DETAILS PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION

VELANJA VILLAGE
SURAT DISTRICT

PREPARED BY

NAME	BRANCH NAME	ENROLL.NO
ADITYA MEHTA	CIVIL	181133106004
DOLLAR PATEL	CIVIL	171130106012

SAL COLLEGE OF ENGINEERING

GUIDE BY

PROF. HEMA V. VANAR

Year: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY

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CERTIFICATE

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

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UNDER

VISHWAKARMA YOJNA: VIII

AN APPROACH TOWARDS RURBANISATION

NAME.	BRANCH NAME.	ENROLLMENTNO
DOLLAR PATEL.	*CIVIL.*	*171130106012*
ADTIYA MEHTA.	*CIVIL.*	*181133106004*

Date of Report submission:	
Principal Name and Signature:	DR. RUPESH VASANI
VY-Nodal Officer Name and Signature:	
Internal Guide Name and Signature:	PROF. HEMA V. VANAR
College Name:	SAL college of engineering
College stamp:	

ABSTRACT

- **Vishwakarma Yojana project and how you do your vision project?**

Vishwakarma yojana is basically for the rural areas which are need actual development in areas to provide better life style and fulfill basic amenities of the villagers. In this yojana we can try to reduce the distance between the rural and urban areas and also we can try to make a better connectivity between the rural and urban areas.

- **About your village description:**

The main objective of this yojana is –"creation of all the basic facilities or infrastructure such as Connectivity, civic, physical infrastructure along with the provision of economy generation by maintaining the natural surroundings of the area is the key element of this yojana" **VELANJA** is a village in **SURAT** District of Gujarat State, India. It is located 31 km from district headquarters SURAT and 21M above sea level.

- **About existing village condition:**

According to our survey in this village water supplied to the people is sufficient. Drainage system is not available. The condition of roads is Poor except entrance. There is no transportation facility in the village. In the village lack of basic facilities like public toilet, poor condition of panchayat building, Drainage system, there is no health center, Poor network connectivity, shortage of water for irrigation there is no public garden etc. For the better future prospect they have to improve their infrastructure and also use some advance technologies. For development of the village infrastructure facilities like panchayat building, secondary school and public facilities like bus station are required. For sustainable development of the village rain water harvesting system, solar street light may be provided. For cleaning purpose Bio-Gas plant provided.

- **About your proposed designs your view for village development:**

Based on the survey we tried to give design of required basic facilities to fulfill their needs. By providing these basic facilities to villagers migration rate will be decreased. We can also implement the waste collection system and drainage system in the village so villagers can live life healthy. We can also provide better network connectivity in the village and also the mobile library in the village so villagers can improve their knowledge. It is the ultimate goal of the vishwakarma yojana.

Key Words: Infrastructure facilities, Rurbanization, Smart development, Sustainable Development.

ACKNOWLEDGEMENT

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

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

We are also thankful to our **Prof**. (**Dr.) RUPESH VASANI Principal**, 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, **Mrs HEMA V. VANAR from college SAL COLLEGE OF ENGINEERING** for 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. Jayesh Deshkar Hon'ble Director of Vishwakarma Yojana project and Principal, V. V. P Engineering College and Core Committee member of Vishwakarma Yojana project Prof (Dr.) Jigar Sevalia**, Professor, SCET, Surat, **Prof. K. L. Timani,** Associate Professor, VGEC, **Prof. Rena Shukla**, Associate Professor, LD Engineering College, **Prof. Y. B. Bhavsar,** Associate Professor, VGEC, **Prof.Jagruti Shah**, Assistant Professor, BVM Engineering College for providing us technical knowledge of this project work.

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

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

CONTENT

LIST OF TABLES

LIST OF FIGURES AND PHOTOS

ABBREVIATIONS

SHORT NAME	FULLNAME
PHC	Primary Health Center
CHC	Community Health Center
TDO	Taluka Developer Officer
DDO	District Developer Officer
PPP	Public Private Partnership
NGO	Non Governmental Organization
PURA	Provision of Urban Amenities in Rural Area
CSS	Centrally Sponsored Schemes
BOD	Biochemical Oxygen Demand
COD	Chemical Oxygen Demand
DEWATS	Decentralized Waste water System
ZWM	Zero Waste Management
DRDA	District Rural Development Agency
EPF	Eco-friendly Plastic Fuel
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
PMGSY	Pradhan Mantri Gram Sadak Yojana
IAY	Indira Aawas Yojana
NRUM	National Rurban Mission
PHC	Primary Health Center

Chapter 1: Ideal Village Visit From District Of Gujarat State:

1.1 Background Study location

Background

The Image That Come In Minds Of A Typical Indian Village Consists Of Rugged Roads, Frequents Power Cuts, Improper Working Of Schools, Improper Water Distribution, Garbage's Everywhere. But Not In Case Of MUNJKA Village Of Gujarat In India. The Villages Located In RAJKOT District Of Gujarat, India.

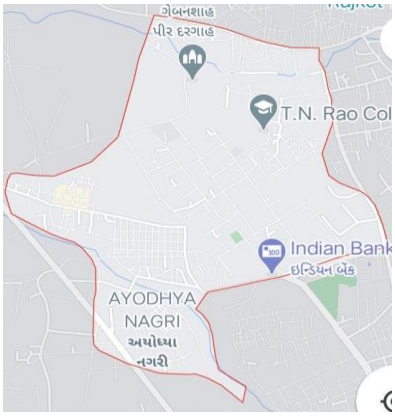

Fig. 1.1 map of munjka

The Village Is Located At About 7.8 Km from RAJKOT. The Village Has Suitable Climates And Is Free From Any Natural Calamities And Has Fertile Land. Around 98% Of The People In The Village Are Dependent On Agriculture And Milk Production For Livelihood. The Major Crops Cultivated In The Village Are Cotton, Wheat And Potato. With Key Infrastructure Facilities Provided By The Gram Panchayat, The Lives Of Villagers Have Improved Significantly. This, In Turn, Has Improved The Income Levels And Consumption Level Of Villagers The Village Is Facilitates With Modern Amenities And Facilities. The Village Has Concrete Roads,

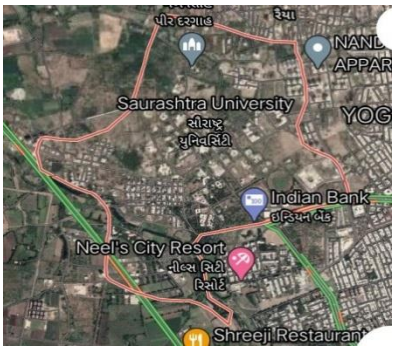

Fig.1.2 Sattelite view of Munjka

ROPlants For Water Purification, Solar Powered Street Lights, Regular Electricity, Primary Health Center, A Toilet In Each House, Proper Sanitation And Drainage System Which Is Completely Under ground, Banking Facilities, ATM Facilities. Adding On To The List The Village Has Air Conditioned Primary Schools Equipped With CCTV Cameras And Smart Education Technology, Speakers at the Junctions, Speakers at The Junctions, WI-FI Connectivity and an Independent Gram Panchayat. There is also a one bus service which is run by villagers.

The Panchayat Has Installed A Reverse Osmosis Plant In 2010 To Ensure The Supply Of Clean Drinking Water To The Villagers. During Wedding And Other Ceremonies Water Tankers Are Arranged. Drinking Water Taps Are Available For All. The Gram Panchayat has Created 3.5 Km Of Underground Drainage System. The Village Has An Area Of 1.5 Square Km. The Gram Panchayat has Spent 1.5 crore to Build a Wall To Wall Extended Concrete Road inside the Village. It Has Set Up The Electricity Generation Plant For the Generation Of Electricity By Waste generated in the city. A Tractor Trailer Collects Waste Twice in a day from The Village.

The Government Has Installed A 66 Sub-Station In The Village That Supplies 24x7 Power To Village. This Has Helped In Improving The Lives Of People And Helped The Panchayat To Implement Various Other Infrastructure Facilities. There Have Been Around 350 Street Lights Have BeenSet Up With LED Lights, Which Run On Solar Power.

Figure1.3 Streetlights

The Village Has Wi-Fi Connectivity Since 2010 and has entered into a Lease Line Agreement With Reliance Communication. The Gram Panchayat Takes 10rs Per Month For Unlimited Internet Excess with a Speed Of 3 Mbps. CCTV Camera Installation at Key Locations has Helped Maintain A Civil Discipline Inside The Village. Similarly, Cctv Cameras Have Been Installed Inside The Schools And Health Centre And It Consists 124 Cameras

Figure 1.4 wifi connectivity

In Whole Village At Every Street And Corners. For The Announcement Of Any Instructions In Emergency Situation They Have Installed 140 Speakers On Every Streets Of This Village, Which Is Directly Operated From The Panchayat.

Figure1.5 Street Light & C.C.T.V. Camera

There Are Five Primary Schools In MUNJKA. 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 MUNJKA.

The Village Was Rated B+ During Ganotsav 2011 Which Is An Annual Education Campaign Run By The State Government. Similarly, There Are Eight Anganwadi Centers Running In The Village With 450 Kids Enrolled.

There Is One Milk Bank And One Outpost Police Station. There Is Proper Sanitization With All Houses Having A Toilet.

Figure1.6 Primary School

Figure 1.7 primary school

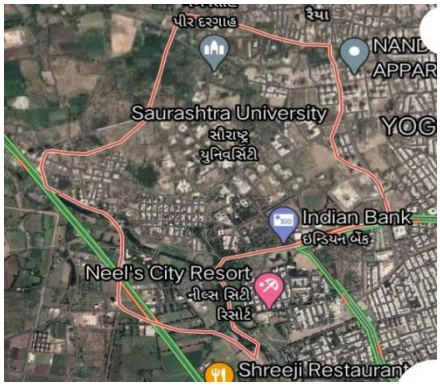

Figure 1.8 satellite view of munjka

Study Area Location:

Country: - INDIA State:-

GUJARAT

District:- RAJKOT

Coordinates:-22.2931°N,70.7436°E

1.2 Concept: Ideal Village

1.2.1. Objectives:

- To Improve The Living Standards Of The Peoples By Providing Various Basic And Non Basic Facilities In The Village.
- To Increase The Literacy Rate Of The Village By Providing The Primary And Secondary Schools In Village And Also By Improving The Facilities Available In This Schools.
- Prevent Distress Migration from Rural to Urban Areas, Which Is A Common Phenomenon in India's Villages Due To Lack of Opportunities And Facilities That Guarantee A Decent Standard Of Living.
- Provision Of Security To The Village By Providing Cctv Cameras And Street Lights In The Village.
- Provision Of Better Infrastructure Facilities, Ex: Residential And Agricultural Infrastructure.
- Provide Easier, Faster And Cheaper Access To Urban Markets
- For Agricultural Produce Or Other Marketable Commodities Produced in Such Villages.

1.2.2. Example/Live Case Studies Of Ideal Village Of India/Gujarat

(A) Punsri:

Punsri Is Located In Gujarat , Puts Metos To Shame. Funded By A Indian Government And Village Own Funding Model, Punsri Is No Nri Blessed Zone. The Village Also Boasts Of Minibus Commute System , Free Wi-Fi Zone, Mobile Library, Cctv Cameras, Speakers System Etc.

(B) Dharnaj:

Dharnai , A Village In Bihar Has A Fully Solar Powered System For Electicity. With The Aid Of Green peace , Dharnai Declared Itself An Energy Independent Village.

(C) Pothanikkad (Kerala) The Village With 100% Literacy Rate. : Unsurprisingly In Kerala, Pothanikkad Village Was The First In The Country To Achieve A 100% Literacy Rate. Not Only Does The Village Boast Of City-Standard High-Schools, But It Also Has Primary Schools And Private Schools. Guess The Number Of People The Village Has Educated? Well, According To The 2001 Census There Are 17563 Residents Living In The Village.

(D) Mawlynnong (Meghalaya) Asia's Cleanest Village:

Mawlynnong,

A Small Village In Meghalaya, Was Awarded The

Prestigious Tag Of 'Cleanest Village In Asia' In 2003 By Discover India Magazine. Located At About 90 Kms From Shillong, The Village Offers A Sky Walk For You To Take In The Beauty As You Explore It.

1.2.3. The Idea Of Model/Smart Village

By Moving People And Businesses To Smart Villages, Revenue, Resources And Job Opportunities Will Increase In Rural India, While Cities Can Decongest. The Idea Of An "Adarsh Gram" Or Model Village Has Been Explored Earlier As Well, Most Notably Through The Pradhan mantra Adarsh Gram Yojana, Launched By The Central Government In 2009-10.The Scheme Was Implemented In Pilot Mode In 1000 Villages Of Assam, Bihar, Himachal Pradesh, Rajasthan And Tamil Nadu, With An Allocation Of Rs 10 Lakh Per Village. This Limit Was Later Raised To Rs 20 Lakh Per Village. The Target Villages Under The Scheme Were Those With MoreThan50% Of The

Population Belonging To Scheduled Castes(Scs). Additionally, State governments Have Also Taken Steps In This Direction. Himachal Pradesh Launched A Mukhya Mantri Adarsh Gram Yojana AlongSimilarLinesIn2011, With The Allocation Of Rs10Lakh Per Village.

1.2.4. Key Elements

A 21st Century Model Village In India Needs To Incorporate Certain Key Themes Which Would be Essential For Its Success.

Key Elements Of A Model Village Are Given Below:
Better Road Network, Drainage System, Ro Plant, Bus Service,
Electro-Osmosis Plant, Recreational Facilities, Skill Development Centre.

A. Mobile Library

Resources

For An Mp, There Are 3 Primary Resource Streams Which Can Be Utilized For This Purpose:

• Funds Under Existing Schemes Across Different Sectors Such As Health, Education, Skill Development, Livelihood Etc Could Be Utilized, And Based On The Specific Demands Of The Village; Resources Could Be Channelized Into The Development Of The Village. Some Important Centrally Sponsored Schemes (Css) Which Could Be Utilized Are Nrlm, Nhm, Ssa, Nrega, Brgf, Rkvy And Mid-Day Meal Scheme.

• Mplad Funds (Rs 5 Crore Per Year) Could Be Utilized For The Construction Of High Quality, Sustainable Assets Such As School Buildings, Hospitals, Anganwadi Centres And School Kitchens For Mid-Day Meals. Funds Could Also Be Channelized Into Road Construction, And The Construction Of Toilets In Schools And Homes, Particularly For Girls.

• Csr Funds, Of Which A Much Larger Corpus Is Available After The Latest Amendment To The Companies Act, Could Also Be Used For The Purpose Of Infrastructure Development In The Constituency.

• Gram Panchayats Could Also Raise Loans, If Legally Permitted To Do So Under The State Panchayati Raj Acts Like In The Case Of Kerala.

1.3. Physical And Demographic Profile

The Population Of MUNJKA Was 3483 As Per 2011 Census Of India Which Has Increased To 5500 In 2011. As Of June 2012,The Population Is 6000.

Economic Profile

In 2006 The Economic Condition Of The Village 'MUNJKA' Was Not Good. But After The New Sarpanch Is Elected In 2006 The Village Has Done A Tremendous Development In Economy, Life Style Of Peoples, Scopes Of Jobs Etc. In The Last Decade. With The Help Of Governments Various Schemes And Opportunity The Economy Of The Village Has Raised.

Social Scenario

This Village Generally Consist Of A Large Number Of Rajpur Families AndOtherCommunities.TheMainSourceOfIncomeIsFarming,GardeningOf Varieties Of Fruits like Lemon, Amala, Mangoes, Plums, Chickus, Papaiya Etc. Of Late People Have Migrated To Other Town & Cities In Search Of Job. Earlier People Of Rajput Community Were Recruited By Government In Police & Army., This Days Community Has Entered Different profession Like. The Population Of Village Today Is 10000Appx.

Infrastructure Facilities

In The MUNJKA Village There Are Good Infrastructure Facilities As Compared To Other Villages Like, Banks, Playgroups, Primary Health Center, Mobile Library, Skill Development Center, Primary School Etc.

How To Develop The Ideal Village/Key Elements Of Ideal Village

To Make Any Village An Ideal Village, We Need To Provide This Key Elements Or Facilities In That Village.

A. Better Road Network

B. Drainage System

C. RoPlant

D. Bus Service

E. Recreational Facilities

F. Skill Development Centre.

G. Mobile Library

H. lectro-Osmosis Plant

Figure.1.9 Roads in MUNJKA village 1

Figure 1.10 RO plant

Figure 1.11 Bus Services

1.4. SWOT Analysis Of Ideal Village

Table1.SWOT analysis of ideal village

Strength	Weakness	Opportunities	Threats
Proper Drainage Facilities	Improper Disposal Of Waste	Improving In Waste Management	Lack Of Awareness Of Villagers About Cleaning
Transportation Facilities	Improper Layout Of Village	Woman Empowerment	Lack Of Awareness Of Villagers About Educations
Sanitation Facilities	No Facilities For Higher Secondary Education	Educational Awareness	Lack Of Funds And Technical Knowledge In Agricultural Fields

1.5. Future Prospects:

In This Village The Gram Panchayat Is Planning To Build A College In The Village, So That The Students In The Village Will Not Have To Go To Other Village For Graduation Studies And So Their Time And Money Both Will Be Saved.

1.6. Benefits Of The Visits

After Visiting The Ideal Village We Learn What Is Truly Be Called An Ideal Village And What We Need To Kept In Mind While Doing This Project About Our Village. We Also Learn What Points We Need To Focus In Making Our Village An Ideal One.

1.7. Case Study Of Any Other State Ideal Village/Any Other From Outside Gujarat

Ankapur-A Modern Village:

Ankapur Has Been Recognized As A Modern Village By Many Agencies Including International Rice Research Institute (Irri) Manila, Philippines. For Outstanding achievement In The Field Of Agriculture Development. Besides Cultivating Commercial Crops And Vegetables On A Large Scale.

AnkapurIs A Small, Self Sufficient, Progressive Model Village Located In Armoor Mandal, Nizamabad District, And Telangana Region Of Andhra pradesh.

This Village Is Considered One Of The Model Village In The Country Due To An Overall Development In General And Agriculture Development In Particular. In Recent Years Ankapur Has Earned The Great Name In Agriculture Development. The Farmers Have Started Adopting Modern Methods And They Have Succeeded In Substituting Subsistence Orientation With Commercialization.

Mawlynnong(Meghalaya):

Mawlynnong(Meghalaya):

Mawlynnong, A Small Village In Meghalaya, Was Awarded the Impressive Tag Of Cleanest Village In Asia' In 2003 By Discover India Magazine. Located AtAbout90KmsFromShillong,The Village Offers A Sky Walk For You To Take In The Beauty As You Explore It. According To Visitors, You Cannot Find A Single Cigarette Butt/Plastic Bag Lying Around There. After Visiting The Ideal Village We Learn What Is Truly Be Called An Ideal Village And What We Need To Kept In Mind While Doing This Project About Our Village. We Also Learn What Points We Need To Focus In Making Our Village An Ideal One.

Chapter2:Village Literature Review – Civil

2.1. Introduction: Urban & Rural:

Urban:

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.

Figure 2.1 urban area

Rural:

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 Ar e Located Very Close To One Another.

2.2 Ancient Villages/Different Definition Of:

Rural Area/Villages:

Figure 2.2 Rural area

A Village Is A Community Larger Than Hamlet But Smaller Than Town Having Population Range Between Hundreds To Few Thousands. Villages Are Permanent Dwellings. In Past Villages Were Usually Form Of Community Involved In Agriculture Practice.

Definition of Rural Area:

• Census Board Define "Urbanized Area Which Is Of Group Having Population Density Of At Least Thousand People Per Square Mile". Whereas "Rural Area Is Any Non-Urban Or Non-Highly Rural Area

• The Majority Of The Population Of The Region Involved In Agricultural PracticaIs Known As Rural Area.

2.3. Scenario: Rural/Urban India & Gujarat As Per Census 2011 (Population Growth):

MUNJKA Village Census Data:

Table2. MUNJKA village census data(2011)

Particulars	TOTAL	MALE	FEMALE
Total No. Of Houses	1689	-	-
Population	8580	4494	4086
CHILD(0-6)	2374	-	-
Literacy	74.03%	87.56%	61.35%
TOTALWORKERS	768	514	254

2.4. Rural Issues & Concerns:

Despites Of Having Facilities Of Basics Amenities In The Village The Villages Have Many Problems Due To Which The Village Growth Had Decreased.

The Following Are The Concern And Issue:

- Bad Road Network, Unplanned Irrigation System, Insufficient Sewer Line, Poor Condition Of Houses, Poor Conditions Of Public Buildings, Unavailability Of Hospitals,

2.5. Various Measures For Rural Development

The Rural Development Is A Process Of Increasing The Quality Of The Life And Living Standards Of The People Of The Village By Providing Them Various Rural Facilities.

The Development Of The Rural Areas Can Be Done By Providing The Villagers Various Facilities Which Includes:

- Better Infrastructure, Proper Houses, Pure And Safe Drinking Water, Better Road Network, Better Transit System, Provision of Recreational Areas, Rain Water Harvesting Facilities .

2.6. Various Guidelines / Norms For Villages For The Provisions Of Different Infrastructure Facilities.

The Foremost Priority With The Government Is To Enhance Quality Of Life In Villages So That It Is On A Par With Urban Areas, The Department Said. The Department Has Asked Gps To Make The Amenities Available Through Ongoing Schemes, Including The Mahatma Gandhi National Rural Employment Guarantee Act(MNREGA).

Since The Government Is Committed To Provide At Least 55 Litres Per Capita Day(LPCD) Of Water To Every Family In A Village, The Gps Should Focus On Providing Individual Households Tap Connections.

At The Same Time, Focus Should Also Be Given To Construction Of Toilets For Each Household Under The MNREGA And The Nirmal Bharat Abhiyan. Schools And Anganwadis In Villages Should Be Provided With Toilets Even As Panchayats Have To Take Steps Towards Solid Waste Management, The Department Said.

2.7. Importance in rural context:

- Rural Development Is The Process Of Improving The Quality Of Life And Economic Well Being Of People Living In Rural Areas, Often Relatively Isolated And Sparsely Populated Areas. Education, Entrepreneurship, Physical Infrastructure, And Social Infrastructure All Play An Important RoleIn Developing Rural Regions.
- By Developing The Rural Areas We Can Improve Life Style Of The Residential.
- By Developing The Rural Area We Can Make Easy Life Style Of The Villagers.
- By Developing The Rural Area We Can Solve The Problems About Migration.
- By Developing The Rural Areas We Can Prevent The Unemployment.
- By Developing The Rural Areas We Can Increase The Literacy Ratio.
- By Developing The Rural Areas We Can Increase Growth Rate Of The Country.

2.8. Sustainable Village Development Concept:

- Sustainable Development Is The Organizing Principle For Meeting Human Development Goals While At The Same Time Sustaining The Ability Of Natural Systems To Provide The Natural Resources And Ecosystem Services Upon Which The Economy And Society Depend. The Desired Result Is A State Of Society Where Living And Conditions And Resource Use Continue To Meet Human Needs Without Undermining The Integrity And Stability Of The Natural Systems.

