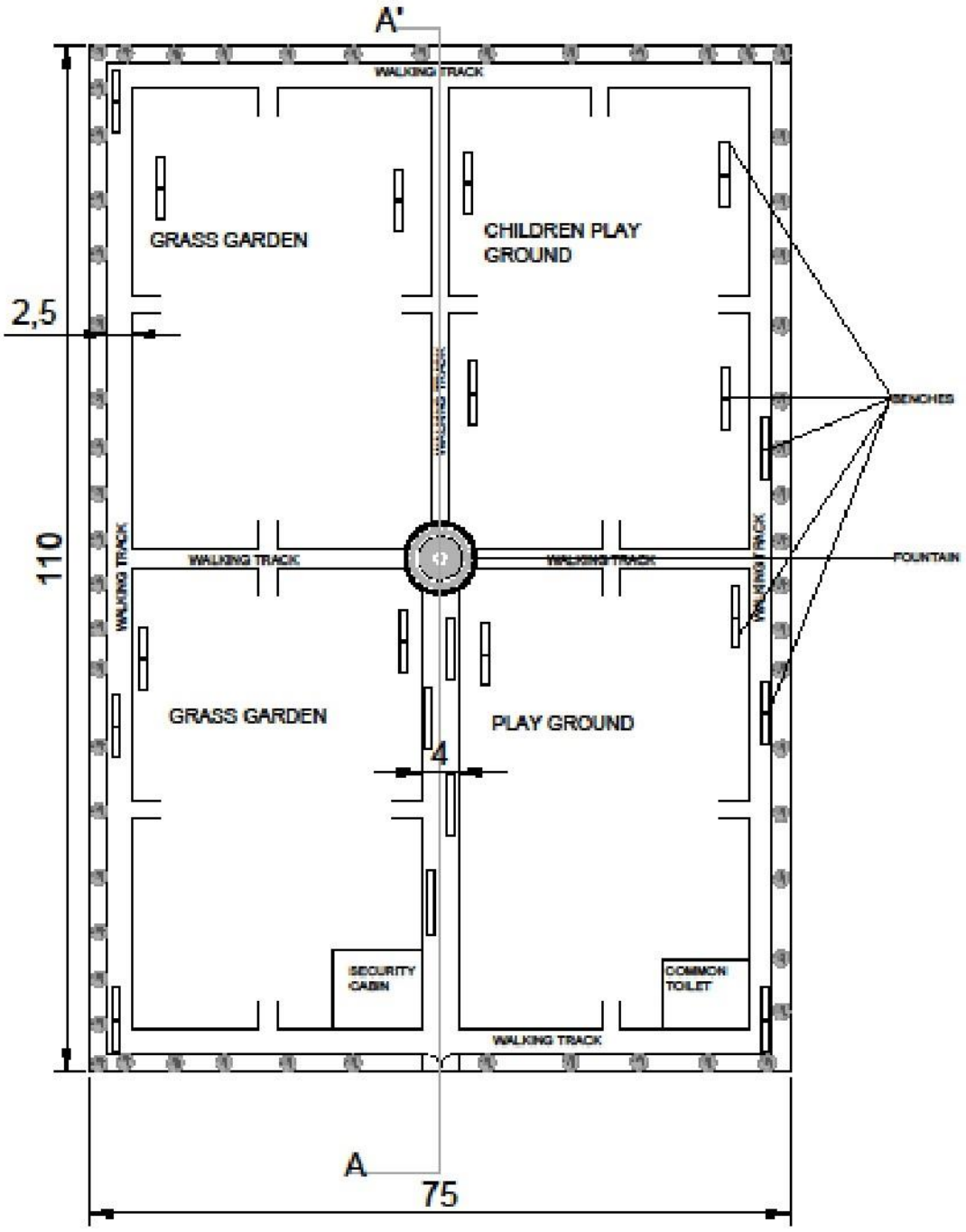
10%contractorcharges=+39296rs

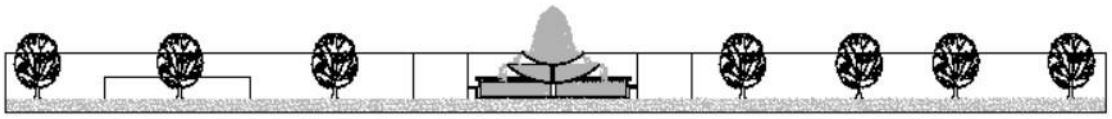
5%extrachargeslikepainters,mixer,transport&labor charges=+19648.2rs

Overallcost=451909rs

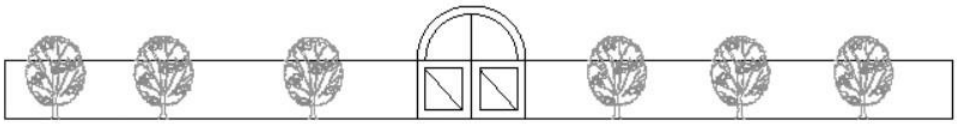
8.1.4 Socio-cultural Design (Civil)

NEW PUBLIC GARDEN





SECTION AA'
L= 115M
H= 2.1M



ELEVATION
L=75M
H=2.1M

Sr. No.	Itemdescription	No.	Length (m)	Width(m)	Height(m)	Total Quantity
1	ProvidingSiteclearanceetc.complete	1	75	110	1	336Sq.M.
2	Providing iron jali i	2	38	1	2.1	1554Sq.M.
3	Providingwalkingtrackin Gardenperiphery	1	530	355	1	855Sq.M.
4	Providing sand pit i	1	0	0	0	10.86Sq.M.
5	PaverBlock	1	32	49.5	-	1584Sq.M.
6	Filling Moorumforgrassingarden	2	32	49.5	0.15	237.6Cu. M.
7	Providing RCC seatingbenchesingarden	10	0	0	0	10Nos.
8	ProvidingIronstripGate	1	0	0	0	1Nos.
9	ProvidingTigardplantsinperipheryof garden	59	0	0	0	59Nos.

Sr. No.	Itemdescription	Total Quantity	Rate	TotalAmounts
1	ProvidingSiteclearanceetc.complete	336Sq.M.	8	2688/-
2	Providing iron jali in peripheryBoundarywall	1554Sq.M.	150	233100/-
3	Providingwalkingtrackin gardenperiphery	855Sq.M.	0	0
4	Providingsandpitingarden	10.86Sq.M.	0	0
5	Paver Block	1584	72	114048
6	Filling moorumforgrassin garden	237.6Cu. M.	500(perTractor)	118800/-
7	Providing RCC seating benches ingarden	10Nos.	1200	12000/-
8	ProvidingIronstrip Gate	1Nos.	900	900/-
9	Providing Tigard plants in periphery ofgarden	59Nos.	500	29500/-
	TotalAmounts:			511036/-
	Contractor'sprofit 10%			51103/-
	Total constructioncost			562139/-

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

- The study is aimed to know the basic scenario of village through techno economic survey and gap analysisform.
- Our design proposal shows that we are interested to provide economical services and facilities to thevillagers.
- OuraimistoworkaccordingtothenewupcomingtownplanningschemeinRangaipuravillage.
- We would like to bring each possible facility like easy transportation, economic electricity(using renewable energy), adequate water supply, Public infrastructures, medical facility, Higher educationFacility.
- Our very next plan is to propose our design to the Talati officer and get approval to execute ourdesign.
- Also we would like to make villagers know how these designs ay helpthem.

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

VishwakarmaYojana is a Gujarat government project allocated to GTU in which we the students of GTU who were involved in this project were allocated with a village in our district for urbanization. We don't make physical visits & Surveys due to COVID-19 pandemic, but as per past year data, we analysis the Mogri&Dharmajvillage and did the SWOT analysis, which helped us to know our strengths, weaknesses, opportunities & threats. From this we analysed problems and requirement of our allocated village and started finding the solution. From various thinkings,research and group discussions we decided to prepare 2 design solutions (civil facility)for Rangaipuravillage. And at the end of semester we were ready with these designs for the proposal.

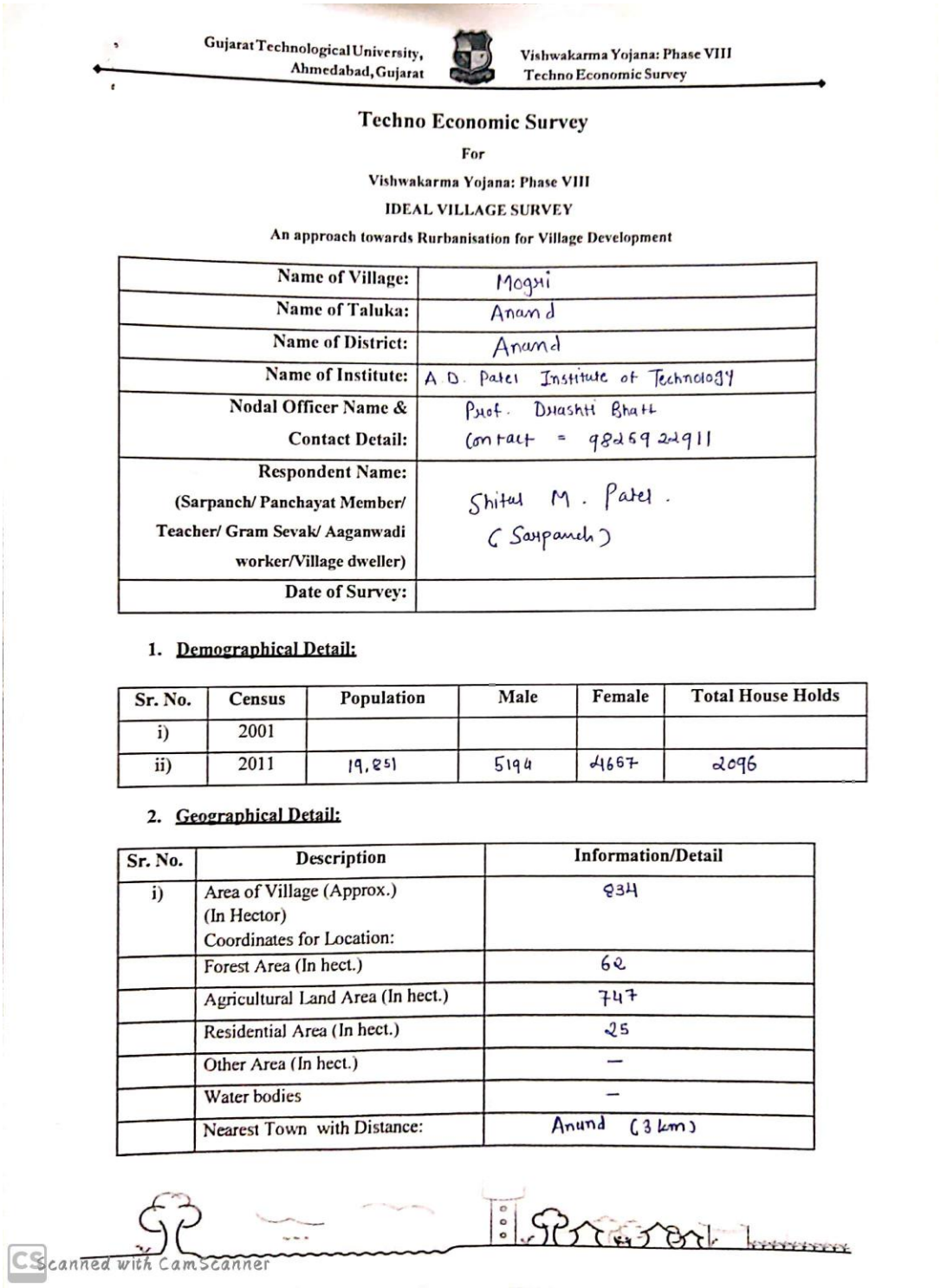
Villages need long term planning proposals in terms of master plan. From our study we conclude that providing some facilities is not only the solution of rural development. All villages in Gujarat are now become very well compare to past. But we should focus on improvement on existing facilities. Villagers and also gram panchayats are not focusing on the existing facilities. Due to these villagers try to discarding for its use.Also villagers are not aware about new technologies, which make them a better one. We should try to aware them.

Chapter-11. References refereed for this project

- http://www.wikipedia.com/
- http://www.dictionary.com/browse/village
- http://censusindia.gov.in/
- http://www.census2011.co.in/
- https://india.gov.in/my-government/schemes
- http://e4ev.org/about-us/what-are-smart-villages/
- www.bis.org.in
- www.censusindia.gov.in
- https://ananddp.gujarat.gov.in/gu/taluka/petlad/Taluka-Population-Information
- https://www.aicte-india.org/initiative/sansad-adarsh-gram-yojna
- https://villageinfo.in/gujarat/kheda/nadiad/rangaipura.html
- www.smallcities.gov.in
- building and town planning byS.C.rangwala
- Smart city and Smart villages by N.Viswanadham.
- Norms and standards of municipal basic services in India by National instituteof
- UrbanAffair.
- Handbook on sustainable development goals and GramPanchayat.
- Building & Town planning by S.C.Rangwala book
- Design of R.C.C. Structure elements by S.S.Bhavikatti

Chapter-12. Annexure attachment

12.1 Survey form of Ideal Village Scanned copy



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:	Mogri
Name of Taluka:	Anand
Name of District:	Anand
Name of Institute:	A D. Patel Institute of Technology
Nodal Officer Name & Contact Detail:	Prof. Drashti Bhatt Contact = 98259 22911
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Shital M. Patel. (Sarpanch)
Date of Survey:	

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001				
ii)	2011	19,851	5194	4667	2096

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	834
	Forest Area (In hect.)	62
	Agricultural Land Area (In hect.)	747
	Residential Area (In hect.)	25
	Other Area (In hect.)	–
	Water bodies	–
	Nearest Town with Distance:	Anand (3 km)

3. Occupational Details:

Name of Three Major Occupation groups in Village	1. Job work 2. Small Industry 3. Agricultural

4. Physical Infrastructure Facilities:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated)	Treated			1
	• RO Water	yes			2
	• Well (Covered/ Uncovered)	uncovered			
	• Hand pumps	yes			4
	• Tube well/ Borehole	yes			3
	• River/ Canal/ Spring/ Lake/ Pond	yes			18
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:			3
	Underground Sump	Capacity:	—	—	—
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	yes			
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	closed			
	If Open than Pucca / Kutchcha	Pucca			
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	water bodies			
Suggestions if any:					

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

E.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	NO	Katcha		1
	Main road	Yes	Bituminus		3
	Internal streets	Yes	Cement Concrete		4
	Nearest NH/SH/MDR/ODR Dist. in kms.				
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO (Anand Railway station)			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Bus (Private)			
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes			
	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)	NO			
	LED Facilities	NO			
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	NO			
	Location Condition	Not Rated			
	Community Toilet (With bath/ without bath facilities)	NO			
	Solid & liquid waste Disposal system available	NO			
	Any facility for Waste collection from road	NO			
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Canal Well Tube well			
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Pucca (1500)			

5. Social Infrastructural Facilities:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	NO			
	Private Clinic/Private Hospital/ Nursing Home	Yes (Private clinic and hospital)			
	If any of the above Facility is not available in village than approx. distance from village: ....03....kms.				
Suggestions if any:					
L.	**Education Facilities:**				
	Aaganwadi/ Play group	Aaganwadi			6
	Primary School	Yes			1
	Secondary school	Yes			
	Higher sec. School	Yes			3
	ITI college/ vocational Training Center	—			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	—			
	If any of the above Facility is not available in village than approx. distance from village: ...03..kms.				
Suggestions if any:					
M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	NO			

	Condition:				
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	NO			
	Public Garden Location: Condition:	NO			
	Village Pond Location: Condition:	Yes			
	Recreation Center Location: Condition:	NO			
	Cinema/ Video Hall Location: Condition:	yes Good			
	Assembly Polling Station Location: Condition:	NO			
	Birth & Death Registration Office Location: Condition:	Yes			
If any of the above Facility is not available in village than approx. distance from village: ...03...kms.					
Suggestions if any:					
N.	**Other Facilities**				
	Post-office				
	Telecommunication Network/ STD booth				

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

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

8. **Additional Information/ Requirement:**

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

9. **Smart Village Proposal Design**

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Solid waste. Disposal plant.		

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

Shidelli [illegible]
સરપંચ
ગ્રામ પંચાયત મોગરી
તા. જી. આણંદ

12.2 Survey form of Smart Village Scanned copy

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	Anand
Name of Taluka:	Petlad
Name of Village:	Dharmaj
Name of Institute:	A. D. Patel Institute of Technology
Nodal Officer Name & Contact Detail:	Prof. Drashti Bhatt Contact - 98259 22911
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Panchayat Member Nainaish bhai Babubhai Patel
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	11,000	5592	4408	
2.	2011	10,429	5380	5049	2232

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	12145.6
2.	Forest Area (In hect.)	13
3.	Agricultural Land Area (In hect.)	1275
4.	Residential Area (In hect.)	157.6
5.	Other Area (In hect.)	—
6.	Distance to the nearest railway station (in kilometers):	Available Petlad - 7 km, Broad gauge

7.	Name of Nearest Town with Distance:	Pethad - 7 km
8.	Distance to the nearest bus station (in kilometers):	Available in village
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.	Textile
	2.	Agriculture
	3.	Tobacco Processing

Major crops grown in the village:	1.	Tobacco
	2.	Rice
	3.	Milets

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		✓		
2.	**DUG WELL**				
	Protected Well		✓		5-10
	Un Protected Well				
3.	**WATER FROM SPRING**				
	Protected Spring				
	Unprotected Spring				
	Rainwater	✓			
	Tanker Truck				
	Cart With Small Tank				
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/**				
	Irrigation Channel	✓			
	Bottled Water				14
	Hand Pump	✓			
	Other(Specify)**Lake/ Pond**	✓			

21

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 7 lakh	✓		
	Underground Sump	Capacity: 5 lakh	✓		
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	✓	✓		B.T.P.
	Main road	✓	✓		B.T.P.
	Internal streets	✓	✓		B.T.P.
	Nearest NH/SH/MDR/ODR Dist. in kms.		✓		
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Yes Petlad - 7kms	–	–	Not working condition
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	–	–	
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	—	—	–	Available
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes			Govt. More than 6hrs.

