

DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII AN APPROACH TOWARDS RURBANISATION Jhalansar Village

Junagadh District

PREPARED BY

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BALAJI ENGG. COLLAGE

Mr. MAYUR S. NANDHA



YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad – 382424 Gujarat

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ON

Vishwakarma Yojana: Phase VIII

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Mt. MAYUR S. NANDHA



Year: 2020-21

**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 :- JHALANSAR

DISTRICT :- JUNAGADH

Under

Vishwakarma Yojana: Phase-VIII

in partial fulfillment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

during the academic year 2020-21.

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

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College Stamp:	

ABSTRACT

Vishwakarma Yojana Project and how you do your vision project: Vishwakarma yojana provides the benefits of real work experience to engineering students and students can apply their technical knowledge in the development of infrastructure in rural development. Under this scheme, the villages are surveyed and this project was identified & selected for implementation. Rurbanisation is the concept of providing villagers the basic amenities required along with keeping the village soul alive. This project gives new ideas for Development of rural villages. As a measure to strengthen the Panchayat Raj Institutions in terms of functions, powers and finance. Gram Sabha, NGOs, Self-Help Groups and PRIs have been accorded adequate role to make participatory democracy meaningful and effective. By this Vishwakarma yojana project government wants technical solution of the problems of villages from the engineering point of view.

About Your Village description: Jhalansar village is located in Junagadh district in Gujarat, India. It is situated 16km away from Junagadh. Jhalansar has population of 2398 as per census of India 2011. Their lives mostly Patel community in this village. There are about 492 house in Jhalansar village. Jhalansar village pin code is 362011.

About existing village condition: there is closed type of drainage system available in Jhalansar. For transportation, there is a bus stand in the main road of village from where many bus many buses connecting to the different cities are easily available. 70% of the houses are pucca while 30% of the houses are kutchha. There is one primary school and two Anganwadi. Also medical facilities like sub-centre, private clinic are available village is connected with 24 hr. electricity supply for residential and 8 hr. for agriculture. The development of city will lead the people to develop their village. Otherwise there will be more migration towards cities, which will setup RURBAN planning.

About your Proposed designs your view for village development: there are many facilities which are lack in Jhalansar village so we have proposed design for bank bus-stand, public toilet, bio-gas plant and gate. They are for good facility and service will be available to the people of Jhalansar village.

About future scope of the village development: We are given attractive of play ground, Anganwadi maintenance, Ro water plant and skill development center using smart technology for Jhalansar village. We are tried to give better design to use maximum natural resources and provide all the basic needs.

Key Word: Development, Urban, Digital, Reduce Migrations

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CONTENT

INDEX CONTENT	PAGE
Cover	
Certificate	1
Abstract	2
Acknowledgment	3
Index	4
List of Figures	9
List of Tables	12
Abbreviations	13
1. Ideal village visit from District of Gujarat State (Civil Concept)	14
1.1 Background & Study Area Location	14
1.2 Concept: Ideal Village, Normal Village	15
1.2.1 Objectives	15
1.2.2 Example / Live Case studies of ideal village of India/Gujarat	15
1.2.3 The Idea of a model/Smart Village	16
1.2.4 Ancient History Civil / Electrical concept about Indian Village / other Countries Perspective about village and its new Development	17
1.3 Detail study (Socio economic, physical, demographic and infrastructure details) of Ideal village / Smart Village with photograph	19
1.4 SWOT analysis of Ideal village / Smart Village	21
1.5 Future prospects of Development of the Ideal village / Smart Village	22
1.6 Benefits of the visits of Ideal village / Smart Village	22
1.7 Civil aspects required in Ideal village / Smart Village	22
2. Literature Review – (Civil Concept)	23
2.1 Introduction: Urban & Rural village concept	23
2.2 Importance of the Rural development	23
2.3 Ancient Villages / Different Definition of: Rural Urban Villages	23
2.4 Scenario: Rural / Urban village of India population Growth	24
2.5 Scenario: Rural / Urban village of Gujarat as per Census 2011 and latest	24
2.6 Rural Development Issues - Concerns – Measures	24
2.7 Various infrastructure guidelines with the Norms for Villages for the provisions of different infrastructure facilities	25
2.8 Ancient / Existing Electrical concept study as a Literature Review for the provisions of development	26
2.9 Other Projects / Schemes of Gujarat / Indian Government	26
3. Smart (Cities / Village) Concept Idea and its Visit (Civil Concept)	28
3.1 Introduction: Concepts, Definitions and Practices	28
3.2 Vision-Goals, Standards and Performance Measurement Indicators	28

3.3 Technological Options	29
3.4 Road Map and Safe Guards	30
3.5 Issues & Challenges	31
3.6 Smart Infrastructure - Intelligent Traffic Management	31
3.7 Cyber Security or any other concept as per the	31
3.8 Retrofitting- Redevelopment- Greenfield Development District Cooling	32
3.9 Strategic Options for Fast Development	32
3.10 India's Urban Water and Sanitation Challenges and Role of Indigenous Technologies	32
3.11 Initiatives in village development by local self-government	33
3.12 Smart Initiatives by District Municipal Corporation	33
3.13 Any Projects contributed working by Government / NGO / Other Digital Country concept	33
3.14 How to implement other Countries smart villages projects in Indian village context (Regarding Environment , Employment,	34
4. About JHALANSAR VILLAGE	35
4.1 Introduction	35
4.1.1 Introduction About Jhalansar Village details	35
4.1.2 Justification/ need of the study	35
4.1.3 Study Area (Broadly define)	35
4.1.4 Objectives of the study	36
4.1.5 Scope of the Study	36
4.1.6 Methodology Frame Work for development of your village	36
4.1.7 Available Methodology for development of related to Civil	36
4.2 JHALANSAR VILLAGE Study Area Profile	37
4.2.1 Study Area Location with brief History land use details	37
4.2.2 Base Location map, Land Map, Gram Tal Map	37
4.2.3 Physical & Demographical Growth	38
4.2.4 Economic generation profile / Banks	38
4.2.5 Actual Problem faced by Villagers and smart solution	38
4.2.6 Social scenario -Preservation of traditions, Festivals, Cuisine	38
4.2.7 Migration Reasons / Trends	38
4.3. Data Collection JHALANSAR VILLAGE Photograph/Graphs/Charts/Table)	39
4.3.1 Describe Methods for data collection	39
4.3.2 Primary details of survey	39
4.3.3 Average size of the House - Geo-Tagging of House	40
4.3.4 No of Human being in One House	40
4.3.5 Material available locally in the village and Material Out Sourced by the villagers	40
4.3.6 Geographical Detail	40

4.3.7 Demographical Detail - Cast Wise Population Details / Which ID proof using by villagers	41
4.3.8 Occupational Detail - Occupation wise Details / Majority business	41
4.3.9 Agricultural Details / Organic Farming / Fishery	41
4.3.10 Physical Infrastructure Facilities - Manufacturing HUB / Ware Houses	41
4.3.11 Tourism development available in the village for attracting the tourist	41
4.4 Infrastructure Details (With Exiting Village Photograph)	41
4.4.1 Drinking Water / Water Management Facilities	42
4.4.2 Drainage Network / Sanitation Facilities	42
4.4.3 Transportation & Road Network	42
4.4.4 Housing condition	43
4.4.5 Social Infrastructure Facilities , Health , Education , Community Hall , Library	43
4.4.6 Existing Condition of Public Buildings & Maintenance of existing Public Infrastructures	46
4.4.7 Technology Mobile/ WIFI / Internet Usage Details	46
4.4.8 Sports Activity as Gram Panchayat	46
4.4.9 Socio-Cultural Facilities , Public Garden /Park/Playground /Pond/ Other Recreation Facilities	46
4.4.10 Other Facilities (e.g like foot path development-Smart toilets-Coin operated entry, self-cleansing, waterless, public building)	46
4.4.11 Any other details	47
4.5 Electrical Concept	47
4.6 Existing Institution like - Village Administration – Detail Profile	47
4.6.1 Bachat Mandali	47
4.6.2 Dudh Mandali	47
4.6.3 Mahila forum	47
4.6.4 Plantation for the Air Pollution	48
4.6.5 Rain Water Harvesting - Waste Water Recycling	48
4.6.6 Agricultural Development	48
4.6.7 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 Soil Liquefaction	50
5.1.3 Sustainable Sanitation	51
5.1.4 Transport Infrastructure / system	52
5.1.5 Vertical Farming	55
5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure	57
5.1.7 Sewage treatment plant	59
5.1.8 Technical Case Study On “INS Khukri Memories”	61

6. Swatchh Bharat Abhiyan (Clean India)	74
6.1 Swatchh needed in allocated village -Existing Situation with photograph	74
6.2 Guidelines - Implementation in allocated village with Photograph	75
6.3 Activities Done by Students for allocated village with Photograph	76
7. Village condition due to Covid-19	77
7.1 Taken steps in allocated village related to existing situation with photograph	77
7.2 Activities Done by Students for allocated village Clean with Photograph	77
7.3 Any other steps taken by the students / villagers	78
8. Sustainable Design Planning Proposal (Prototype Design)- Part- I	79
8.1 Design Proposals	79
8.1.1 Sustainable Design (Civil)	79
8.1.2 Physical design (Civil)	85
8.1.3 Social design (Civil)	89
8.1.4 Socio-Cultural design (Civil)	97
8.1.5 Smart Village Design (Civil)	103
8.1.6 Heritage Village Design (Civil)	109
8.2 Reason for Students Recommending this Design	114
8.3 About designs Suggestions / Benefit of the villagers	114
9. Proposing designs for Future Development of the Village for the PART-II Design	115
10. Conclusion of the Entire Village Activities of the Project	116
11. References refereed for this project	117
12. Annexure attachment	118
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	118
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	126
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	135
12.4 Gap Analysis of the Allocated Village	144
12.5 Summary Details of All the Villages Designs in Table form as Part-I and Part-II	145
12.6 Drawings (If, required, A1, A2, A3 design is not visible then Only)	146
12.7 Summary of Good Photographs in Table Format (village visits, Ideal, Smart Village or any other)	152
12.8 Village Interaction with sarpanch Report with the photograph	155
12.9 Sarpanch Letter giving information about the village development	156
12.10 Comprehensive report preparation as per format	157

VY-PHASE-VIII-PART-II	Page no
13.From the Chapter- 9 future designs of the aspects (Feasibility, Construction, Operation and maintenance of various design options in Rural Areas along with cost with AutoCAD designs / planning with any software	158
13.1 Design Proposals	158
13.1.1 Anganwadi Maintance	158
13.1.2 R.O. Water Plant	160
13.1.3 Play Ground	164
13.1.4 Public Library	167
13.1.5 Skill Development Center	174
13.1.6 Pharmacy Store	184
13.2 Reason for Students Recommending this Design	184
13.3 About designs Suggestions / Benefit of the villagers	184
14. Technical Options with Case Studies	185
14.1Civil Engineering	185
14.1.1Advanced Earthquake Resistant	185
14.1.2Seismic Retrofitting of Buildings	188
14.1.3Advance Practices in Construction field in Modern Material, Techniques and Equipment's	190
14.1.4 Engineering Aspects Of Soil mechanics - Environmental Impact Assessment	195
14.1.5 Water Supply-Sewerage system-Waste Water- Sustainable development techniques	198
14.1.6 Technical Case study	204
15. Smart and/or Sustainable features of Chapter 8 & 13 designs, Impact on society. (For Jhalansar 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	211
16. Survey By Interviewing With Talati And/ or Sarpanch	213
17.Irrigation / Agriculture Activites And Agro Industry, Altenate Technics And Solution	214
18. Social Activities – Any Activates Planned By Students e.g Teaching Learning activities, awareness camp, business idea for SELF HELP GROUP OR ANY OTHER	228
19. JHALANSAR VILLAGE SAGY Questionnaire Survey form with the Sarpanch Signature (Scanned copy attachment in the soft copy report and Original copy in hardbound report)	231
20.TDO-DDO-Collector email sending Soft copy attachment in the report	240
21. Comprehensive report for the entire village	241

LIST OF FIGURE

FIGURE NO	FIGURES LISTING	PAGE NO
1.	VADAL	16
2.	IDEA OF MODEL	16
3.	GRAM PANCHYAT	19
4.	GATE	19
5.	RAILWAY STATION	20
6.	COMMUNITY HALL	20
7.	PSOT OFFICE	20
8.	PHC	20
9.	SCHOOL	20
10.	AGRICULTUR CO-OPRETIV BANK	20
11.	AANGANWADI	21
12.	BOI	21
13.	SBI	21
14.	HOSPITEL	21
15.	SMART ENERGY	29
16.	SMART TRANSPORTATION	29
17.	SMART INFRASTRUCTURE	29
18.	SMART MOBILITY	30
19.	SMART HEALTHCARE	30
20.	SMART INFRASTRUCTURE	31
21.	CYBER SECURITY	31
22.	STARATGIC	32
23.	JHALANSAR	35
24.	BASE LOCATION MAP	37
25.	LAND MAP	37
26.	GRAMTAL MAP	37
27.	GEOGRAPHICAL DETAIL	40
28.	WATER TANK	42
29.	DRAINAGE NETWORK	42
30.	ROAD	42
31.	STREET	42
32.	HOUSE CONADITION	43
33.	AANAGWADI	43
34.	SUB CENTER	43
35.	STORAGE ROOM	44
36.	SCHOOL	44
37.	AGRICULTURE BANK	44
38.	SCHOOL	44
39.	UNDER GROUND SLUMP	44
40.	AANGANWADI	44
41.	SAMAJ	45

42.	UNDER GROUND WATER TANK	45
43.	POST OFFICE	45
44.	SMALL INDUSTRY	45
45.	GARDEN	45
46.	GRAM PNCHAYAT	45
47.	OVER HEAD TANK	46
48.	SOLAR STREET LIGHT	47
49.	DISTRICT ROAD	47
50.	SOIL LIQUEFACTION	50
51.	SUSTAINBLE SANITATION	50
52.	BICYCLE PATHS	53
53.	SUBWAY SYSTEM	53
54.	METRO STATION	54
55.	HYDEOPONICS	56
56.	AQUAPONICS	56
57.	AEROPNICS	57
58.	GRAPH OF SERVICE LIFE	58
59.	LAYOUT OF PLANT	60
60.	LOCATION OF INS KHUKRI MEMORIAL	61
61.	INS KHUKRI NIGHT VIEW	62
62.	INS KHUKRI DEONE VIEW	63
63.	CONSTRUCTION TIME IMAGE	65
64.	CONSTRUCTION WORK CHECK	66
65.	INS KHUKRI PARK LAYOUT, PLAN	67
66.	INS KHUKRI (F 149)	72
67.	STREET A	74
68.	STREET B	74
69.	STREET C	75
70.	STREET D	75
71.	DUSTABIN	75
72.	MEDISEEN SPARY	76
73.	CLEAN PLEDGE	76
74.	PEOPLE PLEDGE	76
75.	DHANVANTARI RATH	77
76.	MEDICAL CHEK UP	77
77.	SOCICAL DISTANCE A	77
78.	SOCICAL DISTANCE B	77
79.	REGISTER A	78
80.	REGISTER B	78
81.	BIO-GAS PLANT	82
82.	BUS-STAND	86
83.	PUBLIC TOILET	90
84.	COMMUNITY HALL	98
85.	BANK	104

86.	GATE	110
87.	IDEAL VILLAGE PHOTO'S	151
88.	SMART VILLAGE PHOTO'S	153
89.	ALLOCATED VILLAGE PHOTO'S	154
90.	SARPANCH	154
91.	R.O. WATER PLANT	162
92.	PLAY GROUND	165
93.	PUBLIC LIBRARY	171
94.	SKILL DEVELOPMENT CENTER	176
95.	PHARMACY STORE	182
96.	EARTHQUAKE	182
97.	EARTHQUAKE RISK ZONE MAP	184
98.	SEISMIC ISOLATION SYSTEM	185
99.	INFILL SHEAR TRUSSES	186
100.	BASE ISOLATORS	186
101.	SUPPLEMENTARY DAMPERS	187
102.	TUNNEL FORMWORK SYSTEM	189
103.	FLAT SLABBING TECHNOLOGY	189
104.	THIN JOINT MASONRY TECHNIQUE	190
105.	BACKHOE	190
106.	BULLDOZER	191
107.	TOWER CRANES	191
108.	TELEHANDLERS	192
109.	GENERALIZED EIA PROCESS FLOWCHART	194
110.	DEAD END SYSTEM	196
111.	SEWAGE SYSTEM	196
112.	SEDIMENTATION	199
113.	BIOCHEMICAL OXIDATION	200
114.	CREATING HEALTHY ENVIRONMENT	200
115.	DESIGN OF TULSI SQUARE	202
116.	PHOTOGRAPH'S DURING CONSTRUCTION WORK	206
117.	ELEVATION & 3D VIEW OF TULSI SQUARE	207
118.	LEAN TO TYPE GREENHOUSE	212
119.	EVEN SPAN TYPE GREENHOUSE	212
120.	UNEVEN SPAN TYPE GREENHOUSE	213
121.	RIGID AND FURROW TYPE GREENHOUSE	213
122.	SAW TOOTH TYPE	214
123.	QUONEST GREENHOUSE	214
124.	INTERLOCKING RIDGE	215
125.	GROUND TO GROUND GREENHOUSE	215
126.	GREENHOUSE FOR ACTIVE HEATING	216

127.	GREENHOUSE FOR ACTIVE COOLING	216
128.	WOODEN FRAMED STRUCTURE	217
129.	PIPE FRAMED STRUCTURE	217
130.	TRUSS FRAMED GREEN HOUSE STRUCTURE	218
131.	GLASS GLAZINGS	218
132.	FIBER GLASS REINFORCED PLASTIC GLAZING	219
133.	PLASTIC FILM	219
134.	UV STABILIZED LDPE FILM	220
135.	NET HOUSE	220
136.	HIGH COST GREEN HOUSE	221
137.	MEDIUM COST GREEN HOUSE	222
138.	LOW COST GREEN HOUSE	222
139.	BETI BACHAO BETI PADHAVO	224
140.	ONE DAY HELATH AWARENESS	225
141.	SWATCHHTA ABHIYAAN IN VILLAGE	226

LIST OF TABLES

TABLE NO	TABLES LISTING	PAGE NO
1.	STUDY ARE AND LOACTION	14
2.	VADAL	16
3.	SOCIO ECONOMIC PROFILE	19
4.	POPULATION OF VADAL	19
5.	SWOT ANALYSIS	24
6.	POPULATION INDIA	24
7.	POPULATION GUJARAT	24
8.	INFRASTRUCTURE FACILITIES	25
9.	STUDY AREA DETAIL	35
10.	DEMOGRAPHICAL DETAIL	41
11.	OCCUPATION DETAILS	41
12.	MEASUREMENT SHEET FOR BIO GAS PLANT	83
13.	ABSTRACT SHEET FOR BIO GAS PLANT	84
14.	MEASUREMENT SHEET FOR BUS STAND	87
15.	ABSTRACT SHEET FOR BUS STAND	88
16.	MEASUREMENT SHEET OF PUBLIC TOILET	91
17.	ABSTRACT SHEET FOR PUBLIC TOILET	94
18.	MEASUREMENT SHEET FOR COMMUNITY HALL	99
19.	ABSTRACT SHEET FOR COMMUNITY HALL	102
20.	MEASUREMENT SHEET FOR BANK	105

21.	ABSTRACT SHEET FOR BANK	108
22.	MEASUREMENT SHEET FOR GATE	111
23.	ABSTRACT SHEET FOR GATE	112
24.	GAP ANALYSIS	144
25.	SUMMARY DETAIL	145
26.	CRACK FELLING COST	159
27.	WITH ALL DESCRIPTION	161
28.	TOTAL MATERIAL USE IN R. O. PLANT BUILDING	163
29.	CALCLATION FOR WELL	166
30.	ABSTRACT SHEET FOR PLAY GROUND	166
31.	MEASUREMENT SHEET FOR PUBLIC LIBRARY	169
32.	ABSTRASHEET FOR PUBLIC LIBRARY	172
33.	MEASUREMENT SHEET FOR SKIIL DEVELOPMENT CENTER	176
34.	ABSTRACT SHEET FOR SKILL DEVELOPMENT CENTER	180
35.	MEASUREMENT SHEET FOR PHARMCY STORE	183
36.	ABASTRACT SHEET FOR PHARMACY STORE	183
37.	IMPACT ON SOCIETY	208
38.	SURVEY INTERVIEW REPORT	210

ABBREVIATIONS

SHORT NAME	FULL NAME
PHC	Public health centre
NGO	Non-government organization
WRRF	Water resource recovery facility
PMGSY	Pradhan Mantri Gram Sadak Yojana
NRVM	National Rurban Mission
CMU	Concrete masonry unit
EIA	Environmental Impact assessment
SBA	Swachh Bharat Abhiyan
IAY	Indira Awas yojana
STP	Sewage treatment plant
S.O.R	Schedule of Rates
SBM	Swachh Bharat Mission

Chapter 1: Ideal Village Visit from Your District of Gujarat State

Introduction:-

Ideal village concept adopted by national, state and local governments of India, as an focused on holistic rural development, derived from Mahatma Gandhi's vision of Adarsh Gram (Ideal village). The 'gaon' with the green field, clean air and clear blue sky always gives a nostalgic charm to any individuals. But, it is very unfortunate that villages which have so many things to offer are still very backward. Poverty, lack of education and lack of even the basic needs are washing away the charm. of the village. But beating the odd there are some Indian village which have set a different level of milestone altogether.

1.1 Background & Study area location:

Background :-

Vishwakarma yojana is provide the benefits of real work experience to engineering student and simultaneously apply their technical knowledge in the development of infrastructure in rural development. Under this scheme, the villages are surveyed and this project was identified and selected for implementation. Rurbanisation is to bring peace of mind to the villagers by providing them basic amenities required and still keeping the village soul. This project gives one new idea for Development of rural villages. Also gives procedure how they fulfill needs of the villages. As a measure to strengthen the panchayat Raj Institutions in terms of functions, powers and finance. Gram Sabha, NGOs, Self-Help Groups and PRIs have been accorded adequate role to make participatory democracy meaningful and effective. By this Vishwakarma yojana project government want technical solution of the problem of villages at the engineering point of view.

Study area location:-

According to census 2011 information the location code of vadal village is 514463.

TABLE NO 1. STUDY AREA AND LOCATION

VILLAGE	VADAL
TALUKA	JUNAGADH
DISTRICT	JUNAGADH
STATE	GUJARAT
LANGUAGE	GUJARATI, HINDI, ENGLISH
TIME ZONE	IST(UTC+5.30)
PINCODE	362310

Vadal village is located in junagadh district in Gujarat, India. It is located 12Km away from junagadh, which is both district & sub- district headquarter of vadal village. Vadal village is gram panchayat.

1.2 Concept: Ideal Village, Normal Village :-

An ideal village has good system of drainage. Because filth and rubbish of the village should be regularly removed away into the compost pits. An ideal village has very good drain system so that the dirty water of the village is properly drained away.

House:- The houses of an ideal village are very neat clean. The owners of these houses look to the house sanitation and house-drainage. The houses have sufficient windows to let in air and light.

Agriculture:- People of an ideal village are good farmers. They grow food crops and seasonal crops etc. now they improved method of farming for production of crops.

Educational facilities :- There are primary schools and high school in an ideal village. Primary education is free and compulsory.

Medical facilities:- In an ideal village, there are clinical facilities for villagers and animals. Hence, there are lots of dispensaries.

Other facilities:- We can find Railway station, post-office, playground, garden, skill development center etc there.

People:- People of an ideal village are very neat and clean. They have a sense of discipline and Collaboration. They have a spirit of service and let go.

Conclusion:- An ideal village makes all possible provision for development of her people. It is our main duty that we should develop every of India to much higher level. The idea of an ideal village will certainly help us in discharge our duty.

1.2.1 Objectives:-

The objectives of an ideal village are as follows,

- To make the village 'HUB' that could attract resources for the development of other village
- To prevent distress migration from rural to urban areas.
- Contribution towards social empowerment
- Create and sustain a culture of cooperative living for inclusive and rapid development.

1.2.2 Example / Live case studies of ideal village of India / Gujarat:-

Based on census 2011 information the location code is 514463. Vadal village is located in junagadh tehsil of junagadh district in Gujarat, India. It is situated 12Km away from junagadh.

TABLE NO 2. VADAL

GRAM PANCAHYAT	VADAL
BLOCK / TEHSIL	JUNAGADHA
DISTRICT	JUNAGADHA
STATE	GUJARAT
PIN CODE	362310
AREA	2104.32 HECTER
POPULATION	7165
HOUSEHOLD	1557
NEAREST TOWN	JUNAGADH

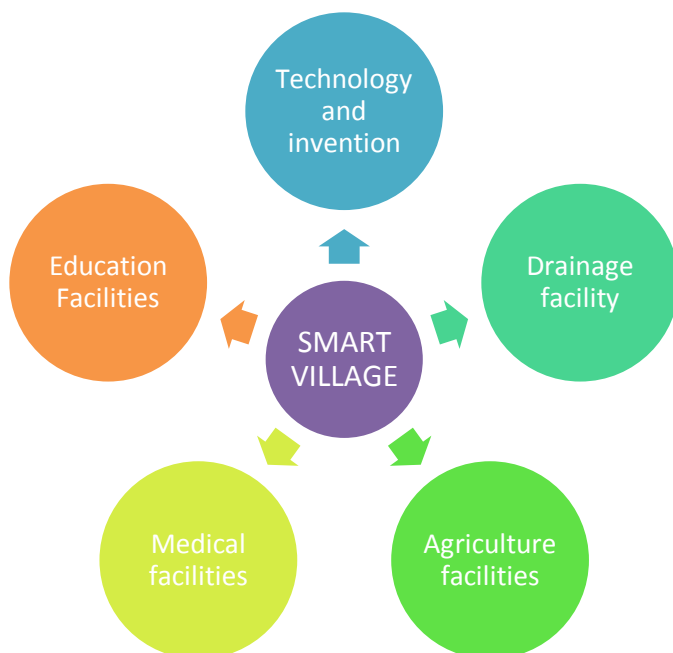
Figure no 1. Map of village.



1.2.3 The idea of model / smart village:-

The concept of smartness is popular in respect and honor of human development regardless of rural or urban area, literate or illiterate in all country and ideal is not omission to it. The ideas of smart village will also attention to multiple challenges such as unplanned urbanization, under development of village and smart villages.

Figure No 2. The idea of model



What is smart village?

In smart village access sustainable energy acts as a catalyst for development – enabling the provision of good education and health care, access to clean water, sanitation and nutrition, the growth of productive enterprise to boost income and enhanced security.

1.2.4 Ancient History civil concept about Indian village / foreign countries

Perspective and its development:-

It is well acknowledged that we were familiar to science just time is changed and the same thing is in front of us in new form. A book “Vimanashastam” show the procedures to make an airplane. Some other facts are:

1. The iron pillar of Delhi is famous Indian place it has 99% resistance to corrosion and almost 16001700 years old. A study concluded that a corrosion-resistance agent iron hydrogen phosphate was applied on it which shows advanced chemical knowledge of our ancestors.
2. Harappa and Mohenjo-Daro are best example of this architecture and mature urban civilization. In Harappa civilization the underground drainage system was from small to big sewer than to channel and then channel to river. It has also a remarkable town planning system.
3. Ancient fort and huge bath bawadiya etc. are very attractive. One of the most beautiful example of patterns in architecture it is chandbauri well in Rajasthan which is 100 feet below the earth level.
4. Mughals have done change in architecture, the use of marbles shows that we had good Knowledge of geology too.
5. Jagganath temple: the shadow of the main dome is not visible whatever be the time it shows architecture feat. Also the Sudarshan chakra on the top seems always facing you. Irrespective of wherever you stand. When you enter the temple by Singhdwara after first step you cannot here any sound of ocean but when you exit it can be clearly heard.
6. The Narayan pal vishun mandir of Chitrkut, Bastar was completely built only in a day. Its structure and arts are also built in a shorter period of time of a day.
7. The Konark sun temple is one of the UNESCO heritage site. The main attraction of the temple is its twelve pairs of wheel located at the base of the temple. These wheels are nit ordinary wheels but tell time as well the spokes of the wheels create a sundial. One can calculate the precise time of the day by just looking at the shadow cast by these spokes.

Soil Testing

Purvsrnbhumirnpariksetapascatvastuparkalpayet) Translated as – First test the earth (site) after that plan the construction

Valmikenasamayuktabumirasthi ganaistuya II Randharnvitaca bhurvarjyagatighescasammanvita II Translated as – Land with anthills, skeleton, full of pits and craters should be avoided.

Varnagandharaskaradisabdsparsanairapi Pariksyaiavayathayogyamgrhniyaddravyamuttamam II
Translated as – After examining the color, smell, test, shape, sound and touch (of the soil) buy the best material as found suitable.

Yavattatrajalarndrstarnkhanettavattubhutale II Translated as – Till water is seen there, (one) Should dig the ground.

Ratnirnatramadhegatespariksyakhatapurane II Adhikesriyamapnoti nyunehaniro samesamam II
Translated as – It (soil) should be tasted by digging a pit of 1 arm length and refilling it (with the same soil). If (soil is) more, one will beget prosperity; if short, one will beget loss; if equal, it is normal.

Making of Bricks

Usarampandurankrsnacikanarn tarnrapullakarn II Mrdascatasrastasvevagrniyattamrapullakam I
Translated as - alty, off-white, black and smooth, red and granulated, these are the four kinds of clay.

Asarkarasmarnulasthilostarnastanuvalukam II Ekavamamsukhasparsamistarnlostestakadisu I
Translated as - Clay suitable for making brick and tiles must be free from gravel, pebbles, roots and bones and must be soft to touch.

Mrtkhandarnpurayedarajanudaghnejaletatah u Alodymaradayetpadbhyarncatvarirnsatpuah
Translated as – Then Fill the colds of clay in knee-deep water; then having mixed, pound with the feet forty times repeatedly.

Ksiradrumakadarnbamrebhayaksa tvagjalairapi II Triphalambubhirasiktvamardayenmasamatrakam
Translated as – After soaking in the sap of fig, kadamba, mango, abhaya and aksha and also in the water of myrobalan for three months, pound (the clay).

Vyasardhar dhatribhagikatvramadhyeparsepare I Istakbahusahsasyahsamadegdhahpunascatah II
Translated as - three (bricks) are in Four, five, six and eight unit (Widths) and twice that in length. Their depth in the middle and in the two ends (is) one fourth or one- third the width. Again these bricks should normally be dried and baked.

Ekadvitricaturmasarnstityaivavicaksanah I jaleparksipayantnenjslsduddhrtys tat punah II
Translated as – The experts, only after one, two, three or four months, again throwing (the baked bricks) in water, and extracting (them) from the water with effort, (will put the brick)

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

Socio Economic:

Table No 3. Socio Economic profile

Name of three major occupation group in village	Farming	70%
	Production of food item	18%
	Jobs in junagadh	12%

Physical and Demographic:

Vadal village is located in Junagadh Tehsil of Junagadh district in Gujarat, India. Vadal is located 12 Km Away from junagadh, which is both district & sub-district headquarter of vadal village. The geographical are of village is 2104.32 hectares. Vadal has a total population of 7,165 peoples. There are about 1,557 houses in vadal village. Junagadh is nearest town to vadal which is approximately 12Km away.

Table No 4. Population of vadal

Sr. No	Census	Population	Male	Female
1	2001			
2	2011	7165	3726	3439

Infrastructures Details:

Figure No 3. Gram Panchayat



Figure No 4. Gate



Figure No 5. Railway station



Figure No 6. Community hall



Figure No 7 Post Office



Figure No 8 P H C



Figure No 9 School



Figure No 10 Agriculture co-operative bank



Figure No 11 Anganwadi



Figure No 12 BOI



Figure No 13 SBI



Figure No 14 Hospital



1.4 SWOT analysis of ideal village:

Table No 5. SWOT analysis

Strength	Weakness	Opportunistic	Threats
Proper facilities Drainage	Improper disposal of waste	Improving management in waste	Lack of awareness of villagers about cleaning
Sanitation Facilities	No facilities for higher secondary Education	Educational Awareness	Lack of funds and technical Knowledge in agricultural fields
Transportation Facilities	Improper village layout of village	Woman empowerment	Lack of awareness of Villagers about educations

1.5 Future Prospects of village:

For future prospect, the vadal village can use more advanced technologies for agricultural prospect and other requirements also. They can make the village Wi-Fi zone and can improve the computer labs in the schools. They can provide biogas plant in the village.

1.6 Benefits of visit of ideal village:

We visited vadal village, Junagadh. By visit of this village Vadad, we got an idea about an ideal village. We had seen much kind of new technologies which can be used in village that are being used in the urban area. By this visit of this village, it has improved our communication skills and we know how to interact with the people.

1.7 Civil Aspect required in ideal village / Smart village:

No Any Other.

Chapter 2. Village literature review

2.1 Introduction: Urban and Rural

- **Urban:** An urban area is human settlement with high population and infrastructure facilities of built environment. Urban area are created through urbanization and are categorized as cities, towns, or sub urban settlements are proper, planned settlements built up according to a process called urbanization. According to census 2011, there are 7,935 towns, 7,041 statutory town and 3,894 census towns.
- **Rural:** A Rural area is a land that has population and infrastructure facility of built environment. Urban area are created through urbanization and are categorized as cities, towns, or sub urban settlement are proper, planned settlement built up according to a process called urbanization. According to census 2011, there are 7,935 towns, 4,041 statutory town and 3,894 census towns.

2.2 Importance of the rural development

- Rural areas have low population density and large amount of undevelopment land .Agricultural activities are more in rural areas.
- Rural areas are large and isolated areas of and open country with low population density.
- United states census (2000 census) defines rural areas as comprising open country and settlement with fewer than 2500 resident 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 from bill) define rural Ares other than a city or town that has a population of greater than 50,000 swath of land that has few homes or other building and not very many people.
- National geographic society define A rural area is an open swath of land that has few homes or other building and not very many people.

2.3 Ancient village / Different definition of Rural Urban Villages

A Village is a clustered human settlement or community, larger than a hamlet but smaller than a town, with a population ranging from a few hundred to a few thousand. Urban: For the census of India 2011, the definition of urban area is as follows:

1. All places with a municipality, corporation, cantonment board or notified town area committee, etc.
2. All other places Which satisfied the following criteria;
 - I. A minimum population of 5,000;

II. At least 75 per cent of the male main working population engaged in non-agricultural pursuits.

2.4 Scenario: Rural/Urban Village of India population growth

Population Growth:

Total: 1,210,194,422(100%)

Rural: 833,087,662(68.84%)

Urban: 377,105,760(31.16%)

Table No 6. Population of Rural and Urban area as per census 2001 and 2011

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

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

Population Growth:

Total: 60,439,692(100%)

Rural: 34,694,609(57.40%)

Urban: 25,745,083(42.60%)

Table No 7. Gujarat Population (in Crores)

	2001	2011	Difference
India	5.06	6.04	0.98
Rural	3.16	3.47	0.31
Urban	1.90	2.57	0.67

2.6 Rural Development Issues – Concerns – Measures

- Rural development issues - Concerns

The Financial, manpower and managerial resources devoted to the implementation of rural development programs are utterly inadequate.

A) People are directly or indirectly dependent on agriculture and a large number of landowners have small and medium-sized landholdings.

B) The upper caste people still hold large land while people of the lower castes own either marginal land or work as landless laborers.

c) Lack of physical facilities in rural areas.

d) Less awareness and less income opportunity.

• **Various Measures for rural Development**

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

1. To develop living standard of rural mass.
2. To develop rural youths, children etc.
3. To develop infrastructure facility in rural area.
4. To develop rural institutions like panchayat, cooperatives, post, banking and credit etc....
5. To develop agriculture, animal husbandry and other agricultural related areas.
6. To provide minimum facility to rural mass in terms of drinking water, education, transport, electricity and communication.

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

Table No 8. Norms for village for the provisions of different infrastructure facilities

Facilities	Planning Commission/UDPFI Norms	Required as per Norms
Education		
Anganwadi	Each Village	2
Primary School	Each Village	1
Secondary School	Per 7,500 Population	1
Higher secondary School	Per 15,000 Population	0
Collage	Per 125,000Population	0
Tech. Training Institute	Per 100,000Population	0
Agriculture research centre	Per 100,000 Population	0

Medical facility		
Gov./ Panchayat Dispensary or Sub	Each Village	1
PHC or Health Centre		
PHC & CHC	Per 20,000 Population	0
Child welfare and maternity Home	Per 10,000 Population	0
Hospital	Per 100,000 Population	0
Transportation		
Pucca village Approach Road	Each Village	Yes
Bus/Auto stand Provision	All Villages connected by Pt (ST Bus or Auto)	Yes
Drinking Water		
Water facilities		
Over Head Tank	1/3 of Total Demand	1.6 Lac cap
U/G Sump	2/3 of Total demand	3.2 Lac cap
Public Latrines	Each Village	2
Cremation Ground	Per 20,000 Population	0
Post Office	Per 10,000 Population	1
Gram Panchayat Building	Each individual/group Panchayat	1
APMC	Per 100,000 Population	0
Fire Station	Per 100,000 Population	0
Police station	Per 15,000 Population	0
Community Hall	Per 10,000 Population	0

2.8 Ancient / Existing Electrical concept study as a Literature Review for the provisions of development

2.9 Other Project / Schemes of Gujarat / Indian Government

Following are the schemes or project by govt. sector:

1. Mahatma Gandhi National Rural employment Guarantee Act (MHNREGA)
2. Pradhan Mantri Gram Sadak yojana (PMGCY)
3. Indira Awas Yojana (IAY)

(i) 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 program but also a

regime of rights. The National Rural Employment Guarantee Act, 2005 (NRAGA) guarantees 100 days of employment in a financial year to any rural household whose adult members are willing to do unskilled manual work.

(ii) Pradhan Mantri gram Sadak Yojna (PMGSY):

Pradhan Mantri gram Sadak Yojana (PMGSY) was launched on 25th December 2000 as a Fully funded Centrally Sponsored Scheme to provide all weather road connectivity in rural areas of the country. The program envisages connecting all habitations with a population of 500 persons and above in the plain areas and 250 persons and above in hill states, the tribal and desert areas.

According to latest figure made available by the State Governments under a survey to identify Core Network as part of the PMGSY program, about 1.67lakh Unconnected Habitations are eligible for coverage under the program. This involves construction of about 3.71 lakh km. of road for New connectivity and 3.68 lakh km. under up gradation.

The president of India, in his address to parliament on 25th February, 2005 announced a major business plan for rebuilding rural India called Bharat Nirman. The Finance Minister, in his Budget Speech of 28th February 2005, identified rural Roads as one of the six components of Bharat Nirman and has set a goal to provide connectivity to all habitations with a population of 1000 person and above (500 person and above in the case of hilly or tribal areas) with an all-weather road. A total of 59564 habitations are proposed to be provided new connectivity under Bharat Nirman. This would construction of 1, 46,185Kms of rural roads. In addition to new connectivity, Bharat Nirman envisages up Gradation/renewal of 1,94,130Kms of existing rural roads. This compresses 605 up gradation from Government of India and 40% renewal by the state Governments.

(iii) Indira Awas Yojana (IAY)

Housing is one of the basic requirements for human survival. For a normal citizen owning a house provide significant economic security and status in society. For a shelter less person, a house brings about a profound social change in his existence, endowing him with an identity, thus integrating him with his immediate social background.

Objective:

The objective of India Awaas yojana primarily to help construction of dwelling units by members of Scheduled castes/Schedule tribes, freed bonded laborers and also non –SC/ST rural poor below the poverty line by providing them with grant-in-aid.

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

3.1 Introduction: Concept, Definition and practices

Concept: In a Smart Villages, access to sustainable energy services acts as a catalyst for Development-Enabling provision of good education and healthcare, access to clean water, the growth of production enterprises to boost Incomes, and enhanced security, gender equality and democratic engagement.

Definition: The meaning of smart village is all the necessities facilities is developed in the village and no need to moves in city for any kind of requirement.

Practices: As civil engineering work change, a new kind of civil engineer will be required. Civil engineers will continue to make in many different roles, including project planner and advocate, regulator, analyst and designer, and builder, as well as working in any of several technical areas. From applying new technologies and adapting new management strategies to becoming Internet-savvy and streamlining the construction process. Civil engineers must master a different set of skills than in the past.

Civil Engineering Practice in the Twenty-first Century details the essentials skills and Strategies civil engineers need to be successful in the twenty-first century. Topic include: critical thinking, finance and economic, communications, management, design skill law and ethics civil engineering heritage and future consequences of civil engineering work and careers of civil engineers and engineering design and the infrastructure life-cycle.

3.2 Vision-Goals, Standards and Performance Measurement Indicators:

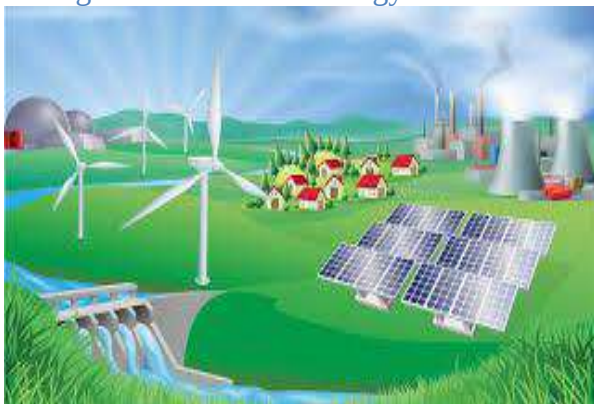
- In order to enhance and improve the quality of “public service”, a sound and clear quality management concept is needed. From the process perspective, “high quality” means that a process must deliver satisfaction- the ultimate output variable of any process. A smart city uses information and communication technologies (ICT) in order to increase the quality of its services-which should to low should result in the high satisfaction of the inhabitants.
- CITY keys provide a validated, holistic performance measurement framework for monitoring and comparing the implementation of Smart City solutions, with the objective of speeding up the transition to low carbon, resource-efficient cities.
- The indicators are arranged in an extended triple bottom line sustainability framework, including the themes people, planet, prosperity, governance and propagation, and completed with specific smart city indicators. Under the main themes, subthemes conforming to major policy ambitions have been identified. All indicators have been described in detail, with an indication of expected data sources. As such the indicators are ready for use. The first use

of the indicator sets was in the testing of the indicators in smart city projects or cases in the CITY keys partner cities.

3.3 Technological options

1. Smart Energy:

Figure No 15 Smart Energy



Both residential and commercial building in smart cities is more efficient, using less energy, and the energy used is analyzed and data collected. Smart grids are part of a development of a smart city, and smart streetlight are an easy entry point for many cities, since LED lights save money and pay for themselves within a few years.

2. Smart Transportation:

Figure No 16 Smart Transportation



A smart city support multi-model transportation, smart traffic lights and parking. By making parking smarter people spend less time looking for parking spots and circling city blocks. Smart traffic lights have a camera that monitors traffic flow so that it's reflected in the traffic signals.

3. Smart Infrastructure:

Figure No 17 Smart Infrastructure



Having a smart infrastructure means that a city can move forward with other technologies and use the data collected to make meaningful change in future city plans.

4. Smart mobility:

Figure No 18 Smart Mobility



Mobility refers to both technology and the data which travels across the technology. The ability to seamlessly move in out of many different municipal and private systems is essential if we are to realize the promise of smart cities. Building the smart city will never be a project that is “finished”. Technology need to be interoperable and perform to expectations regardless of who made it or when it was made.

5. Smart Healthcare:

Figure No 19 Smart Healthcares



Intelligent Healthcare, technology, use of e-health and m-health system, intelligent and connected medical devices.

3.4 Road map and Safe Guards

- The smart City mission has two components; area-based development for smaller areas within the city and pan-city development where one idea is implemented all throughout. According to officials from the Ministry of Urban Development (MUD), among other things, area-based plane allow for the purches of buses and other means to augment public transportation.
- Pan city development has no provision for such capital investment on transport but requires the application of information of technology-based solution for better traffic management
- Pan city development plans for metros such as New Delhi and Mumbai have proposed smart parking to manage the increasing volume of care while Agra has mooted the one Agra, one card for cashless transaction across public transport systems, museum and other tourist attractions.

3.5 Issue & Challenges

- The establishment that help cities manage electricity, water, waste, traffic flows, municipal operations and city services are becoming increasingly complex and can be expensive. Although the return on investment may be attractive, complexities often make it challenging for cities to kick-start their smart City projects. Successful implementation of smart city solutions need effective horizontal and vertical coordination between various institutions between central government (MUD) state government as well as local government agencies on various issues related to financing, sharing of best practices and sharing of service delivery processes.
- Other challenges for India include merging technology with law enforcement. There is no point in installing high tech traffic signals if its implementation cannot be enforced. India will also have to find ways of encouraging private investment for infrastructure required for a smart city.

3.6 Smart Infrastructure – Intelligent Traffic Management

What is smart infrastructure ?

- Smart information and Communication technology (smart ICT) has the potential to transform the way we plan and manage infrastructure.

Figure No 20. Smart Infrastructure



New developments in computer hardware, new applications and software are changing the face of the infrastructure scooter, and society more generally driving greater efficiency, increasing productivity, and greatly simplifying construction processes and life-of-asset manitence.

3.7 Cyber Security or any other concept as per the

Figure No 21. Cyber security



Cyber security is concerned with the security of data, and the applications and infrastructure used to store, process and transmit the data. It is understood as the process of protecting data and info by preventing, detecting and responding to cyber security events, such that events, which include intentional attacks and accidents, are changes

3.8 Retrofitting- Redevelopment – Greenfield Development District Cooling

Air condition from Hammond services .In the Southeast, air conditioners are almost crucial pieces of equipment for home comfort. However, it can be default to find the right air condiment for your home, one that will provide enough cool air in the summer to cool your home without driving your energy costs through the roof.

Energy Efficient and Affordable Air conditioners: When it comes down to selecting a new air conditioner for your home, there are a few things you should consider. First of all is efficiency. By choosing an energy efficient model, you can be sure your money is being well spent and isn't being thrown away with inefficiencies. Get the most being for your buck with and air conditioner that won't cost a fortune to run. If you're having treble choosing an air conditioner for your home, contact us today – we can help you weigh your options!

3.9 Strategic Options for Fast Development

The strategic components of area-based development in the Smart Cities Mission are city Improvement (retrofitting), city renewal (redevelopment) and city extension (Greenfield Development) and Pan-city initiative in which Smart Solutions are applied covering larger Parts of the city.

Figure No 22. Strategic



Retrofitting will introduce planning in an existing built-up area to achieve smart city Objectives, to make the existing area more efficient and livable. In retrofitting, an area Consisting of more than 500 acres will be identified by the city in consultation with citizens. Depending on the existing level of infrastructure services in the identified area and the vision Of the residents, the cities will prepare a strategy to become smart.

Since existing structures Are largely to remain intact in this model, it is expected that more intensive infrastructure Service levels and a large number of smart applications will be packed into the new smart City.

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

Swatchh Bharat Abhiyaan was launched by Prime Minister of India on 2nd October 2015, which caught attention of everybody not only in India, but also in the world? The government has taken various steps to create awareness among the masses for keeping the area surrounding them neat

and clean city. Government is also paying good role for cleaning of rivers, railway stations, tourist destinations and other public places.

3.11 Initiatives in village development by local self-government

The Smart Cities Mission is an innovative and new initiative by the Government of India to drive economic growth and improve the quality of life of people by enabling local development and harnessing technology as a means to create smart outcomes for citizens.

3.12 Smart Initiatives by District Municipal Corporation

The council is the governing body of the municipal corporation and the custodian of its powers, both legislative and administrative. The Municipal Government Act provides that councils can only exercise the powers of the municipal corporation in the proper form, either by bylaw or resolution. A councilor's job is to work with other council members to set the overall direction of the municipality through their role as a policy maker. The policies that council sets are the guidelines for administration to follow as it does the job of running a municipality. A councilor will spend a lot of time while on council creating new policies and programs or reviewing the current ones to make sure they are working as they should.

The Councilor under the Municipal Government Act, councilors have the following duties:

- To consider the welfare and interests of the municipality as a whole and, to bring to council's attention anything that would promote the welfare or interests of the municipality.
- To participate generally in developing and evaluating the policies and programs of the municipality.
- To participate in council meetings and council committee meetings and meetings of other bodies to which they are appointed by the council.
- To obtain information about the operation or administration of the municipality from the chief administrative officer.
- To keep in confidence matters discussed in private at a council meeting until discussed at a meeting held in public.
- To perform any other duty or function imposed on councilors by this or any other enactment or by the council.

3.13 Any Projects Contributed Working by Government/ NGO / Other

Digital Concepts

The village is almost fulfilled with all types of facilities and it does not need any more Facility. Other than this, A Composed Pit is being constructed by government in the village.

