DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
Nyara Village

Rajkot District

PREPARED BY

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Atmiya Institute of Technology & Science

NODAL OFFICERS NAME
Assi. Prof. Devang Sarvaiya

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad – 382424 Gujarat

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Gujarat Technological University,
Chandkheda, Ahmedabad – 382424 Gujarat

CERTIFICATE

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

Detail Project Report for,
VILLAGE Nyara
DISTRICT- Rajkot
Under

Vishwakarma Yojana: Phase-VIII

in partial fulfillment of the project offered by
GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA
during the academic year 2020-21.

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

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ABSTRACT

Vishwakarma Yojana is one of the Resourcefulness towards Reurbanzation by Government of Gujarat, which was selected as a real-time situation type project provide to GTU. It provides the benefits of real work experience to engineering students and simultaneously apply their technical knowledge in the development of infrastructure in rural development. The students and Faculty Members meet all the stake-holders in a village, survey the existing facilities. The students use their engineering skills to prepare detailed project reports for the infrastructure as a part of their Final Year project work. Through the Yojana, the students of GTU are getting real work experience and are able to apply their technical knowledge and practices to a real problem.

Our assigned village is Nyara village. Nyara is a village in Paddhari Taluka in Rajkot District of Gujarat State, India. It is located 13 KM towards west from District headquarters Rajkot. 14 KM from Paddhari. The total geographical area of the village is 1274.16 hectares. Total population 2226 of the village is as per census 2011. Total households in Nyara village is 414 as per census. Main occupation of Nyara village is farming.

Cotton, Groundnut and Wheat are agriculture commodities grow in this village. Total irrigation area in this village is 381.65 hectares from Boreholes, 295 hectares form Tube wells and from Lakes or tanks 86.65 hectares. Treated Tap Water Supply all-round the year is available. Open drainage System is also available in village.

Village has Anganwadi, Govt primary and private Secondary schools with playgrounds. Village has open drainage system. Village has gram panchayat building and Agriculture Co-operative society. There is 24*7 electricity supply for residential use and 8 hour for agricultural use. The development of city will lead the people to develop their villages otherwise there will be more migration towards cities, which will setup RURBAN planning.

There are many facilities which are lack in Nyara village like health center, proper roads, govt. hospital, bio-gas plant, solid waste management plant, community hall, and recreational centers

We are giving design to sustainable facilities such as Sock pit, pick up stand for private and government vehicles, cremation and conference room etc...

In further phase we will provide Social Infrastructure design for the village. It will include Design of CHC (Community Health Centre) and it is required to provide Child-Welfare, Maternity Homes. Then we will also design Social-Cultural Infrastructure for the village. It will Include recreational facilities like Public Library and Public Garden. We will also design Physical Infrastructure in the village.

Key Words: Sustainable Development, Connectivity, Community Involve, Technology, Reduce migration, Village development

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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.

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INDEX

INDEX CONTENT	PAGE
Cover	**1**
Certificate	**3**
Abstract	**4**
Acknowledgement	**5**
Index	**6**
List of Figures	**11**
List of Tables	**13**
List of Abbreviation	**14**
1. Ideal village visit from District of Gujarat State (Civil & Electrical Concept)	**15**
1.1 Background & Study Area Location	**15**
1.2 Concept: Ideal Village, Normal Village	**16**
1.2.1 Example / Live Case studies of ideal village of India/Gujarat	**16**
1.2.2 Various Exposure of model Village	**16**
1.2.3 Objectives	**16**
1.2.4 Ancient History Civil / Electrical concept about Indian Village / other Countries Perspective about village and its new Development	**17**
1.2.5 Resources available in Ideal village	**17**
1.2.6 SWOT analysis of Ideal village / Smart Village	**18**
1.3 Detail study (Socio economic, physical, demographic and infrastructure details) of Ideal village / Smart Village with photograph	**18**
1.4 Economic Profile	**18**
1.5 Socio Scenario Profile	**18**
1.6 Infrastructure Facilities	**19**
1.7 Initiatives in village development by local self - Govt	**21**
1.8 Future Prospects of Ideal village	**21**
1.9 Benefit of visit of ideal village	**21**
1.10 Civil Concept/ Method/ Usages in ideal village	**21**
1.11 Civil Benefit available in Ideal Village	**22**
1.12 Case Study of other State Ideal village	**22**
1.13 Case Study of any other outside1 country of village	**23**
2 Nyara Literature Review – (Civil Concept)	**24**
2.1 Introduction: Urban & Rural village concept	24
2.1.1 Real urban and rural concept	24
2.1.2 Ancient village/ Different definition of rural villages	24

2.2 Scenario: Rural / Urban village of Gujarat as per Census 2011 and	24
2.3 Rural Development Issues - Concerns - Measures	25
2.3.1 Crime free / Dispute free	25
2.3.2 Resources	25
2.3.3 Literacy	26
2.4 Various measures for rural development	27
2.5 Good Governance Project	27
2.6 R urban Clustre	27
2.7 Sansa Adarsh Gram Yojna	27
2.8 Award winning gram panchayat Pradhan	28
2.9 Action towards poverty free village	28
2.10 India state specific special finance grant for village	28
2.11 project/ scheme by Govt/ private sector	28
2.12 Other project / Schemes	29
3. Smart (Cities / Village) Concept Idea and its Visit (Civil & Electrical Concept)	30
3.1 Introduction: Concepts, Definitions and Practices	30
3.2 Vision-Goals, Standards and Performance Measurement Indicators	30
3.3 Technological Options	31
3.4 Road Map and Safe Guards	33
3.5 Issues & Challenges	33
3.6 Smart Infrastructure - Intelligent Traffic Management	34
3.7 Cyber Security or any other concept as per the	35
3.8 District cooling/ heating Green building	35
3.9 Strategic Options for Fast Development	36
3.10 India's Urban Water and Sanitation Challenges and Role of Indigenous Technologies	36
3.11 Initiatives in village development by local self-government	37
3.12 Smart Initiatives by District Municipal Corporation	37
3.13 Any Projects contributed working by Government / NGO / Other Digital Country concept	37
3.14 How to implement other Countries smart villages projects in Indian village context (Regarding Environment , Employment,	38
4. About Nyara	39
4.1 Introduction	39
4.1.1 Introduction About Nyara Village details	39
4.1.2 Justification/ need of the study	39

4.1.3 Study Area (Broadly define)	39
4.1.4 Objectives of the study	39
4.1.5 Scope of the Study	39
4.1.6 Methodology Frame Work for development of your village	40
4.1.7 Available Methodology for development of related to Civil	41
4.2 Nyara Study Area Profile	41
4.2.1 Study Area Location	41
4.2.2 Brief History	41
4.2.3 Base Location map, Land Map, Gram Tal Map	42
4.2.4 Study area land use detail	42
4.2.5 Physical & Demographical growth	43
4.2.6 Economic Profile/ Banks	43
4.2.7 Social Scenario	43
4.2.8 Migration Reason/ Trends	43
4.3. Data Collection Nyara Photograph/Graphs/Charts/Table)	43
4.3.1 Describe Methods for data collection	43
4.3.2 Primary details of survey ~~details~~	44
4.3.3 Average size of the House - Geo-Tagging of House	44
4.3.4 No of Human being in One House	44
4.3.5 Material available locally in the village and Material Out Sourced by the villagers	44
4.3.6 Any Costing	44
4.3.7 Geographical details	44
4.3.8 Occupational Detail - Occupation wise Details / Majority business	44
4.3.9 Agricultural Details / Organic Farming / Fishery	45
4.3.10 Physical Infrastructure Facilities - Manufacturing HUB / Ware Houses	45
4.3.11 Tourism development available in the village for attracting the tourist	45
4.4 Infrastructure Details (With Exiting Village Photograph)	45
4.4.1 Drinking Water / Water Management Facilities	45
4.4.2 Drainage Network / Sanitation Facilities	45
4.4.3 Transportation & Road Network	46
4.4.4 Housing condition	46
4.4.5 Social Infrastructure Facilities , Health , Education , Community Hall , Library	46
4.4.6 Existing Condition of Public Buildings & Maintenance of existing Public Infrastructures	**47**
4.4.7 Technology Mobile/ WIFI / Internet Usage Details	**47**
4.4.8 Sports Activity as Gram Panchayat	**47**

4.4.9 Socio-Cultural Facilities , Public Garden /Park/Playground /Pond/ Other Recreation Facilities	**47**
4.4.10 Other Facilities (e.g like foot path development-Smart toilets-Coin operated entry, self-cleansing, waterless, public building)	**47**
4.4.11 Sustainable infrastructure Facilities	**47**
4.4.12 Existing condition public building	**48**
4.5Existing Institution like - Village Administration – Detail Profile	**48**
4.5.1 Bachat Mandali	**48**
4.5.2 Dudh Mandali	**48**
4.5.3 Mahila forum	**48**
4.5.4 Plantation for the Air Pollution	**48**
4.5.5 Rain Water Harvesting - Waste Water Recycling	**48**
4.5.6 Agricultural Development	**48**
4.5.7 Any Other	**48**
5. Technical Options with Case Studies (FOR ANY ONE TOPIC, Take a new concept design , prototype model with actual costing)	**49**
5.1 Concept (Civil)	**49**
5.1.1 Advance Sustainable construction techniques / Practices and Quantity Surveying	**49**
5.1.2 Causes Prevention and repair of cracks in a building	**49**
5.1.3 Disaster management in natural calamities	**50**
5.1.4 Various types of road	**51**
5.1.5Various types of environmental factors	**52**
5.1.6 E- Waste disposal	**52**
5.1.7 Corrosion mechanism, prevention and repair measures for RCC building	**53**
6. Swatchh Bharat Abhiyan (Clean India)	**56**
6.1 Swatchhta needed in allocated village -Existing Situation with photograph	**56**
6.2 Guidelines - Implementation in allocated village with Photograph	**57**
6.3 Activities Done by Students for allocated village with Photograph	**58**
7. Village condition due to Covid-19	**59**
7.1 Taken steps in allocated village related to existing situation with photograph	**59**
7.2 Activities Done by Students for allocated village ~~Clean~~ with Photograph	**59**
8. Sustainable Design Planning Proposal (Prototype Design)- Part- I (Scenario / Existing Situation / Proposed Design in Auto cad / Recapitulation Sheet / Measurement Sheet / Abstract Sheet / Sustainability of Proposal / Any other software)	**60**

8.1 Design Proposals	**60**
8.1.1 Sustainable Design (Civil)	**61**
8.1.2 Physical design (Civil)	**63**
8.1.3 Social design (Civil)	**65**
8.1.4 Socio-Cultural design (Civil)	**67**
8.1.5 Smart Village Design (Civil)	**68**
8.1.6 Heritage Village Design (Civil)	**69**
8.2 Reason for Students Recommending this Design	**70**
8.3 About designs Suggestions / Benefit of the villagers	**70**
9. Conclusion of the Entire Village Activities of the Project	**71**
10. References refereed for this project	**72**
11. Annexure attachment	**73**
12.1 Survey form of Ideal Village **Scanned copy** attachment in the report for Part-I Survey form of Ideal Village **Original copy** attachment in the report for Part-II	**73**
12.2 Survey form of Smart Village **Scanned copy** attachment in the report for Part-I Survey form of Smart Village **Original copy** attachment in the report for Part-II	**82**
12.3 Survey form of Allocated Village **Scanned copy** attachment in the report for Part-I Survey form of Allocated Village **Original copy** attachment in the report for Part-II	**88**
12.4 Gap Analysis of the Allocated Village	**97**
12.5 Summary Details of All the Villages Designs in Table form ~~as~~ Part-I and Part-II	**99**
12.6 Drawings (If, required,A1, A2, A3 design is not visible then Only)	**100**
12.7 Summary of Good Photographs in **Table Format** (village visits, Ideal, Smart Village or any other)	**106**
12.8 Village Interaction with sarpanch Report with the photograph	**108**

VY-PHASE-VIII-PART-II	**Pageno**
13.From the Chapter- 9 future designs of the aspects (Feasibility, Construction, Operation andmaintenance of various design options in Rural Areas along with cost with AutoCAD designs / planning with any software	**109**
13.1Design Proposals	**109**
13.1.1 Sustainable Design (Civil)	**109**
13.1.2 Physical design (Civil)	**112**
13.1.3 Socio-Cultural Design (Civil)	**114**
13.1.4 Social design (Civil)	**116**
13.1.5 Smart Village Design (Civil)	**118**
13.1.6 Heritage Village Design (Civil)	**119**
13.2Reason for Students Recommending this Design	**121**
13.3About designs Suggestions / Benefit of the villagers	**121**

14. Technical Options with Case Studies	**122**
14.1Civil Engineering	**122**
14.1.1 Advanced Earthquake Resistant	**122**
14.1.2 Seismic Retrofitting of Buildings	**124**
14.1.3 Advance Practices in Construction fieldin Modern Material, Techniques and Equipment's	**126**
14.1.4 Engineering Aspects Of Soil mechanics - Environmental Impact Assessment	**132**
14.1.5 Water Supply-Seweragesystem-Waste Water-Sustainable development techniques	**135**
15. Smart and/or Sustainable features of **Chapter 8 & 13 designs**, Impact on society. (For Allocated village development, villagers happiness, comfortable and for enhancement of the village)(**With the Smart village development Concept As Per Your Idea And Village Visit, modern technology with innovation**). **with doing small changes, Period, Amount Expenditure and Benefit –** (a) Immediately b) Within 1 year c) Long term (3-5 years) along with cost estimation. (b) If possible, List the sources of the funding available with the Village gram panchayat	**141**
16.Survey By Interviewing With TalatiAnd/OrSarpanch	**142**
17.Irrigation / Agriculture Activites And Agro Industry, Altenate Technics	**143**
17.1 Introduction	**143**
17.2 Irrigation and its types	**144**
17.3 Importance of irrigation	**145**
17.4 Agriculture in Vagudad village	**146**
18. Social Activities – Any Activates Planned By Students **e.g Teaching Learning activities, awareness camp, business idea for SELF HELP GROUP OR ANY OTHER**	**147**
19.<<ALLOCATED VILLAGE>>SAGY Questionnaire Survey form **with the Sarpanch** **Signature(Scanned copy** attachment in the soft copy report and Original copy in hardbound report)	**148**
20.TDO-DDO-Collector email sending Soft copy attachment in the report	**157**
21. Comprehensive report for the entire village	**158**
Detail drawings	**159**

LIST OF FIGURES

FIGURE NO	FIGURES LISTING	PAGE NO
1	Location area of rajsamadhiyala village	15
2	Overhead tank	19
3	RCC road in rajsamadhiyala	19
4	Lok Adalat	19
5	Education building	19
6	Cricket Ground	20
7	To detect the buyer	21
8	Rules Code	21
9	Payvihar Village	22
10	Malaysia low carbon “Smart city”	23
11	Urban area	24
12	Rural area	24
13	Digital libraries	31
14	LED light	32
15	Water ATM	32
16	Book Parking	32
17	Smart Toilet	33
18	Methodology	40
19	Satellite Map	41
20	Satellite Map	42
21	Land area	42
22	Elevated Water tank	45
23	Road network	46
24	Private clinic	46
25	Primary School	47
26	Cracks	49
27	ACE Technology	49
28	Flexible Pavement	51
29	Rigid Pavement	51
30	E-Waste Management	53
31	Nyara Road	56
32	Water Distribution System	56

33	Drainage	**57**
34	Waste page paper dish	**57**
35	Meeting with Children	**58**
36	Working with children	**58**
37	Honeybee breeding center	**62**
38	3D view of anganwadi	**61**
39	3D view of high school	**63**
40	3D view of Garden	**65**
41	Plan of CCTV Camera and Speaker	**68**
42	Village Map	**68**
43	Elevation of Entrance gate	**69**
44	Plan of honeybee breeding center	**101**
45	Plan and elevation of anganwadi	**102**
46	Plan of high school	**103**
47	Plan of garden	**104**
48	Position of cameras and speakers	**105**
49	Elevation of entrance gate	**106**
50	Interaction With faculty in Ideal village	**107**
51	CCTV camera facility	**107**
52	Base map of Ideal village	**107**
53	Award	**107**
54	Projector Room	**107**
55	Rules of village	**108**
56	Anganwadi	**108**
57	Primary School	**108**
58	Temple	**108**
59	Cricket Ground	**108**
60	Interaction With Sarpanch	**109**
61	Night View OF supermarket	**108**
62	Day view of supermarket	**109**
63	Night View of Supermarket	**109**
64	Front View of Shed	**111**
65	Rear View of Shed	**111**
66	Side View of youth Club	**113**
67	Front View of Youth club	**113**

68	Front View of Children and women activity center	**115**
69	Side View of Children and women activity center	**115**
70	Side View of open theatre	**117**
71	Front View of open theatre	**117**
72	Front View of Eco Building	**118**
73	Side View of Eco Building	**118**
74	Basic isolation method	**121**
75	Lead Rubber Bearing	**122**
76	Spherical Sliding Bearing	**122**
77	Seismic fluid Damper	**123**
78	Additional Shear Wall	**124**
79	Steel Bracing	**124**
80	Effect of providing shear wall and steel bracing	**125**
81	Jacketing	**125**
82	3d Graphene	**125**
83	Synthetic spider silk	**126**
84	Self healing concrete	**126**
85	Invisible solar cells	**126**
86	Bio Reactor	**126**
87	Prefabricated laminated timber	**127**
88	Transparent aluminum	**127**
89	Translucent Wood	**127**
90	Aluminum Foam	**127**
91	Illuminating concrete	**128**
92	Trencher	**128**
93	Dragline Excavator	**128**
94	Excavator	**128**
95	Dragline Excavator	**129**
96	Wheel Tractor scraper	**129**
97	Graders	**129**
98	3d Volumetric Construction	**129**
99	Insulating Concrete Formwork	**130**
100	Precast Cocnrete Foundation	**130**
101	Precast Flat Panel System	**130**
102	Twin wall Technology	**130**
103	Engineering aspects of Soil	**131**

104	Flowchart of EIA	**134**
105	Water Treatment	**135**
106	Schematic diagram of a rapid-filter water treatment facility.	**136**
107	Combined Sewerage System	**137**
108	Separate Sewerage System	**137**
109	Lagoon/Wetlands	**138**
110	Anaerobic digestion	**138**
111	Soil aquifer	**139**
112	Surface Irrigation	**143**
113	Localized Irrigation	**143**
114	Drip Irrigation	**143**
115	Center Pivot Irrigation	**143**
116	Manual Irrigation	**144**
117	Cleaning Activity	**146**
118	Ground Floorplan of Supermarket	**158**
119	First Floorplan of Supermarket	**159**
120	Section of Storage Shed	**160**
121	Plan of Storage Shed	**160**
122	Gf Plan of Children & Women Activity Center	**161**
123	Ff Plan of Children & Women Activity Center	**161**
124	Plan of Open Air Theatre	**162**
125	Floor Plan of Youth Club	**163**

LIST OF TABLES

Table NO	Table Setting	PAGE NO
1	SWOT Analysis	18
2	Social Scenario/ Profile	18
3	Rajsamadhiyala Water benefits	22
4	Demographic data of Gujarat	25
5	Award Winning Panchayat	28
6	Road Map and Safe guard	33
7	Literacy % Of Nyara	43
8	Geographical Area Detail	44
9	Measurement and abstract sheet of honeybee breeding center	62
10	Measurement and abstract sheet of Anganwadi	664
11	Measurement and abstract sheet of High School	66
12	Measurement and abstract sheet of Garden	67
13	Measurement and abstract sheet of Camera and speaker system	68
14	Measurement and abstract sheet of entrance gate of village	69
15	Gap Analysis	98
16	Summary of all village design	100
17	Abstract Sheet for Super market	110
18	Abstract Sheet for Shed	112
19	Abstract Sheet for Youth Club	114
20	Abstract Sheet for children and women activity center	116
21	Abstract Sheet for Open Theatre	118
22	Abstract Sheet for Eco building	119
23	Retrofitting techniques	124
24	Design Implementation details	140
25	Survey By Interviewing With Talati And/or Sarpanch	141

LIST OF ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
PGVCL	Paschim Gujarat Vij Company Limited
NREGA	National Rural Employment Guarantee Act
DRDA	District Rural Development Agency
NHM	National Health Mission
SSA	SarvaShikshaAbhiyan
NRLM	National Rural Livelihood Mission
RKVY	RashtriyaKrishiVikasYojana
IAY	Indira AwasYojana
SGSY	Swarmajayanti Gram SwarojgarYojana
SAGY	SansadAdarsh Gram Yojana
PMGSY	PradhanMantri Gram SwarojgarYojana
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
CHC	Community Health Centre
NRM	National Rural Mission
SC	Scheduled Castes
ST	Scheduled Tribes
OBC	Other Backward Class
PMRPY	PradhanMantriRojagarProtsahanYojana
PHC	Public health center
BRGF	Backward Regions Grant Fund

Chapter 1: Ideal village visit: Raj-Samadhiyala

1.1 Background & Study area location:

Background:

On 03-AUG-2018 we visited a village named Raj-Samadhiyala. Raj-Samadhiyala is the village located in Rajkot district in Gujarat. The current Sarpanch of the Raj-Samadhiyala is MR. Hardevsinh Jadeja. The village follows the Panchayati Raj system. Many advanced technologies are used in this village for various purposes. Many facilities like Community Hall with TV, primary and secondary schools, post office, shops, small scale industries etc. are developed in this village.

Study area location:

- Name: Raj-Samadhiyala
- District/Taluka: Rajkot
- Distance from Rajkot: 23 km
- Pin code: 360025
- Language: Gujarati, Hindi, English.
- Elevation/Altitude**:** 46 meters. Above-Sea level
- STD code: 02827

Figure1: Location Area Of Raj-Samadhiyala Village

1.2 Concept: Ideal Village:

1.2.1 Case Study of Ideal village of India/ Gujarat

1) Chansad Village (Gujarat):

Chansad village is a located in Vadodara district in the state of Gujarat, India. Village is fulfill by basic amenity like Anganwadi, Primary School, Secondary School, Panchyat, Bus/Auto Stand provision, Drainage Network, Waste Management System, Banks, etc.

2) 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. Well, per the 2001 census there are 17563 residents living in the village.

3) 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. According to visitors, you cannot find a single cigarette butt/plastic bag lying around there.

4) Hiware Bazar (Maharashtra) - The village of 60 millionaires:

Hiware Bazar, located in the Ahmednagar district of Maharashtra, has transformed from being a place fraught with issues to being possibly the richest village in India. The sole reason for this fairy-tale change is one man called PopatraoPawar. He banned all addictive substances to minimize expense and encouraged the villagers to invest in rain-water harvesting, milch cattle, etc. There are a record 60 millionaires in the village and barely any poor. From 168 Below Poverty Line families in 1995, Hiware Bazar now has just three. The villagers continue to strive to see a day when not one person is poor.

1.2.2 The idea of model Village: The idea of a Adarsh Gram‖ or model village has been explored earlier as well, most notably through the Pradhanmantri Adarsh Gram Yojana, launched by the Central Government in 2009.

- At present one of the major challenges in India is growing population and rapid Urbanization.
- Working with research partners around the world to evidence the impact of the holistic Smart Villages development model, through baseline studies and long-term impact assessment across multiple development metrics, across multiple SDGs.
- The idea of ―smart village‖ will also attention to multiple challenge such as unplanned urbanization, under development of villages, migration for economic pursuance, improved standard of living.

1.2.3 Objectives of the Ideal Village:

- Prevent migration from rural to urban.

•Provide easier, faster and cheaper access to urban markets for agricultural produce or other marketable commodities produced in such villages.

•Contribute towards social empowerment by engaging all sections of the community in the task of village development.

1.2.4 How to Develop the Ideal Village / Key elements of ideal village:

- A unified healthcare system needs to be developed which guarantees access to healthcare for every citizen. A community cannot thrive if the people can't even access basic healthcare.
- A unified program needs to be developed where every single individual in the community has access to a nutritious diet.
- Creating an environment for community-led planning, with the TDO spreading this campaign. Situation, Analysis, including baseline surveying and resource mapping. Identification of financial resource streams. Finalizing needs.
- It should also encourage people with new technologies and its beneficial use.

1.2.5 Resources available in Ideal Village Electricity:

- Agriculture (Jyotigram)-(8-10 hour).
- PGVCL (Gujarat Government)-(More than 6 hour)

Transportation facilities:

- Private Transport
- Public Transportation

Irrigation facilities:

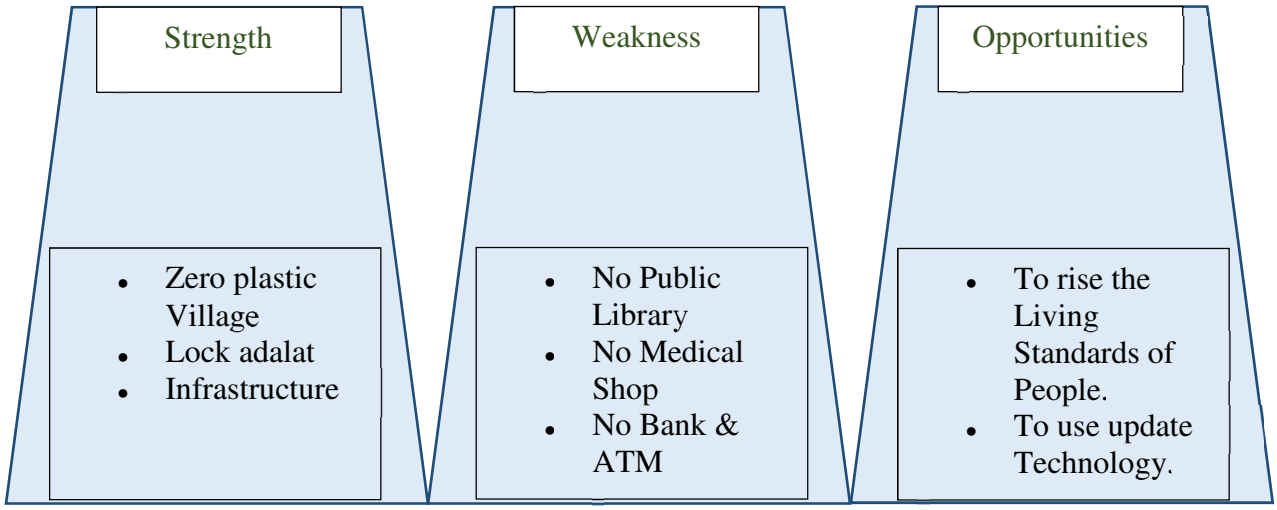
•Lake (7)
•Natural (Rain)
•Check-Dam (48)
•Well & Tube well

Government schemes:

•JSY
•KSY
•BSY
•MMP
•ICDS
•SP
•NREP
•JRY
•IAY
•SAY

1.2.6 SWOT analysis of ideal village:

Table-1 SWOT analysis



1.3 Detail Study (Demographical and physical) of ideal village

•Sardhar is nearest town to Raj-Samadhiyala which is approx. 6.4km away from the Village.
•The total geographical area of village is 1089.55 hectare.
•Nearby Railway station to Raj-Samadhiyala is Rajkot.
•Raj-Samadhiyala has a total population of 1467 peoples.
•There are about 88 Family in Raj-Samadhiyala Village.000.

1.4 Economic profile:

More than 80% peoples are depending on agricultural activities. But also other employment opportunities of income are also available in village from service and small scale industries business.

1.5 Social scenario /profile:

Table 2- Social scenario /profile

Anganwadi	**Yes**
School	**Yes**
CHC/HC/RH	**Yes**
Sub center	**Yes**

Community Hall	**Yes**
Public Garden	**yes**
Village pond	**Yes**
Recreation center	**Yes**

1.6 Infrastructures facilities:

Figure 3 : RCC Road

Figure 2 : Overhead Tank

Figure 4: Lok Adalat

Figure 5: Education building

Figure 6: Cricket ground

1) **Water supply**
   There is 24hrs water supply in village. The water is supplied through overhead tank

2) **Road facilities and Transport Facilities:**
   95% of the road in the village is R.C.C. road.

3) **Guest House:**
   A small guest house is there in village for stay of visitor.

4) **Lok-Adalat:**
   It's division of village in 11 parts for decentralization of work, consist of 11 impressive and responsible members of a group of 25 to 30 households having powers to solve problems of his group , convey and make implement decision take by village development committee and if found inefficient for representing , he personally will be penalized.

5) **Education Facilities:**
   Education is the mainly focused in the village. There is 1Gov.school and 1 Aanganwadi. It includes primary school and secondary school.

6) **Cricket Ground:**

   Sport encouragement to young generation state level cricket ground for local team to compete against under 19 teams from Rajkot and neighborhood village team.

1.7 Initiatives in village development by local self-government

- For betterment of village MR. Hardevsinh Jadeja enthusiastic sarpanch, transformed his village with vision of development through cleanliness.
- Cleanliness of household, streets and entire village was declared compulsory duty of each citizen of the village and fine system was introduced the code of conduct strict implementation of rule since 1983 and today it now habit of all resident to keep the village clean and plastic free.
- First year fine collection of Rs. 30,000 which to yearly 1000-1500 for plastic wrapper.

Figure 7: To detect the buyer

Figure 8: Rules code

1.8 Future prospects of the Ideal Village

For future prospect, the village Raj-Samadhiyala can use more advanced technologies for agricultural prospect and for other requirements also. They can improve the computer labs in the schools. They can also provide bio-gas plant in the village.