2.9. Other Projects And Schemes:

Recently The Gram Panchayat Had Raised The Fund For The Construction Of New Primary School For The Better Future Of The Village.

Chapter3:Smart Cities/Village Concept As Per Your Idea And Its Visit:

3.1.Concepts, Definition And Practices:

What Is 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

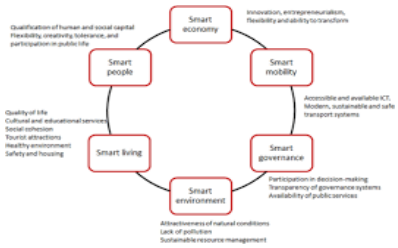

Figure 3.1

And Nutrition, The Growth Of Productive Enterprises To Boost Incomes, And Enhanced Security, Gender Equality And Democratic Engagement.

The Challenge:

Unfortunately It Is A Fact That, In The World Today, 1.3 Billion People Remain Without Access To Electricity. In Addition, 3 Billion Are Still Cooking On Dangerous And Inefficient Stoves. Many Of Them Live In Remote Rural Village Communities. Until Such Communities Have Access To Modern Energy Services, Little Progress Can Be Made To Develop Their Economies And Improve Their Lives.

3.2.Smart Cities Bench Marks, Standards And Performance Measurement

Indicators:

- The Main Benchmarks Of The Smart Cities/Villages Are Clean Metalled Roads

- Literacy And Compulsory Education Up To Final Basic
- Course Work And Means Of Earning
- Proper Inter And Intra Village Connectivity
- Dust Free Lanes & Streets
- Hygienic And Clean Water Supply And Access To All
- Houses Of Worship For All
- Primary And Secondary Schools With Industry Driven Education
- Library With E-Library Facility
- ProfessionalInstitutionsWithinAnAreaOf10Kms
- Proper Means For Health Check-Up And Treatment
- Access To Multi-Facility Hospital Within An AreaOf10Km.
- Empowered Panchayats For Settling Disputes
- Produce Its Own Grains, Vegetable, Fruits And Khadi
- Fixed Place For Evacuation
- WiFi /Broadband Connectivity
- Recreation And Playgrounds For Adults And Children
- Village Theatre, School And Public Hall

For Smart Village:

Following Mandatory Targets Are Necessary To Achieve Before Declaring AnyGramPanchayatASmartVillage.StateGovernmentCanMakeChangesInTheMandatory Targets From Time To Time By Considering Certain Programs OrTargets.

- 100%Vaccination
- 0%DropOutRatio
- Open Defecation Free Village
- 90%TaxCollection
- Compulsory Door To Door Solid Waste Disposal
- Distribution Of A TVT Services AtE –Gram Center
- 'A' Grade Primary School
- 100%IndividualToilet
- Remove Encroachments On Public Roads
- Malnutrition-No Child Should Be In 'RED Zone
- Mandatory Organizing Four Gram Sabha In A Year With50%Presence
- 100%ImplementationOfDirectDepositOfGovernmentAssistanceInto
- Beneficiary's Account.(D.B.T.)
- 100%EnrollmentOfChildrenInAnganwadi.
- To Update Revenue/Gram Panchayat Records.
- Road Side Plantation In The Village.
- 100%Wi-FiVillage.

3.3. Technological Options For Smart Cities:

- Smart Energy.
- Smart Mobility.
- Smart Infrastructure.
- Smart Public Services.
- Smart Care.

3.4. Road Map And Safe Guards For Smart Cities:

- India Is A Country Of Villages Any Product Or Solution That Has To Succeed And Be Popular In The Country Has To Be Of Direct Relevance To Village Life Of This Country. As Per Census Of India 2011, The Country Has A 69% Rural Population Spread Across More Than 600,000 Villages. Now, That Being The Case, No Marketer Worth His Salt Can Ever Dream Of Ignoring Rural India.

- Globally The Concept Of 'Smart City' Is A Significant Initiative That Seeks To Improve The Quality Of Life Of Urban Citizens. In India Too The New Central Government's Stated Priority Of Building 'Smart Cities' Has Found A Relatively Modest Budgetary AllocationOfRs.7,060Crore For FY2014-15,ThoughIts Significance For The Long Term Can Be Much Larger. Be It The Push Of The 'Smart City' Concept From Solution Providers, Real Estate Developers Or The Government Itself, The Concept Finds Wide Appeal. The Government Of India's Stated Plan To Set Up 100 Smart Cities Across The Country Has The Potential To Be A Game-Changer In The Country's Urban Landscape And The Lives Of Ordinary Citizens.

3.5. Issues& Challenges:

Smart City Council Of Is Facing Many Issues And Challenges In The Smart City Project. Some Of The Issues Are Shown Below

- Retro fitting Existing Legacy City Infrastructure To MakeIt Smart
- Financing Smart Cities
- Availability Of Master Plan Or City Development Plan
- Three-Tier Governance
- Providing Clearances In A Timely Manner
- Dealing With A Multivendor Environment
- Capacity Building Programme

3.6. Smart Infrastructure:

Figure.3.2 Smart Infrastructure

Smart Infrastructure Is One Of The Main Points In The Smart Village Development. It Is Essential To Provide Smart Homes In The Smart Cities/Villages.

- The Main Points Of Smart Infrastructure Are
- Energy Efficient Buildings, Low Cost Houses
- Use Of Environment Friendly Materials
- Use Of Solar Rooftops For Saving Energy
- Rain Water Harvesting
- Recycling Of Used Water
- Recycling Of Waste Product

3.7. Cyber 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. The Increase Of Data Exchange Controls Multiple Services And Assets Leads To More Automation In The City.
- As Several Critical Services Become Interconnected, The Need For Cyber Security Surges To Protect Data Exchanges, Privacy As Well As The Health And Safety Of Citizens. However, There Is Currently No Harmonized Guideline Or Standard To Model These Data Exchanges.

3.8. District Cooling And Heating:

Air Condition from Hammond Services,

In The Southeast, Air Conditioners Are Almost Crucial Pieces Of Equipment For Home Comfort. However, It Can Be Difficult To Find The Right Air Conditioner For Your Home, One That Will Provide Enough Cool Air In The Summer To Cool Your Home Without Driving Your Energy Costs Through The Roof. We Can Help! At Hammond Services, We Can Help You Choose The Perfect Air Conditioner For Your Home, Install It Professionally, And Even Maintain/Repair It In The Years Ahead.

Energy Efficient And Affordable Air Conditioners,

When It Comes Down To Selecting A New Air Conditioner For Your Home, There Are A Few Things You Should Consider. First Of All Is Efficiency. By Choosing An Energy Efficient Model, You Can Be Sure Your Money Is Being Well Spent And Isn‘t Being Thrown Away With Inefficiencies. Get The Most Bang For Your Buck With An Air Conditioner That Won‘T Cost A Fortune To Run. Reliability You Can Count On.

As A Carrier Factory Authorized Dealer, Our Commitment To Quality Products You Can Count On Is Clear. We're Confident When We Say That With The Proper Maintenance, You Can Count On Our Air Conditioners To Operate Efficiently For Years To Come. If You'Re Having Trouble Choosing An Air Conditioner For Your Home, Contact Us Today–We Can Help You Weigh Your Options.

The Average Annual Temperature Of The District(SABARKANTHA):

Table3.The Average Annual Temperature Of The District (SABARKANTHA)

Green Building:

TEMPRATURE			
MONTH	**NORMAL**	**WARMEST**	**COLDEST**
JANUARY	20.1°C	28.3°C	11.8°C
February	22.2°C	30.4°C	13.9°C
MARCH	27.3°C	35.6°C	18.9°C
APRIL	31.7°C	39.8°C	23.7°C
MAY	33.9°C	41.5°C	26.2°C
JUNE	32.8°C	38.4°C	27.2°C
JULY	29.5°C	33.4°C	25.6°C
AUGUST	28.2°C	31.8°C	24.6°C
September	29.1°C	34.0°C	24.2°C
October	28.5°C	35.8°C	21.1°C
November	24.7°C	32.8°C	16.6°C
December	21.3°C	29.3°C	13.2°C

- A Green Building Is A Structure That Is Environmentally Responsible And Resource Efficient Throughout Its Life-Cycle. These Objectives Expand And Complement The Classical Building Design Concerns Of Economy, Utility.
- Green Buildings May Incorporate Sustainable Materials In Their Construction(E.G., Reused, Recycled Content, Or Made From Renewable Resources).
- Create Healthy Indoor Environments With Minimal Pollutants (E.G., Reduced Product Emissions).

- And Feature Landscaping That Reduce Water Usage (E.G., By Using Native Plants That Survive Without Extra Watering).
- A Green Building Is A Structure That Is Environmentally Responsible And Resource Efficient Throughout Its Life-Cycle. These Objectives Expand And Complement The Classical Building Design Concerns Of Economy, Utility. Durability And Comfort.
- **Features Of A Green Building:**
- Minimal Disturbance To Landscapes And Site Condition
- Use Of Non-Toxic And Recycled/Recyclable Material
- Efficient Use Of Water And Water Recycling
- Use Of Energy Efficient And Eco-Friendly Equipment.
- Use Of Renewable Energy
- Quality Of Indoor Air Quality For Human Safety And Comfort
- Effective Controls And Building Management Systems

3.9. Strategic Options For Fast Development:

- The Strategic Components Of Area-Based Development In The Smart Cities Mission Are City Improvement (Retrofitting), City Renewal (Redevelopment) And City Extension (Greenfield Development) Plus A Pan-City Initiative In Which Smart Solutions Are Applied Covering Larger Parts Of The City.
- Below Are Given The Deions Of The Three Models Of Area-Based Smart City Development:
- Retrofitting Will Introduce Planning In An Existing Built-Up Area To Achieve Smart City Objectives, Along With Other Objectives, To Make

The Existing Area More Efficient And Livable.

- Redevelopment Will Effect A Replacement Of The Existing Built-Up Environment And Enable Co-Creation Of A New Layout With Enhanced Infrastructure Using Mixed Land Use And Increased Density.
- Greenfield Development Will Introduce Most Of The Smart Solutions In A Previously Vacant Area (More Than 250 Acres) Using Innovative Planning, Plan Financing And Plan Implementation Tools (E.G. Land Pooling/ Land Reconstitution) With Provision For Affordable Housing, Especially For The Poor.

3.10. India's Urban Water And Sanitation Challenges And Role Of Indigenous Technologies

India Is A Very Much Density Populated Country With Almost Population Of 134crore Approximately And Majority Of The Population Are Residing In Villages. Despites Of Having Various Facilities For Sanitation And Water Supply, Some Parts Of The Country Are Lack In Proper Supply Of The Water, People Had To Went To Well Or Hand Pumps In Order To Get The Water To Carry Out Their Various Domestic Purpose. Also Some Parts Of The Country Are Not Having Proper Drainage System, They Are Lacked Of Having Proper Sewer Line, Manhole, Various Biogas Plants, Water Treatment Plants, Maintenance Of Sewer Lines Due To Which They Have No Other Option To Carry Out They Daily Activities.

The Provision Of The Various Technologies Such As Water Treatment Plant With Technologies Like Water Filter Tanks, Aeration Tanks, Sedimentation Tank, Flocculation Tanks, Better Water Supply Pipes And Networks Increase The Quality Of The Water Supply. Also We Have Technologies In Sanitation Department Which Includes, Proper Underground Sewer Lines, Manholes, Facilities Of Public Toilets Etc.

• Indigenous Water Purification Technologies:

These Technologies Can Improve The Drinking Water Quality Of Smaller Villages As Well As Larger Cities. It Uses The Pressure Driven Membrane Processes. These Are Suitable For All Capacity Units E.G. They Are Adaptable From Household Level Unit Or Community Level Unit To Large Scale Unit. Water Purification Technologies Make Use Of The Nuclear Energy And Solar Energy Also.

• Environment Friendly Plasma Technologies:

Solid Waste Dumping Sites Or Landfill Sites Need More Amount Of Land Which Is Not Available In Urban Areas. Incineration Of Solid Waste Pollutes The Environment If The Incinerators Are Not Designed Or Operated Properly. Thermal Plasma Technology Is Ideally Suited For Waste Treatment. By Plasma Technology Hazardous & Toxic Compounds Are Broken Down To Elemental Constituents At High Temperatures; Inorganic Materials Are Converted To Vitrified Mass; And Organic Materials Are Pyrolysis Or Gasified, Converted To Flue Gases (H2 & CO) &Lower Hydrocarbon Gases When Operated At Low Temperature(500–600OC). Disposal Of Carcass Is Also Being Thought Of Using Plasma Pyrolysis.

• Role Of Environmental Isotope Techniques In The Water Resources Development And Management:

There Are Two Type Of Isotopes, Stable Isotopes And Radioactive Isotopes. Isotope Techniques Are Used To Find Out The Type Of Contamination In Surface Water And Ground Water, The Sources And Origin Of Contamination, Pollutant Dispersion In Surface Water Bodies, To Assess The Groundwater Salinity, To Assess The Changes Due To Long-Term Exploitation Of Groundwater, For Hydro-Chemical Investigation And To Carry Out Geochemical Evolution Of Ground water.

• The BARCUF Membrane Technology For Domestic Water Purifiers:

Water Filters Manufactured By Sondhka Based On Membrane Based Water Purification Technology Has Been Developed By BARC. Benefits Of BARC PolySulfone Membrane Are High Tech 0.02micron Or 20nm, Simple Form Factor, Rugged (Life Of More Than 1 Year) And Low Maintenance (About Rs. 500 Per Year). It Is Very Easy To Use And Very Low-Cost Solution For The Water Contamination.

• Deployment Of BARC Domestic Water Purifier In Rural Area Through AKRUTI Program:

Rural Human & Resource Development Facility Is Disseminating BARC Technologies, Namely Nisargruna Biogas, Soil Organic Carbon Testing Kit, Seed Bank, Domestic Water Purifier, Weather Forecasting, LLL, RIA, FSD, VTD; Under The AKRUTI(Advance Knowledge Of Rural Technology Implementation) Program. Activities Carried Out Under The AKRUTI Program Are Surveys For Safe Drinking Water, Interaction With The Villagers, Entrepreneurship Development For Domestic Water Purifier Production And Awareness Programs For Benefits Of Use Purified Water. RHRDF Has Also Launched A Scheme For Safe Drinking Water For Village Under CSR.

• Radiation Hygienization Of Municipal Sewage Sludge:

The Sewage Is The Waste Water Generated From Domestic Premises And Consists Mainly Of Human Waste. It Typically Contains 99.9% Water And About 0.1% Solid. The Solid Waste In Sewage Is Typically Organic In Nature And Is Broken Down In The Sewage Treatment Plants Resulting In Sewage Sludge As A Byproduct. In Radiation Hygienization Process Dry Sludge Generated At STP'S Is Hygienized Using Radiation Technology Using Standard Gamma Facility At A Dose Of 10 Kgs. Such Radiation Plants Are Operating In India For Sterilizing Medical Products.

3.11. Initiatives In Village Development By Local Self-Government

The Village Grampanchayat Has Taken Various Steps For The Betterment Of The Village Through Various Government Schemes And Raising The Funds From The Governments.

With The Help Of The Government The Village Had Developed Better And Sustainable Road Networks, Proper Drainage System, Proper Water Supply With RO Facilities, Sufficient Electric Supply, Better Infrastructure Facilities Etc. Also They Have Provided Bus Facility For The Village Peoples To Help Them In Travelling In Between Other Villages And Also Grampanchayat Has Provided More Than 140 Cctv Cameras in Village For The Safety Purpose.

- Financial Systems. Constraints On Government Budgets And The Rigidities Of The Present System Of Intergovernmental Transfers Prevent An Adequate Response Of Traditional Arrangements To The Challenge Of Urbanization. A New And More Decentralized System Of Public And Private Financial Intermediaries Will Be Required. The Establishment Of The NHB Represents An Important Step :An Apex Institution That Will Stimulate The Creation Of A Network Of Mortgage Financing. The NCU Also Calls For The Creation Of Urban Infrastructure Development Banks To Permit Local Governments To Borrow For Infrastructure.

- Non-Governmental Organizations. Given The Size Of The Job And The Difficulty Governmental Agencies Have In Dealing Directly In Some Aspects Of The Development Of Urban Areas (Eg, Stimulating Informal Sector Enterprise And Provision Of Shelter) There Is A Recognition Of The Need For New And Expanded Ngo’s To Assist In Facilitating The Urbanization Process.

3.12. Smart Initiatives By District Municipal Corporation:

The Village Grampanchayat Has Taken Initiatives For The Betterment Of The People Like, They Had Developed The 'Reverse Osmosis Plant', Which Provide Pure And Hygienic Water Supply And Also Provide Cool Water To The Every House Of The Village. The Village Has Also Developed Solid Waste Treatment Plant In Order To Use The Solid Waste For Various Purposes. The Village Has Also Adopted The Smarter Facilities Like CCTV Cameras, Speakers, Wi-Fi Connectivity.

3.13. Contributed Working By Government/NGO/Other Digital Country Concepts:

The S.B.I. Gives A Digital Banking To The Gram Panchayat.

Telecom Company Gives Internet On Reasonable Prices.

Some Donor Gives Money For The Village Development.

3.14. How To Implement Other Countries Smart Village Projects In Indian Village Context:

By Learning About Other Countries Village Situation We Can Make Some Report On It And Try To Implement That Facilities In Our Indian Village. By Learning About Problems Of Indian Village We Can Find Solution And After That We Have To Try To Solve That Problems.By Improving The Construction Technologies Of India.By Adopting The Best Ideas From The Other Countries Village. Try To Convince A Investor To Invest From Out Side Of India. By Hiring The Engineers And Staff From Foreign Countries.By Taking Concepts From Other Countries Village And Try To Convince The Indian Villager To Help In Development.

CHAPTER4. ABOUT VELANJA

4.1.INTRODUCTION

VELANJA is a Village In Kamrej Taluka In SURAT District Of Gujarat State, India. It Is Located 18 KM Towards South From District Head Quarters SURAT. 9 KM From Nearest Town kamrej. . Lilapur Pin Code Is 524103.Gram Panchayat Building Is In Good Condition. The Educational Status Of The People In The Of VELANJA Is So not Good, VELANJA Havn't School, But There Are Only 7th Std In The School. But There has No Water Supply, No Indoor Toilets. The Main Water Source Of The Village Is Bore Well Or Hand Pump.

The Main Source Of Income Is Farming.

Some People Are Also Doing The Job In Companies And Government Sectors. Some Are Having A Shops In Village

People With Various Casts Are Living Together In The Village.

Some Of The People Are Migrate To The City Area For The Better Future And Education.

The Population Of The Village Is 2550.

4.1.2.Study Justification/Need Of The Study

We Are As A Students Doing The Study About The Village 'VELANJA' To Understand The Infrastructural, Agricultural And Economic Condition Of The Village. Than After To Propose Some Ideas About Improving The Facilities In This Village And To Make Those Peoples Lives Easier To Live In.

4.1.3.Study Area (Broadly Define):

Study Area Mainly Includes The Study Of The Village VELANJA Which Is Located 18 KM Towards From District Head Quarters SURAT And 9 KM From The kamrej.

4.1.4.Objectives Of The Study

Following Are The Various Objectives Of The Study:

- To Provide Basic Physical Infrastructure – Water Supply, Transport, Sewerage And Solid Waste Management Should Be The Priority Focus And Be Provided.
- To Provide Insufficient Social Infrastructure Like Health And Education Facilities And To Ensure Proper Delivery Of Facilities To Village Dwellers.
- To Promote Integrated Development Of Rural Areas With Provision Of Quality Housing, Better Connectivity, Employment Opportunities And Supporting Physical And Social Infrastructure.
- Reduce Migration From Rural To Urban Areas Due To Lack Of Basic Services And Sufficient Economic Activities In Rural Areas.
- Electricity Connection Like Street Lighting That Is Energy Efficient And Eco-Friendly.
- Identification Of Sanitation Facilities That Need Improvement.

4.1.5. Scope of the Study:

- By Studying The Present Status And Techno-Economic Survey Of ‘VELANJA’ Village In SURAT District Of The Gujarat State In Terms Of Basic Services, Public Amenities, Other Infrastructural Facilities For The Need Of

the People And To Prepare A Report On The Expected Socio-Economic Growth Of The Area With The Consultation Of TDO, DDO And Sarpanch; Will help full in providing better facilities and services in Village.

- From the Gap analysis, Development Strategies For Village Development Will Be Proposed And Planning Proposals For Physical Infrastructure, Social Infrastructure And Renewable Energy Source Will Be Suggested For The Village. The Study Will Focus On The Development Of The Village.

4.1.6. Methodology Study/Frame Work:

- Firstly, We Studied What Are Various Objectives And The Need Of The Vishwakarma Yojana.
- Then We Completed Our Literature Review That Includes The Basic Definitions Of Rural Area, Urban Area, Rurbanisation, Sustainable Development Etc.
- We Also Visited An Ideal Village Named MUNJKA Which Is Also Located In The Taluka In RAJKOT District. There We Understood What Kind Of Facilities Are Required In The Village And How To Implement It.
- After This We Met Our Village Sarpanch, Talati Mantra And Other GramPanchayat Members.
- We Collected All The Required Data Related To The Various Facility And Completed Our Techno-Economic Survey And Smart Village Form.

4.1.7. Objects Related To Civil:

- To contribute to the development and maintenance of building and infrastructural facilities and systems, especially in the local and neighbouring regions.

- To making better infrastructure for the villagers.
- To improve the quality of the construction and also the development of the structure.
- To making their life smooth by making road networking and also try to connect them with the urban area.

4.2.VELANJA:

4.2.1.Study Area Location:

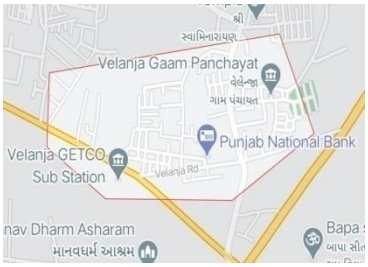

Figure 4.1 Study Area Location

Table4.Primary details of VELANJA village

COUNTRY	INDIA
STATE	GUJARAT
DISTRICT	SURAT
SUB-DISTRICT	KAMREJ
NEARESTTOWN	SURAT18KM
AREA	621.6hectares
GOVERNMENT	Gram Panchayat
POPULATION	2550
TIMEZONE	Ist(utc+5:30)
PINCODE	394150

4.2.2 Physical & Demographical Growth:

Table5. Physical & Demographical Growth

Particulars	Total	Male	Female
Total No.Of Houses	568	-	-
Population	2550	1327	1223
Child(0-6)	326	-	-
Literacy	79.50%	83.20%	75.45%
Total Workers	1174	822	352
Main Worker	1119	-	-
Marginal Worker	55	30	25

4.2.2.1 Physical Growth

- Primary School
- Water Tank
- Post Office
- Dairy

4.2.3. Brief History Of Village:

VELANJA is a large village located in Kamrej Taluka of SURAT district, GUJARAT with total 568 families residing. Velanja village has higher literacy rate compared to Gujarat. In 2011, literacy rate of Velanja village was 79.50%compared to 78.03% of Gujarat. In Velanja Male literacy stands at 83.20%whilefemaleliteracyratewas 75.45%.