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

Similar to Vishwakarma Yojana, Students of engineering colleges can be given chance to visit foreign countries' smart villages and survey and study it properly as they study the smart villages of Gujarat. Than with the help of other government or private engineers, one can Implement other countries smart village projects in Indian villages.

Chapter 4: About Jhalansar Village

4.1 Introduction

4.1.1 Introduction about Jhalansar village

Jhalansar village is located in Junagadh district in Gujarat, India. It is situated 16km away from Junagadh.

Jhalansar has population of 2398 as per census of India 2011.

4.1.2 Justification / Need of study

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, this rate of migration & also increase standard of living of people of rural area. The basic need of this study is to provide facilities in the village for the rural development. Implement the different physical, social and socio-cultural 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 facility, transportations facilities, post-office 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 village of India.

4.1.3 Study Area

Figure No 23. Map of Village



Table No 9 Study area detail

Village	Jhalansar
Tehsil	Junagadh
District	Junagadh
State	Gujarat
Location	16km From Junagadh
Telephone code	0285
Nearest town	Junagadh(16km)

Sex Ratio

In Jhalansar village there is a sex ratio of 890.

4.1.4 Objectives of the study

- To provide basic facilities in the village.
- To reduce migration.
- Repair & maintenance of existing public building like Gram panchayat, public Library, School Buildings, health Center, and public Toilet Block & Other.
- To provide the necessary design of the public building which are not available in the village.
- To promote integrated development of Jalansar village with provision of required facilities, better connectivity, employment opportunities, etc.
- To develop the village such that it can be called a Smart village.
- To crease of the improvement of the communication skills of the people.

4.1.5 Scope of the Study

Provide basic amenities in the rural area which are not existing with rural soul remain intact and to increase the livelihood of people.

4.1.6 Methodology Frame Work For development of your village

- Methodology goes in following order
- Concept
- Literature review
- Meeting with revenue Talati
- Techno Economic Surevy.
- Collection of data
- Analysis of data
- Design proposals
- Future plan
- Acknowledgement

4.1.7 Available Methodology For development of related to Civil

- Water Tank
- Drainage System
- Gram panchayat
- Anganwadi
- Health Centre
- Road
- Community Hall
- Public Toilets
- Underground Sumps

4.2 Jalansar Study Area Profile

4.2.1 Study Area Location with brief History Land use details

Jhalansar is a village in junagadh taluka in junagadh district of Gujarat State, India. It is located 16Km from junagadh. The nearest railway station to Jhalansar which is located in and around 16 kilometers.

4.2.2 Base Location Map, Land Map, Gram Tal Map

Figure No 24 Base Location



Figure No 25 Land Map

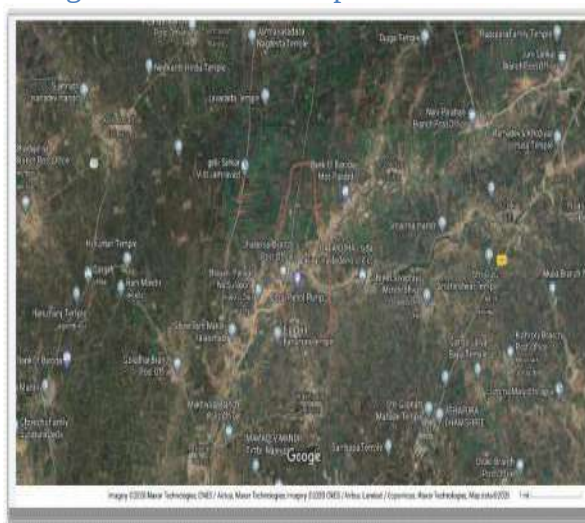
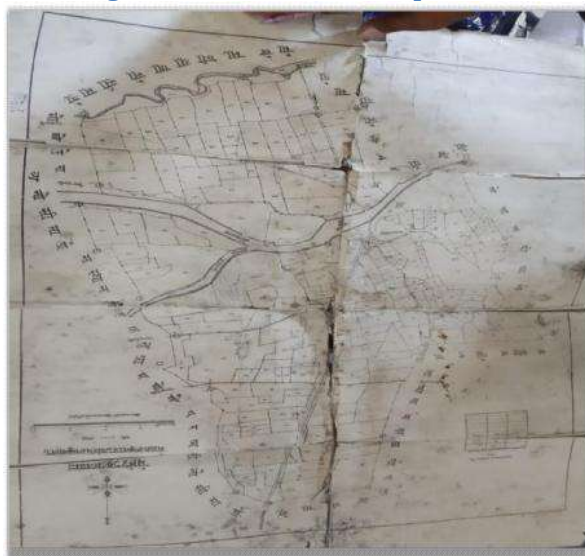


Figure No 26 Garmtal Map



4.2.3 Physical & Demographical Growth

Jhalansar village is located in junagadh taluka of junagadh district in Gujarat, India. Jhalansar is located 16Km away from junagadh. The geographical area of village is 800 hectare. Jhalansar has a total population of 2398. There are about 492 houses in Jhalansar.

4.2.4 Economic generation profile / Banks

The people of Jhalansar village are economically strong

4.2.5 Actual Problem Faced by villagers and smart solution

- The public toilet in the village is in a very bad condition and there is a lot of habitation so we want to build a new public toilet for the village, so there will be cleanliness and the village people use it.
- Since, there is not a single bank in the village. The nearest town which is 10 km away is there to collect or withdraw money from the villagers. So we want to build a new bank for the village.
- The bus station in the village is in a very dilapidated condition. So there is no seating arrangement and no drinking water system. So we want to drinking water system. So we want to build a new bus- station for the village.
- Since there is no arrangement for the people of the to gather in one place to give information about the development of the village. So we want to build a new community hall for the village.
- Since there is not a single playground for children in the village, there is a need for new playground.

4.2.6 Social scenario- Preservation, Festival, Cuisine

- The people of this village are technologically sound and are aware of all such things.
- Mostly Patel community is live Jhalansar village.
- Most of the villagers work in the city area it is located very near to the city.
- Gram panchayat meeting are hold every month for bringing awareness among the cropland development of village.
- The people of the village celebrate all the festivals with Joy and rejoicing.

4.2.7 Migrations Reasons/ Trends Reasons of Migration

Education: Rural areas, by and large, lack educational facilities, especially those of higher education and rural people have to migrate to the urban centers for this purpose. Many of them settle down in the cities for earning a livelihood after completing their education

- Employment; Lack of employment in the rural area.

- Natural Calamity is also reason.

Trends of migration

- For the facilities of the cities are attract the rural people that's also reason of migration.
- urban centers provide vast scope for employment in industries, transport, trade and other services. They also offer modern facilities of life. Thus, they act as 'magnets' for the migrant population and attract people from outside. In other words, cities pull people from other areas. This is known as "pull factor".

Problems and potentials of migrants

The problem includes social, political and economic aspects; the effects also vary for both sending and host countries. Firstly, human migration is due to social factors such as, racism, sexism and religion. Furthermore, people migrate from their homeland as political issues arise.

4.3 Data Collection Jalansar Village Photograph / Graphs / Charts / Table

4.3.1 Describe Methods for data collection

In primary data collection, you collect the data yourself using qualitative and quantitative methods. The key point here is that the data you collect is unique to you and your research and, until you publish, no one else has access to it. There are many methods of collecting primary data

The main methods include :-

1. Interviews
2. Focus Group Interviews
3. Observation
4. Survey
5. Case-studies
6. Diaries
7. Questionnaires

4.3.2 Primary details of survey

Primary details Of Jhalansar village attached with report in the form of Techeo Economic Survey form.

4.3.3 average size of house – geo – Tagging of House

The total area of the village is 0.002041Acre are occupied by Agriculture and rest of it is residential area. The geo tagging of house is not currently done.

4.3.4 No of Human being in One House

There are 492 household in the village and average size of human in family is 4.

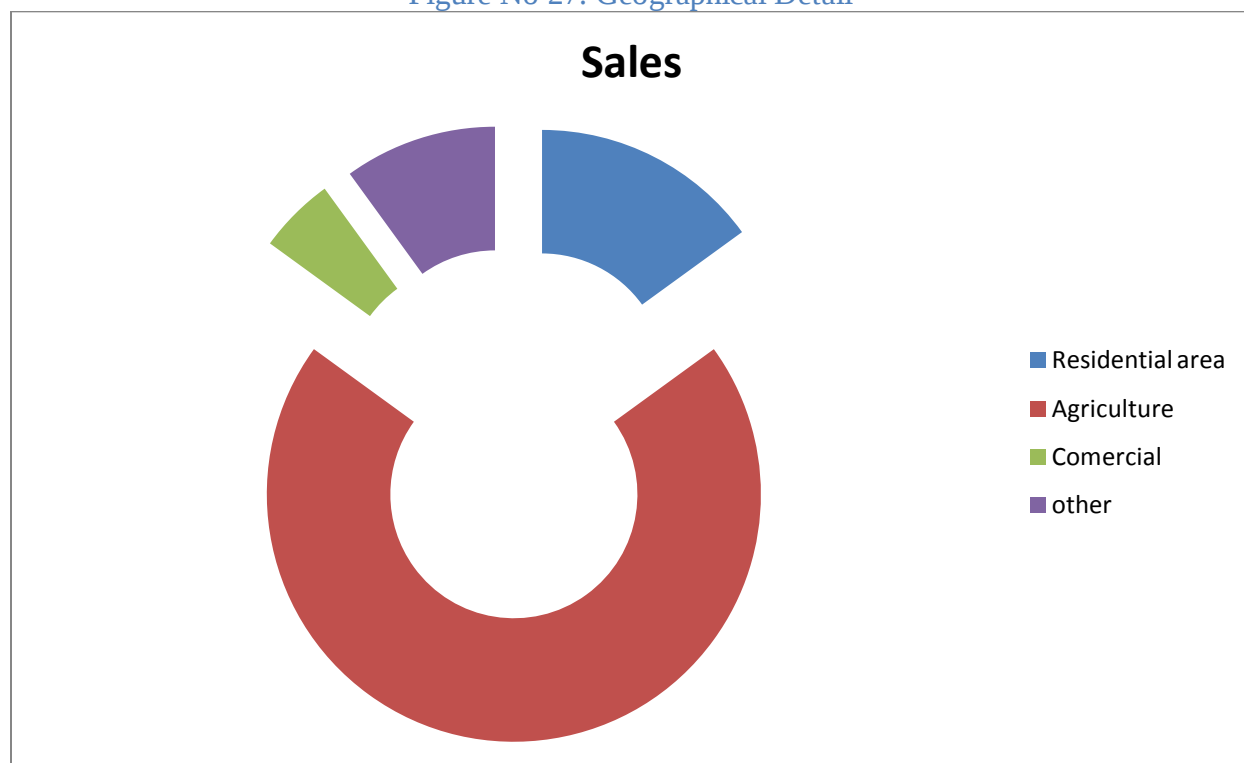
4.3.5 Material available Locally in the village and Material Out Sourced by the Village

There are 492 house in the village out of them 70% of the houses are Pucca houses. Pucca houses are mostly made of Beam and Column type structure with Reinforced Cement Concrete Slab, Very less amount of house are Kachha house which may be made up of stones and bricks.

4.3.6 Geographical Detail

The Total geographical area of the village is 2041acres approximately in residential area is 306.15acres, 1428 acres is occupied by Agriculture and 102 acres is occupied for Commercial, 204acres is occupied for other.

Figure No 27. Geographical Detail



4.3.7 Demographical Detail – Cast Wise Populations Details / Which ID Proof using by villagers

Table No 10. Demographical Detail

Particulars	Male	Female	Total
Total No of house	-	-	492
Population	1269	1129	2398
Child (0-6)	133	120	253
Schedule Caste	62	51	112
Schedule tribe	0	0	0
Literacy	83.45%	61.15%	72.93%
Total Workers	912	694	1606
Main Worker	-	-	802
Marginal Worker	240	564	804

The villagers of Jhalansar using ID proofs as below,

1. Aadhar card
2. Pan card
3. Election voting card
4. Ration card

4.3.8 Occupational Detail – Occupation wise Details / Majority business

Table No 11. Occupation Details

Private Business	15%
Animal Husbandry	15%
Agriculture	70%

4.3.9 Agricultural Details / organic Farming / Fishery

Farmer grows crops which are mainly consumed by Animals and are used in Animal Husbandry. These includes grains like Cottan, Pinuts, Soybens, wheat, etc.

4.3.10 Physical infrastructure Facilities – Manufacturing HUB / ware Houses

There are 2 Industries and 2 were house in this village.

4.3.11 Tourism development available in the village for attracting the tourist

There isn't any attractive place for Tourists.

4.4 Infrastructure Details (With Exiting Village Photograph)

4.4.1 Drinking Water / Water Management Facilities

Figure No 28 Water Tank



There are 2 Mediums of Drinking water available in Jhalansar Village

1. Hand pump
2. Well

Water Management System in Jhalansar Village

1. Underground Water Tank
2. Overhead Water Tank

Figure No 29. Drainage Network



4.4.2 Drainage Network / Sanitation Facilities

4.4.3 Transportation & Road Network

Figure No 30. Road



Figure No 31 Street



4.4.4 Housing condition

Figure No 32 House Condition



4.4.5 Social Infrastructures Facilities , Health, education, community Hall, Library

The list of Social Infrastructure Facility Available in Jhalansar Village

1. Sub centre
2. Primary School
3. Anganwadi

Figure No 33 Anganwadi



figure No 34 Sub center



Figure No 35. Storage Room



Figure No 36. School



Figure No 37. Agriculture bank



Figure No 38. School



Figure No 39. Under Ground Slump



Figure No. 40 Anganwadi



Figure No 41. Samaj



Figure No 42. Under Ground water Tank



Figure No 43. Post Office



Figure No 44. Small industry



Figure No 45. Garden



Figure No 46. GramPanchyat



Figure No 47. Over head Tank



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

There are village Bus-stand and one Anganwadi need for repair and maintenance for Jhalansar Village.

4.4.7 Technology Mobile / WIFI / Internet Usage Details

90% of village population is using Internet services through their Mobile. Besides, Panchayat Building is fully connected with Wi-Fi.

4.4.8 Sport Activity as Gram Panchayat

There is no Sport ground available in the village.

4.4.9 Socio-Culture Facilities, Public Garden / Park / Playground / pound / Other

Recreation Facilities

There are some private centres which provide social facilities and villagers themselves as there is a community hall in the village there is one public garden in the village.

4.4.10 Other Facilities (e. g like foot path development-smart toilets- Coin Operated entry, self-cleansing, waterless, public building)

Figure No 48.Solar Street Light



Figure No 49. District Road



4.4.11 Any Other details

No any other details.

4.5 Electrical Concept

4.6 Existing Institution like – Village Administration _Detail profile

A village is a clustered human settlement or community, larger than a hamlet but smaller than a town, with a population ranging from a few hundred to a few thousand. Though villages are often located in rural areas, the term urban village is also applied to certain urban neighborhoods. Villages are normally permanent, with fixed dwellings; however, transient villages can occur. Further, the dwellings of a village are fairly close to one another, not scattered broadly over the landscape, as a dispersed settlement.

4.6.1 BachatMandli

The group of women's is working in different activities like production & marketing of Vermi Compost (active since 6 years) and Bio pesticide, spices packing, grading & marking etc. They are running BachatMandli for their group members in which members deposit money as savings and if needed, they can take loan from mandli. In the Jhalansar Village there is one Bachat Mandli which handles by Youth of that Village.

4.6.2 DudhMandali

There is no DudhMandali in the village Jhalansar.

4.6.3 Mahila forum

The concept of Mahila Mandal came into existence in 1955 at the time of the first five years plan was about to be over. The women were organized into Mahila Mandals during the second

five year plan with stress on women education, health services for the mother and child, supplementary feeding for the children and women's economic development. The sixth five-year plan basically adopted their pronged strategy, which included thrust on thrust, education and employment. As per our Interaction Survey We did not found any active Mahila Mandal forum Currently in Jhalansar village.

4.6.4 Plantation for the Air Population

Village is fully covered with Trees in each and every streets and each and every place.

4.6.5 Rain Water Harvesting –Waste Water Recycling

Some of the private buildings have the system of rain water harvesting.

4.6.6 Agricultural Development

There is no special attention given to agricultural in this village in present condition. Main crops grown here are only those which are used for animal husbandry.

4.6.7 Any Other

No any other data.

Chapter 5: Technical Option With Case Studies (FOR ANY ONE TOPIC, Take NEW Concept Design, Prototype model with actual costing)

5.1 Concept

5.1.1 Advance Sustainable construction techniques / Practices and Quantity

Surveying

Incorporating advanced construction technology into practice can increase levels of quality, efficiency, safety, sustainability and value for money. However, there is often a conflict between traditional industry methods and innovative new practices, and this is often blamed for the relatively slow rate of technology transfer within the industry. The adoption of advanced construction technology requires an appropriate design, commitment from the whole project team, suitable procurement strategies, good quality control, appropriate training and careful commissioning. Advanced construction technologies are commonly described as including advanced forms of:

- 3D printing.
- Materials.
- Building information modeling (BIM).
- Cladding systems.
- Computer aided design and computer aided manufacturing (CAD/CAM).
- Computer numerical control.
- Construction plant.
- Modern methods of construction.
- Modular construction.
- Offsite manufacturing.
- Prefabrication and preassembly.
- Site investigations and surveying.
- Substructure works.
- Water engineering.
- Temporary works.
- Smart technology.
- Robotics.
- GPS controlled equipment.

Modern methods of construction include:

- Panellised units produced in a factory and assembled on-site to produce a three- dimensional structure.
- Volumetric construction to produce three-dimensional modular units in controlled factory conditions prior to transport to site.
- Hybrid techniques that combine both panellised and volumetric approaches.
- Floor or roof cassettes, pre-cast concrete foundation assemblies, pre formed wiring looms, mechanical engineering composites and innovative techniques such as tunnel form or thinjoint block work.

5.1.2 Soil Liquefaction

Soil liquefaction occurs when the effective stress (shear strength) of soil is reduced to essentially zero. This may be initiated by either monotonic loading or cyclic loading. In both cases a soil in a saturated loose state, and one which may generate significant pore water pressure on a change in load are the most likely to liquefy. This is because loose soil has the tendency to compress when sheared, generating large excess pore water as load is transferred from the soil skeleton to adjacent pore water during untrained loading. As pore water pressure rises, a progressive loss of strength of the soil occurs as effective stress is reduced. Liquefaction is more likely to occur in sandy or nonplastic silt soils, but may in rare cases occur in gravels and clays.

Figure No 50 Soil Liquefaction



A 'flow failure' may initiate if the strength of the soil is reduced below the stresses required to maintain the equilibrium of a slope or footing of a structure. This can occur due to monotonic a loading or cyclic loading, and can be sudden and catastrophic. A historical example is the aberrancy disaster. Casagrande referred to this type of phenomena as 'flow liquefaction' although a state of zero effective stress is not required for this to occur.

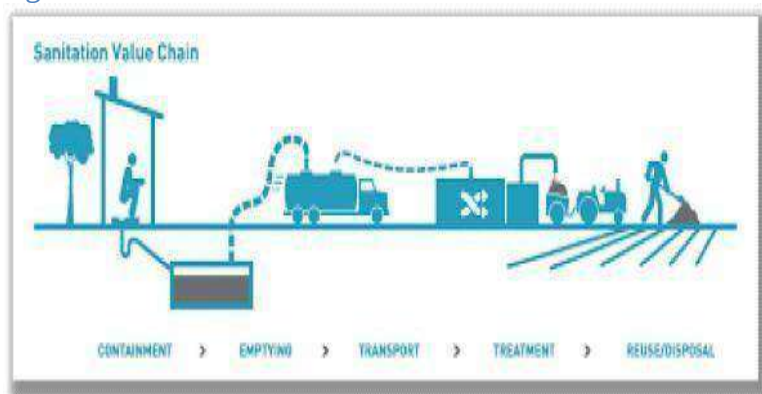
'Cyclic liquefaction' is the state of soil when large shear strains have accumulated in response to cyclic loading. A typical reference strain for the approximate occurrence of zero effective stress is 5% double amplitude shear strain. This is a soil test-based definition, usually performed via cyclic triaxial, cyclic direct simple shear, or cyclic torsional shear type apparatus. These tests are performed to determine a soil's resistance to liquefaction by observing the number of cycles of loading at a particular shear stress amplitude required to induce 'fails'. Failure here is defined by the aforementioned shear strain criteria. The term 'cyclic mobility' refers to the mechanism of progressive reduction of effective stress due to cyclic loading. This may occur in all soil types including dense soils. However, on reaching a state of zero effective stress such soils

immediately dilate and regain strength. Thus, shear strains are significantly less than a true state of soil liquefaction.

5.1.3 Sustainable Sanitation

Sustainable sanitation is a sanitation system designed to meet a certain criteria and to work well over the long- term. The Sustainable Sanitation Alliance includes five features (Criteria) in its definition of "sustainable sanitation." Systems need to be economically and socially acceptable, technically and institutionally appropriate and protect the environment and natural resources.

Figure No 51 Sustainable sanitation



The purpose of sustainable sanitation is the same as sanitation in general to protect human health. However, "sustainable sanitation" attends to all a processes of the system. This includes methods of collecting, transporting, treating and the disposal (Reuse) of waste.

- **Sustainability Criteria:** The main objective of a sanitation system is to protect and promote human health by providing a clean environment and breaking the cycle of disease. In order to be sustainable a sanitation system has to be not a only economically viable, socially acceptable, and technically and institutionally appropriate, but it should also protect the environment and the natural resources. According to the Sustainable Sanitation Alliance, when improving an existing and designing a new sanitation system, sustainability criteria related to the following aspects should be a considered.
- **Health:** Health aspects include the risk of exposure to pathogens and hazardous substances that could affect public health at all points of the sanitation system from the toilet via the collection and treatment system to the point of reuse or disposal. The topic also covers aspects such as hygiene, nutrition and the improvement of a livelihood achieved by the application of a certain sanitation system, as well as downstream effects.
- **Environment and natural resources:** Environment and natural resources aspects involve the required energy, water and other natural resources for construction, operation and maintenance of the system, as well as the potential emissions to the environment resulting from use. It also includes the degree of recycling and reuse of excreta practiced and the effects of these, for example reusing the wastewater, returning nutrients and organic material to agriculture, and the protecting of other nonrenewable resources, for example through the production of renewable energy.

- **Technology and operation:** Technology and operation aspects incorporate the functionality and the ease with which the system can be constructed, operated and monitored using the available human resources. It also concerns the suitability to achieve an efficient substance flow management from a technical point of view. Furthermore, it evaluates the robustness of the system, its vulnerability towards disasters, and the flexibility and adaptability of its technical elements to the existing infrastructure, to demographic and socio-economic developments and climate change.
- **Finance and economics:** Financial and economic issues relate to the capacity of households and communities to pay for sanitation, including the construction, maintenance and depreciation of the system. Besides the evaluation of investment, operation and maintenance costs, the topic also takes into account the economic benefits that can be obtained in “productive” sanitation systems, including benefits from the production of the recyclables, employment creation, increased productivity through improved health and the reduction of environmental and public health costs.
- **Socio-cultural and institutional aspects:** Socio-cultural and institutional aspects take into account the socio-cultural acceptance and appropriateness of the system, convenience, system perceptions, gender issues and impacts on human dignity, the contribution to subsistence economies and food security, and legal and institutional aspects.

Examples

- Pit latrines could be modified to be soil-composting latrines, thus requiring some a wall reinforcement, made shallow and maintained using daily soil additions the pits would be periodically closed and covered with soil in order to allow for sanitization and composting prior to emptying and reuse in agriculture.
- Simple urinals with separate collector systems could be installed instead of using toilets and pit latrines for urination.
- Flush toilets could be modified to use less water or reuse grey water.
- Grey water could be source-separated from the black water from toilets thus simplifying its treatment and providing opportunities for reuse.
- Black water from toilets could be held in conservancy tanks instead of open septic tanks and cess pits and then emptied and transported to biogas reactors, alternatively the toilets could be connected to biogas reactors.
- Cess pits from pour-flush toilets could be equipped with a safety zone of additional filter material to prevent contamination of ground water.
- Above ground dry toilets with urine diversion a could be installed in dry areas lacking water, rocky areas where pits are expensive to dig and areas with high water tables and flooding.

5.1.4 Transport Infrastructure / system

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

- **Roads:** A road is a paved surface to facilitate the movement of a people or goods with means, such as as automobiles, bicycles, buses, vans or trucks. Roads in itself are not an interesting security target, but blocking a road will cause problems with the traffic flow and reach ability of certain parts of the city or area. This can be prevented by designing and to detect a disruption and minimize the consequences, using.
- **Rails:** Rails are the infrastructure for rail transport. A rail road which connects two locations is also called a rail line. As for roads, rails on itself are not an interesting security target, but blocking a railroad will cause large problems with the rail transport.
- **Pedestrian / Bicycle paths:** Pedestrian paths or sidewalks, curbs, pavements, footpaths or platforms are paths alongside a road designated for pedestrians. Bicycle paths comprises of several different forms of cycling infrastructure, from non-segregated pathways aligned next to the road to segregated cycle facilities.

Figure No 52 bicycle paths



Segregated cycle facilities are a form of cycling infrastructure consisting of marked lanes, tracks, shoulders and paths designated for use by cyclists and from which motorized traffic is generally excluded. The term includes bike lanes, cycle tracks, separated bike lanes, road shoulders and side paths located within a road right- of-way.

- **Urban Waterways:** Inter and intra urban transport over waterways such as canals, rivers or other waterways forms a smaller although still important aspect of the urban transport system. For port cities such as Rotterdam, Antwerp or Hamburg the waterway system is of vital importance for their economic development.
- **Subway System:**

Figure No 53 Subway System



A rapid transit, underground, subway, elevated railway, metro or metropolitan railway system is an electric passenger railway in an urban area with a high capacity and frequency, and grade separation from other traffic. Rapid transit systems are typically located either in underground tunnels or on elevated rails above street level.

- **Bridges and Flyovers:** A bridge is a structure built to span physical obstacles such as a body of water, valley, or road, for the purpose of providing passage over the obstacle. A flyover is a bridge, road, railway or similar structure that crosses over another road or railway forming a grade separation. Various different designs are possible depending on the length of the span and the conditions of the site.

Bridges and flyovers form a vital and vulnerable element of a transport system since blocking can cause serious disruptions in the transportation system. Security risks are high since bridges and flyovers are generally difficult to reach in case of emergencies.

- **Terminals:** A terminal is any location where freight and passengers originates, terminates, or is handled in the transportation process. Terminals are central and intermediate locations in the movements of passengers and freight. They often require specific facilities and equipment to accommodate the traffic they handle. Terminals may be used both for interchange of passengers and cargo.

Examples of passenger terminals are airports, railway stations and bus stations. Examples of terminals for cargo are warehouses, trucking terminals, refueling depots, and seaports. All terminals are important for security, since they are potential targets for terrorists. Damage will have a big impact, both economically, life danger of people and by hampering the transportation process heavily. Therefore it is recommended to have an extensive and robust transportation system towards and from the terminal and to locate terminals outside urban areas.

- **Airports:** An airport is a location where aircraft such as fixed-wing aircraft, helicopters, and blimps take off and land. Aircraft may be stored or maintained at an airport. An airport consists of at least one surface such as a runway for a plane to take off and land, a helipad, or water for takeoffs and landings, and often includes buildings such as control towers, hangars and terminal buildings.
- **Train station:** A train station, also called a railroad station or railway station and often shortened to just station, is a railway facility where trains regularly stop to load or unload passengers or freight. It generally consists of a platform next to the track and a station building providing related services such as ticket sales and waiting rooms.
- **Metro station:**

Figure No 54 Metro station



A metro station or subway station is a railway station for a rapid transit system, often known by names such as "metro", "underground" and "subway". Metro stations are very vulnerable for terrorist attacks, as can be seen from this list with underground attacks on the London underground.

- **Bus Terminal:** A bus terminus is a designated place where a bus or coach starts or ends its scheduled route.
- **Freight Terminal:** A freight terminal is a processing node for freight. Most freight terminals are located at ports. They may include airports, seaports, railroad terminals, and trucking terminals. Freight is usually loaded onto and off the transport.
- **Sea port :** A sea port is a location on a coast or shore containing one or more harbors where ships can dock and transfer people or cargo to or from land.

5.1.5 Vertical Farming

Vertical farming is the practice of growing crops in vertically stacked layers. It often incorporates controlled- environment agriculture, which aims to optimize plant growth, and soilless farming techniques such as hydroponics, aquaponics, and aeroponics. Some common choices of structures to house vertical farming systems include buildings, shipping containers, tunnels, and abandoned mine shafts. The modern concept of vertical farming was proposed in 1999 by Dickson Despommier, professor of Public and Environmental Health at Columbia University. Despommier and his students came up with a design of a skyscraper farm that could feed 50,000 people. Although the design has not yet been built, it successfully popularized the idea of vertical farming. Current applications of vertical farmings coupled with other state of the art technologies, such as specialized LED lights, have resulted in over 10 times the crop yield than would receive through traditional farming methods.

There have been several different means of implementing vertical farming system into communities such as: Paignton, Israel, Singapore, Chicago, Munich, London, Japan, and Lincolnshire. The main advantage of utilizing vertical farming technologies is the increased crop yield that comes with a smaller unit area of land requirement. The increased ability to cultivate a larger variety of crops at once because crops do not share the same plots of land while growing is another sought after advantage. Additionally, crops are resistant to weather disruptions because of their placement indoors, meaning less crops are lost to extreme or unexpected weather occurrences. Lastly, because of its limited land usage, vertical farming is less disruptive to the native plants and animals, leading to further conservation of the local flora and fauna.

Vertical farming technologies face economic challenges with large start-up costs compared to a traditional farms. In Victoria, Australia, a “hypothetical 10 level vertical farm” would cost over 850 times more per cubic meter of arable land than a traditional farm in rural Victoria. Vertical farms also face large energy demands due to the use of supplementary light like LEDs. Moreover, if nonrenewable energy is used to meet these energy demands, vertical farms could produce more pollution than traditional farms or greenhouses.

- **Techniques of Vertical Farming Hydroponics:** Hydroponics refers to the technique of growing plants without soil. In hydroponic systems, the roots of plants are submerged in liquid solutions containing macronutrients, such as nitrogen, phosphorus, sulphur, potassium,

calcium, and magnesium, as well as trace elements, including iron, chlorine, manganese, boron, zinc, copper, and molybdenum. Additionally, inert (chemically inactive) mediums such as gravel, sand, and sawdust are used as soil substitutes to provide support for the roots.

Figure No 55 Hydroponics



The advantages of hydroponics include the ability to increase yield per area and reduce water usage. A study has shown that, compared to a conventional farming, hydroponic farming could increase the yield per area of lettuce by around 11 times while requiring 13 times less water. Due to these advantages, hydroponics is the predominant growing system used in a vertical farming.

- **Aquaponics:**

Figure No 56 Aquaponics



The term aquaponics is coined by combining two words aquaculture, which refers to fish farming, and hydroponics the

technique of growing plants without soil. Aquaponics takes hydroponics one step further by integrating the production of terrestrial plants with the production of aquatic organisms in a closed-loop system that mimics nature itself. Nutrient-rich wastewater from the fish tanks is filtered by a solid removal unit and then led to a bio-filter, where toxic ammonia is converted to nutritious nitrate. While absorbing nutrients, the plants then purify the wastewater, which is recycled back to the fish tanks. Moreover, the plants consume carbon

dioxide produced by the fish, and water in the fish tanks obtains heat and helps the greenhouse maintain temperature at a night to save energy. As most commercial vertical farming systems focus on producing a few fast-growing vegetable crops, aquaponics, which also includes an aquacultural component, is currently not as widely used as conventional hydroponics.

- **Aeroponics:** The invention of aeroponics was motivated by the initiative of NASA (National Aeronautical and Space Administration) to find an efficient way to grow plants in space in the 1990. Unlike conventional hydroponics and aquaponics, aeroponics does not require any liquid or solid medium to grow plants in. Instead, a liquid solution with nutrients

is misted in air chambers where the plants are suspended. By far, aeroponics is the most sustainable a soil less growing technique, as it uses up to 90% less water than the most efficient conventional hydroponic systems and requires no replacement of growing medium.

Figure No 57. Aeroponics



Moreover, the absence of growing medium allows aeroponic systems to adopt a vertical design, which further saves energy as gravity automatically drains away excess liquid, whereas conventional horizontal hydroponic systems often require water pumps for controlling excess solution. Currently, aeroponic systems have not been a widely applied to a vertical farming, but are starting to attract significant attention.

5.1.6 Corrosion Mechanism, Prevention & repair Measures of RCC Structure

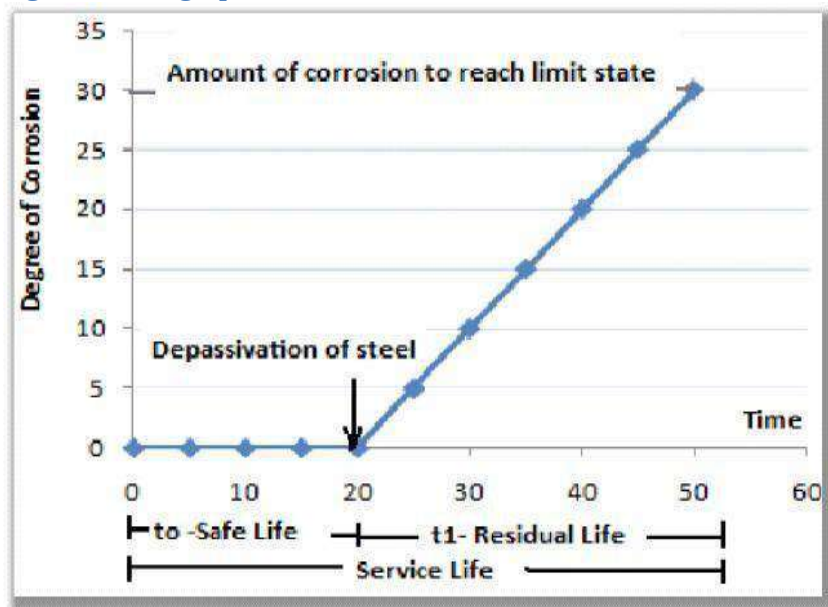
The mechanism of corrosion in aqueous media is of electrochemical nature. This means that the oxidation of the metal is counterbalanced by the reduction of another substance in another region of the metallic surface. Therefore, zones (anodes and cathodes) with different electrochemical potential, develop. In the case of concrete, the electrolyte is constituted by the pore solution, which is very alkaline. This pore solution is formed by mainly a mixture of KOH and NaOH presenting pH values ranging between 12, 6-14. The solution is saturated in $\text{Ca}(\text{OH})_2$. Steel embedded in concrete is naturally protected by this high alkalinity and by the barrier effect of the cover itself. The two main causes of electrochemical corrosion are carbonation and the presence of chlorides. Carbonation usually induces a generalized corrosion while chloride will lead into pitting or localized attack. The corrosion can be easily recognized by the rust presence on the rebar and by the appearance of cracks running parallel to the rebars.

Carbonation: Atmospheric carbon dioxide reacts with the calcium and alkaline hydroxides and cement phases, leading in a lowering of the pore solution pH value until values near neutrality. This process aims into the depassivation of the steel in contact with the carbonated zones.

Chloride attack: The chloride ions may be present in the concrete if they are added in the mix (admixtures, water or aggregates). However, this is fortunately not common. The most frequent is that chlorides penetrate from outside, either due to the structure is placed in marine

environments or because deicing salts are used. Chlorides induce local disruption of steel passive layer dealing into pits or localized attack. In submerged zones or in fully saturated concrete, chlorides penetrate by diffusion.

Figure No 58 graph Of Service Life



Preventing corrosion:

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.

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-alkalise 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

Corrosion inhibitor repair techniques A recent development is the impregnation with chemical corrosion inhibitors which are widely used in the power generation, chemical and manufacturing industries. Recently, attempts have been made to introduce these chemicals into hardened concrete. If successful, then these could be good, relatively simple methods of increasing the life span, reducing maintenance and providing a 'minimum intervention' method of slowing or stopping corrosion. One of the most effective corrosion inhibiting systems is also one of the simplest. An inorganic admixture made with calcium nitrate, which is added to the concrete before casting, performs equally well or better than more complicated systems that include sealers applied to the concrete or coatings on the steel bars.

Repair Measure of RCC structure

The techniques and materials used for repair/rehabilitation/retrofitting and maintenance depend upon the extent of deterioration. Retrofitting/strengthening is a technical option for improving the strength and other attributes of resistance of building to seismic and other forces. The requirement of retrofitting of any structure arises mainly due to the fact that old buildings which were designed as per old Codal provisions [5, 6, 7] may not be having adequate strength as per requirement of latest Code provisions. Presently number of companies is manufacturing various construction chemicals for repair/rehabilitation of civil engineering structures, in India. Various products manufactured by these companies cover all the repair materials available in India. However, their product range & utility varies. In case corrosion of steel has not started but carbonation of concrete has taken place unto reinforcement surface, coating of required thickness can be applied to prevent/retard the carbonation process. Depending upon the severity of carbonation, polymer or epoxy resins or polymer modified mortar concrete provide adequate protection. Such coating also stops penetration of chloride and other deleterious elements. Whenever the process of corrosion has set in, the restoration techniques depend on the extent of damage to the concrete and or steel. But following guidelines are common: -

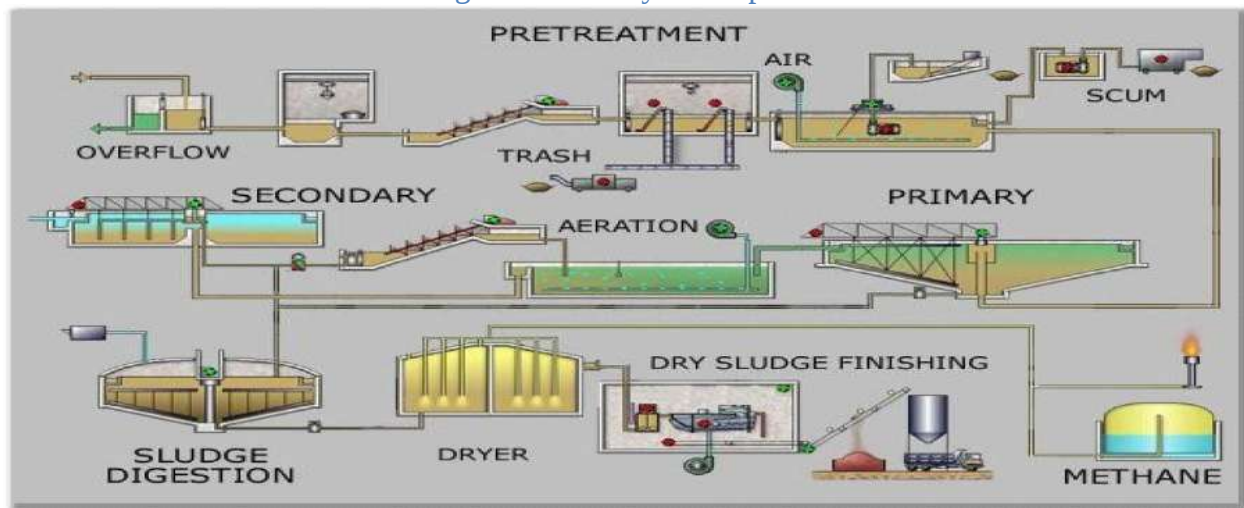
- Remove all unsound concrete & expose reinforcing steel all round.
- De-rust the steel by appropriate methods viz sand blasting, brushing & applying rust removers.
- Restore reinforcement with anchorages i.e. shear connectors, wherever required.
- Apply tack/binding coat of polymers or Epoxy based materials.
- Use one of the several stitching techniques to restore concrete to the original surface level.
- Injection of cement slurry or polymer modified slurry or epoxy of suitable grade to fill up the pores, internal cracks or segregation.
- Apply suitable protective coating.

5.1.7 Sewage Treatment Plant

Sewage treatment is the process of removing contaminants from municipal wastewater, containing mainly household sewage plus some industrial wastewater. Physical, chemical, and biological processes are used to remove contaminants and produce treated wastewater that is safe enough for release into the environment. A by-product of sewage treatment is a semi-solid waste or slurry, called sewage sludge. The sludge has to undergo further treatment before being suitable for disposal or application to land. Sewage treatment may also be referred to as wastewater treatment. However, the latter is a broader term which can also refer to industrial wastewater. For most cities, the sewer system will also carry a proportion of industrial effluent to the sewage treatment plant which has usually received pre-treatment at the factories themselves to reduce the pollutant load. If the sewer system is a combined sewer then it will also carry urban runoff to the sewage treatment plant. Sewage water can travel towards treatment

plants via piping and in a flow aided by gravity and pumps. The first part of filtration of sewage typically includes a bar screen to filter solids and large objects which are then collected in dumpsters and disposed of in landfills. Fat and grease is also removed before the primary treatment of sewage.

Figure No 59 Layout of plane



Layout of Sewage treatment plant:

The following point should be kept in mind while giving layout of sewage treatment plant:

1. All the plants should be located in order of sequence, so that sewage from one process should directly go into the next process.
2. If possible all the plants should be located at such elevation that sewage can flow from one plant into next under its force of gravity.
3. All the treatment units should be arranged in such a way that minimum area is required, to insure economy in its cost.
4. Sufficient area should be occupied for future extension, in the beginning.
5. The site of treatment should be very neat and give very good appearance.
6. Staff quarters and office should also be provided near the treatment plant, so that operators can watch the plant easily.
7. By-pass and overflow weirs should be provided to cut off operation any unit when required.
8. All channels, conduits should be laid in such a way as to obtain flexibility convenience and economy in the operation.

5.1.8 Technical Case Study On “INS Khukri Memorial”:

We Have Selected an Already Constructed site named INS Khukri as a technical case study. It is located on the Diu and collage to the distance is 165 Km.

Indian Naval Ship Khukri was a frigate of the Indian Navy. During the India Pakistan War in 1971 she fell prey to three torpedoes fired at her by a Pakistani Submarine. She sank 40 nautical miles off the coast of Diu taking down with her a crew of 18 Officers and 176 sailors. Captain Mahendra Nath Mulla Mahavir Chakra (Post Honour) of the Indian Navy, the then Commanding Officer of the ship, chose to go down with the warship. The heroic act of Captain Mulla and his valiant crew is a shining example of unyielding spirit and indomitable courage glorifying the heist traditions of the Indian Navy. There is an amphitheater just adjoining the memorial.

The memorials was inaugurated on 15th December, 1999 in memory of the officers and the sailors who chose to go down with the warship INS KHUKRI when it was hit by a salvo of three torpedoes fired from PNS Hangor, a Pakistani Submarine on 09/12/1971 during the INDO-PAK war.

INS Khukri was a Type 14 (Blackwood-class) frigate of the Indian Navy. She was sunk off the coast of Diu, Gujarat, India by the Pakistan Navy Daphné-class submarine Hangor on 9 December 1971 during the Indo-Pakistani War of 1971. This was the first warship sunk in action by a submarine since the Korean War. It remains the post-Independence Indian navy's only warship to be lost in war to date.

Figure no 60 location of INS Khukri memorial

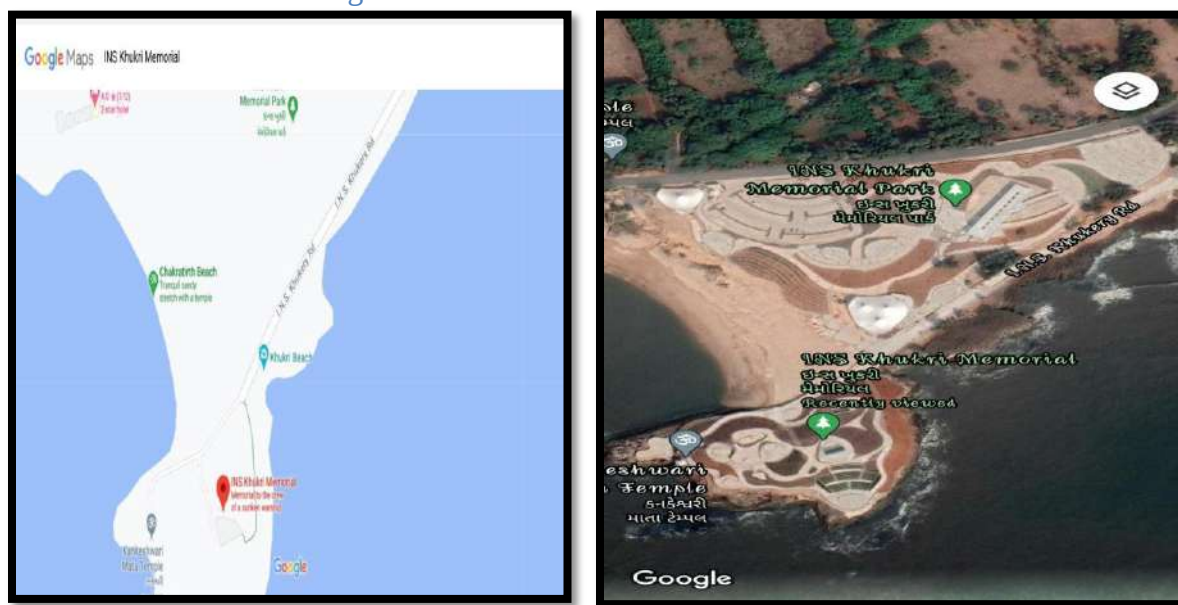


Figure No 61 INS Khukri Night view



History:-

INS Khukri was a Type 14 frigate of the Indian Navy. She was sunk off the coast of Diu, Gujarat, India by the Pakistan Navy Daphné-class submarine Hangor on 9 December 1971 during the Indo-Pakistani War of 1971. This was the first warship sunk in action by a submarine since the Korean War. It remain the post-independence Indian navy's only warship to be lost in war to date.

Name	INS Khukri
Namesake	Khukri
Builder	j. Samule White, Cowes
Laid down	29 December 1955
Lunched	20 November 1956
Commissioned	16 July 1958
Identification	Pannant Number: F 149

Flate: Torpedoed and sunk by Pakistan Navy submarine PNS hangor on 9 Decembers 1971

Displacements : 1,180 Long tons(1,200 t) Full Load

Length: 300 ft (91 m) pp 310 ft (94 m)

Beam: 33ft (10 m)

Draught: 15.5 ft (4.7 m)

Propulsion: Y- 100 Plant (2× Babcock & Wilcox Boilers, Steam Turbines on 1 shaft 15,000 shp (11MW))

Speed: 27.8 Knots (51 Km/h) Maximum, 24.5 Knots (45Km/h) Sustained

Range: 5,200 Nautical miles (9,630Km) at 12 Knots (22Km/h)

Complement: 150

Sensors and Processing Systems: Radar Type 974 Navigation, Sonar Type 174 search

Sonar Type 162 Target Classification, sonar Type 170 targeting

Armament: 3×40 mm Bofors gun Mark 7, 2× Limbo Mark 10 A/S mortars

Sinking of INS Khukri: Part of the naval conflict of indo-Pakistan war of 1971

Date: 9 December 1971

Location: Arabian Sea

Result: INS Khukri sank

Design:-

Figure No 62 INS Khukri drone view



After studying status of "INS Khukri memorial" Across the country, a team of historians, artist, and academics' choice a design submitted by the sanvawaliya seth Gardens Pvt. Ltd. The design of memorial area 36000 sq. meter. The length is a 320.20 meter, width is a 235 meter and high at is a 13 meter.



This was addressed by maintaining a slenderness ratio of 16:19 rather than the customary 8:14 ratio of other tall buildings. The memorial is built to withstand winds of up to 110 kilometers per hour and earthquakes measuring 6.5 on the Richter scale which are at a depth of 10 km and within a radius of 12 km of the memorial. This is aided by the use of two 250 tonne tuned mass dampers ensuring maximum stability.

Funding:-

The "INS Khukri Memorial" was built by a Government of INDIA. With most of the money raised in Government of INDIA in Tourism department. The ₹ 17 crore of raised in Tourism department and ₹ 3 crore of raised in Government of INDIA was allocated for the construction of the "INS Khukri Memorial".

The INS Khukri memorial opening of President of India **Mr. Ram Nath kovind** on 26th December 2020.

Construction:-**INS Khukri Memorial Height**

Studying at 13 meter (43 feet) above ground level . The 5 to 13 meter heights of Dorm and 0 to 5 meter height of plinth level.

INS Khukri Memorial Cost:-

Ting is nearly ₹ 20 crore work on the 13 meter tall INS Khukri memorial began in 2019 and completed in 2020.