1.9 Learnable Things / Benefits of the visits

By the visit of the Raj-Samadhiyala village, we got an idea about an ideal village. We have seen many kind of new technologies which can be used in village that are being used in the urban area like zero plastic waste management. By this visit of Raj-Samadhiyala, we know how to interact with the different peoples. Comparison between ideal village and ordinary village through the visit of ideal village.

1.10 Civil Concept / Method / Usages in the Ideal Village:

In these village, nearly 15 years ago. Its people faced a major water crisis. The groundwater table had receded to a depth of 250 meters. By1985, villagers started to build check dams and tanks by using funds under the District Rural Development Authority (DRDA) program.

They built 45 check dams over an area of 1,090 hectares. Last year, the village received 400mm of rainfall while this year, even with no sign of rain, water is available at a depth of 15 meters.

1.11 Civil Benefit available in the Ideal Village:

Mainly the benefits for this village due to civil concept is on Agricultural sector and on water crises given below:

Now the village uses remote sensing technique and geographic information system (GIS) to locate subsurface dykes to store water.

- Sufficient water available for irrigation purpose.
- Easy availability of drinking water.
- Natural underground water channels helps in fast recharge of ground water.

Table 3: Raj-samadhiyala Water benefits

Parameters	1985-Pre-Water Harvesting	2002-Post-Water Harvesting
Landunder cultivation(Ha)	865	930
Land irrigation (Ha)	258	418
Ground water level(M) pre monsoon	250	15
Post-monsoon	50	1 to 3
Perennial drinking water	2	14
No. of trees	16000	51000
Per Hectare income (Rs)	4600	31000

1.12 Case Study of other state Ideal Village

Payvihir- A Model Village

An obscure village in the foothills of melghat region of Amravati district in Maharashtra, payvihir, has set an example for the country by consistently showing how communities and NGOs can work together to conserve the environment and ensure sustainable livelihood for people.

In 2014, payvihir bagged the biodiversity award from the united nation‘s development progamme for turning a barren , 182-hectare land under community forest right , into a forest .Recently , the village also came up with an out of the box idea of selling organic sutafals and mangoes in Mumbai under their brand naturals melghat.

Figure 9: Payvihir village

1.13 Case Study of any other outside countries of Village:

Malaysia Low-carbon "smart cities"

Malaysia's population grew 53% in 20 years - from 18 million in 1990 to 28 million in 2010 with over 33 million predicted by the end of this decade. In 2020, some 75% will live in cities (almost tripling Peninsular Malaysia's urban demographic from the 27% proportion recorded in1960).With urban development‘s contributing 50% of world greenhouse gas emissions, striving to achieve low-carbon cities is essential to mitigating the planet's warming trend.

Two pilot sites:

- Tasik (lake) Kenyir resort area, northeast Malaysia: CO2 emissions are being reduced this year from 95.39 to 62.35 tons (confirm) from 2011 baseline levels by 2014.
- Cyberjaya, the national capital area high-tech corridor: CO2 emissions are being reduced from 1.4 million to 1.1 million tons from 2011 levels.

Among hallmarks of low-carbon urban areas: Open green space and trees.

- Bicycling, walking and public transportation are easy, attractive alternaties to driving while policies promote car-pooling, lower driving speeds and better traffic flow.
- Water and energy efficiency is promoted in initial construction designs and retrofitting, along with fostering the use of renewable energy.

Infrastructure enables district cooling, effective storm water management and flood mitigation.

Figure 10: Malaysia Low-carbon "smart cities"

Located on the southern tip of the Malay Peninsula opposite Singapore, Iskandar covers 2,217 square km -- an area the size of Luxembourg - and is made up of skyscrapers and high rises as well as low-carbon, self-contained cities, townships, villages and neighborhoods. Its population of 1.3 million people in 2010 expected to roughly trip.

Chapter 2: Nyara Literature Review

2.1 Introduction

2.1.1 Real Urban & Rural and concept:

Urban area: 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. Rural area: In rural areas people live further away from one another and the distances between their homes and businesses are greater. The primary industry in most rural areas is agriculture and most people live or work on farms or ranches. Small settlements including villages, hamlets or small towns are often surrounded by rural areas. Wildlife is also much more common in rural areas due to the lack of people and build.

Figure 11: Urban Area

Figure 12:Ruler Area

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

Rural areas are the opposite of urban areas. Rural areas, often called "the country," have low population density and large amounts of undeveloped land.

United states census(2000 census) defines rural areas as comprising open country and settlements with fewer than 2500 residents areas designated as rural can have population densities as high as 999 per square mile as 1 person per square mile.
United States development of agriculture (2002 form bill) defines rural areas as any area other than a city or town that has a population of greater than 50,000 inhabitants and the urbanized areas contiguous and adjacent to such town or a city.

National geographic society defines A rural area is an open swath of land that has few homes or other buildings and not very many people.

2.2 Scenario: Rural / Urban India & Gujarat as per Census 2011 and latest population Growth: Gujarat Population 2011

- •Total population 60,439,692
- •Total population of male: - 31,491,260
- •Total population of female: 28,948,432
- •Total population growth in decade is 19.28%
- •Out of total population of Gujarat, 42.60% people lives in urban region and rest in rural.

Table 4: Demographic data of Gujarat

Description	Rural	Urban
Population	57.14%	42.60 %
Total population	34,694,609	25,745,083
Male population	17,799,159	13,692,101
Female population	16,895,450	12,052,982
Population growth	9.31 %	36.00 %
Sex ratio	949	880
Literates	21,420,842	19,672,516
Average literacy	71.71 %	86.31 %

2.3 Rural Issues & Concerns:

2.3.1 Crime Free / Dispute free:

The Home Department of the Government of Maharashtra launched the innovative scheme for Alternative Dispute Resolution in 2007 aimed to address the issues with efforts from the community for speedy disposal. It was observed that at the village level, disputes often arise over petty issues. Even though initially few people may be involved, petty disputes if unresolved can contribute to contention and result in distrust which can further decline mutual relations and are a potential threat to the peace and harmony of the community.

The Mahatma Gandhi Tantamukt Gaon Mohim is a village level Alternative Dispute Resolution (ADR) system which seeks to work with a two pronged strategy, firstly it has a preventive role by virtue of which there is a conscious effort made by the village community to prevent the occurrence of any passive or regressive conflict – dispute in the village and secondly to resolve existing disputes at the village level through people's participation and initiative.

2.3.2 Resources:

- •A disproportionate burden of chronic disease relative to the general public
- •Restricted access to quality health care
- •Insufficient or lack of health insurance coverage
- •Geographic isolation
- •Lack of public transportation
- •Poor infrastructure
- •Low educational attainment
- •Low health literacy

- Poverty and unemployment
- A smaller health care workforce and a lack of specialty care
- Limited availability of bilingual providers and interpreter services Cultural or social differences, stigma, and norms

2.3.3 Literacy:

The concept and phenomenon of education based on school-going is of modern origin in India. Education in the past was restricted to upper castes and the content taught was also astrictive. However, today, to lead a comfortable life in this fast-changing world, education is seen as the most influential agent of modernization.

The educational attainments in terms of enrolment and retention in rural India generally correspond to the hierarchical order. While the upper castes have traditionally enjoyed and are enjoying these advantages, the Scheduled Caste and other backward castes children have lagged behind in primary schooling. Studies have revealed that children of backward castes are withdrawn from school at an early age, by about 8 or 9 years.

An important reason for withdrawal of children from school is the cost and work needs of poor households. Income and caste are typically correlated with lower castes having lower incomes and higher castes having better endowments in terms of land, income and other resources. Thus, one fact is certain that there is a clear divide in the villages, along aste lines, regarding access to schools.

The very poor children are enrolled in the municipal school because it provides a number of incentives such as lower expenditure on books, uniforms, fees, etc. The well-off children go to the private school, where English and computers are given more importance.

The tendency in favor of private schools in rural areas is influenced by people‘s perception of private schools, as a means of imparting quality education in English medium. The poor rural girls, if not all, constitute a major junk of disadvantaged groups that are excluded from the schooling process, especially because they enter late into school and drop out earlier

Parental illiteracy is another cause for lack of interest to become literates. Many rural children enrolled are thus first generation learners, who come from illiterate families thus, they have to single handedly grapple with school life, mastering language and cognitive skills without parental help and guidance.

Inadequate Nutrition: Inadequate nutrition in the childhood affects women in their later life especially women belonging to the lower middle class and poor families.
Low status in the family: It is the abuse or violence against women.

Women are considered as inferior to men so they are not allowed to join military services. Status of widows: Widows are considered as worthless in the Indian society. They are treated poorly and forced to wear white clothes.

2.4 Various Measures for Rural Development:

Rural development is the national necessity and it has following measures:

- To develop infrastructure facility of rural area.
- To develop living slandered of rural mass.
- To develop rural youths, children and women.
- To develop and empower human resource of rural area in terms of their psychology, skill, knowledge, attitude and other abilities.
- To provide minimum facility to rural mass in terms of drinking water, education, transport, electricity and communication.
- To develop rural area as whole in terms of culture, society, economy, technology and health.

2.5 Good Governance Project:

The International Federation of Accountants (IFAC) and the Chartered Institute of Public Finance and Accountancy (CIPFA) have together developed the International Framework: Good Governance in the Public Sector.

Growing awareness of the substantial role of poor public sector governance in the sovereign debt crisis and other public sector failures has made the appropriate application of governance standards and arrangements more pressing than ever. The Framework aims to encourage more effective public sector governance and better governed and managed public sector entities.

2.6 Rurban Cluster:

A 'Rurban cluster', would be a cluster of geographically adjacent villages with a population of about 25000 to 50000 in plain and coastal areas and with a population of 5000 to 15000 in desert, hilly or tribal areas. As far as workable, clusters of villages would follow administrative convergence units of Gram Panchayats and shall be within a single block/tehsil for administrative convenience.

2.7 SansadAdarsh Gram Yojana:

SansadAdarsh Gram Yojana(SAGY) is a rural development programme broadly focusing upon the development in the villages which includes social development, cultural development and spread motivation among the people on social mobilization of the village community. The programme was launched by the Prime Minister of India, Narendra Modi on the birth anniversary of Jayaprakash Narayan, on 11 October 2014.

Key objectives of the Yojana include:

1. The development of model villages, called Adarsh Grams, through the implementation of existing schemes, and certain new initiatives to be designed for the local context, which may vary from village to village.
2. Creating models of local development which can be replicated in other villages.

2.8 Award Winning Gram Panchayat Pradhans:

Table 5: Award Winning Panchayat

Sr. No.	State	District	Panchayat name& year
1	Gujarat	Lodhika	Metoda (2008)
2	Gujarat	Mahesana	Akhaj(2009)
4	Gujarat	Patana	Sujanpur(2008)
5	Gujarat	Maliya	Manaba(2008)

2.9 Action towards Poverty Free:

Poverty has multiple dimensions Addressing poverty is one of the toughest challenges in this world. Poverty is a multi-dimensional phenomenon. There are several economic, social, gender and other deprivations contributing to poverty. The problems of poverty and unemployment are inter-linked and need a concrete action plan. In order to ensure sustainable employment and eradicate poverty, we need to invest in human capital. We need to make sure that the following are available to citizens:

1. Education - we need to ensure that all children go to school and do not drop out of school. This in turn means ensuring that basic facilities such as teachers, books, even roads and toilets in schools are present and functioning in the Gram Panchayat.

2.Opportunities for employment – creation of labour, banks, skilling farmers on mechanization can all contribute towards creating employment opportunities.

2.10 India State Specific Special Finance Grant for Village:

•Housing scheme: rajiv awaas yojana 2008.
•Loans to village panchayats under remunerative schemes.
•Matching grants to panchayats .
•Grants to weaker section for strengthening their administration.
•Grants to al panchayatparishad and mahilamandals.
•Rural garbage disposal scheme 2005.

2.11 Projects / Schemes by Govt / Private. Sector:

Government Schemes:

Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA):

MGNREGA Launched on 2nd February 2006 as a momentous initiative towards pro-poor growth. For the first time, rural communities have been given not just a development programme but also a regime of rights. The National Rural Employment Guarantee Act, 2005 (NREGA) guarantees 100 days of employment in a financial year to any rural household whose adult members are willing to do unskilled manual work.

Central Government Health Scheme:

The Central Government Health Scheme (CGHS) was started under the Indian Ministry of Health and Family Welfare in 1954 with the objective of providing comprehensive medical care facilities to Central Government employees, pensioners and their dependents residing in CGHS

covered cities. This health scheme is now in operation with cities such as Bhubaneswar, Bhopal, Chandigarh and Bangalore.

Private Schemes:

Urban amenities in rural areas schemes:

Nine Private Sector Companies join hands with the Rural Development Ministry for Provision of Urban Amenities in Rural Areas (PURA) Scheme.

Urban amenities in rural areas schemes 2:

Under PURA 2, projects are being clubbed to give out to a private sector on a PPP basis for execution and maintenance for 10 years. This will mostly come from the existing central government schemes. With pre-determined service standards, the private party will get a subsidy to build and maintain the assets. The urban amenities that would be covered include water supply, drainage, solid waste management, electricity distribution, telecommunication services and street lighting. Depending on the results, the government wants to scale it up to 100 projects with an investment of about Rs 30,000 crore in the next five years.

2.12 Other Projects / Schemes:

In other projects for the development of the rural area is the Public Private Partnership (PPP).

Public-Private-Partnership - The Concept:

Public-Private-Partnership or PPP is a mode of implementing government programmes/schemes in partnership with the private sector. The term private in PPP encompasses all non-government agencies such as the corporate sector, voluntary organizations, self-help groups, partnership firms, individuals and community based organizations, PPP, Moreover, subsumes all the objectives of the service being provided earlier by the government, and is not intended to compromise on them. Essentially, the shift in emphasis is from delivering services directly, to service management and coordination. The roles and responsibilities of the partners may vary from sector to sector.

Chapter 3: Smart Village Concept as per your Idea and its Visit

3.1 Concepts, Definitions and Practices

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

"Smart village means all the necessaries facilities is developed in the village and no need to moves in city for any kind of requirement."

3.2 Bench Marks-Vision-Goals, Standards and Performance Measurement Indicators

Smart Cities Bench Marks

Smart city should following the smart projects and some of the key smart features are:

- Smart traffic light
- GPS and traffic management software
- Smart waste management systems
- Sensor technology for irrigation
- Smart solar energy systems for water heating
- Smart parking
- Free Wi-Fi access points and devices everywhere in the city
- Building automation and control solutions (security, fire safety, alarms, lighting, gas and smoke detection)
- Smart energy management (Smart grid, smart water meters, smart solar energy solutions, smart electricity meters)
- Public safety module using CCTV and real-time sensors
- Smart transportation
- Sensors and camera for smart waste management, etc.

Smart City Vision

Urbanization is a growing trend. As more and more people gather together, smart systems and their integration need to be developed, not just to provide the necessary services to the people, but to do so effectively with the minimal impact on the environment.

Goals

Provide basic amenities as well as sustainable and smart infrastructure and increasing citizen's accountability towards it.

Identify the transport facility and need resident and business group of people and advantage technology can be used to address problems of safety and other facility.

Improved quality of life through improved physical and social infrastructure and clean and green environment.

Smart Cities Standards

There are some standards activities for smart city which is kept in mind to develop any smart city and you should at least be aware of below things.

1. Strategic:-

•ISO 37120: Sustainable development of communities — Indicators for city services and quality of life.

•ISO 37101: Sustainable development & resilience of communities – Management systems– General principles & requirement.

2. Process:-

•The development by the BIS of a Smart city framework standard (PAS 181) falls into the Process category: ―It provides practical, _how-to' advice, reflecting current good practice as identified by a broad range of public, private and voluntary sector practitioners engaged in facilitating UK smart cities.

Smart Cities Performance Measurement Indicators

•**Information and Communication Technology:** Internet or Wi-Fi facility, mobile network, etc.

•**Environmental sustainability:** Air quality, CO2 emissions, Energy, Indoor pollution, water, soil and noise.

•**Productivity:** Capital investment, Employment, Inflation, Trade, Savings, Export/import, Household income/consumption, Innovation, Knowledge economy.

•**Quality of life:** Education, Health, Safety, Convenience and comfort

•**Equity and social inclusion:** Inequity of income/consumption, Social and gender inequity of access to services and infrastructure, Openness and public participation, Governance.

•**Physical infrastructure:** piped water, sewage systems, electricity, waste management, knowledge infrastructure, health infrastructure, transport, roads, and buildings.

3.3 Technological Options:

• **Digital libraries**

Digital libraries in schools across the city. Some 13 schools in Delhi have been selected for this. 3D printing labs have been set up in 10 schools.

Fig.-13: Digital Libraries

•**LED lights**

LED lights to replace streetlights, pelican crossing, 3D zebra crossing, street furniture, Wi-Fi network, CCTV cameras and environment sensors. In Delhi, pilot on Mother Teresa Crescent road.

Fig-14: LED Light

- **Water ATM:**

Water ATM is device to extract water from mini sewage treatment plants and use water for gardening, house cleaning, washing of cloths, etc.

Fig.-15: Water ATM

- **Book parking through your smartphone**

Mobile app to pre-book parking slots for better regulation of parking spaces. In Delhi, the work awarded has been awarded for the same.

Fig.-16: Book Parking

- **Smart toilets**

  These smart toilets will have water ATM, vending machine and sanitary napkin vending machine.

Fig.-17: Smart Toilet

3.4 Road Map and Safe Guards

Table 6: Road Map And Safe Guard

1.	Develop the Smart City strategy and business
2.	Develop the project plans and quality
3.	Gather business requirements and design smart city
4.	Implement and test smart city
5.	Prepare business transition for smart city
6.	Actual operation and support of smart city

3.5 Issues & Challenges

Urban Water and Sanitation Challenges

- More than 90% of the urban population has access to drinking water, and more than 60% of the population has access to basic sanitation.
- Indian city receives piped water 24 hours x 7 days a week.
- Less than 50% urban population has access to piped water.
- The Non-Revenue Water (NRW) means due to leakages, unauthorized connections, billing and collection inefficiencies, etc. is huge, estimated between 40-70% of the water distributed.
- Operations and maintenance cost recovery through user charges is hardly 30-40%. Most urban operations survive on large operating subsidies and capital grants**.**

Role of Indigenous Technologies

•Businesses and governments are starting to recognize the role of technology in meeting the goals of urban infrastructure provisioning both today and in the long term.

•Dream of Smart cities can be achieved at accelerated pace with higher reliance on information and communications technology (ICT).

•The smart city transformation would be fueled by advance technology and the deployment of intelligence & information management systems.

•Digital disruptions including social media, mobility, Machine-to-Machine, Internet of Things, Big Data, and Cloud Computing will become the backbone of next generation smart cities.

Key Issues in development of Human Being

- Ecosystem services Access to water. Food security.
- Health situation.
- Access to education.

Education / Job Opportunity Development

•Education is a basic determinant of the quality of life of individuals, people with limited skills and competencies are excluded from good jobs and have fewer prospects for economic prosperity**.**

•Higher levels of educational attainment are generally linked to better occupational prospects and higher income for individuals, hence having a positive effect on their quality of life.

•People who have completed tertiary education improve their possibilities to secure a job the unemployment rate decreases with the educational level.

Governmental Issues

•Government and policy makers are facing challenges such as increase in urban population from rural areas and huge gaps in infrastructure.

•Smart city would be a city with facilities like smart people, smart technology, smart energy, smart transportation, smart IT and communication and above all smart governance.

•This paper is an attempt to focus on the key issues and the challenges to develop new cities or improve the infrastructure facilities in our existing cities which are over populated and not properly managed.

3.6 Smart Infrastructure

Smart infrastructure provides the foundation for all of the key themes related to a smart city, including smart people, smart mobility, smart economy, smart living, smart governance and smart environment. This section introduces some key components of smart city infrastructure and concludes by highlighting the need for an integrated approach in dealing with such infrastructure.

Smart buildings

•A smart building integrates the different physical systems present in an intelligent way to ensure that all the systems act together in an optimized and efficient manner.

•Smart building management systems can improve building energy efficiency, reduce waste and ensure an optimum usage of water, with operational effectiveness and occupant satisfaction.

•It is estimated that implementing smart building solutions could save as much as 30 per cent of water usage and 40 per cent of energy usage and reduce overall building maintenance costs by 10 to 30 per cent.

Smart mobility

- Smart mobility is best described as approaches that reduce congestion and foster faster, greener and cheaper transportation options.
  - Most smart mobility systems use data collected from a variety of sources about mobility patterns in order to help optimize traffic conditions in a holistic manner.
  - Smart mobility systems include mass transit systems as well as individual mobility systems that feature bicycle sharing, ride sharing (or carpooling), and vehicle sharing and, more recently, on-demand transportation.

Smart energy

- Smart energy management systems use sensors, advanced meters, renewable energy sources, digital controls and analytic tools to automate, monitor and optimize energy distribution and usage.
- Such systems optimize grid operation and usage by balancing the needs of the different stakeholders involved (consumers, producers and providers).
- There are a number of innovations in smart energy infrastructure, such as distributed renewable generation, micro grids, smart grid technologies, energy storage, automated demand response, virtual power plants and demand-side innovations such as electric vehicles and smart appliances.

Smart waste management

- Waste generation is increasing at a rate faster than that of urbanization.
- Cities are increasingly finding it difficult to source, separate and use different kinds of waste that can potentially be returned to a consumer life cycle.
- Waste management typically includes the monitoring, collection, transport, processing, recycling and disposal of waste.
- Smart waste management systems reduce waste and categorize the type of waste at the source, and develop methods for the proper handling of waste.

3.7 Cyber Security or any other concept

Cyber Security:-

Hybrid cloud workload protection platforms (CWPP) provide information security leaders with an integrated way to protect these workloads using a single management console and a single way to express security policy, regardless of where the workload runs.

Smart Data Centre:-

Smart Data Center Facilities Solution provides a modern foundation for distributed cloud applications.

3.8 District Cooling and Heating / Green Building

Green Buildings:-

- Using sustainable building materials like recycled glass and steel, as well as renewable materials like bamboo and rubber.
- Installing energy-efficient windows and doors
- Using lower-VOC (volatile organic compounds) like paints and others.
- Constructing green roof systems that offer many benefits, including onsite gardens, rainwater management and protection from the effects of harmful UV light.
- Adding water harvesting and purification systems that don't just manage, but also make the most use of rainfall.
- Maximizing natural light, which cannot only save on energy costs, but can also help keep buildings warm in colder months.

District Cooling and Heating:-

- District heating and Cooling Systems are a heat source plant that installs chillers and boilers for a group of neighboring buildings centrally for heating and cooling in district units.
- The cold water and hot water produced by the heat source plant is supplied to each building through regional pipes built inside the district to use for cooling and heating.

3.9 Strategic Options for Fast Development

- For developing smarter city, city and national leaders need to plan a comprehensive urbanization strategy, taking advantage of the latest developments in technology, creating employment opportunities, and supporting economic activities that will improve quality of life for citizens.
- 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

- The government has taken various steps to create awareness among the masses for keeping the area surrounding them neat and clean.
- Government is also paying special attention for cleaning of rivers, railway stations, tourist destinations and other public place.

Role of Indigenous Technologies

- Bhabha Atomic Research Centre (BARC) has developed several water purification devices and desalination techniques, as a part of its research and development efforts towards the betterment of society. These technologies or products are backed by robust design concepts and pilot plant studies, which can cover the needs of households, communities, industries and metropolis.

- A novel idea of coating polysulfide on a porous candle resulted in the development of a "Point of Use water purifier.
- Unlike other devices available in the market which only deactivates the micro-organisms, this device physically eliminates them. This device does not require any electricity or any addition of chemicals.
- Removal of suspended particulates, colour and odour are additional benefits available in these units. A typical unit provides nearly sufficient water per day at 3 meters pressure head and can withstand up to 40psig pressure (2.76 bar).

3.11 Initiatives in village development by local self-government

- Transforming existing Indian cities into Smart Cities or building new ones is a colossal task. Cities need to be able to assess their current situation and determine the critical capabilities needed to enable a Smart City.
- In the past "government as provider" approach, the priorities were to secure budget allocations and develop projects.
- To help cities address these issues, the All India Institute of Local Self-Government (AIILSG) is assisting Raipur, Bilaspur, Chandigarh, Karnal and Faridabad in preparing for the proposal for the nationwide City challenge‘ being contested among 100 potential Smart Cities The Housing Policy and the NCU statement implicitly give higher priority to two other requirements

1. The reform of policies and regulations that now inhibit development initiatives by the people
2. More efficient resource management and the building of institutional capacity.

3.12 Smart Initiatives by District Municipal Corporation

- Urban India faces an enormous challenge: managing its gigantic load of solid waste.
- Recently Rajkot Municipal Corporation is take a step for developing toward smart city.
  Its vision to develop Rajkot as smart, livable and iconic city of Gujarat with inclusive growth.
- Municipal incorporation occurs when such municipalities become self-governing entities under the laws of the state or region in which they are located. Frequently, this event is noticeable by the award or declaration of a municipal contract.

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

Sansad Adarsh Gram Yojana

- Sansad Adarsh Gram Yojana is a rural development program generally focusing upon the development in the villages and rural which includes social-infrastructure development, socio-cultural development.
- The program was launched by the Prime Minister of India, Narendra Modi on the birth anniversary of Jayaprakash Narayan, on 11 October, 2014.

National Rural Health Mission

- This mission serves health services to the poorest households in the remotest rural regions.
- The main aim of this mission provides accessible, affordable and good quality of health services to the rural household peoples.

Provision of Urban Amenities in Rural Areas

- The mission of this scheme was the holistic and accelerated development of compact areas around a potential growth Centre in a Gram Panchayat (or a group of Gram Panchayat) through Public Private Partnership (PPP).
- Framework for providing livelihood opportunities and urban amenities to improve the quality of life in rural areas primary objective of this scheme is to provide good quality infrastructure and associate services in rural areas.

Central Rural Sanitation Programme

- This scheme aims at improving the quality of life of rural people and to provide privacy and dignity to women in rural areas. It led to the formulation of Total Sanitation Campaign' approach in 1999.

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

- The so-called smart development of infrastructure is hardly strictly divided into two polarized sets of frameworks, rural and urban.
- Indian smart development, it is necessary to consider both spaces simultaneously, their mutual interconnections and take into account that significant changes in one will affect the other and another way around.
- Seen in the worldwide context, there are several initiatives promoting or using the concept of the Smart Villages.
- Smart Village initiative: new thinking for off-grid communities worldwide and IEEE Smart Village: Empowering off-grid communities are both worldwide active and striving to meet the SDG 2030, especially goal 7, Affordable and Clean Energy.
- The first one promotes access to sustainable energy as a main catalyst for the development of good education and healthcare systems, access to clean water, sanitation, economic growth, enhanced security, gender equality, etc.
- The activities of the Initiative are taking place in six large regions, namely East Africa,
- West Africa, South Asia, South-East Asia, South America, and Central America, Caribbean, Mexico—the so-called developing world with limited possibilities to access (educational, electrical, economic and other) infrastructure.

Chapter 4 – NYARA

4.1 Introduction

4.1.1 Introduction about Nyara

Nyara is a village in Paddhari Taluka in Rajkot District of Gujarat State, India. It is located 13 KM towards west from District headquarters Rajkot. 14 KM from Paddhari. The total geographical area of the village is 1274.16 hectares. Total population 2226 of the village is as per census 2011. Total households in Nyara village is 414 as per census.

4.1.2 Justification/ need of the study

In India there are 640 districts, (200 backward) 6, 50,000 villages (1, 25,000 backward.)The Government takes responsibility for uplifting rural and poorer regions. There is lot of public spending to improve the infrastructure, water and sanitation in these areas. But not much improvement achieved in most of the villages. Vishwakarma Yojana helps in better and fast development of rural areas. By providing urban facilities in rural areas, decrease this rate of migration & also increase standard of living of people of rural areas.

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

4.1.3 Study Area

From techno economic survey of Nyara village we observe some physical and social facilities are batter like underground drainage, entrance gate, secondary school, and anganwadi. In the village lack of basic facilities like public toilet, community hall, public garden, general market, public library.

4.1.4 Objectives of the study

- To study the existing facilities and parameters of village.
- To identify the issues and problems of the ―village.
- To analyze existing social and physical utilities as well as infrastructure.
- To Design and planning for village basic facilities and needs.
- To collect socio-economic data through techno-economic survey.
- To propose the inclusive planning suited for ideal village.

4.1.5 Scope of Study

- To reduce urban city pressure and lower the migration rate.
- Due to providing urban facilities development of village will be possible.

• To improve health and livelihood of people.