31

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Power supply for Domestic Use		✓		
	Power supply for Agricultural Use		✓		
	Power supply for Commercial Use		✓		
	Road/ Street Lights		✓		
	Electrification in Government Buildings/ Schools/ Hospitals		✓		
	Renewable Energy Source Facilities (Y/ N)	Yes		✓	Solar panel 10 kW
	LED Facilities	Yes			
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos. 03				Usinal
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	—	—	—	—
	Solid & liquid waste Disposal system available	Yes	✓	—	—
	Any facility for Waste collection from road	Yes	✓	—	Door to Door collection
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND	Yes		—	14
	STREAM/RIVER	—		—	7
	CANAL	Yes	✓	—	3
	WELL	Yes		—	10
	TUBE WELL	Yes		—	
	OTHER (SPECIFY)				
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Pucca (99%)	✓	—	—

41

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	✓			12
	Sub-Centre	✓			5-7
	PHC	✓			
	BLOCK PHC				
	CHC/RH	✓			
	District/ Govt. Hospital				
	Govt. Dispensary				
	Private Clinic				
	Private Hospital/	✓			Jalaram Hospital
	Nursing Home				
	AYUSH Health Facility				
	sonography /ultrasound facility	✓			
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	14			
	Primary School	4			2-Govt. 2-Semi Govt.
	Secondary school				
	Higher sec. School	3			
	ITI college/ vocational Training Center	1			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	1			Sanskruntik Seva Charitable
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				

51

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:

L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)			✓	2- Govt. 15- Private
	Public Library (With daily newspaper supply: Y/N)			✓	3
	Public Garden			✓	3
	Village Pond			✓	14
	Recreation Center			✓	1- amusement park
	Cinema/ Video Hall			✓	1
	Assembly Polling Station			✓	8
	Birth & Death Registration			✓	–

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	–	–	✓	1
	Telecommunication Network/ STD booth	–	–	✓	2-4
	General Market	–	–	✓	1
	Shops (Public Distribution System)			✓	100±50
	Panchayat Building			✓	1
	Pharmacy/Medical Shop			✓	4
	Bank & ATM Facility			✓	1782
	Agriculture Co-operative Society			✓	2
	Milk Co-operative Soc.			✓	1
	Small Scale Industries			✓	30
	Internet Cafes/ Common Service Center/Wi Fi			✓	2
	Youth Club			✓	3-4
	Mahila Mandal			✓	2

19

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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

Suggestions if any:

N.	Other Facilities	Condition		Available (YES)	Available (NO)
	1. Have these programme implemented the village? 2. Are there any beneficiaries in the village from the following programme? 3. Janani Suraksha Yojana 4. Kishori Shakti Yojana 5. Balika Samriddhi Yojana 6. Mid-day Meal Programme 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) 12. Rajiv Gandhi National Drinking Water Mission 13. Swarnjayanti Gram Swarozgar Yojana 14. Minimum Needs Programme (MNP) 15. National Rural Employment Programme 16. Employee Guarantee Scheme (EGS) 17. Prime Minister Rojgar Yojana (PMRY) 18. Jawahar Rozgar Yojana (JRY) 19. Indira Awas Yaojna (IAY) 20. Samagra Awas Yojana (SAY) 21. Sanjay Gandhi Niradhar Yojana (SGNY) 22. Jawahar Gram Samridhi Yojana (JGSY) 23. Other (SPECIFY)				

71

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

18

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	No, this is well developed village but one problem is lacking of road maintenance & repair	

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

VILLAGE P... AYAT-DHARMA TA.PETLAD, DI...

B. D. Rohit
Sarpanch.
...laje Panchayat-Dharmaj
Ta. Petlad, Di. Anan...

91

12.3 Survey form of Allocated Village Scanned copy

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

Name of District:	Rangaipura
Name of Taluka:	Petlad
Name of Village:	Anand
Name of Institute:	A.D. Patel Institute of Technology
Nodal Officer Name & Contact Detail:	Prof Drashti Bhatt Co - 9826922911
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Ramilaben J Makvana Co. 97244 84492
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	4650	2446	2204	1044

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	246.69
2.	Forest Area (In hect.)	
3.	Agricultural Land Area (In hect.)	211
4.	Residential Area (In hect.)	
5.	Other Area (In hect.)	Canal, Bare
6.	Distance to the nearest railway station (in kilometers):	Petlad (2 km)

7.	Name of Nearest Town with Distance:	Anand (11 km)
8.	Distance to the nearest bus station (in kilometers):	
9.	Whether village is connected to all road for the any facility or town or City?	No.

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Agriculture
	2.	Job work.
	3.	

Major crops grown in the village:	1.	Paddy
	2.	Wheat
	3.	Bajra

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		✓		
2.	**DUG WELL**				
	Protected Well				
	Un Protected Well				
3.	**WATER FROM SPRING**				
	Protected Spring				
	Unprotected Spring	✓			
	Rainwater				
	Tanker Truck				
	Cart With Small Tank				
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/**				
	Irrigation Channel				
	Bottled Water				
	Hand Pump	✓			

2

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

	Other(Specify)**Lake/ Pond**	✓			2
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 5 lakh	✓		
	Underground Sump	Capacity:			
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1		✓		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	✓	✓		
	Main road	✓			
	Internal streets		✓		
	Nearest NH/SH/MDR/ODR Dist. in kms.		✓		
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO Petlad -17 km Anand -10 km	—	—	
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	NO Anand	—	—	
	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)	NO	—	—	Govt. Less than 6 hrs.

3

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

	Power supply for Domestic Use			✓	
	Power supply for Agricultural Use		✓		
	Power supply for Commercial Use			✓	
	Road/ Street Lights		✓		
	Electrification in Government Buildings/ Schools/ Hospitals		✓		
	Renewable Energy Source Facilities (Y/ N)	NO	✓		
	LED Facilities		✓		
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos. 01				Usinal
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	—	—	—	—
	Solid & liquid waste Disposal system available	NO	—	—	—
	Any facility for Waste collection from road	NO	—	—	—
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND	Yes		—	2
	STREAM/RIVER	—		—	
	CANAL	NO	✓	—	
	WELL	—		—	
	TUBE WELL	Yes		—	1
	OTHER (SPECIFY)	—		—	
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	kutchha (70%)	—	—	—

4

V. SOCIAL INFRASTRUCTURAL FACILITIES:

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

5

	If any of the above Facility is not available in village than approx. distance from village: ...11....kms.
Suggestions if any:	

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

If any of the above Facility is not available in village than approx. distance from village: ...11....kms.

Suggestions if any:

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

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

Suggestions if any:

N.	Other Facilities	Condition		Available (YES)	Available (NO)
	1. Have these programme implemented the village? 2. Are there any beneficiaries in the village from the following programme? 3. Janani Suraksha Yojana 4. Kishori Shakti Yojana 5. Balika Samriddhi Yojana 6. Mid-day Meal Programme 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) 12. Rajiv Gandhi National Drinking Water Mission 13. Swarnjayanti Gram Swarozgar Yojana 14. Minimum Needs Programme (MNP) 15. National Rural Employment Programme 16. Employee Guarantee Scheme (EGS) 17. Prime Minister Rojgar Yojana (PMRY) 18. Jawahar Rozgar Yojana (JRY) 19. Indira Awas Yaojna (IAY) 20. Samagra Awas Yojana (SAY) 21. Sanjay Gandhi Niradhar Yojana (SGNY) 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	NO			
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	NO NO			
3.	Any Other				

VII. DATA COLLECTION FROM VILLAGE

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

8

Gujarat Technological University,
Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

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

IX. Smart Village / Heritage Details

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

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

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

સરપંચ
રંગાઈપુરા ગ્રામ પંચાયત
તા.પેટલાદ. જી.આણંદ.

12.4 Gap Analysis of the RangaipuraVillage

Facilities	Planning commission/UDPFI Norms	Village: **RANGAIPURA** Population:5426(2011)		
		Existing	Required as per the norms	gaps
Social Infrastructure Facility				
Education				
Angalwadi	Each or per 2500 population	4	2	2
Primary School	Each or per 2500 population	3	1	2
Secondary school	Per 7500 population	3	1	2
Higher secondary school	Per 15000 population	3	1	2
college	Per 125000 population	0	1	1
Tech. Training Institute	Per 100000 Population	0	1	1
Agriculture Research	Per 100000 Population	0	1	1
Skill Development Centre	Per 100000 population	0	1	1
Health facility				
Dispensary or Sub PHC or Health Centre	Each Village	1	1	0
PHC & CHC	Per 20,000 population	0	1	0
Child Welfare and Maternity Home	Per 10,000 population	0	1	0
Hospital	Per 100000 Population	0	1	0
Public Latrines	1 for 50 families (If toilet is not there in	Available only in school	20	20
	home, especially for slum pockets &kuccha house)			

Physical infrastructure facilities				
Transportation		Adequate	Inadequate	Remarks
Pucca Approach Road	Each village	√		
Bus/Auto Stand provision	All Villages connected by PT(STBus or Auto)		√	
Drinking Water (Minimum 70 lpcd)		Adequate		
Over Head Tank	1/3 of Total Demand	√		
U/G Sump	2/3 of Total Demand		√	-
Drainage Network		Adequate	Inadequate	
Open			√	
Cover				
Waste Management System Adequate Inadequate		Adequate	Inadequate	
Waste Management System Adequate Inadequate			√	
Electricity Network		Adequate	Inadequate	
Electricity Network		Adequate(24*7)		
Socio- Cultural Infrastructure Facilities				
Community Hall	Per 15000 Population	0	1	1
cum Public Library	Per 15000 Population	0	1	1
Police post	Per 40,000Population	0	1	1
Public Garden	Per village	0	1	1
Fire Station	Per 100000 Population	0	1	1
APMC	Per 100000 Population	0	1	1
Gram Panchayat Building	Each individual/group panchayat	1	1	0
Post Office	Per10,000 Population	1	1	0

12.5 Summary Details of All the Villages Designs in Table form

Sr. No.	Village	Discipline	Part-1
1	SANJAYA	CIVIL	DESIGN OF PAVER BLOCK
			GRAM PANCHAYAT BUILDING
			BANK
			BUS-STOP
			COMMUNITY HALL
			PUBLIC TOILET
		ELECTRICAL	MODERN GRAM PANCHAYAT
			SMART ANGANWADI AUTOMATION
			WATER QUANTITY MONITORING
2	BAMROLI	CIVIL	GRAM PANCHAYAT
			PUBLIC TOILET
			R.C.C. ROAD
			PUBLIC GARDEN
			BUS-STOP
			-
3	SIHOL	CIVIL	BUS-STOP
			LOWCOST HOUSE
			OVER GROUND WATER TANK
			PUBLIC HEALTH CENTER
			PUBLIC TOILET
			-
4	BORIYA	CIVIL	PANCHAYAT BUILDING
			PUBLIC GARDEN
			PUBLIC LIABRARY

			SKILL DEVELOPMENT CENTER
			-
			-
		ELECTRICAL	SMART GREENHOUSE USING ANDROID APPLICATION
			SMART CLASSROOM IN BORIYA
			AUTOMATIC RAILWAY GATE CONTROL
5	RANGAIPURA	CIVIL	COMMUNITY HALL
			POST-OFFICE
			PUBLIC GARDEN
			PUBLIC TOILET
			-
			-

12.7 Summary of Good Photographs

RANGAIPURA VILLAGE

Fig.RangaipuraEnterance

Fig.TempleFig. School

Fig. Gram panchayat

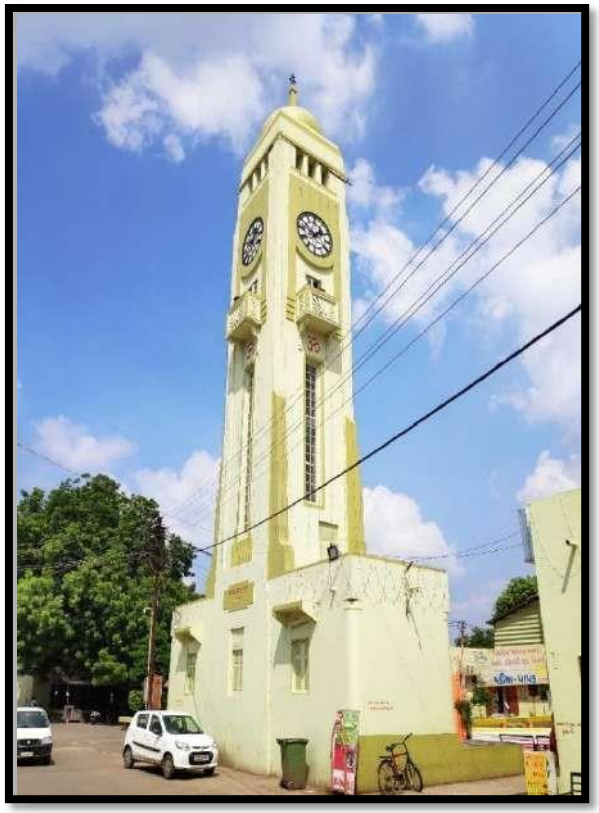
Fig.DudhMandiFig. Water Tank

Mogrivillage


ગાયત્રી શક્તિપીઠ, મોગરી


AI DUAL CAMERA
Shot by Bunny
2021/03/30 14:16

DharmajVillage



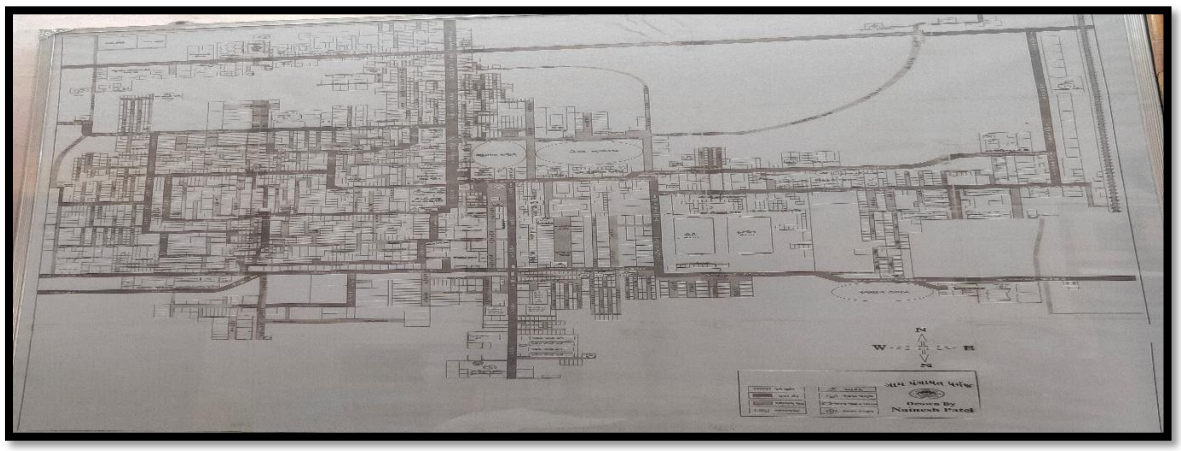
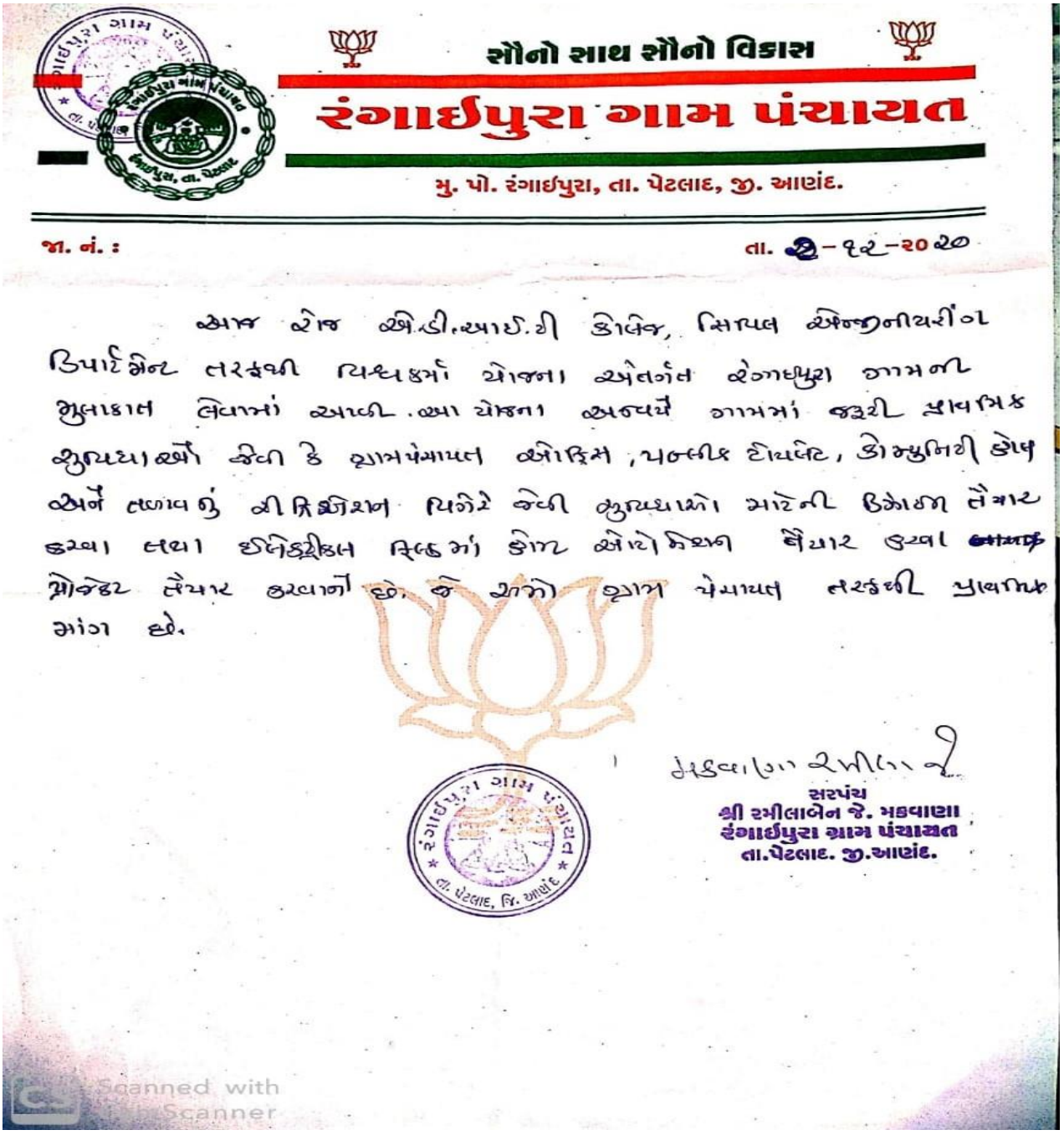


Fig.42 Dharmaj Village

12.8 Village Interaction with sarpanch and Talatimantri with the photograph

- Sarpanch, Talati, All the Panchayat members remained present to know how the development
- ofRANGAIPURA village is possible and to give their feedback.
- We explained various designs under Physical infrastructure, Social infrastructure and socio-
- cultural infrastructural facilities such as repair & maintenance and smart and sustainable etc. We
- explained all the parameters of various designs, how the designs can be sustainable by using
- local labor force and local materials. Economy transportation of the village can be made
- possible by implementing road network. We have also suggested drinking water from R.O. system &Sedimentation Tank design for
- waste water treatment, Bio gas plant, water harvesting system and Underground water sump.