As per constitution of India and PanchyatiRaaj Act, Velanja village is administrated by Sarpanch who is elected representative of village.

4.2.4.Economic Profile/Banks

About The Economic Profile Of This Village, Many Citizens' Work Interest Is Farming And Labor Work. The Village Doesn't Have Any Better Facilities Regarding Infrastructure But Has Good Electrification System Which Distributed 24*7 Hours For Domestic Use And 8 Hours For Agricultural Use. Village Does Not Have Good Drainage System Because There Is Open Drainage Etc. Dairy And Milk Production Is Also The Prime Source Of Income.

4.2.5. Actual Problem Faced By Villagers And Smart

Solution: PROBLEMS:

1. Transportations
2. Shortage Of Irrigation Water
3. Drainage System
4. Internal & External Road
5. Waste Collection
6. Rain Water Does Not Harvesting
7. Unemployment
8. Poor Infrastructure
9. Migration
10. Network Connectivity
11. Lack Of Awareness
12. Health Centre
13. Community Hall

14. School

15. Bus Station

SOLUTION:

1. Make A Better Transportations Facilities.

2. To Improve Irrigation Methods And Provide Sufficient Water.

3. Make A Proper Drainage System And Storage Of The Water.

4. Make A Bituminous Road For External Road ,And R.C.C. Roads For Internal Roads And Also Try Paver Blocks.

5. Make A Waste Collection System In Village And Try To Use That Wastage For Producing Electricity.

6. Make A Rain Water Harvesting And Try To Store Maximum Rain Water Which is Stored Properly

7. To Make A Home Industries For Prevent The Unemployment And Also Villagers can Earn The Money From It. So Their Economy Will Be Increase

8. Make A Good Infrastructure For The Village So Their Life Time Is Increase And Also It Will Be Long Lasting.

9. Make A Better Life Style For The Villagers To Prevent Migration.

10. Try To Make A Better Connectivity By Help Of Government Or A Telecom Company.

11. Try To Aware The Villagers By Posterring And Printed On The Walls.

12. Make A Primary Health Centre With The Sufficient Staff.

13. Make A Community Hall For Social Functions And Village Meetings

14. Make A Primary And Secondary Schools For The Children Of Villages
15. Make A Bus Station For Improving The Facility Of Transportation.
16. Aware The Villagers For The Usage Of The Smart Technologies And Better Knowledge.
17. Improving Agriculture Methods And Try To Make Better And Effective Farming.
18. Make A Gramin Bank For The Villagers To Improve Their Savings And Economical Status.

4.2.6. Social Scenario:

It Was Found That All The People Of This Village Are Not Very Much Connected With Today's Technology Environment Rather Than Their Main Major Working Area. The Major Crops Produced In The Village Are Cotton, Dangar, Wheat And Vegetables. The Major Population Is Get Income Through The Farming And Dairy There Are No Other Job Opportunities. The Education Is Limited To Primary School.

4.2.7. Base Location Map, Land Map ,Gram Tal Map:

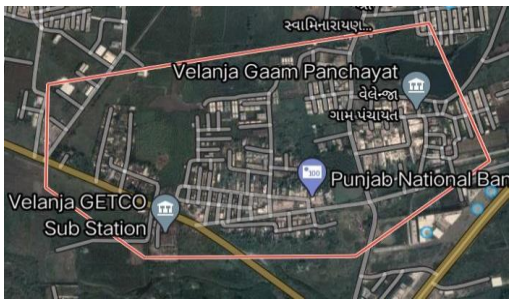

Figure4.3Satellite map of VELANJA villag

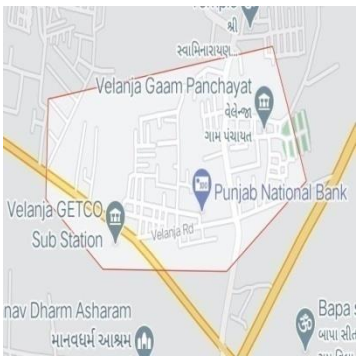

Figure4.2 Map of VELANJA village

4.2.8. Preservation Of Tradition, Festivals, Cuisine:

- By Promoting The Traditions Of The Village We Can Try To Make It Long Lasting.
- Make A Brief Report Or Stories On The Traditions, Festival And Cuisine.
- We Can Aware The Children And The Youth Of The Village By Telling Them About Their Traditions And Their Festivals.
- We Can Arrange The Functions And Programs On Their Traditional Festival
- We Can Also Do The Events And Competition In Their Cultural Festival
- We Have To Aware The People Which Are Living In The Urban Areas About Tradition Of The Village And Also About The Cuisine.
- We Have To Find The People Which Are Migrated From The Village And Try To Convince Them To Come And Participate In The Festivals.
- We Can Also Do A Stage Programme In The Urban Areas To Aware And Give Them Knowledge About Tradition Of The Village.
- By Using Smart Technology We Can Make It Viral To The Different Religions And Different Countries.
- We Have To Make It Interesting To The People For Preservation Of The Tradition, Festivals And Cuisine.

4.2.9. Reasons Of Migration / Trends Of Migration / Problems And Potentials Of Migrate:

Unemployment, poverty, for better health ,status for better education ,lifestyle ,etc.

4.3.Data Collection:

4.3.1.Methods For Data Collections:

There Is Not Any Specific Method About Collecting The Data For The Project But, There Are Several Methods That We Have Used For The Collection Of The Data

Which Includes,

- Data Collection By Visiting The Site
- By Referring Journals
- By Internet Search
- By Searching In Other Projects

4.3.2.Primary Survey Details:

VELANJA Is A Village In KAMREJ Taluka In SURAT District Of Gujarat State, India. It Is Located 18 Km From District Head Quarters SURAT. 9 Km From away from sub-district headquarter Kamrej. VELANJA Pin Code Is 524103.Gram Panchayat Building Is In Dead Condition. The Educational Status Of The People In The Of VELANJA Is So Good, VELANJA Have School, But There Are Only 7 th Std In The School. But There Are No Water Supply, No Indoor Toilets.The Main Water Source Of The Village Is Bore Well Or Hand Pump.

4.3.3.Average Size Of The House:

Average Size Of The House Is 318SqFt.

4.3.4. No Of Human Being In One House:

There Are 3-6 People In One House

4.3.5. Materials

The Materials Used Locally In VELANJA Is Brick, Cement, Aggregate Etc. Which Are Normally Common In Urban Areas. There Is Only 10 To 15PercentOf The Houses Which Are Built Of Earthwork.

4.3.6. Out Sourced Material:

The Outsourced Material Should Be Used In Villages Is Like Fertilizer, Steel, Cement, Aggregate Etc.

4.3.7. Any Costing:

Costing Will Be Shown In Latter Chapters

4.3.8. Geographical Details:

Table6:Geographical Details of VELANJA

Village Name	VELANJA
Taluka Name	KAMREJ
District	SURAT
Language	GUJARATI
Area	621.6hectares

4.3.9. Demographical Details

Table7.Demographical Details

Particulars	Total	Male	Female
Total No.Of Houses	568	-	-
Population	2550	1327	1223
Child(0-6)	326	166	160
Literacy	79.50%	83.20%	75.45%

4.3.10. Occupational Details:

VELANJA village had higher literacy rate compared to Gujarat. In 2011,literacy rate of VELANJA village was 79.50% compared to 78.03% of Gujarat. In VELANJA Male literacy stands at 83.20% while female literacy was75.45%.

4.3.11. Agricultural Details/ Organic Farming/Fishery:

In This Village There Are Some Normal Agricultural Crops Available But, There Is Not Any Organic Farming Or Fish Culture Available Here.

4.3.12. Manufacturing Hub/Ware Houses:

There Is No Manufacturing Hub In This Village But, There Are Few Ware Houses In This Village To Store Crops.

4.3.13. Tourism Cluster:

VELANJA Village Is Not A Part Of Any Kind Of Tourism Cluster.

4.3.14. Services Cluster:

There Is Not Any Service Cluster In Lilapur Village.

4.3.15. Male/Female Details:

Table8. Male/Female Details

Particulars	Total	Male	Female
Total No.Of Houses	568	-	-
Population	2550	1327	1223
Child(0-6)	326	166	160

4.3.16.Occupation Wise Detail:

Major Occupation Of Village People Is Agriculture.

- Agriculture–70%
- Milk Production-10%
- Daily Wages-20%

4.3.17. Physical Infrastructure Facility:

The Village Is Boon With The Following Physical Infrastructure Facilities

- Primary School (under construction)
- Water Tanks
- Open Drainage
- Panchayat Building Good Condition
- Milk Dairy

4.4. Infrastructure Details

4.4.1. Drinking Water:

For Drinking Purpose 1Elevated Water Tank, Sumps And Tube Well And Tap Water Available. Some People Also Use Hand Pump For Water Purpose.

Capacity : 10,00000

LitresHeight:20Meter

Figure 4.4 Watertank, velanja

4.4.2. Drainage Network:

There is good enough drainage system in VELANJA .

Figure4.5 Drainage System In VELANJA

4.4.3. Transportation & Road Network:

For Transport Network Railway Station, Available Within 19 Km In SURAT. Bus Station Is Not Available In VELANJA . Mainly People Use Local Transport Like Auto Rickshaw, Jeep, Chhakda Etc. Approach Road Of Village Is Bagodara Highway Is Bituminous Road. Main Road Of Village Is Bituminous. Internal Street Roads Are Not Available But Some Place Paver Blocks Are Fixed.

Figure 4.7 Housein VELANJA

Figure4.6 Road Network in VELANJA

4.4.4. Housing Condition:

There Are 568 Households In The Village. 70% Households Are Pucca And30% Are Kutcha. Some Of The Houses Have Number Plates On The Outside Wall.

4.4.5. Social Infrastructure Facilities:

Health:

There Is No Health Centre In Village. For Minor Dieses Villagers Have To Go To The SURAT Which Is 19 Km Away From The Village And For Major Dieses They Have To GoA District Head Quarter SURAT.

Education:

There Is A Primary School In The Village Which Has 7th Std. But Now A Days Because Of Poor Infrastructures it under construction.

Community Hall:

There Is No Community Hall.

Library:

There Is No Library in Village

4.4.6. Technology Mobile /WIFI/ Internet Usage Details In%:

Very Few Peoples Of VELANJA Is Aware Of Any Kind Of Mobile Technology And Internet Which Mostly Includes Youngsters.

4.4.7. Sports Activity As Gram Panchayat

There Is No Sports Activities Conducted Through Gram Panchayat.

4.4.8.1 Socio-Cultural Facilities

There Is No Social Cultural Facilities.

4.4.8.2 Public Garden/Park/Playground

Not Available

4.4.8.3 Other Recreation Facilities

Not Available

4.4.9. Other Facilities

Post Office, Shops, Panchayat Building, Agriculture And Milk Co-Operative Facilities Are Available.

4.4.10. Sustainable Infrastructure Facilities & Repair & Maintenance Of Existing Public Infrastructures:

• The Village Need A Gram Panchayat Building

• Solid Waste Management Plant Is Also Needed Because They Just Dumped The Waste On The Land And It Create Foul Environment.

• VillageNeedsBetterAndClosedDrainageSystem.TheyFlushAllTheSewageInto Water Bodies.

• Village Need A Bio Gas Plant So That Use Of Unconventional Fuel Is Reduced.

• Most Of The Roads Of The Village Is Kutcha Road So The Roads Is Very Damaged By Rainy Season So The Maintenance Of The Road Is Required.

Existing Condition Of Public Buildings:

There Is One Public Building In The Village Gram Panchayat Building And Its In Dead Condition. The Drainage Is Open And It Needs To Redesign. The Roads Need A Maintenance. There Is No Bus Stand.

Maintenance of existing Public Infrastructures

In The VELANJA Village There Are Few Structures Which Require Maintenance. School Building Flooring, Gram Panchayat Building, Temple, Post Office, etc.

4.4.11.Any Other Details

One Overhead Water Tanks Are Available And One Milk Dairy Is Available.

4.4.12.Renewable Energy Source Planning Particularly For Villages

Renewable Energy Plays An Important Role In Reducing Greenhouse Gas Emissions. When Renewable Energy Sources Are Used, The Demand For Fossil Fuels Is Reduced. Unlike Fossil Fuels, Non- Biomass Renewable Sources Of Energy (Hydropower, Geothermal, Wind, And Solar) Do Not Directly Emit Greenhouse Gases.

Solar Energy Is Commonly Used On Public Parking Meters, Street Lights And The Roof Of Buildings. Wind Power Has Expanded Quickly, Its Share Of Worldwide Electricity Usage At The End Of 2014 Was 3.1%. Most Of California's Fossil Fuel Infrastructures Are Sited In Or Near Low-Income Communities, And Have Traditionally Suffered The Most From California's Fossil Fuel Energy System.

These Communities Are Historically Left Out During The Decision-Making Process, And Often End Up With Dirty Power Plants And Other Dirty Energy Projects That Poison The Air And Harm The Area. These Toxicants Are Major Contributors To Health Problems In The Communities.

4.4.13. Irrigation Facility:

For Irrigation Purpose 60% Of The Farmers Are Depending On The Well And Rain Water. Canal Facility Is Available In The Village But Some Reasons Shortage Of Water Will Occur. Farmers Are Not Using Irrigation Technologies Like : Drip Irrigation, Sprinkle Irrigation.

4.4.14.Mahila Forum:

There Is No Any Mahila Forum In The Village.

4.4.15.Plantation For The Air Pollution:

In VELANJA Village The Plantation Are Done By Some Farmers For The Agricultural Purposes.

4.4.16.Rain Water Harvesting:

There Is Only Open Drain Channel So The Rain Water Is Not Harvesting Properly

4.4.17. Agricultural Development:

There Is No Agricultural Development.

4.4.18. Any Other:

Infrastructure Are Very Poor.

Basic Facilities Are Not Available.

Transportations Are Not Available Easily.

CHAPTER 5.Technical Options with Case Studies :(FOR ANY ONE TOPIC, Take a new concept design ,prototype model with actual costing):

5.1 Concept(Civil):

5.1.1. Advance Sustainable construction

India's construction sector is assessed at Rs.4000 billion or $100 billion. As a result of government spending, private investments as well as foreign direct investment, has made India number one of the top ten spending nations on construction in the world. We manufacture more than 250million tons of cement and are second only to China. A recent report "Global Construction 2020", estimates that India will be the third largest global construction market after China and USA. In order to improve the standard of living of her population, one of the key hurdles that faces today's India is to overcome the challenge of infrastructure bottle necks. Consequently the federal government has announced our 11th five years plan which allocates 9% of the GDP to infrastructure projects. The National Planning commission-an apex federal body has estimated an allocation of $515 billion which is equivalent to Rs.23 trillion to infrastructure sectors over the next five years. This includes construction of Roads, Highways, Airports, Bridges, Ports, Railways as well as water supply and sanitation amongst few others. The 12th five years plan projects an investment of10% of the national GDP into infrastructure which equatestoastaggering $1trillion or equivalently Rs.45trillion.

Drivers for Sustainability:

While India is preparing to tackle these growth plans with enthusiasm, it is imperative that the country should analysis and take into account the price that the future populations of the world and here will have to pay and the world in turn will have to pay, should this unprecedented growth take place without adequate thought to sustainability. Should we consume all our energy, materials, water resources without considering for the needs of our children and grandchildren, the future of the world and our nation is at peril. Obviously GHG emissions, climate change and sustainability are at stake. It is estimated that GHG emissions would increase from 2 billion tons to 6-7 billion tons of CO2 in 2030.

Some of us may question why India must slow down her pace of development and pay for the sins of already developed and industrialized Western nations. Clearly, the OECD or the industrialized countries must take the lead in mitigating climate change, reducing greenhouse gas emissions, but also large developing countries such as India and China will also have to start to reduce their emissions over the next 20 to 30 years if we truly want to give our children a chance at a future. Developing countries with large emissions should have some responsibility, although differentiated and different from the industrialized world. While sustainable practices and products may be slightly un intuitive and perceived as counter productive to the growth of GDP in the short-term, in the long- term, the future growth of the country depends on it. Growth that is not sustainable is not true growth.

Recommendations:

In mapping out sustainable practices that India must adopt a "cradle to grave" analysis is required. And for this we need to have a total approach than a patch work point system or a grade based certification system. In order to have a comprehensive plan for sustainable construction, every structure may be thought about based on the following parameters:

- Planning, design and specifications based on performance and service life
- Construction Practices
- Material Conservation and Selection
- Demolition and recycling
- Energy Conservation

1. Planning, Design and Specifications:

Structures in India are designed well however so far in most specifications, there is no reference to any service life or calculations there of. To this effect, deeper study of various service life prediction models and calculations are essential. Specifications must to be performance based as opposed to their present form of being prescription based.

2. Construction Practices:

It is acknowledged that wastage in the construction industry is as high as30%. That means at current valuation, we are talking about wastage to the tune of Rs.1200 billion or $27 billion in India. This is in itself a large, yet relatively simple and straight forward challenge to tackle. These wastages are activities that absorb resources, man hour sand materials but create no value. Most developed countries have different forums / institutes /researchers / academic institutions for seeking solutions to mitigate these wastages and lean construction practices that emerged have yielded encouraging. Lean construction is a "way to design production systems to minimize waste of materials, time and efforts in order to generate the maximum possible value". While some novel initiatives are being taken in some parts of India to adopt leaner construction practices, India does not have a fully focused lean construction forum. Creation of an industry consortiumorlean construction forum may be a good beginning.

3. Material Conservation and Selection:

Concrete is the largest synthesized material which has a per capita consumption of 1.5 tons per annum in India. Presence of concrete is all pervading simply because it has the capacity to utilize locally available ingredients, develop adequate engineering properties for a variety of applications, easily adapt to any shape and size and has comparatively low initial and maintenance costs. While concrete not be as big of an energy consumer as structural steel, aluminum and glass; concrete and particularlycement still remains a major energy 'sink' due to its sheer volume of production and also environmentally unsustainable due to large quantities of CO2 evolution associated with its manufacture. Raw materials forcement manufacture include non-renewable natural resources like limestone, aggregates, manufactured sands (fine aggregates), and so on. Hence the Indian concrete Industry needs to take a fresh look at these challenges.

Some of the problems faced by Indian concrete industry towards achieving sustainability in concrete utilization areas follows:

Increase the use off lyash and other cement substitutes; Use of manufactured sand ; Use of light weight aggregates

4. Demolition and Recycling:

In India, the use of recycled aggregates has not been adequately explored. Reportedly, the construction and demolition waste has substantially increased as new super structures are being built on land after tearing down the smaller structures that previously existed. It is estimated that the construction industry in India generates about 10-12 million tons of waste annually. Projections for building materials requirement of the housing sector indicate a shortage of aggregates of about 55,000 million cu. m. An additional 750 million cu.m. of aggregates would be required for achieving the targets of the road sector. Recycling of aggregate material from construction and demolition waste may reduce the demand-supply gap in both these sectors. There is also an increasing-acute shortage of dumping grounds and landfills particularly in metropolitan cities. SERC, Ghaziabadhad taken up a pilot R&D project on Recycling and Reuse of Demolition and Construction Wastes in Concrete for Low Rise and Low Cost Buildings in mid-nineties with the aim of developing techniques/methodologies for use of recycled aggregate concrete in construction. The experimental investigations were carried out in Mat Science laboratory and Institutes around Delhi/GZB to evaluate the mechanical properties and durability parameters of recycled aggregate concrete made with recycled coarse aggregate collected from different sources. Also, the suitability in construction of buildings has been studied.

5. Energy Conservation:

Since sources of good quality, aggregates are fast depleting, the concrete industry in India needs to prepare itself to use locally available 'marginal' aggregates. The use of local materials helps reduce the carbon foot print associated with transport. Thus, from sustainability angle, the emphasis should be placed on using locally-available aggregates, even if there are small deficiencies in their quality. It has been amply demonstrated that desired properties of concrete can be obtained by intelligent blending of available aggregates with crushed sand, inert fillers, supplementary cementitious materials and chemical admixtures. Another important issue is that river sand and other construction materials are usually transported by road. India has a well-developed and efficient rail and water transport system that need to be leveraged by the construction industry. This is not only more sustainable option but also most cost effective.

Conclusion:

➢India is an astoundingly growing economy and hence the pressure on the use of natural resources is very heavy.

➢Though the durability is understood to a point there almeaning and importance of sustainability is not fully comprehended by engineering fraternity as well as planners.

➢Some sporadic efforts are carried out in the form of very repetitive academic experimentation; however, these efforts are in extreme primitive conditions.

➢Industry has no to pened to this "Sustainability aspect" proactively as they are busy joining the band wagon of growth machine.

➢Federal authorities also are not well informed and hence not equipped to adopt 'Sustainability initiative'.

➢Also use of renewable energy and resources is not much sought after option and not given due importance as the initial costs are high.

➢At the same time, there is definite internal feeling in all that something is definitely needed to be done for next generation. Typically not to leave them with depleted resources.

➢At the behest of ACI international – India Chapter of ACI has organized couple of international conferences on sustainability along with the help of other organizations and Institutions.

➢But these for to create and spread awareness should be all pervasive. The proactive participation of all the institutions, professional bodies, academicians, industry as well as firm patronage and participation of government is extremely essential.

➢'LeanConcrete'and'ReduceWastage'initiativesintheindustryareverynece ssary.

➢India chapter of ACI has decided to take the lead role in this initiative by forming "JSI" like efforts in India. It was suggested by late President DickStehly to the chapter after he witnessed the capability of chapter to galvanize the support and participation of many in the recent international conference on "Sustainability".

5.1.2. Soil Liquefaction:

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

In soil mechanics, the term "liquefied" was first used by Allen Hazen in reference to the 1918 failure of the Calaveras Dam in California. He described the mechanism of flow liquefaction of the embankment dam as: If the pressure of the water in the pores is great enough to carry all the load,it will have the effect of holding the particles apart and of producing a condition that is practically equivalent to that of quicksand… the initial movement of some part of the material might result in accumulating pressure, first on one point, and then on another, successively, as the early points of concentration were liquefied.

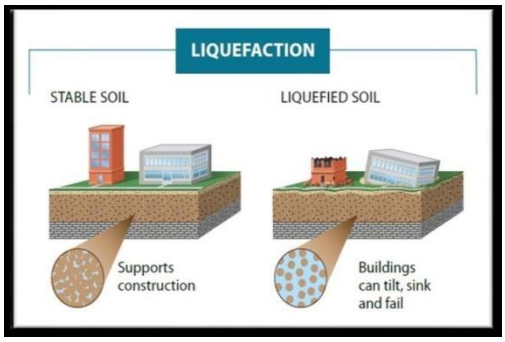

Figure 5.1 soil liquefaction

Type of soil causes liquefaction : Poorly drained fine-grained soils such as sandy, silty, and gravelly soils are the most susceptible to liquefaction.