4.1.6 Methodology Frame Work for development of your village

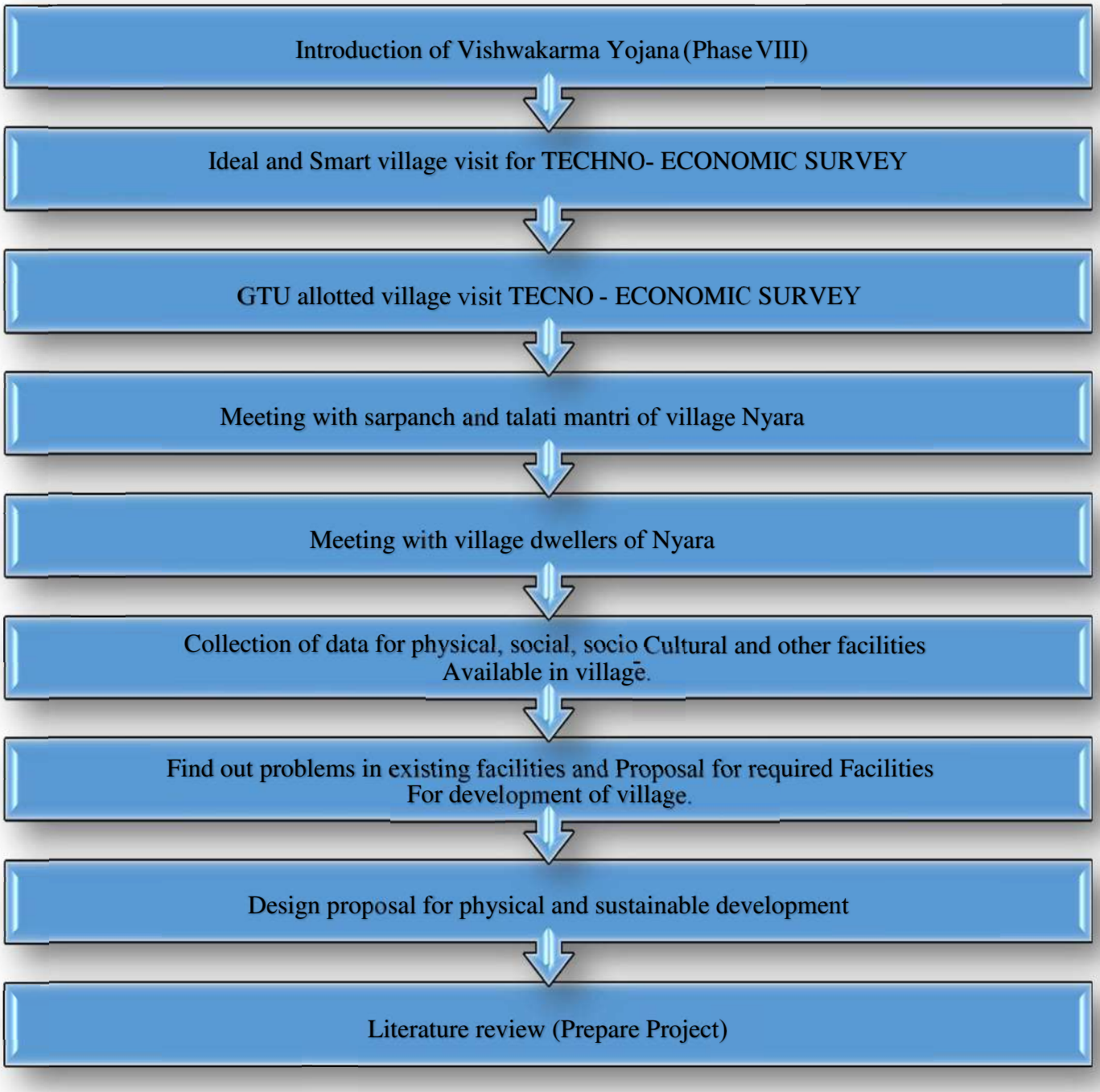


Fig.-18: Methoology

4.1.7 List of Objects Available related to civil methodology

- Higher Secondary school
- Entrance gate
- Anganwadi
- Garden
- Pond
- Village map
- Protected well

4.2 NYARA Study Area Profile

4.2.1 Study Area Location

- Nyara village is situated at Paddhari Taluka in Rajkot District of Gujarat State, India.
- Nyara village is situated on 22.4365ºN latitude and 70.6016ºlongitudes.
- Nearest town from Nyara village is Rajkot and it is 13 km away from Nyara.
- The current sarpanch of Nyara is Rameshbhai Pipaliya .
- The village follows the Panchayat raj system.
- The surrounding nearby villages from Nyara are Dahisarda Und, Sal Pipaliya, Khambhala etc.

Indian village code of Nyara is 512911.

Fig.-19: Satellite Map

4.2.2 Brief history:

Nyara village is situated in Rajkot district. People of this village are living in very peaceful manner. Agriculture is the main profession of this village. Still the village is waiting for industrial development, education, drinking water and roads are the main concerns of this village. Young generation is attracted towards mobile, laptop and computer technology these

days. If banks and finance institutes proved loan and other financial support to the villagers, this village will see the real development. Medical and health services must be improved.

4.2.3 Base Location map, Land Map, Gram Tal Map:

Fig.-20: Satellite Map

4.2.4 Study area land use details:

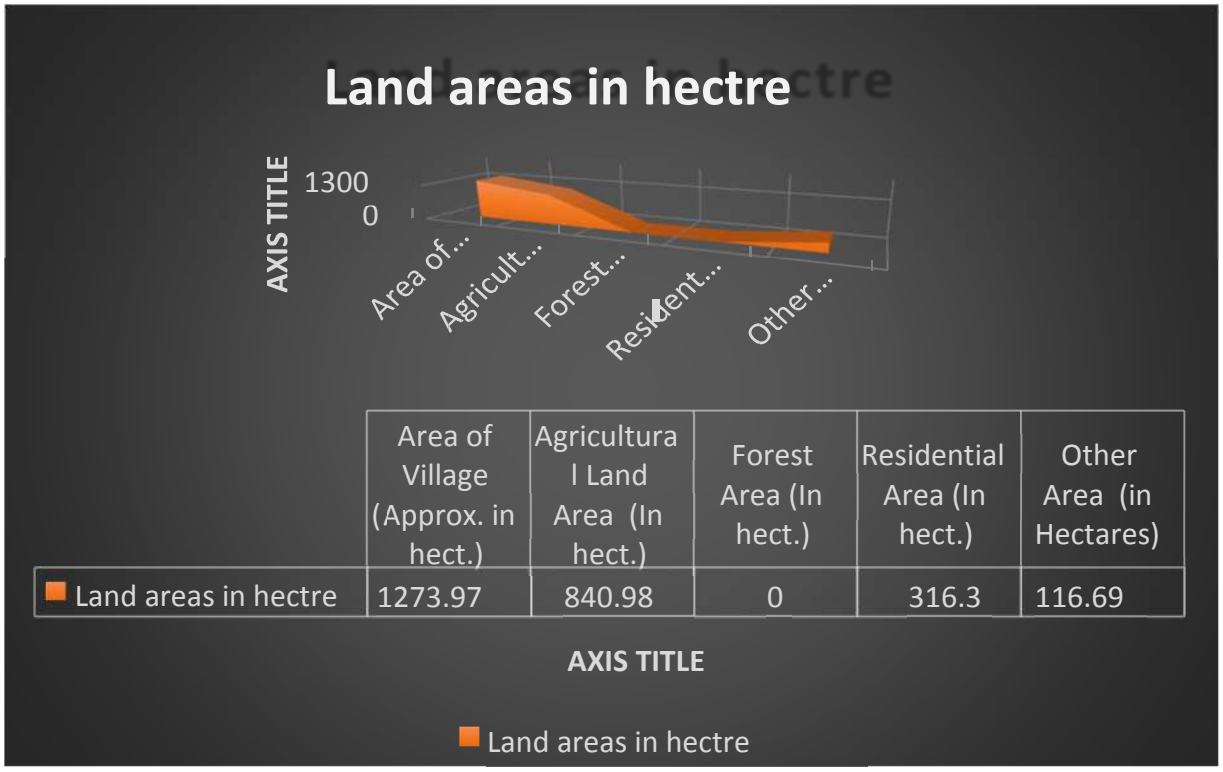


Fig.-21: Land area

4.2.5 Physical & Demographical Growth:

- Nyara is a medium size village located in Paddhari Taluka of Rajkot district, Gujarat with total 414 families residing. The Nyara village has total population of 2226 of which 1144 are males while 1082 are females as per Population Census 2011.
- In Nyara village population of children with age 0-6 is 307 which makes up 13.79 % of total population of village. Average Sex Ratio of Nyara village is 946 which is higher than Gujarat state average of 919. Child Sex Ratio for the Nyara as per census is 907, higher than Gujarat average of 890.

4.2.6 Economic profile / Banks:

About the economic profile of this village, many villagers are interested in 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. Agriculture is the main occupation of Nyara Village. Majority crops taken in the village are wheat, cotton and groundnut. Some of the peoples are also running their stores (local stores). Dairy and milk production is also the prime source of income.

4.2.7 Social scenario:

Following table is showing the Literacy Percentage of the Male and Females of the Nyara.

Table 7: Literacy Percentage of Nyara

As per 2011 census	Literacy Percentage
Male	83.83%
Female	69.98%
Total	77.07%

4.2.8 To know the reasons of migration / trends of migration / problems and potentials of migrants

- Now a days people are migrate due to low facility of people.
- Unable to provide Modern lifestyle.
- Now a days Unemployment is big problem for migrate.
- The main problem of migration is poor education facility.

4.3 Data Collection of Nyara

4.3.1 Methods for data collection:

A detailed baseline survey was undertaken which involved household census survey and Village level data collection from Sarpanch and Talati Mantri. This gave in the details of the demographic profile of the village, the literacy percentage, SC/ST population, cattle population and net consumption rate in the village, average milk production of the cattle and various schemes running and their benefits physical survey was undertaken to identify various natural resources available in the village.

4.3.2 Primary survey details:

Nyara village is in Paddhari taluka in Rajkot district of Gujarat state. The total geographical area of the village is 1273.16 hectares. Total population 2226 of the village is as per census 2011. Total households in Nyara village is 414 as per census. Sarpanch of Nyara village is Rameshbhai Pipaliya and Talati Mantri is M.B Mehta. The nearest town to the Nyara is Rajkot which is 13 km away from village. The village has Gram Panchayat, Primary School, etc.

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

Around the village all house Average seen to be of 600 Sq feet. Nyara village is at 196M above sea level. Time zone is IST (UTC+5:30)

4.3.4 No of Human being in One House:

We interact with Sarpanch and talati mantri to collect the data Average Number of human being in a house is 4.

4.3.5 Which Material used locally & Out Sourced Material:

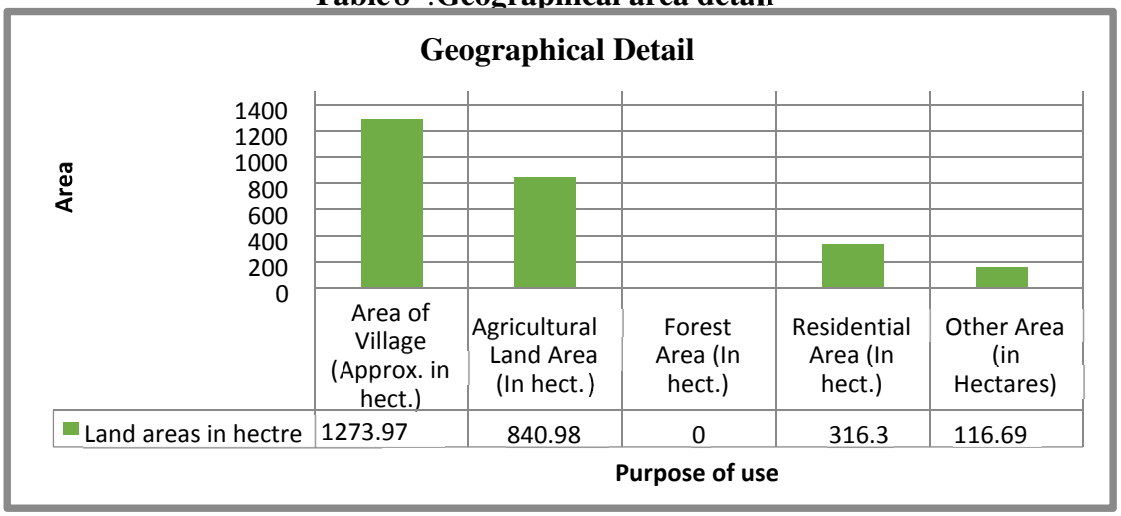
Generally, construction Material used in village are cement, sand, bricks and concrete.
Labor work is done on field of agriculture work.

4.3.6 Any Costing:

The average in income of one person per month is near about 10000 to 15000 Rs.

4.3.7 Geographical Data:

Table 8 :Geographical area detail



4.3.8 Occupational Detail

Major occupational in village is farming and milk production.

4.3.9 Agricultural Details / Organic Farming / Fishery:

Main source of income in this village is farming. Farmers use drip irrigation system to do farming. The main agriculture product is groundnut, cotton, wheat**.** 840.98-hectare area covered in the agriculture activity out of 1091 hectare.

4.3.10 Manufacturing HUB / Ware Houses

There is no ware house and manufacturing hub in Nyara village.

4.3.11 Tourism Cluster:

There is no Tourism Cluster in village.

4.4 Infrastructure Details:

4.4.1 Drinking Water

In Nyara village drinking is distributed through pipe line which is arrive from Narmada Yojana. Which is also use for public tap and irrigation purpose. Other source of water is protected well and bore well.

Fig.-22: Elevated Water Tank

4.4.2 Drainage Network:

In this village, the drainage system is closed and underground.

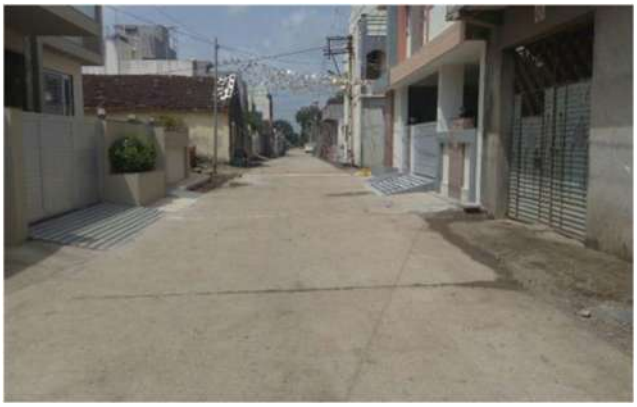


Fig.-23: Road Network

4.4.3 Transportation & Road Network

All the internal street and main road of village is constructed by cement concrete (C.C.). One bus stand available for easy transportation and privet vehicles also available like rickshaw, private vehicle, etc.

4.4.4 Housing condition

House in Nyara village has good condition, near about 75% pucca house and 25% kutchha houses in village.

4.4.5 Social Infrastructure Facilities

Health Facilities

There is only one private clinic in village.

Figure 24: Private clinic

Education Facilities

There is one Anganwadi in the village. There is also one Primary school. There is no ITI college or any other college in the village. Nearest town having college is Rajkot which is 14 km away from the village.

Figure 25: Primary School

Community Hall
There is no community hall in village

Public Library
There is no public library in village.

Existing Condition of Public Buildings & Maintenance of existing Public Infrastructures

4.4.6 Technology Mobile/ WIFI / Internet Usage Details.

There is no Wifi Connection in village

4.4.7 Sports Activity as Gram Panchayat

There is no sport activity as Gram Panchayat.

4.4.8 Socio-Cultural Facilities

4.4.9 Village Pond/Lake:

There is one village pond in the village.

4.4.10 Other Facilities

There is one Panchayat Building in the village.

4.4.11 Sustainable Infrastructure Facilities

There are no sustainable facilities available in the village like bio – gas plant, solid waste management plant and rain water harvesting system.

4.4.12 Existing Condition of Public Buildings

There is one public building in the village gram panchayat building. The drainage is underground. The Angadwadi's condition is very poor and hence it need a maintenance. Bus stand is open and need to redesign.

4.5 Existing Institution like- Village Administration – Detail Profile:

4.5.1 Bachat Mandali

In this village no any type of bachat mandali.

4.5.2 Dudh Mandali

In village one dudh mandli are there so all people are easily supply milk from one place to another.

4.5.3 Mahila forum

In this village one mahila mandal are there. Which has 10 member are required.

4.5.4 Plantation for the Air Pollution

In village there is no plantation for the air pollution.

4.5.5 Rain Water Harvesting

In this village people are not collect rain water for future purpose.

4.5.6 Agricultural Development

In this village agricultural development is not available

4.5.7 Any Other It has a gram Panchayat for many working purpos

Chapter 5: Technical Options with Case Studies of the Existing Village

5.1 Concept

5.1.1 Advance construction techniques

- The construction industry is repeatedly criticized for being inefficient and slow to innovate. The basic methods of construction techniques and technologies have changed little since Roman times. But the application of innovation in the construction industry is not straight forward.
- The term "advance construction technology" covers a wide range of modern techniques and practices that encompass the latest development in material technology, design procedure, quantity surveying, facilities management, service, and structural analysis and management studies.

5.1.2 Causes Prevention and Repair of Cracks In Building:

Cracks are the most common problem that occurs in any type of concrete structure such as, beams, columns, etc. A building component develops cracks whenever stress in the component exceeds its strength. Stress in a building component could be caused by externally applied forces such as, dead, live, wind or seismic loads and internal forces such as, moisture changes, thermal movements and chemical reaction.

Fig.-26: Cracks

Fig.-27: ACE Techniques

Causes Prevention

- By creating slip joints under the support of RCC slab on walls, cracks by elastic deformation can be prevented.
- Construct various joints such as expansion joints, construction joints, slip joints and control joints to prevent cracks from thermal movement.
- Slab should be provided with thermal insulation.
- Concrete should be of good quality. Use richer mix of cement concrete 1:1.5:3 to prevent cracks. In mixing of cement concrete or cement mortar, Use minimum quantity of water, as per water cement ratio.
- Do not use excessive cement in the mortar mix. Because as a general rule, the richer the mix is, the greater the shrinkage will be. And shrinkage is one of the major causes of occurrence of cracks.
- Use largest possible aggregate and the materials should be of good grading and quality.
- As soon as initial setting has taken place, the curing should be started and be continued for at least seven to ten days.
- Fine materials which contain silt, clay and dust should not be used. The coarse sand/fine aggregate used in cement concrete and cement mortar mix should has silt and clay less than 4%.
- Use coarse and fine aggregates after washing to reduce silt contents.

Repair of Cracks In Building

- By epoxy-injection grouting.
- By routing and sealing.
- By flexible sealing.
- By stitching.
- By providing additional reinforcement.
- By drilling and plugging.
- By prestressing steel.
- By grouting.
- Dry packing.
- Overlays.
- Autogenesis healing.
- Surface coatings.

5.1.3 Disaster management in natural calamities:

- Disaster management in India refers to conservation of lives and property during a natural and manmade disaster.
- Disaster management plans are multi-layered and are planned to address issues such as floods, hurricanes, fires, mass failure of utilities and the rapid spread of disease.
- India is especially vulnerable to natural disasters because of its unique geo-climatic conditions, having recurrent floods, droughts, cyclones, earthquakes, and landslides.
- As India is a very large country, different regions are vulnerable to different natural disasters.
- The new approach started from the conviction that development cannot be sustained unless mitigation is built into the development process.
- Another cornerstone of the approach is that mitigation must be multi-disciplinary, spanning across all sectors of development.

5.1.4 Various types of Roads:

There are two types of roads as below,

1.Flexible pavement road

2.Rigid pavement road

Flexible Pavement Road:

Flexible pavement can be defined as the road pavement consisting of a mixture of asphaltic or bituminous material and aggregates placed on a bed of compacted granular material of suitable quality in layers over the subgrade.

Fig.-28: Flexible pavement

•The design of flexible pavement is based on the principle of any magnitude, the intensity of a load diminishes of vehicles and its transmitted downwards from the surface by virtue of spreading over an gradually larger area, by carrying it deep enough into the ground through succeeding layers of granular material.

Rigid Pavement road:

A rigid pavement is constructed from cement concrete or reinforced concrete slabs.

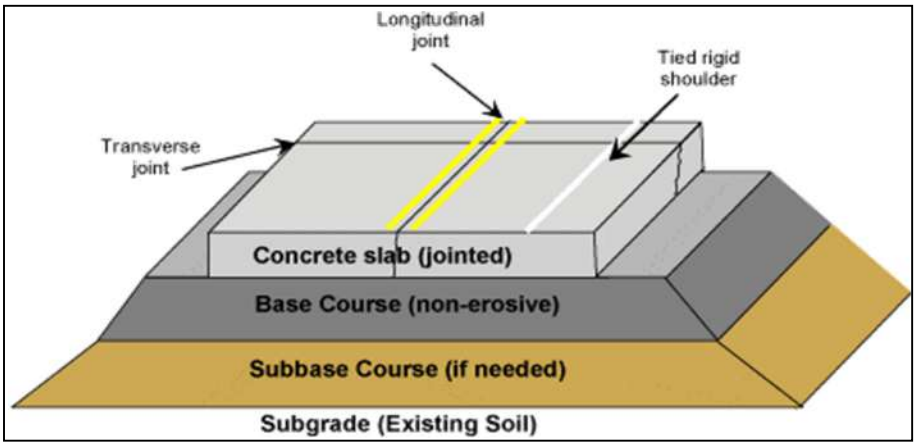


Fig.-29 : Rigid pavement

5.1.5 Various type of Environmental Factors :

Wind Effect:

•Wind is a powerful force that has a great deal of effect on structures.
•There are two general types of effects of wind on structures:
1.Static
2.Dynamic
•The static load mainly indications to elastic bending and twisting of structure.
•Dynamic analysis of wind is required for skyscrapers, taller, long-span and slender structures.
•This is because gusts of wind cause varying forces on the structure that induce large dynamic motion, including oscillations.

Corrosion Effect:

•Simply corrosion is the damage to metals over a period of time because of their reaction with the environment.
•For civil and structural engineers corrosion is not just an aesthetic issue it causes severe damage and deterioration to buildings, bridges, equipment and pipelines.
•While the metal components on the exterior of the building are more liable to atmospheric damage and corrosion, the effect of corrosion on all the metal elements especially within the building like foundation and structural walls is equally bad.

5.1.6 E – waste disposal / Any West disposal:

Use a Certified E-Waste Recycler

Find an e-waste recycler certified through the Basel Action Network (BAN). BAN is a non-profit organization devoted to certifying e-Stewards, recyclers who are committed to safely and responsibly recycling electronics. Members take and demonstrate the Pledge of Responsible Recycling, so working with a certified e-Steward means you don't have to worry that your gadget will become another nation's pollution or a criminal's newest project. BAN's recycler locator will help you find the certified safety and comfort of e-stewards in your area.

Fig.-30: E-Waste Management

Visit Civic Institutions

Check with near local government, schools, and universities for additional responsible recycling options. With e-waste becoming such a large problem, government offices and schools are assigning days when citizens can bring unwanted electronics to a designated drop off location.

Explore Retail Options

Best Buy makes sure that the recyclers we work with adhere to the highest guidelines and standards so that the products customers bring into our stores for recycling don't end up in landfills or in foreign countries, and that all hazardous materials are disposed of properly. We partner directly with a short list of qualified, respected recycling companies who ensure all products collected for recycling through Best Buy are handled responsibly. These recycling companies meet our standards, and we encourage them to examine and consider additional third-party standards for responsible practices (such as the EPA R2 and e-Stewards).

Donate Your Electronics

Reusing is always better than recycling. If your electronics still have life left, you can reduce e-waste pollution and share technology with people who wouldn't otherwise have access to it.

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

1. Corrosion mechanism

- Reinforced concrete uses steel to provide the tensile properties that are needed in structural concrete. It prevents the failure of concrete structures which are subjected to tensile and flexural stresses due to traffic, winds, dead loads, and thermal cycling.
- Standard terminology defines corrosion as "the chemical or electrochemical reaction between a material, usually a metal, and its environment that produces a deterioration of the material and its properties."
- When reinforcement corrodes, the formation of rust leads to a loss of bond between the steel and the concrete and subsequently delamination and swelling.
- If left unchecked, the integrity of the structure can be affected. Reduction in the cross sectional area of steel reduces its strength capacity.

2. Prevention

- There are a variety of methods for preventing corrosion or at least to slow down the corrosion process. The most common are listed below.

•Galvanization

Galvanized reinforcing steel is effectively and economically used in concrete where unprotected reinforcement will not have adequate durability. The susceptibility of concrete structures to the intrusion of chlorides is the primary incentive for using galvanized steel reinforcement. Galvanized reinforcing steel is especially useful when the reinforcement will be exposed to the weather before construction begins. Galvanizing provides visible assurance that the steel has not rusted and requires no on-site repair, unlike most other coatings.

•Catholic protection (CP)

In this process the anodes, power supply and control systems are permanent, and a range of anodes can be used. The aggressive anodic reaction is isolated to a corrosion resistant anode while the harmless catholic reaction occurs at the surface of the steel reinforcement. This process creates additional hydroxyl ions, rebuilds the passive alkaline layer and repels chloride ions.

•Re-alkalization

This system is the equivalent of desalination for carbonated structures. It relies on the principle that the hydroxyl ions produced at the cathode re-alkalize the concrete from the reinforcement outwards. This is linked with a wet anode at the surface that contains calcium carbonate, which moves under electro-osmotic pressure and re-alkalizes the concrete from the surface inwards

3. Repair Measures

•Patch Repair

By far the most common repair technique is the application of concrete patches to damaged or deteriorated concrete. Furthermore, when other remediation techniques are being applied in order to limit the extent of on-going corrosion mechanisms or to prevent their re-occurrence. Patch repairs are also used to reinstate the spalled or delaminated areas of concrete.

•Corrosion Inhibitors

Corrosion Inhibitors are one of a variety of techniques that can be employed in an effort to suppress and control the rate of steel corrosion in concrete structures particularly in the case of hidden or latent damage, although their long-term effectiveness in reinforced concrete is still open to debate and the subject of detailed research. Due to the large number of commercially available concrete corrosion inhibitors, which vary widely in their respective formulations and inhibitive properties, categorization is difficult. However, it is possible to divide concrete corrosion inhibitors into two generic categories. Surface Treatments

Three generic types of Surface Treatment are available for the decoration and protection of concrete surfaces, designed to control chemical ingress as well as moisture movement.

They are described as follows:

Pore-liners

These are hydrophobic impregnation treatments such as silicone impregnated, which line the pores of the concrete. They repel water and therefore prevent it from entering the concrete, but continue to allow water vapor to escape.

Pore blockers

These are materials that partially or completely block the in concrete. They may accomplish this by either reacting with the concrete to produce pore-blocking products or by physically blocking the pores.

Chapter 6: Swatchh Bharat Abhiyan

6.1 Type of swatchhta needed in Nyara:

In this village there are required to proper maintain road network because many road are WBM.
During rainy season people cannot travel properly.
Rain water are flow on road surface.

Fig.-31 : Nyara Road

•In this village there are not cover well properly so many type of wastage are fall in well
•So people are not directly use water.
•There are required to be clean well.
•Otherwise well cover are provided.

Fig.-32: Water Distribution System

•At some area which doesn't have any cleanness in this village.
•So there are required to clean some area.

•If there are not properly clean then many mosquitoes are made and it may causes of malaria etc.

Fig.-33: Drainage

•Many time in marriage season people are wasting paper dish anywhere. In this village to clean it.

Fig.-34: wastage paper dish

6.2 Guidelines for the process of the implementation in Nyara:

•Arrange the program related to clean village.
•Keep supporting who are engaged with SBM (Swachh Bharat mission).
•Public awareness is necessary for clean village.
•Provide technical support for clean village.
•Provide sufficient grant for public toilet.
•Coverage of Piped Water Supply with at least 40 LPCD in ODF verified villages.
•Arranging for regular cleaning of school toilets and proper disposal of solid and liquid waste.
•Prioritization of construction and maintenance of anganwadi toilets.
•These activities can be undertaken as part of Swachh Bharat through SBM (G) or in convergence with other schemes.

•Gram Panchayat may pass resolution regarding dos and don'ts for ODF sustainability.
•The village has to ensure that any new houses that come up post ODF achievement construct their own toilets.

6.3 Actual Activity Done by Students for making your village Clean with Photograph:

•We had gone to over allocated village and meet the children in their school and we have arrange a seminar related to clean India
•Children are very excited to attempt a seminar

Fig.-35: meeting with children

•We had arrange a campaign with slogan and children are also come with us and attempt campaign
•Many people was joined us. Then children and staff are clean there school garden. After complete clean garden then children are ready to clean there class room and school.

Fig. 36 : working with children

Chapter 7: Village Condition due to Covid-19

7.1 Taken steps in allocated village related to existing situation:-

The COVID-19 pandemic has brought the entire nation to a halt. Health officials and medical professionals are struggling with containing the disease, and testing and treating affected people. Last night, Prime Minister Narendra Modi announced a three-week, nation-wide, complete lockdown to contain the spread of this virus, as the number of reported positive cases in India crossed 500. In light of this, it is pertinent to take stock of our rural areas.

The risk of spread in rural areas is heightened. This is due to a number of factors, including lack of awareness, a limited supply of clean water, low levels of nutrition, and most importantly, ill-equipped and insufficient public health centers and district hospitals.

In Nyara Village, people are highly conscious regarding the safety during Covid-19. They wear mask, have safe clear social distance and follow each and every guideline given by government.

7.2 Activities Done by Students for allocated village with Photograph:-

- We visited the village and give guidelines to the villagers regarding the safety during this pandemic situation.
- We help the villagers by giving them proper knowledge about safe social distance and why it is necessary.
- We advised them to wear mask whenever they go out in public.
- We advised them to keep sanitizer along them whenever they go out in public or meet anyone.

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

8.1 Design Proposals:

In the general observation, we perform techno economic survey. In techno economic survey we studied like physical Infrastructure facility, Social Infrastructure Facility, Sustainable Infrastructure Facility.

In the Physical infrastructure facility we observed Main Source of Drinking Water, Water tank facility, Drainage facility, types of drainage, Road networks, Transportation facility, Electrical Distribution, Sanitation facility, irrigation facility and housing condition etc.

In the Social Infrastructure Facility, we observed health facility, Education Facility and Social Cultural facility. In the village All the physical infrastructure facilities Are Very Good and in working condition. But, Sustainable Facilities are not developed in it. So we designed Liquid waste management system.

8.1.1 Sustainable Design

In this part, we have decided to design a Honeybee Breeding Center.