INS Khukri Memorial Construction

Built by over 11 engineer and 150 workers users of 70000 begs of cement, 480 tones of reinforce steel bars in Use of "INS Khukri memorial".

Figure No 63 construction time image



The "INS Khukri memories "is built to withstand wind velocity up to 60 meters per second and earthquakes measuring below 6.5 on the Richter scale.

Figure No 64 contraction work check



Features:-

The INS Khukri memorial are dividing in four Zone and all zones are accessible to the public. The first zone is a INS Khukri memorial. The second zone is a park and tree Barrington are accessible for the public. The third zone is a bitch front of the memorial. And forth zone is shopping centre .so the museum has been developed to the remain list for the "INDIAN NEVY".

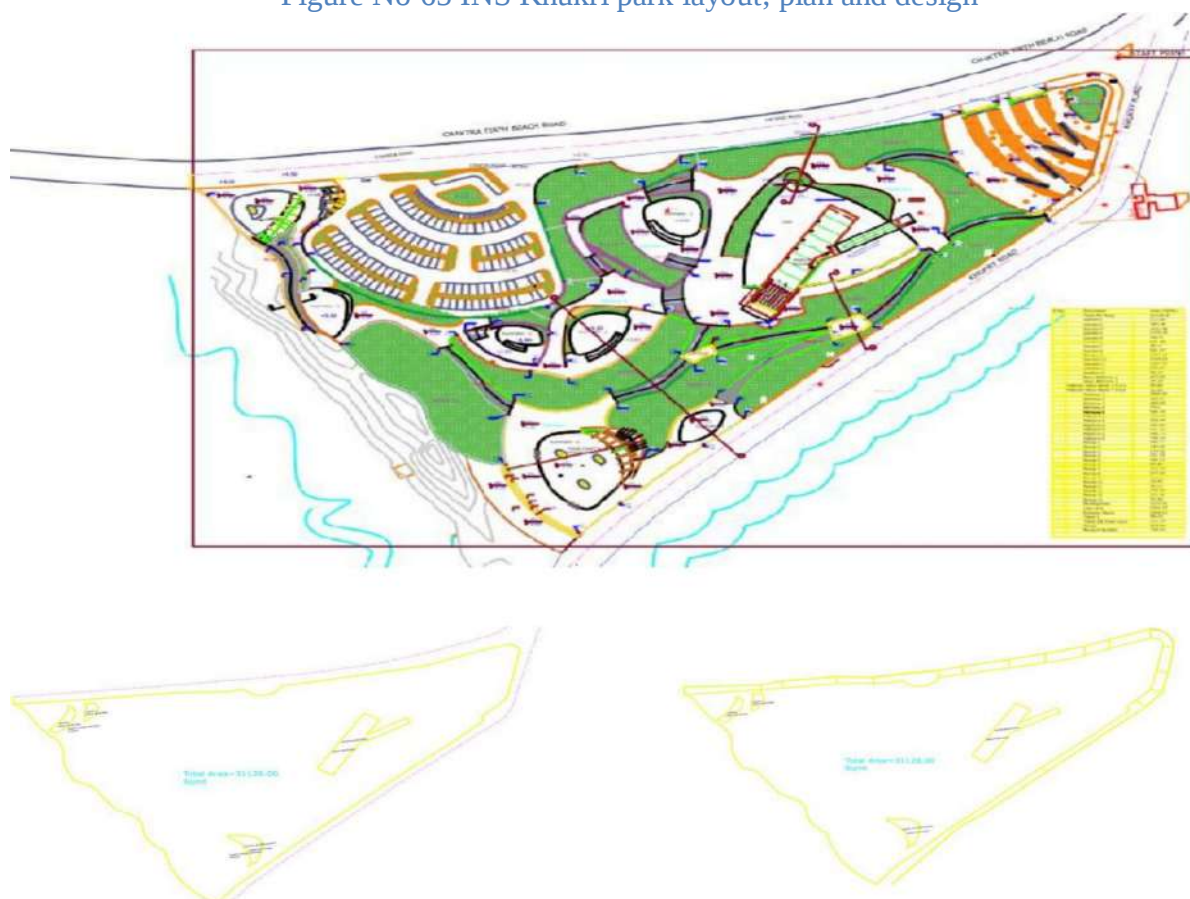
Proposed And planned Infrastructure:-

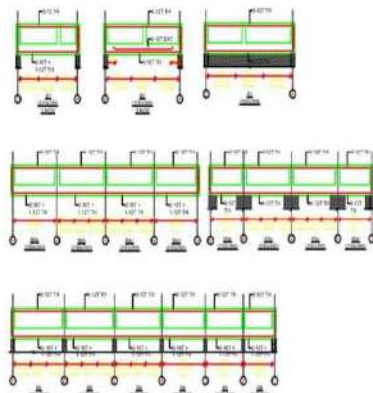
A museum has been set up for the Indian Navy's INS Khukri ship to know the history of the shipwreck. It has been development a popular tourist point.



INS Khukri Memorial Architect

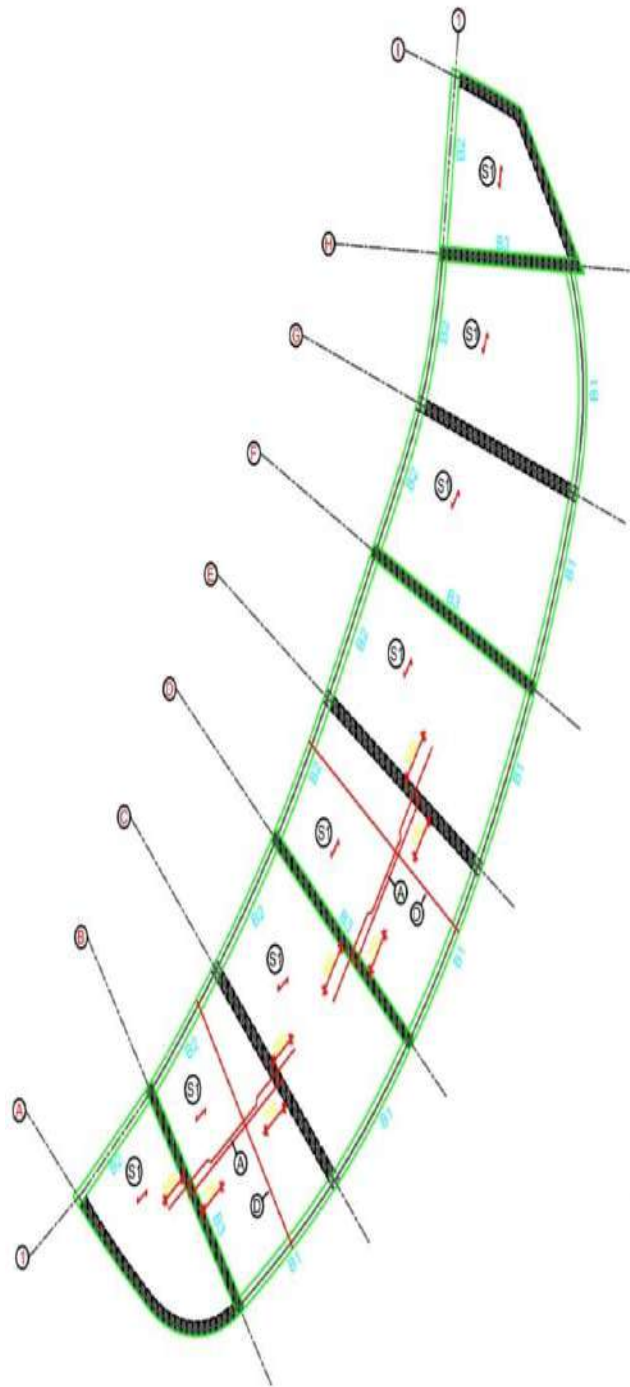
Figure No 65 INS Khukri park layout, plan and design





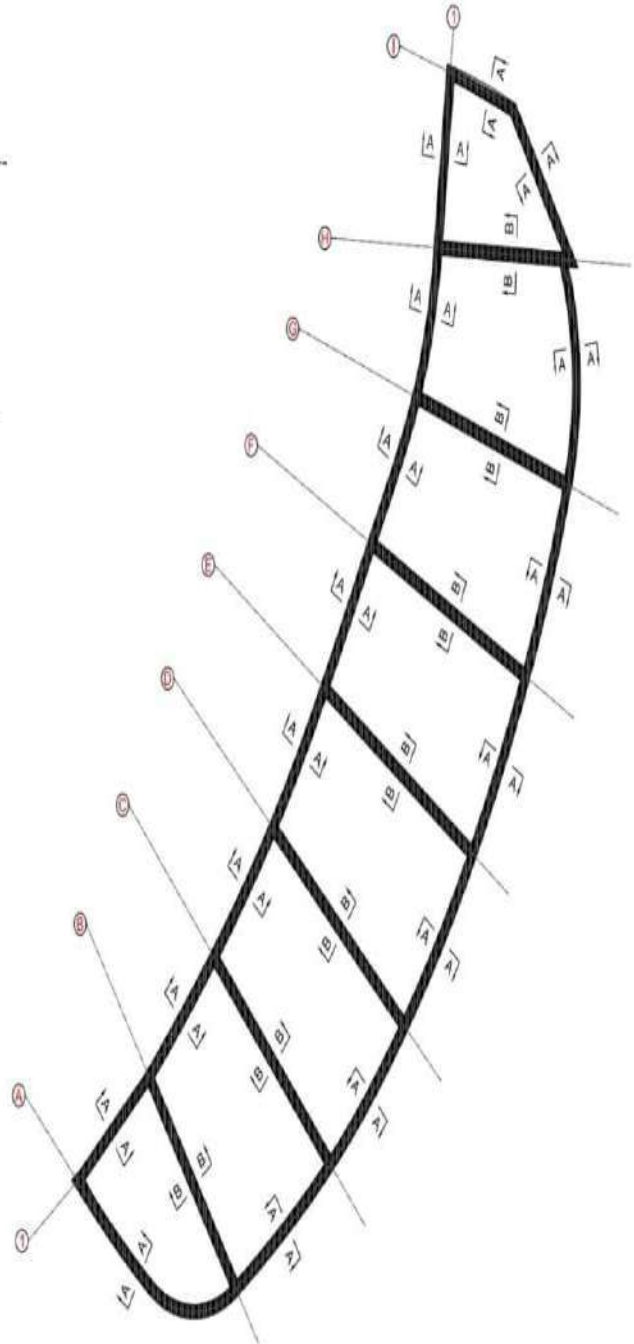
SLAB STEEL DETAILS

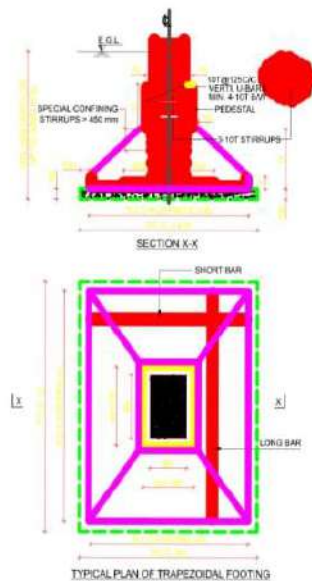
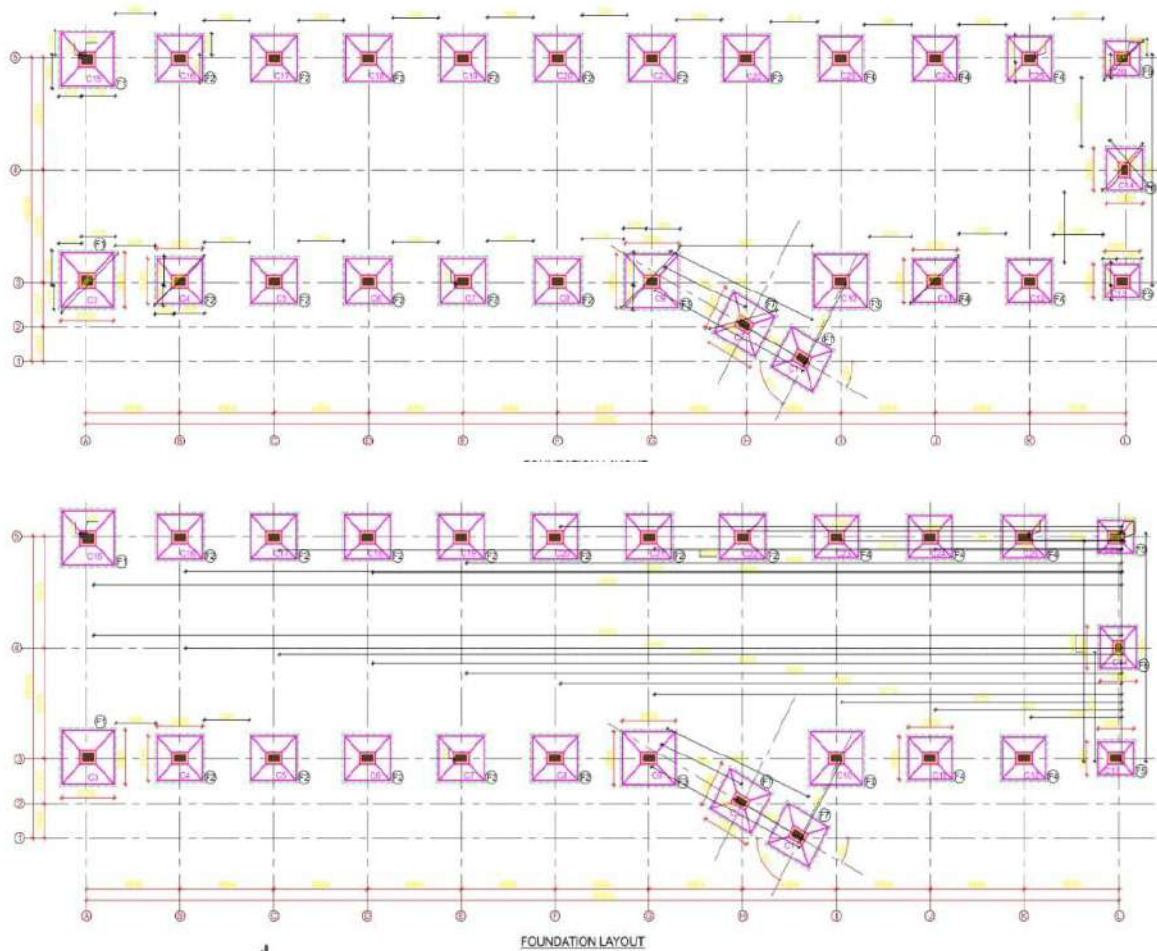
BAR MARK	DESCRIPTION
A	8T @ 125 C/C ALT. BT. UP.
B	8T @ 150 C/C ALT. BT. UP.
C	8T @ 250 C/C EXT. TOP
D	8T @ 150 C/C DIST.



GROUND FLOOR SLAB LVL. BEAM LAYOUT

NOTE:- ALL SLAB ARE AT BEAM BOTTOM, ALL BEAMS ARE INVERTED.
ALL SLAB ARE 125 THK. EXCEPT OTHERWISE SPECIFIED.



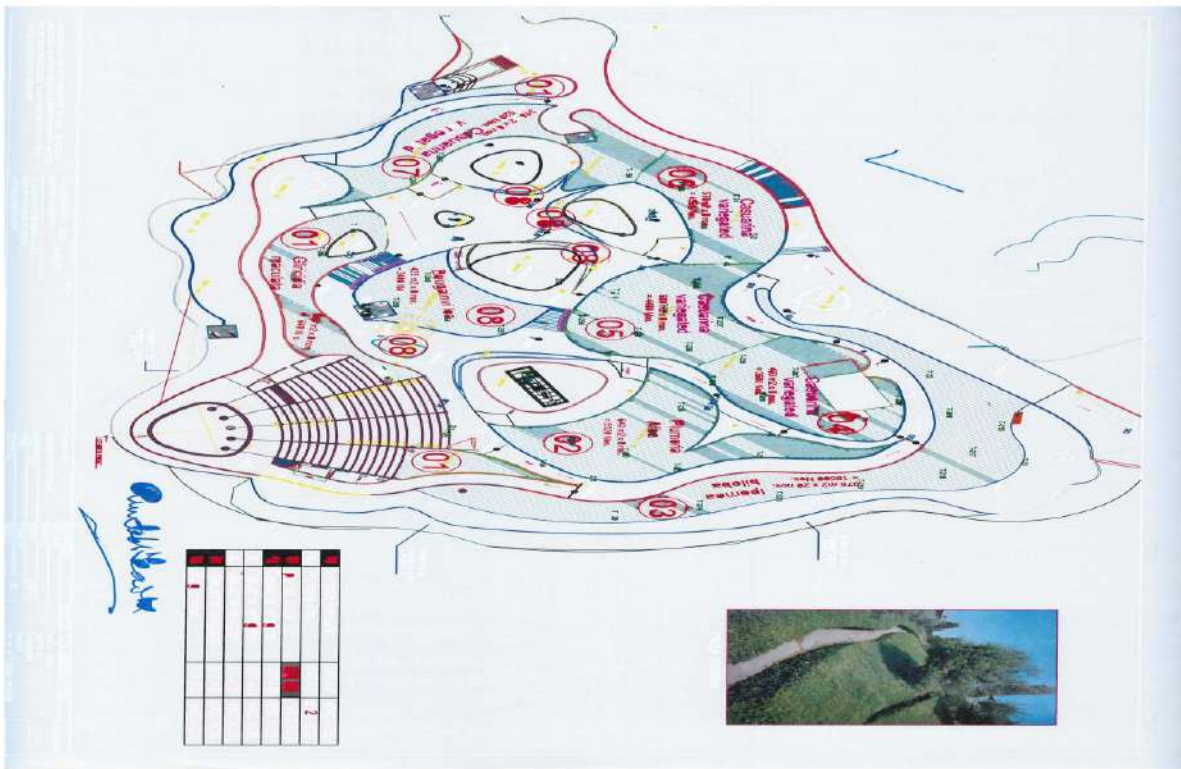


SCHEDULE OF COLUMN SIZE

COLUMN NO.	COLUMN SIZE
C1, C2, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26	500 x 600
C3, C15	450 x 600
C14	350 x 450

SCHEDULE OF FOOTINGS (TRAPEZOIDAL SLOPED)

FOOTING NO.	FOR COLUMN NOS.	P.C.C. SIZE (l x b)	CONCRETE GRADE	FOOTING SIZE		FOOTING DEPTH	REINFORCEMENT		PEDESTAL SIZE L x B x H
				L	B		MAIN STEEL LONG SPAN	MAIN STEEL SHORT SPAN	
F1	C3, C15	2950 x 2800	M30	2750	2600	750	12T-125 C/C	12T-125 C/C	750 x 600 x 300
F2	C4, C5, C6, C7, C8, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26	2800 x 2350	M30	2400	2150	600	10T-100 C/C	10T-100 C/C	750 x 500 x 300
F3	C9, C10	3000 x 2750	M30	2800	2650	750	12T-125 C/C	12T-125 C/C	750 x 500 x 300
F4	C11, C12, C23, C24, C25	2500 x 2250	M30	2300	2050	525	10T-100 C/C	10T-100 C/C	750 x 500 x 300
F5	C13, C26	2950 x 1800	M30	1850	1600	450	10T-125 C/C	10T-125 C/C	750 x 500 x 300
F6	C14	2200 x 2100	M30	2000	1900	525	10T-125 C/C	10T-125 C/C	600 x 500 x 300
F7	C1, C2	2950 x 2400	M30	2450	2200	525	10T-125 C/C	10T-125 C/C	750 x 500 x 300



What are the Advantages of the INS Khukri Memorial?

Advantages of INS Khukri Memorial:-

- It will boost income from tourism and generate a large number of hotels, transports and other services.
- Increase in the transport, restaurants, accommodation, service sectors.
- Local people getting employment.
- The local business has seen lots of progress It will be contribute to the national income of India through tourism for centuries.

Tourism:-

The INS Khukri memorial opening of President of India Mr. Ram Nath Kovind on 26th December 2020. Daily many people are visit this place.

Information and details in brief in below videos:-

<https://www.youtube.com/watch?v=B8Ezs8QlOLg>

<https://www.youtube.com/watch?v=VCnRLxNcOGg>

<https://www.youtube.com/watch?v=-Nw2SB8umVs>

<http://diutourismgov.in/placedetails/placedetail/16>

<http://diu.gov.in/inskhukri.php>

<https://www.nativeplanet.com/diu/attractions/ins-khukri-memorial/>

Figure No 66 INS Khukri (F 149)





Chapter 6. Swachh Bharat Abhiyaan (Clean India)

Swachh Bharat Abhiyan (SBA) (or Swachh Bharat Mission (SBM) or Clean India Mission is a campaign in India that aims to clean up the streets, roads and infrastructure of India's cities, smaller towns, and rural areas. The objectives of Swachh Bharat include eliminating open defecation through the construction of household-owned and community owned toilets and establishing an accountable mechanism of monitoring toilet use. Run by the Government of India, the mission aims to achieve an Open-Defecation Free (ODF) India by 2 October 2019, the 150th anniversary of the birth of Mahatma Gandhi, by constructing 12 million toilets in rural India at a projected cost of Rs. 1.96 lakh crore. The campaign was officially launched on 2 October 2014 at Rajghat, New Delhi by Prime Minister Narendra Modi. It is India's largest cleanliness drive to date with 3 million government employees, school students, and college students from all parts of India participating in 4,041 statutory cities, towns and associated rural areas.

6.1 Swachhta need in allocated village – Existing situation with Photograph

The Jhalansar village is very clean village. The internal streets and Roads are very clean. There is a system of door to door collection of waste from residential and commercial. But there is no Public sanitation in whole village. Also at some places where there is no usage of and, it has become quite polluted and is necessary to clean those places.

Figure No 67. Street A



Figure No 68. Street B



Figure No.69 Street C



Figure No 70 street D



6.2 Guidelines – Implementation in allocated village with Photograph

As the work of cleaning the old type of dustbins of Municipal Corporation comes under the Gram Panchayat or Municipal Corporation, it should be properly emptied and new dustbins for dry and wet waste should be provided separately and it should be maintained properly and regularly.

Figure No. 71 Dustabin



The design of Public sanitary blocks would be given by us, so they should be constructed by the government if designed properly. At rest of the few places left, the villagers should clean it themselves as very less area would be come under that part.

6.3 Activities Done by Student for allocated village with Photograph

- If there was any dirt in the sub centre, it was cleaned and a pledge of cleanliness was taken from its staff.
- The drug was sprayed to prevent further spread of mosquito infestations, so that diseases' like dengue do not spread
- While traveling doesn't throw any paper or any waste on road. Keep it in your beg or pocket (as it is a dry waste you can them in your beg/pocket).
- Keep paper begs with yourself to store wet and throw them in dustbin only.
- Spitting on road (as it can be the reason of viral disease).
- Avoid use of plastic bag.
- Follow government's rules and regulations.
- If someone is breaking the rules then make them aware of it.
- Stop your friends if they are making such mistakes.
- Spread awareness to keep our village clean.

Figure no 72 medicine spry



Figure no 73 clean pledge



figure no 74 people pledge



Chapter 7. Village condition due to Covid-19

7.1 Taken steps in allocated village related to Existing Situation with

Photograph

With, help of govt. agency should check temperature with thermal gun of villager. In which, those people who have temperature they have recommed for medical advuse from expert and “Dhanvantari Rath” visit all streets of village and they are providing necers any medical advise regarding Coivd –19.

Figure No 75. Dhanvantri Rath



Figure No 76. medical chek up



7.2 Activities Done by Students for allocated village with Photograph

Volumeter of student they have took initiator like they are want to make social distance of customer their frequently visited at shop. They made circle and advised shopkeeper and consumer they have stood in this circle and regular maintain it.

Figure No 77. social distance A



Figure No 78. Social Distance B



7.3 Any other steps taken by the student / Villagers

Grampanchayet should be took initiated like those people who came outsider of village they have check temperature and gave 14 days corona quarantine center facilities or home quarantines recommendation and maintain proper list of outdoors. Those are very benefit foe identify people of outsider.

Figure No 79. Register A

Sl. No.	Name	Address	Age	Gender	Occupation	Health Status	Quarantine Status	Remarks
1	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...
41	...	...	...	...	...	...	...	...
42	...	...	...	...	...	...	...	...
43	...	...	...	...	...	...	...	...
44	...	...	...	...	...	...	...	...
45	...	...	...	...	...	...	...	...
46	...	...	...	...	...	...	...	...
47	...	...	...	...	...	...	...	...
48	...	...	...	...	...	...	...	...
49	...	...	...	...	...	...	...	...
50	...	...	...	...	...	...	...	...

Figure No 80. Register B

Sl. No.	Name	Address	Age	Gender	Occupation	Health Status	Quarantine Status	Remarks
1	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...
24	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...
31	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...
38	...	...	...	...	...	...	...	...
39	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...
41	...	...	...	...	...	...	...	...
42	...	...	...	...	...	...	...	...
43	...	...	...	...	...	...	...	...
44	...	...	...	...	...	...	...	...
45	...	...	...	...	...	...	...	...
46	...	...	...	...	...	...	...	...
47	...	...	...	...	...	...	...	...
48	...	...	...	...	...	...	...	...
49	...	...	...	...	...	...	...	...
50	...	...	...	...	...	...	...	...

Chapter 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)

8.1 Design Proposals

In tachometric survey done by us, we observed that the basic physical infrastructure, socio-culture infrastructure, sustainable infrastructure, physical infrastructure includes sources of drinking water, water tank, drainage system, road network, electricity distribution, sanitation facilities and irrigation system, social infrastructure includes school, colleges, Anganwadi, hostel, sub center, clinics, sustainable infrastructure include Bio-gas plant, solar street lights, rain water harvesting, renewable energy source social- cultural facilities include community hall, public library, public garden, pond celebration center, cinema hall, assembly polling station, birth and death registration office etc.

8.1.1 Sustainable Design (Civil) BIO-GAS Plant

Scenario:- Biogas plant, one is to provide as sustainable source to villagers and second is to reduce the pollution and disease occurred due to cow dung, and fertilizer waste. Bio gas plant is one of the economical solutions for renewable energy sources for a rural area. It transforms rural village into a clean village and also provides gas as energy source and gives fertilizer at end.

Existing situation Jhalansar village:- In this village Bio - gas plant is not in the village. The village people are not using sustainable energy sources. So we give design of bio gas plant so that people can use for fuel purpose with economic.

- Bio-gas plant is one of the plants for renewable energy sources. It transforms rural village into a clean village and provides gas as energy source and gives fertilizer at end.
- Day to day operation
- Daily 4000-5000 kg cow dung is fed into the plant. The amount of cow dung fed varies with number of cattle present (400/animal/day). Poultry waste and kitchen waste can also be added if it is available.
- Equal amount of water is added in the inlet tank, mixed (manually), and let in the digester. Water is procured manually from nearby wells (Maximum) 50 footway.
- The availability of water is not a problem as normally every household that has cattle has that much amount of water available. Entire operation of biogas plant is done by the woman in the household which calls upon extra efforts to be put in by her.

- The gas collected in the dome after digestion is used as and when required. The usability of gas depend on its pressure inside the dome. The output slurry is dried and used as manure in beneficiary's own farms. Initial cost of the plant.

DESIGN OF BIO-GAS PLANT

Total no of animal = 400

As per standard data assume per day dung of animal = 10.5kg

So, total dung per day = $400 \times 10.5 = 4200\text{kg/day}$

1) Design of Digester:-

Assume retention period = 70 days

Now total amount of slurry per day = total dung/day + water amount

$$= 4200 + 2(4200)$$

$$= 12.60\text{m}^3/\text{day}$$

Digester volume = $S \times R$

$$= 12.60 \times 70 = 882\text{m}^3$$

Assume cylindrical shape biogas plant,

Total volume of digester = $\pi r^2 h$

$$\therefore 882 = \pi r^2 \times 10$$

$$R = 5.3\text{m}$$

So, dimension is $h = 10\text{m}$, $r = 5.3\text{m}$

2) Design of gas holder:-

Assume digester temp = 26.28°

Now, specific gas production = 37 lit/day

Daily gas production = $G_d \times \text{feed volume}$

$$= 37 \times 12600$$

$$= 466\text{m}^3$$

Assume gas holder capacity = 60%

Gas holder volume

= daily gas production x capacity of holder

$$= 466 \times 0.6$$

$$= 280 \text{m}^3$$

$$\text{Volume} = \pi r^2 h$$

$$280 = \pi r^2 \times 1$$

$$R = 5.6 \text{m} \quad H = 1 \text{m}$$

3) design of inlet and outlet tank:-

total volume of slurry mix deposit

$$= 12.60 \text{m}^3/\text{day}$$

Assume two time filling operation in plant

so, take total volume for slurry = $12.6/2$

$$= 6.3 \text{m}^3/\text{day}$$

Provide rectangular tank, so total volume for one time mixing of slurry = $L \times B \times H$

$$8 = L \times B \times 1$$

$$L = 4 \text{m},$$

$$B = 8,$$

$$H = 1 \text{m}$$

$$6.3 \text{ m}^3/\text{day} \leq 8 \text{ m}^3/\text{day}$$

Hence OK.

Provide same size outlet.

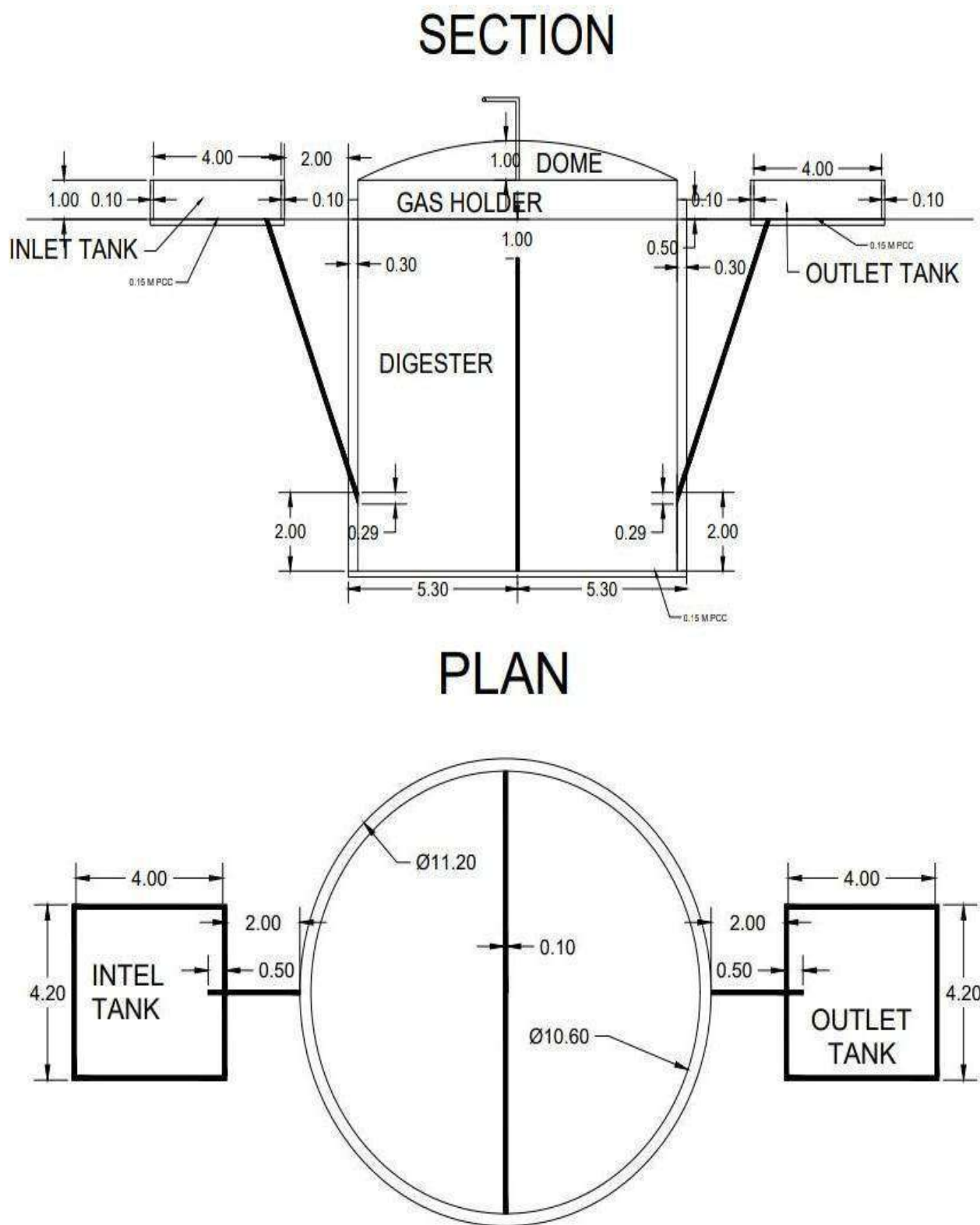


Figure No 81 Bio-gas Plant

• **Measurement Sheet For Bio-Gas Plant:-**

Table No 12. Measurement Sheet For Bio-Gas Plant

MEASUREMENT SHEET						
Sr. No	DESCRIPTION	NO.	LENGT H(L)	WIDTH (W)	HIGHT (H)	QUANTIY
1.	Excavation for biogas plant digester					
A	Exaction up to 1.5m					
	H= 1.5m					
	R= 5.6m					
	volume= $\pi r^2 h = \pi \times 5.6^2 \times 1.5 = 147.78m^3$	1			1.5	147.78
B	Excavation up to 1.5 to 3m	1			1.5	147.78
C	Excavation up to 3 to 9.5m					
	H= 6.5m					
	R= 5.6m					
	volume= $\pi r^2 h = \pi \times 5.6^2 \times 6.5 = 640.38m^3$	1			6.5	640.38
2	Providing and laying PCC, d =11.2m					
	$A = \pi d^2/4 = \pi \times 11.2^2/4 = 98.52m^2$	1	98.52m ²		0.15	14.77
	PCC at inlet/outlet tank					
	L = 4+0.2+0.2 = 4.4m	2	4.4	4.4	0.15	5.808
					Total	20.57
3	First class brick masonry C:M(1:6) for digester ,0.3m					
	H = 10.5m					
	$A = \pi(D^2 - d^2)/4 = (11.2^2 - 10.6^2)/4 = 10.27m^2$	1	10.27		10.5	107.83
4	For inlet/outlet tank, 0.1m					
	Lw = 4.2m	2	4.2		1	8.4
	Sw = 3.6m	2	3.6		1	7.2
	Center wall in digester	1	10.6		7.5	79.5
					Total	95.1
5	RCC work of dome of gas holder dome					
	H ₁ = 1.2m , h ₂ = 1m					
	R ₂ = 5.4m					
	B= 0.2m					
	R ₁ = 5.6m					
	Volume = $\pi h_1^2(3R_1 - h_1)/3 - \pi h_2^2(3R_2 - h_2)/3$					
	$= \pi \times 1.2^2(3 \times 5.6 - 1.2)/3 - \pi \times 1^2(3 \times 5.4 - 1)/3$					
	$= 23.52 - 15.91 = 7.61m^3$	1				7.61
6	Providing mild steel reinforcement in RCC Work					
	Quantity=1%ofvolumeofconcrete					
	$= 7.61 \times 78.54 = 597.68kg$					597.68

• **Abstract Sheet Bio-Gas Plant:-**

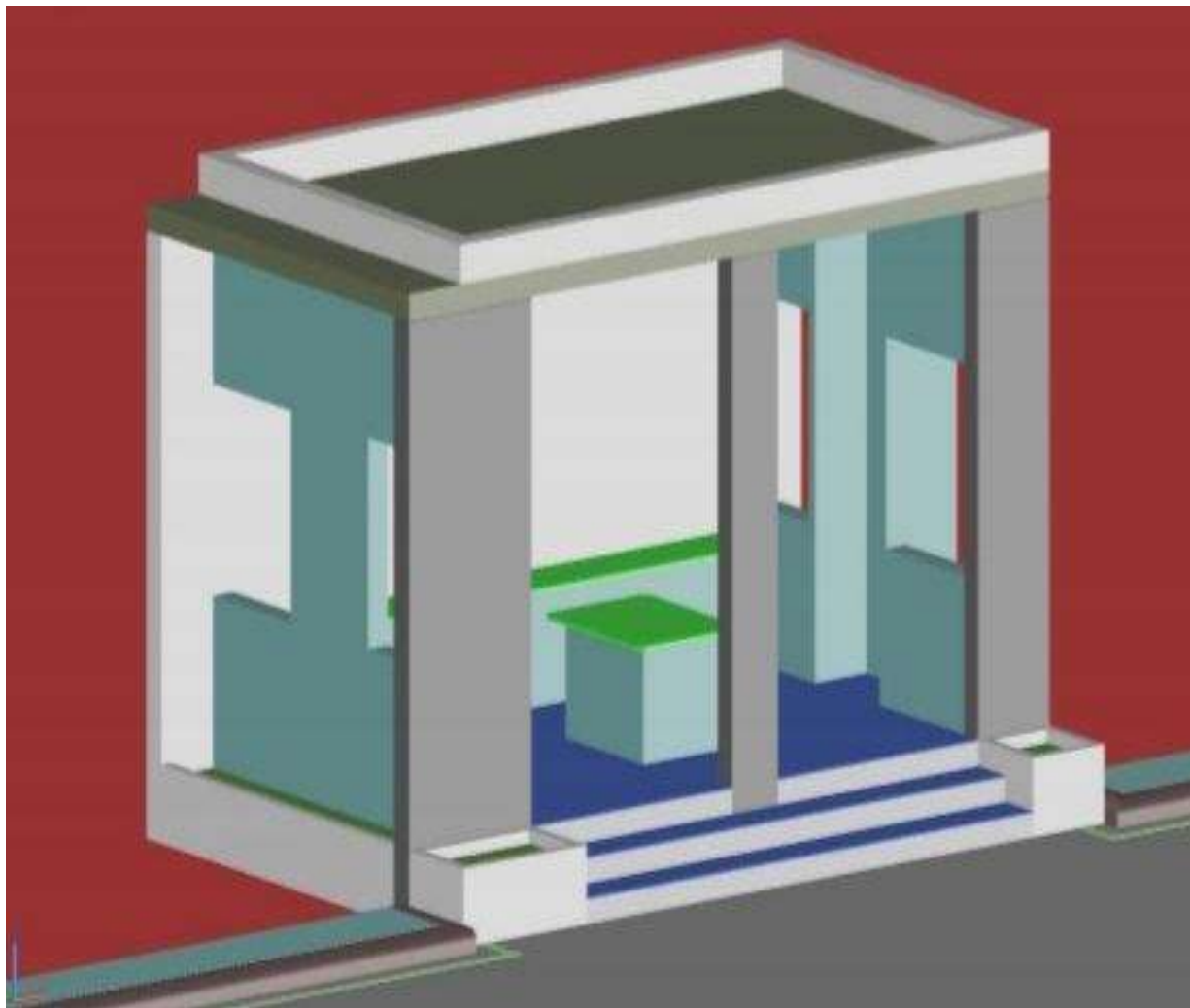
Table No 13 Abstract Sheet for Bio-Gas Plant

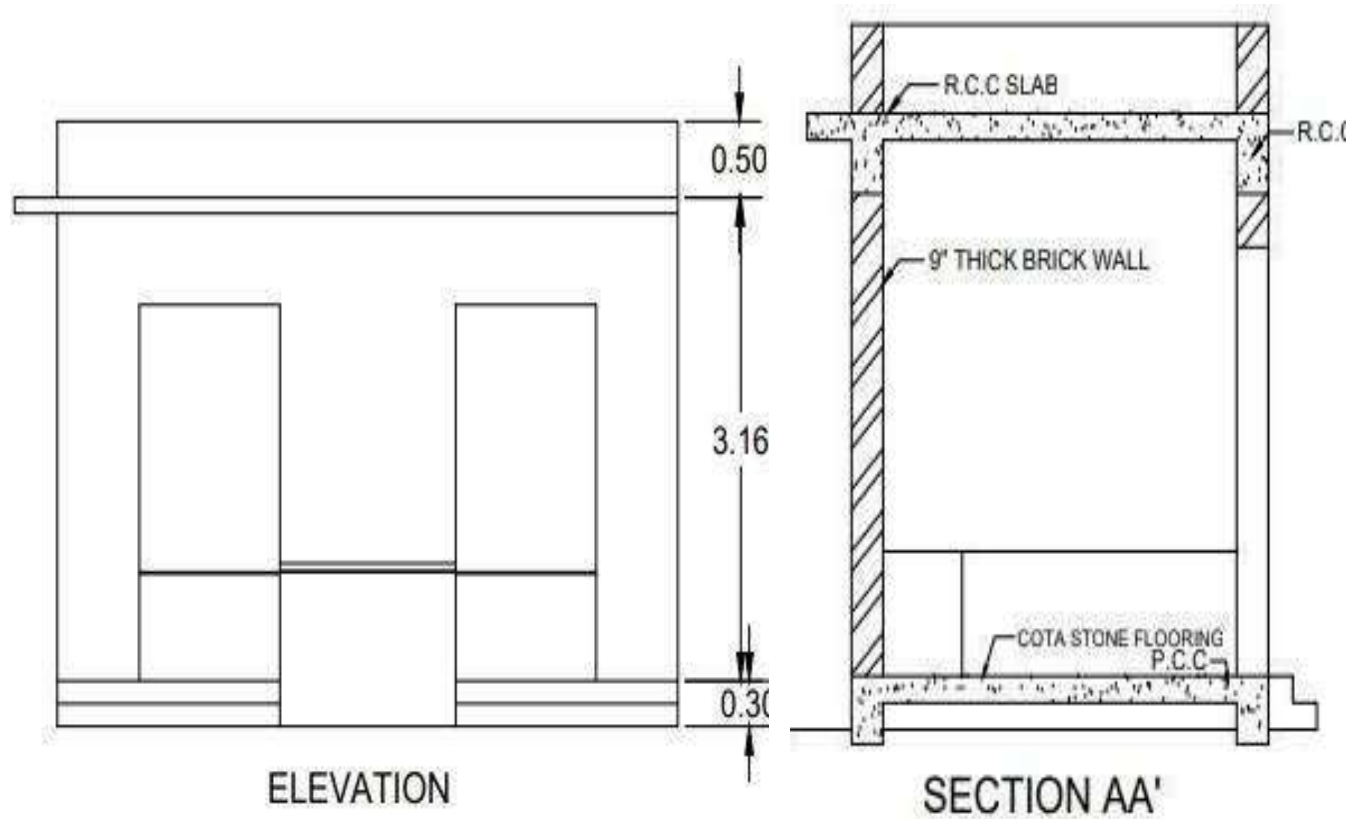
ABSTRACT SHEET					
Sr. No	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
1.	Excavation For biogas plant Digester				
A	Exaction up to 1.5 m	147.78	68	M ³	10049.04
B	Excavation up to 1.5 to 3m	147.78	93	M ³	13743.54
C	Excavation up to 3 to 9.5 M	640.38	165	M ³	105662.7
2	Providing and laying PCC, d = 11.2m	20.57	1410	M ³	29003.7
3	First class brick masonry C:M (1:6) for digester , 0.3m	107.83	1842	M ³	198622.86
4	Brick work for inlet and outlet tank, 0.1 m	95.1	1510	M ²	143601
5	RCC work of dome of gas holder dome	7.61	2200	M ³	16742
6	Providing mild steel reinforcement in RCC Work	597.68	74	Kg	44228.32
Total					561652.58
Add 3% Contingency					16849.57
Add 2% Work charged establishment					11233.05
Grand Total					5,89,735.2 Rs.

8.1.2 Physical Design (Civil) DESIGN OF BUS STAND

Scenario :- A bus stop is a designated place where buses stop for passengers to get on and off the bus. The construction of bus stops tends to reflect the level of usage, where stops at busy locations may have shelters, seating, and possibly electronic passenger information systems; less busy stops may use a simple pole and flag to mark the location. Bus stops are, in some locations, clustered together into transport hubs allowing interchange between routes from nearby stops and with other public transport modes to maximize convenience.

Existing situation Jhalansar:- The bus station in Jhalansar village is in a Dilapidated conditions so it is mandatory to build a new bus station. People can easily sit there waiting for the bus. Developing bus-stand it is very use full for bus construer system as well as village and who is coming to village and going to village. So, we can decide to designed a bus stand.