5.1.3. Sustainable Sanitation:

Sustainable sanitation is a sanitation system designed to meet certain criteria and to work well over the long-term. Sustainable sanitation systems consider the entire "sanitation value chain", from the experience of the user, excreta and wastewater collection methods, transportation or conveyance of waste, treatment, and reuse or disposal.

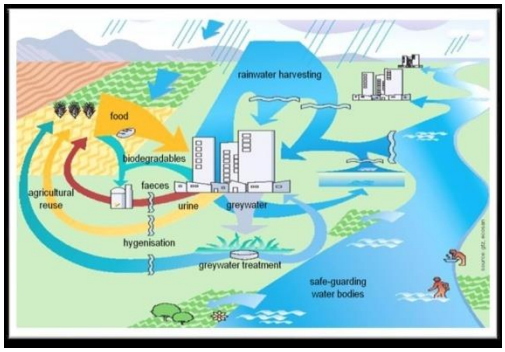

Figure 5.2 sustainable sanitation

The Sustainable Sanitation Alliance (SuSanA) includes five features (or criteria) in its definition of "sustainable sanitation": Systems need to be economically and socially acceptable, technically and institutionally appropriate and protect the environment and natural resources. The purpose of sustainable sanitation is the same as sanitation ingeneral :to protect human health.However, "sustainable sanitation" attends to all processes of the system: This includes methods of collecting, transporting, treating and the disposal (or reuse)of waste.

5.1.4. Transport Infrastructure/system:

Transport infrastructure consists of the fixed installations necessary for transport and includes roads, railways, airways, waterways, and terminals.

Transport is vital to the well-functioning of economic activities and a key to ensuring social well-being and cohesion of populations. Transport ensures everyday mobility of people and is crucial to the production and distribution of goods. Adequate infrastructure is a fundamental precondition for transport systems. In their endeavour to facilitate transport, however, decision-makers in governments and international organizations face difficult challenges. These include the existence of physical barriers or hindrances, such as insufficient or inadequate transport infrastructures, bottlenecks and missing links, as well as lack of funds to remove them. Solving these problems is not an easy task. It requires action on the part of the governments concerned, actions that are coordinated with other government sat international level.

5.1.5. Vertical Farming:

Vertical farming is the practice of growing crops in vertically stacked layers. It often incorporates controlled-environment agriculture, which aims to optimize plant growth,and so illessfarming techniques such as hydroponics, aquaponics, and aeroponics. Some common choices of structures to house vertical farming systems include buildings, shipping containers, tunnels, and abandoned mine shafts. As of 2020, there is the equivalent of about 30 ha (74 acres) of operational vertical farmland in the world. The modern concept of vertical farming was proposed in 1999 by Dickson Despommier, professor of Public and Environmental Health at Columbia University. Despommier and his students came up with a design of a sky scraper farm that could feed 50,000 people. Although the design has not yet been built, it successfully popularized the idea of vertical farming. Current applications of vertical farming coupled with other state-of-the-art technologies, such as specialized LED lights, have resulted in over10 times the crop yield than would receive through traditional farming methods. The main advantage of utilizing vertical farming technologies is the increased crop yield that comes with a smaller unit area of land requirement. The increased ability to cultivate a larger variety of crops atonce because crops do not share the same plots of land while growing is another sought-after advantage. Additionally, crops are resistant to weather disruptions because of their placement indoors, meaning less crops lost to extreme or unexpected weather occurrences. Because of its limited land usage, vertical farming is less disruptive to the native plants and animals, leading to further conservation of the local flora and fauna.

Vertical farming technologies face economic challenges with large start-up costs compared to traditional farms. In Victoria, Australia, a “hypothetical10 level vertical farm” would cost over 850 times more per cubic meter ofdarable land than a traditional farm in rural Victoria. Vertical farms also face large energy demands due to the use of supplementary light like LEDs.

Moreover, if non-renewable energy is used to meet these energy demands, vertical farms could produce more pollution than traditional farms or greenhouses.

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

Mechanism : In the case of Reinforced concrete structure the ingress of moisture or air may lead to corrosion of steel, cracking and spalling of the concrete cover there by reducing durability of the concrete structure.
Repair has been suggested as the protective solution for damaged structure due to corrosion. Corrosion of reinforcing steel is a significant economic and safety problem, preventing many buildings from attaining their design life. It is now a must look into field as corrosion of reinforcing steel is seen almost in every 10outof 100constructions with in a life of 10years.

Nowadays the increase content of pollutants in the city atmosphere has very much affected the life span of RCC structures.The increased content of pollutants include a very high rates of Sulphates and Chlorides which whenthese mixes with rain water and falls over these structures and dam.

Prevention: Corrosion of steel in reinforced concrete structures can be divided into four different categories, based on how they provide protection:
ages the visible parts.

1) Alternative reinforcement and slab design method includes materials that electrically isolate the steel from the concrete and create a barrier for chloride ions, materials that protect steel galvanic-ally, and materials that have significantly higher corrosion thresholds than conventional reinforcing steel. Concrete slabs have been designed without any internal reinforcement.

2) Barrier methods protect reinforced concrete from corrosion damage by preventing water, oxygen, and chloride ions from reaching there inforcement and initiating corrosion.

3) Electrochemical methods use current and an external anode to protect the reinforcement, even when the chloride ion concentration is above the corrosion threshold.

4) Corrosion inhibitors offer protection by raising the threshold chloride concentration level, by reducing the permeability of the concrete, or by doing both.

5.1.7. Sewage treatment plant:

Sewage treatment plant is a plant where waste water is treated. Sewage treatment is the process of removing contaminants from municipal wastewater, containing mainly household sewage plus some industrial wastewater. Physical, chemical, and biological processes are used to remove contaminants and produce treated wastewater (or treated effluent)that is safe enough for release into the environment.

A by-product of sewage treatment is a semi-solid waste or slurry, called sewage sludge. The sludge has to undergo further treatment before being suitable for disposal or application to land. Sewage treatment may also be referred to as wastewater treatment. However, the latter is a broader term that can also refer to industrial wastewater. For most cities, the sewer system will also carry a proportion of industrial effluent to the sewage treatment plant that has usually received pre-treatment at the factories to reduce the pollutant load. If the sewer system is a combined sewer, then it will also carry urban runoff(storm water)to the sewage treatment plant.

Sewage water can travel towards treatment plants via piping and in a flowaided by gravity and pumps. The first part of the filtration of sewage typically includes a bar screen to filter solids and large objects that

Are then collected in dumpsters and disposed of in landfills. Fat and grease are also removed before the primary treatment of sewage.

The term "sewage treatment plant" (or "sewage treatment works" in some countries) is nowadays often replaced with the term wastewater treatment plant or wastewater treatment station. Sewage can be treated close to where the sewage is created, which may be called a "decentralized" system or even an "on-site" system (in septic tanks, biofilters or aerobic treatment systems). Alternatively, sewage can be collected and transported by a network of pipes and pump stations to a municipal treatment plant. This is called a "centralized" system (see also sewerage and pipes and infrastructure).

5.1.8. Technical Case Study On "SARDARSAROVAR DAM"

Sardar Sarovar Dam (SSD), on the Indian Narmada river, is located in the village of Kevadia in the state of Gujarat. It is one of the largest and most controversial interstate, multipurpose river valley infrastructure development projects in the country. The Sardar Sarovar Project (SSP) also consists of auxiliary worksanda1,450MWpowercomplex.

SSP was estimated to have cost INR400bn ($8bn)in 2010-2011, revisedfrom the initial estimate of INR64bn ($1.25bn) in 1988. It is part of the Narmada Valley Development Project, a major plan to generate power and supply water for drinking and irrigation to states of Gujarat, MadhyaPradesh and Maharashtra.The scheme was conceived by the late Sardar Vallabhbhai Patel in 1946-1947. It envisages the construction of 30 major dams, 135 medium and3,000 smaller dams along the river, with SSD being the largest of them all. They are expected to generateabout4,000MWof power in total.

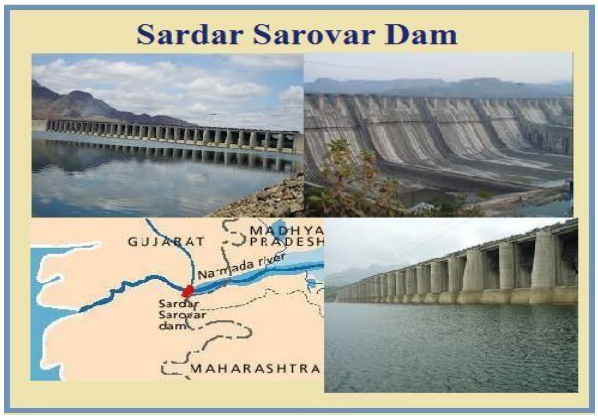

Figure 5.3 SARDAR sarovar dam

History:

The foundation stone of the project was laid out by Prime Minister Jawaharlal Nehru on 5th April 1961. The project took form in 1979 as part of a development scheme funded by the WorldBank through

Their International Bank for Reconstruction and Development, to increase irrigation and produce hydro electricity, using a loan of US$200million.

The construction for dam begun in 1987, but the project was stalled by the Supreme Court of Indiain1995in the back drop of Narmada Bachao Andolan over concerns of displacement of people. In2000–01 the project was revived but with a lower height of 110.64 metres under directions from SC, which was later increased in 2006 to 121.92meters and 138.98 meters in 2017.[4]The dam was inaugurated in 2017 by Prime minister Narendra Modi.[5]The water level in the Sardar Sarovar Damat Kevadia in Narmada district reached its highest capacity at **138.68metres** on 15 September 2019.

Design:

The dam irrigates 17,920 km^2(6,920 sq mi) of land spread over 12 districts, 62 talukas and 3,393 villages (75% of which is drought-prone areas) In Gujarat and 730 km^2 (280sqmi) in the arid areas of Barmer and Jalore districts of Rajasthan. The dam also provides flood protection to riverine reaches measuring 30,000 ha (74,000 acres) covering 210 villages and Bharuch city and a population of 400,000 in Gujarat.- Saurashtra Narmada Avtaran Irrigationis a major program to help irrigate a lot of regions using the canal's water.

Funding:

The project took for min 1979 as part of a development scheme funded by the World Bank through their International Bank for Reconstruction and Development, to increase irrigation and produce hydro electricity, using a loan of US$200 million.

Construction:

SARDAR SAROVAR DAM:

Plans for the dam projects in the Narmada basin were initiated in 1946. The SSP project has been under constant criticism since its early stages. Its construction was halted several times due to court stay orders and oppositions.

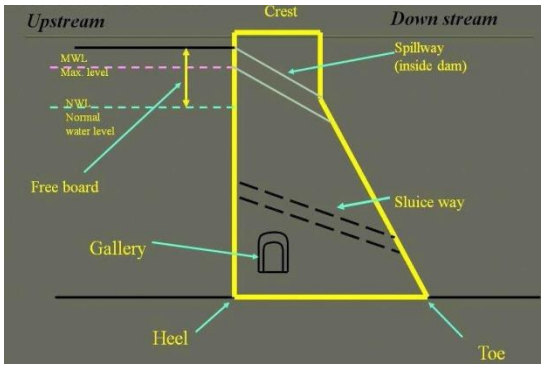

Figure 5.4 Sardar sarovar dam plan

SARDARSAROVAR DAMCOST:

SSP was estimated to have cost INR400bn ($8bn)in 2010-2011, revised from the initial estimate of INR64bn ($1.25bn) in 1988. It is part of the Narmada Valley Development Project, a major plan to generate power and supply water for drinking and irrigation to states of Gujarat, Madhya Pradesh and Maharashtra.

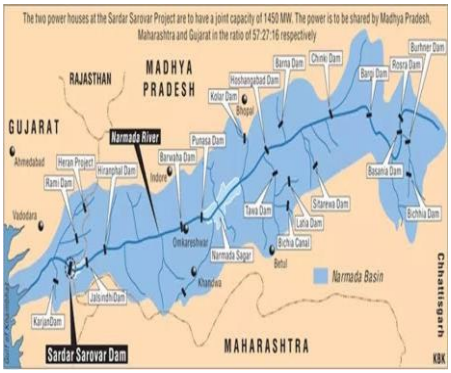

Figure 5.5 plan

SARDAR SAROVAR DAM Architect:

Construction was halted as per the Supreme Court's stay in May 1995. It resumed in February 1999 and the dam's height was increased from the

planned 80m to 88m. The Court allowed the increase of the dam's height to 90m in October 2000, but ordered adherence to the rehabilitation and resettlement issues. The dam's height was increased to 110.6m with the approval from Narmada Control Authority, in June 2004. It was further raised to its current 121.9m height in December2006.

Features:

The dam irrigates 17,920 km^2(6,920 sq mi) of land spread over 12 districts,62talukas,and3,393 villages (75%of whichis drought-proneareas) In Gujarat and730km^2(280sqmi) inthe aridareas of Barmer and Jalore districts of Rajasthan. The dam also provides flood protection to riverine reaches measuring 30,000 ha (74,000 acres) covering210villages and Bharuch city and a population of 400,000in Gujarat.[13]Saurashtra Narmada Avtaran Irrigationis a major program to help irrigate alot of regions using the canal's water.

The dam is one of India's most controversial, and its environmental impact and net costs and benefits are widely debated.[15][16][17]The World Bank was initially funding SSD, but withdrew in 1994 at the request of the Government of India when the state governments were unable to comply with the loan's environmental and other requirements.[18]The Narmada Dam has been the centre of controversy and protests since the late 1980s.[19]

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Issues faced during the construction:

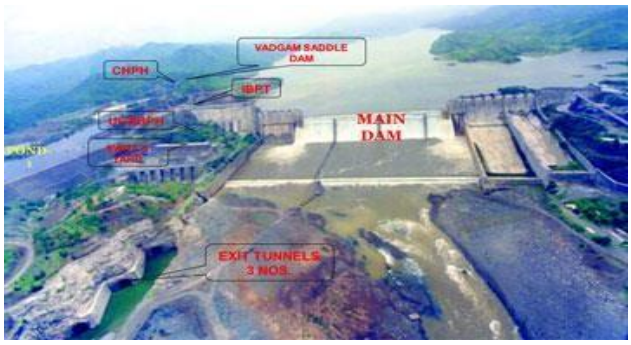

Figure 5.6 dam layout

One such protest takes centre stage in the Spanner Films documentary *Drowned Out*(2002), which follows one tribal family who decide to stay at home and drown rather than make way for the Narmada Dam.[20]An earlier documentary film is called *A Narmada Diary*(1995) by Anand Patwardhan and Simantini Dhuru. The efforts of Narmada BachaoAndolan("Save Narmada Movement") to seek "social and environmental justice" for those most directly affected by the Sardar Sarovar Dam construction feature prominently in this film. It received the (Filmfare Award for Best Documentary-1996).


Figure 5.7 dam

Recent News on SARDAR SAROVAR DAM:


Figure 5.8 flow of dam water

- In October 2000 again, in a 2-to-1 majority judgment in the Supreme Court, the government was allowed to construct the dam upto 90m(300ft).[10]
- In May 2002, the Narmada Control Authority approved increasing the height of the dam to 95 m (312ft).
- In March 2004, the Authority allowed a 15 m (49 ft) height increase to 110 m(360ft).
- In March 2006, the Narmada Control Authority gave clearance for the height

- of the dam to be increased from 110.64 m (363.0 ft) to 121.92 m (400.0 ft).This came after 2003 when the Supreme Court of India refused allow the height of the dam to increase again.
- In August 2013, heavy rains raised the reservoir level to 131.5 m (431 ft),which forced7,000 villagers upstream along the Narmada River to relocate.[24]
- On June 2014, Narmada Control Authority gave the final clearance to raise theheightfrom121.92m(400.0ft) metres to138.68m(455.0ft)[25]
- The Narmada Control Authority decided on 17 June 2017 to raise the height of the Sardar Sarovar Dam to its fullest height 163-meter by ordering the closure of 30Gates

Chapter6.Swachh Bharat Abhiyan(Clean India):

Swachh Bharat Mission (SBM), Swachh Bharat Abhiyan (SBA), or CleanIndia Mission

It is a country-wide campaign initiated by the Government of India in 2014 to eliminate open defecation and improve solid waste management(SWM).Phase1 of the mission lasted till October2019.Phase2 will be implemented between2020-21and 2024-25.

Initiated by the Government of India, the mission aimed to achieve an"open-defecation free" (ODF) India by 2 October 2019, the 150th anniversary of the birth of Mahatma Gandhi. The objectives of the first phase of the mission also included eradication of manual scavenging, generating awareness and bringing about a behavior change regarding sanitation practices, and augmentation of capacity at the local level. The second phase of the mission aims to sustain the open defecation free status and improve the management of solid and liquid waste. The mission is aimed at progressing towards target 6.2 of the Sustainable Development Goals Number 6 established by the United Nations in2015.

The campaign's official name is in Hindi. In English, it translates to "Clean India Mission". The campaign was officially launched on 2 October 2014 at Rajghat, New Delhi by Prime Minister Narendra Modi. It is India's largest cleanliness drive to date with three million government employees and students from all parts of India participating in 4,043 cities, towns, and rural communities. At a rally in Champaran, the Prime minister called the campaign Satyagrah se Swachhagrah in reference to Gandhi's Champaran Satyagraha launched on 10 April 1916. The mission was split into two: rural and urban. In rural areas "SBM - Gramin" was financed and monitored through the Ministry of Drinking Water and Sanitation; whereas "SBM – urban "was over seen by the Ministry of Housing and Urban Affairs.

As part of the campaign, volunteers, known as Swachhagrahis, or"Ambassadors of cleanliness", promoted indoor plumbing and community approaches to sanitation (CAS) at the village level. Other activities included national real-time monitoring and updates from non-governmental organizations (NGOs) such as The Ugly Indian, Waste Warriors, and SWaCH Pune(SolidWaste Collection and Handling).

The government provided subsidy for construction of nearly 110 million toilets between 2014 and 2019, although many Indians especially in rural areas choose to not use them. The campaign was criticized for using coercive approaches to force people to use toilets. Many households were threatened with a loss of benefits such as access to electricity or food entitlements through the public distribution system.

6.1. Swachhta needed in VELANJA village -Existing Situation with photograph:

We have done one survey on existing condition of village regardingswachhta.Thepeoplearemaintainingcleanlinessofthevillagebutinsomestreets there is no swachhata because there are animal and their waste ,mud, etc. The village pond has to need a proper maintenance. Other than these the reare clean streets, main road and approach road.

6.2. Guidelines - Implementation in VELANJA village withPhotograph:

According to Talati, Sarpansh and villagers, the people are cleaning their nearby area regularly and collect that waste and dispose it to out of the village and burn it. No daily basis waste collection is there in the VELANJA village.

6.3. Activities Done by Students for VELANJA village:

Figure 6.1 swachta abhiyan

Firstly we took a permission from village Talati and Sarpanch for doing one Swachhta awareness camp and then we have done one activity of swachhta awareness in the village and we have done an interaction with villagers and aware them about the importance of swachhta in our life and told them to keep the village and infrastructure clean and safe. We have also done a cleaning of village street. We have suggested them for not dumping the waste in village streets and dispose It at right place.

Figure 6.2 swachta abhiyan 1

So that we have also propose done design of Solid Waste Management as part 2 design in the VELANJA village.

Figure 6.3 Photos of village streets

Chapter7.Village condition due to Covid-19:

With respect to COVID 19 pandemic, Ministry of Panchayati Raj, Government of India in close collaboration with State Governments has taken various initiatives. Close consultation and guidance of the State as well as District authorities is being maintained to ensure that lock down conditions are not violated and norms of social distancing are scrupulously followed to contain the spread of the disease. India has overtaken Brazil and become the second-worst affected country in the world by the corona virus pandemic, with more than 4 million cases. COVID-19 had mostly remained in India's cities, but the disease is now spreading to rural India – an area with over 850 million people and far worse healthcare. The reason for this shift appears to be migrant workers who have been returning to their villages since lockdown was eased at the end of June. The medical response to stop the spread and treat those infected has been inadequate, according to media reports. With one trained doctor for every 1,497 people, against the World Health Organization recommended one per 1,000, and public health expenditure for 2018 at just 1.3% of GDP, India faces an uphill struggle in dealing with the pandemic. While two-thirds of India's population lives in rural areas, there are almost four times as many health workers per person in cities. Most rural communities rely on untrained health workers. Over two-thirds of these rural health providers have no formal medical training, but remain the only option of medical support for most of the rural population.

7.1 Taken steps in VELANJA village related to existing situation with photograph:

During interaction with the Talati, he told us that quarantine place and home quarantine facility were implemented during the lockdown.
According to Talati, Sarpanch and villagers ; in the VELANJA village the sanitization process was done during the lockdown period when first case of covid19 came in the village.

Figure 7.1 quarantine center

CHAPTER-8.Sustainable Design Planning Proposal (Prototype Design) -Part-I (Scenario / Existing Situation / Proposed Design In AutoCad /Recapitulation Sheet /Measurement Sheet /Abstract Sheet/Sustainability Of Proposal):

In Our Allocated Village “VELANJA” There Is No Infrastructure Development And Also There Is No Any Public Buildings For The Villagers.The Village Has Not Even A Bus Station For The Busses So That’s Why There Is No Any Transportations Facilities Like State Transport. In That Village There Is No Any Public Garden For The Villagers To Seat And Also There Is No Any Play Ground For The Children Also The Village Has Not A Proper Infrastructure Or Building For The School And Also There Is No Any Community Hall For The Purposes Of The Social Functions And Also For The Meetings Of Villagers. VELANJA Has Not A Primary Health Center For The Primary Treatment Of The Villagers. Gram Panchayat Is Also In The Dead Condition. So In The Village The Infrastructure Is Very Poor That’s Why We Suggest Or We Propose Some Designs For The Village.

8.1. Proposed Design:

1. Solid waste management

2. Eco sanitation toilet

3. School canteen

4. Garden

8.2. Recommendations Of The Design:

• There Is No Bus Station For The Transportation Service

• There Is No Primary Health Center For The Villagers.

• There Is No Any Community Hall For The Social Functions And Meetings.

• Infrastructure Are Very Poor.

• Gram Panchayat Is Also In Dead Condition.

• There Is No Any Rain Water Harvesting System.

• There Is No Any Public Garden For The Villagers And Also There Is No Any Children Play Ground.

• There Is Some Roads Are Very Damaged And Also They Are Full Off Water In Rainy Weather So We Can Construct The Roads.

8.3. Suggestions/Benefit Of The Villagers:

• By Making The Bus Stand The Transportation Facility For The Public Is Increased

• By Making A Primary Health Center We Can Increase The Health Status Of The Villagers.

• By Making A Community Hall We Can Increase Sociality In The Villagers.