- **Honeybee Breeding Center:**

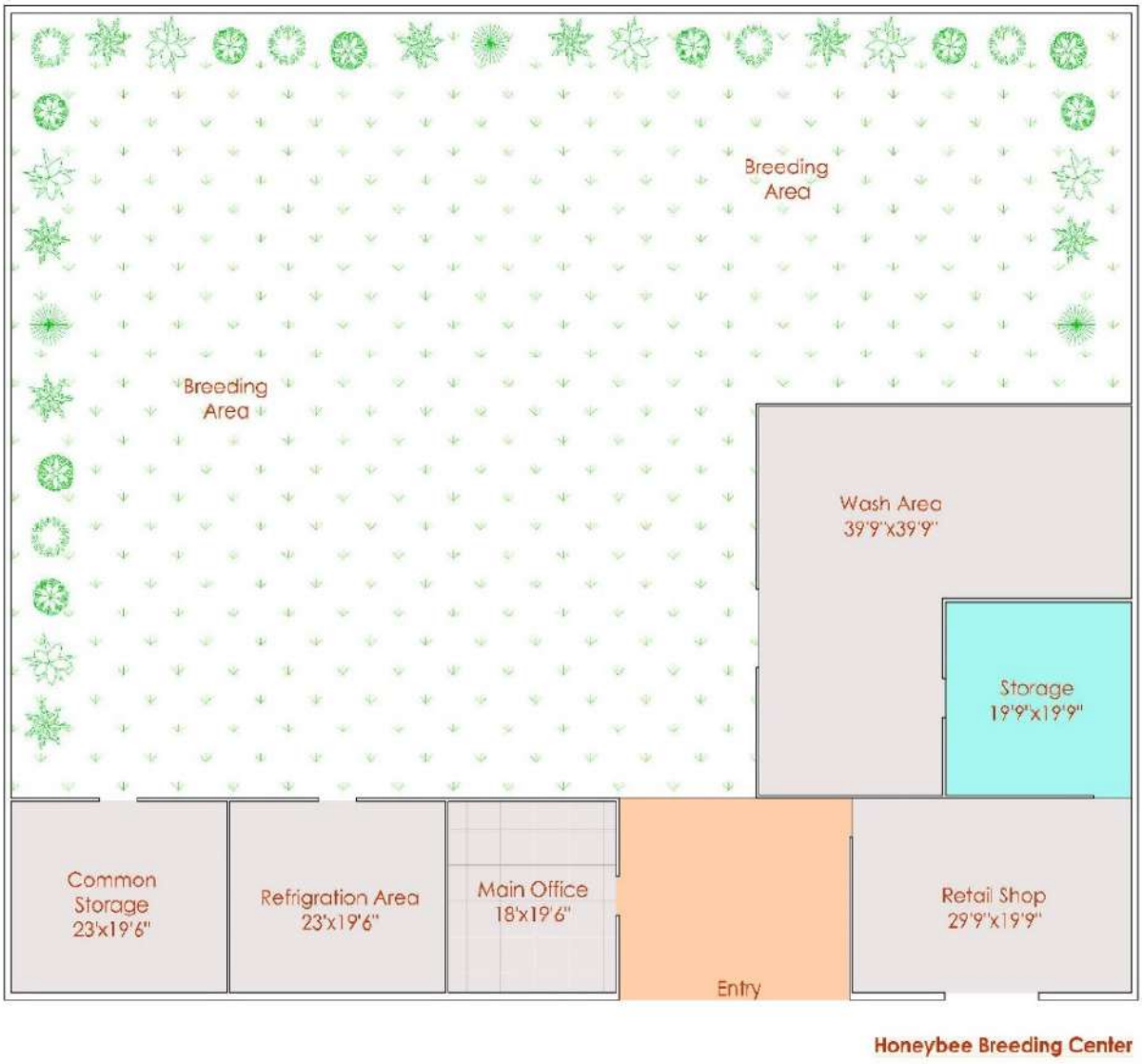


Fig.37 : Honeybee Breeding Cent

Table 9 : Measurement and Abstract Sheet of Honeybee Breeding Center

Sr No.	Quantity	Item of work	Rate	Unit	Total Amount
1	147	Cement Concrete in **Main office**	100	cu. Ft.	1470
2	247	Cement Concrete in **Retail Shop**	100	cu. Ft.	2470
3	490	Cement Concrete in **Wash Area**	100	cu. Ft.	4900
4	188	Cement Concrete in **Refrigeration Area**	100	cu. Ft.	1880
5	188	Cement Concrete in **Common storage**	100	cu. Ft.	1880
6	163	Cement Concrete in **storage**	100	cu. Ft.	1630
7	3446	Providing and laying of **R. C. C. Slab**	180	cu. Ft.	620000
8	5820	Providing and laying of 15mm thick plaster	40	Sq. Ft.	232800
Total Amount					**867030**
Contractor's Profit (10%)					86703
Water Charges (5%)					43352
Total Amount in Rs. 997085					

8.1.2 Physical design

As Physical design we decide to provide Anganwadi.

- **Anganwadi**

Figure 38 : 3D View of Anganwadi

Table 10 : Measurement and Abstract Sheet of Anganwadi

Sr No.	Quantity	Item of work	Rate	Unit	Total Amount
1	127	Excavation	85	m3	10795
2	127	P.C.C	3400	m3	431800
3	2187	Providing & laying 9" Masonry work (Peripheral Wall)	100	cu.ft.	218700
4	384	Providing & laying 4" Masonry work	50	cu.ft.	19200
5	879	Providing & laying of **R.C.C.Slab**	180	cu.ft.	158220
6	376	Providing & laying of **R.C.C.Beam**	200	cu.ft.	75200
7	154	Providing & laying of **R.C.C.Column**	210	cu.ft.	32340
8	2297	Providing & laying **15mm thick Cement Plaster**	40	sq.ft.	91880
9	917	Providing & laying **Vitrified Tiles**	70	sq.ft.	64190
10	6280	Providing & laying **Pavement Blocks**	70	sq.ft.	439600
11	101	Providing & fixing **Aluminum window**	70	sq.ft.	7070
12	170	Providing & fixing **Marble frame Window**	70	sq.ft.	11900
13	133	Providing & fixing Laminate for **Door**	150	sq.ft.	19950
14	101	Providing & fixing **Steel Railing**	600	sq.ft.	60600
15	1054	Finishing wall with **weather proof exterior emulsion paint**	10	sq.ft.	10540
Total Amount					**1651985**
Contractor's Profit (10%)					165198
Water Charges (5%)					825993
Total Amount in Rs. 2643176					

8.1.3 Social design

As Social Design we decided to provide High School.

- **High School**

Figure 39: 3D View of High School

Table11 : Measurement and Abstract Sheet of High School

Sr No.	Quantity	Item of work	Rate	Unit	Total Amount
1	335	Excavation	85	m3	28475
2	335	P.C.C	3400	m3	1139000
3	4638	Providing & laying 9" Masonary work	100	cu.ft.	463800
4	3734	Providing & laying 5" and 4" Masonary work	50	cu.ft.	186700
5	8610	Providing & laying 1' External Peripherial Wall	100	cu.ft.	861000
6	35666	Providing & laying of **R.C.C.Slab**	180	cu.ft.	6419880
7	14300	Providing & laying of **R.C.C.Beam**	200	cu.ft.	286000
8	1536	Providing & laying of **R.C.C.Column**	210	cu.ft.	322560
9	15539	Providing & laying **15mm thick Cement Plaster In side**	40	sq.ft.	621560
10	8609	Providing & laying **20mm thick Cement Plaster Out side**	50	sq.ft.	430450
11	17965	Providing & laying **Vitrified Tiles**	70	sq.ft.	1257550
12	12145	Providing & laying **Ceramic Tiles**	40	sq.ft.	485800
13	7434	Providing & laying **Pavement Blocks**	90	sq.ft.	669060
14	480	Providing & fixing **Alluminum window**	220	sq.ft.	105600
15	80	Providing & fixing **Marble frame Window**	140	sq.ft.	11200
16	546	Providing & fixing Laminate for **Door**	150	sq.ft.	81900
17	480	Providing & fixing **Steel Ralling**	600	sq.ft.	288000
18	29126	Finishing wall with **weather proof exterior emulsion paint**	10	sq.ft.	291260
Total Amount					**15377866**
Contractor's Profit					23066680
Total Amount in Rs: 38444546					

8.1.4 Socio-Cultural design

As a Social Cultural Design we decided to provide a garden.

- **Garden**

Figure 40 : 3D View Of Garden

Table12 : Measurement and Abstract Sheet of Garden

Sr No.	Quantity	Item of work	Rate	Unit	Total Amount
1	1966	Path	100	cu ft.	196600
2	1358	Cement Concrete in Sitting Area-1	100	cu ft.	135800
3	332	Cement Concrete around fountain	100	cu ft.	33200
4	172	Cement Concrete in Sitting Area-2	100	cu ft.	17200
5	420	Earth filling	100	cu ft.	42000
6	243	Pavement Blocks	90	cu ft.	21870
Total Amount					**446670**
Contractor's Profit (10%)					44667
Water Charges (5%)					223335
Total Amount in Rs. 714672					

8.1.5 Smart Village Design

As a Smart Village Design we decided to provide the whole village with CCTV camera and Speakers.

- **CCTV Camera and Speakers**

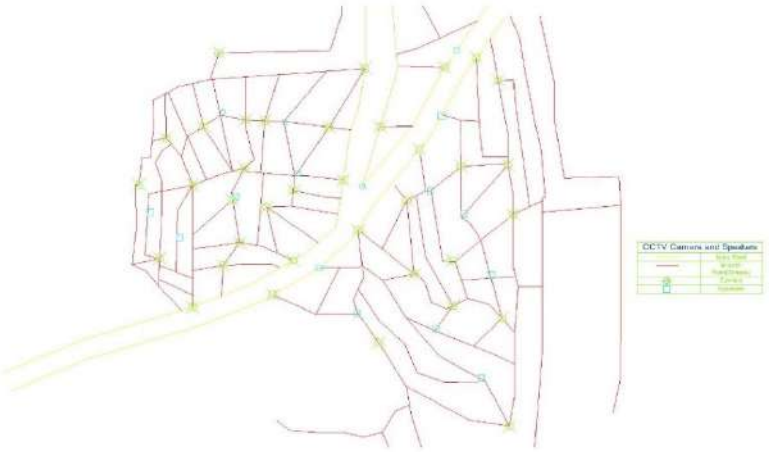


Figure 41 : Plan of CCTV Camera and Speakers

Figure 42 : Village Map

Table13 : Measurement and Abstract Sheet of CCTV Camera and Speakers

Sr No.	Item of work	Quantity	Rate	Unit	Total Amount
1	CCTV Camera	35	1000	Numbers	35000
2	Water-Proof Speakers	15	900	Numbers	13500
Contingencies Charge (14%)					6790
Total Amount in Rs. 55290					

8.1.6 Heritage Village Design

As a heritage design we have provided village Entrance Gate.

- **Entrance Gate**

Figure 43 : Elevation of entrance gate

Table14 : Measurement and Abstract Sheet of Entrance Gate of Village

Sr No.	Quantity	Item of work	Rate	Unit	Total Amount
1	6	Excavation for foundation	85	m3	510
2	6	P.C.C	3400	m3	20400
3	1015	R.C.C. Work	200	cu. Ft.	203000
Total Amount					223910
Contingencies Charges (3%)					67173
Work charged Establishment (2%)					4477
Total Amount in Rs. 295560					

8.2 Reason for Students Recommending this Design

- In Village there was no Honeybee breeding center so we decided to provide such center because it is unique and essential as sustainable design.
- Recreational facilities can be provided like public garden, playground etc. for the recreational purpose because there are no such provisions made in the village. So we decide to provide Garden as social-cultural design.
- There is no any type of heritage like statue, gate and chabutra etc… so we decided to design an Entrance Gate of village as heritage design.
- In village there was not any CCTV camera on street, so we decided to CCTV in streets and speakers as a smart design.
- The condition of Anganwadi was very poor so we decided to design an Anganwadi as a physical design.
- Village only had Primary School so we decided to provide High School so that students does have to travel 13kms every day to study.

8.3 Suggestions / Benefit of the villagers:

- There was not any Honeybee breeding center in village so we decided to provide it.
- There is no recreational facility so we give garden design.
- Students were travelling about 13 km daily to study as there was no Higher Secondary School in village. So we decided to provide it as Social Design.
- The village was lack of entrance gate so we decide to provide it as a heritage design.
- For safety purpose we provided CCTV Street Camera System with Speakers.
- The Anganwadi's condition was really poor so we designed a new anganwadi as Physical Design.

Chapter 9: Conclusion

The motive of Vishwakarma Yojana phase - VIII is to uplift the lifestyle of the rural areas to its certain extent up to the level of an **ideal village** situated at the nearby location of that particular jurisdiction. It is an effective government scheme to develop the rural areas under economical cost with good workability and efficiency during its usage. Introduction of village, Geographical details, Demographical details, Occupational detail and different types of Infrastructure facilities like about Sanitation, Transportation, Road Network, Drainage Line, Water Supply, Education Viability, Irrigation etc. And **Smart Village Survey** concludes about Value of Education: Health and Cleanliness of village. And we find about which **smart facilities** can be subjected as per requirement of village dweller and village authorities.

By use of Gap Analysis we compare all the available facilities and required facilities in Nyara village. We observe available amenities in village like, road network, drinking water facility, educational facility, health facility, sanitation facility, transportation facility, and renewable source facility. We also observe which facilities are required for batter growth of village by interaction with different authorities of ideal village and smart village.

•Honeybee Breeding Centre (Sustainable Design)
•Anganwadi (Physical Design)
•High School (Social Design)
•Garden (Socio Cultural Design)
•CCTV Camera and Speaker (Smart Village Design)
•Entrance Gate (Heritage Village Design)

By providing this required facility to village, development and growth of village can be possible. So ultimately migration rate and urban city pressure can be reduce and livelihood of village dweller will increase.

And lastly this project is helped us to understand our skills and make it even batter. We got deep knowledge about development of village and various infrastructure facility design of village. Lastly we enjoyed the informational as well as practical journey of civil work.

Chapter 10: References of report

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2) Browne, W. and L. Swanson. Living With the Minimum: Rural Public Policy. In The Changing American Countryside: Rural People and Places, E.N. Castle (ed.). Lawrence, KS: University Press of Kansas. 1995.

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6) WWW.GOOGLEMAPS.COM

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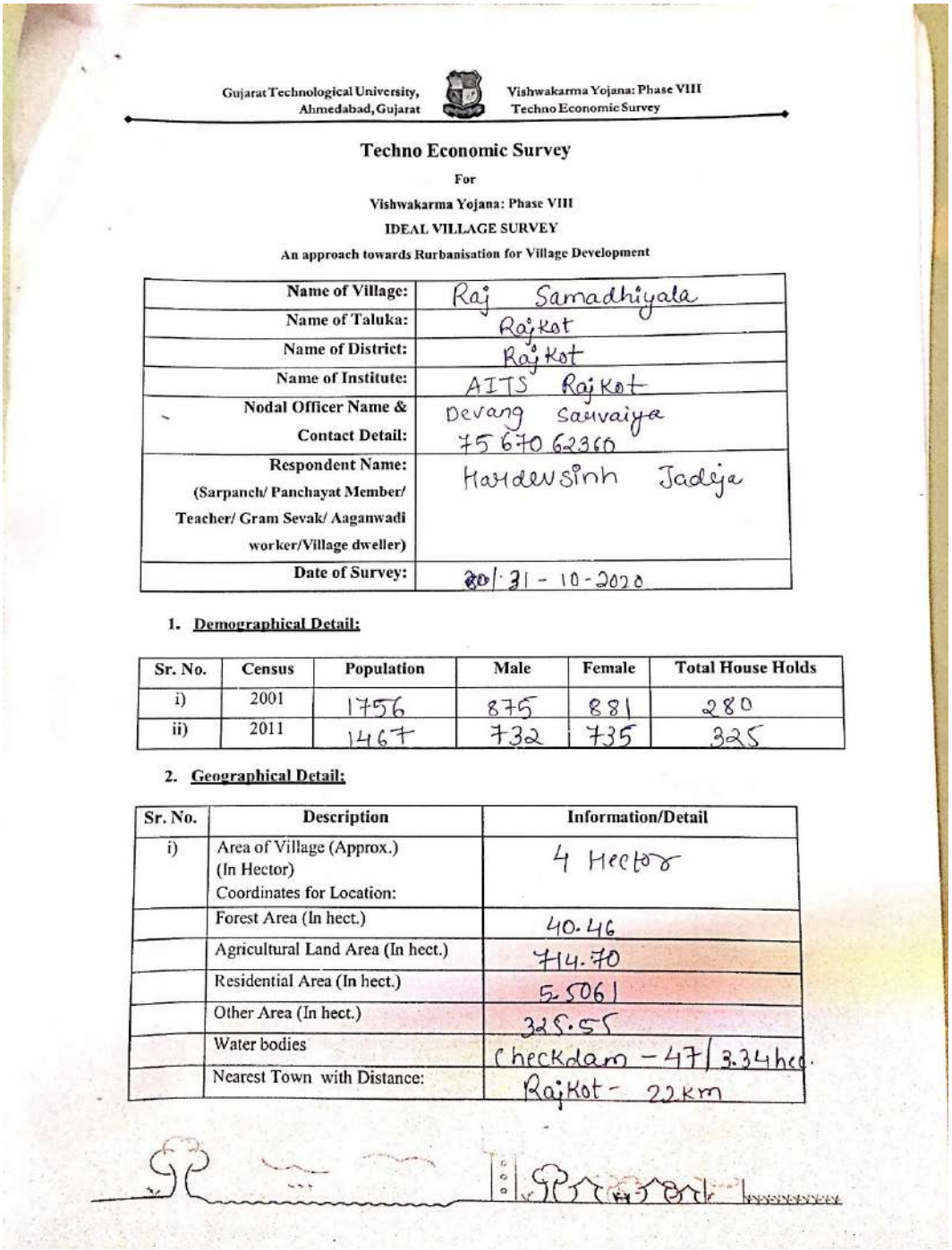
8) http://vy.gtu.ac.in - vishwakarma literatures

9) http://censusindia.gov.in - Census department website

10) http://www.unicef.org/india/reallives_8562.html

Chapter 11: Annexure Attachment

1. **Scanned copy of Ideal Village Survey**



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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	Raj Samadhiyala
Name of Taluka:	Rajkot
Name of District:	Rajkot
Name of Institute:	AITS Rajkot
Nodal Officer Name & Contact Detail:	Devang Savaiya 75670 62360
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Hardevsinh Jadeja
Date of Survey:	30/31 - 10 - 2020

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	1756	875	881	280
ii)	2011	1467	732	735	325

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	4 Hector
	Forest Area (In hect.)	40.46
	Agricultural Land Area (In hect.)	714.70
	Residential Area (In hect.)	5.5061
	Other Area (In hect.)	325.55
	Water bodies	Checkdam - 47/ 3.34hec.
	Nearest Town with Distance:	Rajkot - 22km

3. Occupational Details:

Name of Three Major Occupation groups in Village	1.	Farmer
	2.	Dairy
	3.	Spinning mill

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		✓ ✓		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	—		
	Underground Sump	Capacity:	100000		
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	yes	✓		
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	closed	✓		
	If Open than Pucca / Kutchcha				
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	NO	✓		
Suggestions if any:					

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E.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	All weather	✓		
	Main road	CC road	✓		
	Internal streets	CC road	✓		
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH Rajkot Bhavnagar highway	✓		
Suggestions if any:					

F.	Transport Facility				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No 22 km - Bhaktinagar			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	yes			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	All type of transportation available on S.H.			
Suggestions if any:					

G.	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	yes Govt. morethan 6 hrs			
	Power supply for Domestic Use	✓			
	Power supply for Agricultural Use	✓			
	Power supply for Commercial Use	✓			
	Road/ Street Lights	✓	✓		

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	Electrification in Government Buildings/ Schools/ Hospitals	Yes			
	Renewable Energy Source Facilities (Y/ N)	✓			
	LED Facilities	✓			
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	✓ 5			
	Location Condition	Newgamtal – 2 Visitor centre – 1 Harijanvas – 2			
	Community Toilet (With bath/ without bath facilities)	cricket ground – 1 community bath at smashan			
	Solid & liquid waste Disposal system available	Yes			
	Any facility for Waste collection from road	Yes Gram panchayat employee			
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Well tubewell Bore well – 2			
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	5/95			

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

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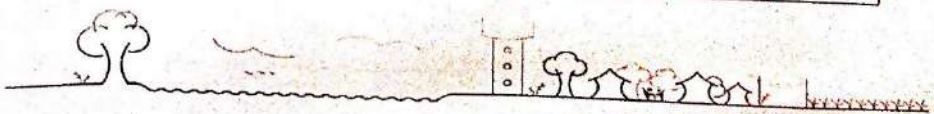
K.	Health Facilities:				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	PHC Sub centre Sub centre NO			
	Private Clinic/Private Hospital/ Nursing Home	NO			
	If any of the above Facility is not available in village than approx.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

L.	Education Facilities:				
	Aaganwadi/ Play group	✓			
	Primary School	✓			
	Secondary school	✓			
	Higher sec. School	—	Sardhar & Kasturbadham		
	ITI college/ vocational Training Center	22-Km Rajkot			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	R.K university Tramba - 7 Km			
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					

M.	Socio- Culture Facilities				
	Community Hall (With or without TV) Location:	yes with TV			



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	Condition:				
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	NO			
	Public Garden Location: Condition:	Yes good			
	Village Pond Location: Condition:	Yes			
	Recreation Center Location: Condition:	NO			
	Cinema/ Video Hall Location: Condition:	Yes good			
	Assembly Polling Station Location: Condition:	Primary School (Location) Good			
	Birth & Death Registration Office Location: Condition:	Gram 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	Sub-post office			
	Telecommunication Network/ STD booth	NO			

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Recent Projects going on for Development of Village	Paving block near visitor center
Any NGO working for village development	No

8. **Additional Information/ Requirement:**

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities(School Building, Health Center, Panchayat Building, Public Toilets & any other)	- Secondary school building vented by gram panchayat. - 42 checkdam & lack free wifi - Mahila gram panchayat. - ~~Cricket ground~~	
2.	Additional Information/ Requirement		

9. **Smart Village Proposal Design**

Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

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

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

તલાટી-કમ-મંત્રી,
રાજસમઢીયાળા ગ્રામ પંચાયત

તા. 21. 12. 21
સરપચ,
રાજસમઢીયાળા ગ્રામ પંચાયત

2.Scanned copy of Smart Village Survey

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Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	Rajkot
Name of Taluka:	Lodhika
Name of Village:	Dhaliya
Name of Institute:	ATTS
Nodal Officer Name & Contact Detail:	Dhavang Sarvaiya
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Dinesh Bhai Bagthaniya - Sarpanch Hetalben Patel - Talati
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	-	-	-	-
2.	2011	1983	990	993	464

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1091 Hectares
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	840.98
4.	Residential Area (In hect.)	9.28
5.	Other Area (In hect.)	256
6.	Distance to the nearest railway station (in kilometers):	18 kms.

V. SOCIAL INFRASTRUCTURAL FACILITIES:

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

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Vishwakarma Yojana: Phase VIII
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Suggestions if any:

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

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

Suggestions if any:

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

19

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

Suggestions if any:

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

7

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

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1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	All Public Buildings are in Good Condition	
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING .....1..... FOGGING.....1..... Drive was undertaken in the village?	one time cleaning and fogging	

IX. Smart Village / Heritage Details

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

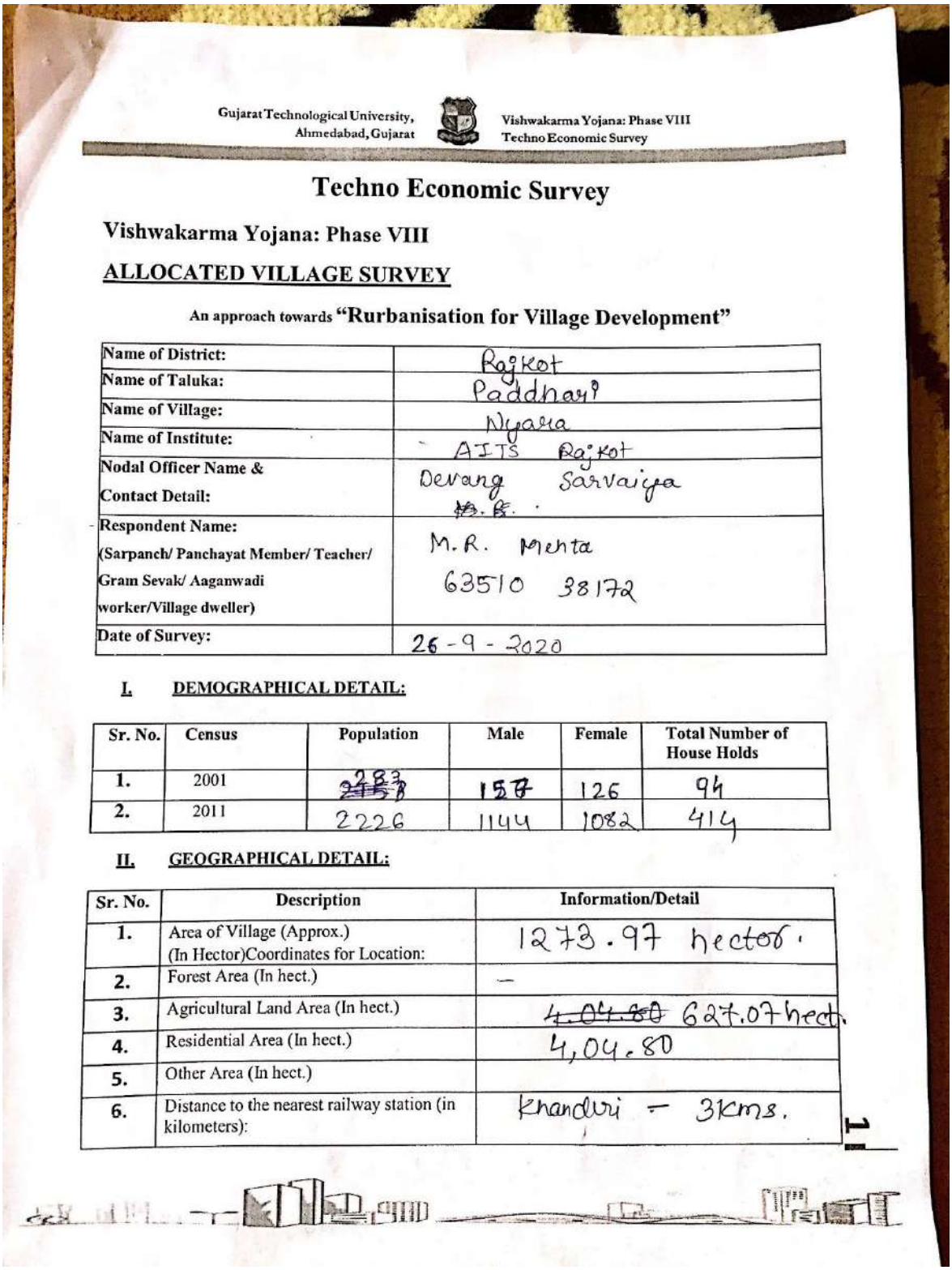
Note: Photographs/ Video/ Drawings of all existing Infrastructure facilities & conditions should be taken by students of respective villages for their record and information.

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

સરપંચ
ઢોલરા ગ્રામ પંચાયત

તલાટી-કમ-મંત્રી,
ઢોલરા ગ્રામ પંચાયત

3. Scanned Copy of Allocated Village Survey



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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	Rajkot
Name of Taluka:	Paddhari
Name of Village:	Nyara
Name of Institute:	AITS Rajkot
Nodal Officer Name & Contact Detail:	Devang Sarvaiya
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	M.R. Mehta 63510 38172
Date of Survey:	26-9-2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	~~2383~~	~~157~~	126	94
2.	2011	2226	1144	1082	414

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1273.97 hector.
2.	Forest Area (In hect.)	–
3.	Agricultural Land Area (In hect.)	~~4.04.80~~ 627.07 hect.
4.	Residential Area (In hect.)	4,04.80
5.	Other Area (In hect.)	
6.	Distance to the nearest railway station (in kilometers):	Khandivi – 3kms.

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Agricultural
	2.	Labour work
	3.	