12.9 Sarpanch Letter giving information about the village development



સૌનો સાથ સૌનો વિકાસ

રંગાઈપુરા ગામ પંચાયત

મુ. પો. રંગાઈપુરા, તા. પેટલાદ, જી. આણંદ.

જા. નં. :

તા. ૨૩-૧૨-૨૦૨૦

આજ રોજ વી.ડી.વી.આઈ.ટી કોલેજ, સિવિલ એન્જીનીયરીંગ ડિપાર્ટમેન્ટ તરફથી વિશ્વકર્મા યોજના અંતર્ગત રંગાઈપુરા ગામની મુલાકાત લેવામાં આવી. આ યોજના અન્વયે ગામમાં જરૂરી પાયાકીય સુવિધાઓ જેવી કે ગ્રામપંચાયત ઓફિસ, પબ્લીક ટોયલેટ, કોમ્યુનિટી હોલ અને તળાવનું બ્યુટિફિકેશન વિગેરે જેવી સુવિધાઓ માટેની ડિઝાઈન તૈયાર કરવા તથા ઈલેક્ટ્રીકલ સિસ્ટમ માં કોમ્પ્રેહેન્શન તૈયાર કરવા પ્રોજેક્ટ તૈયાર કરવાનો છે. જે અંગે ગ્રામ પંચાયત તરફથી પ્રાથમિક માંગ છે.

રમીલાબેન જે. મકવાણા

સરપંચ
શ્રી રમીલાબેન જે. મકવાણા
રંગાઈપુરા ગ્રામ પંચાયત
તા.પેટલાદ. જી.આણંદ.

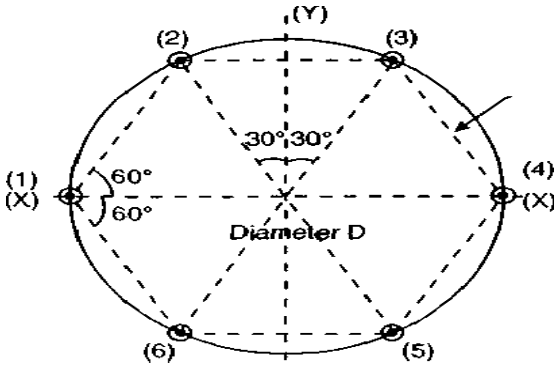
VY-PHASE-VIII-PART-II

13.From the Chapter- 9 future designs of the aspects (Feasibility, Construction, Operation and maintenance of various design options in Rural Areas along with cost with AutoCAD designs / planning with any software

- 13.1Design Proposals :We Visited **RANGAIPURA** village and observed various infrastructure facilities like physical infrastructure facility, social infrastructure facility, sustainable infrastructure facility, etc. As per the visit we designed various design for allocated village. This design shown below .

13.1.1 Civil Design 1

OVERHEAD WATER TANK



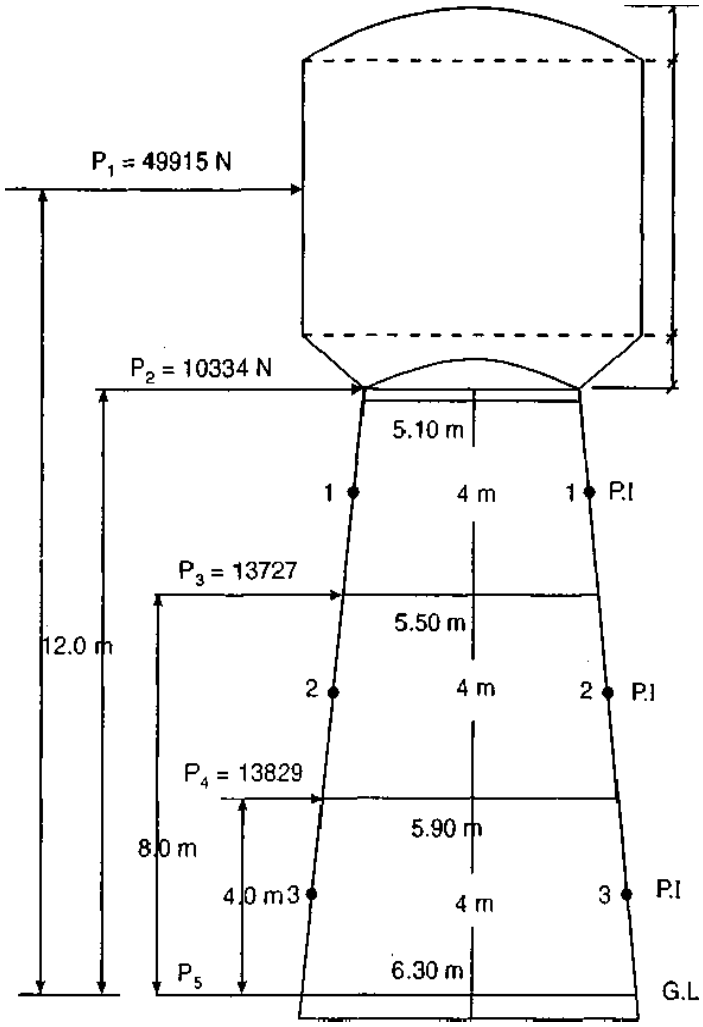


Fig. PlanofRCCWatertankFig. ElevationofOverheadRCCTank

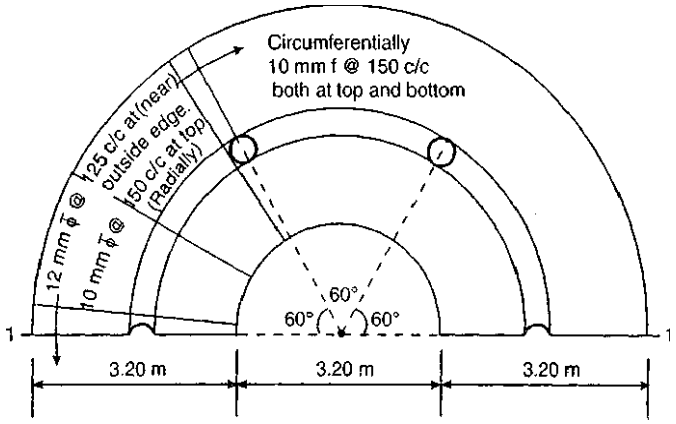


Fig.Details ofRCCTank

MEASUREMENT SHEET

S.No.	DECRIPTIONOFWORK	NOS	Lm	Bm	Am^2	Dm	QTY m^3	REMARKS
1	EARTH WORKINEXCUVATION	1			64.32	2	128.64	L=2πR=2π*2.55 =16.022m,R =5.1/2=2.55m
2	EARTHWORKINFILLING	1					100.198	L=2πR=2π*3.75= 23.56m,R=7.5/2= 3.75m
3	RCC WORK INFOUNDATION(1:1.5:3)	1			64.32	0.4	25.728	L=2πR=2π*3.75= 23.56m,R=7.5/2= 3.75m
4	RCCWORKIN COLOUMNSBELOW G.L(1:1.5:3)	6			0.282	1.6	2.714	Sa= 2πhRc=π(h2 + r2) =π(1.5^2+5.4375^2) =99.95m^2,h=1.5m,r =5.4375
5	RCCWORKIN COLOUMNSABOVE G.LUPTO4MHT(1:1.5:3)	6			0.282	4	6.785	Davg =(7.5+5.1)/2 =6.3m,R=6.3/2=3.15m,Sa =πr(r+h) =π*3.15(3.15+1.6)=47.006m^2
6	RCC WORK INCOLOUMNS FROM4M TO 8MHT(1:1.5:3)	6			0.282	4	6.785	R=3.3816m,Sa= 2πhRc =π(h2+r2)=π (0.950^2+3.3816^2)=
								38.760m^2
7	RCC WORK INCOLOUMNSFROM 8M TO 12M HT(1:1.5:3)	6			0.282	4	6.785	D=(0.23+0.2) =.215m,Sa =2πR h= 2π*3.75*5 =117.80m
8	TOTAL RCC WORKIN COLOUMNS(1:1.5:3)						23.069	QTY=2*6*0.3*0.3*0.6 =0.648m^3

9	RCC WORK INBRACING AT 4mHT (1:1.5:3)	1	18.535	0.3		0.3	1.668	QTY = 23.609 - 0.648 =22.961m^3
10	RCC WORK INBRACING AT 8mHT (1:1.5:3)	1	17.278	0.3		0.3	1.555	QTY =25.728+2.714+3*6.785+ 22.961+1.668+1.555+3.8 45+3.675+0.848+9.995+1 1.751+7.752+25.327=138 .174m^3
11	RCC WORK INCIRCULARGIRDER(1:1.5:3)	1	16.022	0.4		0.6	3.845	,R=6.3/2=3.15m,Sa =πr(r+h) =π*3.15(3.15+1.6) = 47.006m^2
12	RCC WORK INRING BEAM ATBOTTOM OF THECLWALL(1:1.5:3)	1	23.56	0.3		0.52	2.675	R=6.3/2+0.5= 3.65m,Sa =πr(r+h) =π*3.65(3.65+1.6) =60.2m^2
13	RCC WORK INRINGBEAMATTOP OF THE CL WALL(1:1.5:3)	1	23.56	0.16	99.95	0.225	0.848	R=3.3816m,Sa= 2πhRc =π (h2 + r2) =π(0.950^2+3.3816^2) =38.760m^2
14	RCCWORK IN	1				0.1	9.995	Sa= 2πhRc=π(h2 + r2) =π(1.5^2+5.4375^2) =99.95m^2,h=1.5m,r =5.4375
15	DOMEDROOF(1:1.5:3) RCCWORK INCONICAL SLAB(1:1.5:3)	1			47.06	0.25	11.751	Davg =(7.5+5.1)/2 =6.3m,R=6.3/2= 3.15m,Sa =πr(r+h) =π*3.15(3.15+1.6) = 47.006m^2
16	RCC WORK INCONICALDOME(1:1.5:3)	1			38.76	0.2	7.752	R=3.3816m,Sa= 2πhRc =π(h2+r2)=π (0.950^2+3.3816^2) =38.760m^2

17	RCC WORK INCYLINDRICALWALL(1:1.5:3)	1		0.215	117.8	5	126.35	D=(0.23+0.2) =.215m,Sa =2πRh=2π*3.75*5=177.80m
18	DEDUCTIONS IN RCC WORK IN BRACINGS IN COLOUMNS	2*6	0.3	0.3		0.6	0.648	QTY = 2*6*0.3*0.3*0.6 =0.648m^3
19	T0TAL RCC WORK IN COLOUMNS AFTER DEDUCTIONS						22.901	QTY = 23.609 - 0.648 = 22.961m^3
20	TOTAL RCC WORK (1:1.5:3)						138.174	QTY =25.728+2.714+3*6.785+ 22.961+1.668+1.555+3.8 45+3.675+0.848+9.995+1 1.751+7.752+25.327=138 .174m^3
21	PLASTERING IN C M (1:2) FOR INNER SURFACE OF CONIVAL SLAB (12MM)	1			47.06		47.006	,R=6.3/2= 3.15m,Sa =πr(r+h) = π*3.15(3.15+1.6) = 47.006m^2
22	PLASTERING IN C M (1:6) FOR OUTER SURFACE OF CONICAL SLAB (12MM)				60.2		60.2	R=6.3/2+0.5= 3.65m,Sa =πr(r+h) = π*3.65(3.65+1.6) = 60.2m^2
23	PLASTERING IN C M (1:2) FOR INNER SURFACE OF CONICAL DOME (12MM)	1			38.76		38.76	R = 3.3816m,Sa = 2πhRc =π (h2 + r2) =π (0.950^2+3.3816^2) = 38.760m^2
24	PLASTERING IN C M (1:6) FOR OUTER SURFACE OF CONICAL DOME (12MM)				43.135		43.135	R = 3.3816+0.2m = 3.5816,Sa = 2πhRc =π (h2 + r2) =π (0.950^2+3.3.5816^2) = 43.135m^2

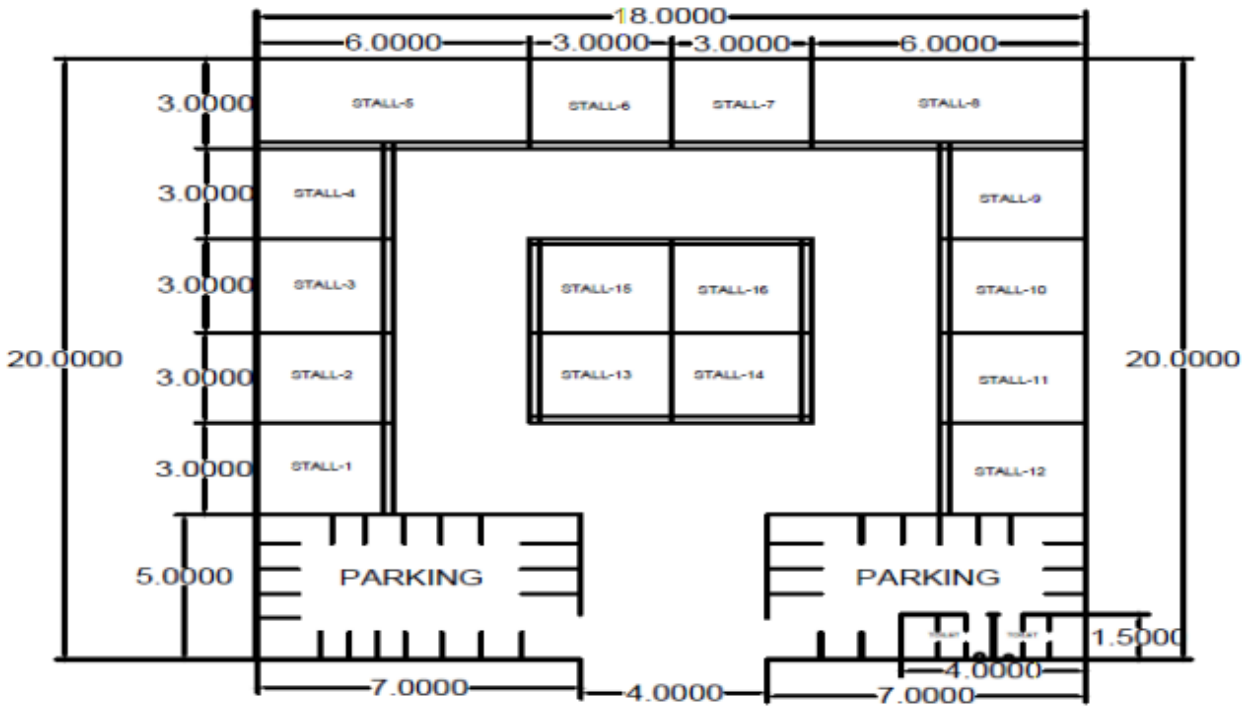
25	PLASTERING IN C M (1:2) FOR INNER SURFACE OF CYLINDRICAL WALL (12MM)				117.8		117.8	D = (0.23+0.2) =.215m,Sa =2πR h= 2π*3.75*5 = 117.80m
26	PLASTERING IN C M (1:6) FOR OUTER SURFACE OF CYLINDRICAL WALL (12MM)				125.03		125.03	D = (0.23+0.2) =.215m,R=3.75+.23 =3.98m,Sa =2πR h= 2π*3.98*5 = 125.03m
27	PLASTERING IN C M (1:2) FOR INNER SURFACE OF DOMED ROOF (12MM)				96.5		96.556	Sa = 2πhRc =π (h2 + r2) =π (1.5^2+5.3375^2) =96.56m^2,h =1.5m,r = 5.3375
28	PLASTERING IN C M (1:6) FOR OUTER SURFACE OF DOMED ROOF (12MM)				99.95		99.95	Sa = 2πhRc =π (h2 + r2) =π (1.5^2+5.4375^2) =99.95m^2,h =1.5m,r =5.4m
29	PLASTERING IN C M (1:6) FOR COLUMNS (12MM)	6			45.23		271.433	P =2πRh =2π*.6*12 = 45.23m^2
30	PLASTERING IN C M (1:6) FOR CIRCULAR GIRDER (12MM)	1	16.022			0.6	91.732	L =2πR = 2π*2.55 = 16.022m,R =5.1/2 = 2.55m
31	PLASTERING IN C M (1:2) FOR RING BEAM AT TOP (12MM)		23.56	0.16			18.213	Sa =2*23.56*0.225+2*0.225 *0,16+2*0.16*23.56 = 18.213m^2
32	PLASTERING IN C M (1:2) FOR RING BEAM AT BOTTOM (12MM)		23.56	0.3		0.225	38.95	Sa =2*23.56*0.52+2*0.52*0 .3+2*0.3*23.56 = 38.950m^2

33	PLASTERING IN C M (1:6) FOR BRACING AT 4M HT (12MM)		18.535	0.3		0.52	22.422	Sa =2*18.535*0.3+2*0.3*0.3+2*0.3*18.535 = 22.422m^2
34	PLASTERING IN C M (1:6) FOR BRACING AT 8M HT (12MM)		17.278	0.3		0.3	20.936	Sa =2*17.278*0.3+2*0.3*0.3+2*0.3*17.278 = 20.936m^2
35	TOTAL PLASTERING IN CM (1:2) 12MM THICK					0.3	357.289	QTY = 47.006+38.76+117.8+96.56+18.213+38.95 = 357.289m^2
36	TOTAL PLASTERING IN CM (1:6) 12MM						652.838	QTY = 60.2+43.135+125.03+99.95+271.433+9.732+22.422+20.936 = 652.838m^2
37	THICK WATER PROOF CEMENT PAINTING FOR TANK PORTION						647.174	QTY =47.006+60.2+38.76+43.135+117.8+125.03+96.56 +99.95+18.213+0.52=647
38	WHITE WASHING FOR COLUMNS	6			45.23		271.433	P =2πRh =2π*.6*12 = 45.23m^2
39	TOTAL WHITE WASHING						918.607	QTY =647.174+271.433 = 918.607m^2

S.NO	DESCRIPTION OFWORK	QTYORNOS	RATE RS PS	COST RS PS
1	Earthworkine xcuvation	**28.30cumec**		
2	Beldars	**5nos**	**215.00**	**1075.00**
3	Mazdoors	**4nos**	**215.00**	**860.00**
4	Total			**1935.00**
5	Totalearthworki n Excavation for128.64cum ec	**128.64/28.30 =4.6*1935 =8901**		**8901.00**
6	Earthworkinf illing Infoundation	**28.30**		
7	Beldar	**3**	**215.00**	**645.00**
8	Bhisthi	**½**	**260.00**	**130.00**
9	Total			**775.00**
10	Totalearthwork In Filling100.198 cumec	**100.198/28.30 =3.6*775 =2790**		**2790.00**
	surplusearth ina lead30m			
12	Mazdoor		**215.00**	**645.00**
13	Total			12336**.00**

13.1.2 Civil Design 2

VEGETABLE MARKET



MARKET PLAN

FIG. VEGETABLE MARKET

MEASUREMENT SHEET

Sr.	Item	No.	Length	Width	Height	Quantity	Unit
1	Excavation	1	88	0.9	3	287.6	m3
2	P.c.c.	1	88	0.9	0.15	16.88	m3
3	Brickworkin foundation	1	88	1.2	0.2	21.12	m3
4	Brickworkinsuperstructure	1	134	0.3	3	130.6	m3
5	Plasterwork	1	140.5	-	3	491.5	m2
6	R.c.c.slab	1	18	3	0.15	8.1	m3
7	FabricatedShutter	20	-	-	-	20	nos.