• By Making A Rain Water Harvesting System We Can Stored The Water And Solve The Problems Of The Villagers Which Are Related To The Water.

• By Making The Public Garden And Children Play Area We Can Make A Better Environment For The Village.

• By Making The Roads We Can Improve The Transportations System For The Villagers.

8.4.Sustainable design

8.4.1 solid waste management

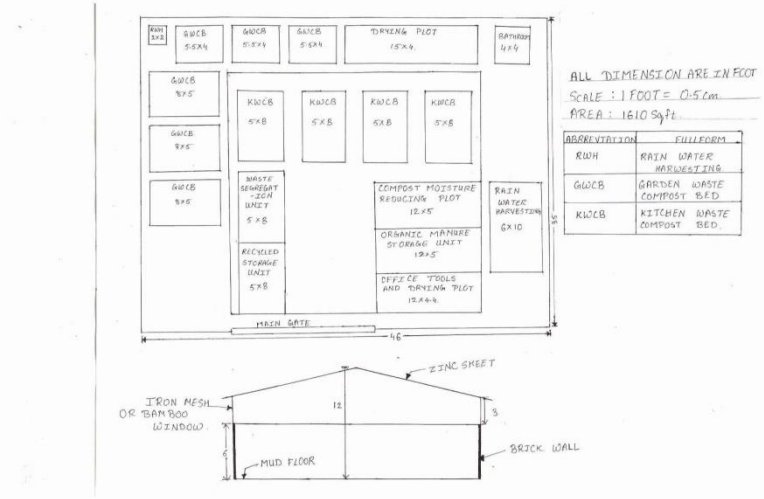

Fig-8.1 Sketches for solid waste management

There is large amount of solid waste is produced every day and it is not disposed properly. As there is no facility to dispose waste so the villagers use to throw it all over roads which makes village filthy and unhygienic situations are created. Solid waste management is good option to dispose organic and kitchen waste and it also generates employment opportunities in village.

◊ Recapitulation Sheet

SOLID WASTE MANAGEMENT, VELANJA,SURAT		
CIVILENGINEERINGDEPARTMENT		
1	TOTALCOSTOFCIVILWORK	Rs.92943
2	ADD WATER AND SANITARY WORK @10%	Rs.9294
3	ADD5%CONTINGENCYCHARGES	Rs.4647
4	ADD2%WORKCHANGEESTABLISHMENT CHARGES	Rs.1859
5	ADD7%ELECTRIFICATION	Rs.6506
6	ADD5% OF 5	Rs.325
	Grand Total	**Rs1,15,574**

◊ Measurement Sheet

Item no	Description Of item	No	length	width	Depth	quality	Total Quantity
	BRICK WORK						
	FOR INSIDE WALL						
1	Long wall	2	9.35	.20	1.83	6.85m3	
2	Short wall	2	7.82	.20	1.83	5.72m3	
	FOR RAIN WATER HARVESTING						
3	Long wall	2	3.05	.20	1.83	2.23m3	
4	Short wall	2	1.83	.20	1.83	1.34m3	
	FOR BATHROOM						
5	Long wall	4	1.22	.20	1.83	1.79m3	
							17.93m3
6	ROOF	8	4	2.48		79.36m3	79.36m2

◊ Abstract Sheet

Item No.	Description of item	Quantity	Rate	Per	Amount
1	Bricks	8965	3.5	no	31,378
2	Cement	22	325	Bag	6902
3	Sand	13.80	500	Ttone	11951
4	Woodwork	Lumsump	5000	-	7000
5	Roof Material	79.36	480	m2	35712
	TOTAL				**RS92943**

◊ Details of income and expenditure

INCOME	RS.	EXPENDITURE	RS.
Waste collection Fees From houses @Rs. 30/monthin1200 houses:	36,000	Honorarium for The volunteers(SHGs) @ Rs.3000/month for 20 members:	60,000
Waste collection Fees From shops @Rs. 40/monthin30 shops:	1,200	All basic needs for works @ Rs.150/month per worker:	3,000
Private and Government Offices @Rs. 150/month for10 establishments:	1,500	Honorarium for Project incharge:	6,000
Income from compost:	30,000	Other expenditures:	1,000
Income for recyclables:	5,000	----- ---	
Total	**73,700**	**Total**	**70,000**

8.4.2. Eco Sanitation toilet:

In our village VELANJA It is not available in most of the houses. About 45% of houses have toilets in their houses with septic tank and soak pit as there are sanitary fittings and pipelines are in worst condition. Also waste management facility is not existent. Personal toilets are not present in every house nor is there any provision of public toilets.

◊ Proposed

As per the requirements 20 toilet blocks should be provided for the villagers at different places every villagers can easily use it.

The design, specifications and dimensions for the proposal of eco sanitation toilet is shown in figure and table below:

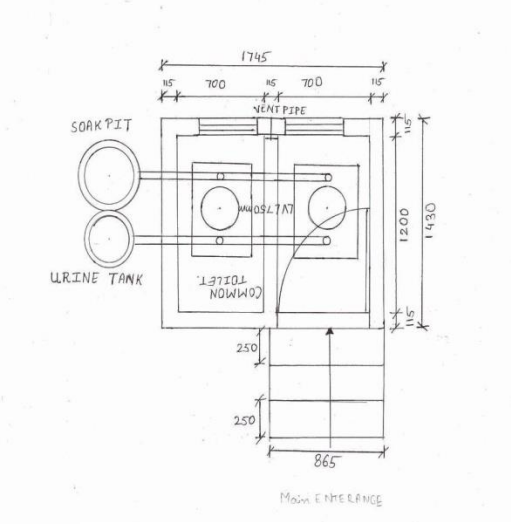

Figure 8.2 Plan of toilet

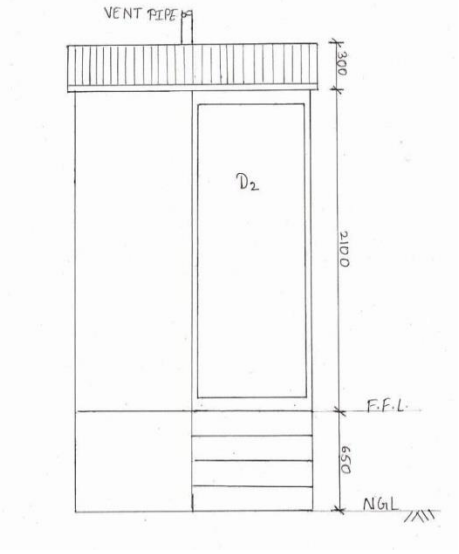

Figure 8.3 Elevation of toilet

Also the specifications for the toilet block are given below:

DESIGNDETAIL	SPECIFICATION
Average volume of dessicated material	0.25litres/person/day
Retention period	300days
No of chamber	2no.
Size of feaces collection tank • Volume of tank needed • Size of tank provided	=5no.x300daysx .25l/p/d =1.2mx 0.70mx 0.50mx1000 litres =420litres
Size of chamber access hole	450x500
Size of urine collection tank	10-15jerrycanes
Vent pipe	• 100mmdiaconnectingbotht anks • 500mmaboverooflevel • Cowlontop
Toilet size(floor area)	1.5x1.2m
Plant bed or soak pit	.45x .45mor .45x.45x .45m
Door	.90x 2.1m
Suoer structure	Brickwall115mmthick

Specification of toilet

◊ Recapitulation Sheet

NO.	ECOSANITATION,VELANJA, SURAT	DATE: / /
1	TOTAL COST OF CIVIL WORK	Rs.9123
2	ADD WATER AND SANITARY WORK 10%	Rs.912
3	ADD 5%CONTINGENCY CHARGES	Rs.456
4	ADD 2% WORK CHANGE ESTABLISHMENT CHARGES	Rs.182
5	ADD7%ELECTRIFICATION	
	CAHRGES	Rs.639
6	ADD5% OF5	Rs.32
	Grand Total	**Rs11344**
	Grand Total for20 toilet blocks	**Rs2,26,880**

◊ Measurement sheet

Item No.	Description of Item	No.	Length	Width	Depth	Quantity	TotalQuantity
	Brickwork						
1	Long wall	2	1.75	.15	3.05	1.60	
2	Short wall	2	1.43	.15	3.05	1.9	
	Deductions						
	Door	1	1.2	.15	2.1	-.378	3.122m3
	R.C.CWORK						
3	Slab	2	1.75	1.43	.075	.375	1.41m3

◊ Abstract Sheet

S.N.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE	AMOUNT
1	BRICK	650	No	3.50	2,275
2	CEMENT	5	Bag	300.00	1,500
3	SAND	35	Cuft	22.00	770
4	AGGREGATE	15	Cuft	33.00	495
5	MS bar	10	Kg	50.00	500
6	MASON	6	Nos	250.00	1,500
7	PAN	2	Nos	350.00	700
8	PIPEAND FITTING				
	*3"Polybend	1	Nos	55	55
	*3"Polytee	1	Nos	60	60
	*3"Polycowl	1	Rft	30	30
	*3"Polypipe	6	Nos	20	120
	*2"PVCtee	1	Nos	110	110
	*2"PVCbend	3	Nos	90	270
	*2"PVCnet Cap	3	Rm	20	60
	*2"PVCpipe	1	Nos	45	45
	*1/2"GI nipple	2	Nos	24	48
	*1/2"GI socket	1	Nos	20	20
	*Plastic tap	1	Nos	15	15
	* 100 liter plastic container	1	Nos	550	550
				TOTAL	**9,123**

8.4.3. School Canteen

Currently a primary school in VELANJA have provision for mid-day meals and fortunately there are facilities to prepare food in the school itself. The hard ships faced by the students are that the midday meals could be eaten in the school garden during the winters, but it is entirely inconvenient to do the same during summers as well as monsoons.

The design and specification for the proposed project of school canteen are as follows:

Figure 8.5. Plan of school canteen

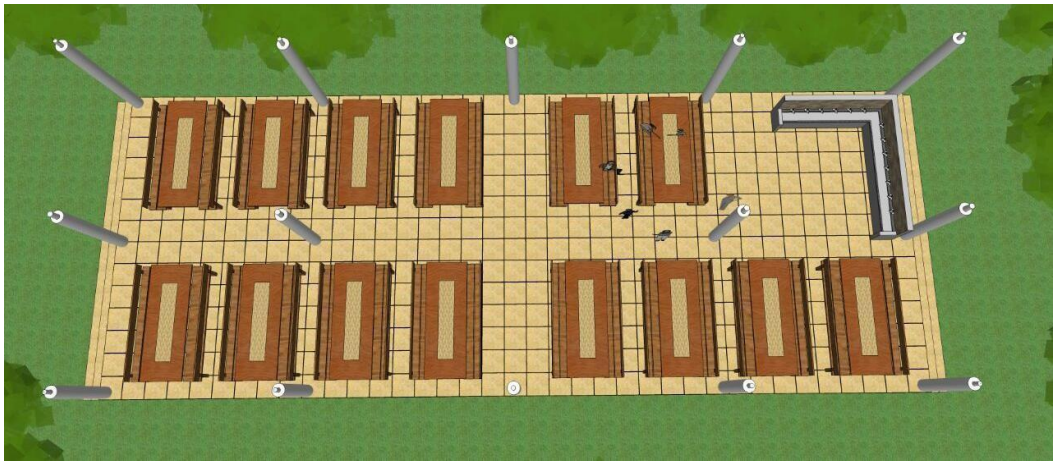

Figure 8.5. Plan of school canteen

Figure 8.6. Sectional elevation of scho

The specifications and information about columns shade and flooring for the school canteen areas follows:

DESCRIPTION	DIMENSION
LENGTH	24m
WIDTH	9m
AREA	216m2
SIZE OF COLUMN	6inch
TYPE OF COLUMN	HOLLOWCIRCULAR
TYPE OF MATERIAL OF COLUMN	MILDSTEEL
SPACING OF COLUMN	• Outside columns of 3m • Intermediate columns of 2.75 • Insidecolumnsof2.5m
MATERIAL OF ROOF	6m(both sides)
SIZE OF ROOF	MILDSTEEL
THICKNESS OF ROOF	24.8x 9.8m
THICKNESS OF P.C.C	5mmthick
FLOORING	Vitrifiedtiles

Specifications for School cantee

◊ Recapitulation Sheet

CANTEEN FOR SCHOOL,VELANJA, SURAT	**DATE: / /**
CIVIL ENGINEERING DEPARTMENT	
TOTAL COST OF CIVIL WORK	Rs.372875
ADD WATE RAND SANITARY WORK10%	Rs.37288
ADD5%CONTINGENCY CHARGES	Rs.18644
ADD 2% WORK CHANGE ESTABLISHMENT CHARGES	Rs.7457
ADD7%ELECTRIFICATION	Rs.26101
ADD5% OF5	Rs.1305
Grand Total	**Rs4,63,669**

◊ Measurement Sheet

ITEM NO.	**DESCRIPTIONOFITEM**	**NO.**	**LENGTH**	**WIDTH**	**DEPTH**	**QUANTITY**	**TOTALQUANTITY**
	FOR COLUMN						
1		5	3	@32kg/m		1440kg	
2		5	2.75	@32kg/m		1320kg	
3		5	2.5	@32kg/m		1200kg	
4	FORROOF	10	9.8	2.48		243.0m2	
5	FORPCC	1	24	8	.15		32.24m3

100

◊ Abstract Sheet

Item no.	Quantity	Description Of item	rate	per	Amount
	FORP.C.C				
1	Cement	201	325	Bag	65325
2	Sand	23.902	500	Tonne	11951
3	Coarse agg.	46.415	600	Tonne	27849
	FOR COLUMN				
4	For 3m	1440	40	Kg	57600
5	For 2.75	1320	40	Kg	52800
6	For 2.5m	1200	40	Kg	48000
7	For roof	243	480	M2	109350
	TOTAL				**3,72,875Rs**

8.4.4. GARDEN:

There is no public spot for get together, children play on roads, and schools are not open for children after premises. Even senior citizens cannot find a spot to breath in good atmosphere in order to do so they crowd the local temple.

The design of garden is shown in sketch below:

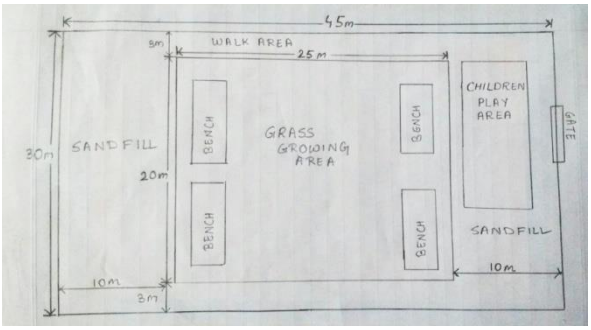

Fig 8.7. Design of garden

◊ Recapitulation Sheet

PUBLIC GARDEN,VELANJA,SURAT	**DATE: / /**
CIVIL ENGINEERING DEPARTMENT	
TOTAL COST OF CIVIL WORK	Rs.2,17,728
ADD WATER AND SANITARY WORK@ 10%	Rs.21,772
ADD5%CONTINGENCY CHARGES	Rs.10,886
ADD 2% WORK CHANGE ESTABLISHMENT CHARGES	Rs.4,355
ADD7%ELECTRIFICATION	Rs.15,241
ADD5% OF5	Rs.762
Grand Total	**Rs2,70,744**

◊ Measurement Sheet

Item No.	Description Of item	No	length	Width	Depth	Quantity	Total Quantity
1	Levelling	1	45	30			1350m2
2	Grass Growing area	1	25	24			750m2
3	Sand filling	2	10	30	0.50	300	
		2	25	3	0.50	75	
							375m2
4	Compound Wall						
	Long wall	2	45	0.2	1.5	27	
	Short wall	2	30	0.2	1.5	18	
	Deduction						
	Gate	1	3	0.2	1.5	-0.9	
							44.91m3

◊ Abstract Sheet

Item No.	Description Of items	Quantity	Rate	Per	Amount
1	BRICKS	22455	3.5	No	78,593
2	CEMENT	53	325	Bag	17,225
3	SAND	13.80	500	Tonne	17,310
4	LEVELLING	1360	5	M2	6,750
5	Grass Growing area	750	75	M2	56,250
6	Sand filling	375	31	M3	11,600
7	Gate and Rides	Lumsum			30,000
	Total				**2,17,728**

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

For future development of the VELANJA village we are proposing the designs for Part II design in which following points should be considered,

1. Sustainable design: Rainwater harvesting

An additional source of water will be available which could be used at the time of emergency or water shortage by implementing the Rain Water Harvesting system in the village households.

2. Physical design: Solid Waste Management

Currently the villagers are dumping their solid waste at outer part of the village and burn it at a specific location. By that air pollution will increase and waste collection is not done regularly so that solid waste management system should be there in the village for cleanliness and safe environment.

3. Social design: Bank

In the velanja village there is no any bank and villagers have to go outside the village at Jarod for banking facility so that one bank should be there in village so villagers can easily do their banking related works and for easy access of it.

4. Socio-Cultural design: Skill Development Center

There is no any child development or maternity home or skill development center in the velanja village but for the better development of students and children there should be one skill development center in the village.

5. Smart village design: Solar Street Lights & E-Dustbins

For the smart development of the velanja village we have proposed the smart concepts as the solar streetlights and e-dustbins.

6. Heritage village design:Public Garden

In the velanja village there is no any recreational area existing. So that for the better living standard and entertainment purpose we have proposed one design of public garden as recreational area in the village.

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

We have visited the ideal village punsri and that visit helped us to know about the type of infrastructure needed by the village. With help of techno-economic survey and gap analysis and also studying / surveying our ideal village punsri , we were able to broadly define requirements of development for people of velanja village. Then we have visited the smart village Chansad and by that visit we better understood the smart technologies and concepts as smart development of our allocated village velanja.

In the velanja village, the basic requirements like community hall, any recreational area, bank, etc. were not existing. By implanting given design proposals, all the missing amenities can be provided which will stop the migration of rural people towards the urban area which will in turn reduce pressure on cities.

The amenities designed under this Vishwakarma project phase viii will be helpful for better development of the village as physically as well as socially, which improves the overall lifestyle of people along with nation with preserving nature bit by bit. This will help in developing Smart villages in sustainable manner, reduce migration from villages and prevent the cities from the urban pressure. This should lead to some rethinking about the meaning of efficiency beyond the usual conceptions of economic or technical efficiency. Indeed, employment expansion is at least as important as growth in productivity. In a sense, both represent the utilization of labor as a resource. Why, then, does thinking about efficiency focus on one and neglect the other It is important to reflect on this question. The answer, which calls for change in both economics and politics, could make a real difference.

Students who want to work towards preservation of rural soul of country can do many things for our own good and environment. By implanting given design proposals, we can say that all the missing amenities are provided will stop the migration of rural people towards the urban area. This can cause reduce the load on urban areas as well as pollution in both sector can be minimized gradually.

These amenities designed under this project will be helpful for better development of village as physically as well as socially, which improves the overall lifestyle of people along with nation with preserving nature bit by bit.

Chapter11.References refereed for this project:

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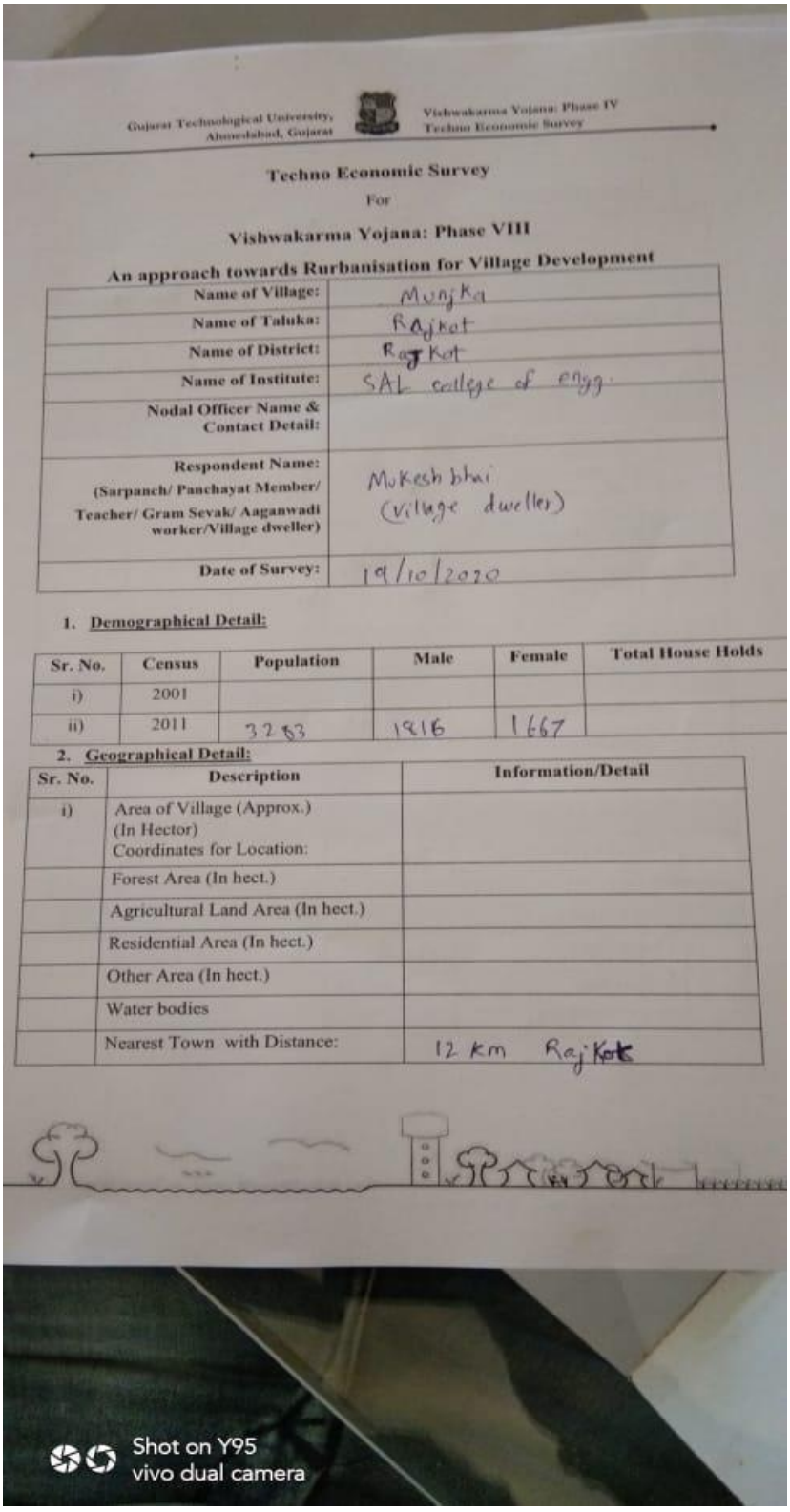
- **https://sarkariyojana.com/gujarat/**

CHAPTER-12Ideal/SmartVillageSurveyForm:



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

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

An approach towards Rurbanisation for Village Development

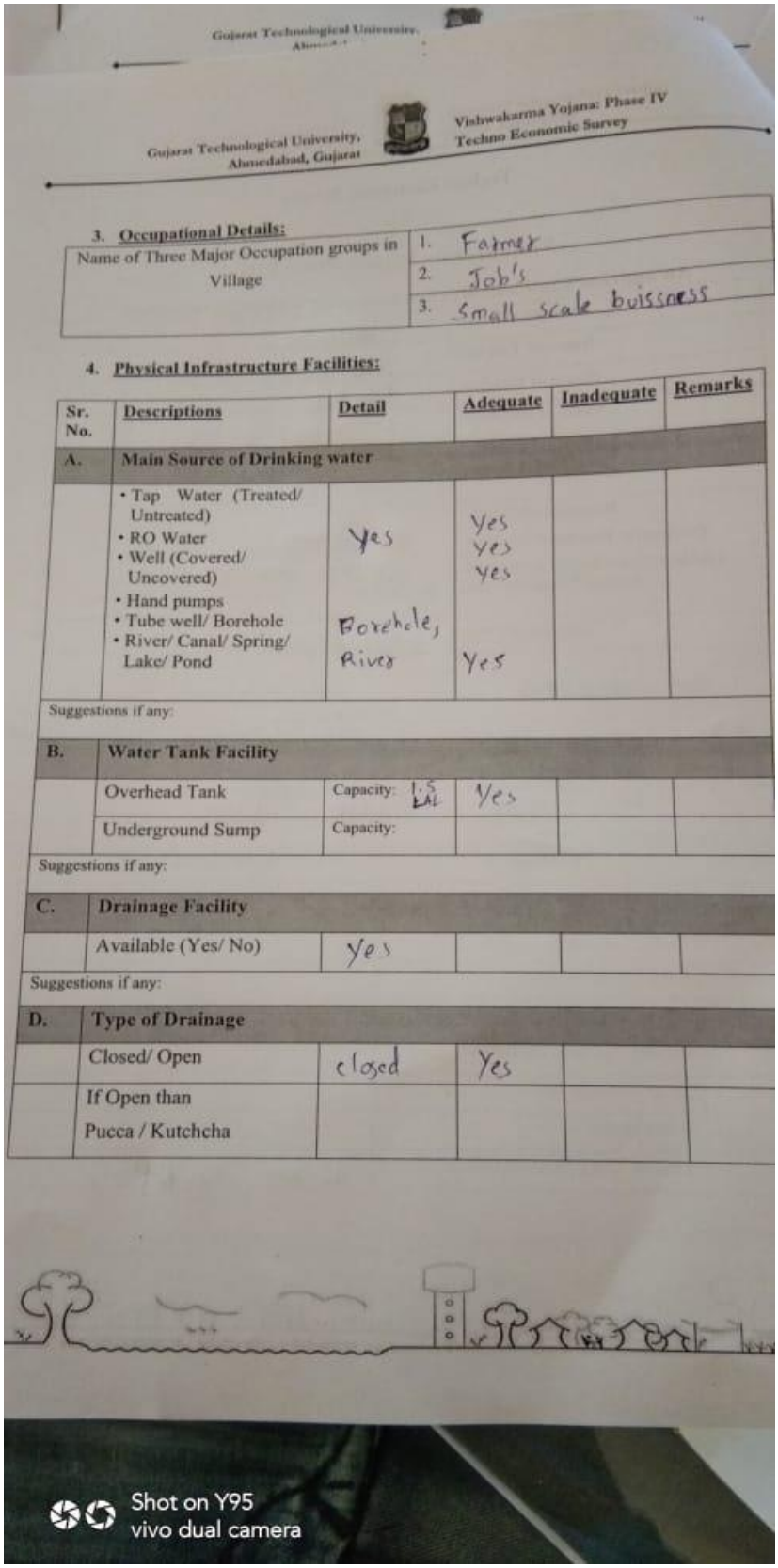
Name of Village:	Munjka
Name of Taluka:	Rajkot
Name of District:	Rajkot
Name of Institute:	SAL college of engg.
Nodal Officer Name & Contact Detail:	
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Mukesh bhai (Village dweller)
Date of Survey:	19/10/2020

1. Demographical Detail:

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001				
ii)	2011	3283	1616	1667	

2. Geographical Detail:

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	
	Forest Area (In hect.)	
	Agricultural Land Area (In hect.)	
	Residential Area (In hect.)	
	Other Area (In hect.)	
	Water bodies	
	Nearest Town with Distance:	12 km Rajkot



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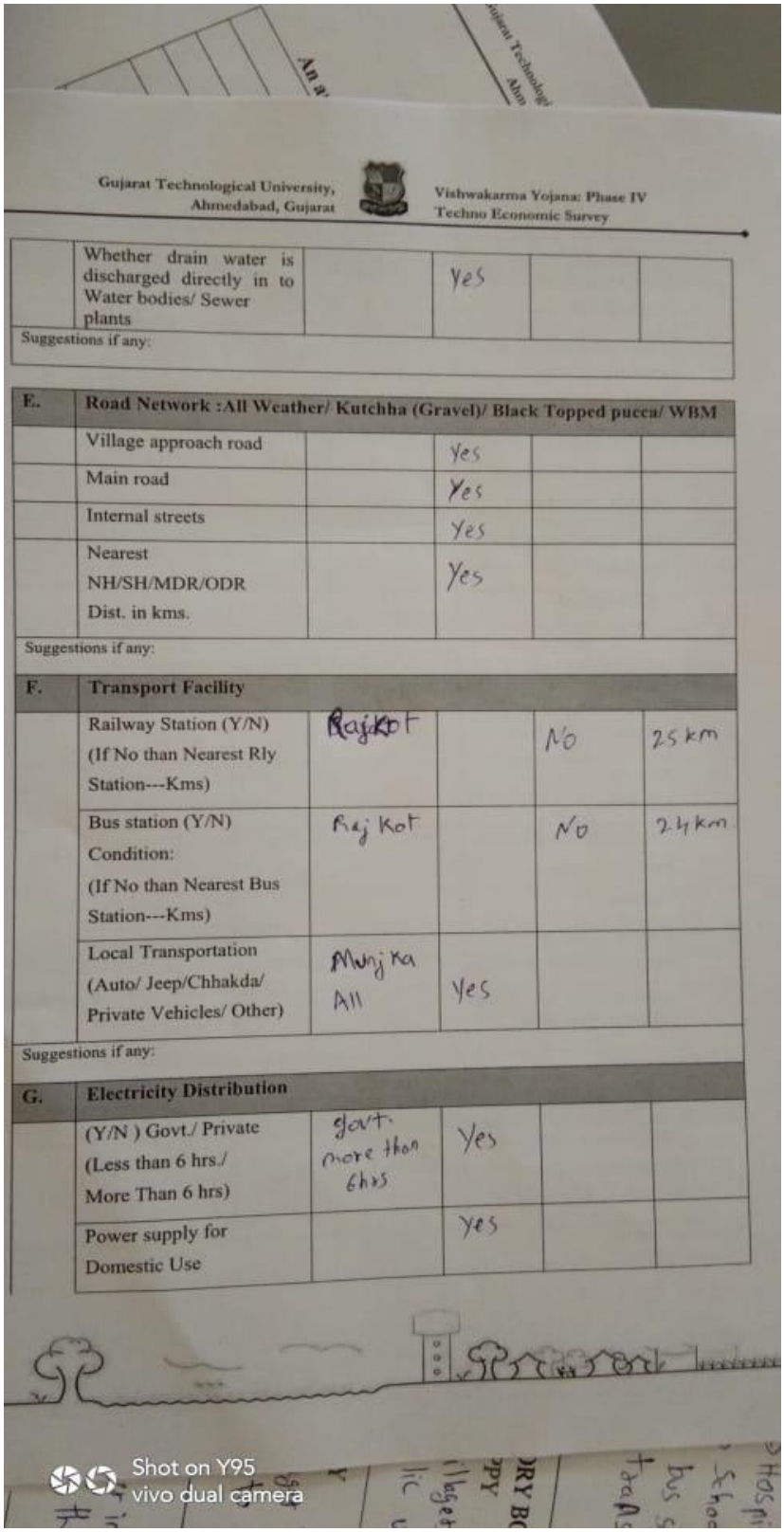
Techno Economic Survey

3. Occupational Details:

Name of Three Major Occupation groups in Village	1. Farmer 2. Job's 3. Small scale buissness

4. Physical Infrastructure Facilities:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated) • RO Water • Well (Covered/ Uncovered) • Hand pumps • Tube well/ Borehole • River/ Canal/ Spring/ Lake/ Pond	Yes Borehole, River	Yes Yes Yes Yes		
	Suggestions if any:				
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 1.5 LAL	Yes		
	Underground Sump	Capacity:			
	Suggestions if any:				
C.	**Drainage Facility**				
	Available (Yes/ No)	Yes			
	Suggestions if any:				
D.	**Type of Drainage**				
	Closed/ Open	closed	Yes		
	If Open than Pucca / Kutchcha				



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Techno Economic Survey

	Whether drain water is discharged directly in to Water bodies/ Sewer plants		Yes		

Suggestions if any:

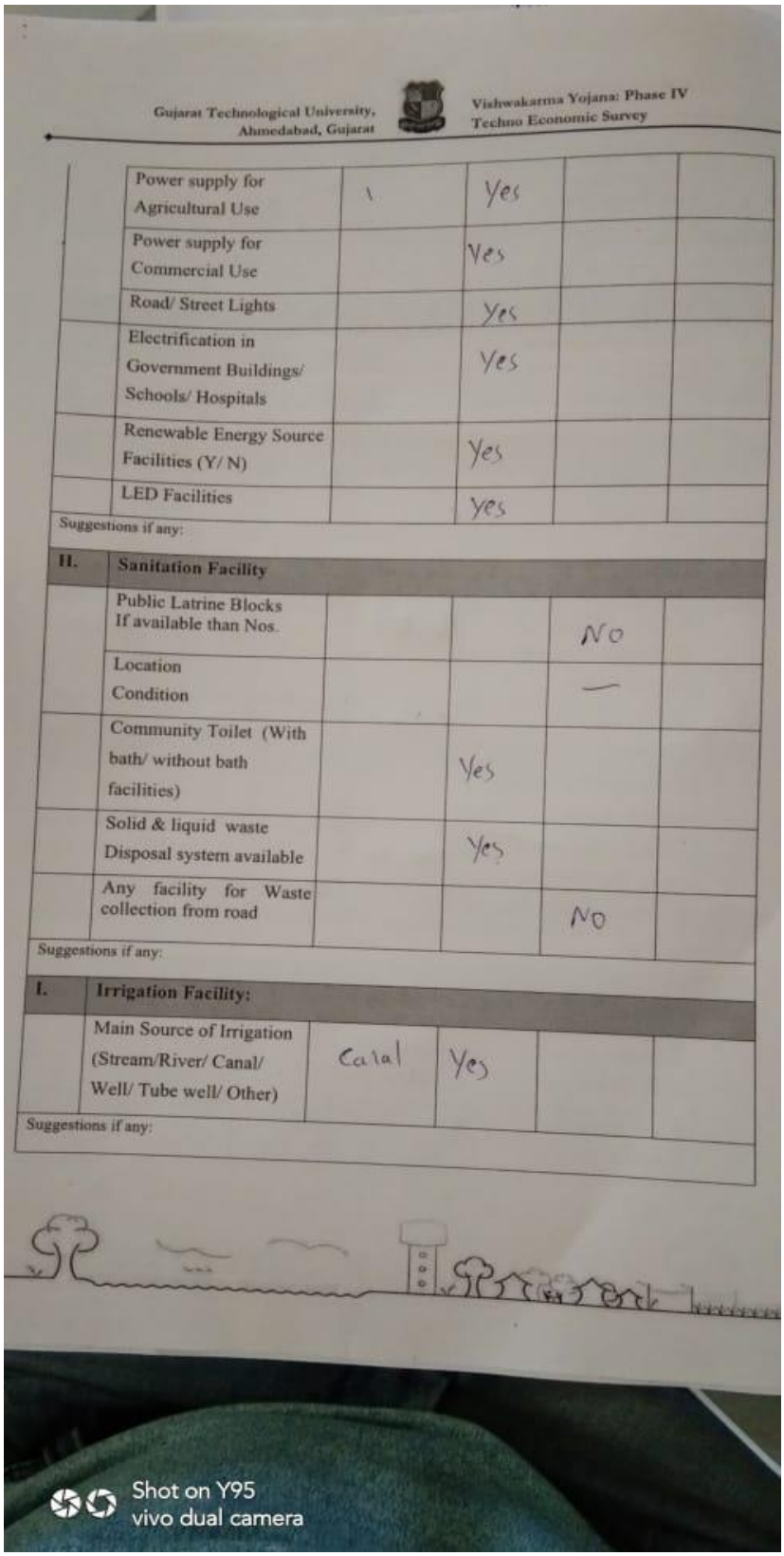
E.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road		Yes		
	Main road		Yes		
	Internal streets		Yes		
	Nearest NH/SH/MDR/ODR Dist. in kms.		Yes		

Suggestions if any:

F.	Transport Facility				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Rajkot		No	25 km
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Raj Kot		No	2.4 km
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Mwnj ka All	Yes		

Suggestions if any:

G.	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	govt. more than 6hrs	Yes		
	Power supply for Domestic Use		Yes		



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase IV
Techno Economic Survey

	Power supply for Agricultural Use	1	Yes		
	Power supply for Commercial Use		Yes		
	Road/ Street Lights		Yes		
	Electrification in Government Buildings/ Schools/ Hospitals		Yes		
	Renewable Energy Source Facilities (Y/ N)		Yes		
	LED Facilities		Yes		

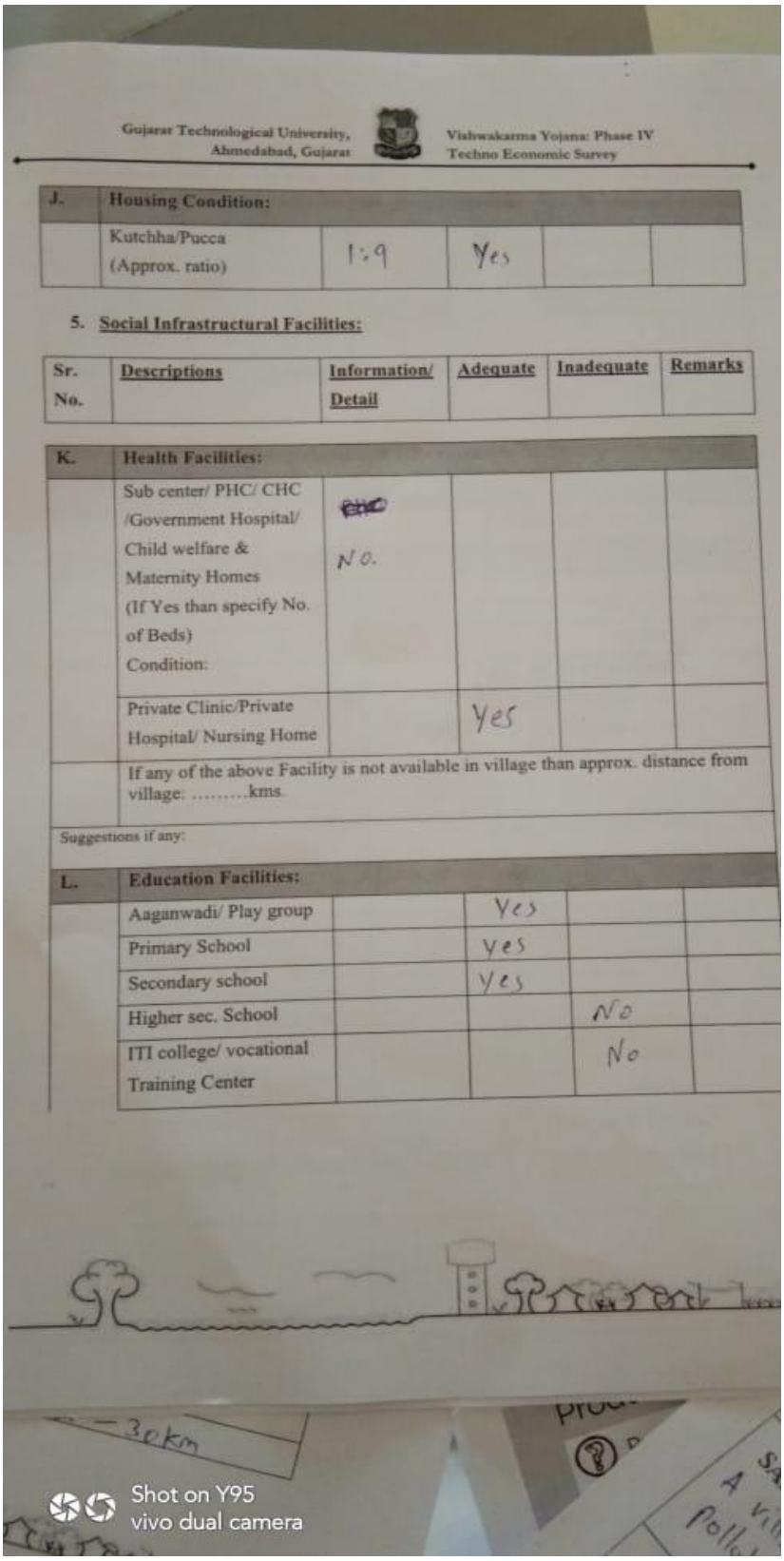
Suggestions if any:

H.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.			NO	
	Location Condition			—	
	Community Toilet (With bath/ without bath facilities)		Yes		
	Solid & liquid waste Disposal system available		Yes		
	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	Yes		

Suggestions if any:



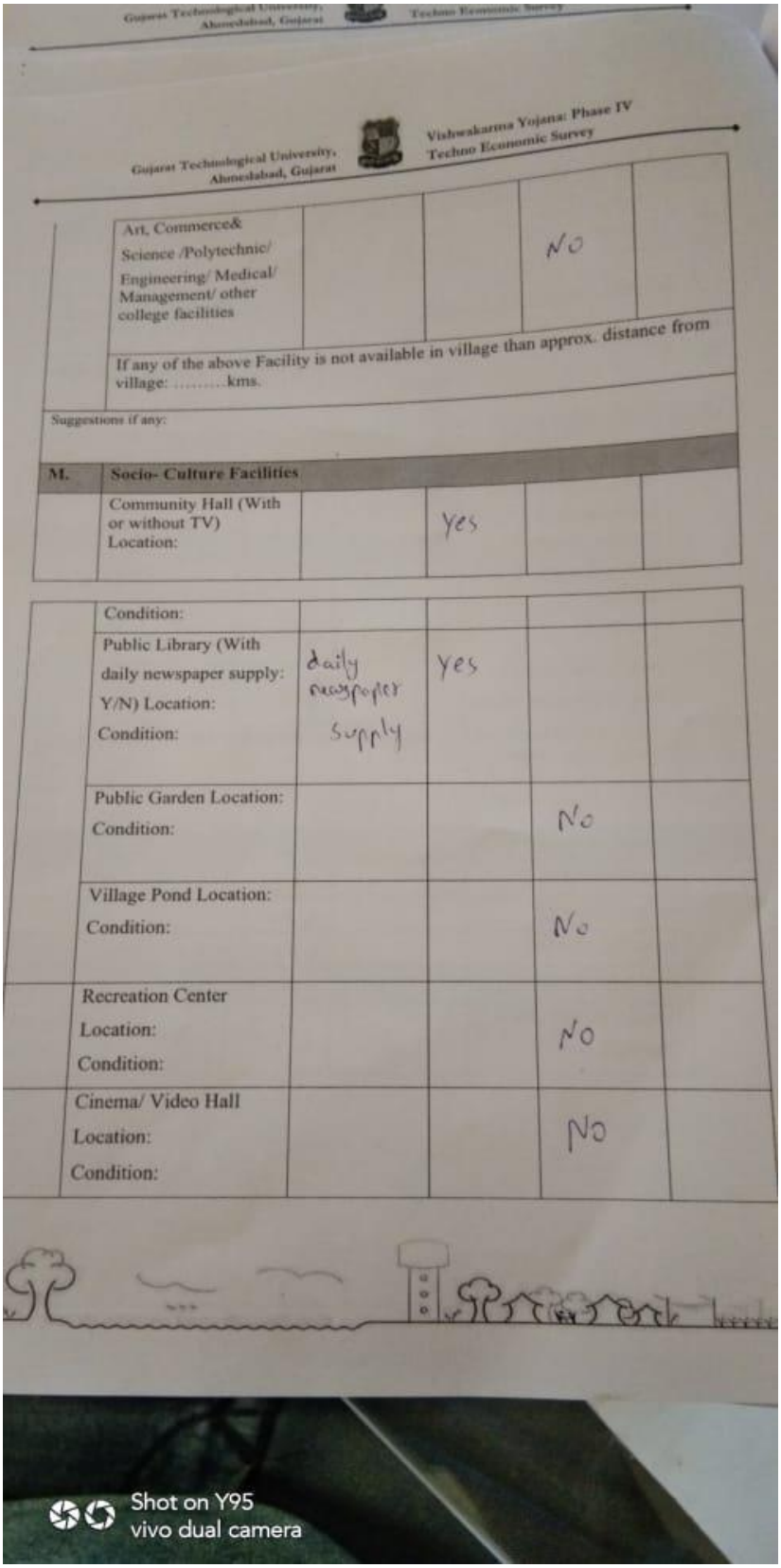
Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase IV
Techno Economic Survey

J.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	1:9	Yes		

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
K.	Health Facilities:				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	~~Yes~~ No.			
	Private Clinic/Private Hospital/ Nursing Home		Yes		
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
L.	Education Facilities:				
	Aaganwadi/ Play group		Yes		
	Primary School		Yes		
	Secondary school		Yes		
	Higher sec. School			No	
	ITI college/ vocational Training Center			No	