Major crops grown in the village:	1.	Ground Nut
	2.	Cotton
	3.	Wheat

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

2

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Other(Specify)Lake/ Pond	NO.			
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	1,00,000 lit.		
	Underground Sump	Capacity:	1,00,000 lit.		
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1	Yes			
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	C/C.			
	Main road	WBM			
	Internal streets	CC.			
	Nearest NH/SH/MDR/ODR Dist. in kms.				
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO. Khanderi Railway station 3Km			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	NO. Rajkot 11 Km.			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes	Rajkot		
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	24 hours			

3

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Power supply for Domestic Use	✓			
	Power supply for Agricultural Use	✓			
	Power supply for Commercial Use	✓			
	Road/ Street Lights	✓			
	Electrification in Government Buildings/ Schools/ Hospitals	Yes			
	Renewable Energy Source Facilities (Y/ N)	NO.			
	LED Facilities	Yes			
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	NO.			
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	NO.			
	Solid & liquid waste Disposal system available	Yes			
	Any facility for Waste collection from road	Yes			
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND	X			
	STREAM/RIVER	✓			
	CANAL	✓			
	WELL	✓			
	TUBE WELL.	✓			
	OTHER (SPECIFY)	Bore well.			
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	10/90			

V. SOCIAL INFRASTRUCTURAL FACILITIES:

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

51

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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

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

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

Suggestions if any:

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

9

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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

Suggestions if any:

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

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

18

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

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

IX. Smart Village / Heritage Details

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

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

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

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12.4 Gap Analysis

Table15 : Gap Analysis

VILLAGE GAP Analysis					
Village Facilities	**Planning Commission/UDPFI Norms**	**Village Name:**	Nyara		
		Population:		2226	
		Existing	**Required as per Norms**	**Smart Vilage / Cities / Heritage Future Projection Design**	**Gap**
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	1	2		-1
Primary School	Each Per 2500 population	1			
Secondary School	Per 7,500 population	0	1		-1
Higher Secondary School	Per 15,000 Population	0	1		-1
College	Per 125,000 Population	0	0		0
Tech. Training Institute	Per 100000 Population	0	0		0
Agriculture Research Centre	Per 100000 Population	0	0		0
Skill Development Center	Per 100000 Population	0	0		0
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	1	1		0
Primary Health & Child Health Center	Per 20,000 population	0	0		0
Child Welfare and Maternity Home	Per 10,000 population	0	0		0
Multispeciality Hospital	Per 100000 Population	0	0		0

Public Latrines	1 for 50 families (if toilet is not there in home, especially for slum pockets & kutcha house)	0	1		-1
Physical Infrastructure Facilities					
Transportation		**Adequate / Inadequate**			
Pucca Village Approach Road	Each village	Yes			
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	Yes			
Drinking Water (Minimum 70 lpcd)		**Adequate / Inadequate**	Yes		
Over Head Tank	1/3 of Total Demand	Yes			
U/G Sump	2/3 of Total Demand	Yes			
Drainage Network - Open		**Adequate / Inadequate**	No		
Drainage Network - Cover			Yes		
Waste Management System		**Adequate / Inadequate**	No		
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	0	1		-1
community hall and Public Library	Per 15000 Population	0	1		-1
Cremation Ground	Per 20,000 population	0	1		-1
Post Office	Per 10,000 population	0	1		-1
Gram Panchayat Building	Each individual/group panchayat	1	1		0
APMC	Per 100000 Population	0	1		-1
Fire Station	Per 100000 Population	0	1		-1
Public Garden	Per village	0	1		-1
Police post	Per 40,000Population	0	1		-1
Shopping Mall		0	1		-1

12.5 Summary of All Villages Designs as Part-I and Part-II

Table 16: Summary of All Villages Designs

Sr. No.	Village	Discipline	Part - 1	Part - 2
1	Nyara	Civil	Honeybee Breeding Center	ECO building
			Anganwadi	Storage Shed
			High School	Supermarket
			Garden	Youth Club
			CCTV Camera and Speakers	Women & Children Activity Center
			Entrance gate of village	Open Air Theater
2	Vagudad	Civil	Green House	Rain Water Harvesting
			Borewell in Cremation	
			Renovation of Gram Panchayat	
			Vending Machine	
			Community Hall	
			Over Head RCC Tank	
3	Moviya	Civil	Biogas plant	Soak pit
			Drinking water tank for Animals	Children Amusement Park
			Hospital	2nd innings home
			Library	Shopping Center
			Water Filter Plant	Govt. grocery shop
			Bus Stand	Renovation of Chabutra

12.6 Detail drawing of Honeybee Breeding Center

Figure 44 : Plan of Honeybee Breeding Center

12.6Detail drawing of Anganwadi

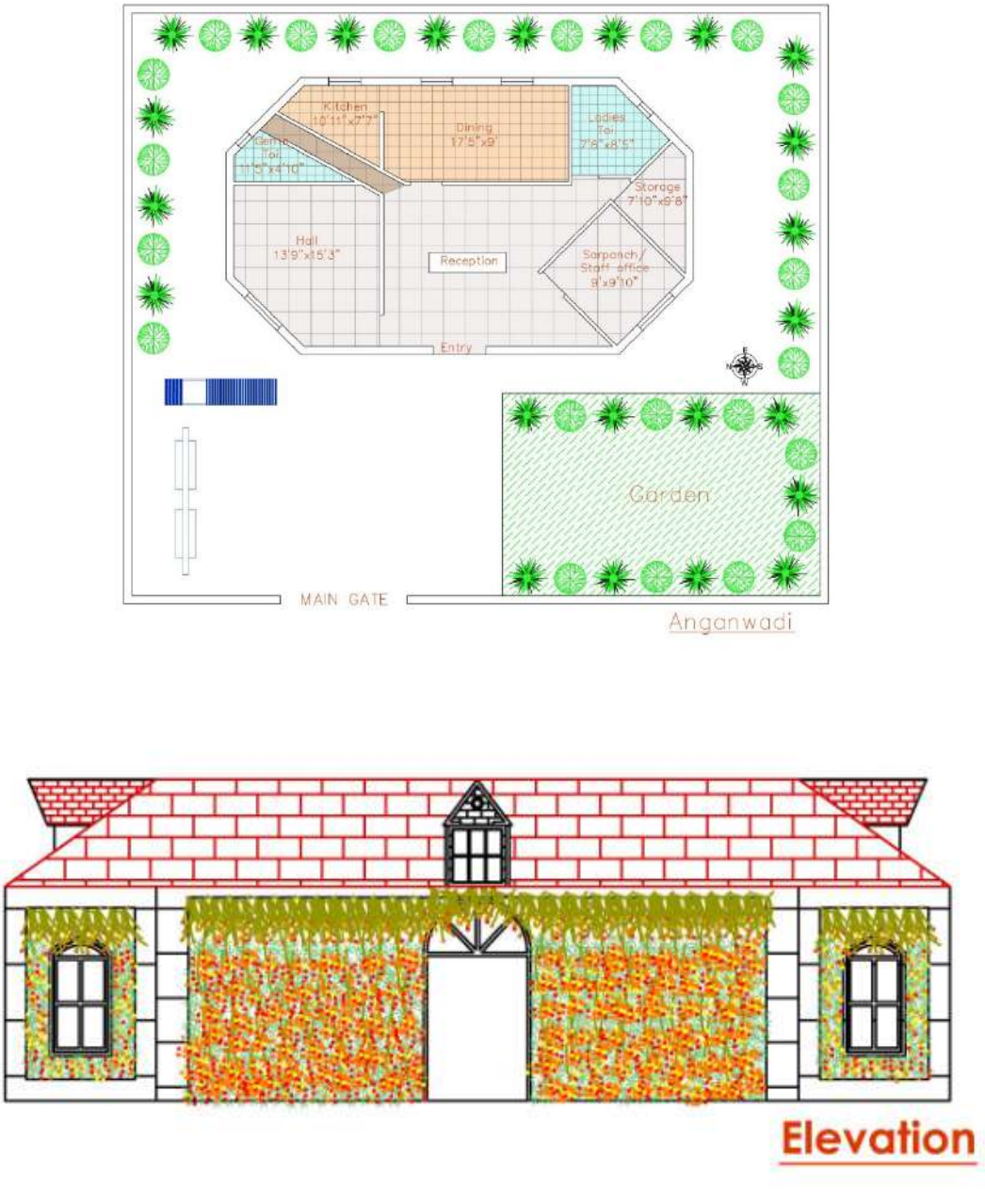


Figure 45 : Plan and Elevation of Anganwadi

12.6 Detail drawing of High School

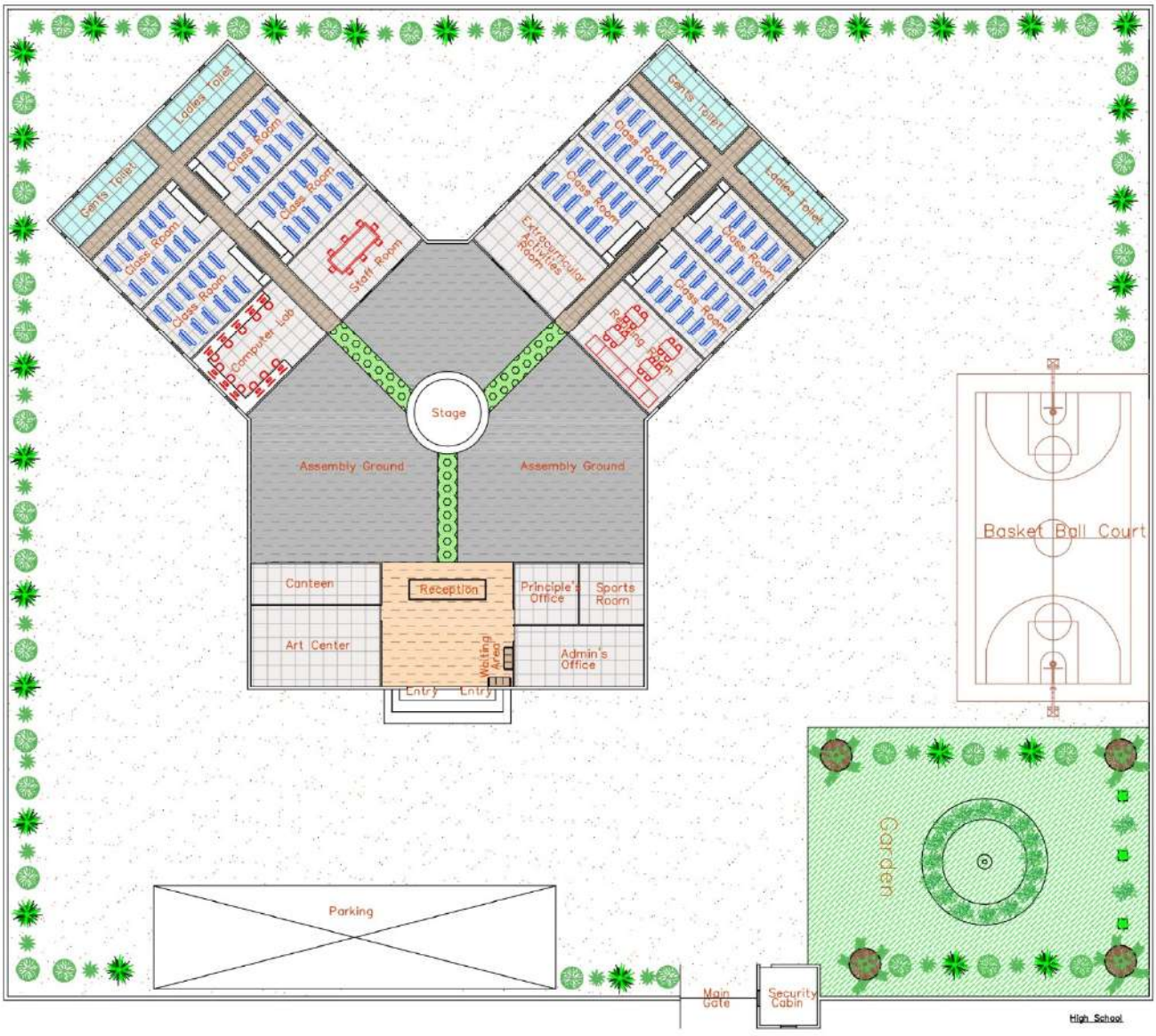


Figure 46 : Plan of High School

12.6 Detail drawing of Garden

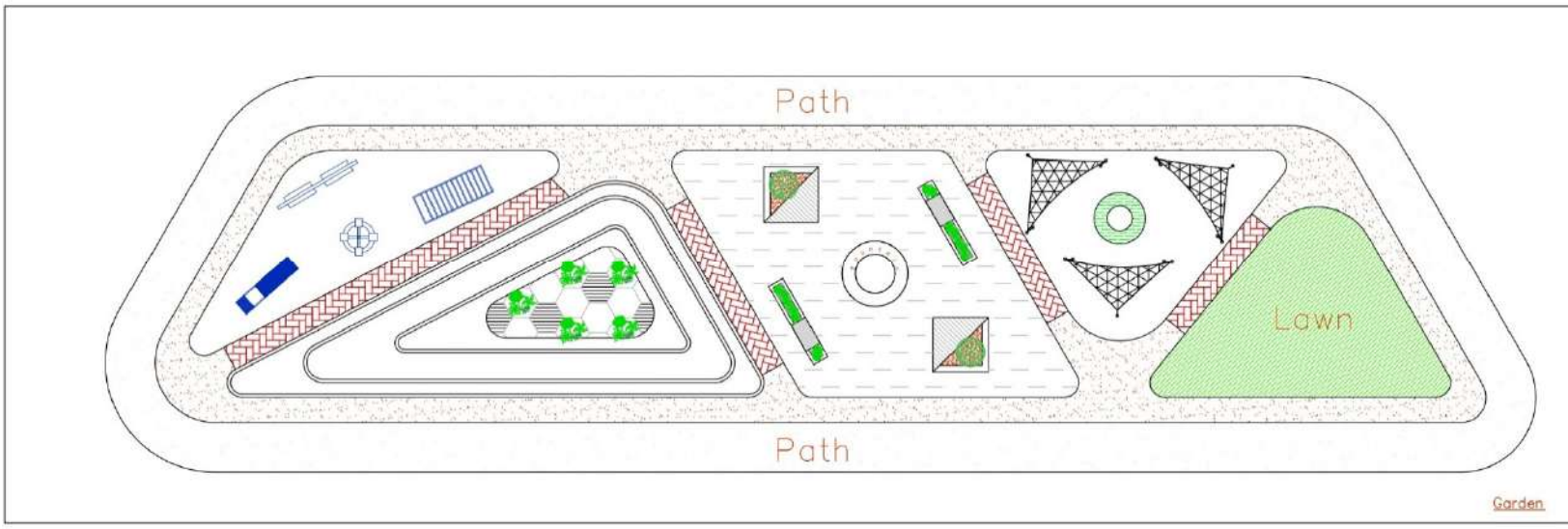


Figure47 : Plan of Garden

12.6 Detail drawing of CCTV Camera and Speakers

Figure48 : Positions of cameras an speaker

12.6 Detail drawing of Entrance Gate of Village

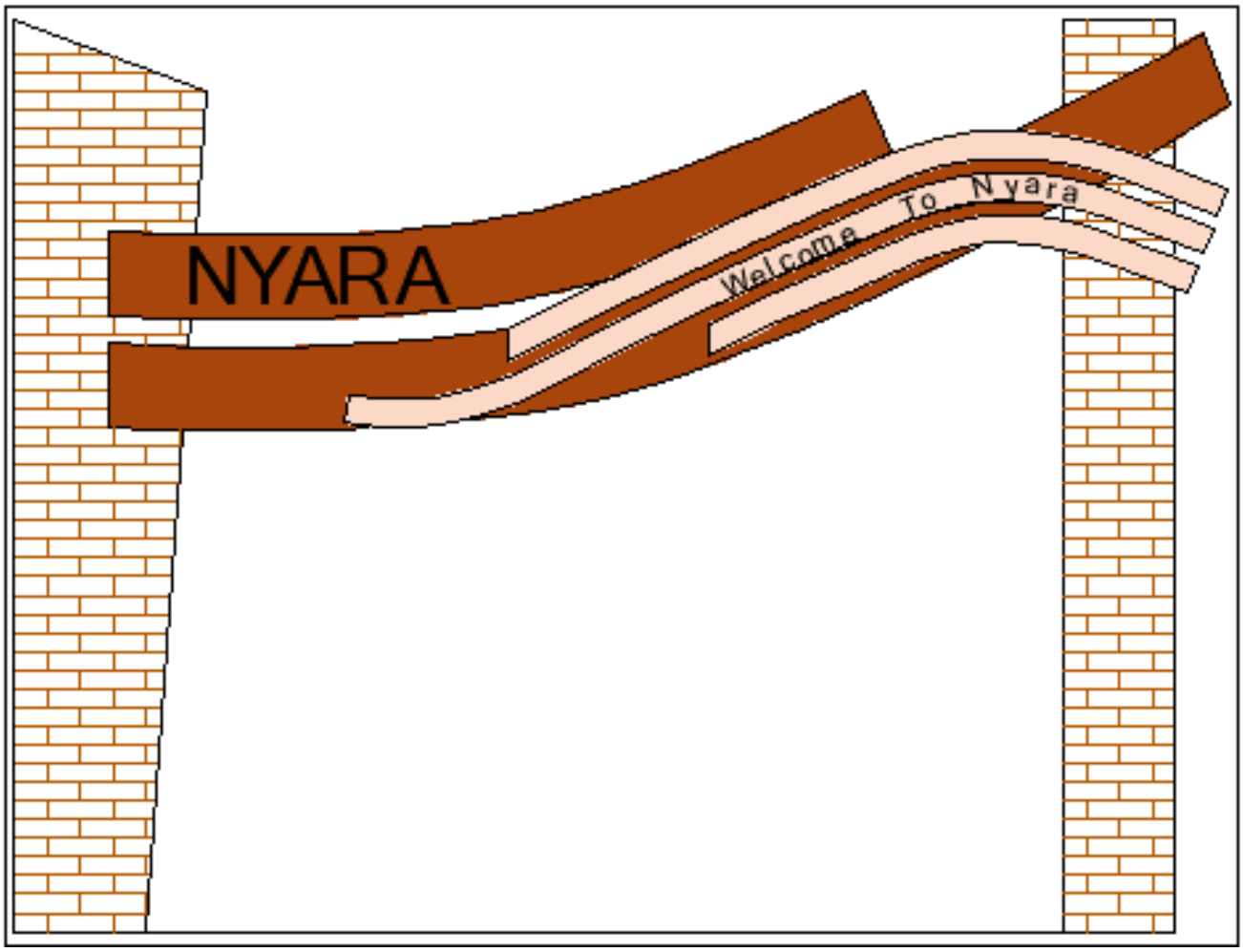


Figure49 :Village Entrance gate

12.7 Summary of Good Photographs in Table Format

Figure50 : Interaction with faculty in ideal village

Figure51 : CCTV camera facility

Figure52 : Base map of ideal village

Figure53 : Award

Figure54 : Projector room

Figure55: Rules of village

Figure56 : Anganwadi

Figure57: Primary school

Figure58 : Temple

Figure59 : Cricket Ground

12.8Village Interaction Report with the photograph

A Report
On
Interactive Presentation (Vishwakarma Yojana:Phase-VIII)
At
Nyara Village, Rajkot.

25th Nov. 2020

We visited the village and interact with various authorities of village like Sarpanch, Talati mantri as well as people of village. We explained what is Vishwakarma Yojana and main aim of vishwakarma project. We conduct techno-economic survey of village to identify various existing facilities.

We have also visited various places like gram-panchyat, bus stands, temples, Primary school and other amenities. Existing condition of various amenities as well as various infrastructure was examined by us like, road condition, housing condition, drainage system, etc.

We explain various design of our project under different infrastructure such as Honeybee Breeding Center (sustainable design), Anganwadi (physical design), High School (social design), Garden (socio cultural design), CCTV Camera with Speakers (smart village design) and Entrance Gate of Village (Heritage village Design).

Fig 60: Interaction with Sarpanch

VY-PHASE-VIII-PART-II

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

13.1 Design Proposals

In the detailed survey carried by us, we concluded that the basic facilities required in a village are Physical infrastructure, Social infrastructure, Socio-cultural infrastructure. In part-2 we decided to provide designs which is beneficial in terms of cost and also easy availability of resources and also it is environmentally efficient in every way. The another main advantage of the proposed design is people of the village can use it very easily with very low maintenance cost.

13.1.1 Sustainable design

As a sustainable design we have decided to provide **super market** in village.

Fig 61 : Night View of Super market

Fig 62 : Day View of Super market

Fig 63 : Night View of Super market

Table 17 :Abstract Sheet for Super market

Sr No.	Quantity	Item of work	Rate	Unit	Total Amount
1	250	**Excavation**	85	m3	21250
2	250	**P.C.C**	3400	m3	850000
3	4500	Providing & laying 9" **masonary wall**	50	cu.ft.	225000
4	4000	Providing & laying of **R.C.C.Slab**	180	cu.ft.	720000
5	5998	Providing & laying **15mm thick Cement Plaster**	40	sq.ft.	239920
6	1287	Providing & fixing **Glass Panel**	500	sq.ft.	643500
7	90	Providing & fixing **Glass Doors**	1400	sq.ft.	126000
8	59	Providing & fixing **Glass Ralling**	1200	ft.	70800
9	1600	Providing & laying of **C.C. Floor**	3400	sq.ft.	5440000
10	7290	Providing & laying **Vitrified Tiles**	70	sq.ft.	510300
11	5998	Finishing wall with **weather proof exterior emulsion paint**	10	sq.ft.	59980
12	280	Providing & fixing Steel **Ralling**	800	ft.	224000
Contractor's Profit(10%) 913075					
Water Charges(5%) 456654					
Total Amount Rs. 10500479					

13.1.2 Physical design

As a part of physical design we decide to give design of Shed which can be used for Storage of food grains and also temporary storage for stock of supermarket.

Fig 64 : Front View of Shed

Fig 65 : Rear View of Shed

Table 18 : Abstract Sheet for Shed

Sr No.	Quantity	Item of work	Rate	Unit	Total Amount
1	400	**Excavation**	85	m3	34000
2	400	**P.C.C**	3400	m3	1360000
3	4737	Providing & laying 9" **masonry wall**	50	cu.ft.	236850
4	1500	Providing & laying of **R.C.C.Slab**	180	cu.ft.	270000
5	6315	Providing & laying **15mm thick Cement Plaster**	40	sq.ft.	252600
6	434	Providing & fixing **Glass window**	70	sq.ft.	30380
7	544	Providing & fixing Rolling Shutters	80	sq.ft.	43520
8	480	Providing & fixing Glass **Railing**	1200	sq.ft.	576000
9	7258	Providing & laying of **C.C. Floor**	3400	sq.ft.	24677200
10	7329	**Aluminum Roofing**	50	sq.ft.	366450
11	6315	Finishing wall with **weather proof exterior emulsion paint**	10	sq.ft.	63150
Contractor's Profit(10%) 279101					
Water Charges(5%) 1395508					
Total Amount Rs. 29584759					

13.1.3 Socio-Cultural design

As a part of Socio-Cultural design, we decide to give design of Youth Club to encourage the teenagers for doing various useful activities.

Fig 66 : Side View of youth club

Fig 67 : Front View of youth club

Table 19 : Abstract Sheet for Youth Club

Sr No.	Quantity	Item of work	Rate	Unit	Total Amount
1	125	Excavation	85	m3	10625
2	125	P.C.C	3400	m3	425000
3	3413	Providing & laying 9" **brick masonary**	50	cu.ft.	170650
4	1264	Providing & laying of **R.C.C.Slab**	180	cu.ft.	227520
5	4554	Providing & laying **15mm thick Cement Plaster**	40	sq.ft.	182160
6	2370	Providing & laying **Vitrified Tiles**	70	sq.ft.	165900
7	7728	Providing & laying **Pavement Blocks**	90	sq.ft.	695520
8	75	Providing & fixing Roundtop **Glass Door**	1400	sq.ft.	105000
9	1185	Providing & laying of **Flooring**	3400	sq.ft.	4029000
10	4554	Finishing wall with **weather proof exterior emulsion paint**	10	sq.ft.	45540
11	224	Cement Concrete in **staircase**	50	sq.ft.	11200
12	41	Laying **granite** on top of **stairs**	70	sq.ft.	2870
Contractor's Profit(10%) 602545					
Water Charges(5%) 301273					
Total Amount Rs. 6929263					

13.1.4 Social design

As a part of Socio design we decide to give design of Children and women activity center.

Fig 68 : Front View of Children and women activity center

Fig 69 : Side View of Children and women activity center

Table 20:Abstract Sheet for children and women activity center

Sr No.	Quantity	Item of work	Rate	Unit	Total Amount
1	112	Excavation	85	m3	9520
2	112	P.C.C	3400	m3	380800
3	1723	Providing & laying 9" **masonary wall**	50	cu.ft.	86150
4	440	Providing & laying of **R.C.C.Slab**	180	cu.ft.	79200
5	2767	Providing & laying **15mm thick Cement Plaster**	40	sq.ft.	110680
6	57	Providing & fixing **Door**	70	sq.ft.	3990
7	8	Providing & fixing **Wooden Strips**	750	sq.ft.	6000
8	14	Providing & fixing **Glass Ralling**	1200	ft.	16800
9	697	Providing & laying of **Wooden Floor**	1500	sq.ft.	1045500
10	2961	Finishing wall with **weather proof exterior emulsion paint**	10	sq.ft.	29610
11	394	Providing **Glass panels**	500	sq.ft.	197000
12	2317	Providing **Pavement Blocks**	90	sq.ft.	208530
Contractor's Profit(10%) 217378					
Water Charges(5%) 108689					
Total Amount Rs. 2499847					

13.1.5 Smart design

As a part of Smart design we decided to give design of open theatre.

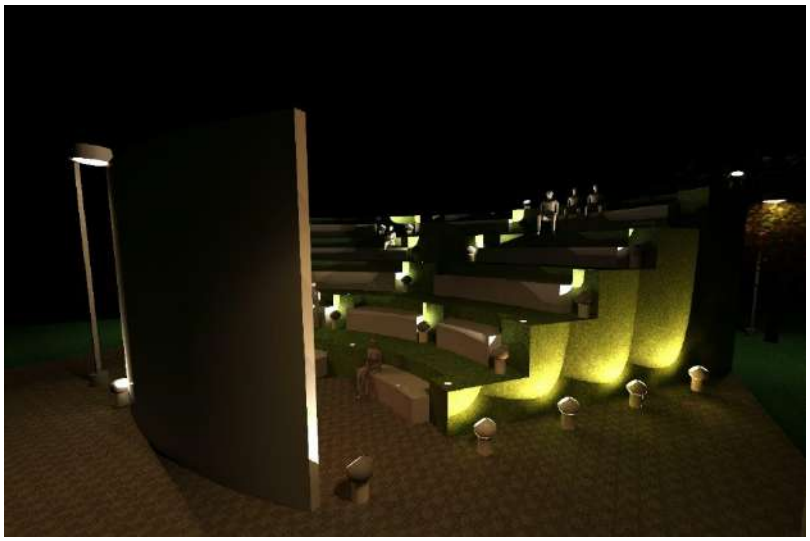


Fig 70 : Side View of open theatre

Fig 71 : Front View of open theatre

Table 21 : Abstract Sheet for Open Theatre

Sr No.	Quantity	Item of work	Rate	Unit	Total Amount
1	10960	Concrete Work	3400	cu. ft.	37264000
2	961	Pavement Blocks	90	sq.ft.	86490
Contractor's Profit(10%) 3735049					
Water Charges(5%) 1867525					
Total Amount Rs. 42953064					

13.1.6 Heritage design

As a part of heritage design, we decided to give design of Eco Building.

Fig 72 : Front View of Eco Building

Fig 73 : Side View of Eco Building

Table 22 : Abstract Sheet for Eco building

Sr No.	Quantity	Item of work	Rate	Unit	Total Amount
1	180	Excavation	85	m3	15300
2	180	P.C.C	3400	m3	612000
3	2225	Providing & laying flyash brick masonary	50	cu.ft.	111250
4	1200	Providing & laying of **R.C.C.Slab**	180	cu.ft.	216000
5	158	Providing & laying of **R.C.C.Beam**	200	cu.ft.	31600
6	97	Providing & laying of **R.C.C.Column**	210	cu.ft.	20370
7	2796	Providing & laying **15mm thick Cement Plaster In side**	40	sq.ft.	111840
8	2195	Providing & laying **Vitrified Tiles**	70	sq.ft.	153650
9	1544	Providing & laying **Pavement Blocks**	90	sq.ft.	138960
10	187	Providing & fixing **Glass window**	70	sq.ft.	13090
11	68	Providing & fixing **Concrete frame**	100	sq.ft.	6800
12	49	Providing & fixing Laminate for **Door**	150	sq.ft.	7350
13	480	Providing & fixing Glass **Ralling**	600	sq.ft.	288000
Contractor's Profit(10%) 201064					
Water Charges (5%) 100533					
Total Amount Rs. 23122411					

13.2 Reason for Students Recommending this Design:

- There was no facility available where people can buy all types of things from one single place sowe decides to design super market as a part of Sustainable design.
- Food grains and other vegetables can be easily stored if there is a shed in which such things can be stored so in physical design we decided to give design of storage shed.
- There was not a single heritage building present in the village, which represent the landmark of the village so we decided to design eco building under the category of heritage design.
- Youth club in the village provides a platform for the teenagers to explore their interest so as a part of socio-Cultural design we decided to design Youth club.
- There was no such landmark where women and children can gather and carry out some activity so as a part of social design we designed Women and children activity center.
- In the smart design, we designed open theatre for entertainment purpose.