ABSTRACT SHEET

Sr.	Item description	Quantity	Rate	Per	Amount
1	Excavation	287.6	85	m3	24,446
2	P.c.c.	16.88	3000	m3	50,640
3	Brickwork infoundation	21.12	3200	m3	67,584
4	Brickwork in superstructure	130.6	3500	m3	4,57,100
5	Plasterwork	421.5	150	m2	63,225
6	R.c.c.slab	8.1	8000	m3	64,800
7	FabricatedShutter	20	12800	nos.	2,56,000
	Total				9,85,866

BUS STAND

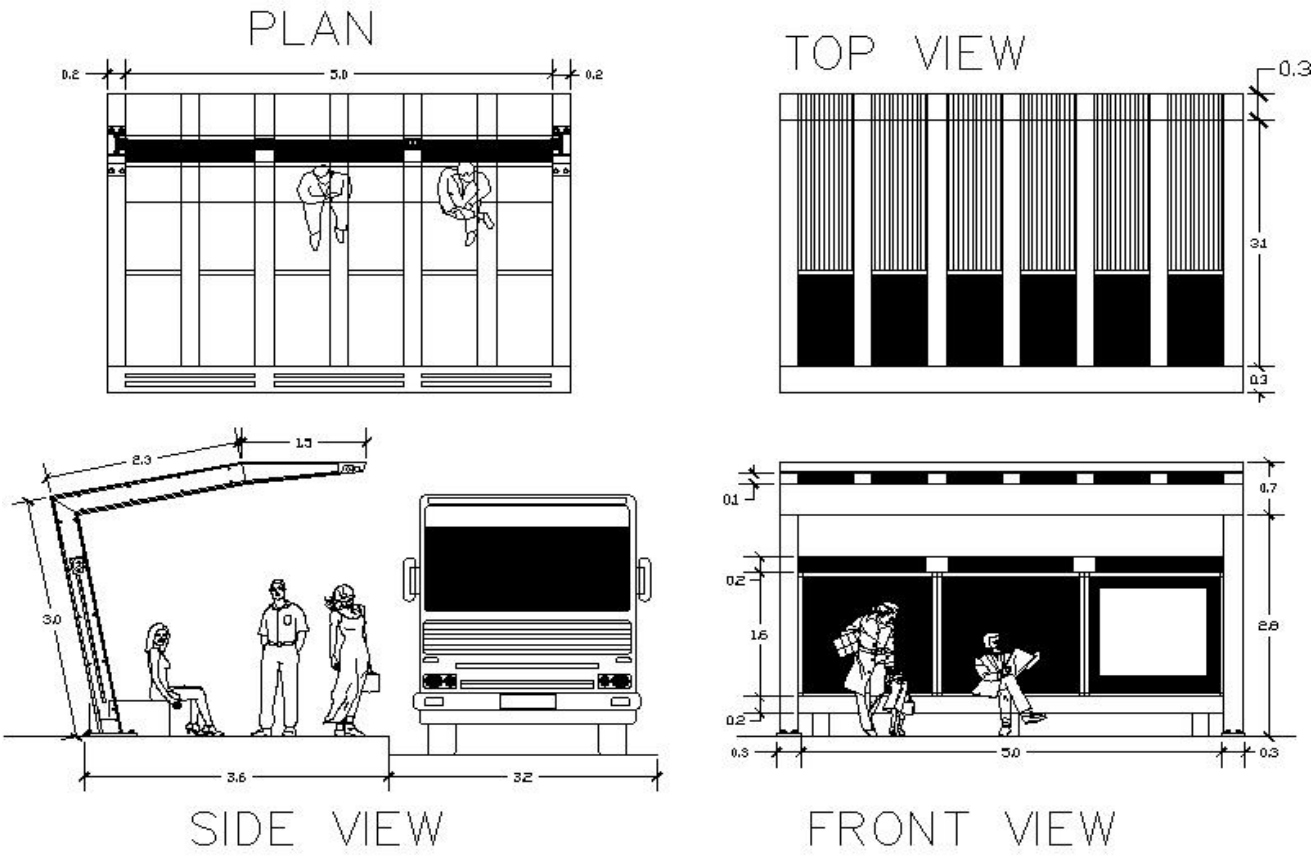


FIG. BUS STAND

MEASUREMENT SHEET

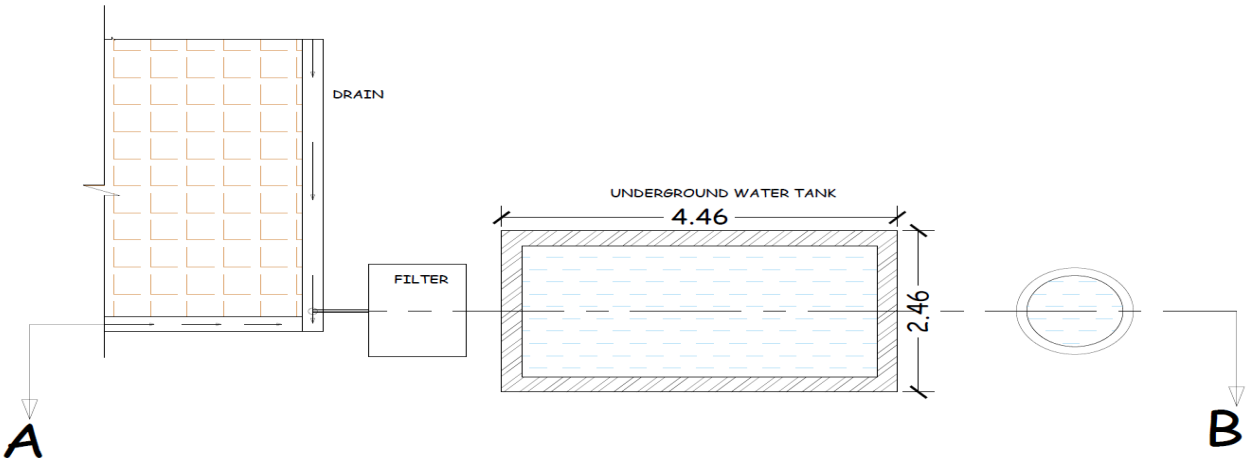
Sr No.	Description	No.	Length	Width	Height	Quantity	Total
1	Excavation for base slab						
	Long walls (Horizontal):						
	L1	2	5.57	0.9	1	10.2	
	Long walls (Horizontal):						
	S1	2	3.96	0.9	1	7.12	
							17.14m^3
2	D.P.C. Work at plinth level						
	Long walls (Horizontal):	1	5.57	3.96		22.05	
							22.05m^2
3	RCC Work for flooring						
	Length of slab: 45 m	1	4.57	2.43	0.15		
	Width of slab: 21.03 m						1.66m^3
4	Steel Pole	4	0.35		3		0.385m^3
5	Steel fencing around bus stand						
	(side)	2	1.98		1.22	4.83	
	(behind)	1	2.35		1.22	4.81	
							9.64m^2
6	Metal or ACC sheets for roof	1	4.57	2.43		11.40	
							11.10m^2
7	Plastering work on base slab	1	4.69	2.85			13.26m^2

ABSTRACT SHEET

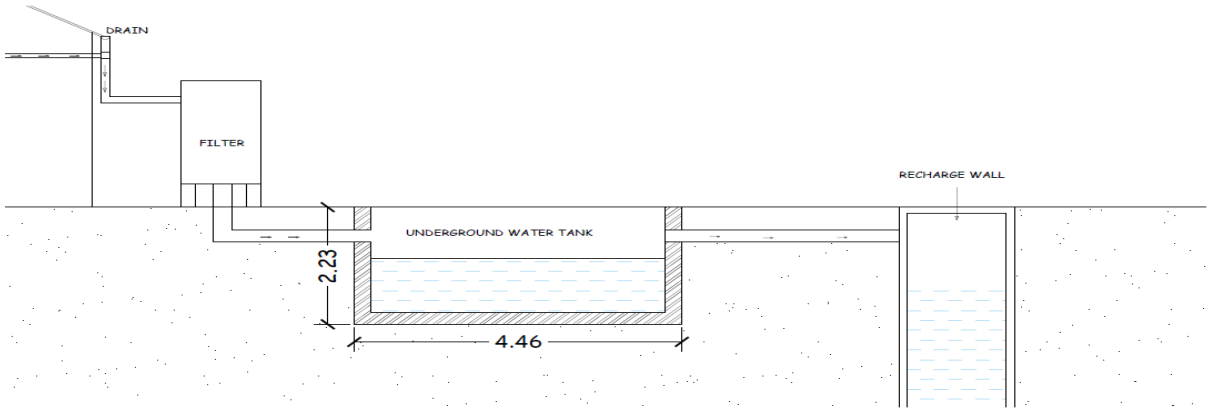
NO	ITEM	QUANTITY	RATE	PER	AMOUNT
1	Excavation for base slab	17.14	90	M3	1542.6
2	D.P.C. Work at plinth level	22.05	150	M2	3307.5
3	RCC Work for flooring	3.66	8800	M2	32208
4	Steel Pole	0.385	1500	M3	577.5
5	Steel fencing around bus stand	9.64	150	M2	1419
6	Metal or ACC sheets for roof	11.10	58	KG	643.8
7	Plastering work on base slab	13.26	150	M2	1989
				Total	44989

13.1.2 Civil Design 4

RAINWATER HARVESTING



PLAN OF RAINWATER HARVESTING



SECTION OF RAINWATER HARVESTING

FIG. RAIN WATER HARVWSTING

MEASUREMENT SHEET

No	Item	No	Length	Width	Height	Quantity
1	**Excavation**					
	StorageTank	1	4.46	2.46	2.23	**24.46m^3**
2	**RCCWork**					
	BottomSlab	1	4.46	2.46	0.3	**3.29m^3**
	C/Clengthofsidewalls	1	12.92	0.3	2	**7.75m^3**
	TopSlab	1	4.46	2.46	0.15	**1.65m^3**
	TOTAL=12.69m^3					
3	**PlasteringWork**					
	Plasteroutsidetank	1	13.84	–	2.23	30.86 m^2
	Bottomoftankoutside	1	4.46	2.46	–	10.97 m^2
	TOTAL=41.83m^2					
	Plasterinsidetank	1	12.92	–	2	25.74 m^2
	Topofbottomslab (inside)	1	4.23	2.23	–	9.43 m^2
	Bottomoftopslab(inside)	1	4.23	2.23	–	9.43 m^2
	TOTAL=44.7m^2					
4	**Centering&Shuttering**					
	BottomSlab:					
	Bottom	1	4.46	2.46	–	**10.97m^2**
	Side1	2	4.46	–	0.3	**2.67m^2**
	Side2	2	–	2.43	0.3	**1.46m^2**
	RCCWalls:					
	TotallengthofWall1	2	4.46		2	**17.84m^2**
	TotallengthofWall2	2	2		2	**6m^2**
	TopSlab:					
	Bottomofslab	1	4.46	2.46		**16.97m2**
	Side1	1	4.46		0.15	**0.67m2**
	Side2	1		2.46	0.15	**0.37m2**
	TOTAL=50.95m^2					

No.	Item	Quantity	Rate	Per	Amount
1	**Excavation**	24.46	110	Cu.m	**2,691**

2	**RCCWork**	22.69	965	Cu.m	**21,895.8**
3	**Cement**	150	280	Bag	**42,000**
4	**CenteringWork**	50.95	130	Sq.m	**6,624**
5	**SteelWork**	50.95	200	Sq.m	**10,190**
6	**Sand**	6.64	900	Cu.m	**5,976**
7	**Aggregate**	10.25	1000	Sq.m	**10,250**
8	**Steel**	1097	55	KG	**60,335**
9	**BindingWire**	9.97	60	KG	**599**
10	**Shuttering**	50.95	70	Sq.m	**3,567**
11	**Filtermedia**	1.5		L.S.	**9,000**
12	**InsidePlaster**	44.47	1.5	Sq.m	**6,671**
13	**OutsidePlaster**	41.83	250	Sq.m	**10,458**
	TOTAL= 2,04,989Rs.				
Add1.5% watercharges	**3074.8**				
Add10% CotractorProfit	**20,498**				

ABSTRACT SHEET

13.1.2 Civil Design 5

PAVER BLOCK ROAD

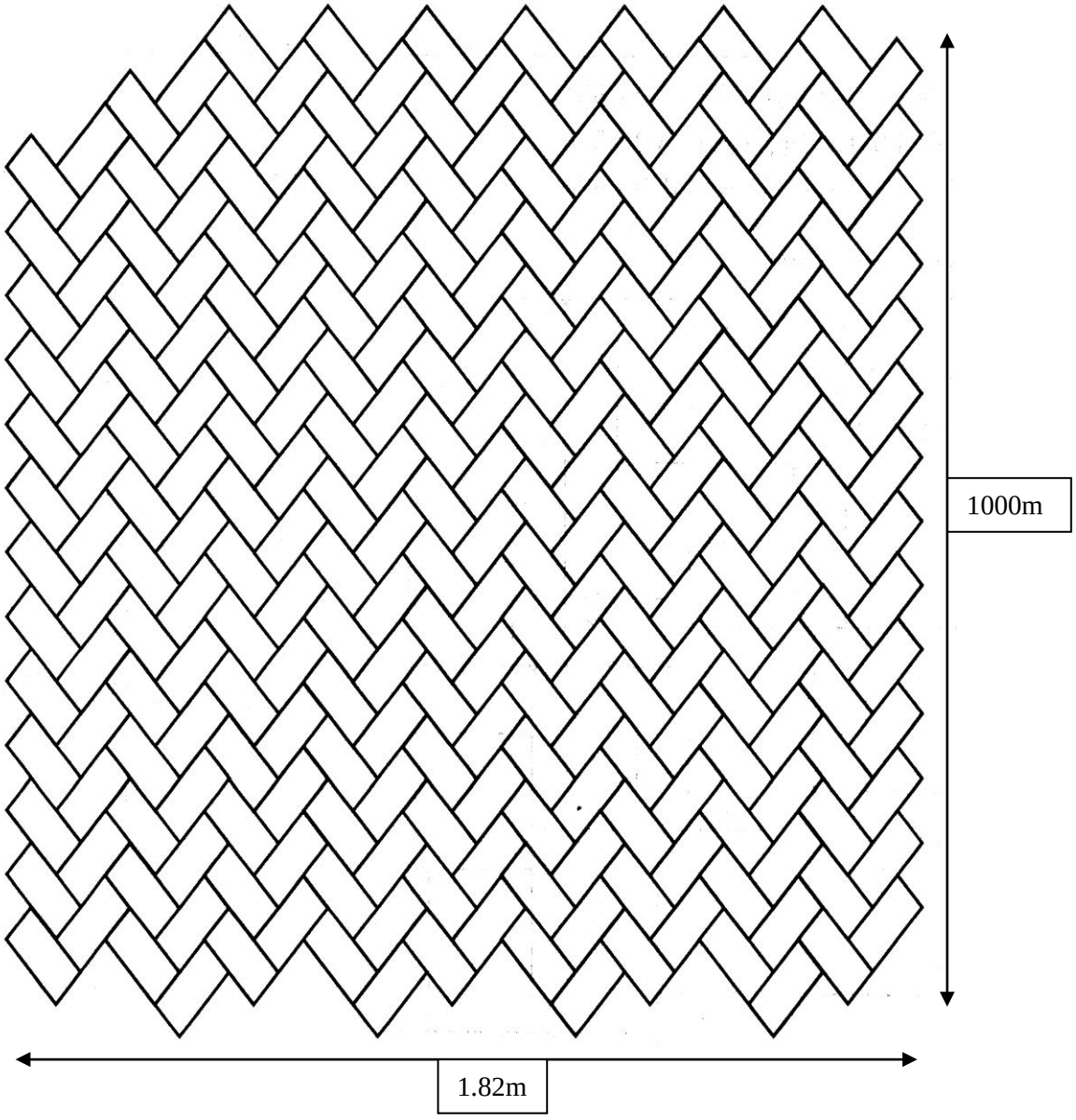


FIG. PAVER BLOCK

MEASUREMENT SHEET

Item No.	Typeofwork	Area(m^2)	Depth(m)	Quantity	Unit
1	Dressing	830	NA	830	m^2
2	P.C.C.(1:4:8)	830	0.1	183	m^3
3	SandBedding	830	0.03	54.9	m^3
4	Bricks TypePaverblock(8"*4")	830	0.06	69.8	m^3
5	Paverblock Fitting	830	NA	830	m^2
6	CompactorRollingOnSurface	830	NA	830	m^2

ABSTARCT SHEET

Item no	TypeofWork	Quantity	Rate(Rs.)	Unit	Cost	TotalCost
1	Dressing	830	50	sq.m.	41,500	
2	P.C.C.(1:4:8)	113	220	sq.m.	24,860	
3	SandBedding	24.9	900	Cu.m.	22,410	
4	Bricks TypePaverblock(8"*4")	69.8	325	sq.m.	22,685	
5	Paverblock Fitting	830	130	sq.m.	1,07,900	
6	CompactorRollingOnSurface	830	80	sq.m.	66,400	
						2,40,030 Rs.