Elevation of Bus Stand

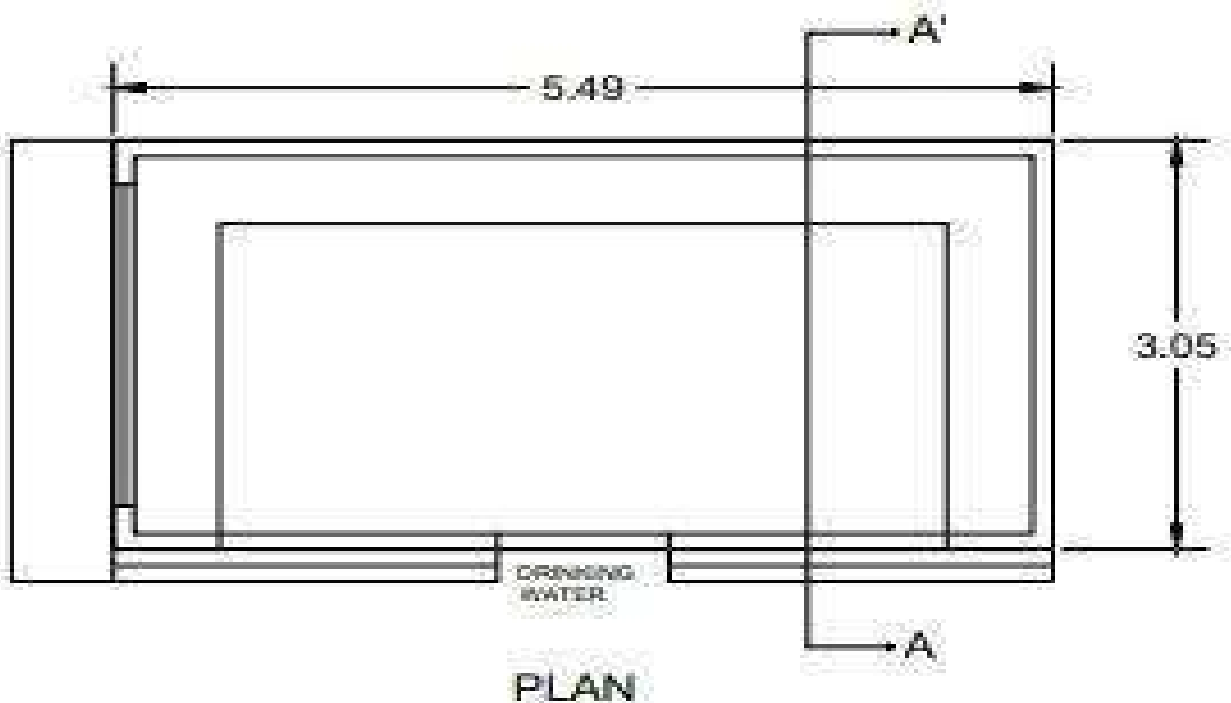


Figure No 82 Bus Stand

• **Measurement Sheet Bus Stand :-**

Table No 14. Measurement Sheet For Bus Stand

MEASUREMENT SHEET						
Sr. No	DESCRIPTION	NO.	LENGTH (L)	WIDTH (B)	HEIGHT (H)	QUANTIY
1	Excavation	4	1.5	1.5	1.5	13.5
2	P.C.C (1:4:8) in footing	4	0.8	0.8	0.075	0.192
3	R.C.C(1:1.5:3) in Footing	4	0.7	0.7	0.15	0.294
4	R.C.C(1:1.5:3) in column below G.L.	4	1.5	0.23	0.3	0.414
5	R.C.C.(1:1.5:3) in column below G.L	4	3	0.23	0.3	0.828
6	Excavation for Ground Beam	4	2	0.5	0.45	1.8
7	P.C.C. (1:4:8) in Ground Beam	4	2	0.25	0.075	0.15
8	R.C.C.(1:1.5:3) in Ground Beam	4	2	0.23	0.3	1.84
9	Masonry work up to plinth level	4	0.5	0.23	0.6	0.276
10	Filling of moorum up to plinth Level	1	3.5	5	0.5	8.75
11	P.C.C. (1:4:8) at Plinth level	1	3.5	5	0.5	8.75
12	R.C.C.(1:1.5:3) in Slab S1	1	3.5	5	0.15	2.625
13	Masonry Work $L = (2)(3.5) + 2(7.5) = 15$	-	15	0.23	0.75	2.58
14	Plaster	-				
X	Main Plaster area	-	15	1.73	-	25.95
XI	Plaster on Slab S1	1	3.5	7.5	-	26.25
15	Flooring	-	3.5	7.5	-	26.25
16	Painting	LS				LS

• **Abstract Sheet For Bus Stand :-**

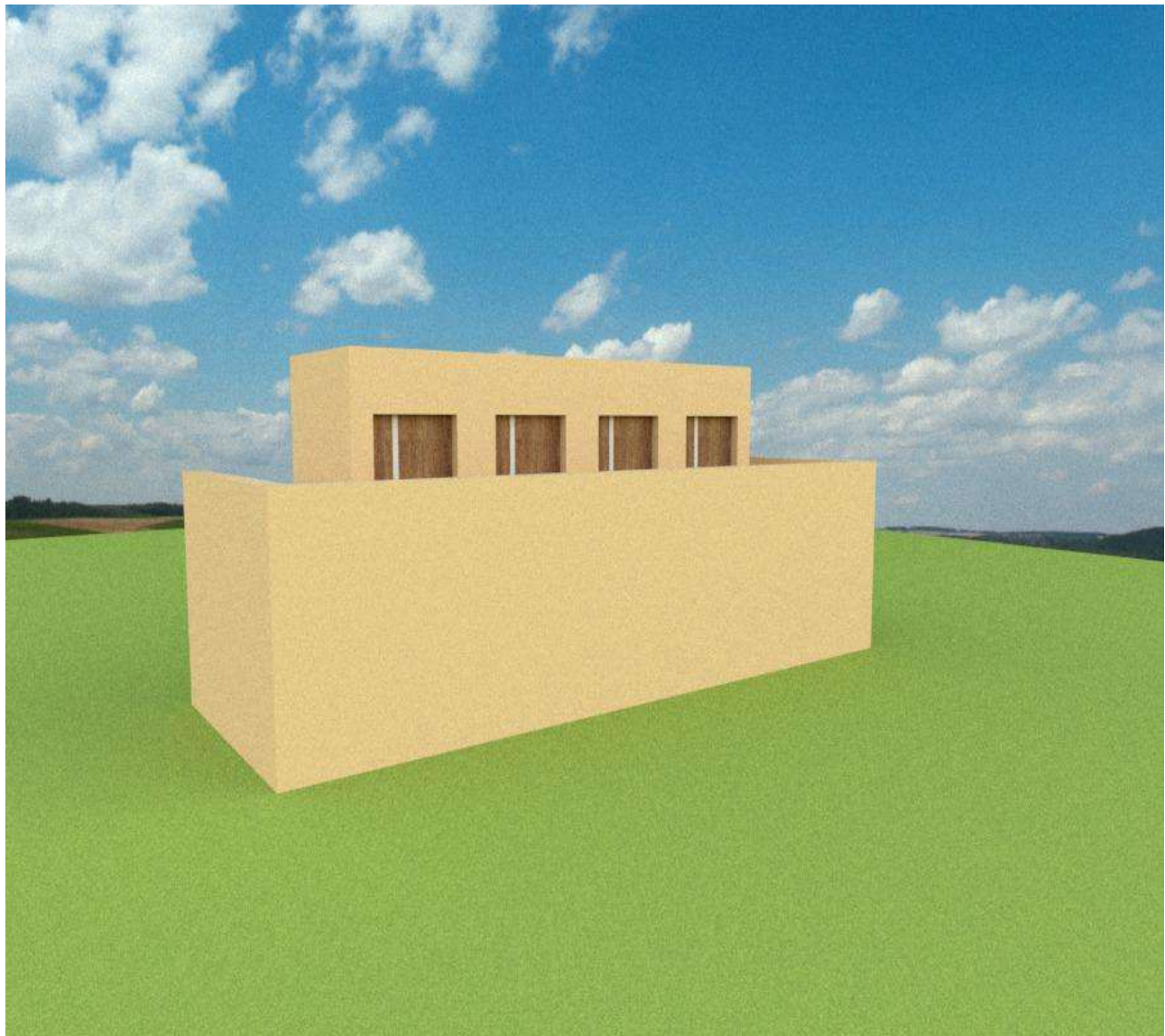
Table No 15. Abstract Sheet of Bus Stand

ABSTRACT SHEET					
Sr. No.	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
1	Excavation For Foundation:	13.5	223	M ³	3010.5
2	P.C.C.(2:4:8)	1.345	2703	M ³	3635.53
3	R.C.C. (1:1.5:3) Footing	0.735	4500	M ³	3307.5
4	R.C.C. (1:1.5:3) Column and Beam	90195	5000	M ³	45975
5	R.C.C.(1:1.5:3) SLABS	5.48	4850	M ³	26578
6	Murum Filling	11.93	369	M ³	4402.17
7	Brick Masonry	15.2	3513	M ³	53397.60
8	Kota Stone Flooring	16.6	730	M ²	12118
9	Smooth Plastering (BLDG) 15MM	160.89	150	M ²	29132.5
10	Reinforcement Steel	535	75	Kg	40125
11	Water Tank 500L	1	8000	Lit	8000
Total					2,24,682.813
Add 3% Contingency					6740.48
Add 2 % Work Charged Establishment					4493.65
Grand Total					2,35,916.93RS

8.1.3 Social Design (Civil) DESIGN OF PUBLIC TOILET

Scenario:- A public toilet is a room or small building with toilets (or urinals) and sinks that does not belong to a particular household. Rather, the toilet is available for use by the general public, customers, travelers, employees of a business, school pupils, prisoners etc. Public toilets are commonly separated into male and female facilities, although some are unisex, especially for small or single-occupancy public toilets. Increasingly, public toilets are accessible to people with disabilities. Public toilets play a role in community health and individual well-being.

Existing situation Jhalansar :- The public toilet in Jhalansar village is in a dilapidated conditions so it is mandatory to build a new public toilet. Also a public toilet should be maintain in proper manner with cleanliness so we are decide to design a public toilet as social design.



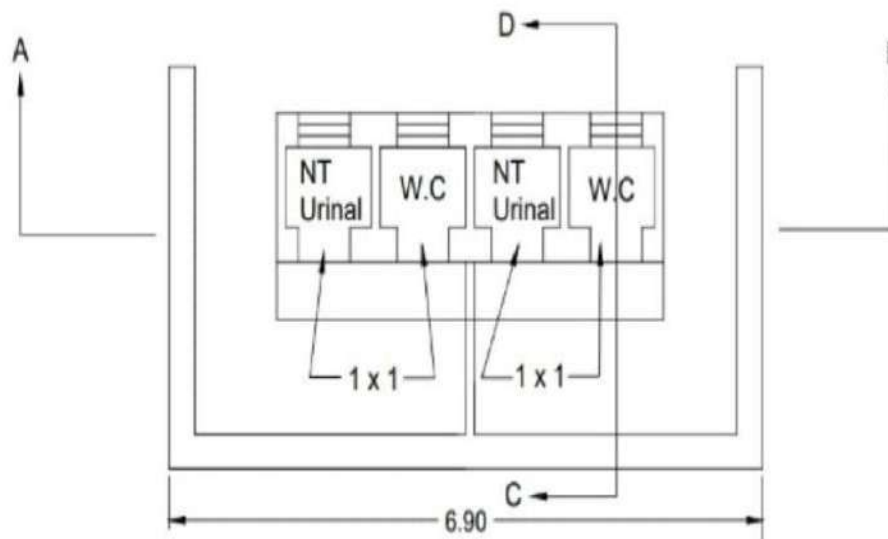
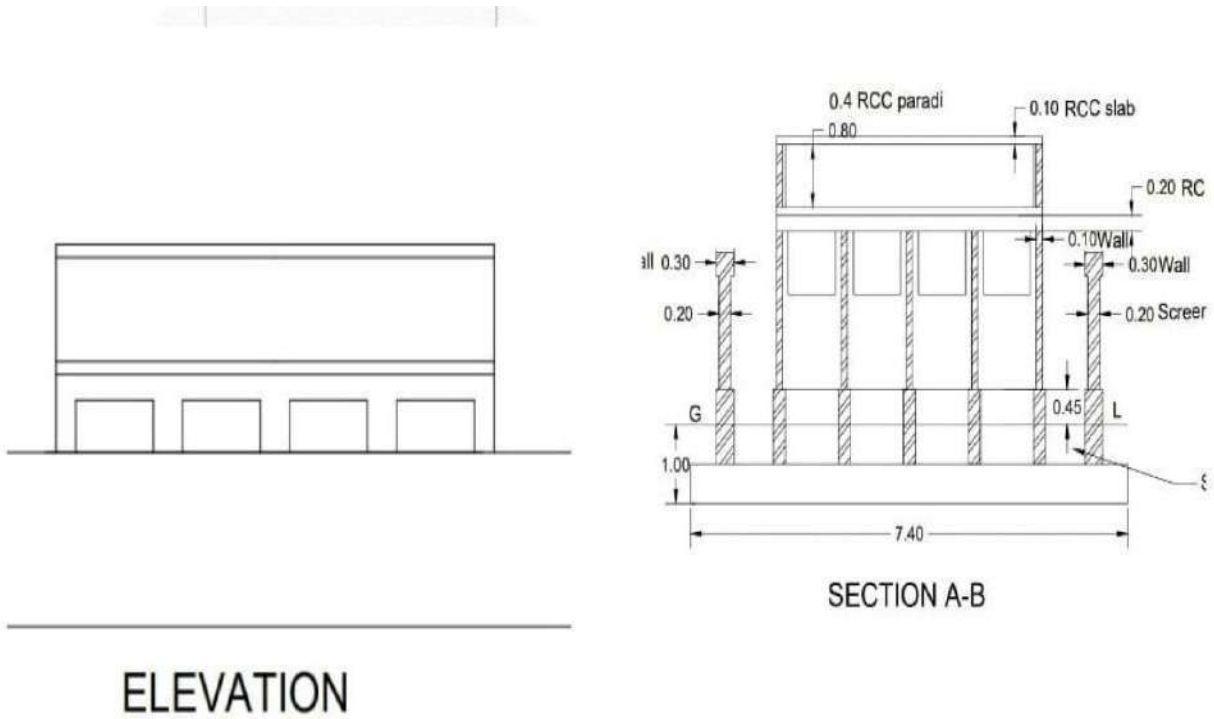


Figure No 83 Public Toilet

• **Measurement Sheet Public Toilet :-**

Table No 16. Measurement Sheet of Public Toilet

Measurement Sheet						
Sr. No	Description	No	Length (L)	Width(B)	Height(H)	Quantity
1	Excavation	1	7.4	3.1	1	22.94
2	B.B.C.C (1:6:12) in Foundation	1	7.4	3.1	0.5	11.47
3	First class brick masonry					
	up to plinth in C.M. (1:6):					
	H= (1+0.45-0.5) =0.95m					
	L= (1-0.1) =0.9m (vert. ili)	5	0.9	0.2	0.95	0.86
	L= (4.5+0.05+0.05) =4.6m (hor. olo)	2	4.6	0.3	0.95	2.62
	Screen Wall:					
	Horizontal olo, L= (6.9+0.1) =7.0m	1	7	0.3	0.95	1.996
	vertical ilo, L= (2.6-0.2) =2.4m	2	2.4	0.3	0.95	1.386
	vertical ili, L= (1-0.1) =0.9m	1	0.9	0.3	0.95	0.25
						3.62
	Step:	1	4.2	0.3	0.75	0.95
	H= (0.95-0.2) =0.75m					
	L= (4.5-0.3) =4.2m					
4	Sand filling in plinth					
	b= (2.6-0.3) =2.3m	2	1	2.3	6.5	2.3
	L= (6.9-1-1.0-0.2) =4.7m	1	4.7	0.7	0.5	1.65
	b= (1-0.3) =0.7m					
	h= (0.45-0.1)=0.35m	4	1	1.6	0.35	1.4
5	First class brick masonry in super structure in C.M. (1:6)					
	San. Block hor.(olo)	2	4.5	0.2	2	3.6
	screen wall hor.(olo), h = (2-0.45) = 1.56m	1	6.9	0.2	1.55	2.13
	vert. (oli)	2	2.4	0.2	1.55	1.48
	top portion	1	7	0.3	0.2	0.42
		2	2.4	0.3	0.2	0.23
	Deduction:					
	Door	4	0.8	0.2	2	-1.28

	c.c. jail	4	0.6	0.2	0.5	-0.24
						NET
6	10 cm brick portion wall in C.M. (1:4)					
	vertical (ili)	2	1	-	2	4
		3	1	-	2.2	6.6
	Water tank					
	horizontal (o o)	2	4.5	-	0.8	7.2
	Vert., (i i)	2	1.2	-	0.8	1.92
	Screen wall	1	1	-	1.75	1.75
7	Wooden doors with oxide copper fastening & fixtures	4	0.8	-	2	6.4
8	Cement concrete jail	4	0.6	-	0.5	1.2
9	R.C.C. lintels portions (1:1.5:3)					
	hor.(o o)	2	4.5	0.2	0.2	0.36
	vert.(i i)	2	1	0.2	0.2	0.08
10	10 cm R.C.C slab portion (1:1.5:3)					
	Bottom of water tank, b= (1.4+.6)=2m	1	4.5	2	-	9
	Top of water tank, b=1+.4 = 1.4m	1	4.5	1.4	-	6.3
	Manhole cover	1	0.6	0.5	-	-0.3
						NET
11	40mm R.C.C paradi portion (1:1.5:3)					
	Inside water tank					
	hor. (o o), L=4.5-.2=4.3m	2	4.3	0.8	-	6.88
	vert.(i i), L=1.4-.2-.08=1.08	2	1.12	0.8	-	1.79
12	10 c.m thick B.B.C.C (1:6:12) floor concrete					
	Flooring	4	1	1	0.1	0.4
13	Paving of 150mm*150mm white glazed tiles in Flooring	4	1	1	-	4
14	do... but in dado					
	L=.1+.1+1+1+1+.1+.1=3.4	4	3.4	-	0.8	10.88
15	Paving of 40 mm thick I.P.S. (1:2:4)					
	Step	1	4.2	0.3	-	1.26
16	12 mm thick sagol finish cement plaster					

	in C.M.(1:4)					
	Inside plaster:					
	$h=.08+.8+.3+.08+.3+2.2+.05+.45+.4=4.36\text{ m}$	2	4.5	-	4.36	39.26
	Outside plaster:					
	$h=.08+.8+.08+2.2+.05+.45+.1=3.76\text{m}$	2	1.4	-	3.76	10.53
	Screen wall:					
	$L=2(2.6-.1)+(6.9-.2)=11.7\text{m}$	1	11.7	-	5.1	59.67
	$h=4.8+.3=5.1\text{m}$					
	Bottom of slab	4	1	1		4
	Cross wall, $h=2.2+.1=2.3\text{m}$	2	1	-	2.3	4.6
	Top	1	1	0.1		0.1
	Deduction:					
	Door	4	0.8	-	2.6	-6.4
	Jali	4	0.6	-	0.5	-0.12
						NET
17	Three coats of white washing					
	same as cement plaster					136.26
18	12 mm thick waterproof cement plaster in C.M.(1:4)					
	Top & bottom slab					
	$L=4.5-.2-.08=4.22\text{m}$	2	4.22	1.12		9.45
	Paradi	2	4.22	-	0.08	6.75
		2	1.12	-	0.08	0.79
	Deduction: Manhole cover	1	0.6		0.5	-0.3
						NET
19	Indian w.c. pans with a pair of footrests	2				2
20	Foot rests	2				2
21	P.V.C. flushing cistern for w.c.	2				2
22	P.V.C. automatic flushing tank Forurinals	2				2
23	Nahni traps	2				2
24	Gully traps	3				3
25	Inspection chamber	1				1
26	Manholes	2				2

27	100 mm dia. S.W. pipe	1	1.5			1.5
		2	2			4
28	150 mm dia. S.W. pipe	1	5			5
		1	20			20
29	75 mm dia. Cast iron pipe					
	vent pipe	1	6			6
	from urinal to G.I.	2	1.5			3
30	100 mm dia. C.I. soil pipe					
	wall from w.c. to G.I.	1	1.5			1.5
31	75mm dia. C.I. vent cowl	1				1
32	Intercepting sewer traps	1				1
33	Mica flap valve	1				1
34	25 mm dia. G.I. pipe					
	from main line	1	15			15
	from water tank	1	1			1
	for overflow	1	1			1
	for washout up to G.I.	1	3			3
35	12 mm dia. G.I. pipe					
	L=4.5-1=3.5m					
	Horizontal	1	3.5			3.5
		4	1			4
36	Stop cocks	4				4
37	Bib cocks	4				4
38	Copper ball cock	1				1
39	Wheel valves 25 mm dia. Pipes					
	Inlet	1				1
	Outlet	1				1
	wash out	1				1
40	Manhole cover	2				2

• **ABSTRACT Sheet Public Toilet**

Table No 17. Abstract Sheet For Public Toilet

ABSTRACT SHEET					
Sr.No.	Description	Quantity	Rate	Per	Amount
1	Excavation	22.94	220	m ³	5046.80
2	B.B.C.C (1:6:12) in Foundation	11.47	2620	m ³	30051.40
3	First class brick masonry up to plinth in C.M. (1:6)	8.05	3850	m ³	30992.50
4	Sand filling in plinth	5.35	1930	m ³	10325.50
5	First class brick masonry insuper structure in C.M. (1:6)	6.42	3950	m ³	25359
6	10 cm. Brick portion wall in C.M. (1:4)	21.47	465	M ²	9983.55
7	Wooden doors with oxide copper fastening & fixtures	6.4	7400	m ³	47360
8	Cement concrete jail	1.2	550	M ²	660
9	R.C.C. lintels portions (1:1.5:3)	0.44	16950	m ³	7485
10	10 mm R.C.C slab portion (1:1.5:3)	15	163	M ²	24450
11	40mm R.C.C parade portion (1:1.5:3)	8.67	1410	M ²	12224.70
12	10 cm. thick B.B.C.C (1:6:12) floor Concrete	0.4	2620	m ³	1048
13	Paving of 150mm*150mm white glazed tiles in flooring	4	1480	M ²	5920
14	 Do... but in dado	10.88	1625	M ²	17680
15	Paving of 40 mm thick I.P.S.(1:2:4)	1.26	345	M ²	434.70
16	12 mm thick sagol finish cement plaster in C.M. (1:4)	136.2	185	M ²	25208.10
17	Three coats of white washing	136.2	25	M ²	3406.50
18	12 mm thick waterproof cement plaster in C.M. (1:4)	17.69	210	M ²	3714.90
19	Indian W.C. Pans with a pair of footrests	2	3350.	Nos.	6700
20	Foot rests	2	450	Pair.	900
21	P.V.C. flushing cistern for W.C.	2	2800	Nos.	5600
22	P.V.C. automatic flushing tank for Urinals	2	2000	Nos.	4000
23	Nanny traps	2	300	Nos.	600
24	Gully traps	3	420	Nos.	1260

25	Inspection chamber	1	4000	Nos.	4000
26	Manholes	2	5000	Nos.	10000
27	100 mm dia. S.W. pipe	5.5	800	r. m.	4400
28	150 mm dia. S.W. pipe	25	890	r. m.	22250
29	75 mm dia. Cast iron pipe	9	450	r. m.	4050
30	100 mm dia. C.I. soil pipe	1.5	650	r. m.	975
31	75mm dia. C.I. vent cowl	1	220	Nos.	220
32	Intercepting sewer traps	1	600	Nos.	600
33	Mica flap valve	1	1050	Nos.	1050
34	25 mm dia. G.I. pipe	20	355	r. m.	7100
35	12 mm dia. G.I. pipe	7.5	300	r. m.	2250
36	Stop cocks	4	500	Nos.	2000
37	Bib cocks	4	450	Nos.	1800
38	Copper ball cock	1	450	Nos.	450
39	Wheel valves25 mm dia. Pipes	3	650	Nos.	1950
40	Manhole cover	2	750	Nos.	1500
Total				3,44,978.65	
Add 3% Contingency				10,499.34	
Add 2% Work Charged establishment				6,999.57	
Grand Total				3,67,477.56	

8.1.4 Socio-Cultural Design (Civil) Community Hall

There are no such as hall where people meet together and the any function or also helpful for awareness program so we can decide a community hall.

Scenario: Community hall is a public location where members of a community gather for group activities, events, festivals and social purpose. They may sometimes be open for whole community or for a specialized group example Mahila mandal hall. A community hall of village generally consists of a hall , storage or kitchen area and washroom.

Existing Situation in Jhalansar: In the Jhalansar village there is no any community hall so that according to the village population there should be one community hall in village. It is a public location where members of a community gather for group activities, events, festivals and social purpose. A community hall of village generally consists of a hall, storage or kitchen area and washroom. During the interaction with villagers they have also suggested that there should be a community hall in Jhalansar village.



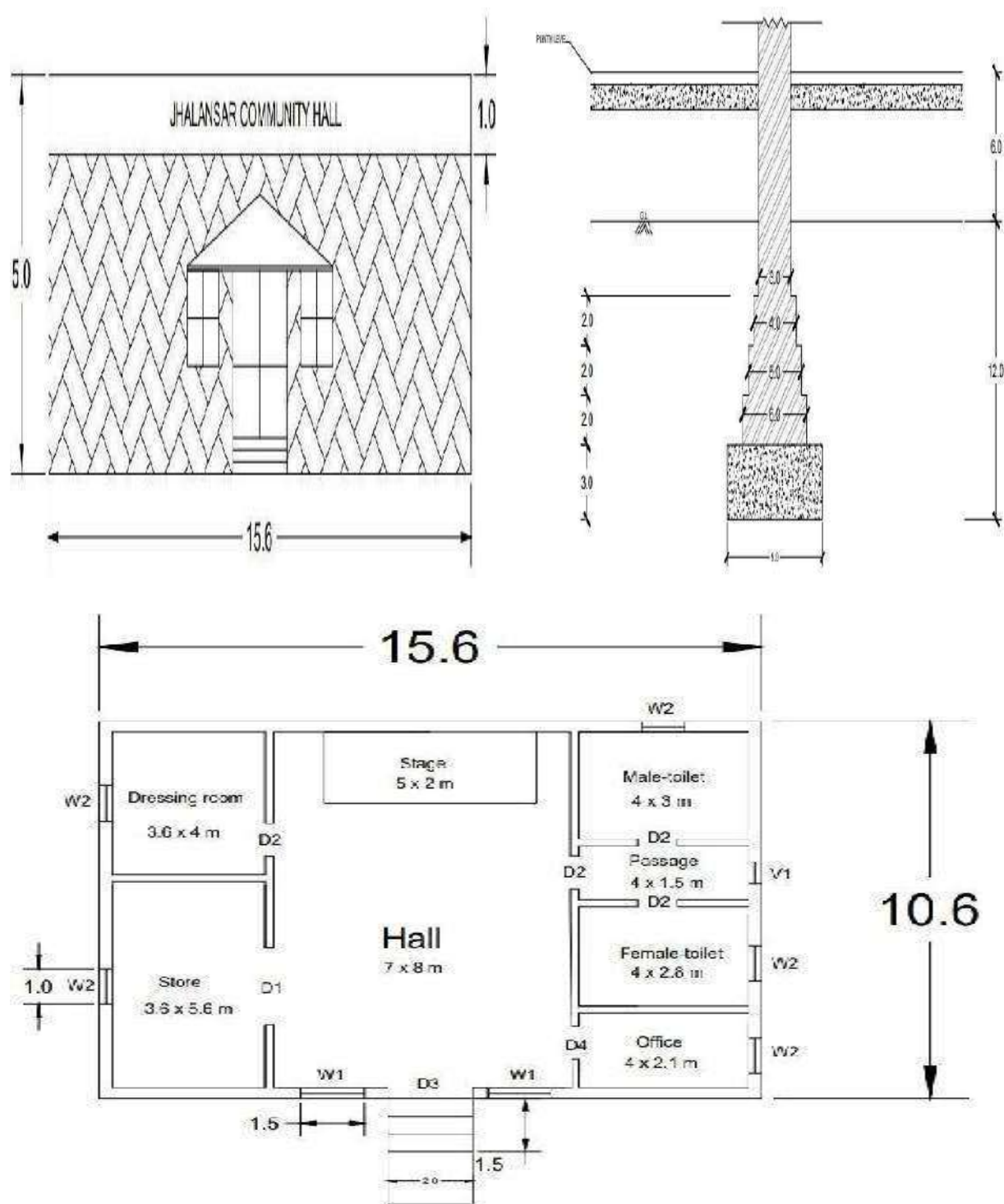


Figure No 84 Community Hall

• **Measurement Sheet Community Hall:-**

Table No 18.Measurement sheet For Community hall

MEASUREMENT SHEET						
Sr. No	Description	No	Length (L)	Weight (B)	Height (H)	Quantity
1	Excavation For Foundation					
	Lw1 = 3.9 + 0.9	3	4.8	0.9	1.5	19.44
	Lw2 = 7.2 + 0.9	2	8.1	0.9	1.5	22.14
	Lw3 = 4.3 + 0.9	5	5.2	0.9	1.5	35.1
	Sw1 = 10.3 - 0.9	4	9.4	0.9	1.5	50.78
2	P.C.C.					
	Lw1 = 3.9 + 0.9	3	4.8	0.9	0.3	3.88
	Lw2 = 7.2 + 0.9	2	8.1	0.9	0.3	4.374
	Lw3 = 4.3 + 0.9	5	5.2	0.9	0.3	7.02
	Sw1 = 10.3 - 0.9	4	9.4	0.9	0.3	10.15
3	Brickwork Up To Plinth					
	Step 1					
	Lw1 = 3.9 + 0.6	3	4.5	0.6	0.2	1.62
	Lw2 = 7.2 + 0.6	2	7.8	0.6	0.2	1.87
	Lw3 = 4.3 + 0.6	5	4.9	0.6	0.2	2.94
	Sw1 = 10.3 - 0.6	4	9.7	0.6	0.2	4.65
	Step 2					
	Lw1 = 3.9 + 0.5	3	4.4	0.5	0.2	1.32
	Lw2 = 7.2 + 0.5	2	7.7	0.5	0.2	1.87
	Lw3 = 4.3 + 0.5	5	4.8	0.5	0.2	2.4
	Sw1 = 10.3 - 0.5	4	9.8	0.5	0.2	3.92
	Step 3					
	Lw1 = 3.9 + 0.4	3	4.3	0.4	0.2	1.03
	Lw2 = 7.2 + 0.4	2	7.6	0.4	0.2	1.19
	Lw3 = 4.3 + 0.4	5	4.7	0.4	0.2	1.88
	Sw1 = 10.3 - 0.4	4	9.9	0.4	0.2	3.16
	Step 4					
	Lw1 = 3.9 + 0.3	3	4.2	0.3	0.2	4.53
	Lw2 = 7.2 + 0.3	2	7.4	0.3	0.2	5.54
	Lw3 = 4.3 + 0.3	5	4.6	0.3	0.2	8.28
	Sw1 = 10.3 - 0.3	4	10	0.3	0.2	14.4
4	Brick Masonry For Superstructure					
	Lw1 = 3.9 + 0.3	3	4.2	0.3	3	11.34
	Lw2 = 7.2 + 0.3	2	7.4	0.3	3	13.82
	Lw3 = 4.3 + 0.3	5	4.6	0.3	3	20.7
	Sw1 = 10.3 - 0.3	4	10	0.3	3	1436
	Deucti on for Doors and Window					
	D1	1	1.5	0.3	2.1	2.85

	D2	4	1.2	0.3	2.1	3.024
	D3	1	2	0.3	2.1	1.26
	D4	1	1	0.3	2.1	0.63
	W1	2	1.5	0.3	1.2	1.08
	W2	3	1	0.3	1.2	1.08
	V	1	0.6	0.3	0.45	0.81
	Deucti on For Lintel					
	D1	1	1.8	0.3	0.1	2.85
	D2	4	1.5	0.3	0.1	0.18
	D3	1	2.3	0.3	0.1	0.069
	D4	1	1.3	0.3	0.1	0.039
	W1	2	1.8	0.3	0.1	0.108
	W2	3	1.3	0.3	0.1	0.117
	Total = 81.9 – 10.734 – 0.567 = 70.60 m ³					
5	R.C.C. Slab, Lintel & Chjja					
	SLAB					
	CHAJJA					
	D1	1	1.5	0.6	0.15	1.35
	D2	4	1.2	0.6	0.15	0.432
	D3	1	2	0.6	0.15	0.18
	D4	1	1	0.6	0.15	0.09
	W1	2	1.5	0.6	0.15	0.27
	W2	3	1	0.6	0.15	0.27
	V	1	0.6	0.6	0.15	0.054
	LINTEL = 0.567m ³					
	TOTAL R.C.C. = 0.567 + 2.646 + 26.32 = 29.533 m ³					
6	Smooth Plastering					
	ROOM					
	LW	2	3.6	-	3	21.6
	SW	2	4	-	3	24
	HALL					
	LW	2	7	-	3	42
	SW	2	10.6	-	3	60
	KITCHEN					
	LW	2	3.6	-	3	21.6
	SW	2	5.8	-	3	34.8
	TOILET					
	LW	4	4	-	3	48
	SW	4	3	-	3	36
	PASSAGE					
	LW	2	4	-	3	24
	SW	2	1.5	-	3	9
	OFFICE					
	LW	2	4	-	3	24

	SW	2	2.1	-	3	12.6
	CEILING					
	ROOM	1	3.6	4	-	14.4
	KITCHEN	1	3.6	5.8	-	20.88
	HALL	1	7	10	-	70
	M TOILET	1	4	3	-	12
	F TOILET	1	4	2.8	-	11.12
	PASSAGE	1	4	1.5	-	6
	OFFICE	1	4	2.1	-	8.4
	TOTAL SURFACE PLASTER = 499.38 M ²					
7	Thick Flooring					
	ROOM	1	3.6	4	-	14.4
	KITCHEN	1	3.6	5.8	-	20.88
	HALL	1	7	10	-	70
	M TOILET	1	4	3	-	12
	F TOILET	1	4	1.5	-	6
	PASSAGE	1	4	2.8	-	11.2
	OFFICE	1	4	2.1	-	8.4
8	EARTH FILLING IN PLINTH					
	ROOM	1	3.6	4	0.45	6.91
	KITCHEN	1	3.6	5.8	0.45	10.02
	HALL	1	7	10	0.45	3.36
	M TOILET	1	4	3	0.45	5.76
	F TOILET	1	4	1.5	0.45	2.88
	PASSAGE	1	4	2.8	0.45	5.37
	OFFICE	1	4	2.1	0.45	4.03

- Abstract Sheet Community Hall

Table No 19. Abstract Sheet For Community Hall

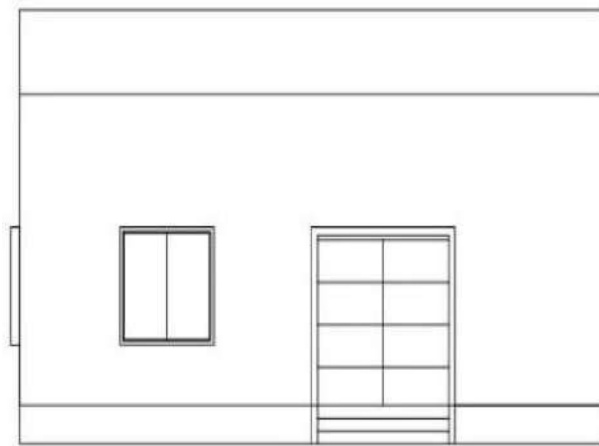
ABSTRACT SHEET					
Sr. No	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
1	Excavation For P.C.C.	127.46	93	M ³	11853.78
2	P.C.C.	2.17	3217	M ³	6980.89
3	Brick Masonry For Foundation	59.84	3205	M ³	191787.02
4	Brickwork in Superstructure	70.6	3513	M ³	248017.08
5	R.C.C. For Slab, Lintel, Chajja	29.533	8805	M ³	260011.65
6	Smooth Plaster	499.28	150	M ²	74892
7	Flooring	142.88	510	M ²	72868.8
8	Earth Filling In Plinth	38.33	55	M ³	2108.15
TOTAL					8,68,518.65
ADD 3 % Contingency					26,055.55
ADD 2 % work Charged Establishment					17,370.37
GRAND TOTAL					9,11,944.58 RS

8.1.5 SMART Village Design (Civil) DESIGN OF BANK

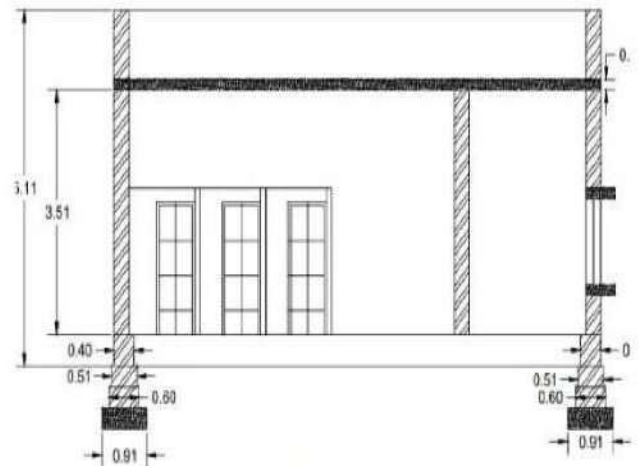
Scenario:- Banks and credit unions can help you access credit to acquire a home, a car, student or personal loan, because banks tend to favor existing customers, particularly those who manage their money well. Plus, going to small loan lenders that lend you cash quickly can be quite expensive because they charge lending fees and high interest rates. The money kept in a bank account is safe and is well regulated.

Existing situation Jhalansar :- In the Jhalansar village there is no any bank and villagers have to go outside the village at Dhoraji for banking facility so that one bank should be there in village so villagers can easily do their banking related works and for easy access of it. so we have designed a village bank as a Smart village design.

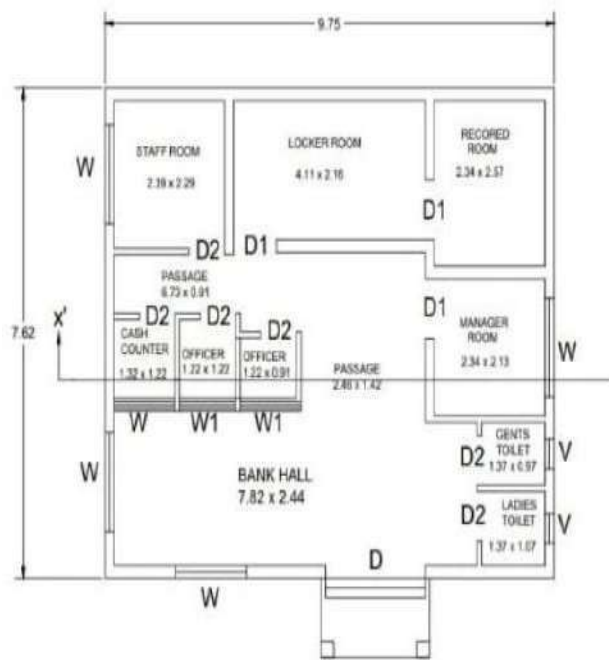




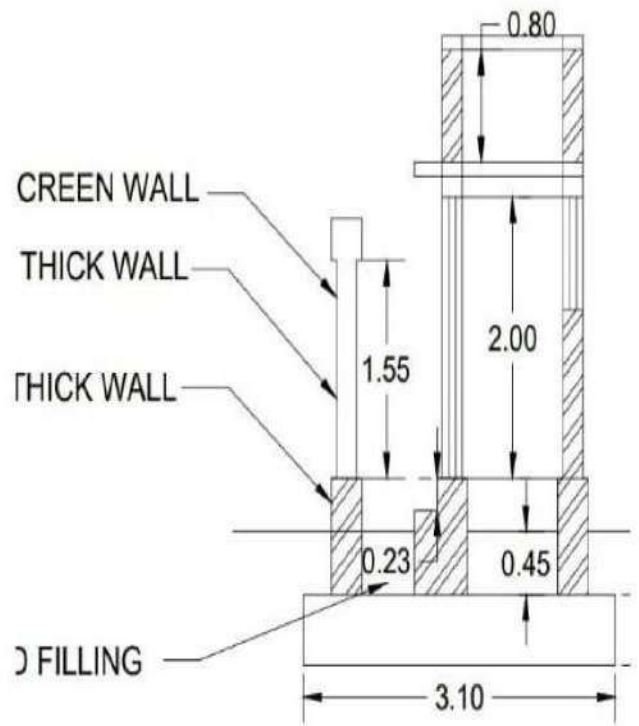
ELEVATION



SECTION - X'



PLAN



SECTION C-D

Figure Bo 85 Bank

- **Measurement Sheet Bank**

Table No.20 Measurement Sheet for Bank

MEASUREMENT SHEET						
Sr. No	DESCRIPTION	NO.	LENGTH (L)	WIDTH (B)	HEIGHT (H)	QUANTIY
1	Excavation for foundation	-	44.64	0.91	0.81	32.90
2	P.C.C. in foundation	-	44.64	0.91	0.30	12.19
3	Brick work in foundation					
	Step 1	-	45.84	0.61	0.30	8.39
	Step 2	-	46.24	0.51	0.20	4.72
	Step 3	-	46.64	0.41	0.46	8.81
4	Brick work					
	Brick work (9")	-	47.36	0.23	3.50	38.12
	Brick work (4")	-	20.83	0.10	3.50	7.29
5	Deduction from wall					
	D	1	2.13	0.23	2.29	1.12
	D1	3	0.9144	0.23	2.13	1.34
	D2	6	0.76	0.10	1.98	0.90
	W	4	1.52	0.23	1.37	1.92
	W	1	1.52	0.10	1.37	0.21
	W1	2	1.21	0.10	1.37	0.33
7	W2	2	0.91	0.10	1.37	0.25
6	R.C.C. lintel & chajja					
	Door	1	2.43	0.23	0.15	0.084
	Door 1	3	1.21	0.23	0.15	0.125
	Door 2	6	1.06	0.23	0.15	0.095

	Window for 9"	4	1.82	0.23	0.15	0.251
	Window for 4"	1	1.82	0.10	0.15	0.024
	Window 1	2	0.10	0.23	0.15	0.045
	Window 2	2	0.10	0.23	0.15	0.036
	Ventilation	2	0.76	0.23	0.15	0.052
	Window chajja	4	1.82	0.30	0.15	0.33
	Door chajja	1	2.44	1.52	0.15	0.556
7	Parapet wall					
	Wall	1	33.81	0.23	0.91	7.08
8	Plaster					
	Outside plaster		34.75	-	4.572	158.86
9	Deduction from outside plaster					
	Door	1	2.13	-	2.29	4.88
	Window	4	1.52	-	1.37	8.33
10	Inner side plaster					
	Staff room	2	2.29	-	3.5	16.03
		2	1.98	-	3.5	13.86
	Locker room	2	4.11	-	3.5	28.77
		2	2.16	-	3.5	15.12
	Record room	2	2.34	-	3.5	16.38
		2	2.57	-	3.5	17.99
	Cash counter	2	1.52	-	3.5	10.64
		2	1.22	-	3.5	8.54
	Office (1)	4	1.22	-	3.5	17.08
	Office (2)	2	1.22	-	3.5	8.54
		2	0.91	-	3.5	6.37

	Manager office	2	2.34	-	3.5	16.38
		2	2.13	-	3.5	14.91
	Gents toilet	2	1.37	-	3.5	9.59
		2	0.96	-	3.5	6.72
	Ladies toilet	2	1.37	-	3.5	9.59
		2	1.066	-	3.5	7.46
	Bank hall	2	6.86	-	3.5	48.02
		2	2.44	-	3.5	17.08
	Front of staff room	2	4.27	-	3.5	29.89
		2	2.64	-	3.5	18.48
	Parapet	2	9.52		0.91	17.33
		2	7.39		0.91	13.45
11	Celling plaster					
	Staff room		2.29	1.98		4.53
	Locker room		4.11	2.16		8.86
	Record room		2.34	2.57		6.01
	Cash counter		1.52	1.22		1.85
	Office (1)		1.22	1.22		1.49
	Office (2)		1.22	0.91		1.11
	Manager office		2.34	2.13		4.98
	Gents toilet		1.37	0.96		1.32
	Ladies toilet		1.37	1.066		1.46
	Hall		6.86	2.44		16.73

- Abstract Sheet Bank

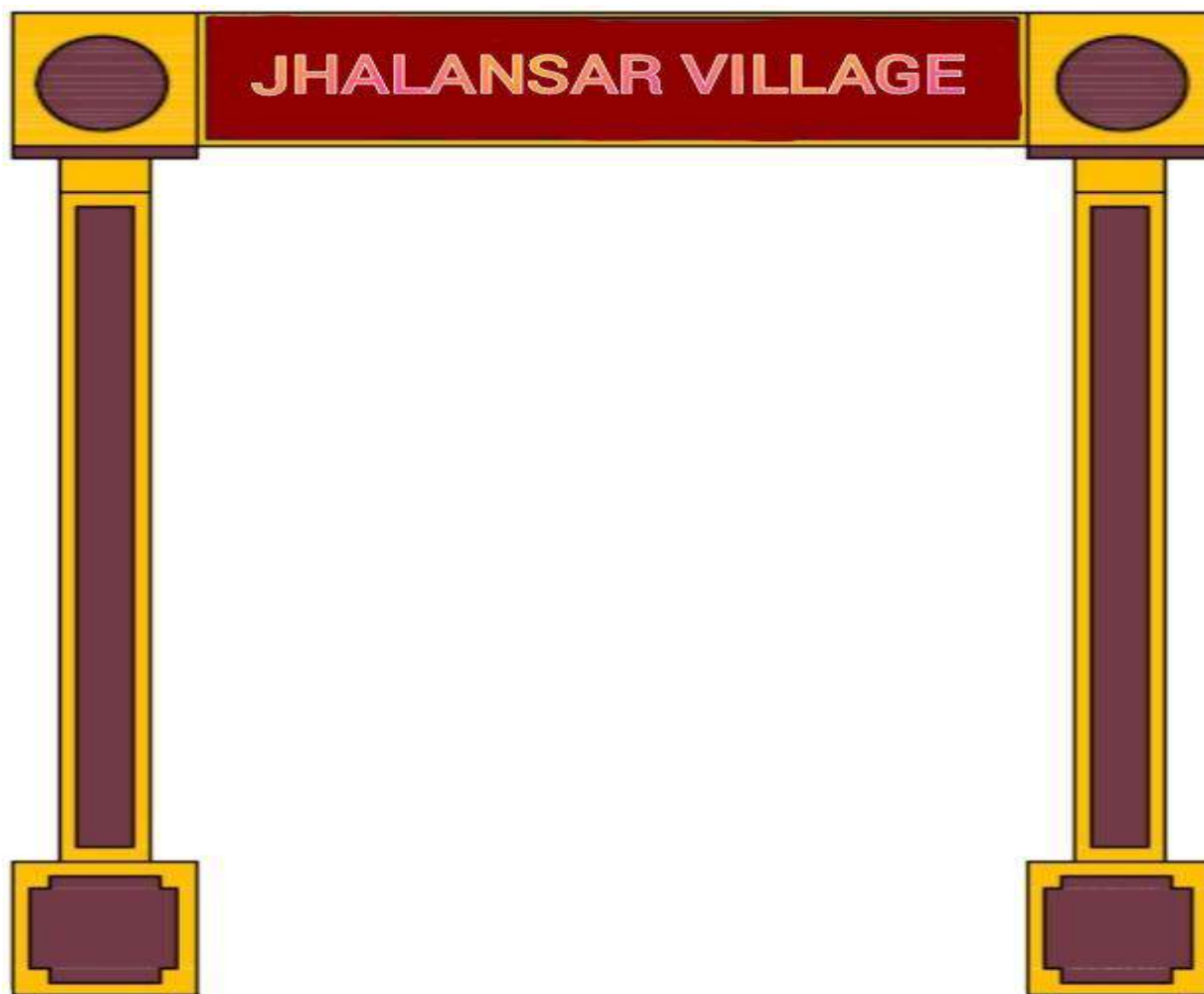
Table No 21 Abstract Sheet For Bank

ABSTRACT SHEET					
Sr. No	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
1	Excavation	32.90	93	m ³	3059.7
2	PCC	12.19	3217	m ³	39215.23
3	Brick Work in foundation	21.82	3205	m ³	69933.10
4	Brick Work in super structure	43.35	3613	m ³	164066.33
5	R.C.C. work in slab, chhajja, lintel	12.74	8805	m ³	112175.70
6	Plaster work in c.m.(1:3) for inside & outside & ceiling	562.21	155	m ²	87142.55
7	Wood work for door & window	35.94	7850	m ²	282029
8	Marble flooring	49.91	485	m ²	24206.35
TOTAL					7,81,926.93
ADD 3 % Contingency					23457.80
ADD 2 % Work Charged Establishment					15638.53
GRAND TOTAL					8,21,023.26

8.1.6 Heritage Village Design (Civil) Design of Gate

Scenario: A village entrance gate as a heritage village design , a gate or gateway is a point of entry to a space which is enclosed by walls. Gates may prevent or control the entry or exit of individuals, or they may be merely decorative. Other terms for gate include yet and port. The word is derived from old Norse "gat", meaning road or path, and originally referred to the gap in the wall or fence, rather than the barrier which closed it. The moving part or parts of a gateway may be considered "doors", as they are fixed at one side whilst opening and closing like one.