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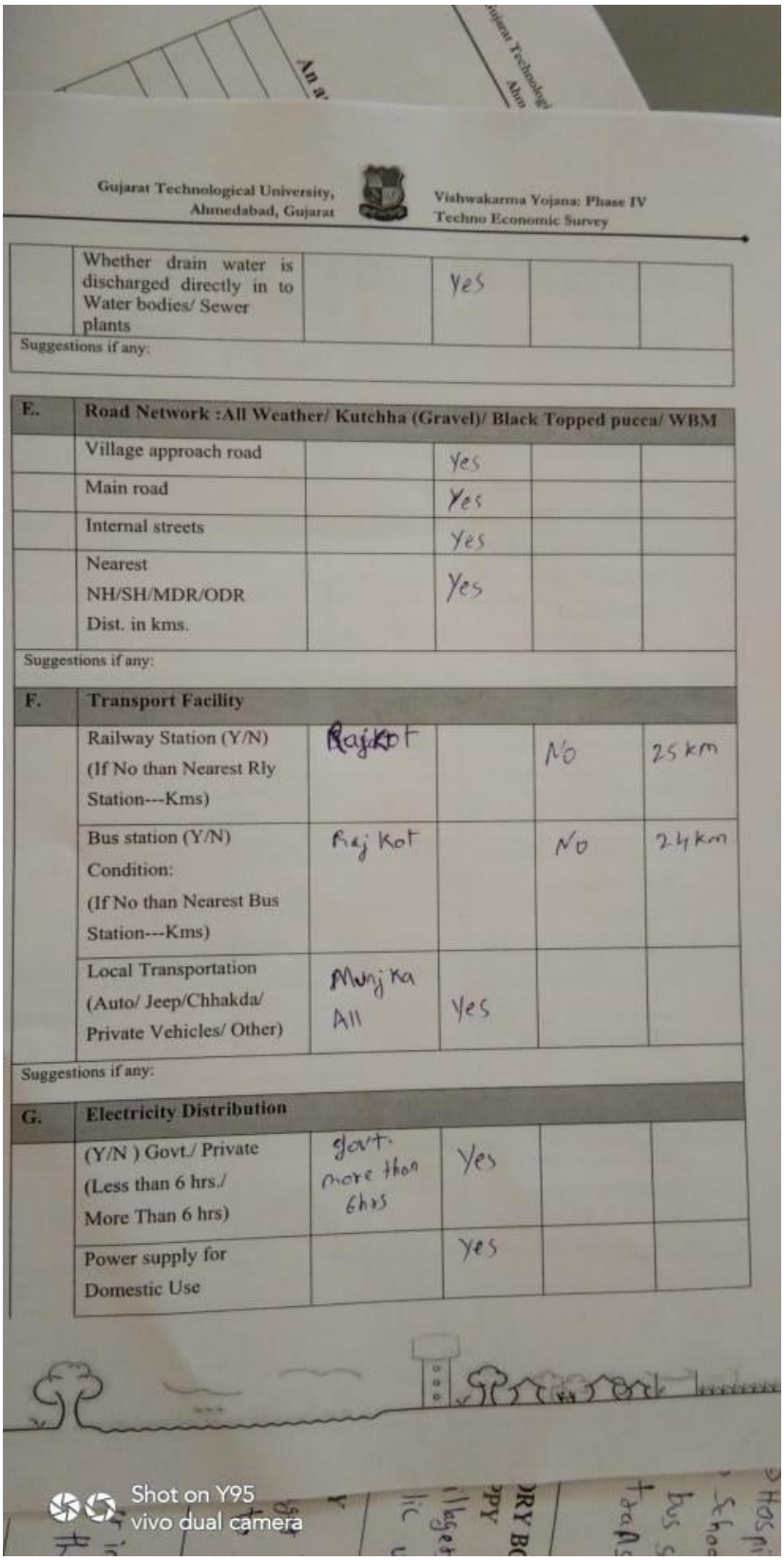
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities			No	
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
	Suggestions if any:				
M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:		Yes		
	Condition:				
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	daily newspaper supply	Yes		
	Public Garden Location: Condition:			No	
	Village Pond Location: Condition:			No	
	Recreation Center Location: Condition:			No	
	Cinema/ Video Hall Location: Condition:			No	

Shot on Y95
vivo dual camera



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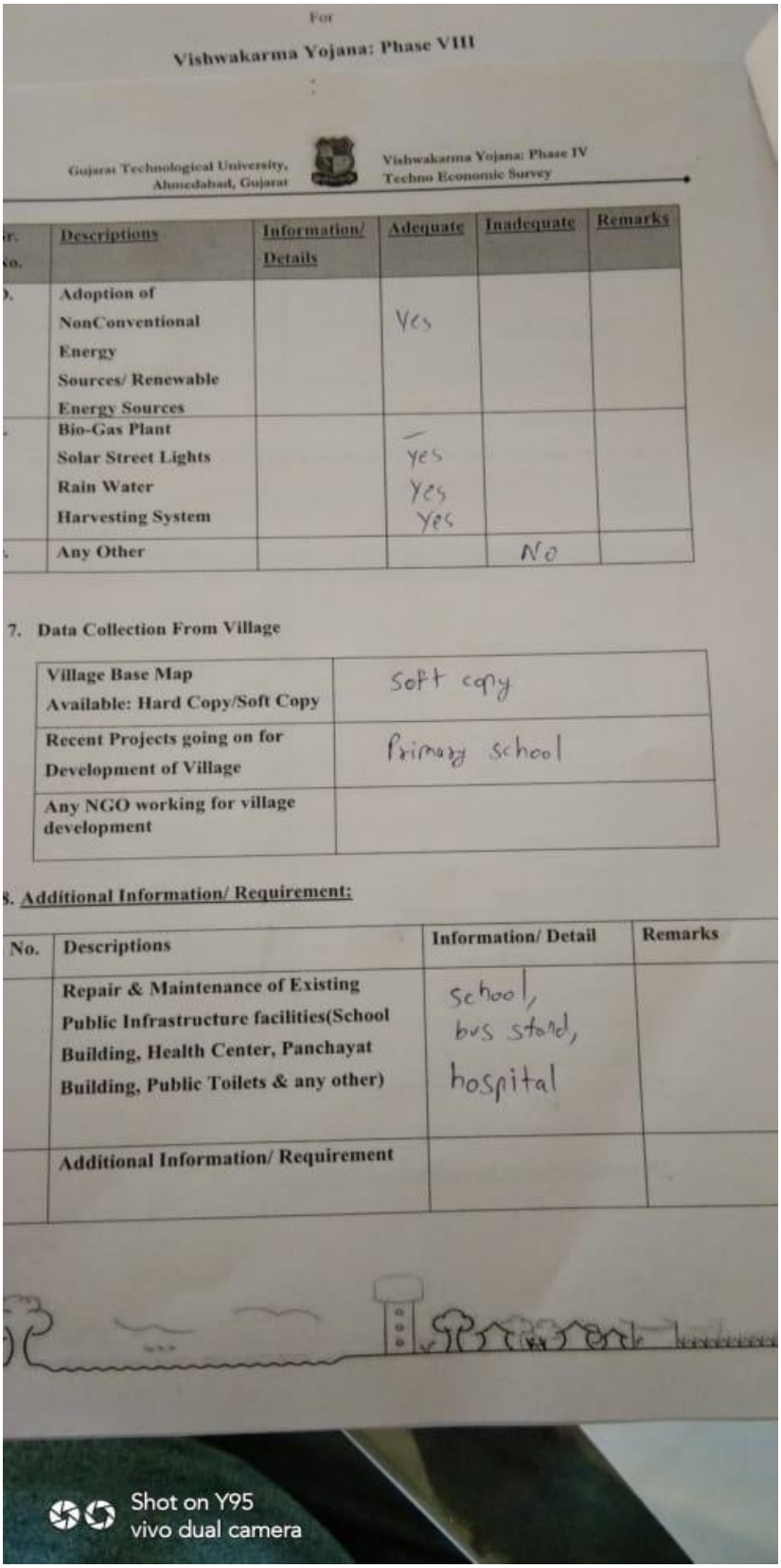
Vishwakarma Yojana: Phase IV
Techno Economic Survey

	Whether drain water is discharged directly in to Water bodies/ Sewer plants		Yes		
Suggestions if any:					
E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road		Yes		
	Main road		Yes		
	Internal streets		Yes		
	Nearest NH/SH/MDR/ODR Dist. in kms.		Yes		
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Rajkot		No	25 km
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Raj Kot		No	2.4 km
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Muvji Ka All	Yes		
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	govt. more than 6hrs	Yes		
	Power supply for Domestic Use		Yes		



For

Vishwakarma Yojana: Phase VIII

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase IV
Techno Economic Survey

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
).	Adoption of NonConventional Energy Sources/ Renewable Energy Sources		Yes		
.	Bio-Gas Plant		—		
	Solar Street Lights		Yes		
	Rain Water Harvesting System		Yes		
.	Any Other			No	

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	Soft copy
Recent Projects going on for Development of Village	Primary school
Any NGO working for village development	

8. **Additional Information/ Requirement:**

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

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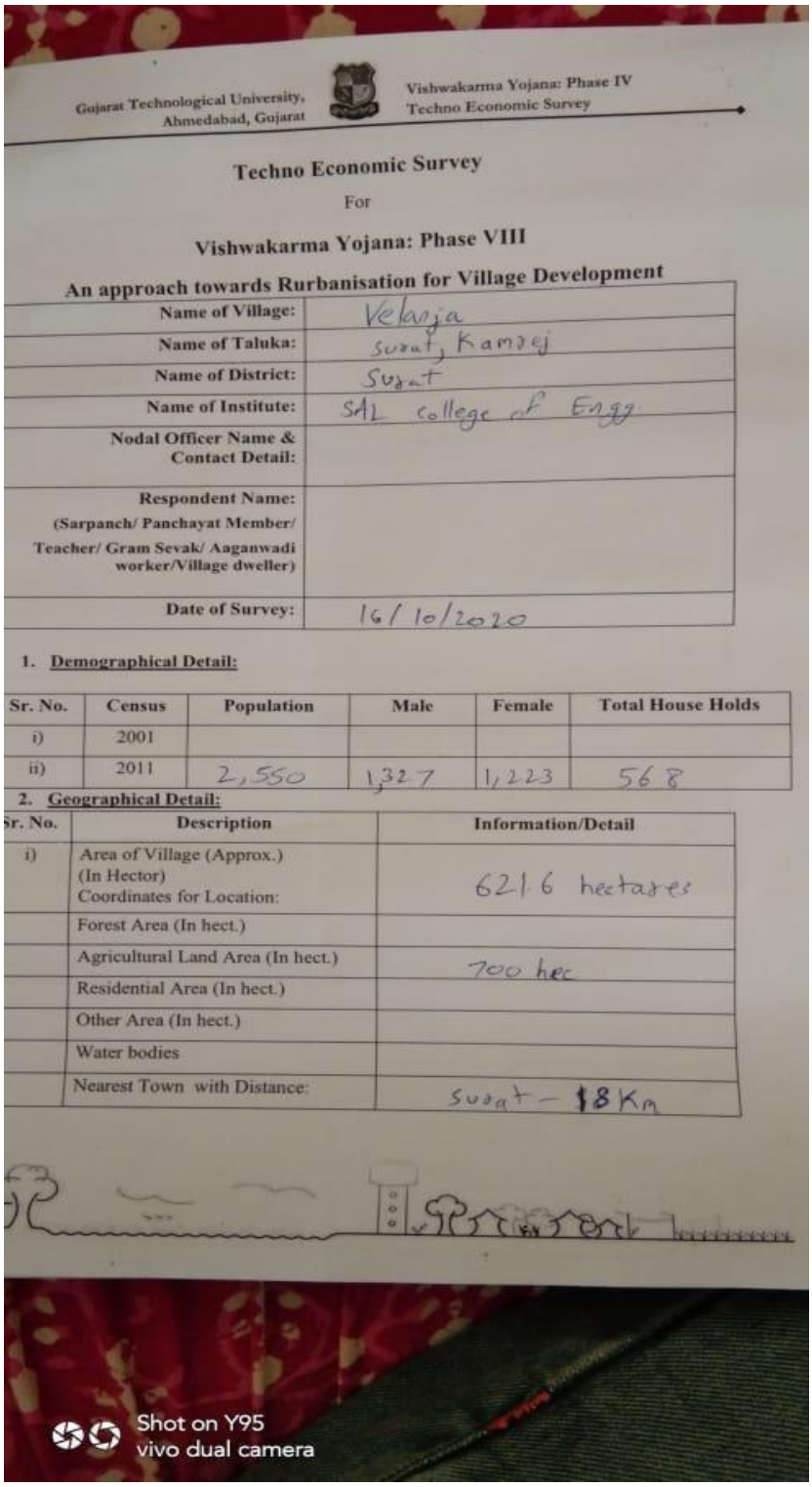
vivo dual camera

12.1 Techno-Economic Survey Form VELANJA village



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase IV
Techno Economic Survey

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

An approach towards Rurbanisation for Village Development

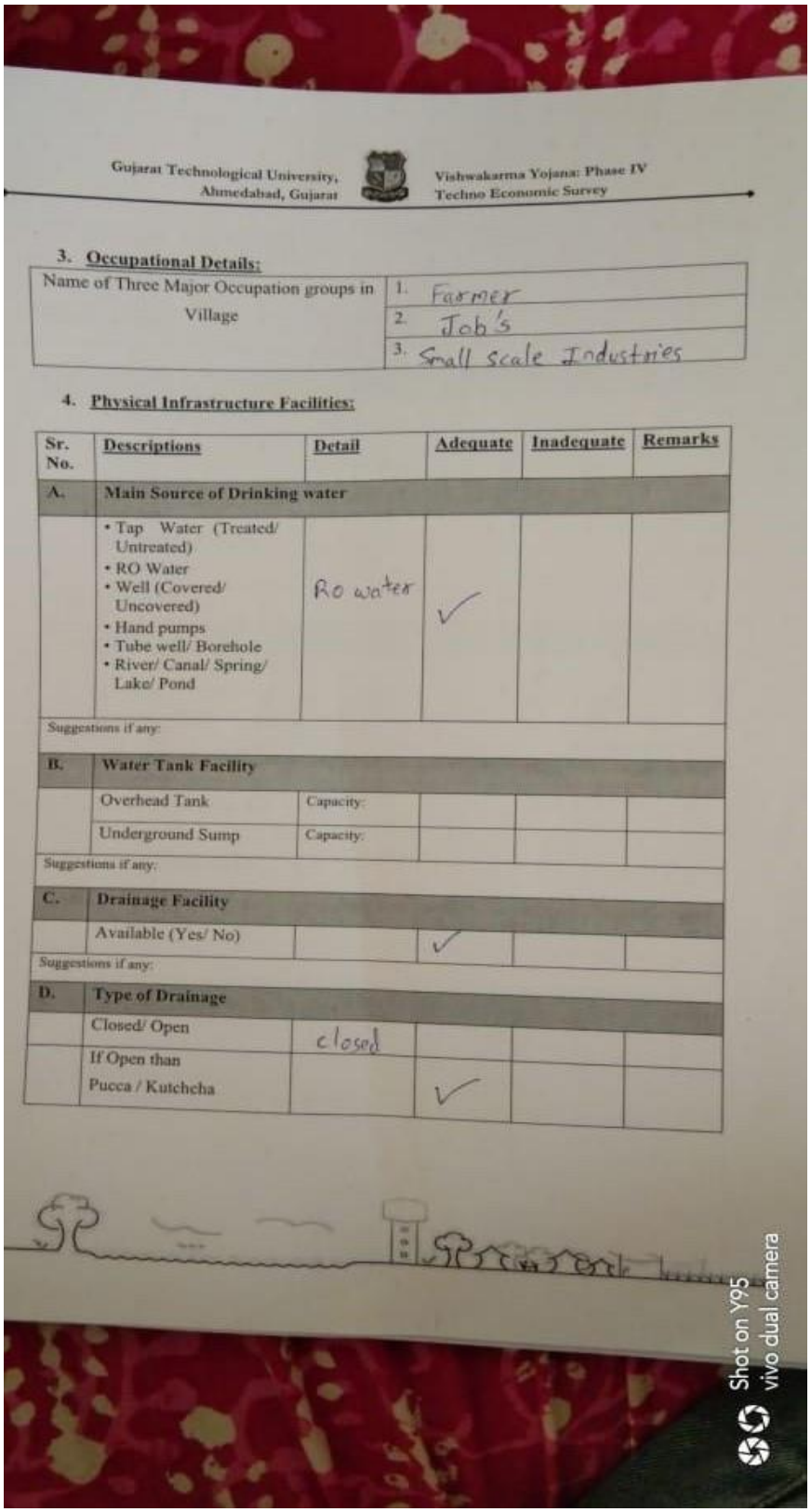
Name of Village:	Velanja
Name of Taluka:	Surat, Kamrej
Name of District:	Surat
Name of Institute:	SAL college of Engg
Nodal Officer Name & Contact Detail:	
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	
Date of Survey:	16/10/2020

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001				
ii)	2011	2,550	1,327	1,223	568

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	621.6 hectares
	Forest Area (In hect.)	
	Agricultural Land Area (In hect.)	700 hec
	Residential Area (In hect.)	
	Other Area (In hect.)	
	Water bodies	
	Nearest Town with Distance:	Surat – 18 Km



Gujarat Technological University, Ahmedabad, Gujarat

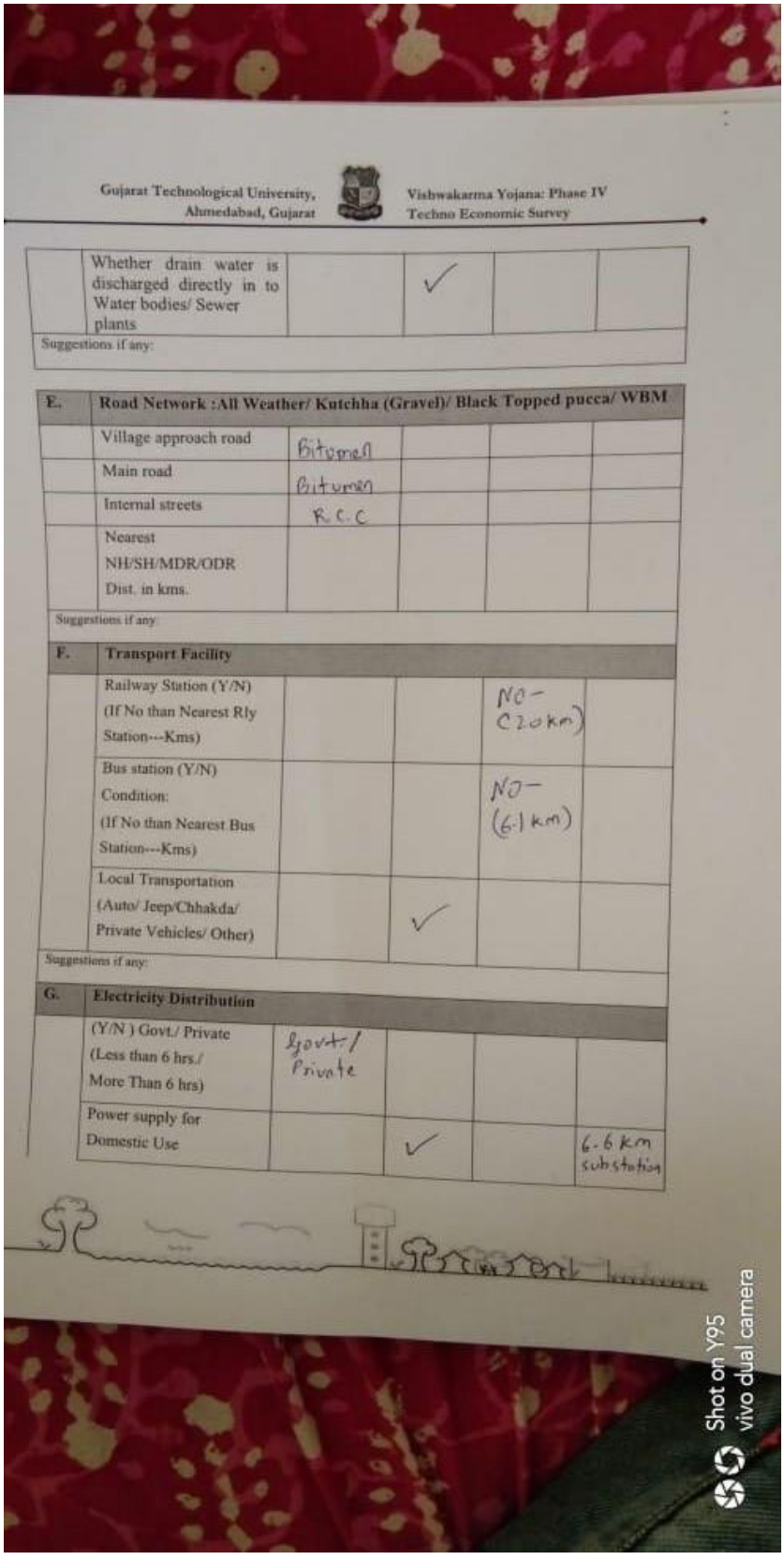
Vishwakarma Yojana: Phase IV
Techno Economic Survey

3. Occupational Details:

Name of Three Major Occupation groups in Village	1. Farmer 2. Job's 3. Small scale Industries

4. Physical Infrastructure Facilities:

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



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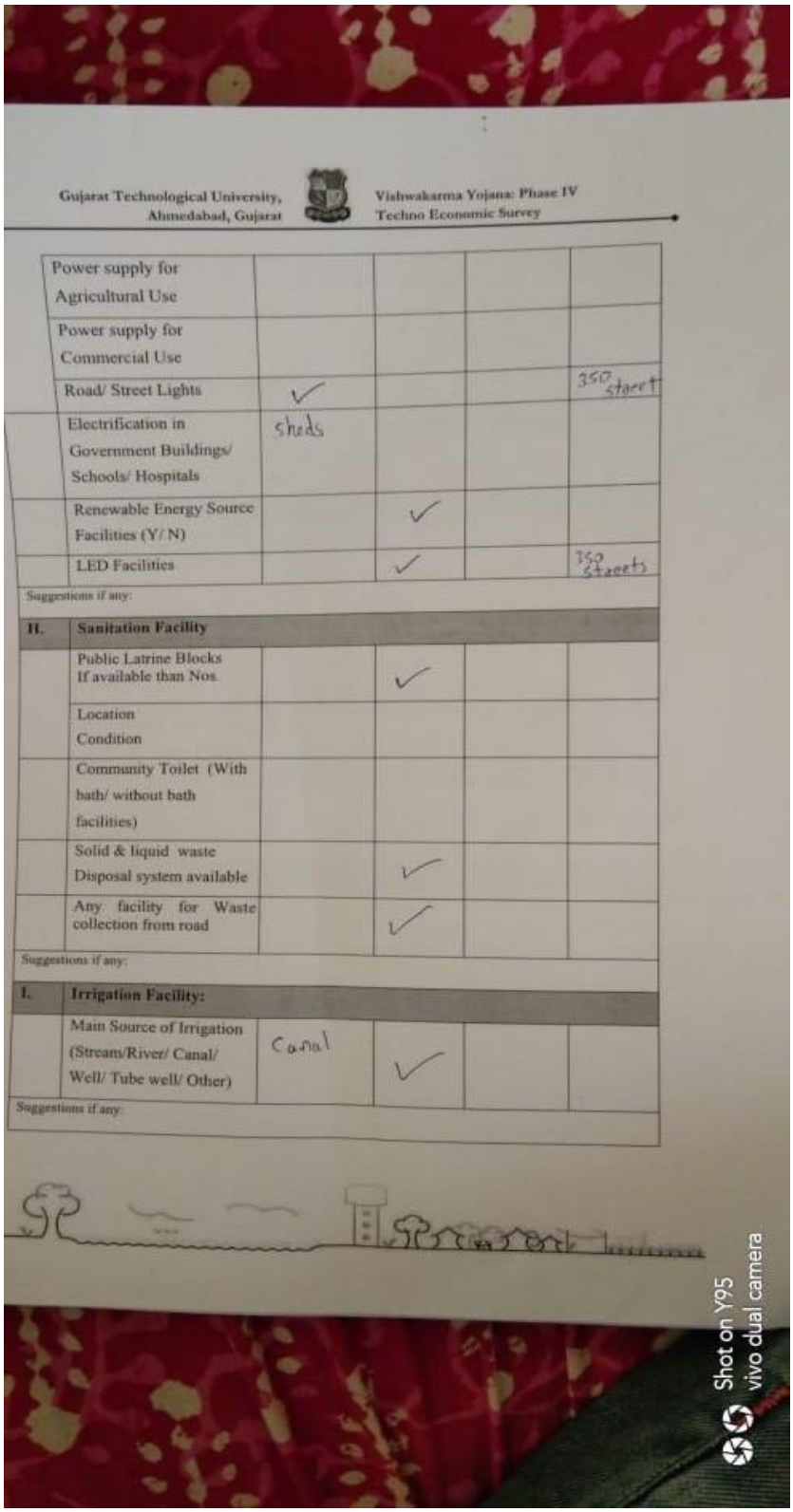
Vishwakarma Yojana: Phase IV
Techno Economic Survey