13.1.2 Civil Design 6

PUBLIC LIBRARY

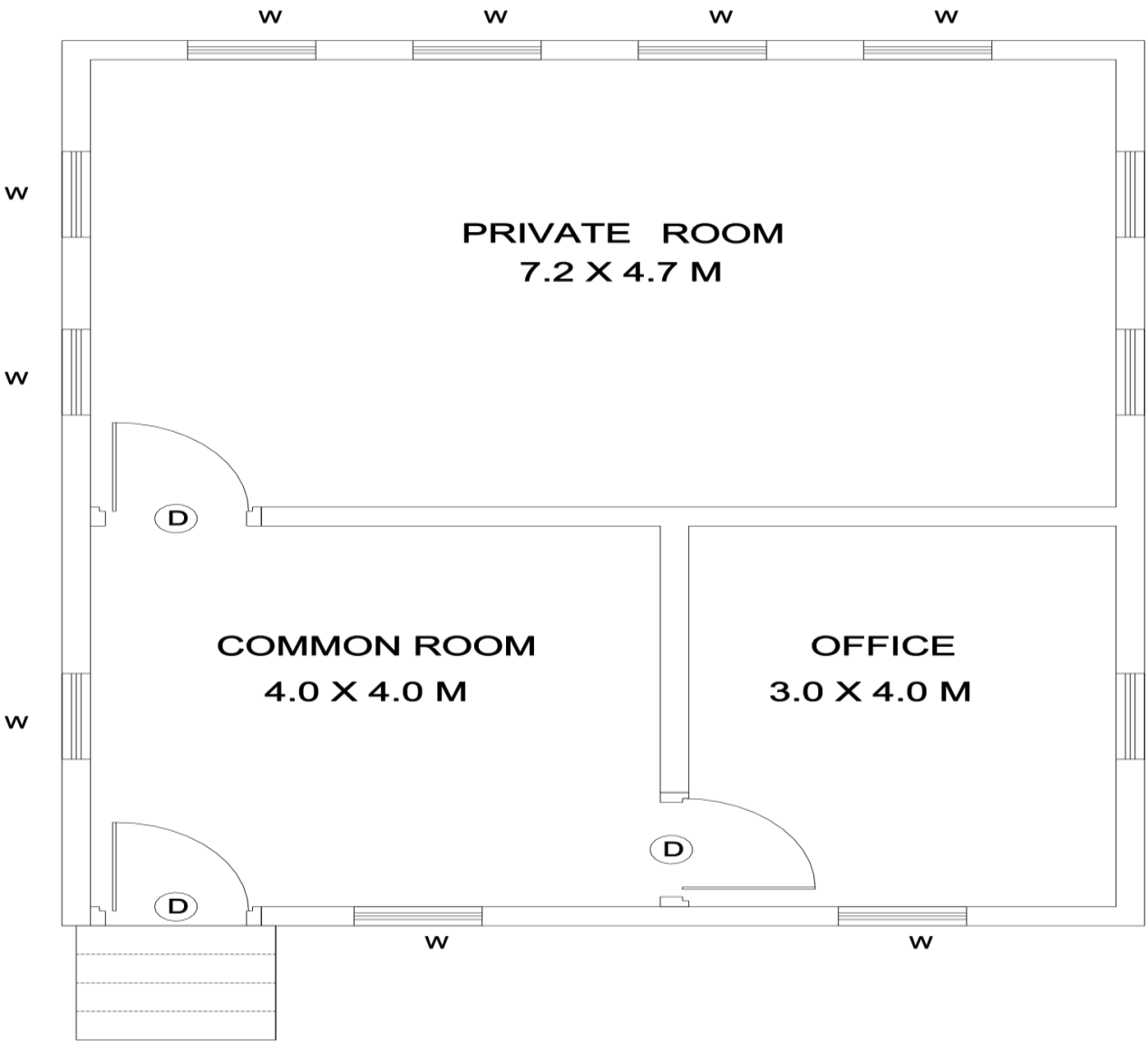
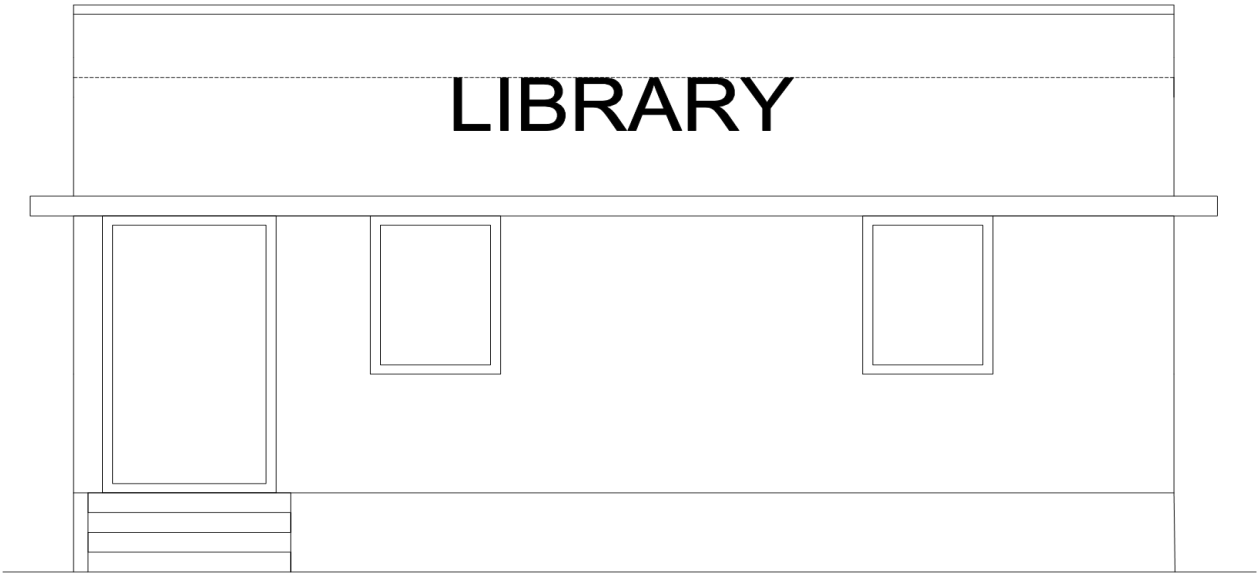


FIG. PLAN OF PUBLIC LIBRARY



ELEVATION

MEASUREMENT SHEET

Item NO.	Itemdescription	Nos.	Length(m)	Width(m)	Height(m)	Quantity
1.	Excavationinfoundation	1	43.2	0.7	1.2	36.28m3
2.	P.C.C.(1:4:8)	1	43.2	0.7	0.3	9.07m3
3.	Brickmasonryinfoundationandplinthin C.M.(1:6)					
	Step-1	1	43.8	0.4	0.2	3.50m3
	Step-2	1	44.0	0.3	0.2	2.64m3
	Step-3(uptoplinth)	1	44.2	0.2	1.0	8.84m3
				TotalQuantity=14.98m3		
4.	Brickworkinsuperstructure	1	44.2	0.2	3	26.52m3
5.	DeductionforDoorandWindow					
	D1	1	1.2	0.2	2.1	0.504m3
	D2	2	1	0.2	2.1	0.840m3
	W1	4	1.5	0.2	1.4	1.680m3
	W2	4	1.2	0.2	1.4	1.344m3
	W3	4	1.0	0.2	1.4	1.120m3
					Deduction=(-)5.488 m3	
	Deductionforlintelsabovedoor& windowswith15cmbearingateachSide					
	D1	1	1.2	0.2	0.15	0.036m3
	D2	2	1	0.2	0.15	0.06m3
	W1	4	1.5	0.2	0.15	0.180m3
	W2	4	1.2	0.2	0.15	0.144m3
	W3	4	1.0	0.2	0.15	0.120m3
					Deduction=(-)0.540m3	
	NetQuantity=26.52-5.488-0.540=20.49m3					
6.	PLASTER :-					
1)	InsidePlaster(1:4)12mmthick					

	ROOM–1	4	4		3	48m2
	ROOM–2	2	3		3	18m2
		2	4		3	24m2
	ROOM–3	2	7.2		3	43.2m2
		2	4.7		3	28.3m2
	Outerwallplaster					
	Longwall	2	9.3		4.5	83.7m2
	Shortwall	2	7.6		4.5	68.40m2
				Totalquantity=313.53m2		
7	Deduction					
	D1	1	1.2	2.1		2.52m2
	D2	2	1	2.1		4.2m2
	W1	4	1.5	1.4		8.4m2
	W2	4	1.2	1.4		6.72m2
	W3	4	1.0	1.4		5.6m2
					Deduction=(-)27.44m2	

ABSTRACT SHEET

1.Earthworkinexcavationupto1.5mdepth					
Nos.	Particular	Quantity/Number	Rate Rs.	Per	Amount Rs.
1.	Labour				
	MaleCoolie	4	200	Day	800
	FemaleCoolie	2	180	Day	360
	Sundries				20
			TotalcostRs.1180		
2.Sandfillinginfoundationandplinth					
Nos.	Particular	Quantity/Number	Rate Rs.	Per	AmountRs.
1.	Materials				
	Sand	8.32m3	800	m3	6656
	Sundries				20
				MaterialcostRs.6676	
2.	Labour				
	Malecoolie	2	200	Day	400
	Femalecoolie	1	180	Day	180
	Bhistie	0.5	200	Day	100
	Sundries				20
				LabourcostRs.700TotalcostRs.7376	
3.P.C.C.(1:4:8)inFoundation					
Nos.	Particular	Quantity/Number	Rate Rs.	Per	AmountRs.
1.	Materials				
	Cement	30	300	Bag	9000
	Sand	4.233	800	m3	3384
	Aggregate	8.46	1000	m3	8460
	Sundries				50
				MaterialcostRs.20894	
2.	Labour				
	Mistry	0.5	400	Day	200
	Mason	1	300	Day	300
	Malecoolie	7	200	Day	1400
	Femalecoolie	11	180	Day	1980
	Bhistie	2.5	200	Day	500

				LabourcostRs.3880	
4.BrickworkinFoundation					
Nos .	Particular	Quantity/Number	Rate Rs.	Per	AmountRs .
1.	Materials				
	Brick	7500	4	No	30000
	Cement	25	300	Bag	7500
	Sand	4.23	800	m3	3384
	Sundries				50
				MaterialcostRs.40934	
2.	Labour				
	Mistry	0.5	400	Day	200
	Mason	7	300	Day	2100
	Malecoolie	7	200	Day	1400
	Femalecoolie	7	180	Day	1260
	Bhistie	2	200	Day	400
				LabourcostRs.5410 TotalcostRs.46344	
5.Brickworkinsuperstructure					
Nos .	Particular	Quantity/Number	Rate Rs.	Per	AmountRs .
1.	Materials				
	Brick	10300	4	No	41200
	Cement	35	300	Bag	10500
	Sand	5.70	800	m3	4632
	Sundries				50
				MaterialcostRs.56382	
2.	Labour				
	Mistry	0.5	400	Day	200
	Mason	7	300	Day	2100
	Malecoolie	7	200	Day	1400
	Femalecoolie	7	180	Day	1260
	Bhistie	2	200	Day	400
				LabourcostRs.5410 TotalcostRs.61782	
6.Insidecementplaster12mmthick(1:4)					
Nos .	Particular	Quantity/Number	RateRs.	Per	AmountRs.
1.	Materials				
	Cement	17	300	Bag	5100
	Sand	2.36	800	m3	1888
	Sundries				50
				MaterialcostRs.7038	
2.	Labour				
	Mistry	0.25	400	Day	100

	Mason	10	300	Day	3000
	Malecoolie	10	200	Day	2000
	Femalecoolie	10	180	Day	1800
	Bhistie	2	200	Day	400
	Sundries				50
				LabourcostRs.7350Totalc ostRs.14388	
7.20mmthickplasterinC.M.1:3					
Nos .	Particular	Quantity/Numbe r	Rate Rs.	Per	AmountRs .
1.	Materials				
	Cement	28	300	Bag	8400
	Sand	2.84	800	m3	2272
	Sundries				50
				MaterialcostRs.10722	
2.	Labour				
	Mistry	0.25	400	Day	100
	Mason	10	300	Day	3000
	Malecoolie	10	200	Day	2000
	Femalecoolie	10	180	Day	1800
	Bhistie	2	200	Day	400
	Sundries				50
				LabourcostRs.7350Totalc ostRs.18072	
8.R.C.C.workforslabandlintel(1:1.5:3)					
Nos .	Particular	Quantity/Numbe r	Rate Rs.	Per	AmountRs .
1.	Materials				
	Cement	56bags	300	Bag	16800
	Sand	2.92m3	800	m3	2336
	Aggregate	5.85m3	1000	m3	5850
	Steel(1%)	845kg	45	Kg	38025
	Bindingwire	9kg	50	Kg	450
	Sundries				50
				MaterialcostRs.63511	
2.	Labour				

	Labourformixing,transporting andplacingconcrete includingcuring	7.20m3	300	m3	2160
	Costofhiringmixtureandvibrator			L.S.	1000
	Labourforbending, cuttingandplacingreinforcementsteel	565kg	5	Kg	2825
	Labourforcenteringandshuttering			L.S.	3000
	Sundries				50
				LabourcostRs.9035TotalcostRs.60546	
TotalcostRs.2464621 .5%watercharge3670RS. 10%contractor‘sprofit25000RS. Totalcost=2,60,132RS.					

13.1.2 Civil Design 7

PANCHAYAT OFFICE

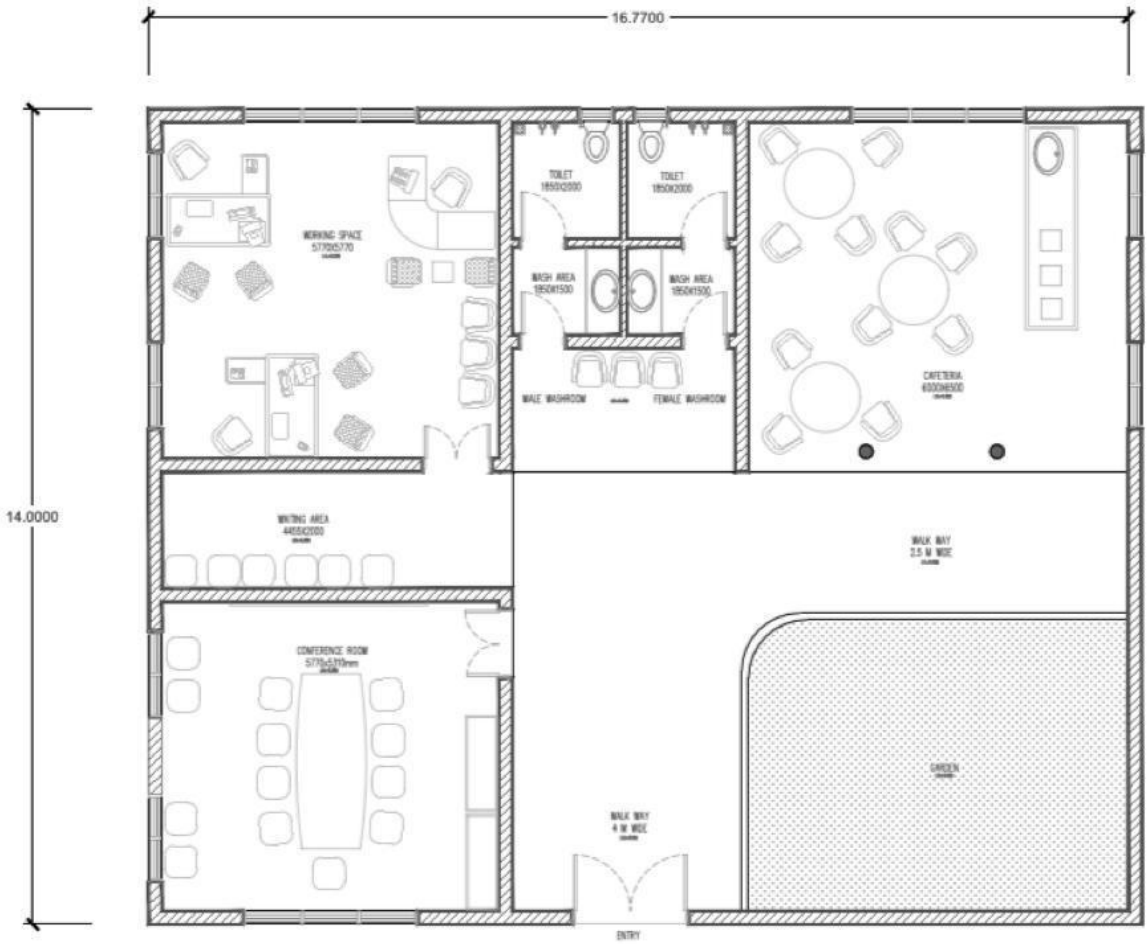


FIG. PANCHAYAT OFFICE

MEASUREMENT SHEET

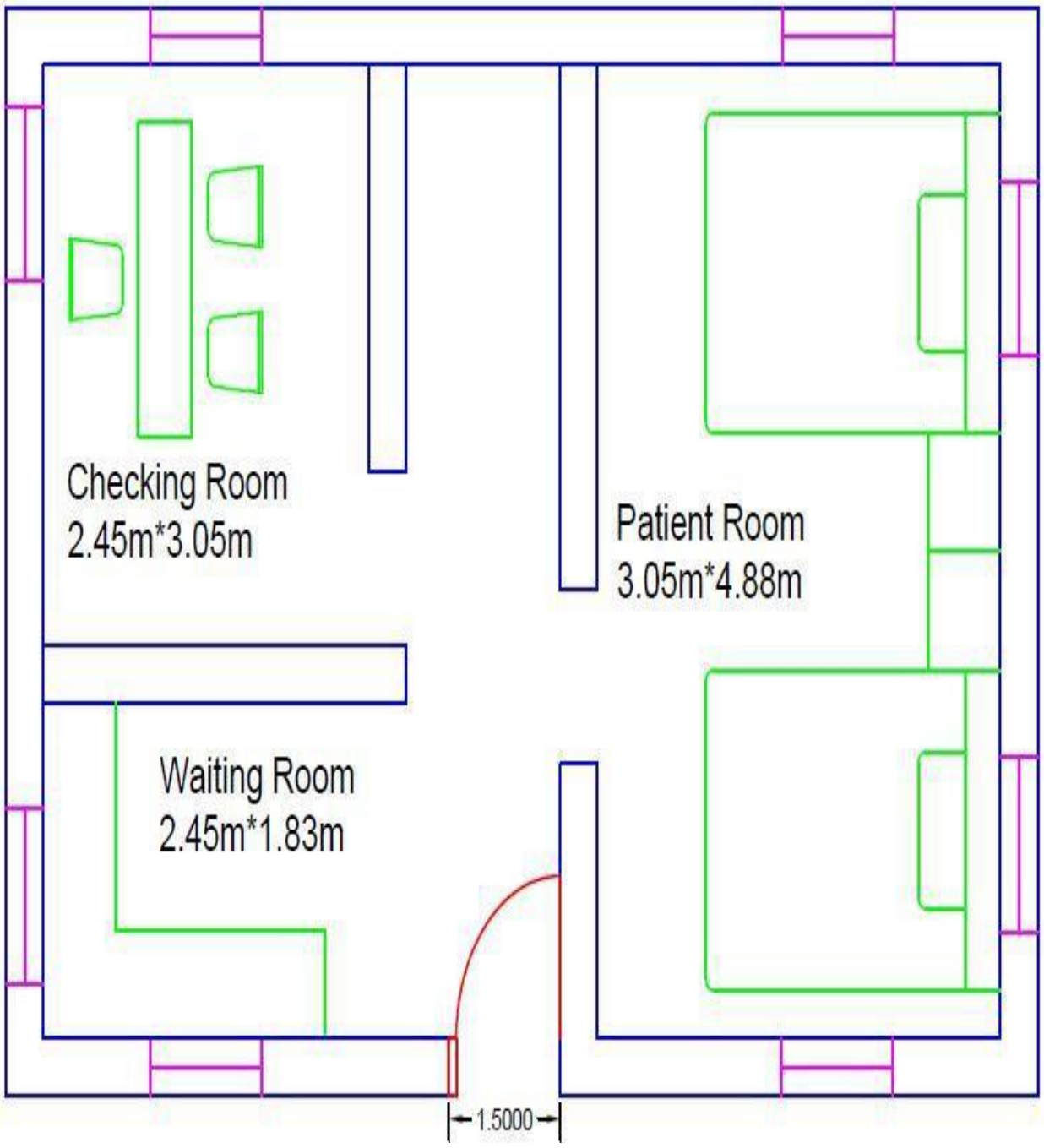
Sr No.	Item	No.	Length (m)	Width (m)	Height (m)	Total
1	Excavation for base slab					
	Long walls (Horizontal):					
	L1	3	5.57	0.9	1	10.2
	Long walls (Horizontal):					
	S1	4	3.96	0.9	1	7.12
2	Earth Filling		7.92	2.9	0.450	10.33
3	Shuttering		2.9	1.5	1	4.35
	D.P.C. Work at plinth level					
	Long walls (Horizontal):	3	5.57	3.96		22.05
4	RCC Work for columns	15	.450	.300	3	6.075
5	Ground beam					
		7	17	0.450	0.300	16
		7	14	0.450	0.300	13.23
6	Brick work		43.4	9”	3	136.2
			26.6	4.5”	3	79.8
7	Plastering work		17	14	3	186

ABSTRACT SHEET

Item Number	Item description	Quantity	Rate in Rs	Per	Amount in Rs.
1	Excavation work	270	9	M^3	6013.4
2	Foundation concrete	38.52	1500	M^3	57780
3	RCC Work total	135.52	3000	M^3	406560
4	Steel	850	130	kg	385645
5		30.59	800	M^3	24472
6	Earth filling	21.34	45	M^3	965.25
7	Brick masonry up to plinth	23.21	800	M^3	18568
8	Glazed tiles	40.768	120	Sq.feet	40000
9	Plaster	216.52	40	M^2	35000
				Total	985866Rs.