Existing Situation in Jhalansar: In the Jhalansar village there is no any village entrance or front gate existing in the village. After the approval of proposed designs of village as of part 1, Talati has appreciated our work and told that there is a need of the village entrance gate in Jhalansar village. Village gate is symbolizes of the village. So we have designed a village entrance gate as a heritage village design



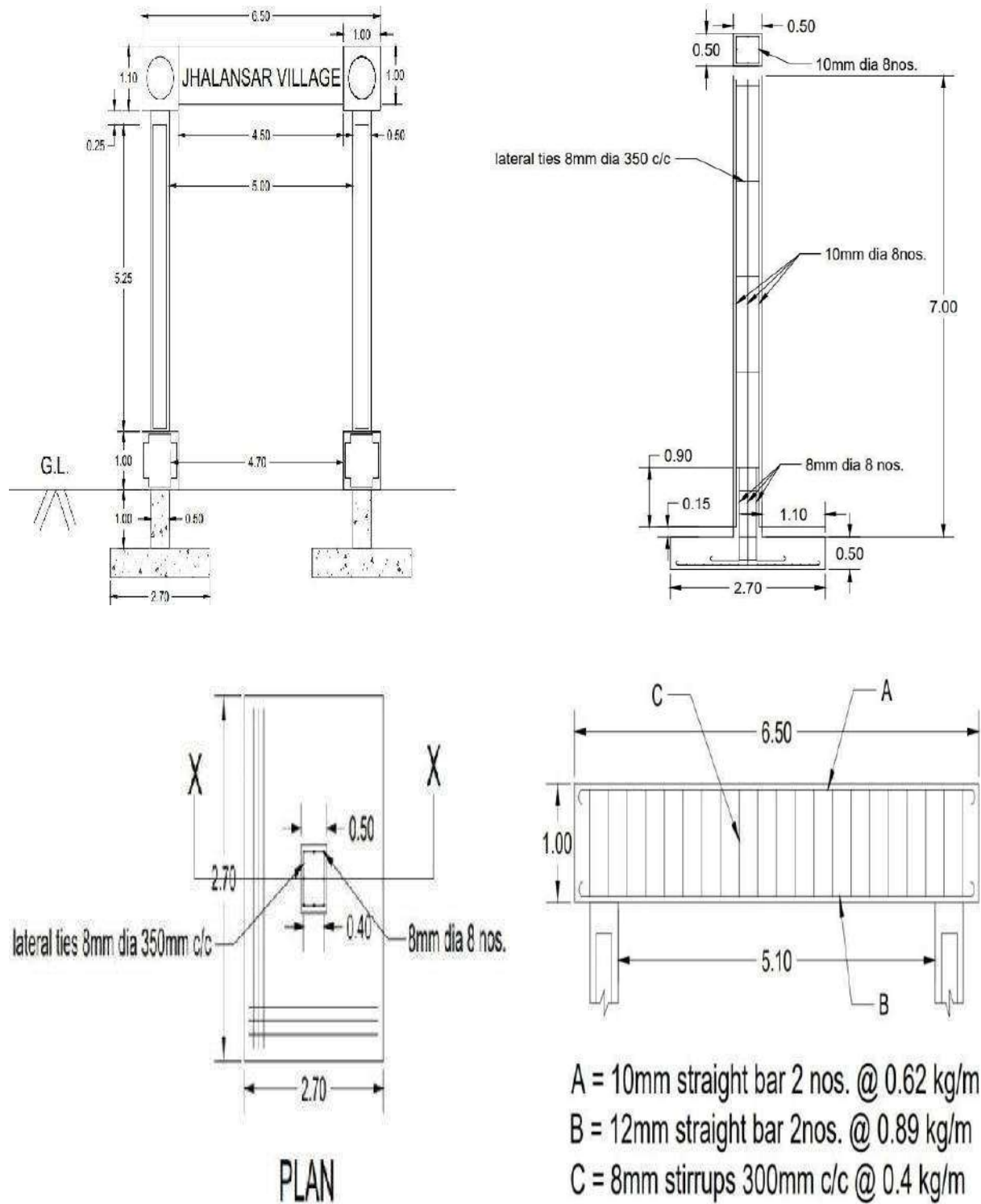


Figure No.86 Gate

• **Measurement Sheet for Gate :-**

Table No 22. Measurement Sheet For Gate

MEASUREMENT SHEET						
Estimate of Beam Of Gate (Span = 4.51 m):						
Sr. No	DESCRIPTION	No	LENGTH (L)	WIDTH (B)	HEIGHT (H)	QUANTITY
1	Quantity of concrete: L=6.5m B=1m H=1m	1	6.5	1	1	6.5
2	Formwork					
	Bottom	1	4.51	1	-	4.51
	Side 1	2	6.5	-	1	13
	Side 2	2	1	-	1	2
3	Weight of Steel in Kg					
	A type:					
	L=6.5-(2×0.05)+(2×9×0.01)					
	=6.58m					
	No. of bars=2	2	6.58	-	@ 0.62	8.16
	B type:					
	L=6.5-(2×0.05)+(2×9×0.012)					
	=6.616m					
	No. of bars=2	2	6.616	-	@0.89	11.7
	C type:					
	A=1-(2×0.025)-(2×0.008)					
	=0.934m					
	B=1-(2×0.025)-(2×0.008)					
	=0.934m L=2(A+B)+24D					
	=2(0.934+0.934)+24(0.008)					
	=3.93m Nos.=(6.5÷0.3)+1=22.67					
	Say 23	23	3.93	-	@ 0.4	36.15
Estimate of Column + Footing of Gate :						
1	Excavation for Foundation					
	H = 7+0.5+0.5 = 8	1	2.7	2.7	8	58.32
2	R.C.C.(1:2:4)					
	Footing	1	2.7	2.7	0.5	3.645
	Column	1	0.5	0.5	7.5	1.875
3	Filling of Foundation trench:					
	= 588.30- 5.52 = 52.8	-	-	-	-	52.8
4	Steel for column and footing:					
	Vertical bars of column:					
	L=5.95+(9×0.01)=6.04m	8	6.04	-	@ 0.62	30
	Dowel bars:					
	L=0.9+0.15+0.5+0.5+(9×0.008)-					

	0.05-(2×0.016)					
	=2.04m	8	2.04	-	@ 0.4	6.53
	Lateral ties for column:					
	A=0.5-(2×0.025)-(2×0.008)					
	=0.434m					
	B=0.5-(2×0.025)-(2×0.008)					
	=0.434m					
	L=2(A+B)+24D					
	=2(0.434+0.434)+0.192					
	=1.928m					
	No. of ties=(7.5-0.05-(2×0.016))÷0.35					
	=21.19 Say 22	22	1.928	-	@ 0.4	17
	Footing bars:					
	L=2.7-(2×0.05)+(2×9×0.016)					
	=2.888m					
	No.=(2.7-(2×0.05))÷0.17					
	=15.29 Say 16	32	2.88	-	@ 1.58	140
5	Formwork for column and footing					
	Column	4	0.5	-	7	14
	Footing	4	2.7	-	0.5	5.4

- Abstract Sheet Gate

Table No 23. Abstract Sheet For Gate

ABSTRACT SHEET					
Sr. No.	Description of Item	Quantity	Rate Rs.	Per	Amount Rs.
1	Excavation For Foundation	58.32	165	M ³	9622.8
2	Filling of Foundation Trench	52.80	280	M	19784
3	Placing of Concrete	5.52	150	M	828
4	16mm dia bar	146	75	Kg	10950
5	10mm dia bar	30	55	Kg	1650
6	8mm dia bar	23.53	62	Kg	1458

7	Charge for cutting, bending and placing	199.53	113	Kg	22546.89
8	Centering Shuttering	19.4	4500	M ²	87300
TOTAL					1,49,140.55
ADD 3 % Contingency					4474.21
ADD 2% Work Charged Establishment					2982.81
GRAND TOTAL					1,56,597.57RS

There are 2 Colum

So, Cost = $2 \times 1,56,597.57$

= 3,13,195.14

Total Cost = Cost of Beam + Cost of Column

= 36435.47 + 3,13,195.19

= 3,49,630.61RS.

Say = 3,50,000 Rs.

8.2 Reason for Student recommending this Design

- In This Village Bio –Gas plant not in the village so we are decide to design a biogas plant as sustainable design.
- Also a bus station should be maintain in proper manner, so we are decide to design a Bus station as physical design
- Also a public toilet should be maintain in proper manner with cleanliness so we are decide to design a public toilet as social design.
- There are no such as hall where people meet together and enjoy the any function, or also helpful for awareness program. Sometime guest from the government side have to meet to number of people For meeting purpose.
- There is no bank in this village. If people need more than they will go nearer town which is 13 Km away from this village, so we decide to design a bank as smart village design.
- There is no any type of heritage like statue, gate, chabutra etc. so we can decide to design a heritage gate as heritage design.

8.3 About design Suggestions / Benefit of the villagers

- People are not use sustainable energy source. So we give design of bio gas plant so that people can use for fuel purpose with economic.
- People waiting for the bus can sit well at the bus stand, some give design for bus stand.
- The people of the village will be able to make good use of public toilets so we give design of public toilet.
- Any programs related to the village are made available to all the village people so we give design of community hall.
- There is no bank in the village. So we give design of bank, now people can easily withdrawal or deposit money in bank.
- In this village gate are not available so we give design of heritage design. As heritage point of view village make beautiful.

Chapter 9. Proposing design for Future Development of the village for the PART-II Design

- After completion of visit & data collection of the Jhalansar village, we have given some of the designs which were to be provided under this project.
- Future scope would be study over other different urban amenities that would be sustainable in rural areas of Saurashtra.
- Some of the designs which are left like Anganwadi, library, and R O Water plant etc. will be Provided in the next semester.
- The study is aimed to know the basic scenario of village through techno economic survey form.
- Our master development plan might include provision of all the facilities suggest by as, then our focus will be on the improvement in the existing amenities.
- Our aim is to work according to the new upcoming town planning scheme in Jhalansar village based on these plans, our next target will be to provide regular manitence program, which helps in sustaining the structure for longer duration.

So, we can future development of the village planning is....

1. Anganwadi manitence
2. R.O.water Plant
3. Play ground
4. Library
5. Skill Development centre

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

With help Gap Analysis we conclude that some of different Smart Village facilities are required as basic or primary level which still lack in village. So according to Gap Analysis of Jhalansar village, we observed condition of existing infrastructure facilities in village such as- Primary school, Water tank, Road network, Drainage network, etc. Smart Village can solve their problem itself can become a smart village example to other village too. According to UDPFI norms, lacking in basic amenities and Smart Amenities can be provided as-

- Bio gas plant
- Bus stand
- Public Toilet
- Community hall
- Bank
- Gate

By providing required amenities to village, development of village can be possible. So ultimately migration to the city from village will be reduced and livelihood of villagers will increase. So healthy and prosperous life can be possible for the villagers. Ultimate growth of village and people is base step for the development of country. India is developing country and GDP is highly depended on farming. As the development of village would be possible, farming techniques will increase and percentage of GDP will increase.

Chapter 11. Reference Refereed For this Project

- Census of India
- <http://www.giftgujarat.in/>
- UDPI (urban development plans formulation and implementation) norms 2014
- S.O.R. of Junagadh 2019-20
- <http://www.mdws.gov.in/sites/default/files/Primer%20SLWM.pdf>
- http://www.gramalaya.in/pdf/appropriateLowcost_toilet_technology.pdf
- http://www.swachhbharaturban.in:8080/sbm/content/writereaddata/SBM_Guideline.pdf
- <http://vy.gtu.ac.in-vishwakarmaliteratures>
- Google Maps
- ESTIMATING, COSTING AND VALUATION (Tax-Max PUBLICATION)
- http://www.gramalaya.in/pdf/appropriateLowcost_toilet_technology.pdf
- http://www.swachhbharaturban.in:8080/sbm/content/writereaddata/SBM_Guideline.pdf
- Treatment, disposal reuse, Tata-McGraw Hill, New Delhi.
- IS 12647: 1989 (Solid waste management system- collection equipment- guidelines)
- <http://www.cbgaindia.org/opinion/rural-infrastructure/>
- http://web.worldbank.org/archive/website01291/WEB/0_CO-23.HTM
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- <https://www.mercycorps.org/sites/default/files/mcgoodgovernanceframework.pdf>
- <http://www.barc.gov.in/publications/tb/desalination.pdf> 11.
- <https://www.suratmunicipal.gov.in/Departments/ProjectsUnderExecution><http://www.undp.org/content/undp/en/home/sustainable-development-goals.html>
- www.undp.org/content/undp/en/home/sustainable-development-goals.html
- Rate from market survey done in Junagadh region Biogas book by LUDWIG SASSE (online).
- <https://www.census2011.co.in/census/state/gujarat.htm>
- <http://smartcities.gov.in/upload/uploadfiles/files/MethodologicalReportFinal.pdf>
- http://www.udd.gujarat.gov.in/projects_gift.php

Chapter 12. Annexure attachment

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

Gujarat Technological University,
Ahmedabad, Gujarat



Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey
For
Vishwakarma Yojana: Phase VIII
IDEAL VILLAGE SURVEY
An approach towards Rurbanisation for Village Development

Name of Village:	Vadai
Name of Taluka:	Junagadh
Name of District:	Junagadh
Name of Institute:	Belluji Engineering college
Nodal Officer Name & Contact Detail:	Mayur S. Nandhu no. 9687306846
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aanganwadi worker/Village dweller)	Arvindbhai ghurdesiya (Sarpanch)
Date of Survey:	17/08/2020

1. Demographical Detail:

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	6520			
ii)	2011	7265	3726	3437	1557

2. Geographical Detail:

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hectar)	2104.32 hectar
	Coordinates for Location:	
	Forest Area (In hect.)	-
	Agricultural Land Area (In hect.)	1750.35 hectar
	Residential Area (In hect.)	65.40 hectar
	Other Area (In hect.)	2104.32 hectar
	Water bodies	Well / Hand pump
	Nearest Town with Distance:	Junagadh (12 km)



Gujarat Technological University,
Ahmedabad, GujaratVishwakarma Yojana: Phase VIII
Techno Economic Survey**3. Occupational Details:**

Name of Three Major Occupation groups in Village	1.	Farming
	2.	Industrial
	3.	Education

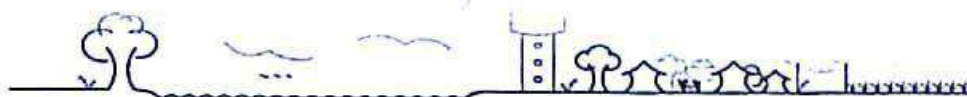
4. Physical Infrastructure Facilities:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A. Main Source of Drinking water					
	• Tap Water (Treated/ Untreated)	Yes	✓		
	• RO Water	No			
	• Well (Covered/ Uncovered)	Yes (Uncovered)	✓		
	• Hand pumps	Yes	✓		
	• Tube well/ Borehole	Yes	✓		
	• River/ Canal/ Spring/ Lake/ Pond	Spring	✓		
Suggestions if any:					
B. Water Tank Facility					
	Overhead Tank	Capacity:	✓		1,00,000 ltr. lit.
	Underground Sump	Capacity:	✓		2,00,000 ltr. lit.
Suggestions if any:					
C. Drainage Facility					
	Available (Yes/ No)	Yes	✓		
Suggestions if any:					
D. Type of Drainage					
	Closed/ Open	Both	✓		
	If Open than Pucca / Kutchcha	Pucca	✓		
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	Water bodies	✓		
Suggestions if any:					



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

E.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
Village approach road	Yes	✓			RCC & Black
Main road	Yes	✓			RCC
Internal streets	Yes	✓			Block
Nearest NH/SILMDR/ODR Dist. in kms.	NH.	✓			
Suggestions if any:					
F.	Transport Facility				
Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Yes	✓			
Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes (excellent)	✓			
Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes	✓			
Suggestions if any:					
G.	Electricity Distribution				
(Y/N) Govt/ Private (Less than 6 hrs / More Than 6 hrs)	Yes	✓			Private (24 hr.)
Power supply for Domestic Use	Yes	✓			24 hr. (single)
Power supply for Agricultural Use	Yes	✓			8 hr.
Power supply for Commercial Use	Yes	✓			24 hr.
Road/ Street Lights	Yes	✓			



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

Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		24 hr.
Renewable Energy Source Facilities (Y/ N)	No		X	
LED Facilities	Yes	✓		

Suggestions if any:

II. Sanitation Facility

Public Latrine Blocks If available than Nos.	Yes	✓		
Location	centre			
Condition	Good			
Community Toilet (With bath/ without bath facilities)	Yes (without bath)	✓		
Solid & liquid waste Disposal system available	No			
Any facility for Waste collection from road	No			

Suggestions if any:

I. Irrigation Facility:

Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Yes (Tube well)	✓		
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Suggestions if any:

J. Housing Condition:

Kutchha/Pucca (Approx. ratio)	Both	✓		80% Pucca 20% Kutchha
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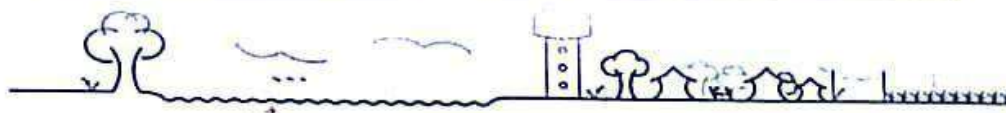
5. Social Infrastructural Facilities:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
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Gujarat Technological University,
Ahmedabad, GujaratVishwakarma Yojana: Phase VIII
Techno Economic Survey

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



Gujarat Technological University,
Ahmedabad, Gujarat



Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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



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

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

6. Sustainable /Green Infrastructure Facilities:

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

7. Data Collection From Village

Village Base Map	Yes
Available: Hard Copy/Soft Copy	Hard copy



Gujarat Technological University,
Ahmedabad, GujaratVishwakarma Yojana: Phase VI
Techno Economic Survey

Recent Projects going on for Development of Village	YES
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)	NO	
2.	Additional Information/ Requirement		
	Road		
	Drainage		
	water		

9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Wifi / Treatment plant / Library		

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

જાલંસર-મંડી
ગ્રામ પંચાયત-વડોદરા

A Ghoshal
ગ્રામ પંચાયત વડોદરા



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

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

Name of District:	Junagadh
Name of Taluka:	Vanthali
Name of Village:	Shapur
Name of Institute:	Beluji Engineering College
Nodal Officer Name & Contact Detail:	Mayur S. Nandha Mo. 9687306846
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aanganwadi worker/Village dweller)	Sagarbhai N. Rathod
Date of Survey:	20/08/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	8108	4237	3871	1778

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hectar) Coordinates for Location:	1878 hectar
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	2530 hectar
4.	Residential Area (In hect.)	45 hectar
5.	Other Area (In hect.)	223 hectar
6.	Distance to the nearest railway station (in kilometers):	Shapur

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Ahmedabad, Gujarat



Vishwakarma Yojana: Phase VIII
Techno Economic Survey

7.	Name of Nearest Town with Distance:	Junagadh (13 km.)
8.	Distance to the nearest bus station (in kilometers):	Junagadh (13 km.)
9.	Whether village is connected to all road for the any facility or town or City?	Yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Farming
	2.	Industrial
	3.	Private Business
Major crops grown in the village:	1.	Bagmati
	2.	Panuts
	3.	cotton

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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



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Ahmedabad, GujaratVishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:

B. Water Tank Facility

Overhead Tank	Capacity:	Yes		5,00,000 lit.
Underground Sump	Capacity:	Yes		4,00,000 lit.

Suggestions if any:

C. The Type of Drainage Facility

A. UNDERGROUND DRAINAGE	Yes	✓		
1				
2				
B. OPEN WITH OUTLET	Yes	✓		
C. OPEN WITHOUT OUTLET				

Suggestions if any:

D. Road Network : All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM

Village approach road	Yes	✓		
Main road	No		X	
Internal streets	Yes	✓		
Nearest NH/SH/MDR/ODR Dist. in kms.	Yes	✓		

Suggestions if any:

E. Transport Facility

Railway Station (Y/N) (If No than Nearest Rly Station—Kms)	Yes	✓		
Bus station (Y/N) Condition: (If No than Nearest Bus Station—Kms)	Yes	✓		
Local Transportation (Auto/ Jeep/ Chhakkda/ Private Vehicles/ Other)	Yes	✓		

Suggestions if any:

F. Electricity Distribution

(Y/N) Govt./ Private (Less than 6 hrs / More Than 6 hrs)	Govt. (Yes)	✓		more than 6 hrs.
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31



Gujarat Technological University,
Ahmedabad, Gujarat



Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Power supply for Domestic Use	24 hr.	✓		
	Power supply for Agricultural Use	8 hr.	✓		
	Power supply for Commercial Use	24 hr.	✓		
	Road/ Street Lights	Yes	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	Yes	✓		
	LED Facilities	Yes	✓		
Suggestions if any:					
G.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.	Yes	✓		
	Location Condition	Good			
	Community Toilet (With bath/ without bath facilities)	Yes (without bath)	✓		
	Solid & liquid waste Disposal system available	No		X	
	Any facility for Waste collection from road	No		X	
Suggestions if any:					
II.	Main Source of Irrigation Facility:				
	TANK/POND	Yes	✓		
	STREAM/RIVER	No		X	
	CANAL	No		X	
	WELL	Yes	✓		
	TUBE WELL	Yes	✓		
	OTHER (SPECIFY)	-	-	-	
Suggestions if any:					
I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	90% Pucca 10% Kutchha	✓		

41



Gujarat Technological University,
Ahmedabad, GujaratVishwakarma Yojana: Phase VIII
Techno Economic Survey**V. SOCIAL INFRASTRUCTURAL FACILITIES:**

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



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

Suggestions if any:

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

If any of the above Facility is not available in village than approx. distance from Vunthali village: 5 kms.

Suggestions if any:

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

61



Gujarat Technological University,
Ahmedabad, Gujarat



Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Credit Cooperative Society	Agriculture cooperative society		yes		
Agricultural Cooperative Society					
Milk Cooperative Society					
Fishermen's Cooperative Society					
Computer Kiosk/ e-choupal / Mills / Small Scale Industries					
Other Facility					
Suggestions if any:					
N.	Other Facilities	Condition		Available (YES)	Available (NO)
	1. Have these programme implemented the village?	Good		yes	
	2. Are there any beneficiaries in the village from the following programme?	Good		yes	
	3. Janani Suraksha Yojana			yes	
	4. Kishori Shakti Yojana			yes	
	5. Balika Samridhi Yojana			yes	
	6. Mid-day Meal Programme			yes	
	7. Integrated Child Development Scheme (ICDS)			yes	
	8. Mahila Mandal Protsahan Yojana (MMPY)				
	9. National Food for work Programme (NFFWP)				
	10. National Social Assistance Programme				
	11. Sanitation Programme (SP)				
	12. Rajiv Gandhi National Drinking Water Mission				
	13. Swarnjayanti Gram Swarozgar Yojana				
	14. Minimum Needs Programme (MNP)				
	15. National Rural Employment Programme				
	16. Employee Guarantee Scheme (EGS)				
	17. Prime Minister Rojgar Yojana (PMRY)				
	18. Jawahar Rozgar Yojana (JRY)				
	19. Indira Awas Yojana (IAY)				
	20. Samagra Awas Yojana (SAY)				
	21. Sanjay Gandhi Niradhar Yojana (SGNY)				
	22. Jawahar Gram Samridhi Yojana (JGSY)				
	23. Other (SPECIFY)				

**VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:**

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	Renewable energy	Yes		
2.	Bio-Gas Plant	Yes	✓		
	Solar Street Lights	Yes	✓		
	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	Yes	✓		
2.	Recent Projects going on for Development of Village	Under ground drainage			
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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Gujarat Technological University,
Ahmedabad, Gujarat



Vishwakarma Yojana: Phase VIII
Techno Economic Survey

1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	NO	
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING 30 FOGGING 32 Drive was undertaken in the village?		

IX. Smart Village / Heritage Details

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

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

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



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2020-2021

91



12.3 Survey from of Allocated Village Scanned copy attachment in the report for Pert-I



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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

Name of District:	Junagadh
Name of Taluka:	Junagadh
Name of Village:	Jhalansar
Name of Institute:	Balaji Engineering college
Nodal Officer Name & Contact Detail:	Munish S. Nandha Mo. 9687306846
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Anganwadi worker/Village dweller)	Hirenbhai Jadhani
Date of Survey:	25/08/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	2398	1267	1129	492

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hectar/Coordinates for Location:	825.52 hectar
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	619.55 hectar
4.	Residential Area (In hect.)	38.62 hectar
5.	Other Area (In hect.)	267.35 hectar
6.	Distance to the nearest railway station (in kilometers):	Dhoraji (10 km)

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

7.	Name of Nearest Town with Distance:	Dhoruji (10 km)
8.	Distance to the nearest bus station (in kilometers):	Dhoruji (10 km)
9.	Whether village is connected to all road for the any facility or town or City?	Yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Farmer
	2.	Private Business
	3.	Education

Major crops grown in the village:	1.	Cotton
	2.	Panuts
	3.	Soybeans

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



Gujarat Technological University, Ahmedabad, Gujarat				Vishwakarma Yojana: Phase VIII Techno Economic Survey	
Other(Specify) Lake/ Pond					
Suggestions if any:					
B.	Water Tank Facility				
	Overhead Tank	Capacity:	Yes		50,000 lit.
	Underground Sump	Capacity:	Yes		1,50,000 lit.
Suggestions if any:					
C.	The Type of Drainage Facility				
	A. UNDERGROUND DRAINAGE	Yes	✓		
Suggestions if any:					
D.	Road Network : All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	Yes	✓		Gravel
	Main road	Yes	✓		Gravel
	Internal streets	Yes	✓		Rec / Black
	Nearest NH/SH/MDR/ODR Dist. in kms.	Yes	✓		SH Pass in village
Suggestions if any:					
E.	Transport Facility				
	Railway Station (Y/N) (If No than Nearest Rly Station—Kms)	No			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station—Kms)	Yes	✓		Bad condition
	Local Transportation (Auto/ Jeep/Chakda/ Private Vehicles/ Other)	Yes	✓		
Suggestions if any:					
F.	Electricity Distribution				
	(Y/N) Govt/ Private (Less than 6 hrs./ More Than 6 hrs)	Yes (Govt.)	✓		24 hr.

31

Gujarat Technological University,
Ahmedabad, Gujarat



Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Power supply for Domestic Use	Yes	✓		24 hr.
	Power supply for Agricultural Use	Yes	✓		8 hr.
	Power supply for Commercial Use	Yes	✓		24 hr.
	Road/ Street Lights	Yes	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		24 hr.
	Renewable Energy Source Facilities (Y/ N)	NO			
	LED Facilities	Yes	✓		
Suggestions if any:					
G.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.	Yes (2 Nos)	✓		one Bed condition
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	Yes (without bath)	✓		
	Solid & liquid waste Disposal system available	NO			
	Any facility for Waste collection from road	Yes	✓		
Suggestions if any:					
H.	Main Source of Irrigation Facility:				
	TANK/POND	Yes	✓		
	STREAM/RIVER	Yes	✓		
	CANAL	Yes	✓		
	WELL	Yes	✓		
	TUBE WELL	Yes	✓		
	OTHER (SPECIFY)				
Suggestions if any:					
I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	Both (1:50)	✓		

41

**V. SOCIAL INFRASTRUCTURAL FACILITIES:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	Health Facilities:				
	ICDS (Anganwadi)	Yes	✓		
	Sub-Centre	Yes	✓		
	PHC	No			
	BLOCK PHC	No			
	CHC/RII	No			
	District/ Govt. Hospital	Yes	✓		
	Govt. Dispensary	No			
	Private Clinic	No			
	Private Hospital/	No			
	Nursing Home	No			
	AYUSH Health Facility	No			
	sonography /ultrasound facility	No			
	If any of the above Facility is not available in village than approx. distance from Dhoraji village. 10 kms.				
	Suggestions if any:				
K.	Education Facilities:				
	Anganwadi/ Play group	Yes	✓		
	Primary School	Yes	✓		
	Secondary school	Yes	✓		
	Higher sec. School	Yes	✓		
	ITI college/ vocational Training Center	No			
	Art, Commerce & Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	No			

51



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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

If any of the above Facility is not available in village than approx. distance from Dhoraji
village: 10 kms.

Suggestions if any:

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

If any of the above Facility is not available in village than approx. distance from Dhoraji
village: 20 kms.

Suggestions if any:

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

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-choupal / Mills / Small Scale Industries	Agricultural cooperative society		yes	
Other Facility	-	-	-	-

Suggestions if any:

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

**VI. SUSTAINABLE / GREEN INFRASTRUCTURE FACILITIES:**

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

VII. DATA COLLECTION FROM VILLAGE

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



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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other		
2.	Additional Information/ Requirement	-	-
3.	During the last six months how many times CLEANING 30 FOGGING 30 Drive was undertaken in the village?	Yes	

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.

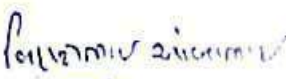
For Any Administration queries/ Difficulties:

GTU VY Section

Contact No - 079-23267588

Email ID: rurban@gtu.edu.in


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સરખંડા
ગ્રામ પંચાયત ઝાલણસર

12.4 Gap Analysis of the Allocated Village

Table No 24. Gap analysis

VILLAGE GAP Analysis					
Village Facilities	Planning Commission/UDPFI Norms	Village Name:	JHALANSAR		
		Population:			2398
		Existing	Required as per Norms	Smart Village / Cities / Heritage Future Projection Design	Gap
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	2	0	-	2
Primary School	Each Per 2500 population	1	0	-	1
Secondary School	Per 7,500 population	1	0	-	1
Higher Secondary School	Per 15,000 Population	1	0	-	1
College	Per 125,000 Population	0	0	0	0
Tech. Training Institute	Per 100000 Population	0	0	0	0
Agriculture Research Centre	Per 100000 Population	0	0	0	0
Skill Development Center	Per 100000 Population	0	0	0	0
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	1	0	-	1
Primary Health & Child Health Center	Per 20,000 population	0	0	0	0
Child Welfare and Maternity Home	Per 10,000 population	0	0	0	0
Multispeciality Hospital	Per 100000 Population	0	0	0	0
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutch house)	2	0	-	2
Physical Infrastructure Facilities					
Transportation		Adequate / Inadequate			
Pucca Village Approach Road	Each village	Adequate			Adequate
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	Adequate			Adequate
Drinking Water (Minimum 70 lpcd)		Adequate / Inadequate			
Over Head Tank	1/3 of Total Demand	Adequate			Adequate
U/G Sump	2/3 of Total Demand	Adequate			Adequate
Drainage Network – Open		Adequate			10%
Drainage Network – Cover		Adequate			90%
Waste Management System		Adequate			Adequate
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	1	0	-	1
community hall and Public Library	Per 15000 Population	0	0	0	0
Cremation Ground	Per 20,000 population	0	0	0	0
Post Office	Per 10,000 population	1	0	-	1
Gram Panchayat Building	Each individual/group panchayat	1	0	-	1
APMC	Per 100000 Population	0	0	0	0
Fire Station	Per 100000 Population	0	0	0	0
Public Garden	Per village	1	0	-	1
Police post	Per 40,000Population	0	0	0	0
Shopping Mall		-			
Electrical Design					

Electricity Network		Adequate / Inadequate			
Govt. ele.	Each Village	Adequate			Adequate(24Hr.)
Any Smart Village Facility					
Technology					
CCTV Camera	-	Adequate			Adequate
WIFI	-	Adequate			Adequate
		ESR cap	0		
		Sump cap	0		
		Lat	0		

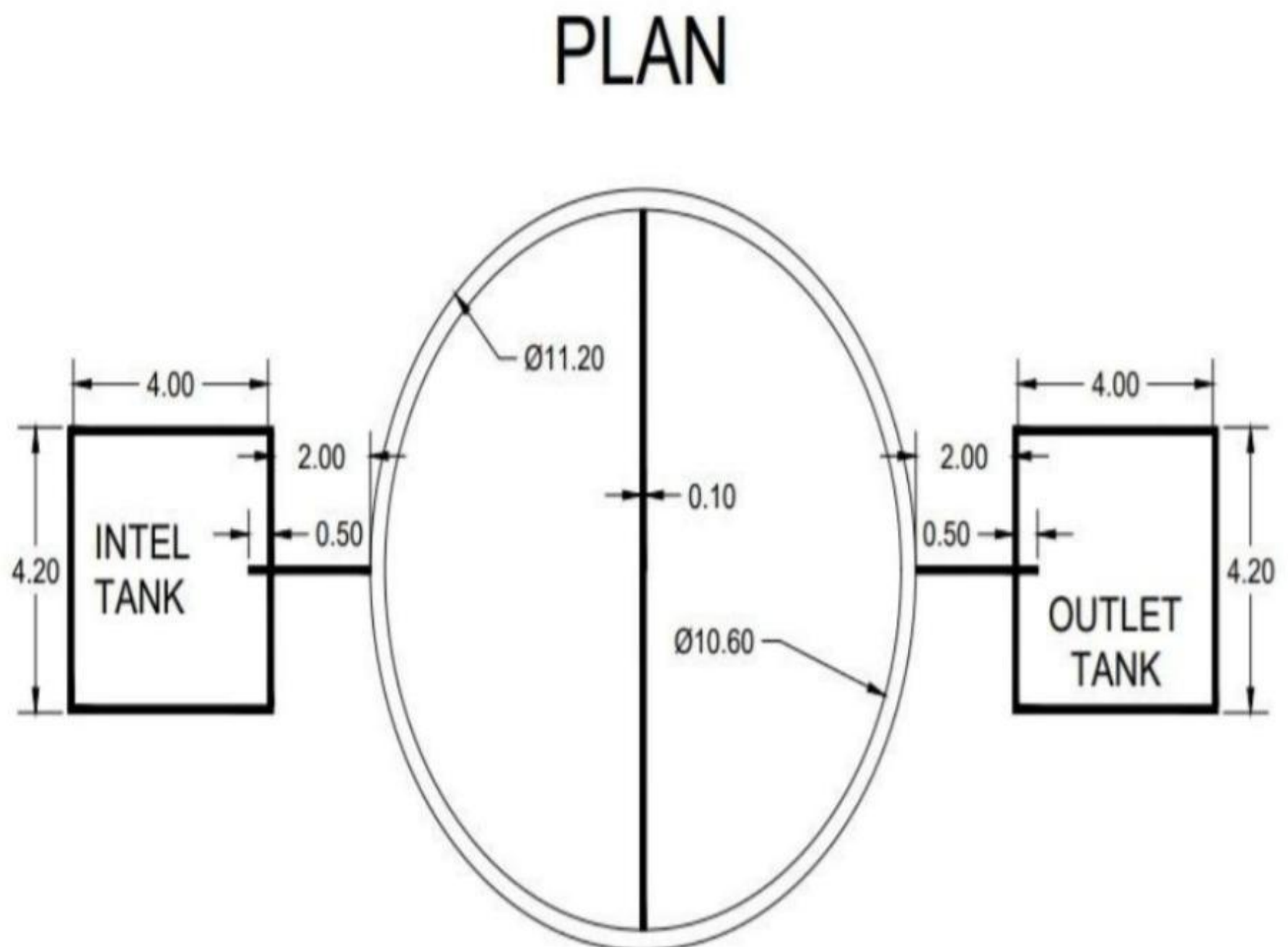
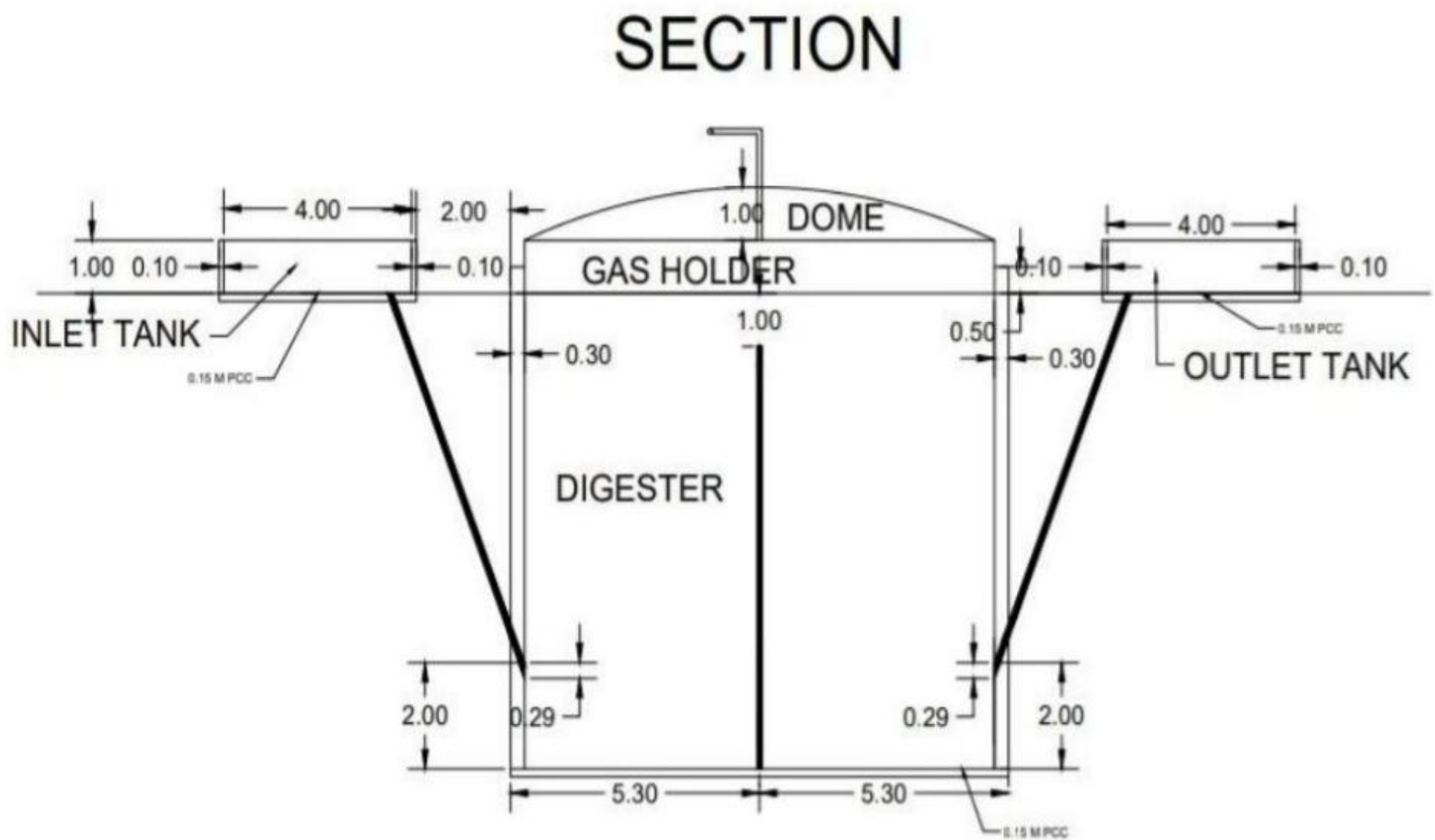
12.5 Summary Details of All the Village Design in the Table from part-I and part-II

Table No.25 summary detail

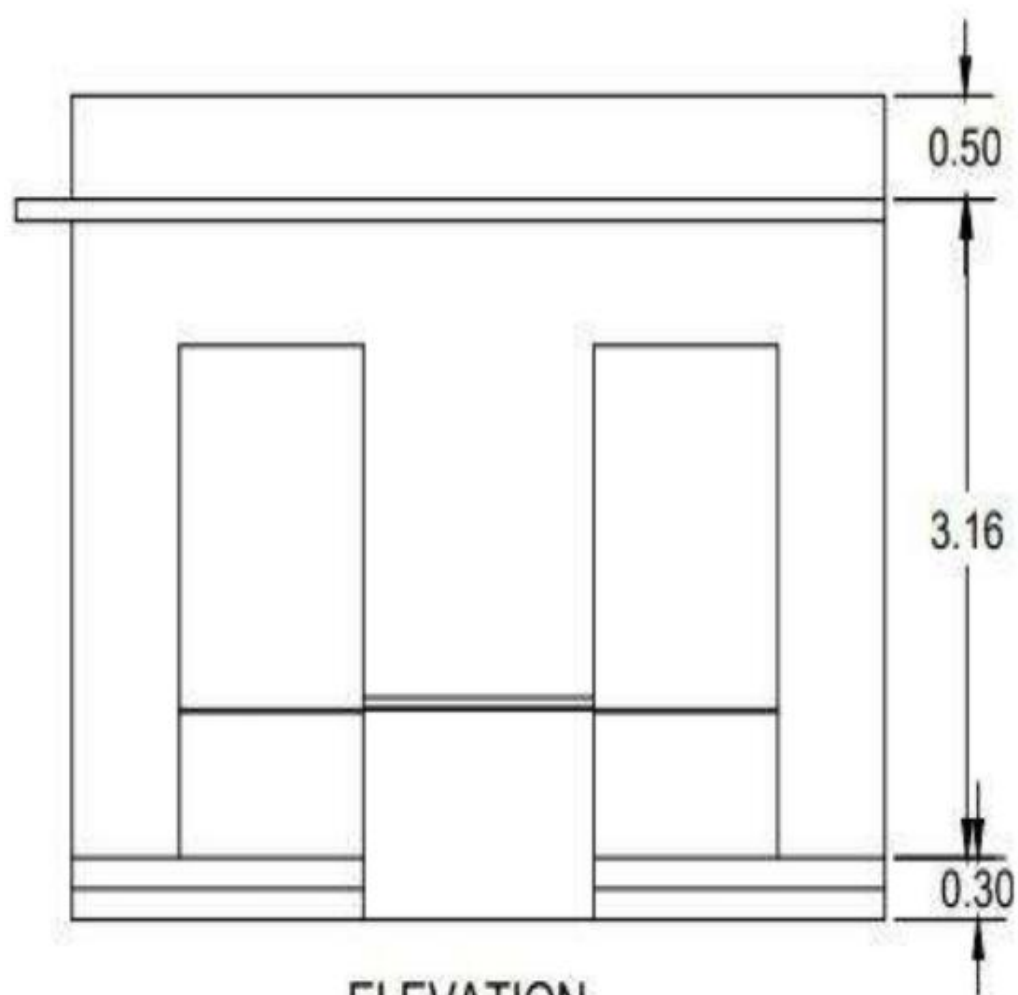
Village	Part I	Part II
JHALANSAR	Bio Gas Plant	Aanganwadi
	Bus Station	R. O. Water
	Public Toilet	Play Ground
	Community hall	Library
	Bank	Skill development Center
	Gate	
MAKHIYALA	Public Library	Super Market
	Medical Shop	Animal shelter
	Internet Café	Party plot
	Public garden	Hospital
	Solar Water Purification	Statue
	Gate	
SUKHPUR	Solid Waste Management	Bio Gas Plant
	Cemetery	Post Office
	PHC	Stationary Shop
	Krushi Seva Kendra	Dispensary Shop
	Water Treatment	ATM