13.3About designs Suggestions / Benefit of the villagers:

- It allows people to sit in nature and enjoy the movie. Open air theater is cost effective.
- Availability of all the goods of daily need.
- No need to travel to city to buy daily household items.
- Eco buildings can not only reduce or eliminate negative impacts on the environment, by using less water, energy or natural resources, but they can - in many cases - have a positive impact on the environment (at the building or city scales) by generating their own energy or increasing biodiversity.
- A shed is made of steel, making it highly durable. The time and cost for its maintenance are super low. It is useful to store goods.
- Being part of a group can help young people develop important personal and interpersonal skills. These include the ability to think critically and solve problems, and the assumption of personal and group responsibility.
- Promote training courses for rural women in entrepreneurship, village and farm tourism, agro-forestry, fish-farming, integrated production methods such as organic farming, as well as in business-planning, accounting, financing and loan procedures, issues regarding taxation and marketing, etc

Chapter :14 Technical options with case studies

14.1 Civil Engineering

14.1.1 Advanced Earthquake Resistant

- To protect the structure form the impact of earthquake, earthquake resistant structure are constructed.
- The aim of earthquake-resistant construction is to erect structures that fare better during seismic activity than their conventional counterparts.
- According to building codes, earthquake-resistant structures are designed to withstand the largest earthquake force of a certain frequency, which is likely to occur at their location.
- Currently, there are several design philosophies in earthquake engineering, making use of experimental results, computer simulations and observations from past earthquakes to offer the required performance for the seismic threat at the site of interest.
- Among the most important advanced techniques of earthquake resistant design and construction are:

1. Base Isolation
2. Energy Dissipation Devices.

➢ **Base Isolation**

- The simplest form of base isolation uses flexible pads between the base of the building and the ground.
- When the ground shakes, inertia holds the building nearly stationary while the ground below oscillates in large vibrations.
- Thus, no force is transferred to the building due to the shaking of the ground. The flexible pads are called base-isolators and structures using these devices are called base-isolated buildings.

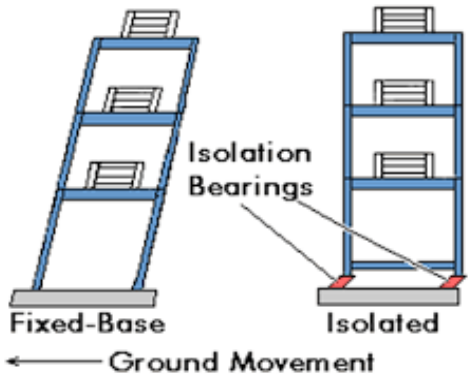


Fig 74 : Basic isolation method

➢ **Working Principle**

- When an earthquake vibrates a building with a fixed foundation, the ground vibration is transmitted to the building.
- The buildings displacement in the direction opposite the ground motion is actually due to inertia.
- In addition to displacing in a direction opposite to ground motion, the un-isolated building is deformed.

- If the deformation exceeds the constraints of the building design, the structure of the buildingwill fail.
- This failure often occurs in the ground floor because most of the building‘s mass is above that level. Also many buildings have ―soft‖ ground floors with many windows or unreinforced spaces for parking or lobbies.

➢ **Types of Bearings**

- Lead-rubber bearings are frequently used for base isolation. A lead rubber bearing is made from layers of rubber sandwiched together with layers of steel. The bearing is very stiff and strong in the vertical direction, but flexible in the horizontal direction.
- Spherical sliding isolation uses bearing pads that have a curved surface and low-friction materials similar to Teflon. During an earthquake the building is free to slide both horizontally and vertically on the curved surfaces and will return to its original position after the ground shaking stops. The forces needed to move the building upwards limit the horizontal or lateral forces that would otherwise cause building deformations.

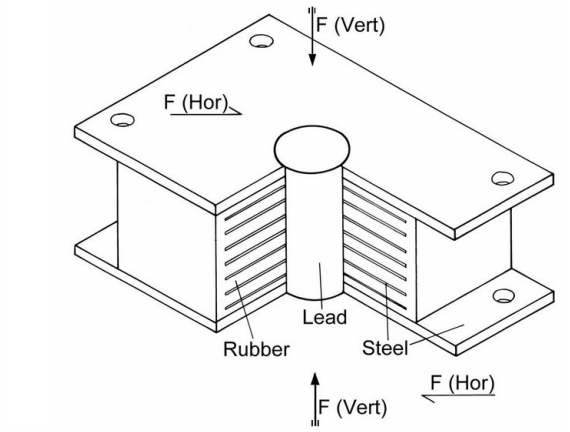


Fig 75 : Lead Rubber Bearing

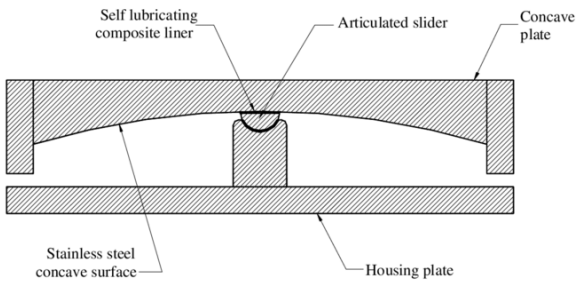


Fig 76 : Spherical Sliding Bearing

➢ **Energy Dissipation Devices**

- Another alternative for controlling seismic damage in buildings is to install Seismic Dampers in place of some structural elements, such as diagonal braces.
- These dampers act like the hydraulic shock absorbers in cars that absorb sudden jerks. When seismic energy is transmitted through them, dampers absorb part of the energy, thus damping the vibration of the building.
- By equipping a building with devices that have high damping capacity, the seismic energy entering the building is greatly decreased.

➢ **Commonly used Energy Dissipation Devices**

- Viscous Dampers (energy is absorbed by silicone-based fluid passing between piston cylinder arrangement).
- Friction Dampers (energy is absorbed by surfaces with friction between them rubbing against

each other).

- Yielding Dampers, (energy is absorbed by metallic components that yield).
- Viscoelastic dampers (energy is absorbed by utilizing the controlled shearing of solids).

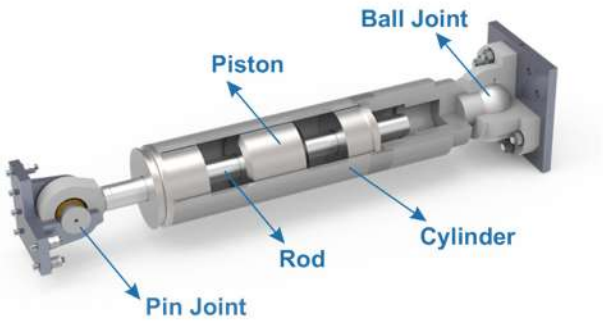


Fig 77 : Seismic fluid Damper

14.1.2Seismic Retrofitting of Buildings

➢ **Seismic Retrofitting of Buildings**

- It is the modification of existing structures to make them more resistant to seismic activity, ground motion or soil failure due to earthquake.
- The retrofit techniques are also applicable to other hazardous conditions such as tropical cyclones, tornadoes and severe winds from thunderstorms.

➢ **When seismic retrofitting is needed?**

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

➢ **Retrofit Performance Objectives**

- Public safety only: The goal is to protect human life, ensuring that the structure will not collapse upon its occupants or passersby, and that the structure can be safely exited. Under severe seismic conditions, the structure may be a total economic write-off, requiring tear- down and replacement**.**
- Structure survivability: The goal is that the structure, while remaining safe for exit, may require extensive repair (but not replacement) before it is generally useful or considered safe for occupation. This is typically the lowest level of retrofit applied to bridges.
- Structure functionality: Primary structure undamaged and the structure is undiminished in utility for its primary application.
- Structure unaffected: This level of retrofit is preferred for historic structures of high cultural significance.

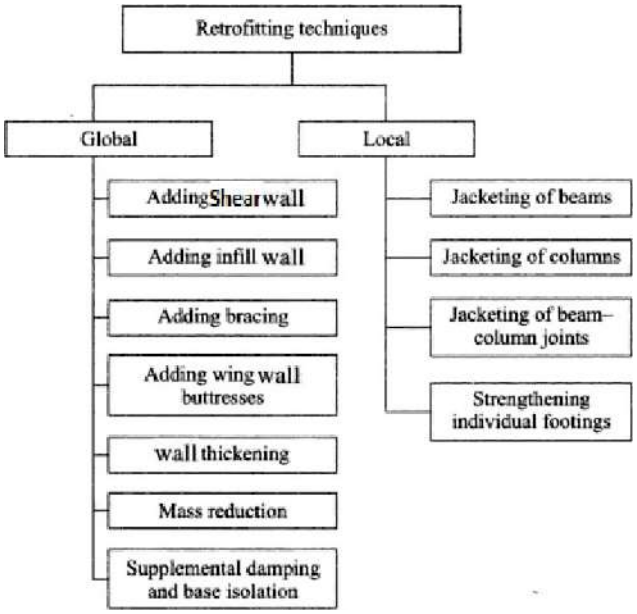


Table 23 : Retrofitting techniques

- **Adding new shear wall**

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

- **Adding steel bracing**

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

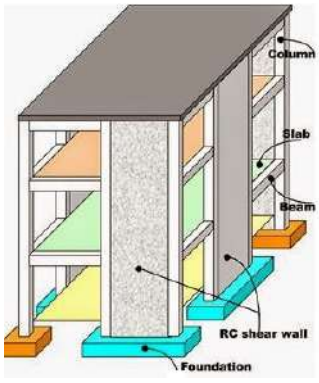


Fig 78 : Additional Shear Wall

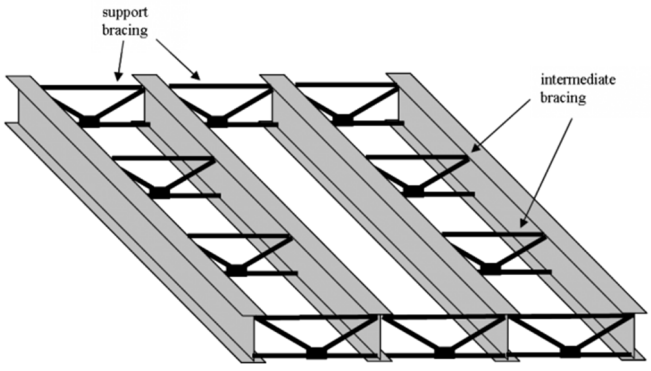


Fig 79 : Steel Bracing

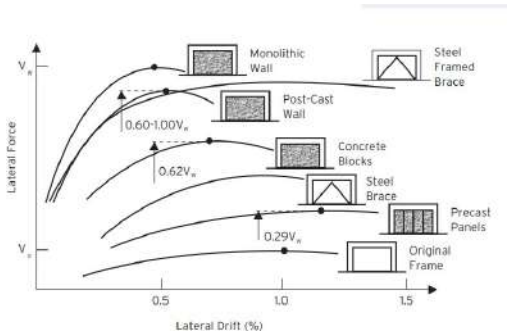


Fig 80 : Effect of providing shear wall and steel bracing

- **Jacketing**

- Most popular method for strengthening of building columns:

1.Steel jacket,
2.Reinforced Concrete jacket,
3.Fiber Reinforced Polymer Composite (FRPC) jacket.

- Purpose for jacketing:
- To increase concrete confinement.
- To increase Shear Strength.
- To increase flexural strength.

Fig 81 : Steel Bracing

- **Retrofit of Structures using Innovative Materials**

- Current research on advanced materials has mainly concentrated on FRP composites.
- Studies have shown that externally bonded FRP composites can be applied to various structural members including columns, beams, slabs, and walls to improve their structuralperformance such as stiffness, load carrying capacity, and ductility.

14.1.3 Advance practices in construction field in terms of construction material and construction equipment

- **Modern Construction material:**

1. 3d Graphene:

3D graphene is coming to replace steel. Steel is not only heavy but also expensive to buy. 3D graphene is only 5 percent of the weight of steel but offers up to200 times the strength of steel. With the added strength,contractors can build skyscrapers more than 98k feet high. Again, the material can be used in the manufacture of lighter and more fuel-efficient vehicles.

Fig 82 : 3d Graphene

2. Synthetic Spider Silk

The synthetic spider silk is up to 340x longer lastingcompared to steel. Again, it contains resonance propertiesmaking it ideal for use in most buildings. Variants of this material can be used in acoustic building tiles and laboratories.

Fig 83 : Synthetic spider silk

3. Self-Healing Concrete

Self-healing concrete is saving contractors a lot of time and labor. The concrete is engineered with water-activated bacteria which heal cracks by producing calcite. By using this type of concrete, you reduce infrastructure maintenance, and you reduce theproduction of greenhouse gases. Simply put, you can build faster, and the structures will last for about 200 years.

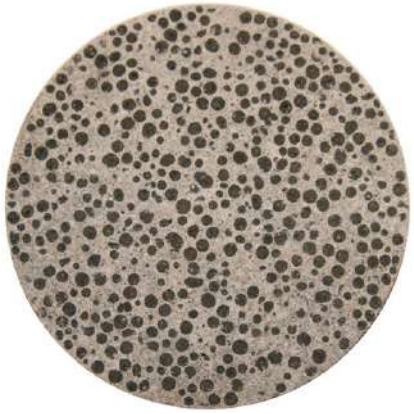


Fig 84 : Self healing concrete

4. Invisible Solar Cells

You can generate energy at home without having huge solar panels. Invisible solar cells produce power by pushing wavelengths of light to cells at the edges. You can use these new home building materials to generate energy from any component of a building, including doors and windows. It is one of the new building materials in architecture that will save you money on electricity bills.

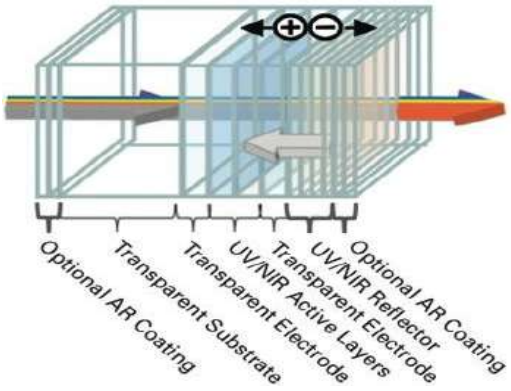


Fig 85 : Invisible solar cells

5. Bio Reactor

As the world moves towards renewable sources of energy, new building materials for houses are all geared towards sustainability. These bioreactors are algae-infused wall panels that undergo synthesis to create energy. The new sustainable building materials are ideal when you need to create buildings with great thermal regulation and which are more self-reliant.

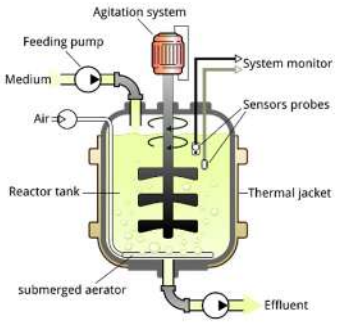


Fig 86 : BioReactor

6.Prefabricated Laminated Timber:

We considered the wood of the future, this type ofwood is more resistant to water and is stronger thanconventional timber from trees. The prefabricated wood issued to support skyscrapers, and help reduce carbon emissions with every story raised.

Many of the top construction companies in the world are using this and other prefabrication methods to increase sustainability and reduce costs.

Fig 87 : Prefabricated laminated timber

7.Transparent Aluminium:

One of the new building materials for homes is a ceramic alloy that is almost 2x harder than sapphire. Thematerial does not corrode and is resistant to radiationand oxidation. You can use it in the creation of stronger windows for homes, and domes for space and undersea vehicles.

Fig 88 : Transparent aluminium

8.Translucent Wood:

This wood can also be termed as the ―future of wood‖ as it will be used for different applications. When used on structures, it offers better insulation, it is stronger than conventional wood, and it is biodegradable.

You can use the wood in solar panels, on windows as replacements for glass, for natural indoor lighting, and contemporary structures. The wood is 90 percent transparent.

Fig 89 : Translucent Wood

9.Aluminium Foam:

This is one of the new sustainable building materials that are 100 percent recyclable. The material is developed when air is injected with molten metal to create a porous material. The aluminum foam is strong and lightweight and can be used to create durable building cladding and decorative features on buildings.

Fig 90: Aluminum Foam

10. Illuminating Concrete:

When used on buildings, illuminating concrete will glow at night, making your building look aesthetically pleasing. The non-flammable concrete is engineered with minuscule glass balls that glow when they reflect light. You can use the concrete to create signage systems, lighting underground spaces, marking dangerous areas, and on artistic buildings.

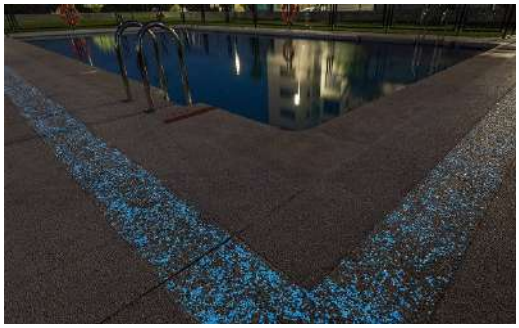


Fig 91 : Illuminating concrete

➢ **Advance Construction Equipment:**

1. Trencher:

Trenchers or Trenching machines are used to excavate trenches in soil. These trenches are generally used for pipeline laying, cable laying, drainage purposes etc. Trenching machines areavailable in two types namely chain trenchers andwheeled trenchers.

Chain trenchers contains a fixed long arm around which digging chain is provided. Wheeled trenchers contains a metal wheel with diggingtooth around it.

Fig 92 : Trencher

2. DraglineExcavator:

Dragline excavator is another heavy equipment used in construction which is generally used for larger depth excavations. It consists a long length boom and digging bucket is suspended from the top of the boom using cable. For the construction of ports, for excavations under water, sediment removal in water bodies etc. can be done by dragline excavator.

Fig 93 : Dragline Excavator

3. Excavator:

Excavators are important and widely used equipment in construction industry. Their general purpose is to excavation but other than that, they are also used for many purposes like heavy lifting, demolition, river dredging, cutting of trees etc. Excavators contains a long arm and a cabinet.

Fig 94 : Excavator

4. Bull Dozer:

Bulldozers are another type of soil excavating equipment, which are used to remove the topsoil layer up to particular depth. The sharp edged wide metal plate provided at its front does the removal of soil. This plate can be lowered and raised using hydraulic pistons.

Fig 95 : Bulldozer

5. Wheel Tractor scraper:

Wheel Tractor Scrapers are earth moving equipment used to provide flatten soil surfacethrough scrapping. Front part contains wheeled tractor vehicle and rear part contain a scrapping arrangement such as horizontal front blade,conveyor belt and soil collecting hopper.

When the front blade is lowered onto the ground and vehicle is moved, the blade starts digging the soil above the blade level and the soil excavatedis collected in hopper through conveyor belt.

Fig 96 : Wheel tractor scraper

6. Graders:

Graders also called as motor graders are another type of equipment used in construction especially for the construction of roads. It is mainly used to level the soil surface. It contains a horizontal blade in between front and rear wheels and this blade is lowered in to the ground while working. Operating cabin is provided on the top of rear axle arrangement.

Fig 97 : Grader

➢ **Advance construction Methods:**

1. 3D Volumetric Construction:

As the name implies, the 3D volumetric construction involves the manufacture of 3D units in the form of modules in off site. At the time of installation, they arebrought to the site and assembled module by module.

Each modular unit manufactured are 3D units, hence this construction is called as 3D volumetric construction or modular construction.

Fig 98 : 3d Volumetric Construction

2. Insulating Concrete Formwork:

Either the system of insulating concrete formwork (ICF) have twin walled panels that are polystyrene panels or blocks are employed. These are built quickly to create the formwork as the wall of the buildings.

The formwork that is made is filled with concrete. This concrete is factory produced that have quality assurance so that a ready – mixed concrete. Mostly the mix is ready mix concrete.

Higher level of thermal insulation is provided by expanded polystyrene blocks. The concrete core will provide good robustness and better sound insulation.

Fig 99 : Insulating concrete formwork

3. Precast Concrete Foundation:

For the rapid construction of foundation, the precast concrete system can be employed. This method is more suited for a bespoke design.

Here, the elements required for the construction of foundation are constructed separately in the factory (off site) and brought to the site and assembled. The manufactured product must have the assured quality as specified by the designer.

Fig 100: Precast Cocnrete Foundation

4. Precast Flat Panel System:

This method of construction involves the procedure of making floor and wall units off site. For this, separate factory outlets and facilities is required.

Once the panel units are made as per the design specification and requirements, they are brought to the site and placed. This method is best suited for repetitive construction project activities.

Fig 101 : precast flat panel system

5. Twin Wall Technology:

The twin wall technology is a hybrid solution of wall system that combines the qualities of erection speed and precast concrete with the structural integrity of in-situ concrete. This type of wall system guarantees structural integrity and waterproof reliability for the structure. The twin wall system has the two slabs are separated by a cast in lattice girder

Fig 102 : Twin wall Technology

14.1.4 Engineering Aspects of Soil mechanics - Environmental Impact Assessment

➢ **Engineering Aspects of Soil Engineering:**

- Soil mechanics is a branch of soil physics and applied mechanics that describes the behavior of soils.
- It differs from fluid mechanics and solid mechanics in the sense that soils consist of a heterogeneous mixture of fluids (usually air and water) and particles (usually clay, silt, sand, and gravel) but soil may also contain organic solids and other matter.
- Soil mechanics is used to analyze the deformations of and flow of fluids within natural and man-made structures that are supported on or made of soil, or structures that are buried in soils. Example applications are building and bridge foundations, retaining walls, dams.

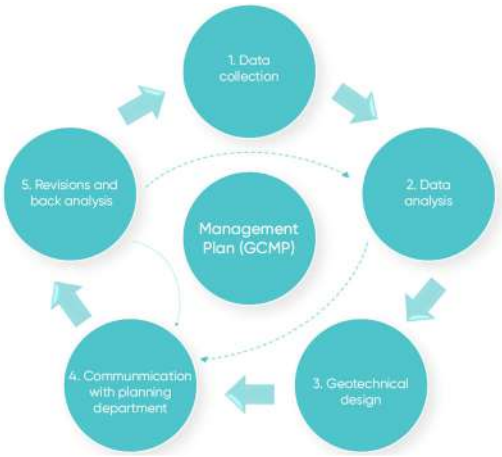


Fig 103 : Engineering aspects of Soil

- This article describes the genesis and composition of soil, the distinction between pore water pressure and inter-granular effective stress, capillary action of fluids in the soilpore spaces, soil classification, seepage and permeability, time dependent change of volume due to squeezing water out of tiny pore spaces, also known as consolidation, shear strength and stiffness of soils.
- Principles of soil mechanics are also used in related disciplines such as geophysical engineering, coastal engineering, agricultural engineering, hydrology and soil physics.
- The shear strength of soils is primary.
- Results derived from friction between the particles and interlocking, which are very sensitive to the effective stress.
- The article concludes with some examples of applications of the principles of soil mechanicssuch as slope stability, lateral earth pressure on retaining walls, and bearing capacity of foundations.

➢ **Environmental impact Assessment:**

14.1.3.1 Introduction

- Environmental Impact Assessment (EIA) is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter- related socio-economic, cultural and human-health impacts, both beneficial and adverse.
- UNEP defines Environmental Impact Assessment (EIA) as a tool used to identify the environmental, social and economic impacts of a project prior to decision-making. It aims to

predict environmental impacts at an early stage in project planning and design, find waysand means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers.

- The Environment Protection Act, 1986 that contains various provisions on EIA methodology and process, statutorily backs environment Impact Assessment in India.

14.1.3.2 History of EIA in India:

- The Indian experience with Environmental Impact Assessment began over 20 years back. Itstarted in 1976-77 when the Planning Commission asked the Department of Science and Technology to examine the river-valley projects from an environmental angle.
- Till 1994, environmental clearance from the Central Government was an administrative decision and lacked legislative support.
- On 27 January 1994, the then Union Ministry of Environment and Forests, under the Environmental (Protection) Act 1986, promulgated an EIA notification making Environmental Clearance (EC) mandatory for expansion or modernisation of any activity orfor setting up new projects listed in Schedule 1 of the notification.
- The Ministry of Environment, Forests and Climate Change (MoEFCC) notified new EIA legislation in September 2006.
- The notification makes it mandatory for various projects such as mining, thermal power plants, river valley, infrastructure (road, highway, ports, harbours and airports) and industries including very small electroplating or foundry units to get environment clearance.

14.1.3.3 The EIA Process:

- EIA involves the steps mentioned below. However, the EIA process is cyclical withinteraction between the various steps.
- Screening: The project plan is screened for scale of investment, location and type ofdevelopment and if the project needs statutory clearance.
- Scoping: The project‘s potential impacts, zone of impacts, mitigation possibilities and needfor monitoring.
- Collection of baseline data: Baseline data is the environmental status of study area.
- Impact prediction: Positive and negative, reversible and irreversible and temporary and permanent impacts need to be predicted which presupposes a good understanding of the project by the assessment agency.
- Mitigation measures and EIA report: The EIA report should include the actions and steps for preventing, minimizing or by passing the impacts or else the level of compensation for probable environmental damage or loss.
- Public hearing: On completion of the EIA report, public and environmental groups living close to project site may be informed and consulted.
- Decision-making: Impact Assessment Authority along with the experts consult the project- in-charge along with consultant to take the final decision, keeping in mind EIA and EMP (Environment Management Plan).
- Monitoring and implementation of environmental management plan: The various phases of implementation of the project are monitored.
- Assessment of Alternatives, Delineation of Mitigation Measures and Environmental Impact Assessment Report: For every project, possible alternatives should be identified, and

environmental attributes compared. Alternatives should cover both project location and process technologies.

- Once alternatives have been reviewed, a mitigation plan should be drawn up for the selected option and is supplemented with an Environmental Management Plan (EMP) to guide the proponent towards environmental improvements.
- Risk assessment: Inventory analysis and hazard probability and index also form part of EIA procedures.

14.1.3.4 Stakeholders in the EIA process:

- Those who propose the project.
- The environmental consultant who prepare EIA on behalf of project proponent.
- Pollution Control Board (State or National).
- Public has the right to express their opinion.
- The Impact Assessment Agency.

14.1.3.5 Importance of EIA:

- EIA links environment with development for environmentally safe and sustainable development.
- EIA provides a cost effective method to eliminate or minimize the adverse impact of developmental projects.
- EIA enables the decision makers to analyze the effect of developmental activities on the environment well before the developmental project is implemented.
- EIA encourages the adaptation of mitigation strategies in the developmental plan.
- EIA makes sure that the developmental plan is environmentally sound and within the limitsof the capacity of assimilation and regeneration of the ecosystem.

14.1.3.6 Salient Features of 2006 Amendments to EIA Notification

- Environment Impact Assessment Notification of 2006 has decentralized the environmental clearance projects by categorizing the developmental projects in two categories, i.e., Category A (national level appraisal) and Category B (state level appraisal).
- Category A projects are appraised at national level by Impact Assessment Agency (IAA) and the Expert Appraisal Committee (EAC) and Category B projects are apprised at state level.
- State Level Environment Impact Assessment Authority (SEIAA) and State Level Expert Appraisal Committee (SEAC) are constituted to provide clearance to Category B process.
- After 2006 Amendment the EIA cycle comprises of four stages:
- Screening.
- Scoping.
- Public hearing
- Appraisal
- Category A projects requires mandatory environmental clearance and thus they do not undergo the screening process.
- Category B projects undergoes screening process and they are classified into two types.
- Category B1 projects (Mandatorily requires EIA).
- Category B2 projects (Do not require EIA).

- Thus, Category A projects and Category B, projects undergo the complete EIA process whereas Category B2 projects are excluded from complete EIA process.

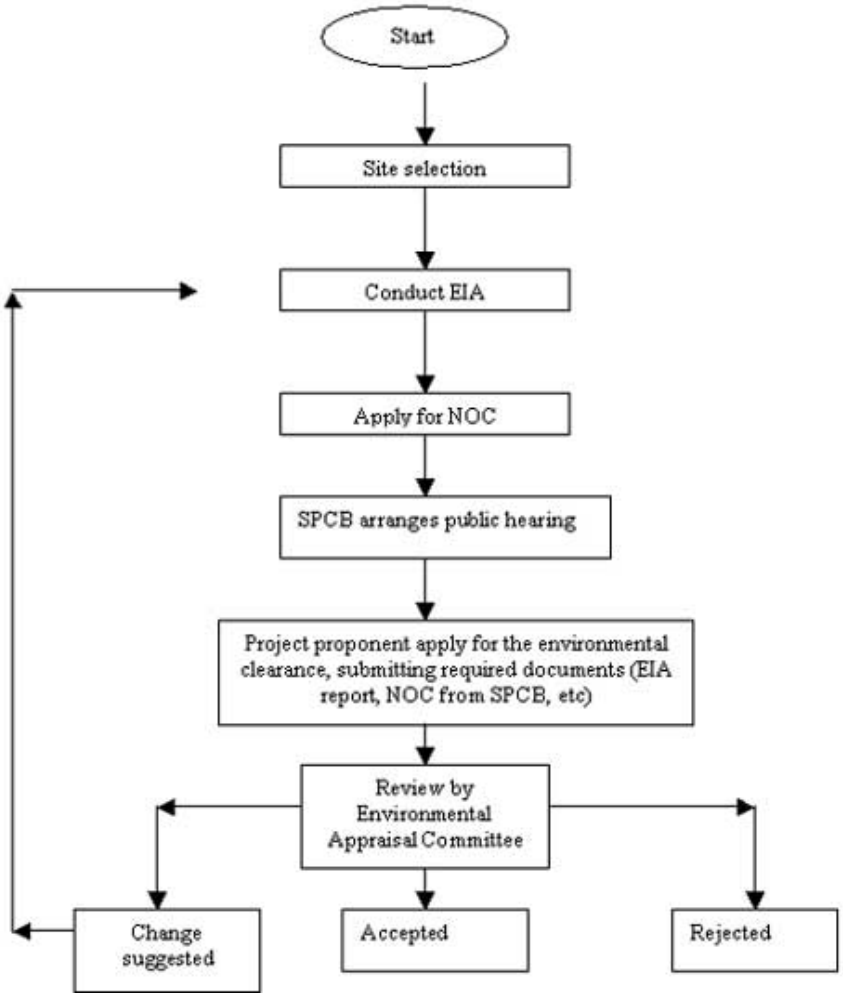


Fig 104: Flowchart of EIA

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

1. Water Supply system

- It is an infrastructure for the collection, transmission, treatment, storage, and distributionof water for homes, commercial establishments, industry, and irrigation, as well as for such public needs as firefighting and street flushing.
- Of all municipal services, provision of potable water is perhaps the most vital. People depend on water for drinking, cooking, washing, carrying away wastes, and other domestic needs. Water supply systems must also meet requirements for public, commercial, and industrial

activities.