13.1.2 Civil Design 8

PUBLIC HEALTH CENTER



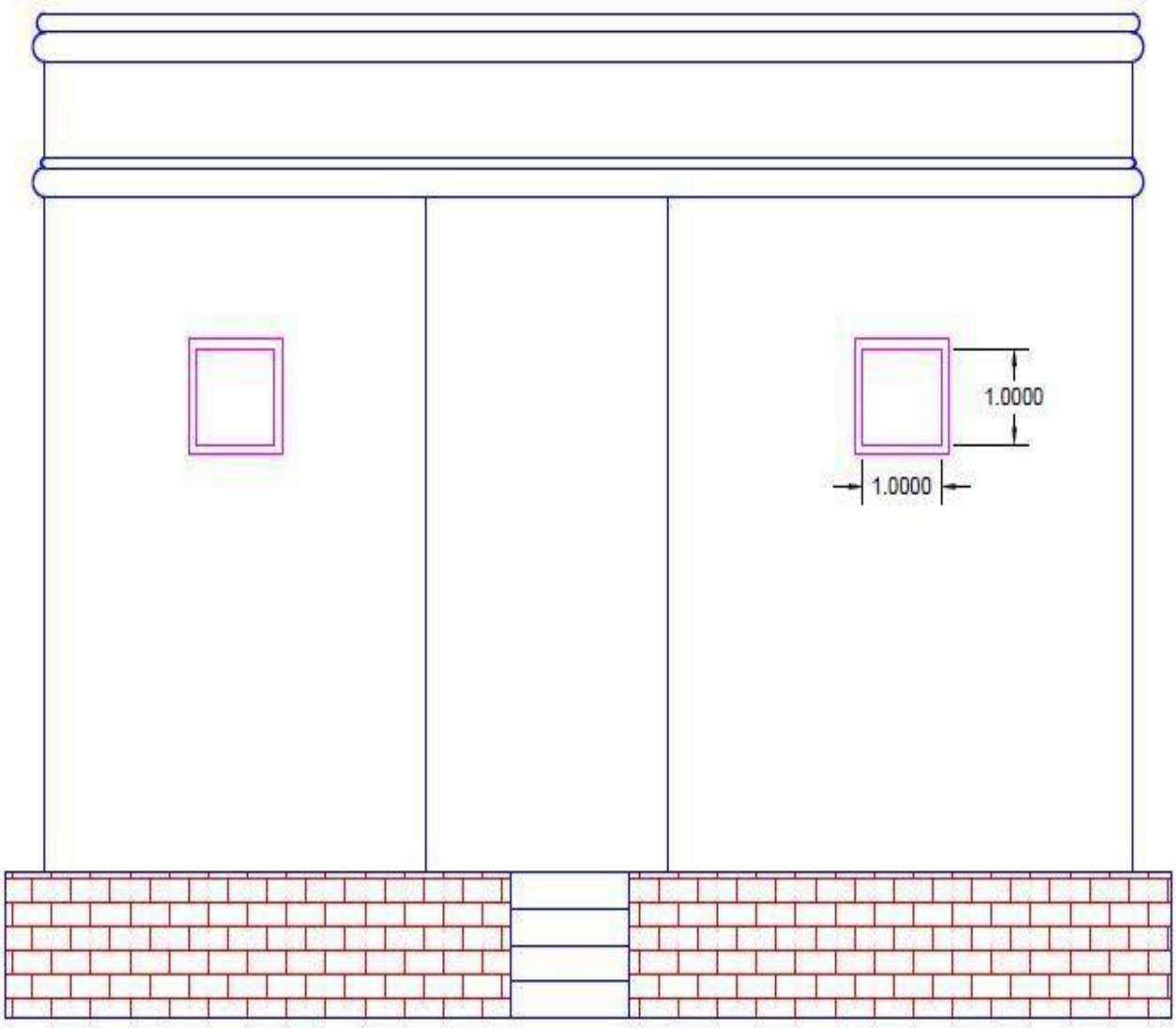


FIG. PUBLIC HEALTH CENTER

MEASUREMENT SHEET

No.	Item	No	Length	Width	Height	Total
1	Excavation	1	25.02	0.9	1.10	24.77
2	Foundation (1:4:8) for foundation	1	25.02	0.9	.02	4.50
3	Brick masonary up to plinth in CM 1:6					
	First step:	1	25.80	0.5	0.3	3.87
	Second step:	1	26.02	0.4	0.3	3.12
	Third step:	1	0.3	0.3	0.8	6.30
	Steps:					
	First	1	1.5	0.9	0.15	.2035
	Second	1	1.5	0.6	0.15	.135
	Third for step L=1.5m	1	1.5	0.3	0.15	0.0675
					Total	13.70
4	Brick above plinth up to slab					
	Level C:M 1:6	1	26.22	0.3	3.5	27.53
	Door	2	1.5	0.3	2.1	0.945
	Window	8	1	0.3	1	2.4
					Total	22.80

5	Smooth plaster For walls For ceiling	 11 4	 24.42 9.78	 14.64	 28 Total	 164.58 35.76 201
6	R.C.C. work in slab Slab Chajja lintel	 1 8	 2.83 1.3	 5.18 0.6	 0.15 0.10	 6.40 0.624 0.693
					Total	7.72
7	Parapet wall	2 2	8.23 5.18	0.3 0.3	1 1 Total	4.94 3.11 8.05
	Plaster of parapet wall	4 4	8.23 5.18		1 1 Total	32.92 20.72 53.64

ABSTRACT SHEET

No.	ItemDescription	Quantity	Rate	Per	Amount Rs.
1.	Excavationworkforfoundation	24.77	85	Cubicmeter	2106
2.	Plaincementconcrete(1:3:6)	4.5	3200	Cubicmeter	14400
3.	Brickworkinfoundation(1:6)	13.70	3200	Cubicmeter	43840
4.	Brickmasonryin superstructure	22.80	3500	Cubicmeter	79800
5.	PlasterworkC:M1:3	246.64	150	Squaremeter	36996
6.	R.C.C.workinslab,chajjaand lintel	7.72	8800	Cubicmeter	67936
7.	Earthfillinginplinthlevel	17.90	50	Cubicmeter	895
8.	Brickworkforparapetwall	8.05	3500	Cubicmeter	28175
				Total=	**Rs.2,74,148**

14. Technical Options with Case Studies

14.1 Civil Engineering

14.1.1 Advanced Earthquake Resistant

❖ **Earthquake Facts**

- An earthquake is caused by the breaking and shifting of rock beneath the Earth's surface.
- Earthquakes, also called temblors, it's hard to imagine they occur by the thousands every day around the world, usually in the form of small tremors.
- Some 80 percent of all the planet's earthquakes occur along the rim of the Pacific Ocean, called the "Ring of Fire"
- On average, a magnitude 8 quake strikes somewhere every year and some 10,000 people die in earthquakes annually
- Ground shaking from earthquakes can collapse buildings and bridges; disrupt gas, electric, and phone service; and sometimes trigger landslides, avalanches, flash floods, fires, and huge, destructive ocean waves (tsunamis).
- Collapsing buildings claim by far the majority of lives, but the destruction is often compounded by mud slides,fires, floods, or tsunamis

❖ **Earthquake Hazards**

- Ground Shaking: Shakes structures constructed on ground causing them to collapse.
- Liquefaction: Conversion of formally stable cohesion-less soils to a fluid mass, causing damage to the structures.
- Landslides: Triggered by the vibrations
- Retaining structure failure: Damage of anchored wall, sheet pile, other retaining walls and sea walls.
- Fire: Indirect result of earthquakes triggered by broken gas and power lines.
- Tsunamis: large waves created by the instantaneous displacement of the sea floor during submarine faulting

❖ **Approch to ERC Construction**

❖ **Conventional Approach:-**

- Design depends upon providing the building with strength, stiffness and inelastic deformation capacity which are great enough to withstand a given level of earthquake generated force.

❖ **Basic Approach:-**

➢ Design depends upon underlying more advanced techniques for earthquake resistance is not to strengthen the building, but to reduce the earthquake generated forces acting upon it.

❖ **Factored governing Effect of Earthquakes on Structure**

➢ Intensity of earthquake
➢ Type of earthquake waves
➢ Type of structure
➢ Type of design
➢ Shape of structure both in plan & elevation
➢ Type of soil
➢ Type of foundation
➢ Type of material used for construction
➢ Load of structure

❖ **Methods Of Creating Earthquakes Resistant Structure**

➢ **Increase natural period of structures by Base Isolation like :**
- Lead Rubber Bearing
- Laminated Rubber Bearing
- High Damping Rubber Bearing
- Spherical Sliding Bearing
- Friction Pendulum System

➢ **Increase damping of system by Energy Dissipation Devices like :**
- Viscous dampers
- Friction dampers
- Yielding dampers
- Visco elastic dampers

➢ **By using Active Control Devices like :**
- Sensors
- H/w & S/w
- Actuators

❖ **Seismic Designing**

Planning stage

- Plan building in symmetrical way (both axis)
- Avoid weak storey and provide strong diaphragm
- Don't add appendages which will create difference in Centre of mass and centre of rigidity
- Conduct soil test to avoid soil liquefaction
- Steel to be used of having elongation of 14% and yield strength of 415 N/mm2

Design stage

- Avoid weak column and strong beam design.
- Provide thick slab which will help as a rigid diaphragm. Avoid thin slab and flat slab construction.
- Provide cross walls which will stiffen the structures in a symmetric manner.
- Provide shear walls in a symmetrical fashion. It should be in outer boundary to have large lever arm to resist the EQ forces.

Construction stage

- Compact the concrete by means of needle vibrator.
- Cure the concrete for at least a minimum period.
- Experienced supervisor should be employed to have good quality control at site

❖ BIS Guidelines for Construction in India

- Guideline laid down for five category of structures

- ➢ Part 1 General provisions and buildings
- ➢ Part 2 Liquid retaining tanks - Elevated and ground supported
- ➢ Part 3 Bridges and retaining walls
- ➢ Part 4 Industrial structures including stack like structures
- ➢ Part 5 Dams and embankments

- Seismic zone identified and construction parameters amended accordingly

- Foundation laying in various soil type is also specified.

- Specification about material to be used including RCC, Steel, masonry work etc

❖ Some important IS Codes.

IS 1893 (Part I), 2002, Indian Standard Criteria for Earthquake Resistant Design of Structures (5th Revision)

IS 4326, 1993, Indian Standard Code of Practice for Earthquake Resistant Design and Construction of Buildings (2nd Revision)

IS 13827, 1993, Indian Standard Guidelines for Improving Earthquake Resistance of Earthen Buildings

IS 13828, 1993, Indian Standard Guidelines for Improving Earthquake Resistance of Low Strength Masonry Buildings

IS 13920, 1993, Indian Standard Code of Practice for Ductile Detailing of Reinforced Concrete Structures Subjected to Seismic Forces

14.1.2 Seismic Retrofitting of Buildings

Introduction

- Earthquake creates great devastation in terms of life, money and failures of structures.
- Earthquake Mitigation is an important field of study from a long time now.
- Seismic Retrofitting is a collection mitigation techniques for Earthquake Engineering.
- It is of utmost importance for historic monuments, areas prone to severe earthquakes and tall or expensive structures.

Seismic Retrofitting

Definition

- It is the modification of existing structures to make them more resistant to seismic activity, ground motion, or soilfailure due to earthquakes.
- The retrofit techniques are also applicable for other natural hazards such as tropical cyclones, tornadoes, and severe winds from thunderstorms.

When is Seismic Retrofitting Needed ?

The two circumstances are:-

- Earthquake damaged buildings, and
- Earthquake-vulnerable buildings(with no exposure to severe earthquakes)

Need of Retrofitting in Existing Earthquake Vulnerable Buildings

- Buildings have been designed according to a seismic code, but the code has been upgraded in later years;
- Buildings designed to meet the modern seismic codes, but deficiencies exist in the design and/or construction;
- Essential buildings must be strengthened like hospitals, historical monuments and architectural buildings;
- Important buildings whose services are assumed to be essential just after an earthquake like hospitals;
- Buildings, the use of which has changed through the years;
- Buildings that are expanded, renovated or rebuilt.

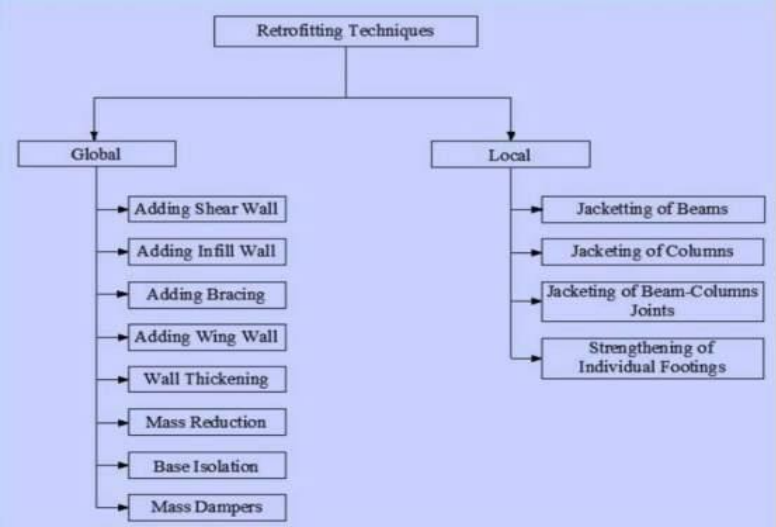
Earthquake Design Philosophy

- Under **minor but frequent shaking**, the **main members** of the building that carry vertical and horizontal forces **should not bedamaged**; however building parts that do not carry load may sustain repairable damage;
- Under **moderate but occasional shaking**, the **main members** may sustain **repairable**

damage, while the other parts of the building may be damaged such that they may even have to be replaced after the earthquake; and

- Under **strong but rare shaking**, the **main members** may sustain **severe** (even irreparable) **damage**, but the **building should notcollapse**.

❖ Classification of Retrofitting Techniques



Some Conventional Approaches

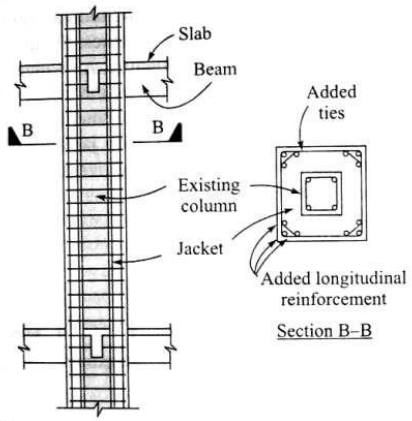
Adding New Shear Walls

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

Adding Steel Bracings

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

Jacketing (Local Retrofitting Technique)

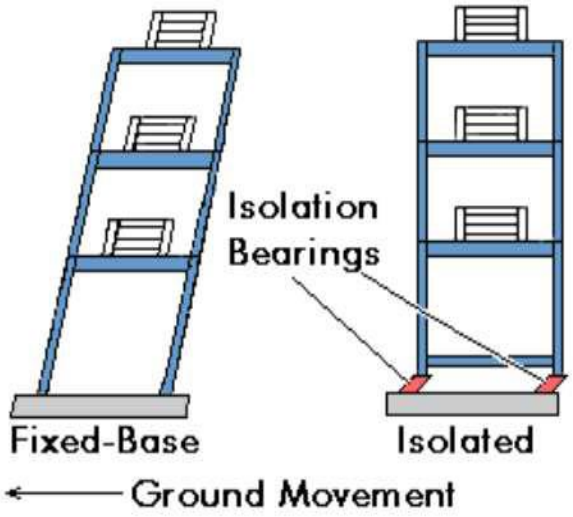


- Most popular method for strengthening of building columns
  Types-1. Steel jacket,
  2. Reinforced Concrete jacket ,
  3.FibreReinforcedPolymer Composite(FRPC) jacket

- Purpose for jacketing:
  - To increase concrete confinement
  - To increase shear strength
  - To increase flexural strength

Base Isolation (or Seismic Isolation)

- Isolation of superstructure from the foundation is known as base isolation.
- It is the most powerful tool for passive structural vibration control technique]



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

❖ **Modern Construction Technology**

- Modern Construction Technology is the process of preparing for and forming buildings and building systems.

- The process of building large structures with the minimum use of cost , time and environment.

- Construction starts with planning, design, and financing and continues until the structure is ready for occupancy.

❖ **Concrete walls and floors**

- Concrete walls is an eclectic category with options for everything like seat walls; decorative interior or exterior finishes; sound walls that abut a freeway; retaining walls to hold back the earth; to the very walls that comprise the exterior.
- Concrete has become the new flooring material of the latest technology.
- Whether it's acid-stained, painted, overlays, microtoppings, radiant floors, or a unique personal floor, concrete floors offer a range unlike any other material
- Concrete flooring, sometimes referred to as cement flooring.
- One of the major benefits of concrete floors is their affordability compared to other flooring options.
- concrete flooring is ease of maintenance.
- When properly sealed concrete floors can be cleaned with a quick pass of a dust mop.