12.6 Drawing

1 .BIO-GAS Plant

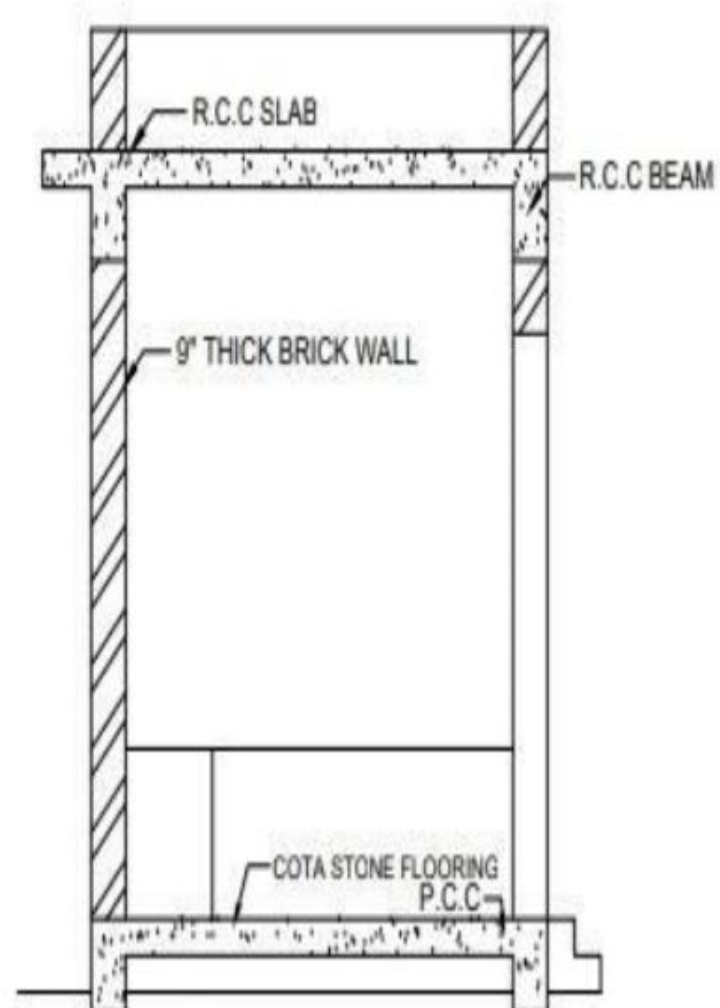


2. BUS-Stand

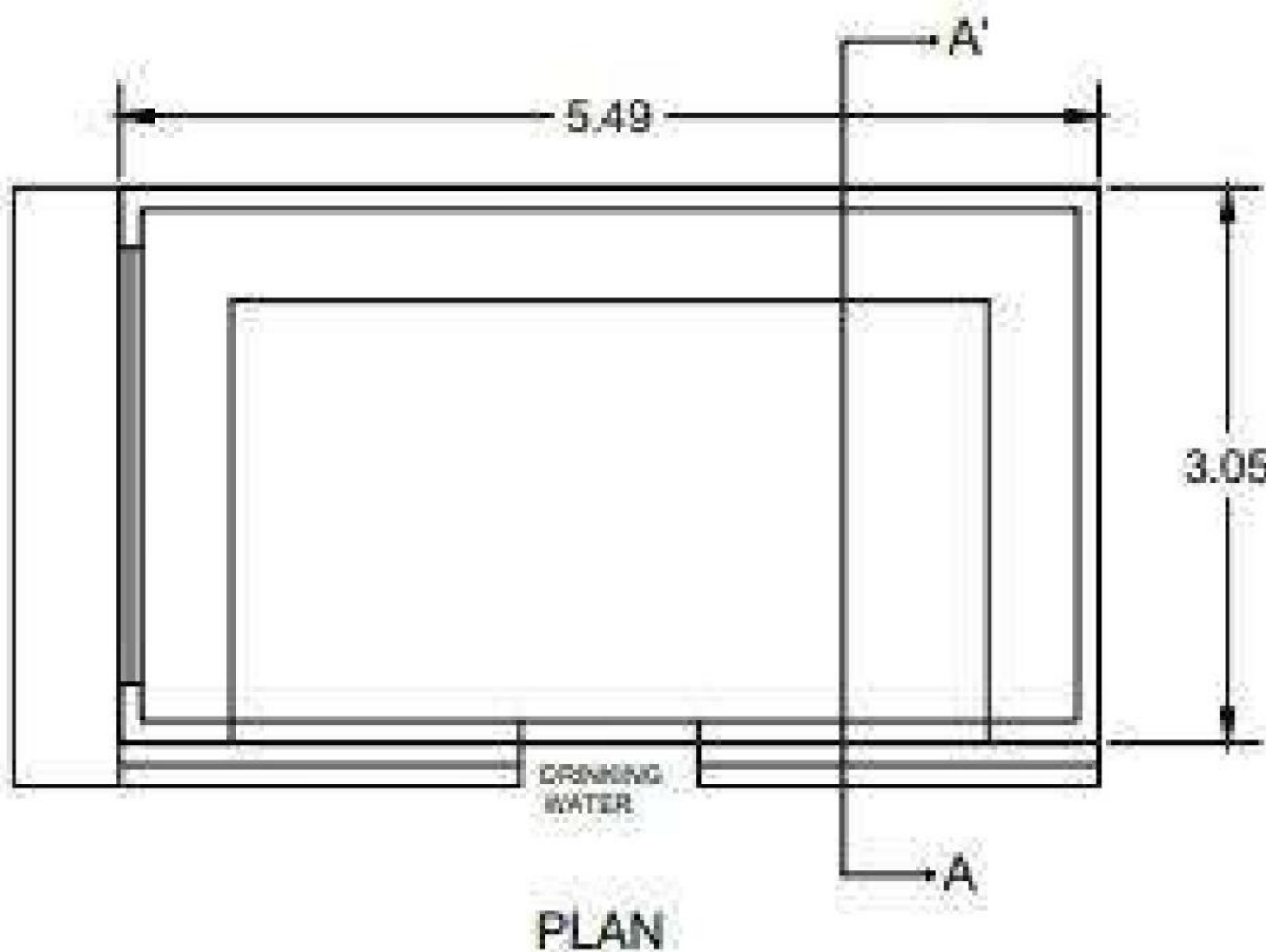


ELEVATION

Elevation of Bus Stand

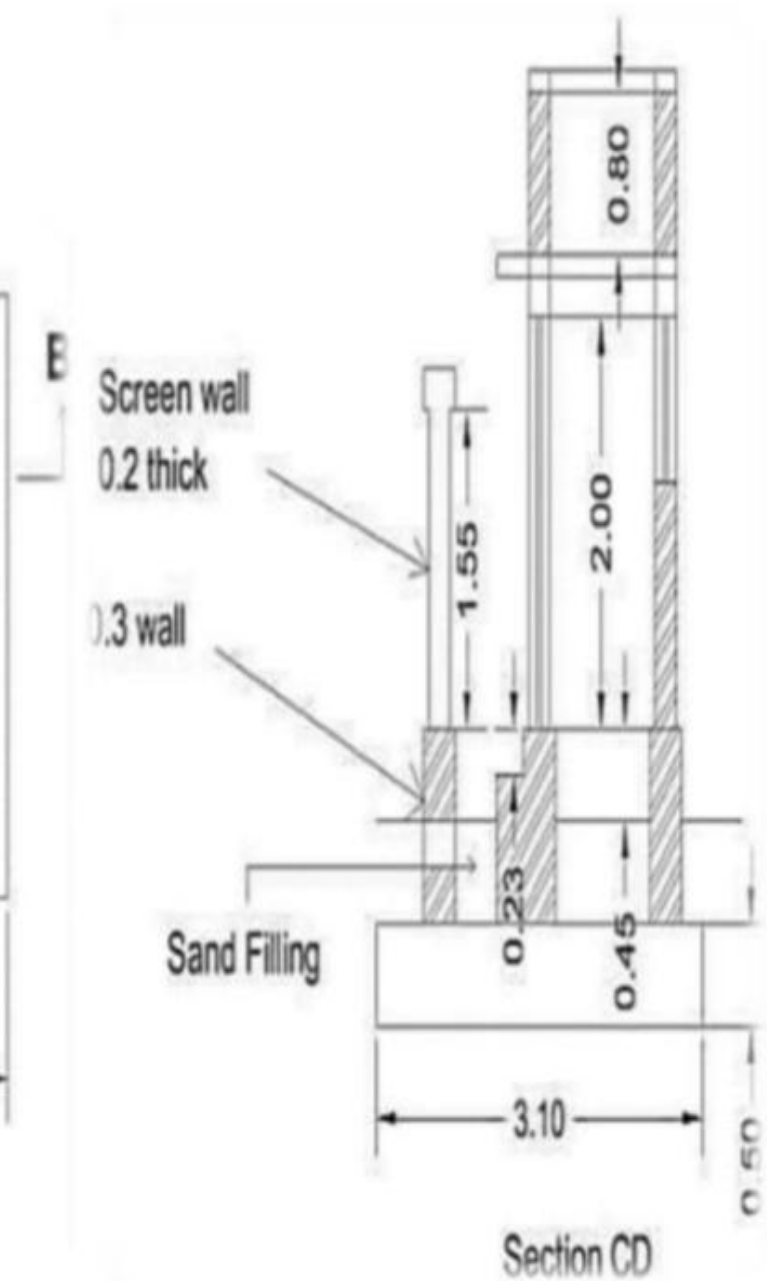
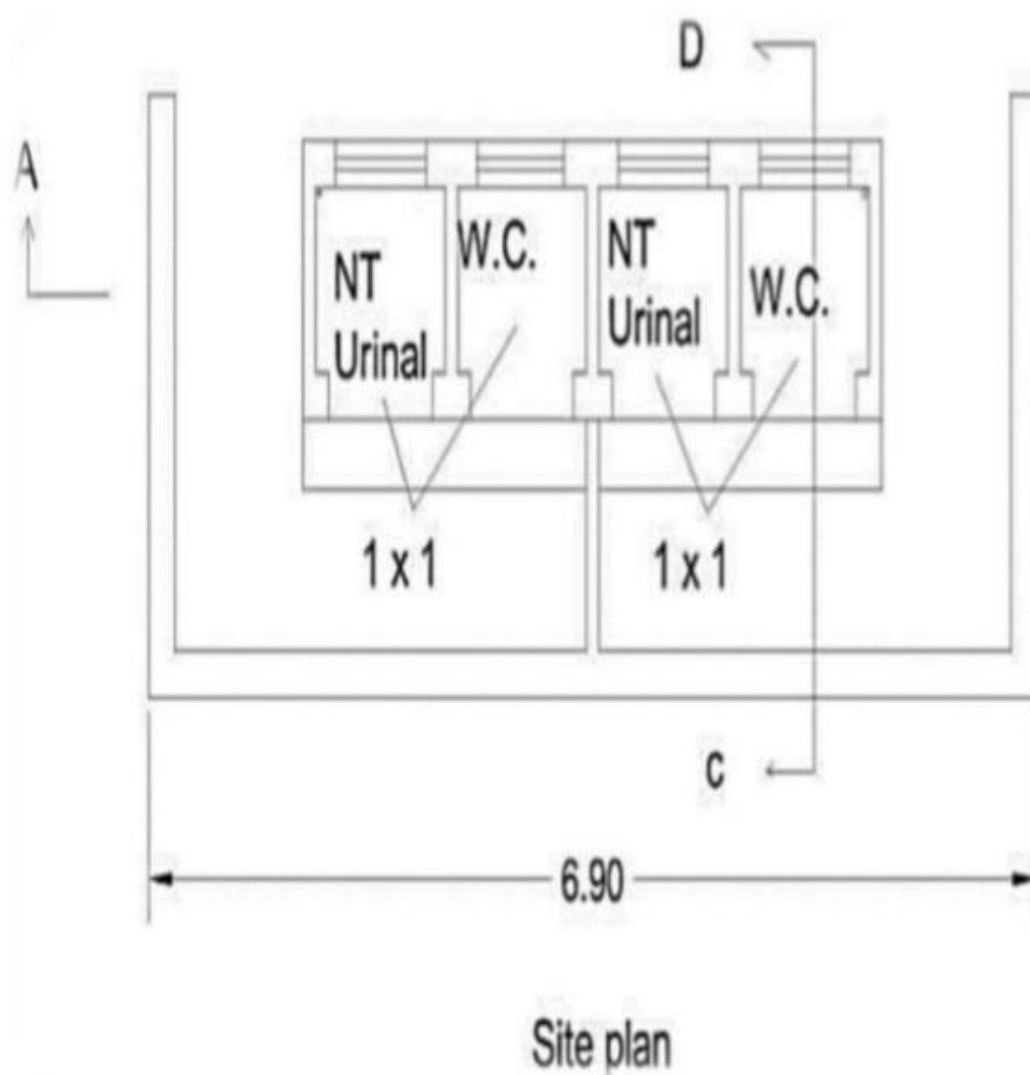
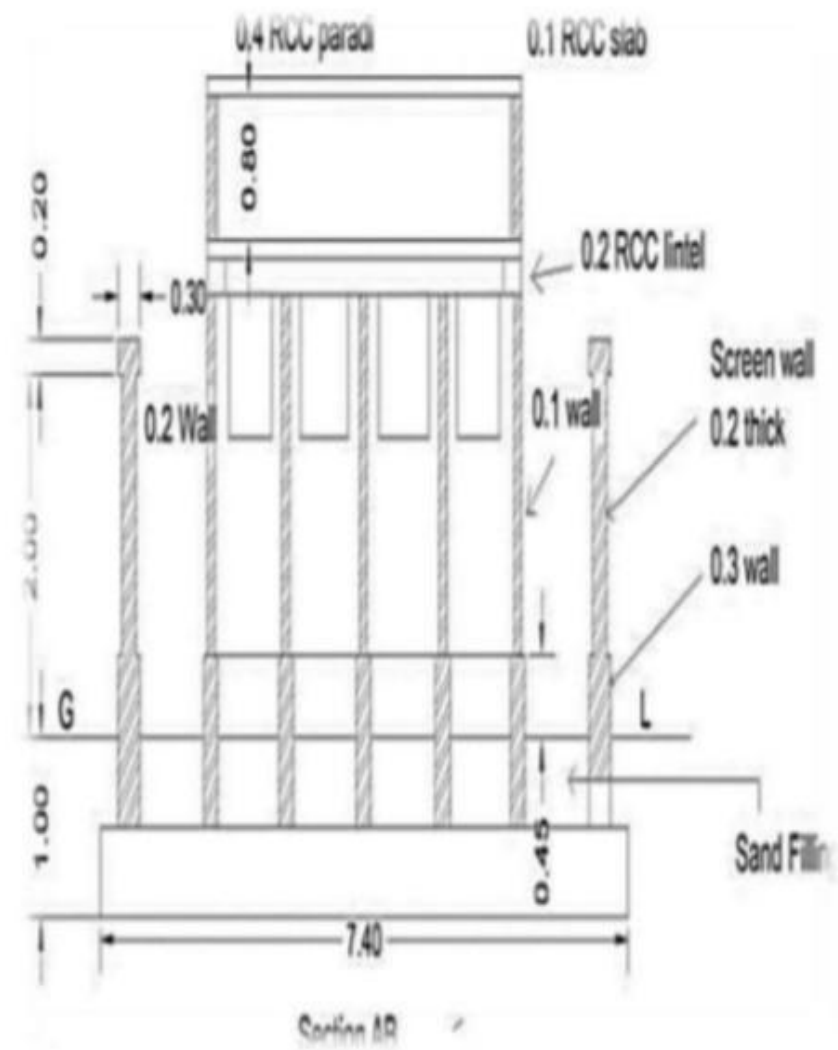
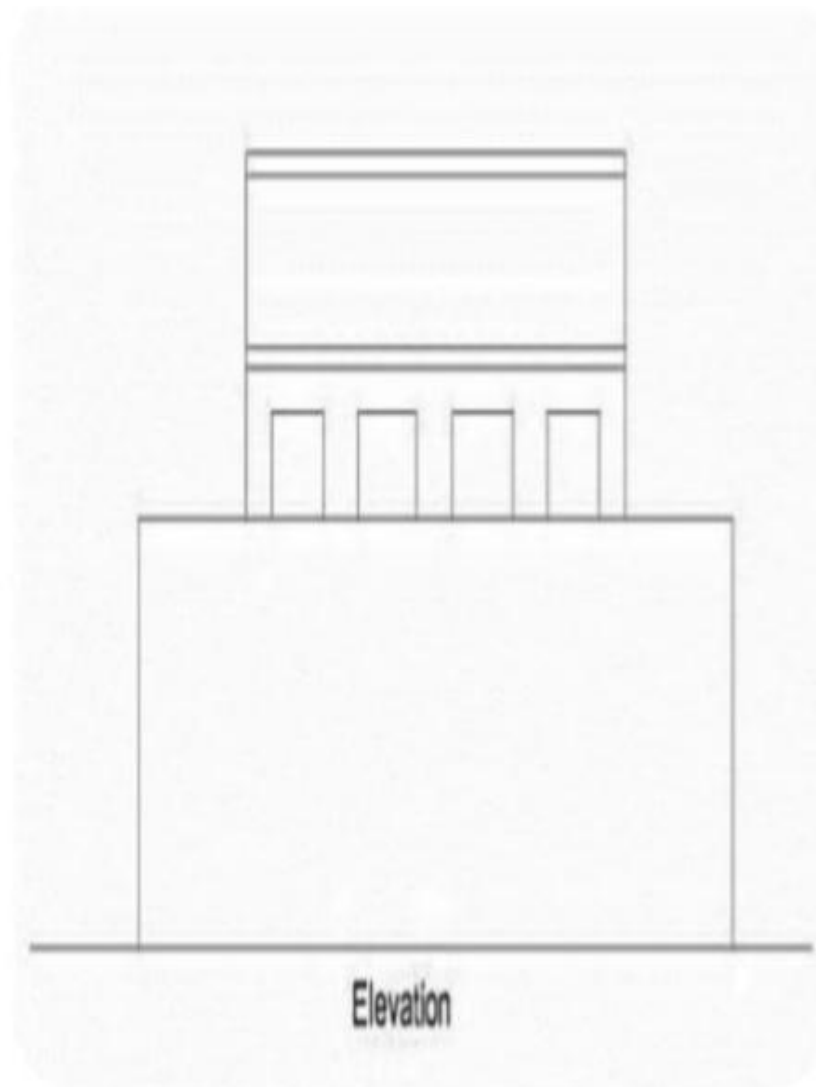


SECTION AA'

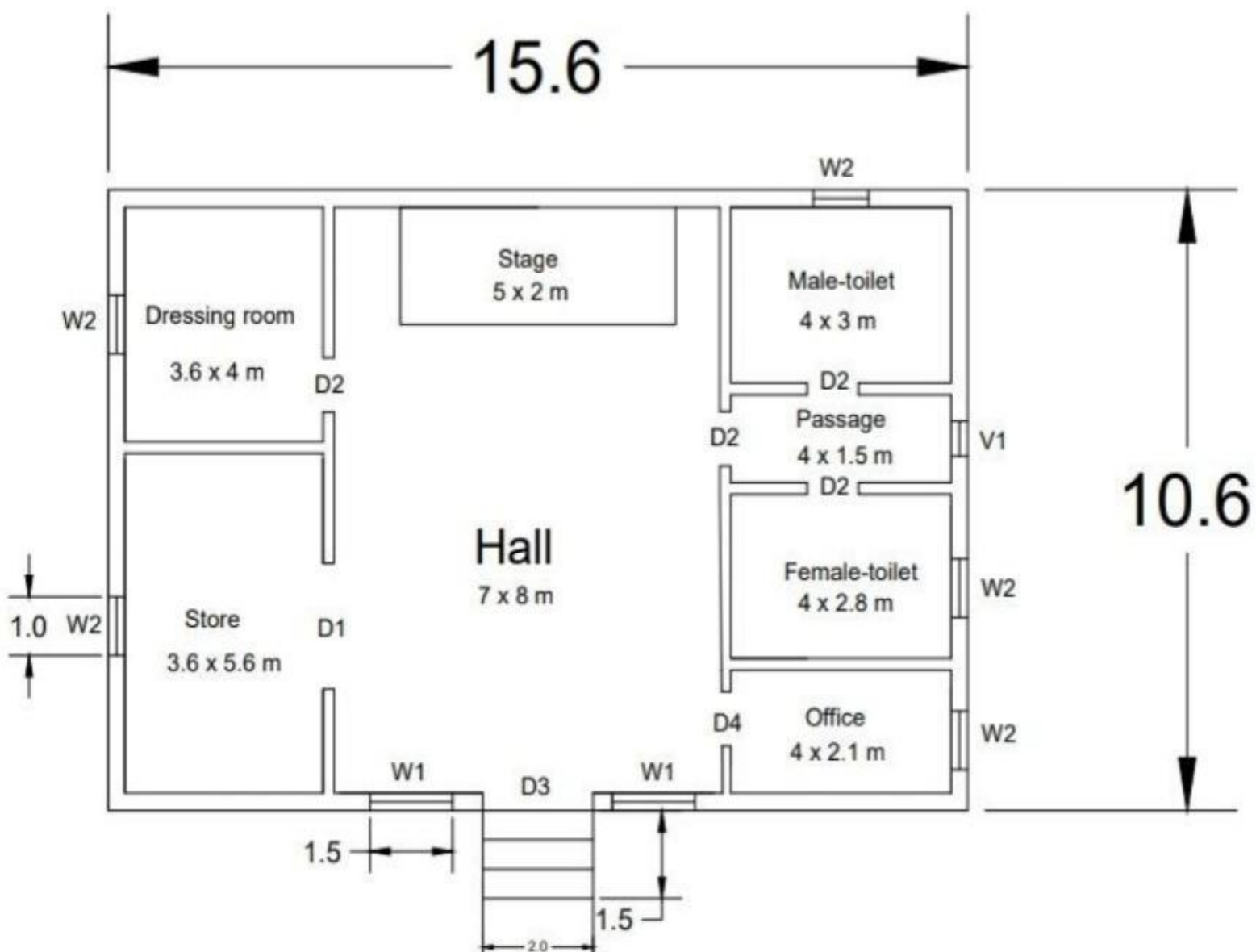
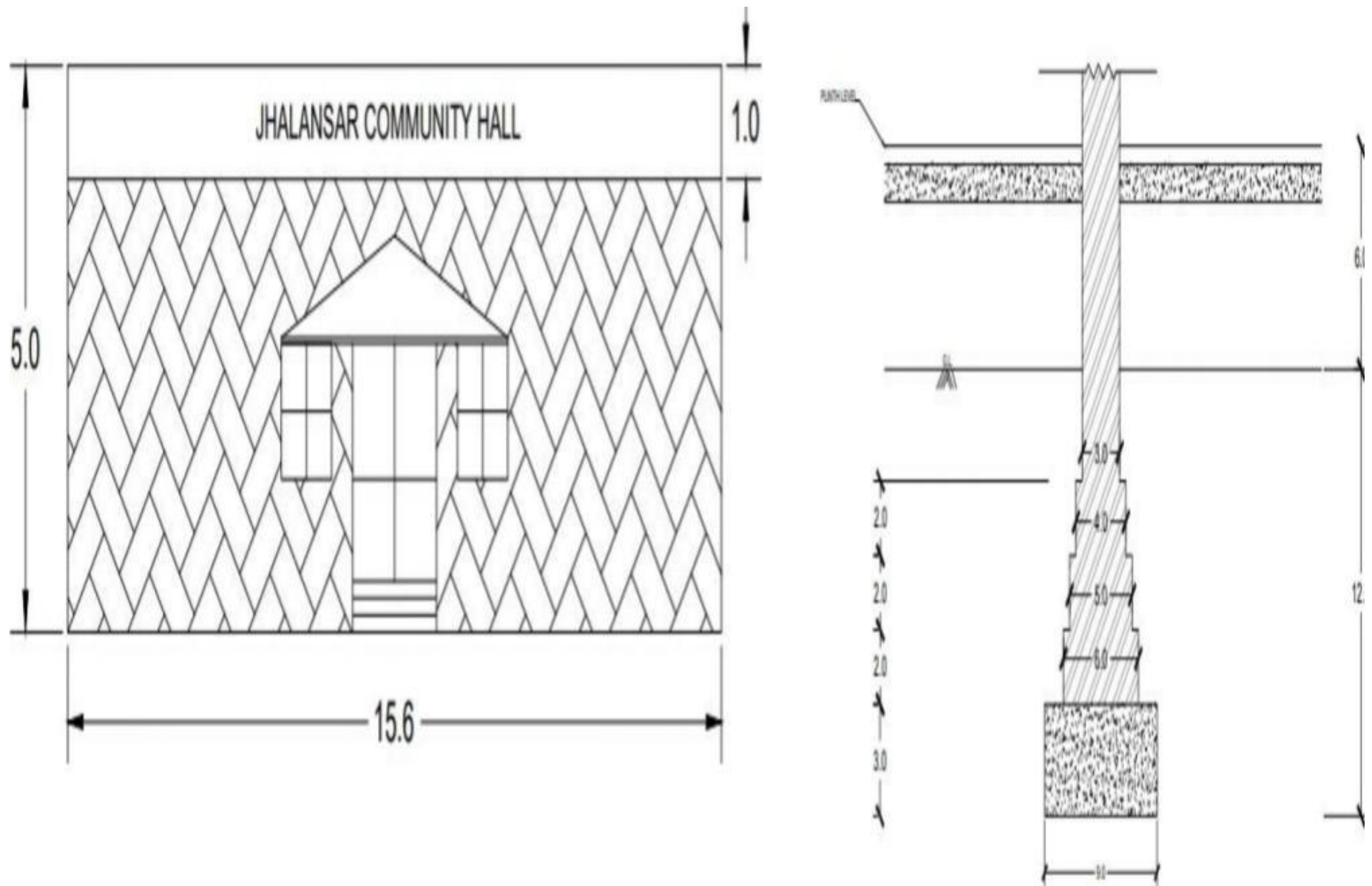


PLAN

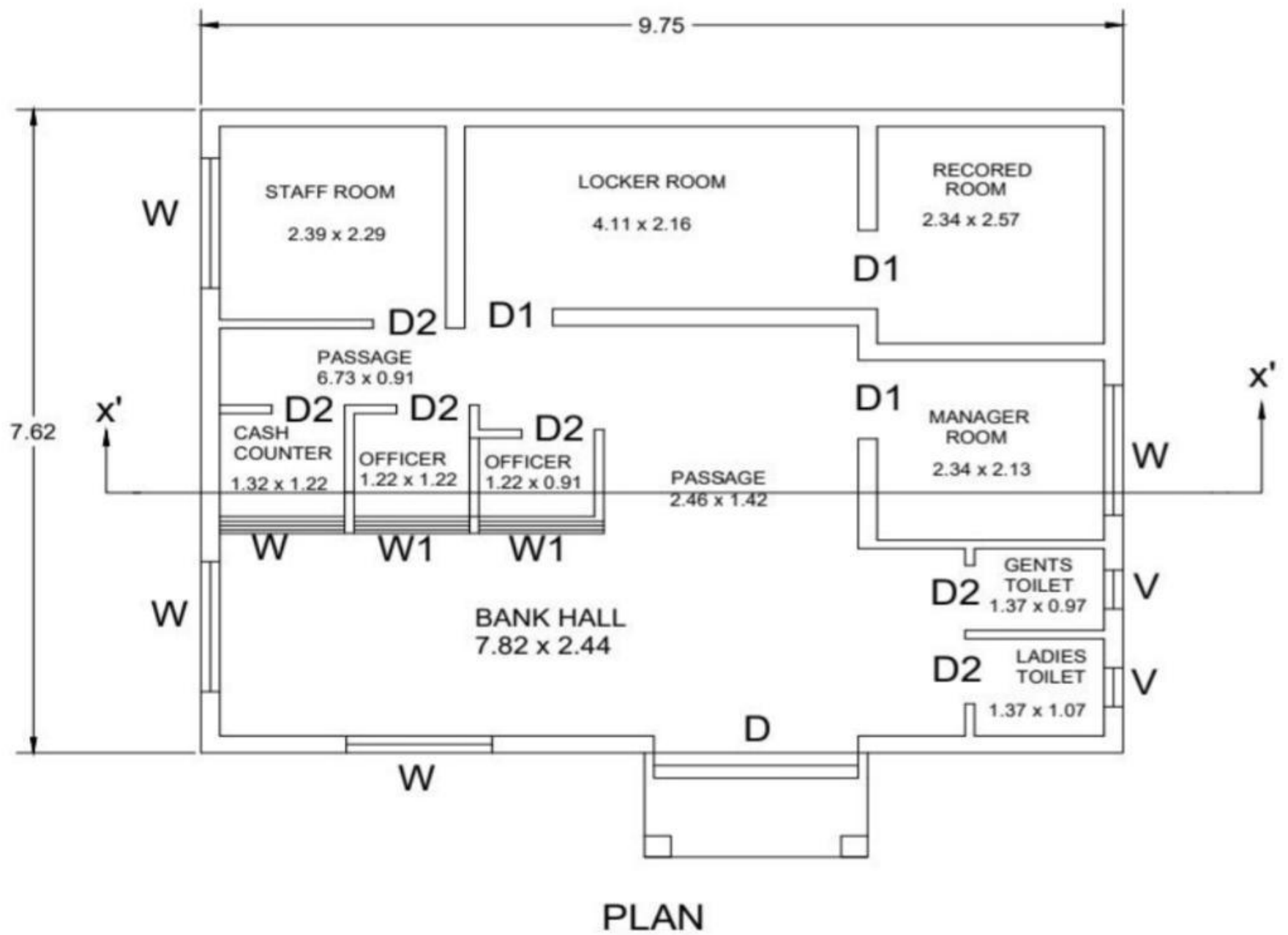
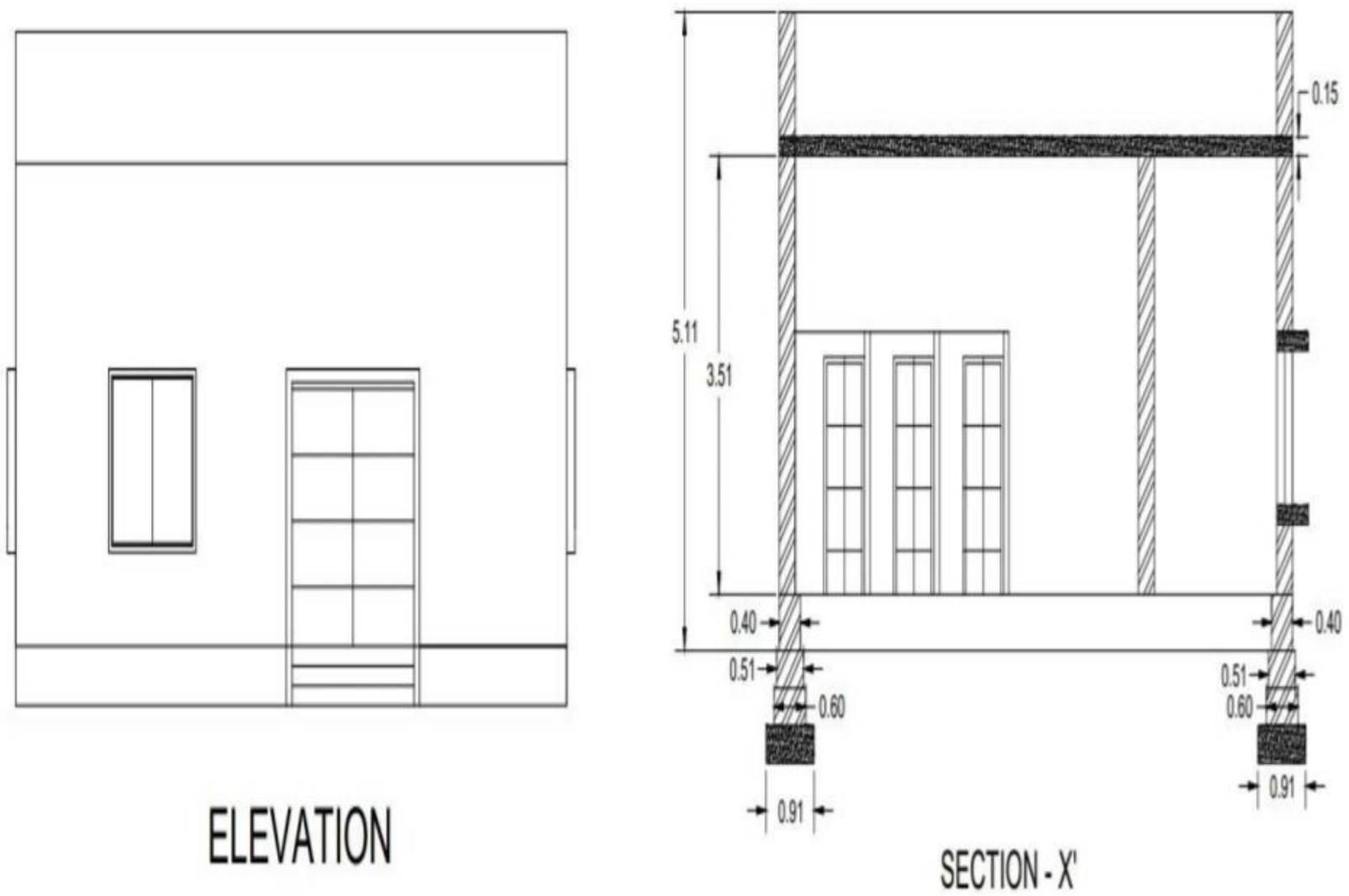
3. Public Toilet



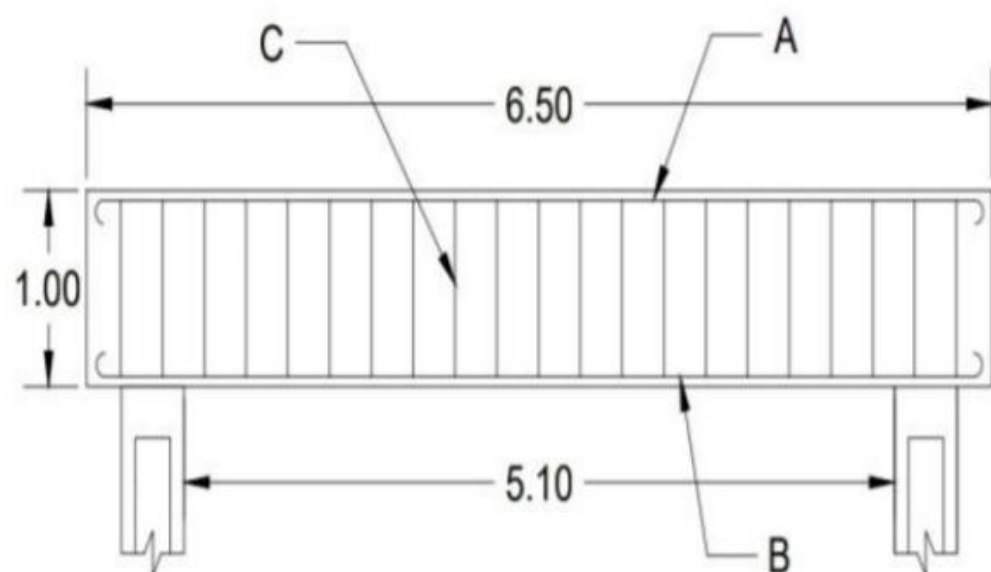
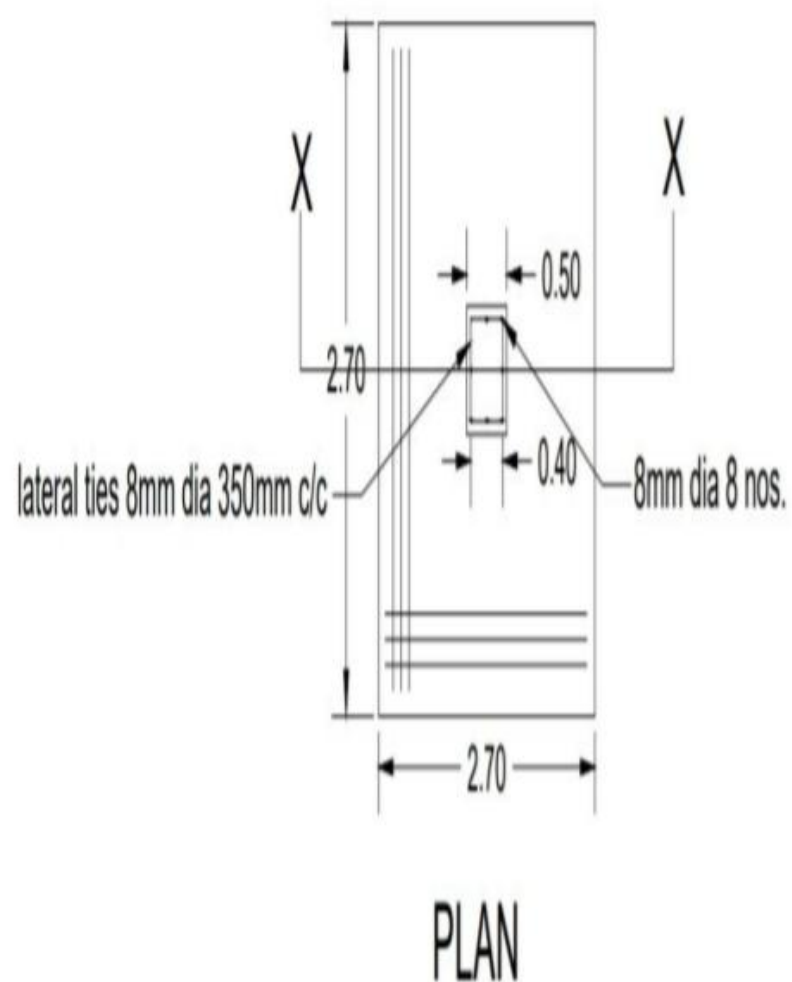
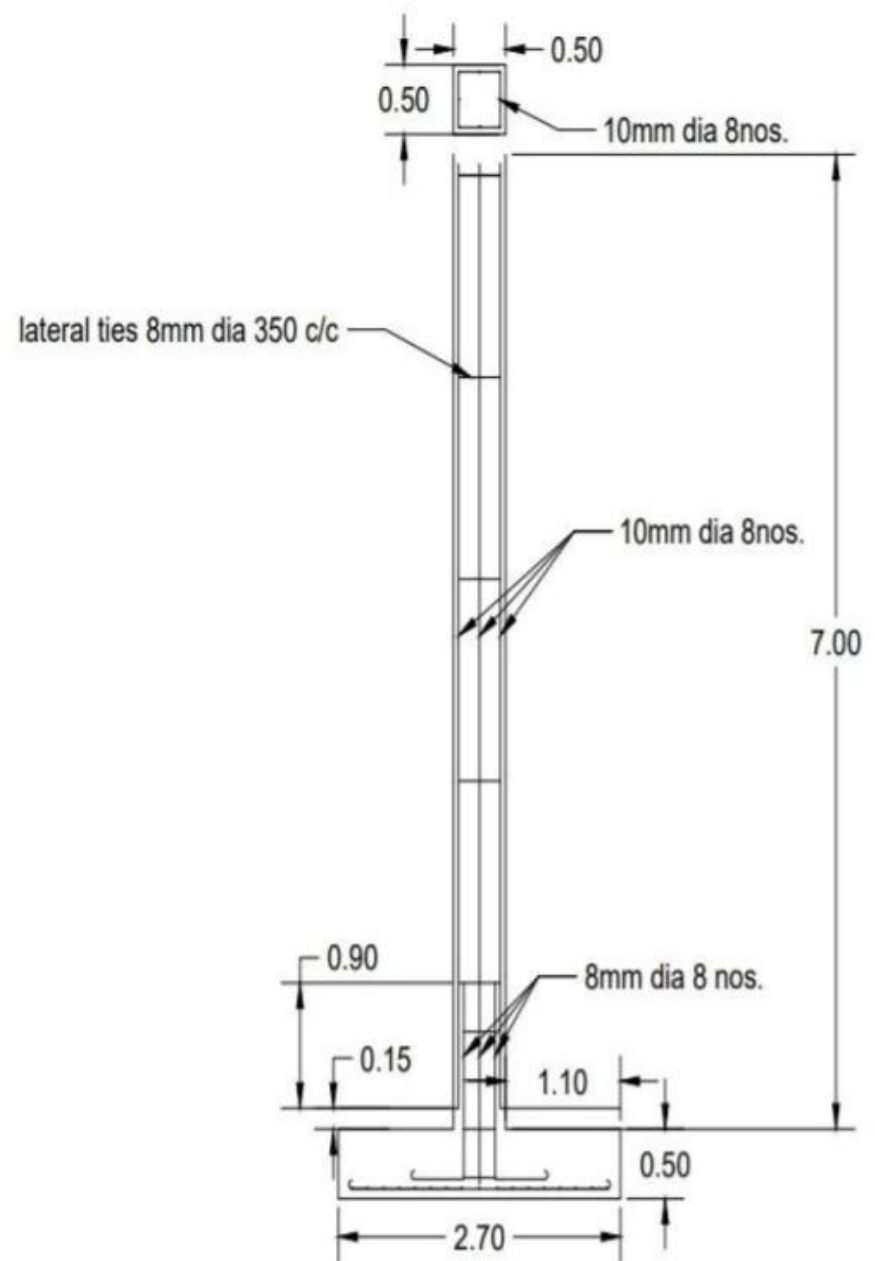
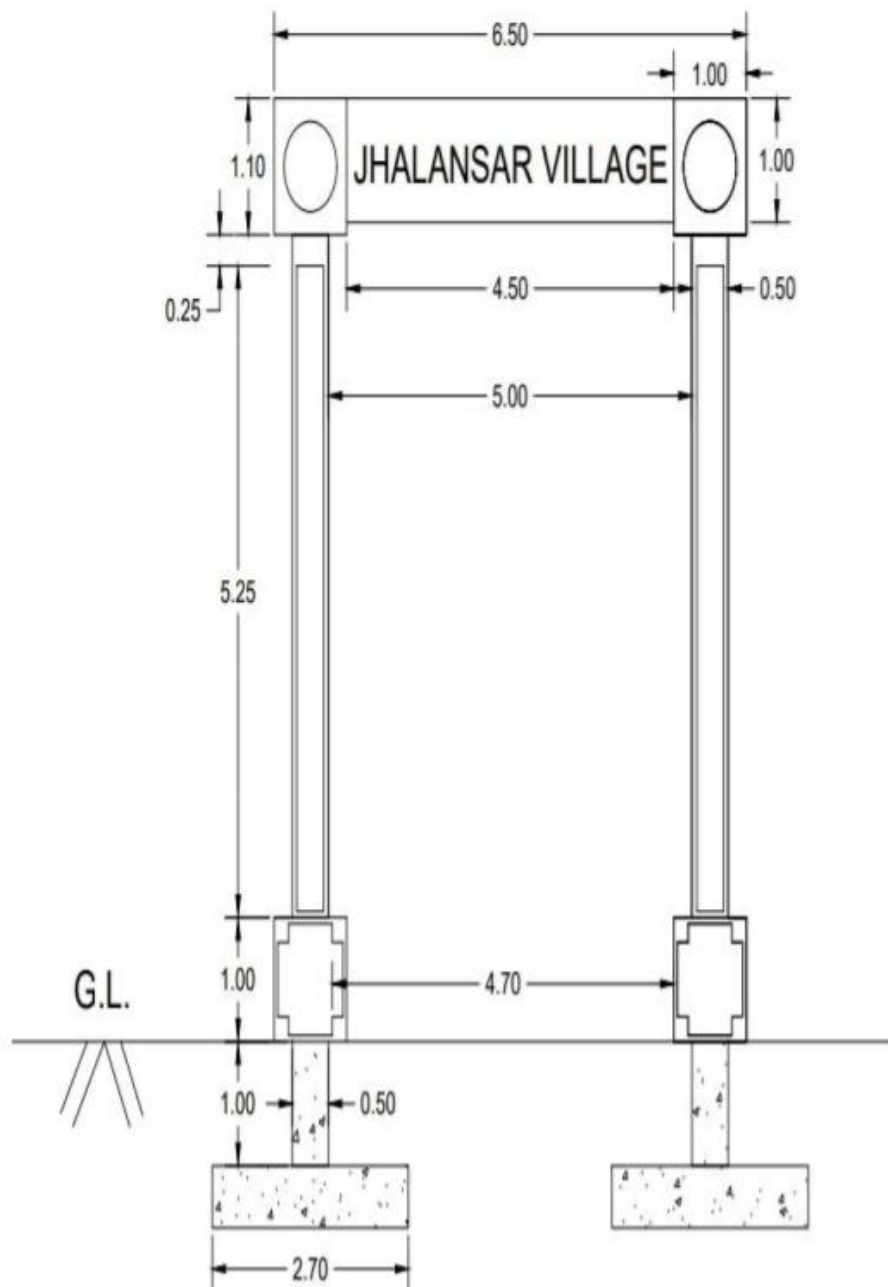
4. Community Hall



5. Bank



6. GATE



A = 10mm straight bar 2 nos. @ 0.62 kg/m
 B = 12mm straight bar 2nos. @ 0.89 kg/m
 C = 8mm stirrups 300mm c/c @ 0.4 kg/m

12.7 Summary of Good Photographs in Table Format

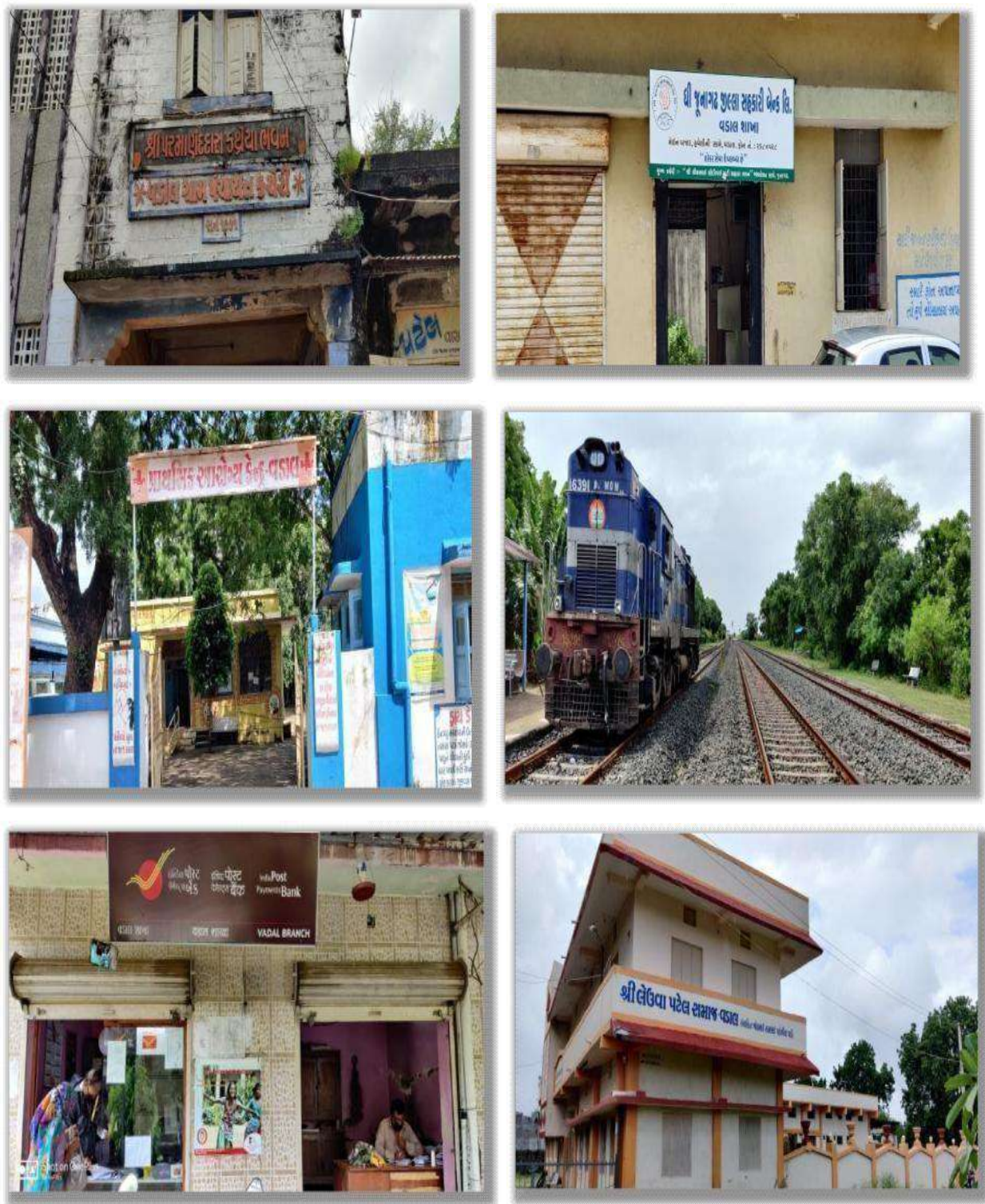


Figure No 87 Ideal Village Photo's

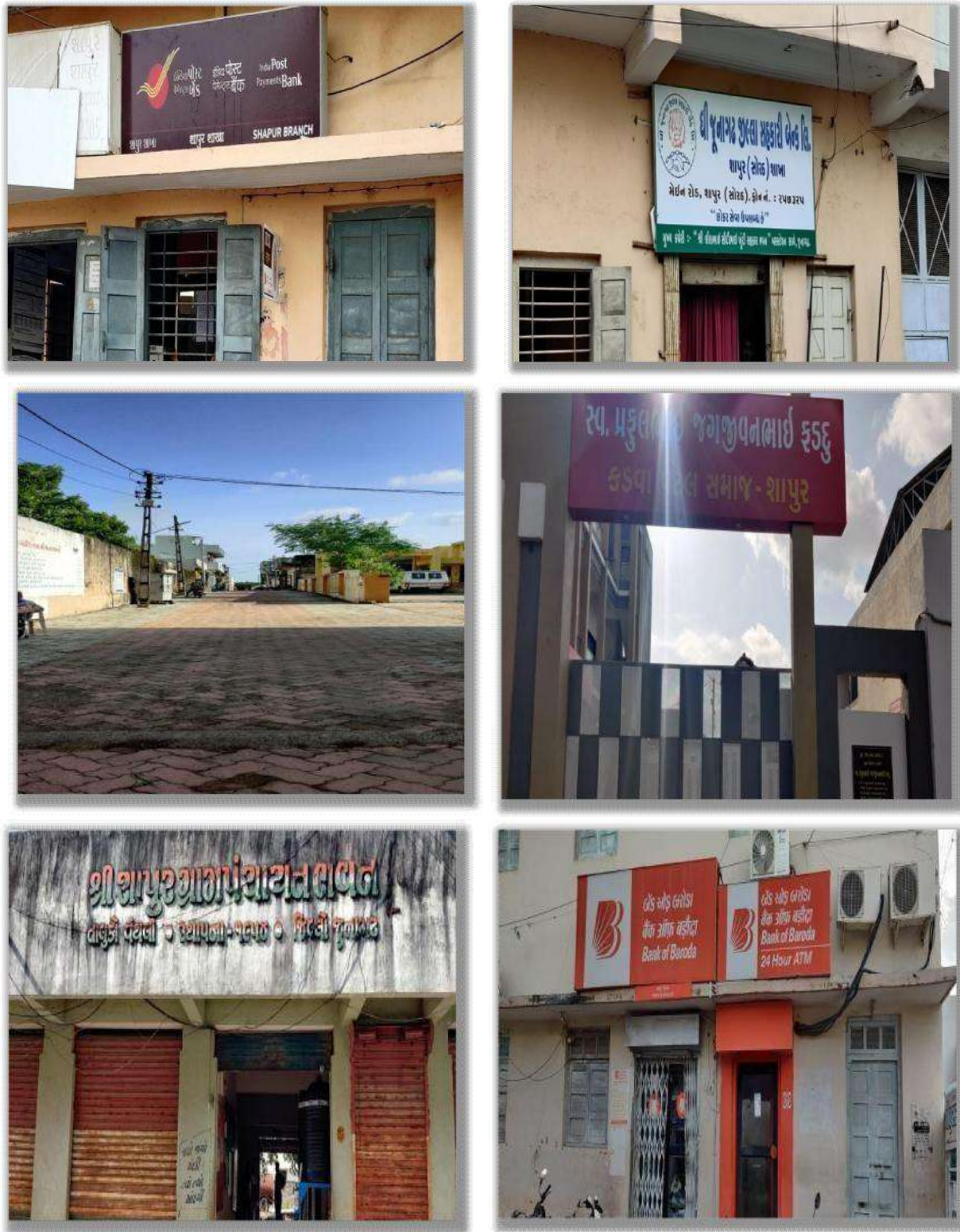


Figure No 88. Smart Village Photo's

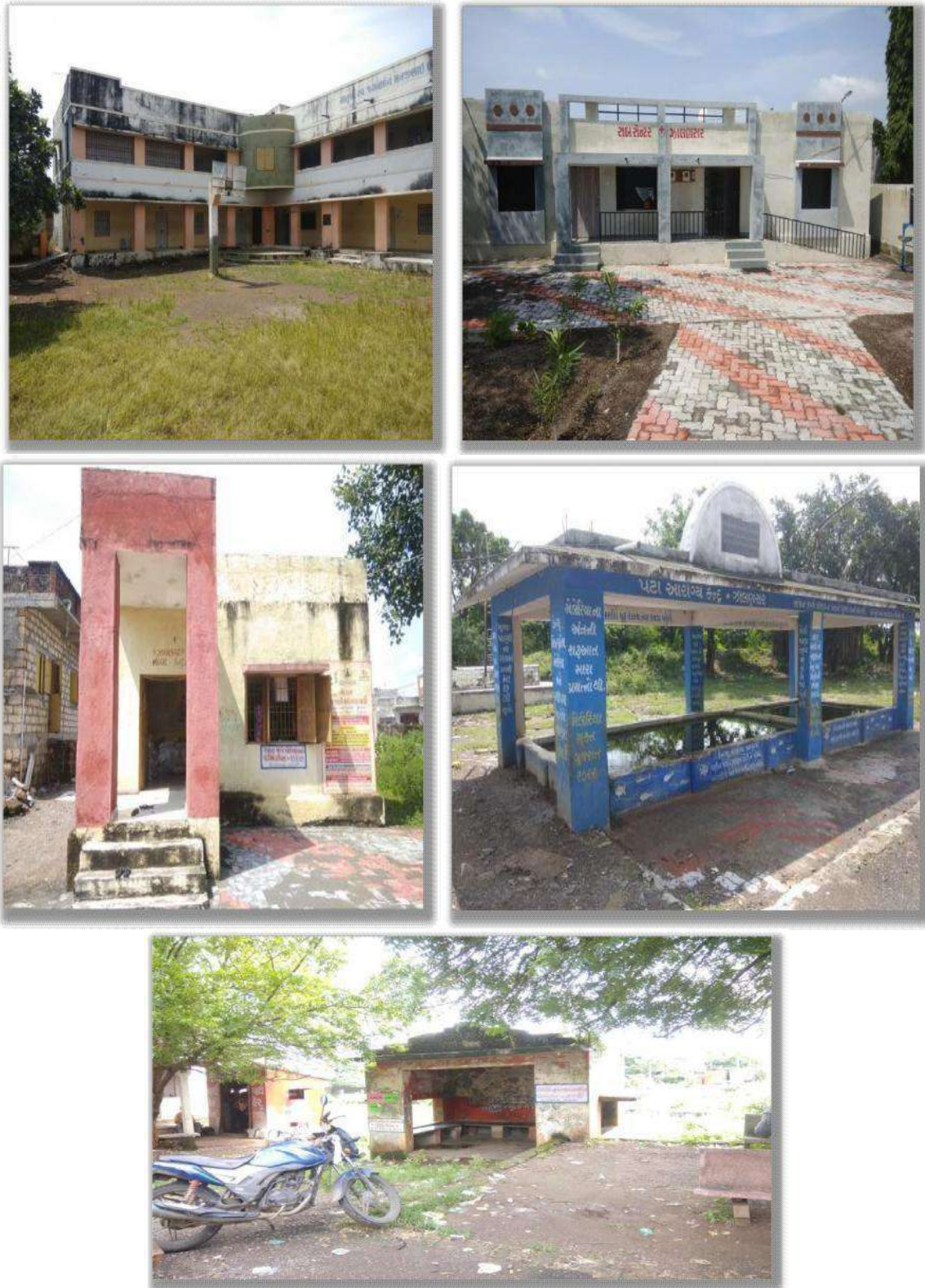


Figure No 89.Allocated Village Photo's

12.8 Village Interaction with sarpanch Report with photograph



Figure No 90. Sarpanch

- As per the guideline of Vishwakarma Yojana VIII, we visited Jhalansar village for the study purpose.
- We met Sarpanch and Talati Mantri. We met other staff member also, and they gave us good response. Still we tried our best for collection of data from other sources.
- We also visited through the village and interacted with villagers directly and asked them about the present situation of village. We had conducted a Techno-economic survey of Jhalansar village.
- After doing the survey of the village, we prepared gap analysis and designed necessary facilities for Jhalansar village.
- We designed Bio Gas Plant, Bus Stand, Public Toilet, community Toilet, Bank and Anganwadi.