- In all cases, the water must fulfill both quality and quantity requirements.

➢ **Surface and ground water**

- Groundwater is a common source for single homes and small towns, and rivers and lakes arethe usual sources for large cities.
- Although approximately 98 percent of liquid fresh water exists as groundwater, much of it occurs deep.
- This makes pumping very expensive, preventing the full development and use of allgroundwater resources.

➢ **Water Requirement**

- Municipal water supply systems include facilities for storage, transmission, treatment, and distribution. The design of these facilities depends on the quality of the water, on theparticular needs of the user or consumer, and on the quantities of water that must be processed.

➢ **Water Treatment**

- Water in rivers or lakes is rarely clean enough for human consumption if it is not first treated or purified. Groundwater, too, often needs some level of treatment to render it potable.

Fig 105: Water Treatment

- The primary objective of water treatment is to protect the health of the community. Potable water must, of course, be free of harmful microorganisms and chemicals, but public supplies should also be aesthetically desirable so that consumers will not be tempted to use waterfrom another, more attractive but unprotected source.
- The water should be clear, with almost no turbidity, and it should be free of objectionable color, odor, and taste.
- For domestic supplies, water should not be corrosive, nor should it deposit troublesome amounts of scale and stains on plumbing fixtures.
- Industrial requirements may be even more stringent; many industries provide special treatment on their own premises.

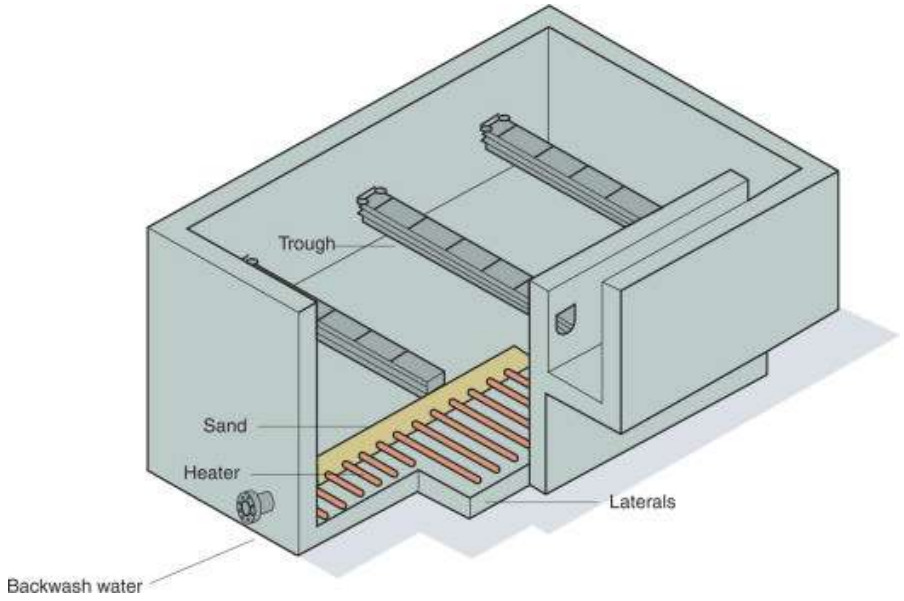


Fig106 : Schematic diagram of a rapid-filter water treatment facility.

- The type and extent of treatment required to obtain potable water depends on the quality of the source. The better the quality, the less treatment is needed.
- Surface water usually needs more extensive treatment than does groundwater, because most streams, rivers, and lakes are polluted to some extent.
- Even in areas remote from human populations, surface water contains suspended silt, organic material, decaying vegetation, and microbes from animal wastes.
- Groundwater, on the other hand, is usually free of microbes and suspended solids because of natural filtration as the water moves through soil, though it often contains relatively high concentrations of dissolved minerals from its direct contact with soil and rock.

2. Sewerage System

- Sewerage system**,** network of pipes, pumps, and force mains for the collection of wastewater,or sewage, from a community.
- Modern sewerage systems fall under two categories: domestic and industrial sewers and storm sewers.
- Sometimes a combined system provides only one network of pipes, mains, and outfall sewersfor all types of sewage and runoff.

➢ **Types of Sewerage System**

1. Combined sewerage system:

- A combined sewer system is a sewer that accepts storm water, sanitary water/sewage, and then the sewage is treated in STP (sewerage treatment plant). This system is mainly used in the towns where streets are narrow and rainfall is less than the moderate.

Advantages:

- Less construction cost.
- There will be No chocking problem.

Disadvantages:

- Due to sewage, the toxicity of storm water will increase.
- Cost of piping will be high initially.
- Handling such a thing is a hectic job.

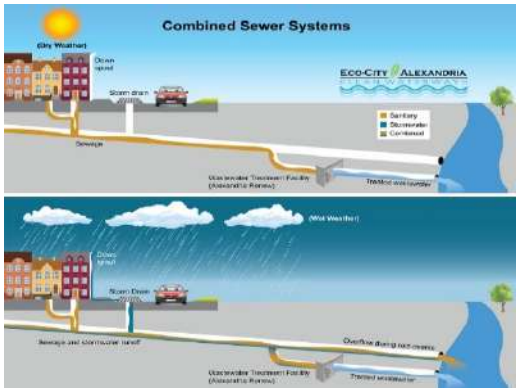


Fig 107 : Combined Sewerage System

2. Separate Sewerage system:

In this system the sanitary sewage and storm waterare carried separately in two sets of sewers. The sewage is conveyed to waste water treatment plant(WWTP) and the storm water is discharges into rivers without treatment.

Advantages:

- The rain water will not become toxic.
- More efficient than combined system.

Disadvantages:

- Problem of chocking.
- Flushing system will be required for cleaning purpose.

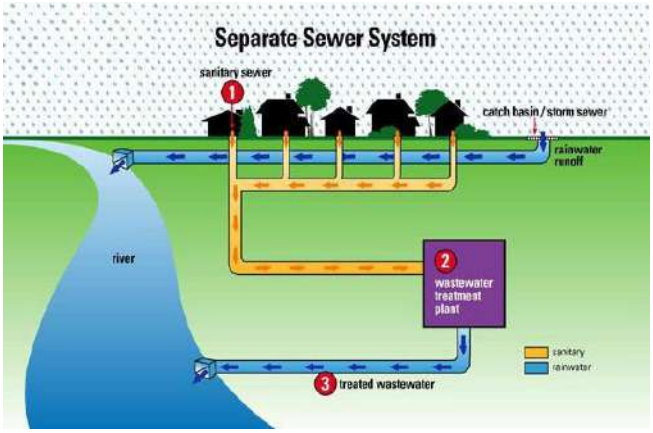


Fig 108 : Separate Sewerage System

3. Partially combined or partially separated system:

A partially separate system is a combination of a combined sewerage system and separate sewerage systems. This type of sewerage system helps decrease the load from a combined sewerage system because only the water from initial rain falls(water from acid rain) is added to sewage water and after than this system work as separate system.

Advantages:

- The sizes of sewers are not very large as some portion of storm water is carried through open drains.
- Combines the advantages of both the previous systems. Silting problem is completely eliminated.
- Storm water will be less toxic as compare to previous two systems.

Disadvantages:

- The storm water is unnecessary put load on to the treatment plants to extend.
- The toxicity of sewage water will increase.

3. Waste Water-Sustainable development techniques:

1. Sustainable Treatment types

a) Lagoons/wetlands.
b) Anaerobic digestion.
c) Soil aquifer treatment.

➢ **Lagoons/wetlands:**

In wetland treatment, natural forces (chemical, physical and solar) act together to purify the wastewater, thereby achieving wastewater treatment.

A series of shallow ponds act as stabilization lagoons, while water hyacinth or duckweed acts to accumulate heavy metals.

Multiple forms of bacteria, plankton and algae act to further purify the water.

Fig 109 : Lagoon/Wetlands

Advantages of wetland treatment:

- It is mechanized treatment systems.
- Allows for total resource recovery.
- Considered as a low-cost technology if sufficient, non-arable land is available.

Disadvantages of wetland treatment:

- Affected by the climate.
- Some locations may make it unsustainable.
- Mechanical problems may include clogging with sprinkler and drip irrigation systems.
- High demand for large area of arable, flat land. Existing significant odor problems.

➢ **Anaerobic Digestion:**

Anaerobic Digestion Anaerobic bacteria degrade organic materials in the absence of oxygen and produce methane and carbon dioxide.

The methane can be reused as an alternativeenergy source (biogas).

Advantages of Anaerobic Digestion

- No, or very low energy demand.
- Applicable at small as well as large scale**.**
- No, or very low energy demand.
- Production of valuable energy in the form of methane.
- Low investment and low initial requirement.

Disadvantages of Anaerobic Digestion

- Low production of excess sludge.
- Low nitrogen and phosphorus requirements.
- High treatment efficiencies.
- Effluents contain valuable fertilizers (ammonium salts).

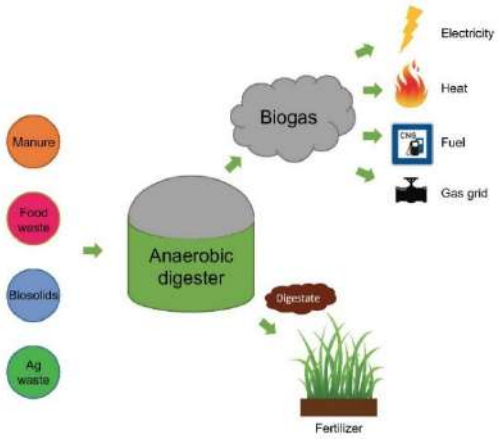


Fig 110 : Anaerobic digestion

➢ **Soil aquifer treatment**

- Soil Aquifer Treatment SAT (soil aquifer treatment) is a geo purification system where partially treated sewage effluent artificially recharges the aquifers and then withdrawn for future use.
- By recharging through unsaturated soil layers, the effluent achieves additional purification before it is mixed with the natural groundwater.

Advantages of Soil Aquifer Treatment

- Cost is lower.
- Remove pathogen efficiently.
- Operation is not highly technical Breaks the pipe-to-pipe connection of directly reusingtreated wastewater from a treatment plant.

Disadvantages of Soil Aquifer Treatment

- Can change the soil and groundwater hydrological properties.
- Requires a big area for the infiltration basin.

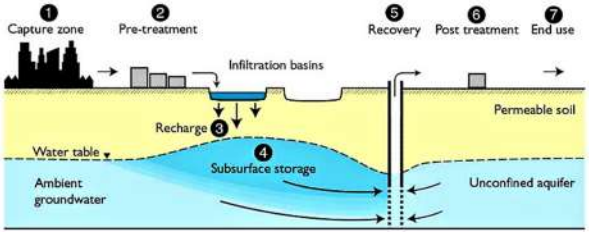


Fig 111 : Soil aquifer

Chapter: 15 Smart and/or Sustainable features of Chapter 8& 13 designs, Impact on society. With doing small changes, Period, Amount Expenditure and Benefit

Table 24 :.Design Implementation details

Sr.no	Description	Period to implement	Amount
1	**Physical design**		
	Anganwadi	Long term(3-5 year)	2643176
	Storage Shed	Immediately	29584759
2	**Sustainable design**		
	Honeybee breeding center	Within 1 year	997085
	Supermarket	Within 1 year	10500479
3	**Social design**		
	High school	Within 1 year	32444546
	Women and children activity center	Immediately	2499847
4	**Socio-cultural design**		
	Garden	Within 1 year	714672
	Youth club	Immediately	6929263
5	**Heritage design**		
	Entrance gate	Long term(3-5 year)	295560
	Eco Building	Long term(3-5 year)	23122411
6	**Smart design**		
	CCTV and camera system	Long term(3-5 year)	55290
	Open Theatre	Within 1 year	42953064

Chapter: 16 Survey By Interviewing With Talati And/orSarpanch

Vishwakarma Yojana: Phase VIIIVAGUDAD VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

Table 25: Survey By Interviewing With Talati And/or Sarpanch

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

Chapter: 17 Irrigation / Agriculture Activities and AgroIndustry, Alternate Technique

17.1 Introduction

- **A history of agricultural irrigation**

  Humans have relied on agriculture to feed their communities for thousands of years and they have needed irrigation to water their crops for almost as long.

  Irrigation involves artificially supplying water to the land to enhance the growth of crops.

  The earliest form of irrigation dates back at least 8,000 years, and the technique remains an important part of successful agricultural practices across the world. Here is a brief history of irrigation from the earliest days until modern times.

- **Egypt and Mesopotamia**

  The earliest known systems of irrigation began in 6000 BC in Egypt and Mesopotamia. In Egypt, the Nile flooded for a few months each year, and the waters were diverted to the fieldsto allow farmers to grow crops where otherwise they would be unable to do so. In 3100 BC, alarge irrigation project was built, which involved the construction of dams and canals up to 20 kilometers in size.

  However, the flooding was uncertain, and high flows could wash away dikes and flood entire villages, whereas low flows would not provide the crops with enough water.

  In Mesopotamia, the Tigris and Euphrates floodwaters were used in the same way. The Sumerians dug canals in what are considered the first ever works of engineering. It is thought that canals could be used for up to 1,000 years before being replaced.

- **Terrace irrigation**

  Terrace irrigation is an ancient technique that was used all over the world, including in China and India, but it was used especially in the Americas. The Zana Valley in Peru provides an example of this technique, and remains of irrigation canals have been found here that date back to 4,000 BC, which are the earliest systems in the Americas that we know of. However, the technique could have been used even earlier than this.

- **Shri Lankan irrigation**

  Irrigation in Sri Lanka dates back to about 300 BC during the reign of King Pandukabhaya. A very complex system of underground canals was used, and this is the first place where artificial reservoirs for storing water were built in an incredible feat of engineering. In fact, they were so well designed that they still exist to this day.

- **North American irrigation**

  Two systems of irrigation were used in North America, which are known as the Chaco and Hohokam systems. The Hohokam people in Arizona used the Hohokam system, and the Anasazi in New Mexico used the Chaco system.

  The Hohokam people built canals in the early centuries of the first millennium, whereas the Chaco system dates to about 900 AD.

17.2 Irrigation and its types

There are different types of irrigation practiced for improving crop yield. These types of irrigation systems are practiced based on the different types of soils, climates, crops and resources. The main types of irrigation followed by farmers include:

Fig 112 : Surface Irrigation

1. **Surface Irrigation:**
   In this system, no irrigation pump is involved. Here, water is distributed across the land by gravity.

2. **Localized Irrigation:**
   In this system, water is applied to each plant through a network of pipes under low pressure Sprinkler Irrigation.
   Water is distributed from a central location by overhead high-pressure sprinklers or from sprinklers from the moving platform.

Fig 113 : Localized Irrigation

3. **Drip Irrigation:**
   In this type, drops of water are delivered near the roots of the plants. This type of irrigation is rarely used as it requires more maintenance.
   Reduce the impact of drought and climate change on food production
   Avoid contamination of groundwater and rivers caused by fertilizer leaching.
   Support rural communities, reduce poverty and reduce migration to cities.

Fig114 : Drip Irrigation

4. **Center Pivot Irrigation:**
   In this, the water is distributed by a sprinkler systemmoving in a circular pattern.
   Sub Irrigation.
   Water is distributed through a system of pumping stations gates, ditches and canals by raising the watertable.

Fig 115: Center Pivot Irrigation

5. Manual Irrigation:

This a labour intensive and time-consuming system ofirrigation. Here, the water is distributed through watering cans by manual labour.

Fig 116 : Manual Irrigation

➢ **Methods of Irrigation**

Irrigation can be carried out by two different methods:

I. Traditional Methods.

II. Modern Methods.

➢ **Traditional Methods of Irrigation**

- In this method, irrigation is done manually. Here, a farmer pulls out water from wells orcanals by himself or using cattle and carries to farming fields. This method can vary in different regions.
- The main advantage of this method is that it is cheap. However, its efficiency is poor because of theuneven distribution of water. In addition, the chances of water loss are very high.
- Some examples of the traditional system are pulley system, lever system, chain pump.Among these, the pump system is the most common and used widely.

➢ **Modern Methods of Irrigation:**

- The modern method compensates the disadvantages of traditional methods and thus helps in the proper way of water usage.
- The modern method involves two systems:

1.Drip system.

2.Sprinkler System.

➢ **Sprinkler system:**

A sprinkler system, as its name suggests, sprinkles water over the crop and helps in an even distribution of water. This method is much advisable in areas facing water scarcity.

Here a pump is connected to pipes which generate pressure and water is sprinkled throughnozzles of pipes.

➢ **Drip System**

In the drip system, water supply is done drop by drop exactly at roots using a hose or pipe.This method can also be used in regions where water availability is less.

17.3 Importance of Irrigation:

Insufficient and uncertain rainfall adversely affects agriculture. Droughts and famines are caused due to low rainfall. Irrigation helps to increase productivity even in low rainfall.

The productivity on irrigated land is higher as compared to the un-irrigated land.

Multiple cropping is not possible in India because the rainy season is specific in most of the regions. However, the climate supports cultivation throughout the year. Irrigation facilities make

it possible to grow more than one crop in most of the areas of the country.
Irrigation has helped to bring most of the fallow land under cultivation.
Irrigation has stabilized the output and yield levels.
Irrigation increases the availability of water supply, which in turn increases the income of the farmers.

17.4 Agriculture in Nyara village

The main occupation of the Nyara villagers is agricultural activity.
They grow various crops such as cotton, Peanut and wheat.
They are also aware about various irrigation systems.

Table 26 : Agriculture Input

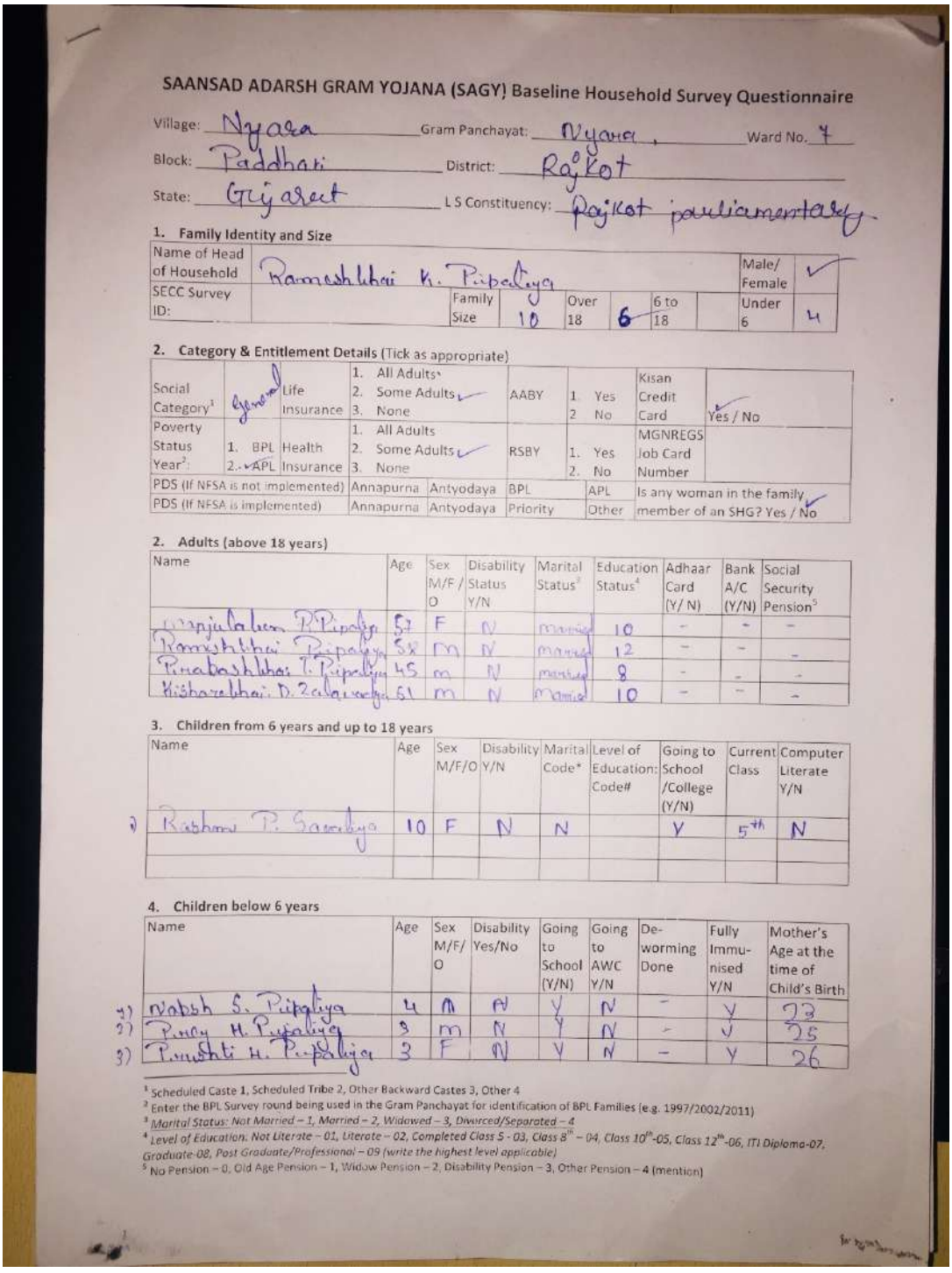
use of chemical fertilizers	Yes
use of chemical insecticides	Yes
Use of chemical weedicide	Yes
soil health card	No
Irrigation: canal /tank/bore well/other	Other
Drip of sprinkler irrigation : drip/sprinkler/none	Drip

Chapter: 18. Social Activities – Any Activities Planned By Students

Fig 117 : Cleaning Activity

- Spread awareness regarding the cleanliness and the hygiene to the villagers.
- Teaching students the importance of clean environment and various benefits of it.
- Organizing the group cleaning activity by villagers once or twice in a month.

Chapter: 19.Vagadad SAGY Questionnaire Survey form with the Sarpanch Signature



SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Nyara Gram Panchayat: Nyara Ward No. 4

Block: Paddhari District: Rajkot

State: Gujarat LS Constituency: Rajkot parliamentary

1. Family Identity and Size

Name of Head of Household	Rameshbhai K. Pipaliya						Male/ Female	✓
SECC Survey ID:		Family Size	10	Over 18	6	6 to 18	Under 6	4

2. Category & Entitlement Details (Tick as appropriate)

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

2. Adults (above 18 years)

Name	Age	Sex M/F/O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/N)	Bank A/C (Y/N)	Social Security Pension[5]
Vanjulaben P. Pipaliya	57	F	N	married	10	-	-	-
Rameshbhai P. Pipaliya	58	m	N	married	12	-	-	-
Pinakbhai T. Pipaliya	45	m	N	married	8	-	-	-
Kishorebhai D. Zalavadiya	61	m	N	Married	10	-	-	-

3. Children from 6 years and up to 18 years

	Name	Age	Sex M/F/O	Disability Y/N	Marital Code*	Level of Education: Code#	Going to School /College (Y/N)	Current Class	Computer Literate Y/N
1)	Krishna P. Savaliya	10	F	N	N		Y	5th	N

4. Children below 6 years

	Name	Age	Sex M/F/O	Disability Yes/No	Going to School (Y/N)	Going to AWC Y/N	De-worming Done	Fully Immu-nised Y/N	Mother's Age at the time of Child's Birth
1)	Nabbh S. Pipaliya	4	M	N	Y	N	-	Y	23
2)	Parth H. Pipaliya	3	m	N	Y	N	-	Y	25
3)	Trushti H. Pipaliya	3	F	N	Y	N	-	Y	26

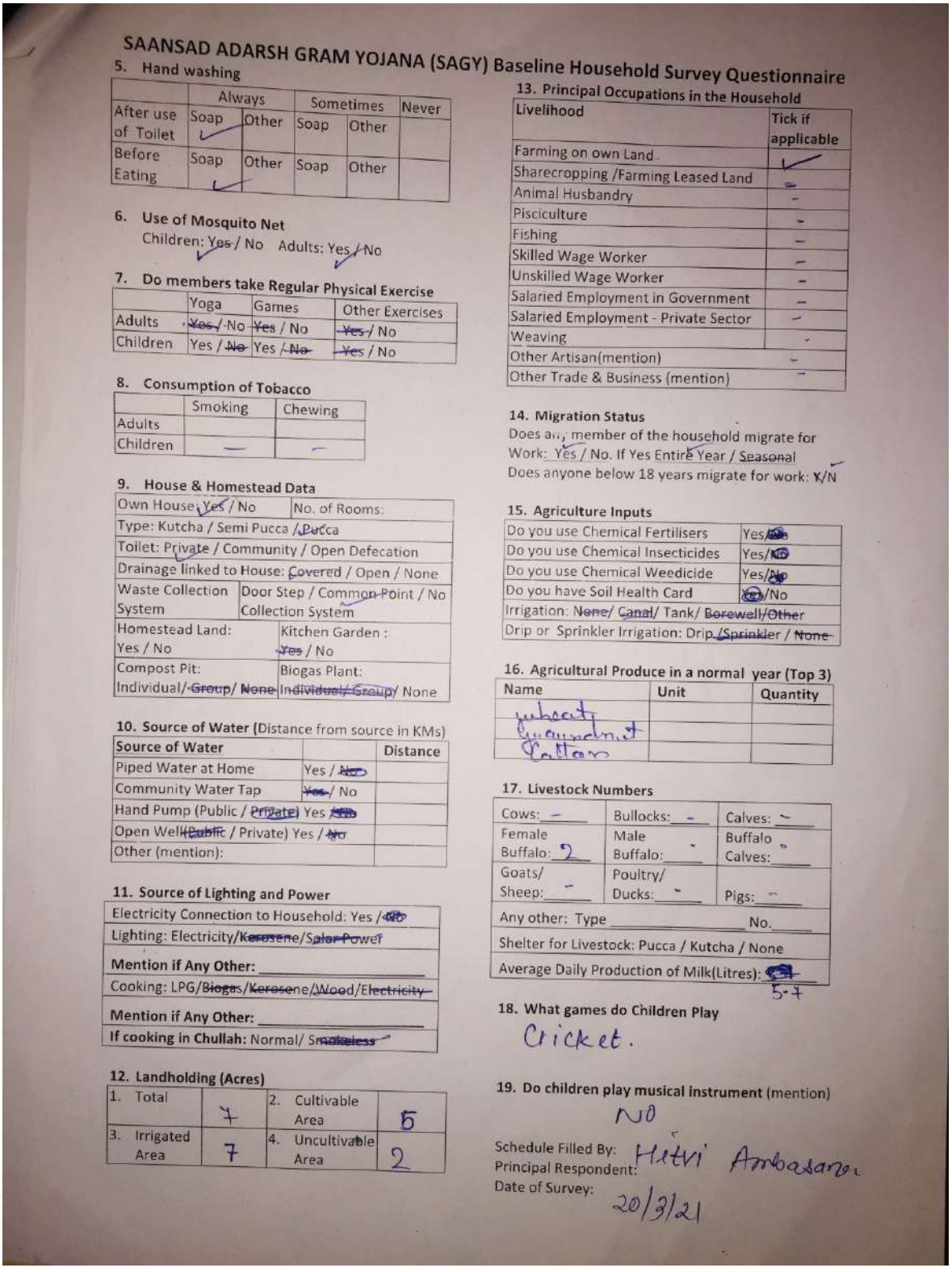
[1] Scheduled Caste 1, Scheduled Tribe 2, Other Backward Castes 3, Other 4

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

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

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

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



SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

5. Hand washing

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

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

7. Do members take Regular Physical Exercise

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

8. Consumption of Tobacco

	Smoking	Chewing
Adults		
Children	–	–

9. House & Homestead Data

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

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

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

11. Source of Lighting and Power

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

12. Landholding (Acres)

1. Total	7	2. Cultivable Area	5
3. Irrigated Area	7	4. Uncultivable Area	2

13. Principal Occupations in the Household

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

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

15. Agriculture Inputs

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

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

Name	Unit	Quantity
Jubar		
Groundnut		
Cotton		

17. Livestock Numbers

Cows: –	Bullocks: –	Calves: –
Female Buffalo: 2	Male Buffalo: –	Buffalo Calves: –
Goats/ Sheep: –	Poultry/ Ducks: –	Pigs: –
Any other: Type _____		No. _____
Shelter for Livestock: Pucca / Kutcha / None		
Average Daily Production of Milk(Litres): ~~4~~ 5-7		

18. What games do Children Play
Cricket.

19. Do children play musical instrument (mention)
No

Schedule Filled By: Hitvi Ambasana
Principal Respondent:
Date of Survey: 20/3/21

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

I. Basic Information

a. Gram Panchayat: Nyara

b. Block: Paddhari

c. District: Rajkot

d. State: Gujarat

e. Lok Sabha Constituency: Rajkot Parliament Constituency

f. Number of Wards in the Gram Panchayat: -

g. Number of Villages in the Gram Panchayat: -

h. Names of Villages:

~~Vag~~ NYARA

Demographic Information

Number of Households 414 Total Population 2226 Male 1144 Female 1082

SC HHs 0.5.1. ST HHs 0 OBC HHs - Other HHs -

I. Access to Infrastructure / Facilities / Services

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
a.	ANM/ Health Sub Centre	NO	14kms
b.	Nearest Primary Health Centre (PHC)	NO	14kms
c.	Nearest Community Health Centre (CHC)	NO	14kms
d.	Nearest Post Office	NO	14kms
e.	Nearest Bank Branch (Any)	No	14kms
f.	Nearest Bank with CBS Facility	NO	14kms
g.	Nearest ATM	V	14kms
h.	Nearest Primary School	Yes	1 km
i.	Nearest Middle School	Yes	1 km
j.	Nearest Secondary School	Yes	1 km
k.	Nearest Higher Secondary School / +2 College	NO	-
l.	Nearest Graduate College	NO	14kms
m	Nearest ITI / Polytechnic Centre	NO	14kms
n	Kisan Seva Kendra	No	14kms

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society	NO	
p	Nearest Agro Service Centre	NO	
p	MSP based Government Procurement Centre	NO	
q	Milk Cooperative /Collection Centre	NO	
r	Veterinary Care Centre	NO	
s	Ayurveda Centre	NO	
i	E – Seva Kendra	NO	
u	Bus Stop	Yes	0-KM
v	Railway Station	NO	
w	Library	NO	
x	Common Service Centre	NO	

IV. Sports Facilities in the Gram Panchayat NO.

a. Number of Play Grounds in the GP: Total NO Public – Private –

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 1

b. Number of villages without Angan Wadi Centres _____

Names of such villages: _____

c. Schools (Number)

Primary Private: – Primary Govt.: 1

Middle Private: – Middle Govt.: 1

Secondary Private: – Secondary Govt.: 1

Higher Secondary Private: – Higher Secondary Govt: –

VI. Public Distribution System

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

2

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

VII. Coverage of Villages under different Facilities & Services

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

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	627.07Hec	d.	Pasture / Grazing Land	-	g.	Check Dam	-
b.	Irrigated Land	627.07Hec	e.	Forests/ Plantations	-	h.	Wells/Bore Wells	-
c.	Un-irrigated Land	-	f.	Other Common Land	-	i	Tanks /Ponds	4

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

3

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

IX. Parameters relating to Households & Institutions

		Number
a)	Number of eligible Households for pension (old age, widow, disability)	5
b)	Number of Households receiving pension (old age, widow, disability)	5
c)	Number of eligible Households who are not receiving pension	-
d)	Number of Households eligible for Ration Card	-
e)	Number of eligible HHs having ration cards	-
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	-
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	-
h)	Number of active Job Card holders under MGNREGA	-
i)	Number of Job Card holders who completed 100 days of work during 2013-14	-
j)	Number of shops selling alcohol	-
k)	Number of BPL families	-
l)	Number of landless households	-
m)	Number of IAY beneficiaries	-
n)	Number of FRA[2] beneficiaries	-
o)	Number of Community Sanitary Complexes	-
p)	Number of Households headed by single women	-
q)	Number of Households headed by physically handicapped persons	-
r)	Total number of Persons with Disability in the village	-
s)	Number of SHGs	-
t)	Number of active SHGs	-
u)	Number of SHG Federations	-
v)	Number of Youth Clubs	-
w)	Number of Bharat Nirman Volunteers	-

Name and Signature of Surveyor and Respondent'

Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey
Hetvi Ambaseana & Miraj Thoriya	સરપંચ ન્યારા ગ્રામ પંચાયત		20/3/2021

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

4

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: NYARA
b. Ward Number: 7
c. Gram Panchayat: NYARA
d. Block: PADDHARI
e. District: RAJKOT
f. State: Gujarat
g. Lok Sabha Constituency: Rajkot Parliament Constituency
h. Number of Habitations / Hamlets in the Gram Panchayat: _____
i. Names of Habitations / Hamlets:

Demographic Information

Number of Households 414 Total Population 2226 Male 1144 Female 1082

SC HHs _____ ST HHs _____ OBC HHs _____ Other HHs _____

II. Access to Infrastructure/Amenities etc.

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
a.	Nearest Primary School	Yes	
b.	Nearest Middle School	Yes.	
c.	Nearest Secondary School	No	14kms
d.	Kisan Seva Kendra	No	14Kms
e.	Milk Cooperative /Collection Centre	No	14kms.
g.	Health Sub Centre	No	14Kms
h.	Bank	No	14kms
i.	ATM	No	14kms.
j.	Bus Stop	Yes	
k.	Railway Station	No	30 Kms

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

1

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
l	Library	N	14 Kms
m	Common Service Centre	N	14 Kms
n	Veterinary Care Centre	N	14 Kms

ii. Road Connectivity

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

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

iii. Drinking Water Facilities

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

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

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

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

iv. Coverage of Habitations under Waste Management System

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

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

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

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

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

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

v. Coverage of Habitations under Electrification

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

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

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

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

vi. Sports Facilities in the Village

a.Number of Play Grounds in the Village (minimum size 200 square meters): 0

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 1

c. Schools (Number)

Primary Private: - Primary Govt.: 1

Middle Private: - Middle Govt.: 1

Secondary Private: - Secondary Govt.: -

Higher Secondary Private: - Higher Secondary Govt: -

2

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

viii. Land Category		Area in Acres		Land Category	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	627.07Hec	d.	Pasture / Grazing Land	-	g.	Check Dam	-
b.	Irrigated Land	627.07Hec	e.	Forests/ Plnatations	—	h.	Wells/Bore Wells	-
c.	Un-irrigated Land	-	f.	Other Common Land	—	I	Tanks /Ponds	1

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

Name and Signature of Surveyor and Respondent'

Hetvi Ambasana & Miraj Ghoniya			20/3/2021
Surveyor	PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey

3

Chapter: 20 TDO-DDO-Collector emails sending Soft copy attachment in the report

Chapter: 21 Comprehensive report for the entire village

We Decided to take A VISIT TO Nyara Village and Communicate with the various authorities like Sarpanch, Talati Mantri as well as the local villagers. We had a brief conversation about the Vishwakarma Yojna and explained them about the various aspect of the project and also the main purpose behind this project. WE conduct several techno-Economic survey and listed out the existing facilities which villagers use it in their day to day life.

We also visited various important landmarks such as Gram panchayat, Higher secondary school, temple, etc. We examined thoroughly the condition of the facilities like condition of the road, condition of drainage system etc.

After carrying out the detail survey we listed some of the facilities which are missing in the villages which can be used by villagers and proves very beneficial.

We discuss with the sarpanch of the rajsamsdhiyala, Nyara and Dholra and carry out the questionaries survey and filled up various types of forms. Using Techno-economic survey we get existing condition of village like demographical details, geographical details, occupational detail, physical infrastructure details, social infrastructure details, socio-cultural facilities, sustainable infrastructure facilities, and other facilities.

We observe available amenities in village like, road network, drinking water facility, educational facility, health facility, sanitation facility, transportation facility, and renewable source facility. We also observe which facilities are required for better growth of village by interaction with different authorities of ideal village and smart village. Here is the list of the facilities we decided to design for the village.

- Supermarket.
- Storage shed of food Grains.
- Youth Club.
- Children and women activity center.
- Open air theatre.
- Eco building.

Lastly this project is helped us to understand our skills and make it even batter. We got deep knowledge about development of village and various infrastructure facility design of village. Lastly, we enjoyed the informational as well as practical journey of civil work.

- **Detailed Drawings:**
  - **Super Market**

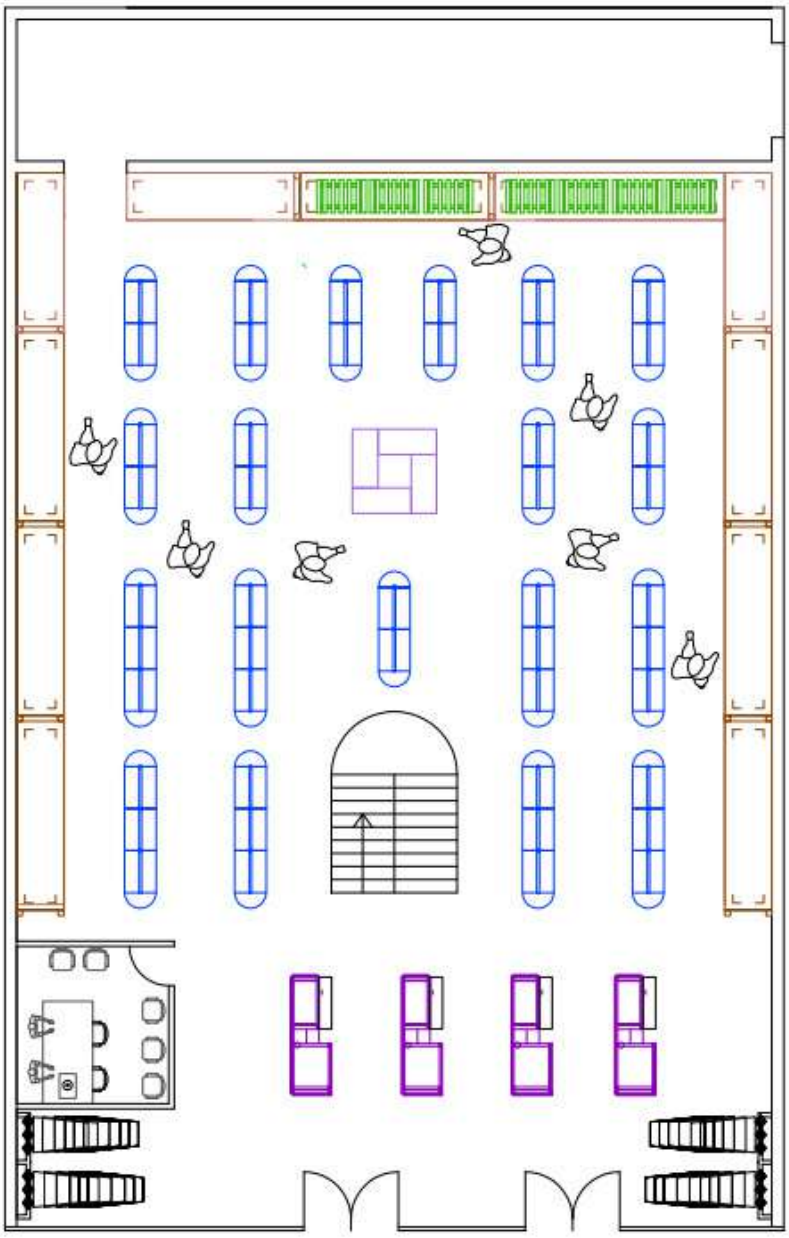


Fig 118 : Ground Floorplan of Supermarket

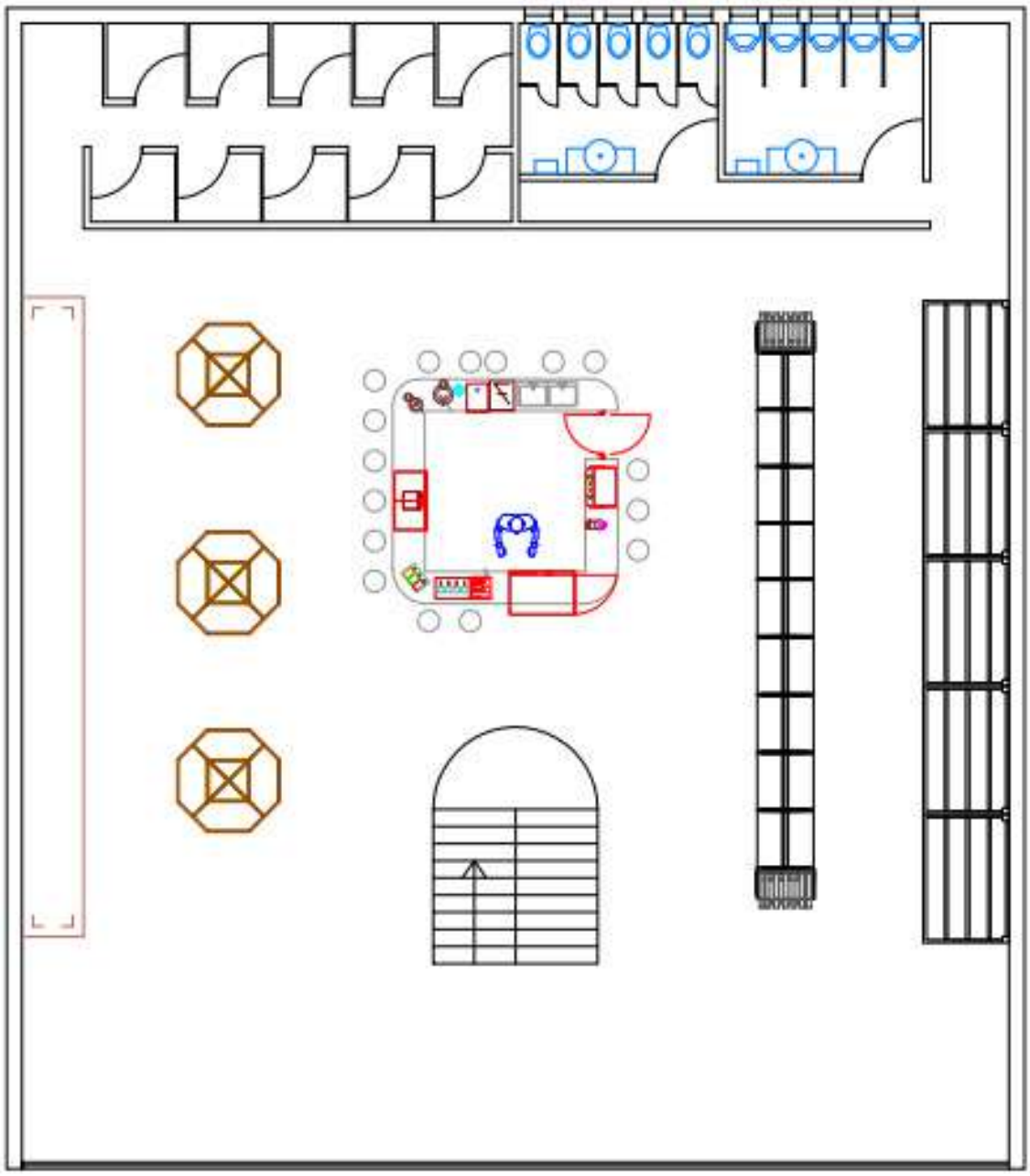


Fig 119 : First Floorplan of Supermarket

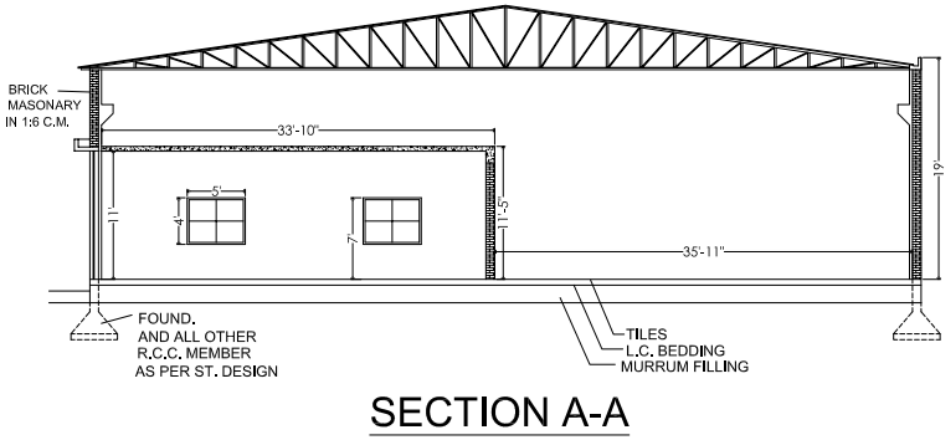


Fig 120: Section of Storage Shed

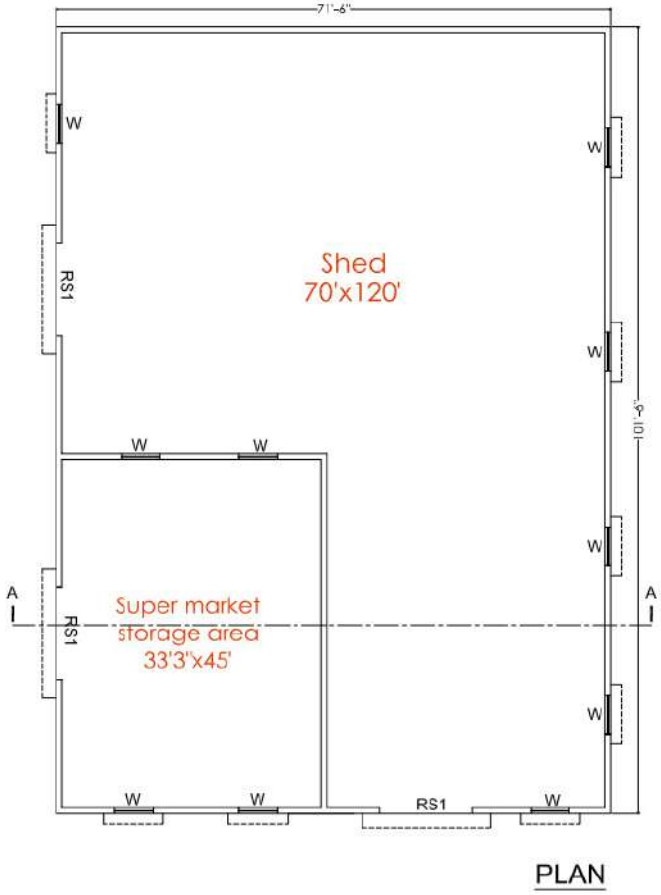
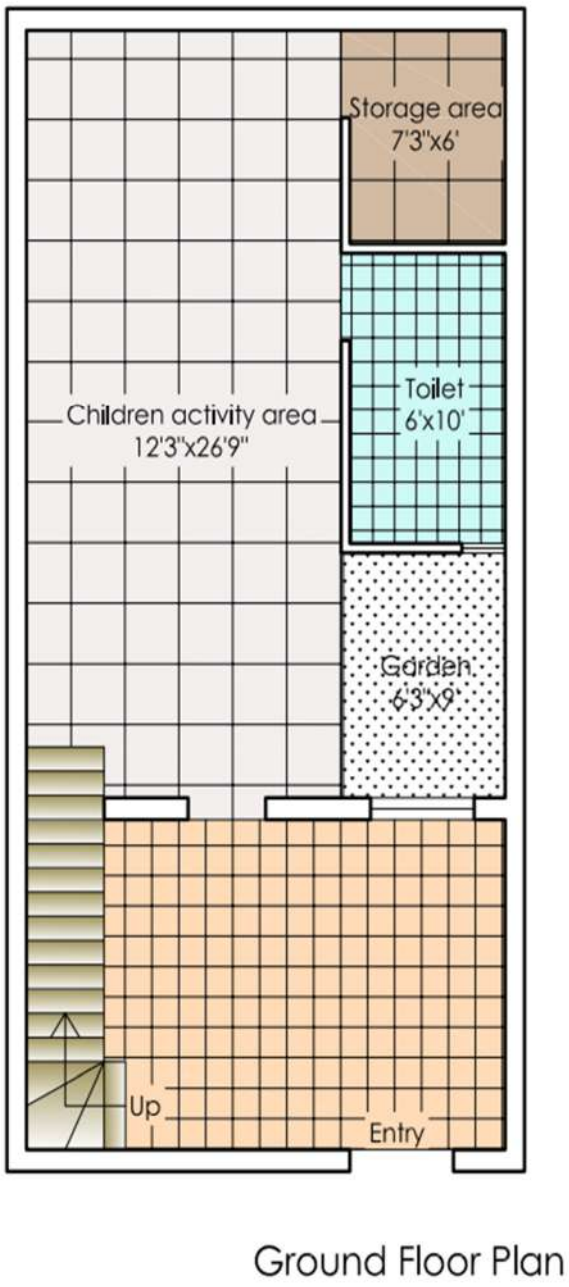


Fig 121 : Plan of Storage Shed



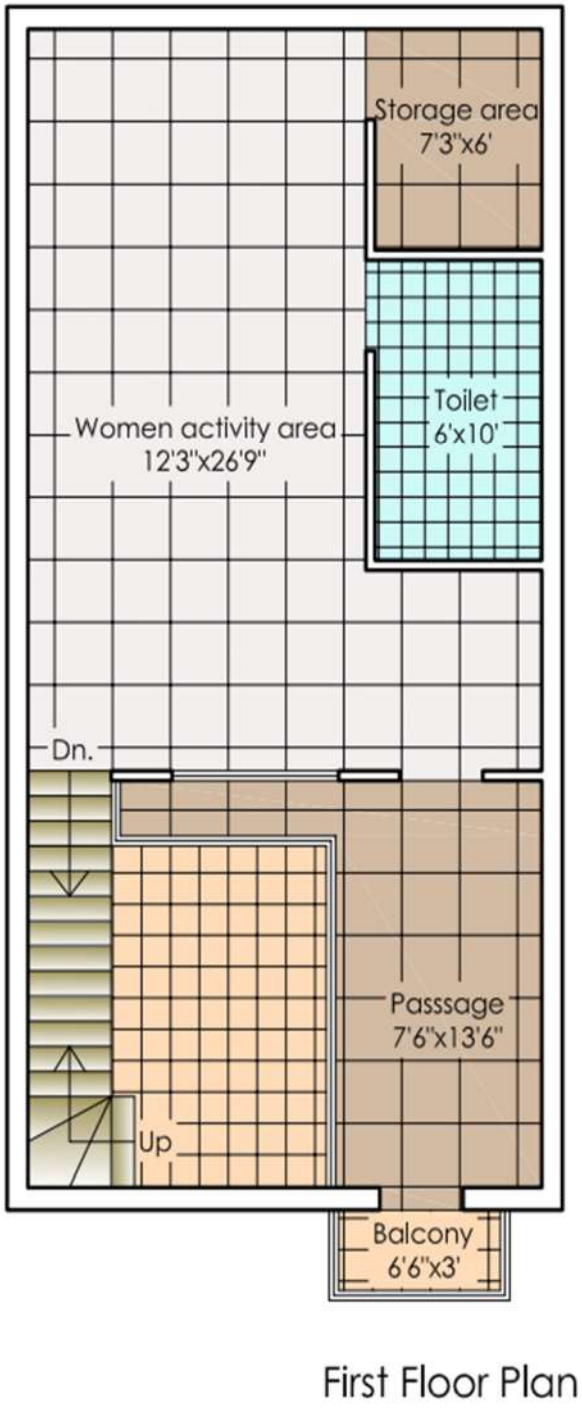


Fig122: Gf Plan of Children & Women Activity Center

Fig123: Ff Plan of Children & Women Activity Center

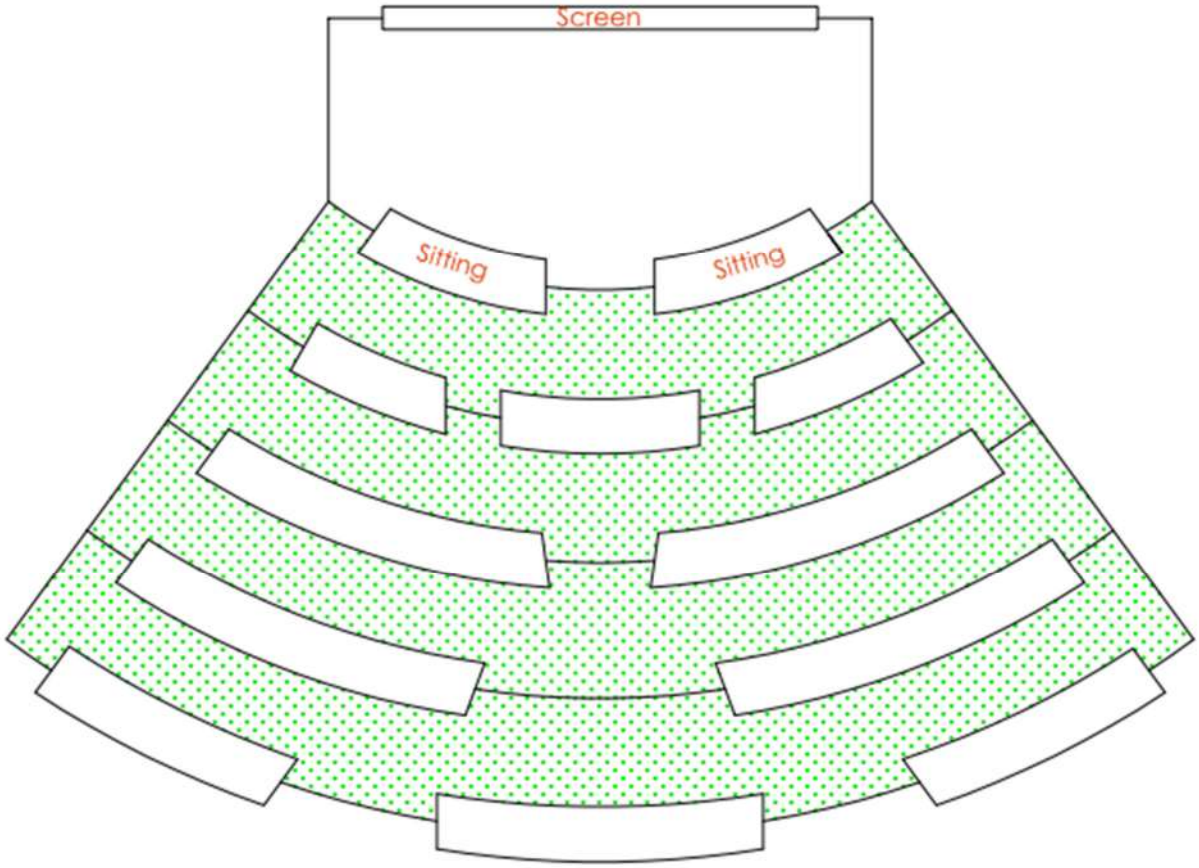


Fig 124: Plan of Open Air Theatre

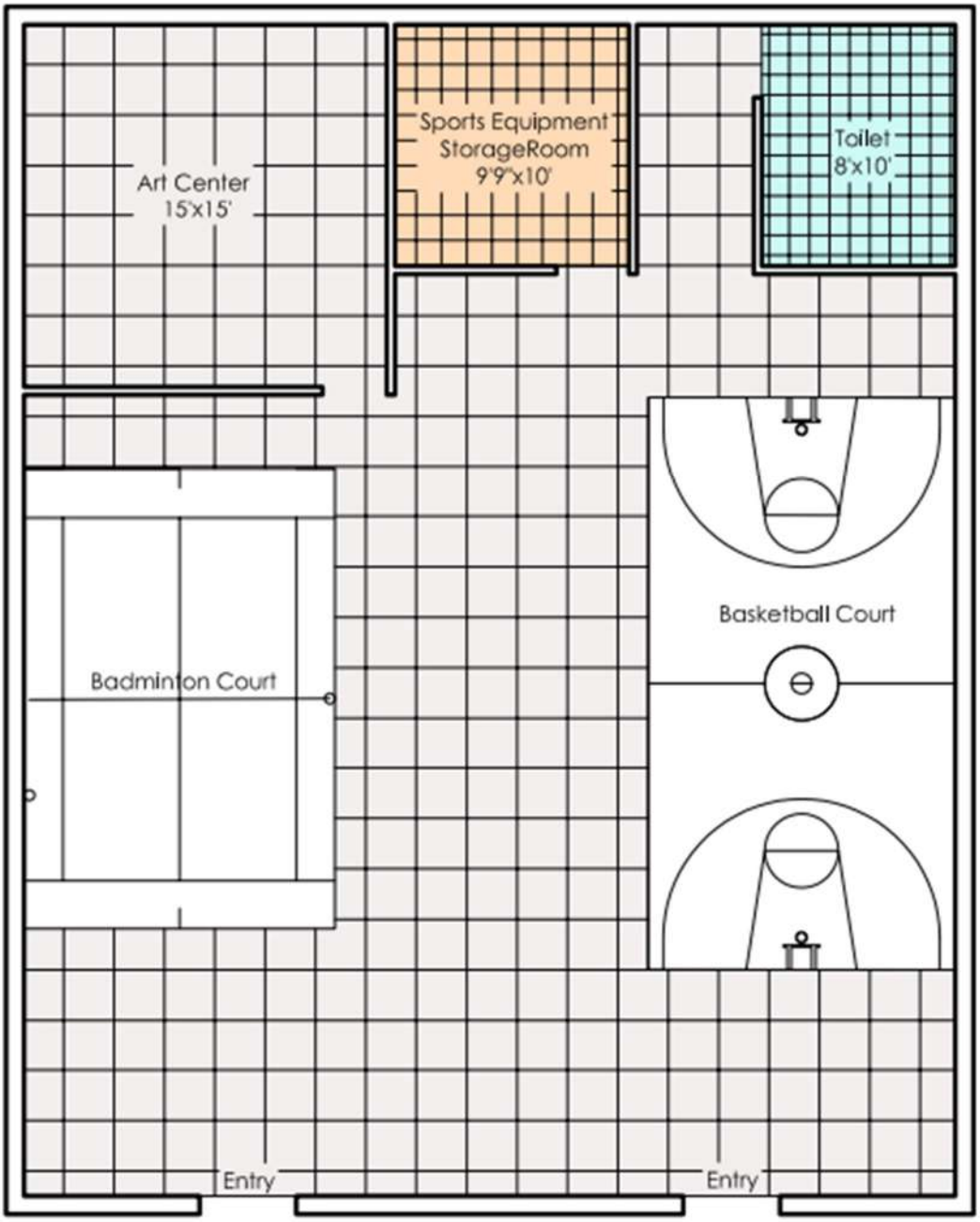


Fig 125: Floor Plan of Youth Club