❖ **Precast cladding panels**

- Cladding is the application of one material over another to provide skin or layer intended to control the infiltration of weather elements, or for aesthetic purposes
- Cladding does not necessarily have to provide a waterproof condition but is instead a control element.
- This control element may only serve to safely direct water or wind in order to control runoff and prevent infiltration into the building structure.

❖ **Precast flat panel system**

- Floor and wall units are produced off-site in a factory and erected on-site to form robust structures, ideal for all repetitive cellular projects.
- Panels can include services, windows, doors and finishes.
- Building envelope panels with factory fitted insulation and decorative cladding can also be used as load-bearing elements.

- This offers factory quality and accuracy, together with speed of erection on-site.

❖ **Thin Joint Masonry**

- Thin joint blockwork (thin joint masonry) is a fast, clean, accurate system for construction using autoclaved aerated concrete blocks of close dimensional tolerance with 2mm-3mm mortar joints.
- Thin layer mortar is a pre-mixed cementbased product that only requires the addition of water to make an easilyapplied mortar.
- The benefits offered by thin layer mortars are provided by a system with many of the characteristics of traditional blockwork construction.
- This means that familiarity with the build process and flexibility are also inherent in the system.

❖ **Insulating Concrete Formwork**

- Insulating Concrete Formwork (ICF) systems consist of twinwalled, expanded polystyrene panels or blocks that are quickly built up to create formwork for the walls of a building.
- This formwork is then filled with factory produced, quality assured, ready-mixed concrete to create a robust structure.
- The expanded polystyrene blocks remain to provide high levels of thermal insulation and the concrete core provides robustness and good levels of sound insulation.

14.1.4 Engineering Aspects Of Soil mechanics - Environmental Impact Assessment

❖ **Origin of Soils**

- Soils are formed by weathering of rocks due to mechanical disintegration or chemical decomposition.
- Exposed rocks are eroded and degraded by various physical and chemical processes.
- The products of erosion are picked up and transported to some other place by wind water etc.
- This shifting of material disturbs the equilibrium of forces on the earth and causes large scale movements and upheavals.

❖ **Types of Soils**

(1) **Glacial soils**: formed by transportation and deposition of glaciers.

(2) **Alluvial soils**: transported by running water and deposited along streams.

(3) **Lacustrine soils**: formed by deposition in quiet lakes (e.g. soils in Taipei basin).

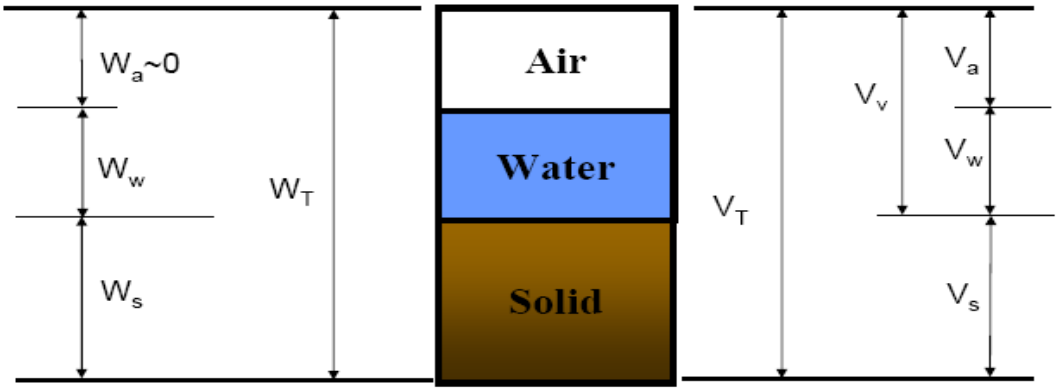
(4) **Marine soils**: formed by deposition in the seas (Hong Kong).

(5) **Aeolian soils**: transported and deposited by the wind (e.g. soils in the loess plateau, China).

(6) **Colluvial soils**: formed by movement of soil from its original place by gravity, such as during landslide (*HongKong*)

❖ **PHASE DIAGRAM**

➢ For purpose of study and analysis, it is convenient to represent the soil by a PHASE DIAGRAM, with part of the diagram representing the solid particles, part representing water or liquid, and another part air or other gas.



Wt: total weight
Ws: weight of solid
Ww: weight of water
Wa: weight of air = 0

Vt: total volume
Vs: volume of solid
Vw: volume of water
Vv: volume of the void

❖ **Relationships Between Various Physical Properties**

➢ All the weight- volume relationships needed in soil mechanics can be derived from appropriate combinations of six fundamental definitions. They are:

1. Void ratio

2. Porosity

3. Degree of saturation

4. Water content

5. Unit weight

6. Specific gravity

14.1.5 Water Supply-Seweragesystem-Waste Water-Sustainable development techniques

WASTE WATER

- Wastewater is any water that has been affected in quality. It can be described as contaminated water or "sick Water".
- Wastewater can originate from homes, industrial and factory waste, commercial or farming activities, surface runoff or storm water.
- Surface run off can include anything from harmful substances that wash off from roads, parking lots or rooftops.
- Wastewater is harmful to human health if not treated properly after being disposed into the environment.
- **Wastewaters can be categorised as**

DOMESTIC WASTEWATER :

Used water discharged from the residential, commercial and industrial area of a city and collected though the sewage system.

INDUSTRIAL WASTEWATER:

Generated from medium to large scale industries Manufacturing industries produce a large volume of w astewaters

❖ **Types of Wastewater collection**

There are two types:

Centralised System:

Centralised system is a large scale water collection system that collects water from many types of users for treatment at one or multiple sites.

Decentralised System:

Decentralised system is an on-site system which collects wastewater fromn individual users or small groups of users from neighbourhoods or residential areas.

SUSTAINABILITY

- A sustainable approach gives many benefits to not only the environment but also improve food security, health and a country's economy as a whole
- A sustainable way to manage wastewater is to recycle and re-use water.
- For eg: waste water can be used over and over again for a cooling plant, also recycled wastewater can be used for construction and concrete mixing.

❖ PROCESS OF SUSTAINABLE WASTEWATER TREATMENT

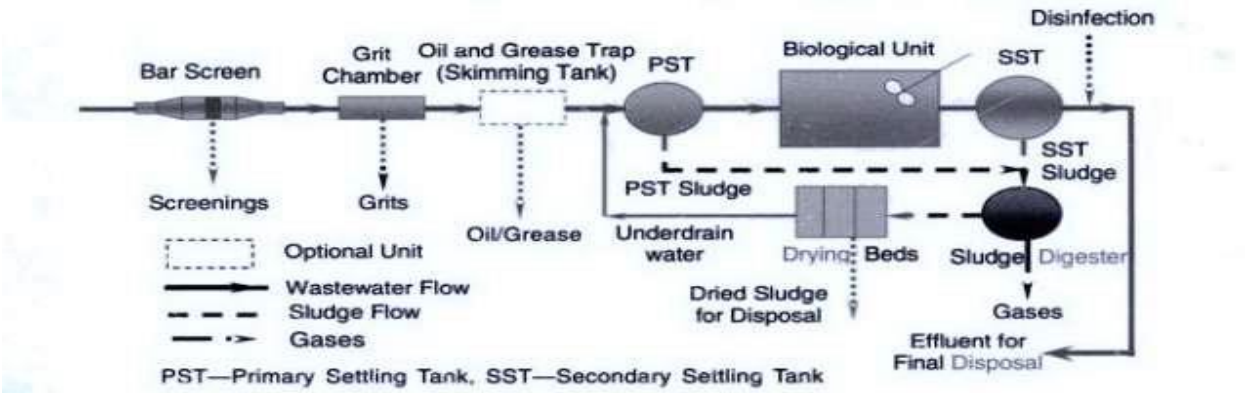


Figure 1.1 Schematic flow diagram of a typical conventional treatment plant.

Treatment system

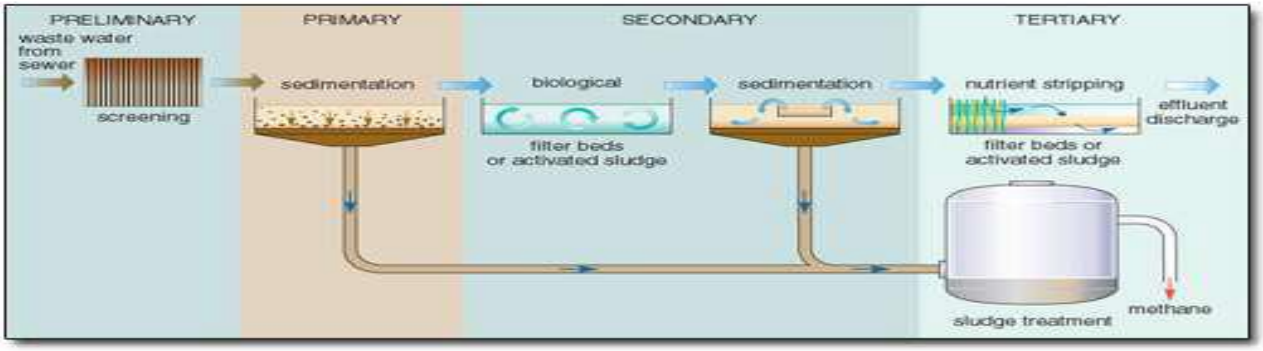
Normally, a wastewater treatment plant is designed for either,

• Preliminary Treatment System

• Primary Treatment System

• Secondary Treatment System

• Tertiary Treatment system.



Preliminary Treatment System

• To remove any floating materials and large inorganic particulate matters

• This treatment is also known as Pretreatment in common treatment system.

• Approach channel : Convey and dampen the flow of wastewater pumped to the treatment plant

Screen chamber : Removes large size of floating materials

Grit chamber : To remove suspended settle able solid

Skimming tank : Remove excessive oil and grease

Sump and pump unit : Waste water is collected in a sump and pumped into higher level of treatment

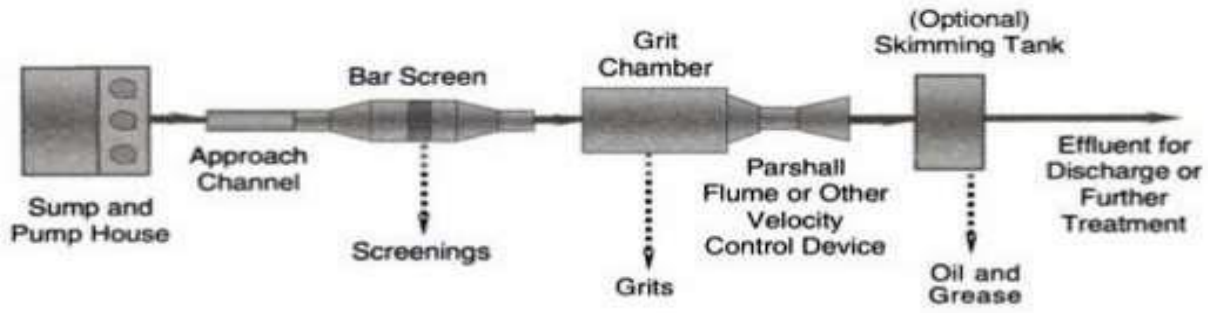


Figure 1.2 Flow diagram of a typical preliminary treatment system.

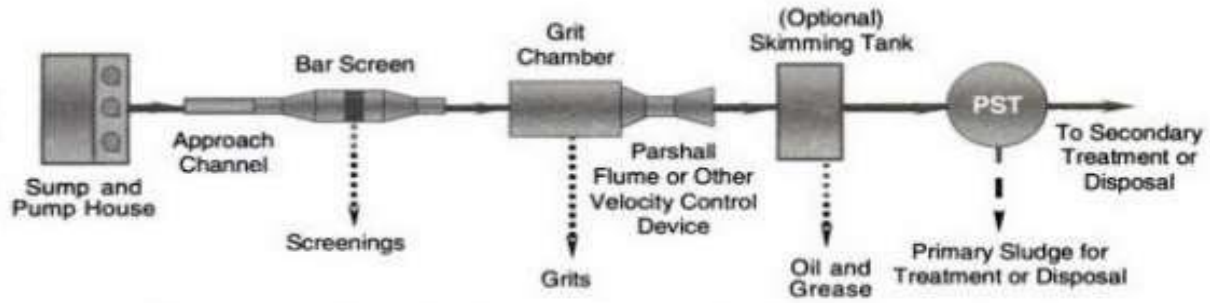


Figure 1.3 Schematic diagram of a typical primary treatment system.

Secondary treatment system

• Secondary treatment is also known as a **biological treatment** because biological process take place in this treatment

• By the use of microorganism, primary bacteria to covert biodegradable organic matter contained in wastewater

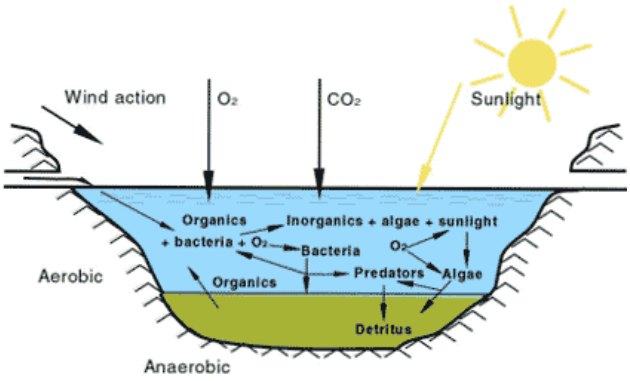
• The oxygen level in the wastewater will be changed in order to produce **aerobic and anaerobic** environment

• The common type used in our country is **oxidation pond**.

Oxidation pond

- Oxidation pond also known as **lagoon**
- Large and shallow ponds designed to treat wastewater through the interaction of **sunlight**, **bacteria** and **algae**

- **Temperature** in our country is **suitable for aerobic bacteria** as bacteria which can only **survive in warm temperature**



Tertiary treatment system

• Tertiary treatment is also known as an **advance treatment system**

• The main purpose in this treatment is to **reduce nitrogen** and **phosphates** which can cause **problems** when they get into water body by **enhancing the growth of algae blooms**

This treatment is provided when :

1. Quality of standard treated waste water (secondary) is inappropriate for final disposal requirement

2. The concentration of leftover organic material or suspended solids require further removal of specific reuse of wastewater

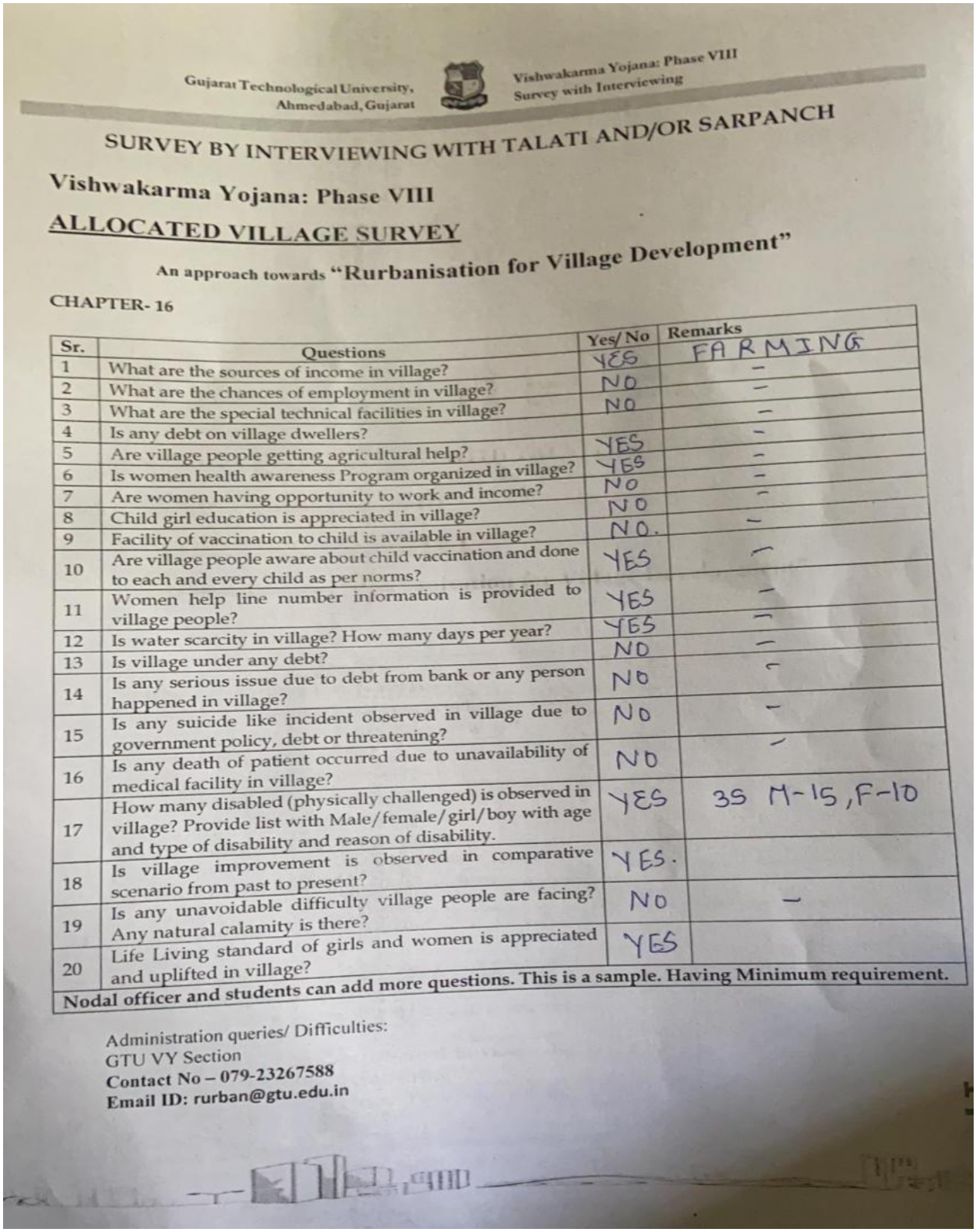
3. Concentration of nutrient is high for final disposal

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

SR.	DESIGN NAME	PERIOD	AMOUNT EXPENDITURE	BENEFITS
1.	Panchayat office	Immediately	9,80,458/-	- To provide smart and best facilities to the people of village.
2.	Public garden	With in 1 year	5,62,139/-	- People spent their leisure time in garden with the natural beauty - Children play's different kinds of games with no time limits.
3.	Public toilet	Immediately	2,30,000/-	- As become apart of swatch bharat. - It is help to village become in smart village.
4.	Water tank	Immediately	32,00,000/-	- Storage of water at least - They use water as per they need in day to day life.
5.	Library	With in 1 year	1,60,000/-	- Use modern technology - Use many kind of books in the study purpose as well get information as per need. - Student Get perfect place for study
6.	Bus stand	Immediately	45,000/-	- To get each and every facilities from government and private commute ferry
7.	Community hall	With in 1 year	61,35,672/-	- To use the in social work as well celebration of special occasion example Weddings
8.	Post office	With in 1 year	3,79,559/-	- Easy to get use of government courier service. - People also use the banking service in the post office.
9	Rain Water harvesting	With in 1 year	2,05,048/-	- Increase a ground water level.
10.	Vegetable market	Immediately	9,85,866/-	- Increase the stall of vegetable and fruits - Easy get any requirement of vegetables

11.	Public health center	With in 1 year	2,74,148/-	- It is used to get cure of any kind of small to large kind of injury
12.	Paver block	With in 1 year	2,40,030/-	- To provide best road for transport

16.Survey By Interviewing With Talati And /Or Sarpanch



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

CHAPTER- 16

Sr.	Questions	Yes/ No	Remarks
1	What are the sources of income in village?	YES	FARMING
2	What are the chances of employment in village?	NO	-
3	What are the special technical facilities in village?	NO	-
4	Is any debt on village dwellers?		-
5	Are village people getting agricultural help?	YES	-
6	Is women health awareness Program organized in village?	YES	-
7	Are women having opportunity to work and income?	NO	-
8	Child girl education is appreciated in village?	NO	-
9	Facility of vaccination to child is available in village?	NO.	-
10	Are village people aware about child vaccination and done to each and every child as per norms?	YES	-
11	Women help line number information is provided to village people?	YES	-
12	Is water scarcity in village? How many days per year?	YES	-
13	Is village under any debt?	NO	-
14	Is any serious issue due to debt from bank or any person happened in village?	NO	-
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	NO	-
16	Is any death of patient occurred due to unavailability of medical facility in village?	NO	-
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	YES	35 M-15, F-10
18	Is village improvement is observed in comparative scenario from past to present?	YES.	
19	Is any unavoidable difficulty village people are facing? Any natural calamity is there?	NO	-
20	Life Living standard of girls and women is appreciated and uplifted in village?	YES	

Nodal officer and students can add more questions. This is a sample. Having Minimum requirement.