12.9 Sarpanch letter giving information about the village development

 **BALAJI ENGINEERING COLLEGE - JUNAGADH**
 Al. Makhiyala, Junagadh-Dhoraji Highway, Junagadh - 362014 Ph. : 0285-2687238 Fax : +91-285-2687338
 Ref. No. : 6561032142/20/192 Date : 17/8/20

માનનીય
 સરપંચશ્રી
 જાલણસર

વિષય : ગામ ની મુલાકાત લેવા બાબત,

નમસ્કાર,

આવેનય શાચ જગાલવાનુ કે "બાલાજી એન્જીનીયરીંગ કોલેજ", જૂનાગઢ માં અભ્યાસ કરતા વિદ્યાર્થીઓને છેલ્લા વર્ષ ના પ્રોજેક્ટ બાબતે આપના ગામ ની મુલાકાત લેવાની હોય તો આપણી ને નમ્ર વિનંતી કે અમારા વિદ્યાર્થીઓને તમારા ગામ ની મુલાકાત માટે ની પરવાનગી આપવા વિનંતી,

ગામ ની મુલાકાત દરમ્યાન ગામ ના વિકાસલક્ષી કાર્ય નુ અવલોકન કરી તેમજ તેનો એક અહેવાલ સેવાર કરવામાં આવશે, તો આ કાર્યમાં આપણી અને ગામવાસીઓ સહભાગી થાઓ એવી અમારી અપેક્ષા છે. વિદ્યાર્થીઓ ના નામ ની યાદી નીચે દર્શાવેલ છે.

i) કાલસીયા ગુંજન દરમુખભાઈ - 181093106004
 ii) આવલિયા સાગર જવેરભાઈ - 181093106006

આભાર 215
 આપનો વિદ્યાર્થી
 Principal
 Balaji Engineering College
 Makhiyala - Junagadh.

સરપંચ
 ગ્રામ પંચાયત જાલણસર

E-mail : becjunagadh@gmail.com Web site : www.bietjunagadh.org

12.10 Comprehensive report preparation as per format

- Jhalansar is a village in Junagadh Taluka in Junagadh District of Gujarat, State India. It is located 16Km from Junagadh Jhalansar village population is 2398
- Sarpanch, Talati, panchayat member and village dweller remained present to know how the development of Jhalansar village is possible and to give their feedback.
- Sarpanch and village dweller shared various problems faced by them while designing such a facility, gave various approaches and also presented management techniques of such facility with proposed design.
- We explained all the parameters of various designs such as sustainable, physical, social, socio-culture, smart and heritage village design.
- The Bus-stand, anganwadi and public toilet are required for repair & maintenance.
- Our team of VY thanked all the members of the village for their support during this work period and made them understand that the implementation of such facilities can build a better village and hence lead to build a strong nation.
- The presentation was very much interactive and helpful to understand various amenities to be designed at village level for the overall development of the Jhalansar village as Rurbanisation.

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

13.1 Design Proposals

In tachometric survey done by us, we observed that the basic physical infrastructure, socio-culture infrastructure, sustainable infrastructure, physical infrastructure includes sours of drinking water, water tank, drainage system, road network, electricity distribution, sanitation facilities and irrigation system, social infrastructure includes school, colleges, Anganwadi, hostel, sub center, clinics, sustainable infrastrure include Bio-gas plant, solar street lights, rain water harvesting, renewable energy source social- cultural facilities include community hall, public library, public garden, pond cerebration center, cinema hall, assembly polling station, birth and death rogation office etc.

13.1.1 Anganwadi Manitence:-

Scenario:- The Ministry of Women Development and Child Welfare has laid down guidelines for the responsibilities of Anganwadi workers. These guidelines include showing community support and active participation in executing this program, conducting regular quick surveys of all families, organizing pre-school activities, providing health and nutrition education to families, especially pregnant women, motivating families to adopt family planning, educating parents about child growth and development, assisting in the implementation and execution of Kishori Shakti Yojana, educating teenage girls and parents by organizing social awareness programs, and identifying disabilities in children.

Existing situation jhalansar village:- There are two Anganwadis in Jhalansar village and one of them is in dilapidated condition so it is necessary to repair the Anganwadi So there can be activities like teaching children well, playing, etc. Therefore it is necessary to maintain this Anganwadi.

Maintenance of Anganwadi

For 1m length 12 mm wide and 6mm deep including 12mm thick plaster in wall of 100 M².

➤ Wet quantity of mortar = area × thickness

$$= 100 \times 0.012$$

$$= 1.20 \text{ cum}$$

➤ Adding 30% for filling up joint, uneven surface etc.

$$\text{The quantity of mortar} = 1.2 + (1.2 \times 0.3)$$

$$= 1.2 + 0.36$$

$$= 1.56 \text{ cum}$$

- Increasing by 25% for dry volume, the total quantity of dry material

$$= 1.56 + (0.25 \times 1.56)$$

$$= 1.56 \times 0.39$$

$$= 2 \text{ cum}$$

- For proportion of cement mortar (1.3)

$$\text{Cement} = 0.5 \text{ m}^3$$

$$\text{Volume of 1 bag of cement} = 0.035 \text{ M}^3 \text{ Cement bags required}$$

$$= (0.5 \div 0.035)$$

$$= 14.28 \text{ Nos}$$

$$\text{Considering cost of 1 M}^3 \text{ cement mortar (1.3)}$$

$$= 4800 \text{ Rs.}$$

$$\text{Thus total cost for 2 m}^3 \text{ can be consider as}$$

$$= 9600 \text{ Rs.}$$

Table 26. Crack filling cost:

DESCRIPTION	TOTAL COST
2 M ³ of Cement Mortar (1.3) (with 15 Bags Cement and 1.5 M ³ Sand)	9600 Rs.

13.1.2 R.O. Water Plant:-

Scenario: - Water Purifiers have become pivotal in every household. R.O. or Reverse osmosis is a water purification process that uses a partially permeable membrane to remove ions, unwanted molecules and harmful particles from drinking water. In the current scenario where fear of contamination and spread of germs, bacteria and viruses has become a real threat, using a Pure it R.O. water purifier can keep all your worries at bay.

Existing situation Jhalansar village: - In Jhalansar village there is availability of daily usage water supply but there is no availability of Clear drinking water supply. They use sources like underground water, by using of hand pump, tube well, open well etc. or Directly from the supply by the panchayat which is untreated water, so we decided to give design of R.O plant building there.

In Jhalansar village there is availability of daily usage water supply but there is no availability of Clear drinking water supply. They use sources like underground water, by using of hand pump, tube well, open well etc. or Directly from the supply by the panchayat which is untreated water, so we decided to give design of R.O. plant building there. This R.O. plant will be machinery working plant.

As per IS drinking and cooking water use is 15 lt./head/day, 5 lt. water is extra for safety purpose.

$$= 15 \text{ lt./head/day} \times 5484 \text{ head}$$

$$= 82260 \text{ lt. /day}$$

$$= 90000 \text{ lt. /day (with extra factor)}$$

Total requirement of R.O water of the village is 82260 lt./day, so we design R.O plant and its capacity is 90000 lit/day. We decided to use machinery of R.O plan and its filtering capacity is 20000 lit/hr.

The Plant BASIS OF DESIGN the Following Raw Water Analysis Is Considered as Basis of Design (Approx.)

A. RAW WATER CHARACTERISTICS

Ph. = 7.0-7.5mg/Lt.

Total Dissolved Solids = 2000mg/Lt. Total Hardness = 200mg/Lt.

Total Alkalinity = Nil

B. TREATED WATER QUALITY FROM R.O. PLANT:

Total Hardness ... <50 PPM Ph. 7.0-7.5

Total Dissolved Solids <50 mg/lit Color.... nil

Odor nil

The Above Quality of R.O. Product Water Is Achieved, Subject to Following Conditions:

1. The Feed Water Quality Is Not Worse Than Specified
2. The Feed Water Limiting Condition Mentioned Below Are Strictly Maintained.
3. The Operation & Maintenance of The Entire Systems Is Carried Out Strictly as Per Our Operation & Maintenance Manual.
4. Pure Cleaning Chemicals. Original Spare & Consumables Specified by Us Are Used in Plant.

For 20,000 lit/hr R.O plant machinery at below the

Table 27. With all Description.

No.	Item	Capacity	Quantity	Made	Information
1.	Raw water pump	40,000 LPH	2	Lubi/ Equiv.	
2.	Pressure sand filter	40,000 LPH	2	FRP	Filtering media - sand, pebbles, gravels, Type- Vertical pressure vessel
3.	Activated Carbon filter	40,000 LPH	2	FRP	Filtering media - Activated Carbon, Type - Vertical pressure vessel
4.	Anticipant dosing Pump	0 to 5LPh	2	Italy/ equiv.	Type – Electronic Diaphragm
5.	Micro cartridge filter Unit	40,000 LPH	2	FRP	Type- Replaceable
6.	High pressure pump	40,000 LPH	2	SS	Type – Vertical multistage centrifugal
7.	Ro module	-	40	Polyamide	Type - Thin Film Composite spiral wound Item – Ro
8.	Ro skid	-	2	SS	-
9.	Raw water storage Tank	20,000 LPH	4	Polyamide	Type - syntax tank
10	Ro water storage tank	5,000 LPH	8	Polyamide	Type - syntax tank



Figure No 91. R.O. Water Plant

Scope of remaining work

- Bore well & raw water storage tank.
- Total Electrical wiring up to pane of the machine.
- PVC piping (1.5 inch) up to inlet of Sand/Media filter.
- Drainage / Backwash/Waste pipe line of PVC (1.5 inch) for R.O.
- Raw material for Testing and Trial.
- Servo Power Stabilizer.
- To & Fro Travelling + Lodging + Boarding of All Visiting Parsons.

Maintenance & area for plant:-

Maintenance Cost for Anticipant Liquid per month = 10,000 Rs. Micron Cartridge Filter Per No = 1500 Per Month.

Manpower Required for Operation = 2Nos.

Total cost of (20,000 lit/h) R.O plant machinery with fitting & labor charges is 20 lacs per R.O. plant. Including 8 no. storage tank of 5,000 lt.

R.O. plant required area is = 16m × 30m Required area for Operation= 2m × 1m

Total area for R.O plant building = 20m × 30m

Table 28. TOTAL MATERIAL USE IN R.O PLANT BUILDING

MATERIAL	REQUIRED (FOR)	QUNTITY	Rate Per Unit	Amount in INR
Brick (19cm × 9cm ×9cm)	131.2 m ³	65600 Nos.	5	3,28,000
Cement	721.38 Bags	722 Bags	320/bag	2,39,040
Aggregate	35.64 m ³	36 m ³	1000/m ³	36,000
Brick bats	18.4 m ³	19 m ³	800/m ³	15,000
Sand	90.30 m ³	91 m ³	800/m ³	72,240
Reinforcement	2684.7 kg	2.7 tones	55/kg	1,47,660
Polished kota (600mm× 600mm)	270.72 m ²	888 Sq. Feet	18/feet	15,985
Water supply pipe	19 m	19 m	30/m	570
Raw water storage tank (syntax)	1,00,000 liters	20,000 liters (2)	78,000	1,56,000
R.O. water storage tank (syntax)	90,000 liters	5,000 liters (5)	31,500	1,57,500
TOTAL				11,57,995 Rs
ADD 3% Contingency				34,800
ADD 2 % Work Charged Establishment				23,200
GRAND TOTAL				12,17,995 Rs.

13.1.3 PLAY GROUND:-

Scenario:- A playground, play park, or play area is a place specifically designed to enable children to play there. It is typically outdoors. While a playground is usually designed for children, some target other age groups or people with disabilities. A playground might exclude children below a certain age. Public playground equipment installed in the play areas of parks, schools, childcare facilities, institutions, multiple family dwellings, restaurants, resorts, and recreational developments, and other areas of public use. A type of playground called a plays cape is designed to provide a safe environment for play in a natural setting.

Existing situation Jhalansar:- In the Jhalansar village there is no play ground in the village. So that for the better living standard and entertainment purpose we have proposed one design of public play ground as recreational area in the village. So we have decided a design for public play ground in the village.

Among various physical designs, Play ground is not available in Jhalansar village and so it is designed below

1) CHILDREN'S PLAY GROUND

TOTAL CENTER LINE LENGTH: $= 2 \times 10.4 + 2 \times 10.4 = 41.6 \text{ M}$



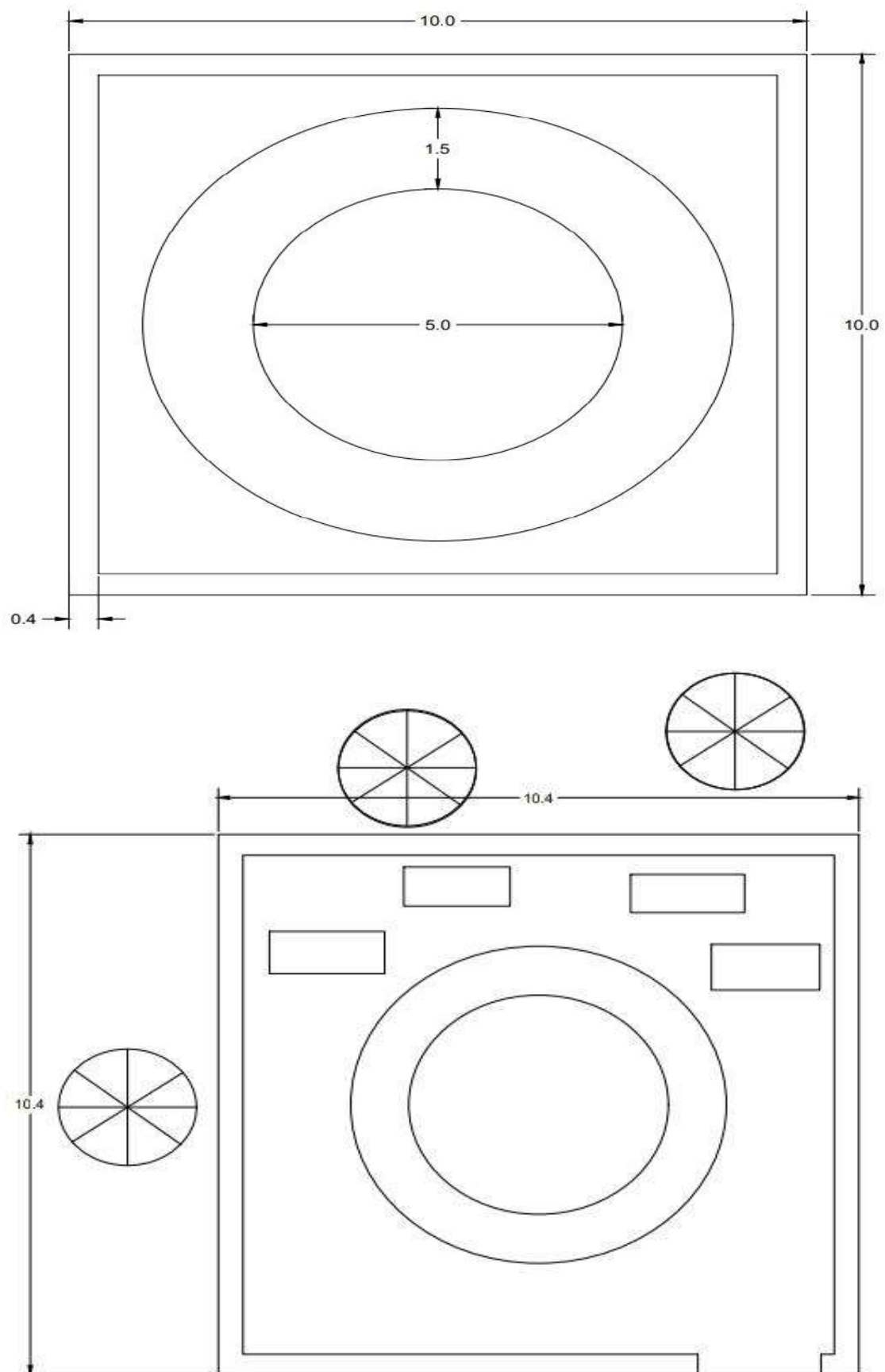


Figure No 92 Play Ground

CALCULATION FOR WELL

Table No 29 Calculation for well

Item No.	Item description	No.	Length	Breadth	Height	Quantity
1	Excavation	1	41.6	0.7	0.3	8.736m ³
2	PCC	1	41.6	0.7	0.1	2.912 m ³
3	First step	1	41.6	0.5	0.2	4.16 m ³
4	Wall	1	41.6	0.4	0.9	14.976 m ³
Deduction:	Gate	1	1	0.4	0.9	(-)0.36 m ³
						=18.77 m ³

ABSTRACT SHEET for Play Ground

Table No 30 abstracted for play ground

Item description	Qty	Rate	Per	Amount(Rs.)
Material:				
Brick:	9385	5	m ³	46,935
Sand:	5.31	800	m ³	4248
Cement:	25 bags	320	bag	8000
Labor:				
Male coolie:	2	350	Day	700
Female coolie:	2	300	Day	600
Bhistie:	1	350	Day	350
COST				61,823
WATER CHARGE 1.5%				928
CONTERACR PROFIT 10%				6,182
GRAND TOTAL				68934 Rs.

Water charges = $0.015 \times 61,823$

=Rs. 928

Contractor profit = $0.1 \times 61,823$

=Rs. 6,182

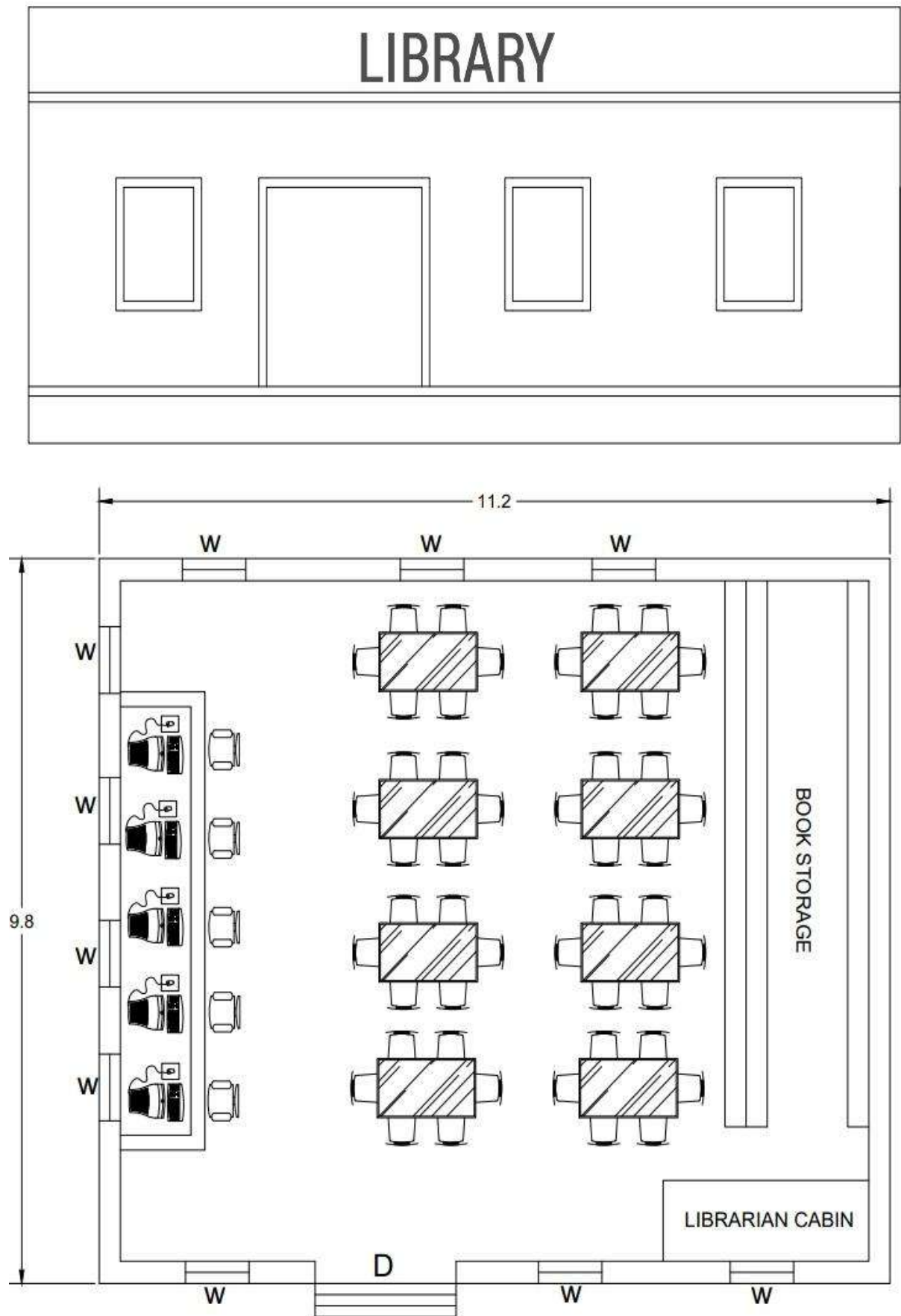
TOTAL COST = Rs. 68,934

13.1.4 PUBLIC LIBRARY:-

Scenario:- Libraries often provide quiet areas for study, and they also provide common areas to facilitate group study and collaboration. Libraries often provide public facilities for their electronic resources and access to the Internet. Libraries are a great place to socialize with your community members you can get to know people that have the same interests you do. This will help you build relationships with people of similar interests. If are new to a society, going to the local library will be a great way to socialize with the community members and you will learn a lot about the norms of that particular community.

Existing situation Jhalansar:- in Jhalansar village are primary school and higher secondary school are available. But library are not available. Students use libraries to enhance their classroom experiences. Libraries help the students to develop good reading and study habits. Public officials use libraries for read a newspaper, book, research and public issues. The libraries provide information and services that are essential for learning and progress. so we have decided a design for library.





SECTION

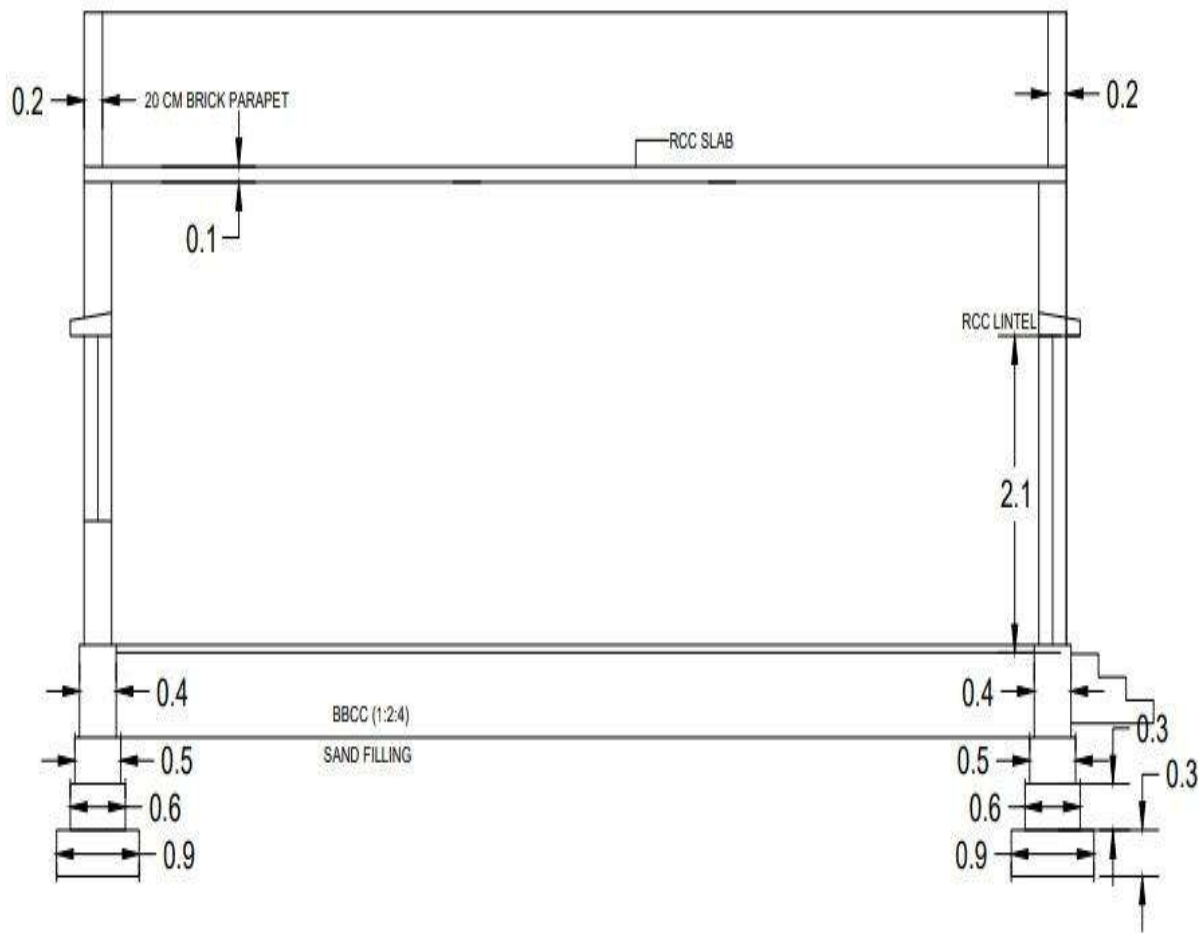


Figure No 93 Public Library

MEASUREMENT SHEET FOR PUBLIC LIBRARY:-

Table No 31 Measurement sheet for Public Library.

MEASUREMENT SHEET						
Sr. No	DESCRIPTION	NO.	LENGTH (L)	WEIGHT (B)	HEIGHT (H)	QUANTITY
	Total Centre line = $2 \times 10.92 + 3 \times 9.48 = 50.28\text{m}$ No. of T- junction = 2					
1.	Excavation for foundation up to 1.5 depth					
	Length = total centerline- (number of tea junction $\times$ width $\div$ 2)					
	$= 50.28 - (2 \times 0.9 \div 2) = 49.38$	1	49.28	0.9	0.9	39.92
	For steps:-					
	$L = 1.2 + 0.15 = 1.5\text{m}$	1	1.5	0.6	0.15	0.135
					Total:	40.055

2.	Providing and laying P.C.C.(1:4:8) for Foundation	1	49.28	0.9	0.3	13.30
	Steps	1	1.5	0.9	0.15	0.236
					Total:-	13.5
3.	First class brick masonry C:M(1:6) for Foundation					
	Step:-1(60cm)					
	L=49.68m	1	49.68	0.6	0.3	8.94
	Step:-2(50cm)					
	L=49.78m	1	49.78	0.5	0.3	7.46
					Total:-	16.40
4.	Back filling in foundation					
	=39.92 - 8.94 = 30.98m ³				Total:-	30.98
5.	First class brick masonry G.L to P.L					
	L=49.88m	1	49.88	0.4	0.575	11.47
	Step1.	1	1.2	0.3	0.15	0.054
	Step2.	1	1.2	0.3	0.30	0.108
	Step3.	1	1.2	0.3	0.45	0.162
					Total:-	11.79
6.	DPC (2.5cm thick)	1	49.88	0.4		19.95
	Deduction:-					
	D	1	1.2	0.4		0.48
					Total:-	19.47
7.	First class brick masonry for superstructure					
	L= 49.98m	1	49.98	0.3	3	44.98
	Deduction					
	(1)Lintel	1	49.98	0.3	0.15	2.25
	(2)Door					
	(a)D	1	1.2	0.3	2.1	0.756
	(a)W	9	0.9	0.3	1.2	2.92
8	Brickwork for parapet, 0.2m					
	LW = 11.22	2	11.22	0.2	0.9	4.04
	SW ₁ = 9.38	2	9.38	0.2	0.9	3.37
					Net total:-	74.672
9.	Providing and laying RCC(1:2:4) for slab, lintel, chhajja					
	(1)Lintel L=49.98m	1	49.98	0.3	0.15	2.25
	(2)Chhajja					
	(a)W	9	1.2	0.45	0.1	0.486
	(3)RCC slab	1	11.22	9.78	0.1	10.97
					Total:-	13.76
10.	Providing mild steel reinforcement in RCC Work					
	Quantity=1% of volume of concrete					
	= 13.76 × 78.54 = 1080.79 kg					

					Total:-	1080.79
11.	12cm thick plaster					
	(A)Internal plaster					
	(1)ceiling	1	10.62	9.18		97.49
	Wall					
	LW=10.62m	2	10.62		3	63.72
	SW ₁ = 9.18m	2	9.18		3	55.08
	SW ₂ = 7m	2	7		3	42
					Total	258.29
11	External plaster up to parapet					
	Lw	2	11.22		4.6	103.23
	Sw	2	9.78		4.6	89.98
	Parapet inside					
	Lw	2	10.82		0.9	19.44
	Sw	2	9.38		0.9	16.88
	Chajja (window)					
	Face	9	1.2		0.1	1.08
	Side	2x9	0.45		0.1	0.81
	Top	9	0.45		0.1	0.405
	Bottom	9	0.45		0.1	0.405
					Total	232.23
	Deduction					
	D	1	1.2		2.1	2.52
	W	9	0.9		1.2	9.72
					Total	12.24
					Net Total	478.28
12.	5cm thick mosaictiles flooring					
	LW= 10.62					
	SW=9.18	1	10.62	9.18		97.49
	Deduction	1	7	0.3		2.1
					Net Total	95.39
13.	10cmB.B.L.C.(1:2:4)					
	LW= 10.61					
	SW=9.17	1	10.61	9.17	0.1	9.72
	Deduction	1	7	0.3	0.1	0.21
					Total	9.51
14.	Sand filling/murum					
		1	10.61	9.17	0.45	43.78
	Deduction	1	7	0.3	0.45	0.945
					Total	42.83
15.	Providing and laying skirting of mosaic Tiles	2	10.62			21.24
		2	9.18			18.36

		2x1	7			14
	Deduction	1	1.2			1.2
					Total	52.4

ABSTRACT SHEET FOR PUBLIC LIBRARY

Table No 32 Abstract sheet for public Library

ABSTRACT SHEET					
Sr. No	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT(RS)
1.	Excavation for foundation up to 1.5 m depth	40.05 m ³	93	m ³	3725
2.	Providing and laying PCC (1:4:8) for foundation	13.5 m ³	1750	m ³	23625
3.	First class brick masonry CM (1:6) for foundation	16.40 m ³	3200	m ³	52480
4.	Back filling in foundation	30.98 m ³	120	m ³	3718
5.	First class brick masonry GL to PL	11.79m ³	3200	m ³	37728
6.	DPC (2.5 cm thick)	19.47 m ²	220	m ²	4284
7.	First class brick masonry for super structure	74.67 m ³	3200	m ³	238944
8	Providing and laying RCC (1:2:4)	13.76m ³	2500	m ³	34400

9	Providing mild steel reinforcement or RCC work including binding and bending and placing in position	1080.79 kg	55	Kg	59444
10.	12 mm thick plaster	478.28 m ²	155	m ²	79134
11.	5 cm thick mosaic tiles flooring	95.39 m ²	220	m ²	20973
12.	10 cm B.B.L.C. (1:2:4)	9.51 m ³	1050	m ³	9986
13.	Sand filling / murum	42.83m ³	60	m ³	2570
14.	Providing and laying skirting of mosaic tiles	52.4m	255	M	13886
TOTAL					5,79,897 Rs
ADD 3% Contingency					17,397
ADD 2% work Charged Establishment					11,598
GRAND TOTAL					6,08,892 Rs

13.1.5 SKILL DEVELOPMENT CENTER:-

Scenario:- The idea is to raise confidence, improve productivity and give direction through proper skill development. Tailor-made, need-based programmes would be initiated for specific age groups which can be like language and communication skills, life and positive thinking skills, personality development skills, management skills, behavioral skills, including job and employability skills. The course methodology of "Skill India" would be innovative, which would include games, group discussions, brainstorming sessions, practical experiences, case studies etc.

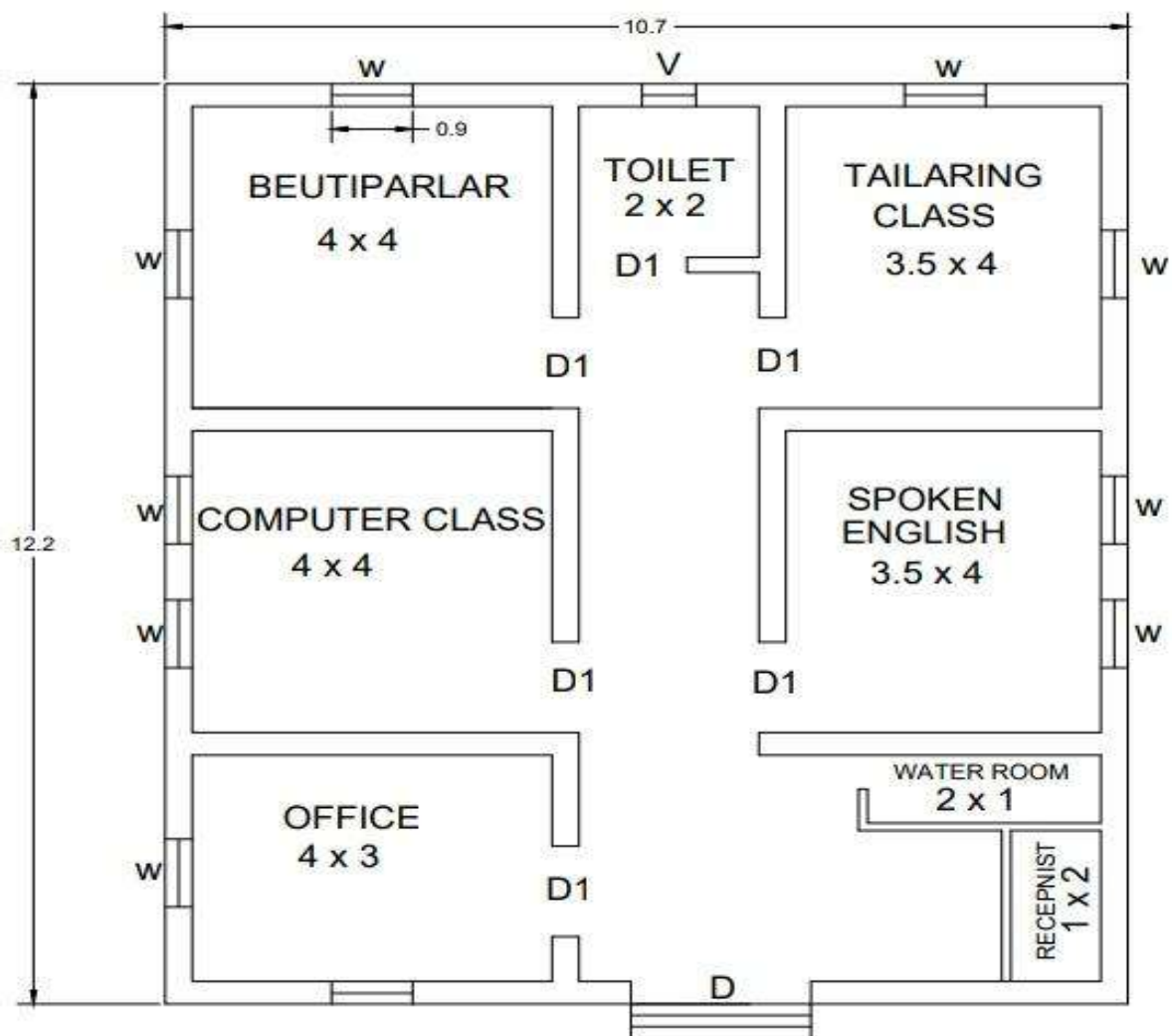
Existing situation Jhalansar:- There is no child development or maternity home or skill development center in the Jhalansar village but for the better development of students and children there should be one skill development center in the village. so the village people provide a training, support and guidance. So we have decided a design for skill development center.

ailor-made, need-based programmes would be initiated for specific age groups which can be like language and communication skills, life and positive thinking skills, personality development skills, management skills, behavioral skills, including job and employability skills. The course “methodology of Skill India” would be innovative, which would include games, group discussions, brainstorming sessions, practical experiences, case studies etc.





ELEVATION
PLAN



The diagram illustrates the cross-section of a building structure with the following components and dimensions:

- Top Wall:** 20 CM BRICK PARAPET (0.2 m thick).
- Roof:** RCC SLAB (0.1 m thick).
- Interior Wall:** 0.2 m thick.
- Foundation:**
 - BBCC (1:2:4) (0.4 m thick).
 - SAND FILLING (0.5 m thick).
 - 0.6 m thick base layer.
 - 0.9 m wide base.
- Right Wall and Foundation:**
 - RCC LINTEL (2.1 m high).
 - 0.4 m thick foundation.
 - 0.5 m thick base layer.
 - 0.6 m thick base layer.
 - 0.9 m wide base.
 - 0.3 m high step.
 - 0.3 m high step.

Measurement Sheet of skill development center:-

MEASUREMENT SHEET						
Sr. No	DESCRIPTION	NO.	LENGTH (L)	WIDTH (B)	HEIGHT (H)	QUANTY
	Total Centre line = $4 \times 10.4 + 4 \times 11.9 = 89.2\text{m}$ No. Of T-junction =16					
1.	Excavation for foundation up to 1.5 depth					
	Length=total centerline- (number of tea junction $\times$ width $\div 2$)					
	= $89.2 - (16 \times 0.9 \div 2) = 82$	1	82	0.9	0.9	66.42m ³
	For steps:-					
	L= $1.2 + 0.15 = 1.5\text{m}$	1	1.5	0.6	0.15	0.135m ³
					Total:-	66.55m ³
2.	Providing and laying PCC(1:4:8) for foundation	1	82	0.9	0.3	22.14m ³
	Steps	1	1.5	0.9	0.15	0.236m ³
					Total:-	22.376m ³
3.	First class brick masonry C:M(1:6) for foundation					
	Step:-1(60cm)					
	L=84.4m	1	84.4	0.6	0.3	15.192m ³
	Step:-2(50cm)					
	L=85.2m	1	85.2	0.5	0.3	12.78m ³
					Total:-	27.97m ³
4.	Back filling in foundation					
	= $66.42 - 27.97 = 38.45\text{m}^3$				Total:-	38.45m ³

5.	First class brick masonry G.L to P.L					
	L=86m	1	86	0.4	0.575	19.78m ³
	Step1.	1	1.2	0.3	0.15	0.054
	Step2.	1	1.2	0.3	0.30	0.108
	Step3.	1	1.2	0.3	0.45	0.162
					Total:-	20.104m ³
6.	DPC(2.5cmthick)	1	86	0.4		34.4m ²
	Deduction:-					
	D	1	1.2	0.4		0.48
	D1	5	0.9	0.4		1.8
					Total:-	2.28m ²
					Net total	32.12m ²
7.	First class brick masonry for superstructure					
	L=86.8m	1	86.8	0.3	3	78.12m ³
	Deduction					
	(1)Lintel	1	86.8	0.3	0.15	3.906
	(2)Door					
	(a)D	1	1.2	0.3	2.1	0.756
	(b)D1	5	0.9	0.3	2.1	2.835
	(a)W	8	0.9	0.3	1.2	2.592
	(5)ventilation	1	0.6	0.3	0.6	0.108
					Total:-	67.923 m ³
8.	Half brick partition wall in C:M (1:6)					
	PLW	1	1		3	3
	PSW	1	2		3	6
	For toilet					
	Lw	1	2		3	6
	Sw	1	2		3	6
	Deduction:-					
	O	1	0.5		2.1	1.05
	D3	1	0.75		2.1	1.575
					Total:-	18.375m ³
9.	Providing and laying RCC(1:2:4) for slab, lintel, Chhajja					
	(1)Lintel L=86.8m	1	86.8	0.3	0.15	3.906
	(2)Chhajja					
	(a)W	8	1.2	0.6	0.1	0.576
	(3)RCC slab	1	12.2	10.7	0.1	13.054
					Total:-	17.608m ³
10.	Providing mild steel reinforcement in RCC work					
	Quantity=1%ofvolumeofconcrete					
	=17.608×78.54=1382kg					
					Total:	1382kg

11.	12cm thick plaster					
	(A)Internal plaster					
	(1)ceiling					
	Beutiparlar class	1	4	4		16
	Computer class	1	4	4		16
	Tailoring class	1	3.5	4		14
	Spoken English class	1	3.5	4		14
	Passage	1	2	8.3		16.6
	Open space	1	3.5	3		10.5
	Office	1	4	3		12
	Reception and water room	1	2	3		6
	Wall					
	Beutiparlar class	4	4		3	48
	Computer class	4	4		3	48
	Tailoring class	2	3.5		3	21
		2	4		3	24
	Spoken English class	2	3.5		3	21
		2	4		3	24
	Passage	1	1.5		3	4.5
		1	11.6		3	34.8
		1	8.6		3	25.8
		1	3.5		3	25.8
	Office	2	4		3	24
		2	3		3	12
	Reception and water room	2	2		3	12
					Total	429.5m2
11	External plaster up to parapet					
	Lw	2	12.2	0.2		4.88
	Sw	2	10.3	0.2		4.12
	Parapet inside					
	Lw	2	11.8		0.9	21.24
	Sw	2	10.3		0.9	18.54
	Chajja (window)					
	Face	8	1.2		0.1	0.96
	Side	2x 8	0.6		0.1	0.96
	Top	8	0.6		0.1	5.76
	Bottom	8	0.6		0.1	5.76
					Total	272.9m2
	Deduction					
	D	1	1.2		2.1	2.52
	D1	5	0.9		2.1	9.45
	D2	1	0.75		2.1	1.575
	W	8	0.9		1.2	8.64
	V	1	0.6		0.6	0.36
	O	1	0.5		2.1	1.05
					Total	23.595m2

					Net Total	678.805m2
12.	5cm thick mosaic tiles flooring					
	Beutiparlar class	1	4	4		16
	Computer class	1	4	4		16
	Tailoring class	1	3.5	4		14
	Spoken English class	1	3.5	4		14
	Passage	1	2	6.6		13.2
	Open space	1	3.5	3		10.5
	Office	1	4	3		12
	Reception and water room	1	2	2		4
					Total	99.7m2
13.	10cm B.B.L.C.(1:2:4)					
	Beutiparlar class	1	3.9	3.9	0.1	1.521
	Computer class	1	3.9	3.9	0.1	1.521
	Tailoring class	1	3.4	3.9	0.1	1.326
	Spoken English class	1	3.4	3.9	0.1	1.326
	Passage	1	1.9	8.5	0.1	1.615
	Open space	1	3.4	2.9	0.1	0.986
	Office	1	3.9	2.9	0.1	1.131
	Reception and water room	1	1.9	2.9	0.1	0.551
					Total	9.977m3
14.	Sand filling/murum					
	Beutiparlar class	1	3.9	3.9	0.45	6.84
	Computer class	1	3.9	3.9	0.45	6.84
	Tailoring class	1	3.4	3.9	0.45	5.967
	Spoken English class	1	3.4	3.9	0.45	5.967
	Passage	1	1.9	8.5	0.45	7.267
	Open space	1	3.4	2.9	0.45	5.08
	Office	1	3.9	2.9	0.45	2.47
	Reception and water room	1	1.9	2.9	0.45	4.437
					Total	44.868m3
15.	Providing and laying skirting of mosaic tiles					
	Beutiparlar class	4	4			16
	Computer class	4	4			16
	Tailoring class	2	3.5			7
		2	4			8
	Spoken English class	2	3.5			7
		2	4			8
	Passage	2	11.2			22.4
	Office	2	4			8
		2	3			6
	Reception and water room	4	2			8
	Deduction					
	D	1	1.2			1.2
	D1	5	0.9			4.5
	D2	1	0.75			0.75
	O	1	0.5			0.5
					Total	99.45m

Abstract Sheet of Skill Development center:-

Table No 34 abstract sheet for Skill Development Center

ABSTRACT SHEET					
Sr. No.	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
1	Excavation for foundation up to 1.5m depth In ordinary soil	66.55	93	M ³	6189.15
2	Providing and lying PCC for foundation	22.376	1750	M ³	39158
3	1 st class brick masonry CM(1:6) for Foundation	27.97	3200	M ³	89504
4	Back filling in foundation	38.45	120	M ³	4614
5	1 st class brick masonry from G.L to P.L	20.104	3200	M ³	64320
6	Providing and lying DPC	32.12	220	M ²	7066
7	1 st class brick masonry CM (1:6) for Superstructure	67.923	3200	M ³	217344
8	Half brick partition wall CM(1:3)	3.675	2800	M ²	10276
9	Providing and lying RCC(1:2:4)	17.608	3000	M ³	52800
10	Providing mild steel reinforcement for RCC work	1382	45	KG	62190
11	12mm thick cement plaster	678.80	155	M ²	105214
12	5cm thick mosaic tiles floor	99.7	220	M ²	21934
13	10cm thick B.B.L.C.(1:2:4)	9.977	1050	M ³	10479
14	Sand filling/murum filling	44.868	60	M ³	2640
15	Providing and laying skirting of mosaic Tiles	99.45	265	M	26354
TOTAL					7,20,082
ADD 3% Contingency					21602
ADD 2 % work charged Establishment					14402
GRAND TOTAL					7,56,086 Rs.

13.1.6 Pharmacy Store:-

Scenario: A pharmacy is a shop where therapeutic drugs are sold. Sometimes a pharmacy is also called a drug store. A pharmacy is the place where most pharmacists practice the profession of pharmacy.

Pharmacists play a major role in providing healthcare services by means of community pharmacy services in rural areas where physicians are not available or where physician services are too costly for meeting the healthcare necessities.

Existing Situation in Jhalansar: In the Jhalansar village there is no any dispensary or private clinic or pharmacy store. So according to the feedback given by the villagers, one dispensary or pharmacy store should be there in the village. The villagers have to go in junagadh for any kind of health or medical facility. So that we have designed one Pharmacy store for the urgent requirement of medicines for the villagers.



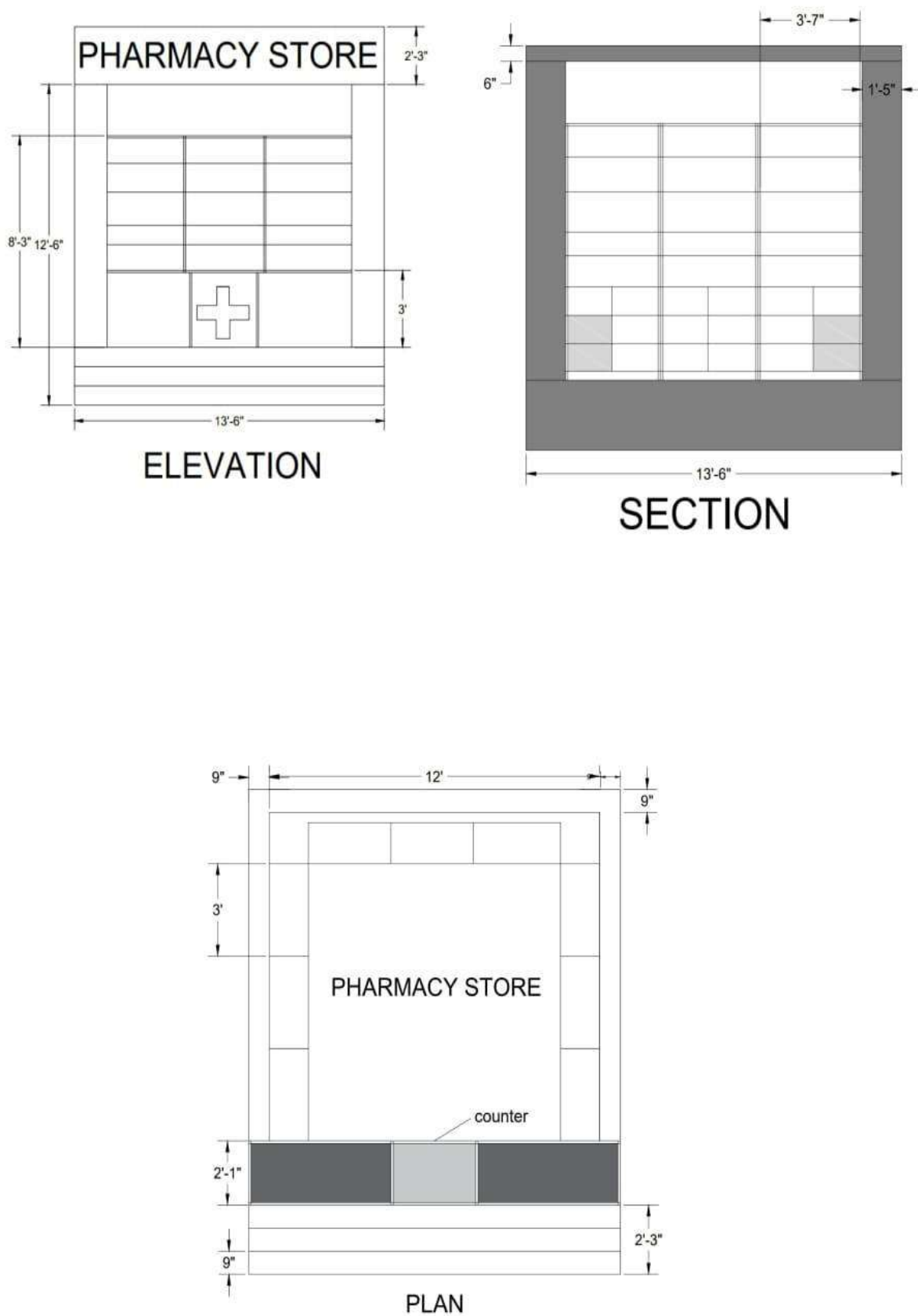


Figure No 95 Pharmacy store

Measurement sheet of pharmacy store:-

Table no 35 Measurement sheet for pharmacy store

SR. NO	Description	Length (m)	Width (m)	Height (m)	Count (Nos.)	Total Quantity (m ³)
1	TOP ROOF	4.1148	4.1148	0.1524	1	2.580231
2	WALL 9"	4.1148	0.2286	3	4	8.282
3	PLINTH WALL WITH STAIRS	4.1148	0.2286	0.762	4	3.575
4	FLOOR	4.1148	4.1148	0.1524	1	2.58
5	PCC	4.1148	0.90	0.4	1	5.02
6	BASIC WALL: 00.30	18.3	1.2	0.4	1	2.2
7	BASIC WALL: 0.40	18.3	1.6	0.4	1	2.9
8	BASIC WALL: GENERIC - 0.50	18.3	2	0.4	1	3.66
9	EXCAVATION	22	1.2	1.5	1	3.6

ABSTRACT SHEET OF PAHRMACY STORE

Table no 36 abstract sheet for pharmacy store

SR NO.	Description	Quantity (m ³)	rate	per	Amount
1	BASIC WALL: 9" EXTERIOR 1	8.282678	130	Ft ²	50700
2	TOP ROOF	2.580231	3500	m ³	9030.81
3	FLOOR	2.580231	3500	m ³	9030.81
4	PLINTH WALL WITH STAIRS	3.575851	90	Ft ²	8757
5	EXCAVATION	1.215*4	350	m ³	1701
6	PCC	5.02	3500	m ³	17570

7	BASIC WALL: 00.30	2.94	90	Ft ²	7200
8	BASIC WALL: 0.40	2.2	90	Ft ²	7200
9	BASIC WALL: GENERIC - 0.50	3.66	90	Ft ²	7200
				GRAND TOTAL	118388

13.2 Reason for Students Recommending this Design:-

- There is no library in this village. Student of this village are not read a book what they want to read so we design a library as a social culture design.
- Anganwadi is for the maintenance and repair design.
- There is no any child development or maternity home or skill development center in jhalansar village but for the better development of student and children there should be one skill development in the village.
- Pharmacy Store to satisfy the requirements of medicines to the public. So we have decide for health that one design of pharmacy store in the village.
- Since there is not a single playground In the village for children to play, so we are have decide that design of play ground.
- The water available to the villagers is bad and abut dent. So it is necessary to set up a water plant. So that the villagers have access to clean and fresh draining water. So we have decide a design a R.O. Water Plant.