	Whether drain water is discharged directly in to Water bodies/ Sewer plants		✓		
Suggestions if any:					

E.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	Bitumen			
	Main road	Bitumen			
	Internal streets	R.C.C			
	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- (20 km)	
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)			NO- (6.1 km)	
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)		✓		
Suggestions if any:					

G.	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Govt / Private			
	Power supply for Domestic Use		✓		6-6 km substation



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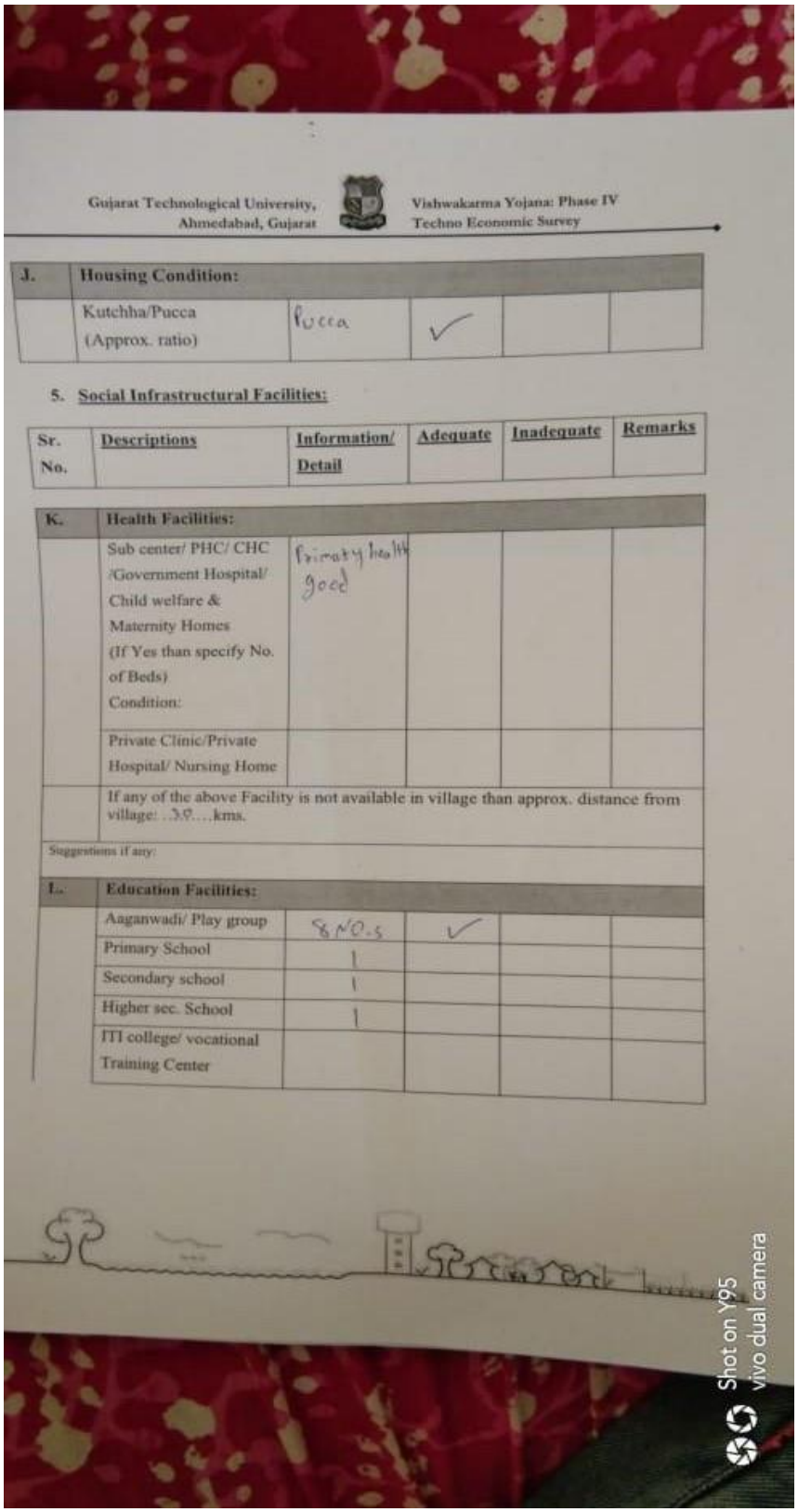
Vishwakarma Yojana: Phase IV
Techno Economic Survey

	Power supply for Agricultural Use				
	Power supply for Commercial Use				
	Road/ Street Lights	✓			350 street
	Electrification in Government Buildings/ Schools/ Hospitals	sheds			
	Renewable Energy Source Facilities (Y/ N)		✓		
	LED Facilities		✓		350 streets
Suggestions if any:					
II.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.		✓		
	Location Condition				
	Community Toilet (With bath/ without bath facilities)				
	Solid & liquid waste Disposal system available		✓		
	Any facility for Waste collection from road		✓		
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Canal	✓		
Suggestions if any:					



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Vishwakarma Yojana: Phase IV
Techno Economic Survey

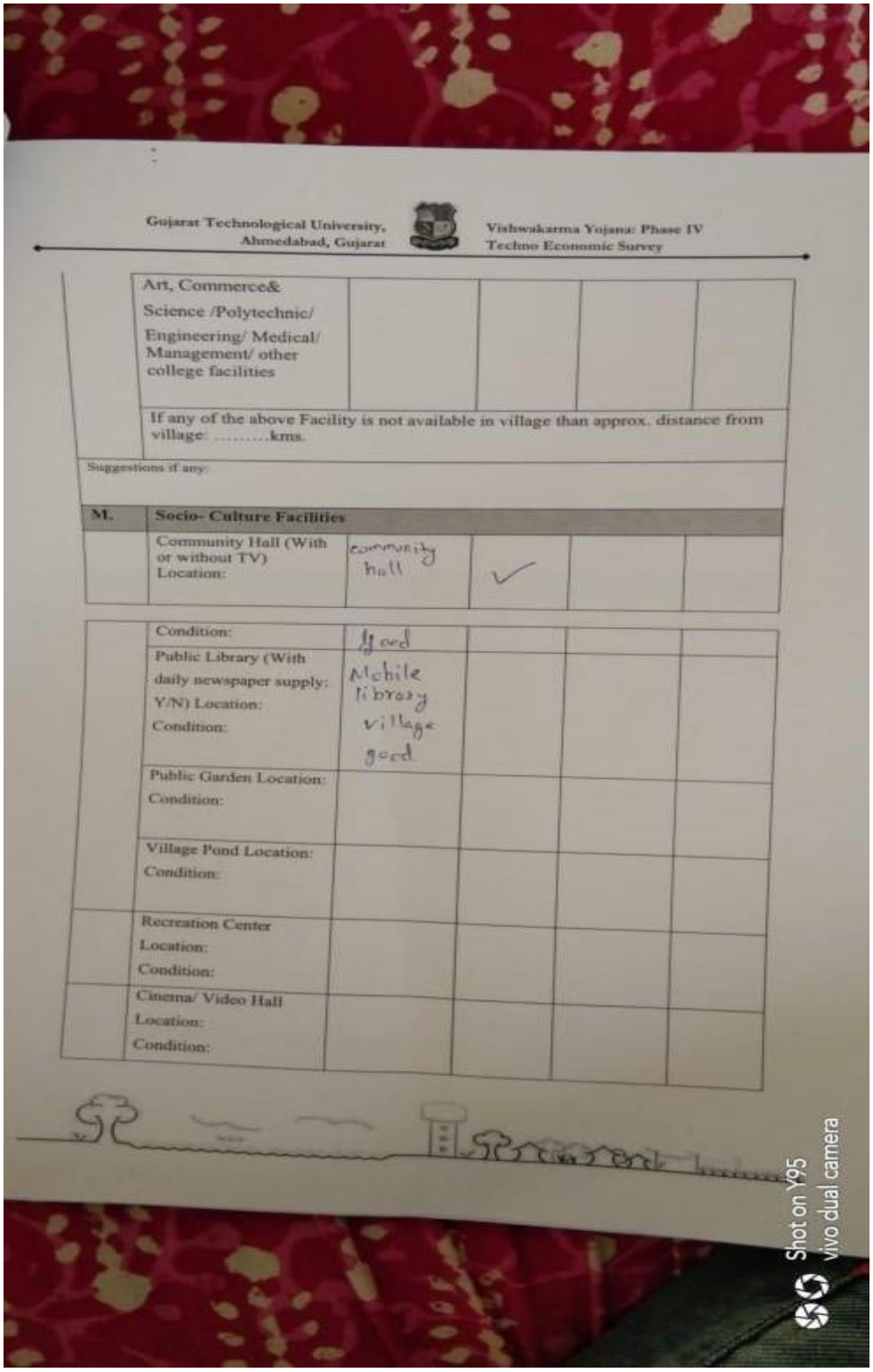
J.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	Pucca	✓		

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

K.	Health Facilities:				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	Primary health good			
	Private Clinic/Private Hospital/ Nursing Home				
	If any of the above Facility is not available in village than approx. distance from village: ..3.9....kms.				
Suggestions if any:					

L.	Education Facilities:				
	Aaganwadi/ Play group	8 NOS	✓		
	Primary School	1			
	Secondary school	1			
	Higher sec. School	1			
	ITI college/ vocational Training Center				



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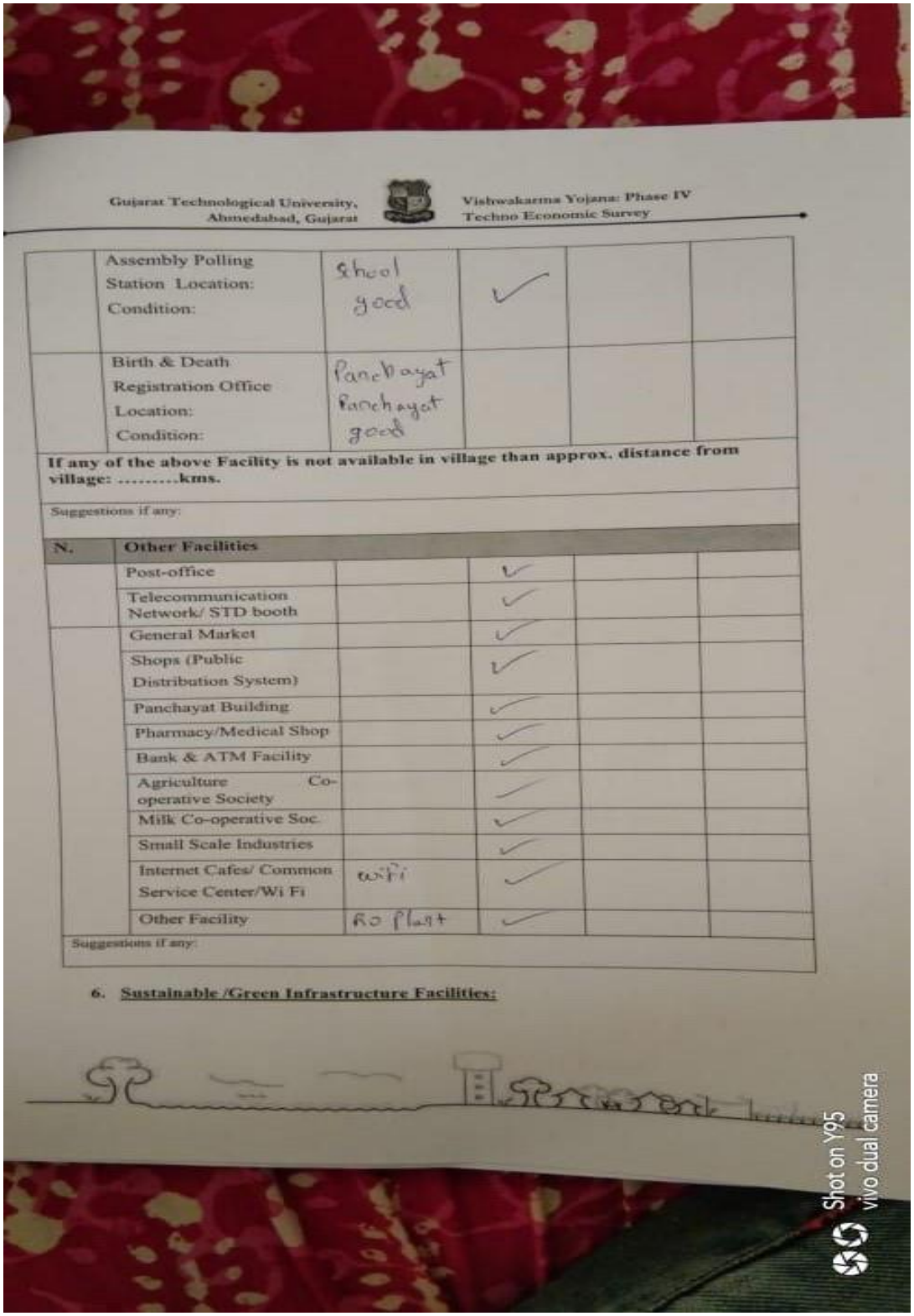
Vishwakarma Yojana: Phase IV
Techno Economic Survey

	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities				
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	community hall	✓		
	Condition:	good			
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	Mobile library village good			
	Public Garden Location: Condition:				
	Village Pond Location: Condition:				
	Recreation Center Location: Condition:				
	Cinema/ Video Hall Location: Condition:				



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Vishwakarma Yojana: Phase IV
Techno Economic Survey

	Assembly Polling Station Location: Condition:	Shool good	✓		
	Birth & Death Registration Office Location: Condition:	Panchayat Panchayat good			

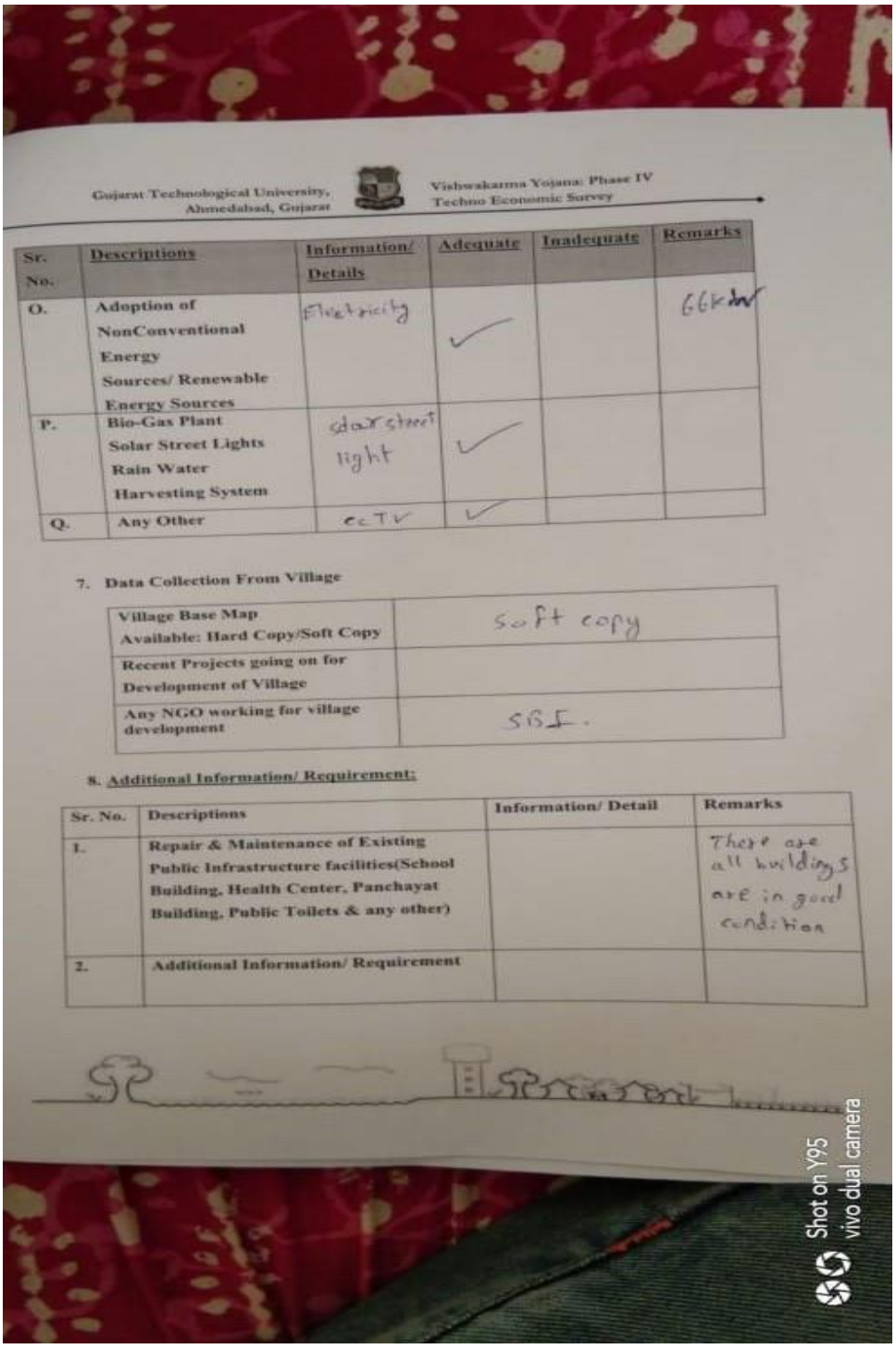
If any of the above Facility is not available in village than approx. distance from village: .....kms.

Suggestions if any:

N.	Other Facilities				
	Post-office		✓		
	Telecommunication Network/ STD booth		✓		
	General Market		✓		
	Shops (Public Distribution System)		✓		
	Panchayat Building		✓		
	Pharmacy/Medical Shop		✓		
	Bank & ATM Facility		✓		
	Agriculture Co-operative Society		✓		
	Milk Co-operative Soc.		✓		
	Small Scale Industries		✓		
	Internet Cafes/ Common Service Center/Wi Fi	wifi	✓		
	Other Facility	RO Plant	✓		

Suggestions if any:

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



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Vishwakarma Yojana: Phase IV
Techno Economic Survey

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
O.	Adoption of NonConventional Energy Sources/ Renewable Energy Sources	Electricity	✓		66kw
P.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	solar street light	✓		
Q.	Any Other	cc TV	✓		

7. Data Collection From Village

Village Base Map Available: Hard Copy/Soft Copy	soft copy
Recent Projects going on for Development of Village	
Any NGO working for village development	SBI.

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)		There are all buildings are in good condition
2.	Additional Information/ Requirement		

12.2. Gap Analysis:

VILLAGE GAP Analysis					
Village Facilities		**Planning Commission/UDPFI Norms**	**Village Name**	**VELANJA (dist. SURAT)**	
			Population: 2550		
		Existing	**Required as per Norms**	**Future Projection Design**	**GAP**
Social Infra structurere Facilities					
Education					
Anganwadi	Each or Per2500 population	1	2	-	-1
Primary School	Each Per2500 population	1(under construction)	1	-	0
Secondary School	Per7,500 population	0	0	-	0
Higher Secondary School	Per15,000 Population	0	0	-	0
College	Per125,000 Population	0	0	-	0
Tech. Training Institute	Per100000 Population	0	0	-	0

Agriculture Research Centre	Per100000 Population	0	0	-	0
Skill Development Center	Per100000 Population	0	0	-	0
Health Facility					
Govt. / Panchayat Dispensary or Sub PHC or Health Centre	Each Village	0	1	-	-1
Primary Health& Child Health Center	Per20,000 population	0	0	1	0
Child Welfare and Maternity Home	Per10,000 population	0	0	-	0
Multispecialty Hospital	Per100000 Population	0	0	-	0
Public Latrines	1 for 50families (if toilet is not there in home, specially for slum pockets& kutcha house)	0	1	1	-1

Physical Infrastructure Facilities			
Transportation	Each village	Adequate	
Pucca Village Approach Road	All Villages connected by PT(ST Bus or Auto)	Adequate	**10 km approach road**
Bus/Auto Stand provision		In Adequate	**No pick up stand available(connected by STbus, auto, AMTS)**
Drinking Water(Mini.70lpcd)		Adequate	
Over Head Tank	1	50000lit.	
U/G Sump	0	0	
Drainage Network-Open		Inadequate	
Drainage Network-Cover		Inadequate	

Socio-Cultural Infrastructure Facilities					
Community Hall	Per10000 Population	0	1	1	-1
Community hall and Public	Per15000 Population	0	1	1	-1
Library					
Cremation Ground	Per20,000 Population	0	1	-	-1
Post Office	Per10,000 Population	1	0	-	+1
Gram Panchayat Building	Each individual/group Panchayat	1	1	-	0
APMC	Per100000 Population	0	0	-	0
Fire Station	Per100000 Population	0	0	-	0
Public Garden	Per village	0	1	1	-1
Police post	Per40,000Population	0	1	-	-1

12.3. Suggestions/Benefit of the villagers:

There are following structures need to build up to Progress of village and their people:

- 12.3.1 Physical Infrastructure Facilities should need such as: Higher secondary school, closed drainage system, panchayat building, sanitation facilities, Child Welfare centered.

- 12.3.2SocialInfrastructureFacilitiesshouldneedsuchas:
Police station, hospitals, community Housing, General market, etc.

- 12.3.3 Socio-Cultural Infrastructure Facilities should need such as:
Govt. grocery shop, Community hall, Library, Auditorium, Recreational activities, pickup stand etc.

- 12.3.4 Sustainable Infrastructure Facilities should need such as:
Green building, organic waste controller, Natural Resources (petrol, diesel), Solar system, Biogas plant, Rain Water Harvesting, etc.

- 12.4.5 If these structures available in the village, Villager can easily gather advantages of the system and they not need to depend on other town, good drainage system and sanitation facility in village ensure the good health and well-being of people.