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

Chapter- 17 Irrigation / Agriculture Activities and Agro Industry, Alternate Techniques and Solution

WhatisIrrigation?

- Irrigation is the process of applying water to the crops artificially to fulfill their waterrequirements.Nutrientsmayalsobeprovided tothecropsthroughirrigation. Thevarious sourcesof water for irrigation are wells, ponds, lakes, canals, tube-wells and even dams. Irrigation offersmoisturerequiredforgrowthanddevelopment,germination andotherrelatedfunctions.
- The frequency, rate, amount and time of irrigation are different for different crops and also varyaccordingtothetypesof soilandseasons.For example, summercropsrequireahigher amount ofwaterascompared to winter crops.

Letushavealookatdifferenttypesofirrigationandthemethodsusedforirrigation.

IrrigationTypes

1. SurfaceIrrigation
2. LocalizedIrrigation
3. SprinklerIrrigation
4. DripIrrigation
5. CentrePivot Irrigation
6. SubIrrigation
7. ManualIrrigation

Methods

1. TraditionalMethods
2. ModernMethods
3. SprinklerSystem
4. DripSystem

- **SurfaceIrrigation**

Inthissystem, noirrigationpump isinvolved.Here, wateris distributedacrossthelandbygravity.

- **LocalizedIrrigation**

Inthissystem,water isappliedto eachplantthrough anetworkof pipesunderlowpressure.

- **SprinklerIrrigation**

  Wateris distributedfrom a centrallocation byoverheadhigh-pressuresprinklersorfrom sprinklersfrom themovingplatform.

- **DripIrrigation**

  Inthistype, dropsofwater aredelivered neartheroots oftheplants. Thistypeofirrigationis rarelyusedas it requires moremaintenance.

- **CentrePivotIrrigation**

  Inthis, thewaterisdistributed byasprinklersystem movingina circularpattern.

- **SubIrrigation**

  Wateris distributedthrough asystem ofpumping stationsgates, ditchesand canalsbyraisingthewatertable.

- **ManualIrrigation**

  Thisalabourintensive andtime-consumingsystem ofirrigation.Here, the wateris distributedthroughwateringcans bymanual labour.

- **MethodsofIrrigation**

  Irrigationcanbecarried out bytwodifferent methods:

- TraditionalMethods
- ModernMethods
- **TraditionalMethodsofIrrigation**

  In this method, irrigation is done manually. Here, a farmer pulls out water from wells or canals byhimself or using cattle and carries to farming fields. This method can vary in different regions. Themain advantage of this method is that it is cheap. But its efficiency is poor because of the unevendistributionofwater. Also,thechances ofwaterloss areveryhigh. Someexamplesof thetraditionalsystem are pulley system, lever system, chain pump. Among these, the pump system is the mostcommonand used widely.

- **ModernMethodsof Irrigation**

  The modern method compensates the disadvantages of traditional methods and thus helps in theproper wayof waterusage.

❖ ImportanceofIrrigation:-

- Theimportanceofirrigationcanbeexplainedinthefollowingpoints:Insufficientandun certainrainfalladverselyaffects agriculture.
- Droughtsandfamines arecausedduetolowrainfall. Irrigationhelpstoincreaseproductivityevenin low rainfall.
- The productivity on irrigated land is higher as compared to the un-irrigated land. Multiplecroppingis notpossibleinIndiabecausethe rainyseason isspecificin mostof theregions.However,theclimatesupports cultivation throughoutthe year.
- Irrigation facilities make it possible to grow more than one crop in most of the areas of thecountry.Irrigationhashelpedtobringmostofthefallowlandundercultivation.Irri gationhasstabilizedthe output andyield levels.
- Irrigation increases the availability of water supply, which in turn increases the income of thefarmers.Irrigationshouldbeoptimumbecauseevenover-irrigationcanspoilthecropproduction.Excess water leads to waterlogging, hinder germination, increased salt concentration anduprootingbecauseroots can't withstand standingwater.
- Thusthe proper method is to beused forthe best cultivation.

18. Social Activities – Any Activates Planned By Student

In our village we are planning for teaching activities for full little student but unfortunately thebecauseofsecondcovid-19wavewecan'tfulfill thatthingbut invillagemanycampsareorganizedbythe Sarpanchas well as district level.

In this camping they aware the people to vaccination drive and to protect self and family from thissecond wave of covid-19 they also introduced about third wave of covid-19, and may be spread in thechildren also so for that the take the preconceptions and stay home this kind of awareness andinformationspreadinginthe villagers,so minimum people& childrencomes positive.

InParallelNearsPHCvaccinationcampsarealsoprovidingbycentralgovernment.

19.<<ALLOCATED VILLAGE>>SAGY Questionnaire Survey form with the Sarpanch Signature(Scanned copy attachment in the soft copy report and Original copy in hardbound report)

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: RANGAI PURA Gram Panchayat: RANGAI PURA Ward No.____

Block: _____ District: ANAND

State: GUJARAT L S Constituency: ANAND

1. Family Identity and Size

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

2. Category & Entitlement Details (Tick as appropriate)

Social Category[1]	OPEN	Life Insurance	1. All Adults 2. Some Adults 3. None	AABY	1. Yes 2. No	Kisan Credit Card	Yes / No
Poverty Status Year[2]: 202	1. BPL 2. APL	Health Insurance	1. All Adults 2. Some Adults 3. None	RSBY	1. Yes 2. No	MGNREGS Job Card Number	
PDS (If NFSA is not implemented)	Annapurna	Antyodaya	BPL ✓	APL	Is any woman in the family member of an SHG? Yes / No		
PDS (If NFSA is implemented)	Annapurna	Antyodaya	Priority	Other			

2. Adults (above 18 years)

Name	Age	Sex M/F/O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/ N)	Bank A/C (Y/N)	Social Security Pension[5]
RAJ	30	M	Y	GRAD	GRAD	Y	Y	
YASH	25	M	N	HSC	HSC	Y	Y	
MANAN	32	M	Y	12th	12th	Y	Y	
RUSHI	45	F	Y	SSC	SSC	Y	Y	

3. Children from 6 years and up to 18 years

Name	Age	Sex M/F/O	Disability Y/N	Marital Code*	Level of Education: Code#	Going to School /College (Y/N)	Current Class	Computer Literate Y/N
RAVI	14	M	N	–	8	Y	–	Y

4. Children below 6 years

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

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

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

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

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

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

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

5. Hand washing

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

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

7. Do members take Regular Physical Exercise

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

8. Consumption of Tobacco

	Smoking	Chewing
Adults	YES	YES
Children	NO	NO

9. House & Homestead Data

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

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

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

11. Source of Lighting and Power

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

12. Landholding (Acres)

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

13. Principal Occupations in the Household

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

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

15. Agriculture Inputs

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

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

Name	Unit	Quantity
TOBACCO	KG	350KG

17. Livestock Numbers

Cows: 10	Bullocks: 2	Calves: —
Female Buffalo: 8	Male Buffalo: —	Buffalo Calves: —
Goats/ Sheep: —	Poultry/ Ducks: —	Pigs: —
Any other: Type —		No. —
Shelter for Livestock: Pucca / Kutcha / None		
Average Daily Production of Milk(Litres):		

18. What games do Children Play
YES

19. Do children play musical instrument (mention)
NO

Schedule Filled By:
Principal Respondent:
Date of Survey:

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

I. Basic Information

a. Gram Panchayat: RANGAIPURA

b. Block: GRAM AREA

c. District: ANAND

d. State: GUJARAT

e. Lok Sabha Constituency: PETLAD

f. Number of Wards in the Gram Panchayat: _____

g. Number of Villages in the Gram Panchayat: 3

h. Names of Villages: RANGAI PURA

Demographic Information

Number of Households 825 Total Population 4014 Male 2101 Female 1913

SC HHs 248 ST HHs 00 OBC HHs _____ Other HHs _____

I. Access to Infrastructure / Facilities / Services

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
a.	ANM/ Health Sub Centre	NO	9 KM
b.	Nearest Primary Health Centre (PHC)	NO	7 KM
c.	Nearest Community Health Centre (CHC)	NO	10 KM
d.	Nearest Post Office	YES	–
e.	Nearest Bank Branch (Any)	NO	2 KM
f.	Nearest Bank with CBS Facility	NO	2 KM
g.	Nearest ATM	NO	2 KM
h.	Nearest Primary School	YES	–
i.	Nearest Middle School	NO	2 KM
j.	Nearest Secondary School	NO	2 KM
k.	Nearest Higher Secondary School / +2 College	NO	2 KM
l.	Nearest Graduate College	NO	7 KM
m	Nearest ITI / Polytechnic Centre	NO	15 KM
n	Kisan Seva Kendra	NO	15 KM

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society	NO	15 KM
p	Nearest Agro Service Centre	NO	15KM
p	MSP based Government Procurement Centre	NO	15KM
q	Milk Cooperative /Collection Centre	YES	-
r	Veterinary Care Centre	NO	15 KM
s	Ayurveda Centre	NO	15KM
t	E – Seva Kendra	YES	-
u	Bus Stop	YES	-
v	Railway Station	NO	2 KM
w	Library	NO	2KM
x	Common Service Centre	NO .	2KM

IV. Sports Facilities in the Gram Panchayat

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

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 5

b. Number of villages without Angan Wadi Centres -

Names of such villages: -

c. Schools (Number)

Primary Private: - Primary Govt.: 3

Middle Private: - Middle Govt.: -

Secondary Private: - Secondary Govt.: -

Higher Secondary Private: - Higher Secondary Govt: -

VI. Public Distribution System

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

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

VII. Coverage of Villages under different Facilities & Services

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

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	607	d.	Pasture / Grazing Land	2.47	g.	Check Dam	
b.	Irrigated Land	607	e.	Forests/ Plantations		h.	Wells/Bore Wells	
c.	Un-irrigated Land	–	f.	Other Common Land		i	Tanks /Ponds	

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

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionna

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

IX. Parameters relating to Households & Institutions

		Number
a)	Number of eligible Households for pension (old age, widow, disability)	445
b)	Number of Households receiving pension (old age, widow, disability)	60
c)	Number of eligible Households who are not receiving pension	80
d)	Number of Households eligible for Ration Card	780
e)	Number of eligible HHs having ration cards	750
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	-
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	-
h)	Number of active Job Card holders under MGNREGA	-
i)	Number of Job Card holders who completed 100 days of work during 2013-14	-
j)	Number of shops selling alcohol	-
k)	Number of BPL families	191
l)	Number of landless households	-
m)	Number of IAY beneficiaries	-
n)	Number of FRA[2] beneficiaries	-
o)	Number of Community Sanitary Complexes	-
p)	Number of Households headed by single women	28
q)	Number of Households headed by physically handicapped persons	15
r)	Total number of Persons with Disability in the village	35
s)	Number of SHGs	-
t)	Number of active SHGs	-
u)	Number of SHG Federations	-
v)	Number of Youth Clubs	-
w)	Number of Bharat Nirman Volunteers	-

Name and Signature of Surveyor and Respondent'

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

[2] The Scheduled Tribes and Other Traditional Forest

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: RANGAIPURA

b. Ward Number: -

c. Gram Panchayat: RANGAIPURA

d. Block: _____

e. District: ANAND

f. State: GUJARAT

g. Lok Sabha Constituency: PETLAD

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

i. Names of Habitations / Hamlets:

Demographic Information

Number of Households 825 Total Population 4014 Male 2101 Female 1913

SC HHs 248 ST HHs - OBC HHs _____ Other HHs _____

II. Access to Infrastructure/Amenities etc.

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
a.	Nearest Primary School	YES	-
b.	Nearest Middle School	NO	2KM
c.	Nearest Secondary School	NO	2KM
d.	Kisan Seva Kendra	NO	15KM
e.	Milk Cooperative /Collection Centre	YES	-
g.	Health Sub Centre	NO	9KM
h.	Bank	NO	2KM
i.	ATM	NO	2KM
j.	Bus Stop	YES	-
k.	Railway Station	NO	2KM

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

1

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
l	Library	NO	2 KM
m	Common Service Centre	No	15 KM
n	Veterinary Care Centre	No	15 KM

ii. Road Connectivity

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

iii. Drinking Water Facilities

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

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

iv. Coverage of Habitations under Waste Management System

a. Coverage under Covered Drains: SOME (*1-All 2-None 3-Some*)
If 3 mention the name of the habitations not covered:

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

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

v. Coverage of Habitations under Electrification

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

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

vi. Sports Facilities in the Village

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 5

c. Schools (Number)

Primary Private: — Primary Govt.: 3
Middle Private: — Middle Govt.: —
Secondary Private: — Secondary Govt.: —
Higher Secondary Private: — Higher Secondary Govt: —

2

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

'e

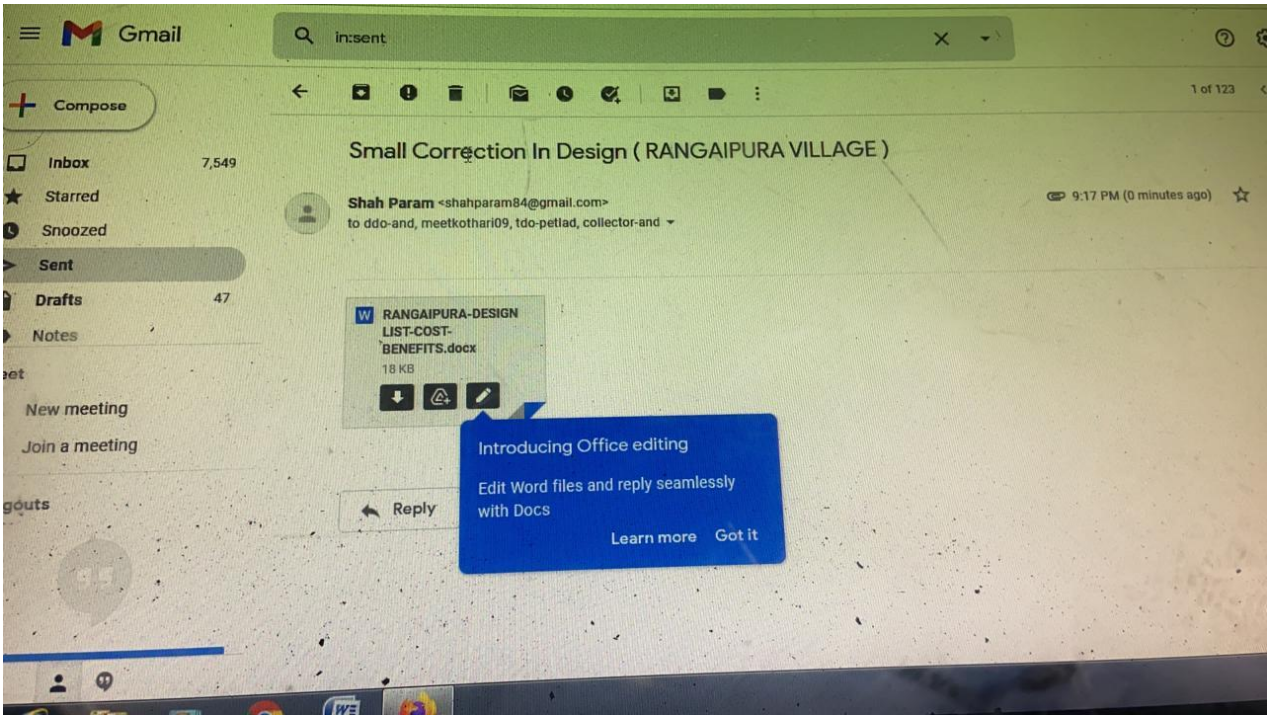
viii. Land Category		Area in Acres		Land Category	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	607	d.	Pasture / Grazing Land	247	g.	Check Dam	
b.	Irrigated Land	607	e.	Forests/ Plnatations	-	h.	Wells/Bore Wells	
c.	Un-irrigated Land	-	f.	Other Common Land	-	I	Tanks /Ponds	

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	-
2	Number of active Job Card holders who have completed 100 days of work	-
3	Number of shops selling alcohol	191
4	Number of BPL families	-
5	Number of landless households	-
6	Number of IAY beneficiaries	-
7	Number of FRA beneficiaries	-
8	Number of common sanitation complexes	-
9	Number of SHGs	-
10	Number of active SHGs	-
11	Existence of SHG Federation in the Village (Yes / No)	-
12	Number of Youth Clubs	-
13	Number of Bharat Nirman Volunteers	-

Name and Signature of Surveyor and Respondent'

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

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



DOCUMENTRY VIDEO OF VILLAGE LINK BELOW:
https://youtu.be/fz3xONSxsXA