13.3 About designs Suggestions / Benefit of the villagers:-

- The people of the village can read the news paper and the children of the village can read will in the library and being different books in library so children will learn and learn new things. So we have design the library.
- Children playing different game on the play ground and the villagers are do exercises like walking, running etc. so we have design the lay ground.
- The people of the village can be trained there according to their skills. It can be made a small business hub and get employment there, so we have designing the skill development center.
- It is necessary to have a pharmacy store in the village so that the people of the village can get better information about medicine and medicine so we give designe of pharmacy store.
- The people of the village got clean and pure water for drinking. So we have design the R.O. water plant.
- In Anganwadi children can be well educated and played so it need to be required so we have design the Anganwadi is for repair and manitence design.

14. Technical Options with Case Studies

14.1 Civil Engineering

14.1.1 Advanced Earthquake Resistant:-

Introduction:-

The violent vibration caused by the sudden movement of the tectonic plates in the earth's crust following the release of tremendous amount of heat is known as earthquake. In the diagram shown, the two tectonic plates which are in the earth's crust moves to and fro because of which an epicenter is created on the surface of earth. At this epicenter the intensity of that vibration is the maximum resulting in the release of seismic waves which moves in a way of making concentric circles and the intensity of vibrations gradually decreases. In spite of great advancement in science and technology, earthquake is one natural disaster which cannot be predicted. The design of earthquake resistant structure is an initiative from where many new developments are possible in future. The following are some of the developments which can be made in near future.

A. A complete probabilistic analysis.

B. Performance-based design codes.

C. Multiple annual probabilities for the response of spectral accelerations and peak ground accelerations.

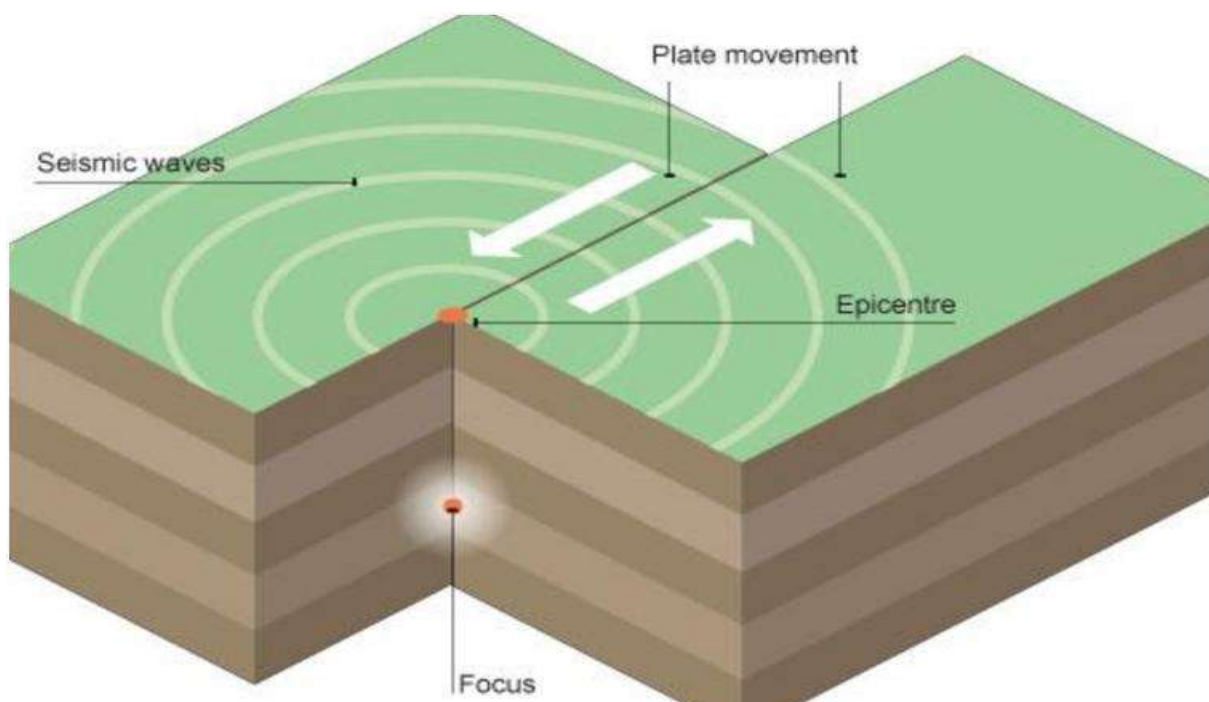


Figure No 95 Earthquake

The new structural system and materials are used which reduces the seismic risk. The structure designed to withstand the effect of earthquakes is referred to as earthquake resistant structure.

The main objective of earthquake resistant construction of buildings is basically to make structures that are strong enough to withstand earthquake or any other seismic activity.

Earthquake prone zone in India:-

Generally, the areas having trap rock or basaltic rock are prone to earthquakes. Basically, our country India has been divided into the following four zones:

(a) Zone 5

This zone covers the areas with the highest risks that suffers earthquakes of intensity MSK IX or greater.

Zone 5 is associated with the highest level of seismicity. It is referred to as the Very High Damage Risk Zone.

The region of Kashmir, the western and central Himalayas, North and Middle Bihar, the North-East Indian region and the Rann of Kutch, the Andaman and Nicobar group islands fall in this zone.

(b) Zone 4

Zone 4 is liable to an intensity of MSK VI to MSK IXI is referred to as the High Damage Risk Zone.

The Indo Genetic basin and the capital of the country (Delhi), Jammu and Kashmir fall in Zone 4. In Maharashtra, the Patna area (Koyananager) and in Bihar the northern part of the state like- Raksaul, near the border of India and Nepal, also in zone 4.

(c) Zone 3

This zone is liable to an intensity of MSK VI. The Andaman and Nicobar Islands, parts of Kashmir, Western Himalayas fall under this zone.

This zone is referred to as Moderate Damage Risk Zone

(d) Zone 2

This region is liable to MSK VI or less and is referred to as the Low Damage Risk Zone. This zone is associated with the lowest level of seismicity.

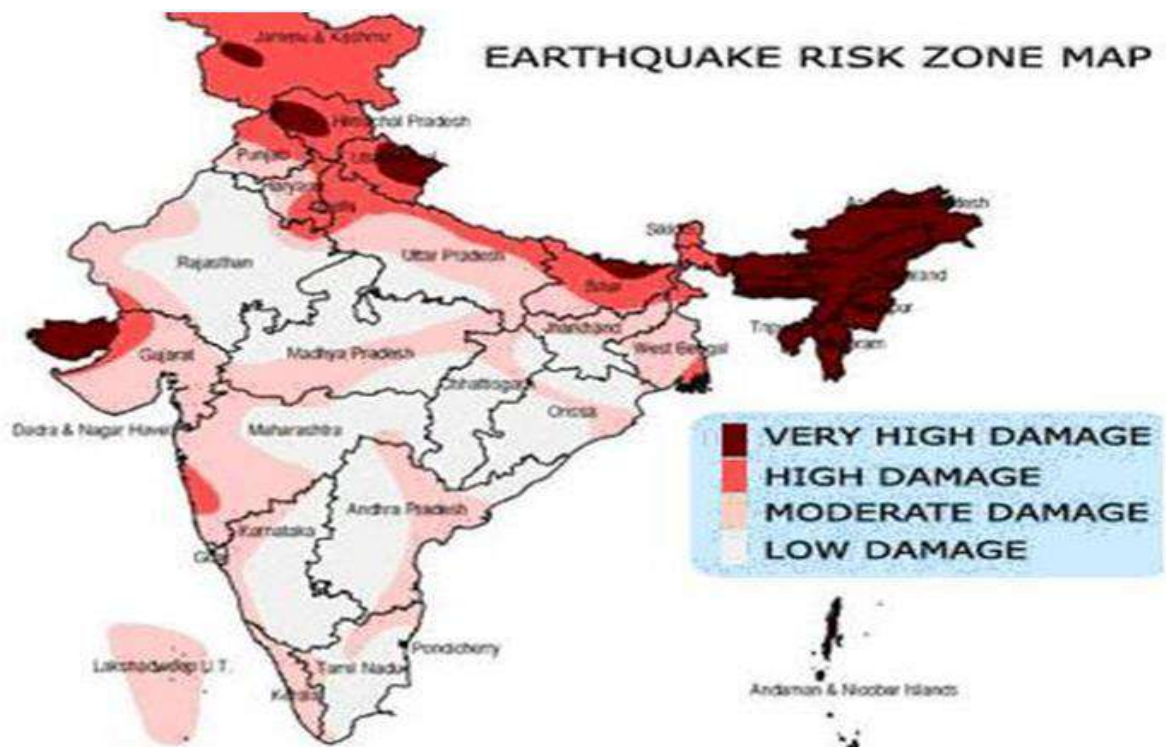


Figure No 96 Earthquake Risk Zone Map

NEW STRUCTURAL SYSTEMS AND MATERIALS:-

A number of new systems and devices has been developed using non-conventional Civil engineering materials broadly for the following two reasons:

To reduce the earthquake forces acting on a structure

To absorb a part of the seismic energy released during the movement of the tectonic plates.

The following new techniques are being developed, evaluated and implemented to make the buildings to withstand the shaking and vibrations caused by earthquake:

(A) Seismic isolation System

Seismic base isolation, also known as base isolation, or base isolation system, is one of the most popular means of protecting a structure against earthquake forces. It is a collection of structural elements which should substantially decouple a superstructure from its substructure that is in turn resting on the shaking ground, thus protecting a building or non-building structure's integrity.

Base isolation is one of the most powerful tools of earthquake engineering pertaining to the passive structural vibration control technologies. The isolation can be obtained by the use of various techniques like rubber bearings, friction bearings, ball bearings, spring systems and other means. It is meant to enable a building or non-building structure to survive a potentially devastating seismic impact through a proper initial design or subsequent modifications.

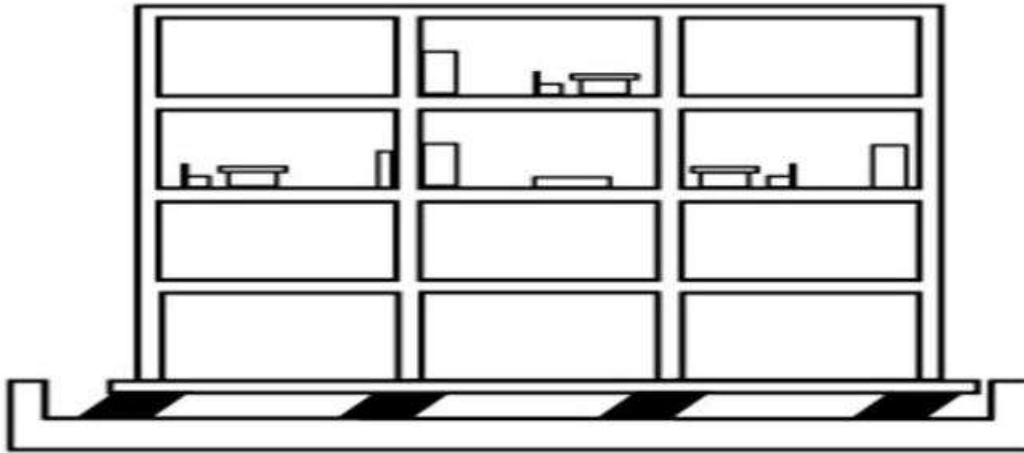


Figure No 97 Seismic Isolation System

In some cases, application of base isolation can raise both a structure's seismic performance and its seismic sustainability considerably. Contrary to popular belief base isolation does not make a building earthquake proof.

14.1.2 Seismic Retrofitting of Buildings

Seismic retrofitting is the modification of existing structures to make them more resistant to seismic activity, ground motion, or soil failure due to earthquakes. With better understanding of seismic demand on structures and with our recent experiences with large earthquakes near urban centers, the need of seismic retrofitting is well acknowledged.

Prior to the introduction of modern seismic codes in the late 1960s for developed countries and late 1970s for many other parts of the world, many structures were designed without adequate detailing and reinforcement for seismic protection.

In view of the imminent problem, various research work has been carried out. State-of-the-art technical guidelines for seismic assessment, retrofit and rehabilitation have been published around the world. These codes must be regularly updated the 1994 Northridge earthquake brought to light the brittleness of welded steel frames, for example.

The retrofit techniques outlined here are also applicable for other natural hazards such as tropical cyclones, tornadoes, and severe winds from thunderstorms. Whilst current practice of seismic retrofitting is predominantly concerned with structural improvements to reduce the seismic hazard of using the structures, it is similarly essential to reduce the hazards and losses from non-structural elements.

It is also important to keep in mind that there is no such thing as an earthquake-proof structure, although seismic performance can be greatly enhanced through proper initial design or subsequent modifications.

Infill shear trusses:

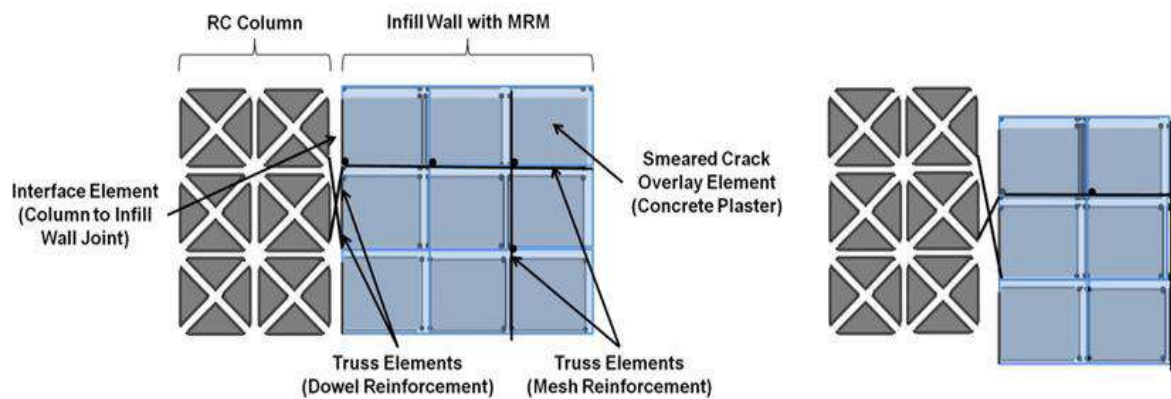


Figure No 98 Infill Shear truss

Shown here is an exterior shear reinforcement of a conventional reinforced concrete dormitory building. In this case, there was sufficient vertical strength in the building columns and sufficient shear strength in the lower stories that only limited shear reinforcement was required to make it earthquake resistant for this location near the Hayward fault.

Base isolators:

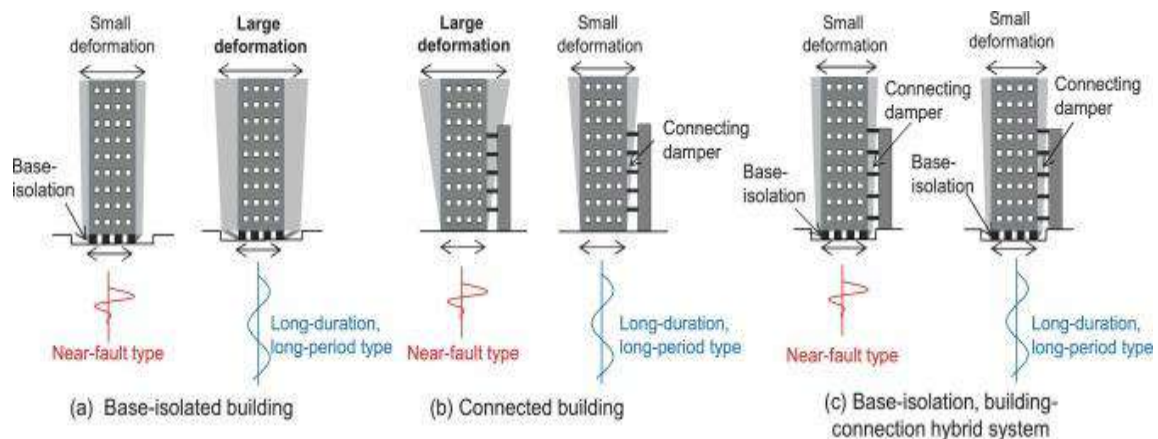


Figure No 99 Base Isolators

Base isolation is a collection of structural elements of a building that should substantially decouple the building's structure from the shaking ground thus protecting the building's integrity and enhancing its seismic performance. This earthquake engineering technology, which is a kind of seismic vibration control, can be applied both to a newly designed building and to seismic upgrading of existing structures. Normally, excavations are made around the building and the building is separated from the foundations. Steel or reinforced concrete beams replace the connections to the foundations, while under these, the isolating pads, or base isolators, replace the material removed. While the base isolation tends to restrict transmission of the ground motion to the building, it also keeps the building positioned properly over the foundation. Careful attention to detail is required where the building interfaces with the ground, especially at entrances, stairways and ramps, to ensure sufficient relative motion of those structural elements.

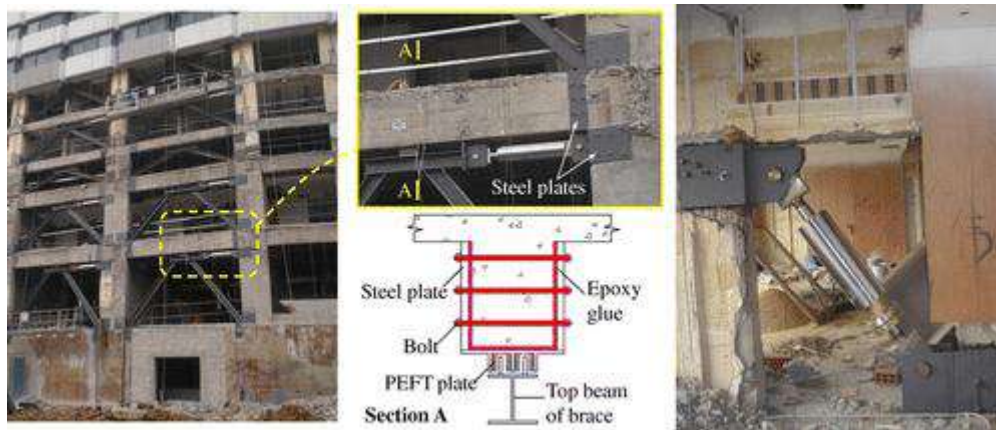
Supplementary dampers:

Figure No 100 Supplementary dampers

Supplementary dampers absorb the energy of motion and convert it to heat, thus damping resonant effects in structures that are rigidly attached to the ground. In addition to adding energy dissipation capacity to the structure, supplementary damping can reduce the displacement and acceleration demand within the structures. In some cases, the threat of damage does not come from the initial shock itself, but rather from the periodic resonant motion of the structure that repeated ground motion induces. In the practical sense, supplementary dampers act similarly to Shock absorbers used in automotive suspensions.

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

CONSTRUCTION MODERN MATERIAL:-

Autoclaved aerated concrete:-

"Aerated concrete" redirects here. For cellular concrete (foamed concrete), see Types of concrete & Cellular concrete. For lightweight blocks, see Expanded clay aggregate.

Autoclaved aerated concrete (AAC) is a lightweight, precast, foam concrete building material suitable for producing concrete masonry unit (CMU) like blocks. Composed of quartz sand, calcined gypsum, lime, cement, water and aluminum powder, AAC products are cured under heat and pressure in an autoclave. Invented in the mid-1920s, AAC simultaneously provides structure, insulation, and fire- and mold-resistance. Forms include blocks, wall panels, floor and roof panels, cladding (facade) panels and lintels.

AAC products may be used for both interior and exterior construction, and may be painted or coated with a stucco or plaster compound to guard against the elements, or covered with siding materials such as veneer brick or vinyl siding. In addition to their quick and easy installation, ACC materials can be routed, sanded, or cut to size on site using standard power tools with carbon steel cutters.

Advantages:-

AAC has been produced for more than 70 years, and it offers several advantages over other cement construction materials, one of the most important being its lower environmental impact.

- Workability allows accurate cutting, which minimizes the generation of solid waste during use.
- Lightweight saves cost and energy in transportation, labor expenses, and increases chance of survival during seismic activity.
- Accuracy: the panels and blocks made of autoclaved aerated concrete are produced to the exact sizes needed before leaving the factory. There is less need for onsite trimming. Since the blocks and panels fit so well together, there is less use of finishing materials such as mortar.
- Long lasting : the life of this material is extended because it is not affected by harsh climates or extreme weather changes. It will not degrade under normal climate changes.

Disadvantages:-

AAC has been produced for more than 70 years, however, some disadvantages were found when it was introduced in the UK (where cavity wall with clay brick two-skin construction has been the norm).

- Installation during rainy weather: AAC is known to crack after installation, which can be avoided by reducing the strength of the mortar and ensuring the blocks are dry during and after installation.
- Brittle nature: they need to be handled more carefully than clay bricks to avoid breakage.
- Attachments: the brittle nature of the blocks requires longer, thinner screws when fitting cabinets and wall hangings and wood-suitable drill bits or hammering in. Special, large diameter wall plugs (anchors) are available at a higher cost than common wall plugs.
- Insulation requirements in newer building codes of northern European countries would require very thick walls when using AAC alone. Thus many builders choose to use traditional building methods installing an extra layer of insulation around the entire building.

Construction modern techniques:-**➤ Tunnel Formwork System**

With this tunnel technique, construction is paced up for cellular structures of repetitive patterns through the building of monolithic walls or units in a single operation per day.

Expeditious work is achieved by deploying formwork and readily mixed concrete with the convenience and agility of factory conditions. Formworks in tunnel form are stacked and used at the site with cranes.

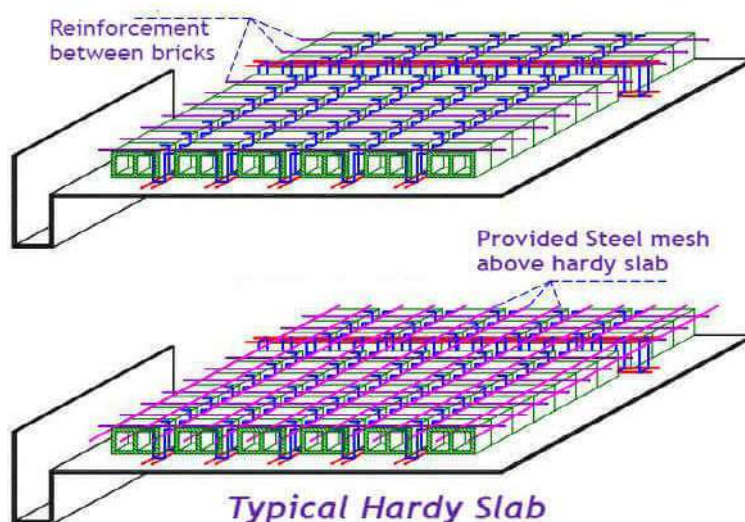


Figure No 101 Tunnel Formwork System

Advanced Tunnel formwork is one of the new formwork techniques to hit Indian construction industry. It is found to be suitable for mass construction in Indian conditions. It delivers quality and speed at a rate which is higher than the speed achieved by most of the formwork systems. The labor in coordination with heavy machineries like tower crane speeds up the construction, assures quality control and durability. This reduces overall time and cost of the structure. This paper mainly focuses on advanced tunnel formwork systems, its components, working cycle, cost involved, its benefits and its limitations based on speed and economy.

➤ Flat Slabbing Technology:-

This technique utilizes the simplicity of contemporary formwork for quickly building flat slabs to facilitate easy and swift placing of horizontal amenities and for partitioning. Maximization of pre-fabricated services occurs as services can be carried out in an uninterrupted manner in zones underneath the floor slabs.



Every top-notch building Construction Company is using the same as internal layouts can be conveniently modified for accommodating alterations at a later date. Further, reinforcement needed is lesser which cuts down labour costs significantly

Figure No 102 Flatslabbing Technology

➤ Thin Joint Masonry Technique

Utilization of this technique leads to the reduction of the quantum of mortar applied by slashing it depth from 10mm to lesser than 3mm. Consequently, mortar can be laid swiftly with enhanced productivity on the longer wall panels.



With large sized concrete blocks, higher construction efficiency along with significant cost reduction can be achieved. Within a single day, the number of mortar courses laid is higher as curing of mortar takes place quickly without compromising on bonding strength resulting in the elimination of floating problem

Figure No 103 Thin Joint Masonry Technique.

Construction Modern Equipment:-

➤ Backhoe:-

Backhoe is another widely used equipment which is suitable for multiple purposes. The name itself telling that the hoe arrangement is provided on the back side of vehicle while loading bucket is provided in the front.



This is well useful for excavating trenches below the machine level and using front bucket loading, unloading and lifting of materials can be done.

Figure No 104 Backhoe

➤ **Bulldozers:-**

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



Figure No 105 Bulldozer

These are widely used for the removal of weak soil or rock strata, lifting of soil etc.

➤ **TOWER CRANES:-**

Tower cranes are fixed cranes which are used for hoisting purposes in construction of tall structures. Heavy materials like pre-stressed concrete blocks, steel trusses, frames etc. can be easily lifted to required height using this type of equipment.



They consists mast which is the vertical supporting tower, Jib which is operating arm of crane, counter jib which is the other arm carries counter weight on rear side of crane and an operator cabin from which the crane can be operated.

Figure No 106 Tower Cranes

➤ Telehandlers:-

Telehandlers are hoisting equipment used in construction to lift heavy materials up to required height or to provide construction platform for workers at greater heights etc. It contains a long telescopic boom which can be raised or lowered or forwarded.



Different types of arrangements like forklifts, buckets, cabin, lifting jibs etc. can be attached to the end of telescopic boom based on the requirement of job.

Figure No 107 Telehandlers

14.1.4 Engineering Aspects of Soil mechanics - Environmental Impact

Assessment

Environmental Impact Assessment (EIA) is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socioeconomic, 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 ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers. Environment Impact Assessment in India is statutorily backed by the Environment Protection Act, 1986 which contains various provisions on EIA methodology and process.

Process:

EIA involves the steps mentioned below. However, the EIA process is cyclical with interaction between the various steps.

- Screening: The project plan is screened for scale of investment, location and type of development and if the project needs statutory clearance.
- Scoping: The project's potential impacts, zone of impacts, mitigation possibilities and need for 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 projection-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

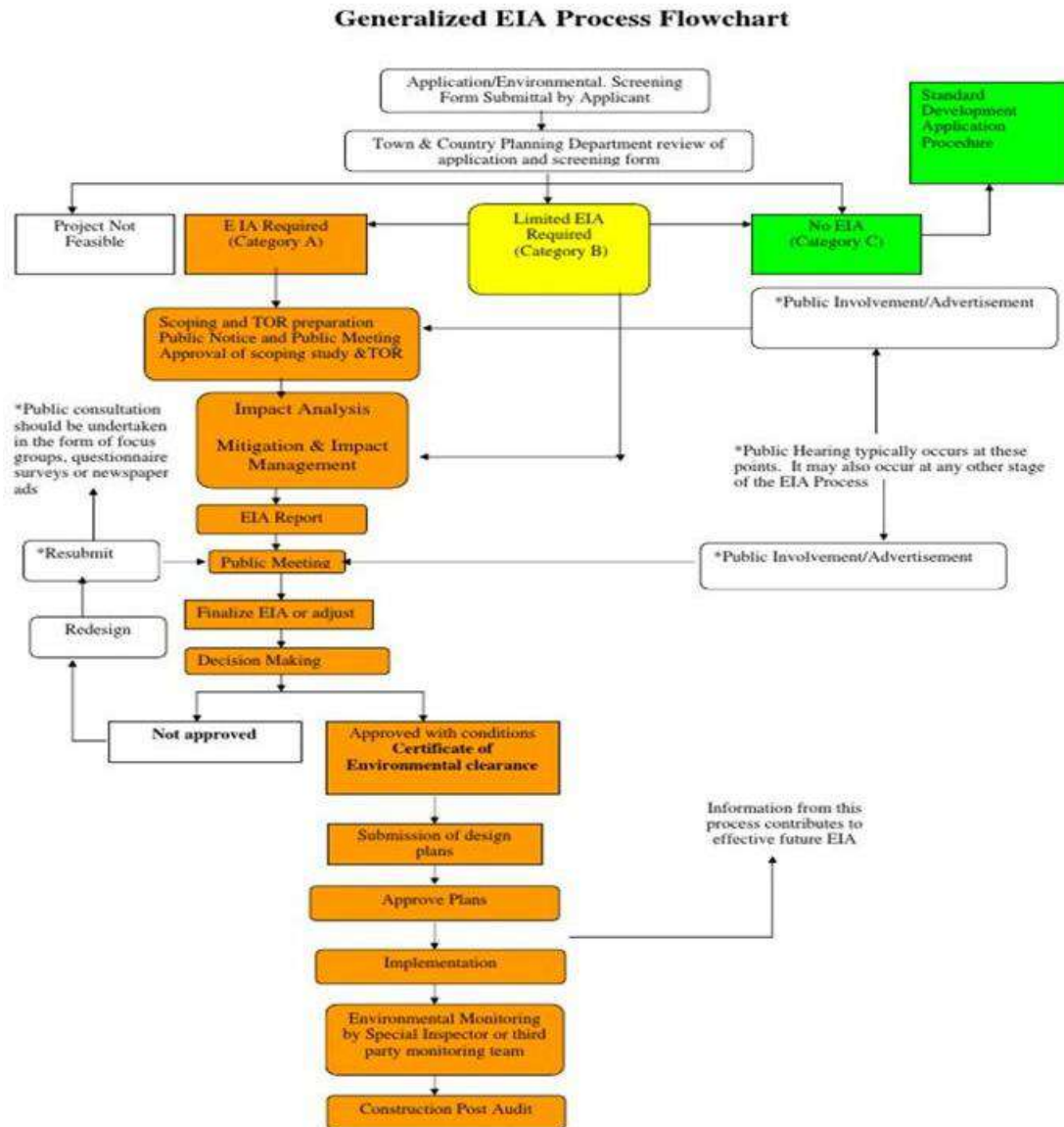


Figure No 108 Geeneralized EIA process Flowchart

WAY FORWARD:

- Independent EIA Authority.
- Sector wide EIAs needed.
- Creation of a centralized baseline data bank.
- Dissemination of all information related to projects from notification to clearance to local communities and the general public.
- Applicability: All those projects where there is likely to be a significant alteration of ecosystems need to go through the process of environmental clearance, without exception.
- No industrial developmental activity should be permitted in ecologically sensitive areas.
- Public hearing: Public hearings should be applicable to all hitherto exempt categories of projects which have environmental impacts.

- The focus of EIA needs to shift from utilization and exploitation of natural resources to conservation of natural resources.
- It is critical that the preparation of an EIA is completely independent of the project proponent.
- Grant of clearance: The notification needs to make it clear that the provision for site clearance does not imply any commitment on the part of the impact Assessment agency to grant full environmental clearance.
- Composition of expert committees: The present executive committees should be replaced by expert people from various stakeholder groups, who are reputed in environmental and other relevant fields.
- Monitoring, compliance and institutional arrangements:
- The EIA notification needs to build within it an automatic withdrawal of clearance if the conditions of clearance are being violated and introduce more stringent punishment for noncompliance. At present the EIA notification limits itself to the stage when environmental clearance is granted.
- The composition of the NGT needs to be changed to include more judicial persons from the field of environment.
- Citizen should be able to access the authority for redressed of all violation of the EIA notification as well as issues relating to non-compliance.
- Capacity building: NGOs, civil society groups and local communities need to build their capacities to use the EIA notification towards better decision making on projects.

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

Water Supply:-

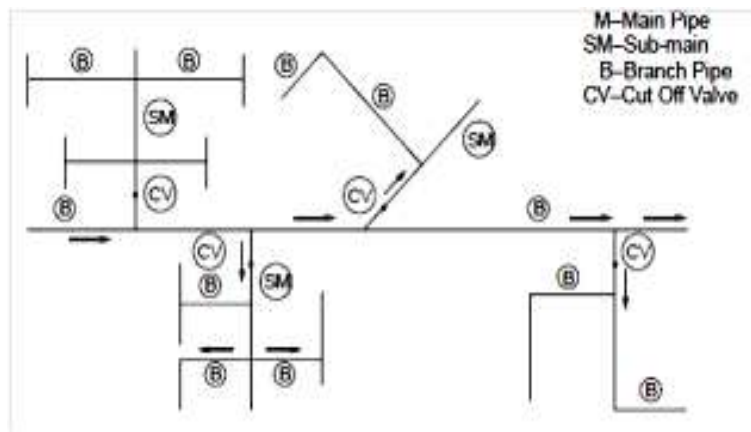
Dead End Water Distribution System

Dead end system, the name itself defining that it contains dead ends in the pipe system. So, the water does not flow continuously in the dead end system.

In this system the whole pipe network is divided into several sub networks. Those are namely main line, sub mains, branch lines and service connections.

Firstly, one main line is laid through the center of the city or area. Sub mains are laid on both sides of the main line and then sub mains divided into branch lines from which service connections are given.

At every starting point of sub main line, a cut off valve is provided to regulate the flow during repair works etc.



On the whole, this network diagram will look like a tree shape, so it is also called as tree system. This type of system is used mostly for the olden cities which are built in irregular manner without any planning. Now a days, this system is not preferable.

Figure No 109 Dead end system

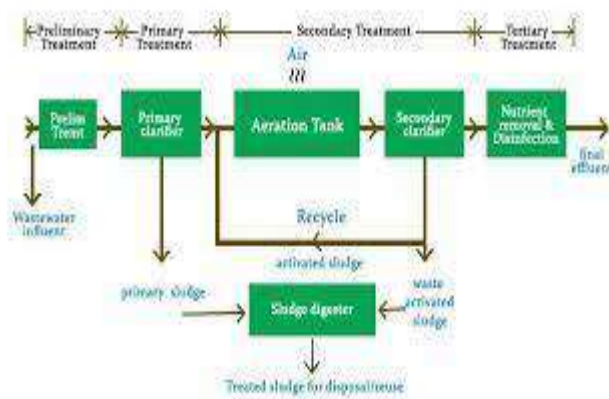
Advantages of DEAD END system

- Pipes in this network can be laid easily.
- The pressure and discharge in each pipe can be determined very easily and accurately which makes design calculations very simple.
- The diameters of pipes of main, sub mains and branches can be designed based on the required demand of population. So, cost of the project can be reduced.
- Dead end system requires less number of cutoff valves.

Disadvantages of DEAD END system

- The pressure is not constant and is very less at remote parts.
- Because of dead ends water stagnation takes place which results in deposition of sediment. To remove this sediments, more number of scour valves are to be provided at the dead ends which increase economy.
- If there is any damage occurs in the branch line, the whole portion should be stopped to repair that which creates discomfort to the other users in that sub main line.
- In this system, Limited discharge is available for firefighting.

Sewerage System:-



On the basis of the system to convey the sewage, the sewerage system can be further classified. Let us study some of the important systems to know their characteristic, their merits, their limitations or their demerits.

Figure No 110 Sewerage System

1) The Combined System:

When only one set of sewer is laid to convey both the sanitary sewage and the storm water, it is known as the combined system. This system has the following merits:

(A) The merits of combined system:

- i. In this system. No flushing or pumping Is required because due to mixing of the storm water, it gets the required self-cleaning velocity.
- ii. Due to dilution of the sewage through the storm water i.e. the rainwater, it becomes easy to treat the sewage after it reaches the final point of treatment.
- iii. The house plumbing become easy and cheap as only one set of pipeline is required in this system.

(B) The demerits or the limitations of combined system:

- i. It needs to have higher Initial cost of construction.
- ii. This system is not suitable for the areas where the rainy season is limited to a small portion of the year, as the dry-weather-sewage flow will be limited with lesser velocity which would be Insufficient to develop self-cleaning velocity. This leads to blocking of the sewers due to siltation.
- iii. It becomes non-economical if the whole sewage is required to be disposed off by pumping.
- iv. In case of heavy rain falls, the sewers get overflowed which create public health problems.

2) The Separate System:

In this system, the domestic and the Industrial sewage are carried by one set of sewers and the storm and the surface water are carried by another separate set of sewers. It has the following merits and demerits or limitations.

A) The merits of the separate system:

- i. As separate sets are used to convey the sewage and the storm water the quantity of sewage to be treated remains limited, so the design of the treatment plant can be made economical i.e. needs less cost for treatment.
- ii. The initial cost of the sewers is less in this system because the foul sewage is carried through the closed sewers while, the storm water, surface flow which is not of foul nature, is carried through the open gatters or drains.
- iii. There no danger of over flowing of sewage and so no danger of sub-soil pollution.
- iv. If the sewage is to be pumped during the process of disposal; this system always is economical, as it has to handle less load.

B) The demerits or limitations of the separate system:

- i. As the sewage is carried separately, it does not have the capacity, to generate the self-cleaning velocity. So additional flushing points are required to be provided, so get smooth conveying this adds to the cost.
- ii. In case, the storm water enters into the sanitary sewers, it may cause over-flowing condition and also may create extra load on the treatment plant.
- iii. As it has to maintain two sets of sewers, the maintenance cost is always higher than the combined system.
- iv. It is difficult to lay two sets of sewers, in busy lane, mainly at the time of repairs; it creates problem to the heavy traffic

3) The Partially separate system:

It is like separate system only but the only difference between these two system is that in this, a part of the storm water is allowed to enter into the sewage carrying sewers while the rest of the surface and storm water is allowed to flow through the separate sewers.

(A) The merits of the partially separate system:

- i. This being an Improved "separate system" it has all the advantages of combined and separate systems.
- ii. As, only part of the storm water is allowed to enter the sewage sewers, the size of the sewers are economical i.e. not too large, to increase the cost.
- iii. The house plumbing works also can be carried by one single pipe which can carry the sullage from the bathrooms and kitchens together with the rain water received on the roofs and for the water, from the other sources like toilets can be carried through another pipe line.
- iv. No flushing is necessary because by using a part of the storm-water the quantity of sewage is increased.

(B) The demerits of the partially separate system:

- i. As a part of the storm-water is mixed with the sanitary sewage it needs to have pumping facilities at the point of disposal. This increase the initial cost of this system.
- ii. There is a chance of over-flow condition due to increase in the storm-water.
- iii. During dry-summer season this system does not have self-cleaning velocity. So it needs to have regular cleaning of the sewers that adds the maintenances cost.

Waste Water:

Wastewater treatment is a process used to remove contaminants from wastewater or sewage and convert it into an effluent that can be returned to the water cycle with acceptable impact

on the environment, or reused for various purposes (called water reclamation). The treatment process takes place in a wastewater treatment plant (WWTP), also referred to as a Water Resource Recovery Facility (WRRF) or a Sewage Treatment Plant (STP) in the case of domestic wastewater. Pollutants in wastewater are removed, converted or broken down during the treatment process.

The treatment of wastewater is part of the overarching field of sanitation. Sanitation also includes the management of human waste and solid waste as well as storm water (drainage) management. The main by-product from wastewater treatment plants is sewage sludge which is usually treated in the same or another wastewater treatment plant.

Processes:-

The processes involved in waste-water treatment include physical processes such as settlement or flotation and biological processes such as aerated lagoons, activated sludge, or bio-films in trickling filters. Other physical methods such as filtration through sieves may be used in specialized circumstances such as de-watering waste-water sludge.

Sedimentation:-

Further information: Sedimentation (water treatment) and Sewage treatment



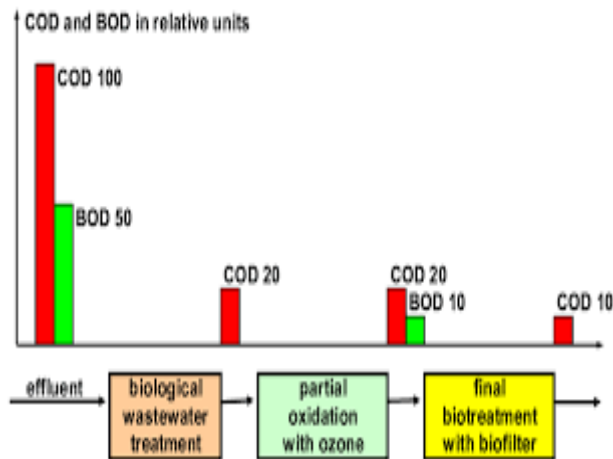
Solids such as stones, grit, and sand may be removed from wastewater by gravity when density differences are sufficient to overcome dispersion by turbulence. This is typically achieved using a grit channel designed to produce an optimum flow rate that allows grit to settle and other less-dense solids to be carried forward to the next treatment stage.

Figure No 111 sedimention

Gravity separation of solids is the primary treatment of sewage, where the unit process is called "primary settling tanks" or "primary sedimentation tanks." It is also widely used for the treatment of other types of wastewater. Solids that are denser than water will accumulate at the bottom of quiescent settling basins. More complex clarifiers also have skimmers to simultaneously remove floating grease such as soap scum and solids such as feathers, wood chips, or condoms. Containers like the API oil-water separator are specifically designed to separate non-polar liquids.

Biochemical oxidation

Secondary treatment by biochemical oxidation of dissolved and colloidal organic compounds is widely used in sewage treatment and is applicable to some agricultural and industrial wastewaters.



Biological oxidation will preferentially remove organic compounds useful as a food supply for the treatment ecosystem. Concentration of some less digestible compounds may be reduced by co-metabolism. Removal efficiency is limited by the minimum food concentration required to sustain the treatment ecosystem.

Figure No 112 Biochemical Oxidation

Sustainable development techniques:-

Sustainability is defined the desire to perform activities without any depletion of resources or bringing any harmful effect on the environment. Practicing sustainable construction methods will help avoiding harmful effects from construction activities. Construction involves activities like use of building materials from various sources, use of machineries, demolition of existing structures, use of green fields, cutting down of trees etc. which can impact environment in one or more ways. Civil engineering field being the major part of the economy, it is very essential that sustainable construction practice dominate the past followed conventional construction practice and methods.

Creating Healthy Environment

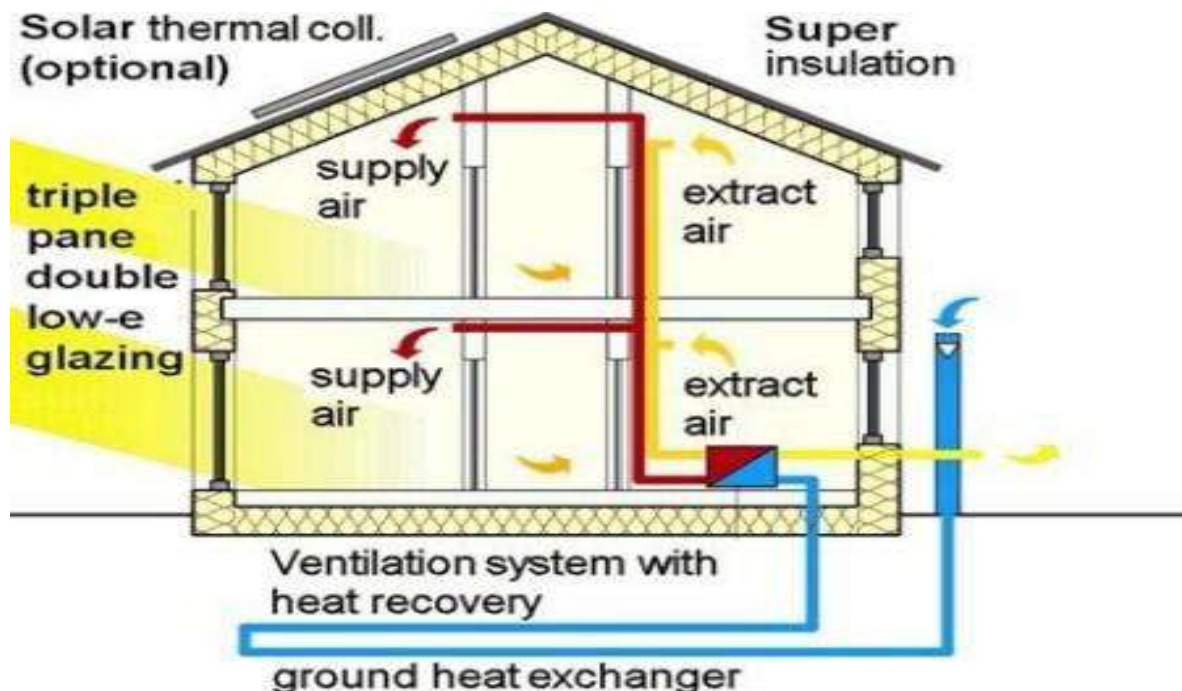


Figure No 113 Creating healthy environment

Instead of endangering the health of worker, builders and occupants' construction must enhance leisure, living and the working environments.

Around 40% of total energy consumption and greenhouse gas emissions are directly due to construction and operation of buildings. The best of to reduce this impact is the use of green buildings construction techniques.

Effective use of resources

Overconsumption of misappropriate amount of resources like land, money, use or disposal, construction must be stopped. Wastage of resources, materials, water, poor design is not recommended. The building constructed have to be affordable and manageable.

Sand and Gravel are being used for thousands of years in construction. The demand for these is increasing day by day as demand for infrastructure development is increasing.

Over use of construction materials such river sand and gravels also have negative impact on environment. Excessive sand-and-gravel mining causes the degradation of rivers. Sand mining results in the lowering of the stream bottom, That results in bank erosion.

This results in the destruction of aquatic and riparian habitat through large changes in the channel morphology. The harmful effects include bed degradation, lowered water tables and channel instability.

14.1.6 TECHNICAL CASE STUDY:

Technical case study

We have selected an construction site “Tulsi Square” as a technical case study. It is located on the Gondal and collapse to the distance 60Km.this is a commercial type building. The project was awarded to “Maruti Construction” to complete the contractions of project.

DESIGN

The design of “Tulsi Square” of area is 25,600 sq. feet. The length of a 160 feet width of a 160 feet and height at is a 42 feet. The slenderness ration is a 1:10 of the building. The earthquakes measuring 6.5 on the Richter scale.

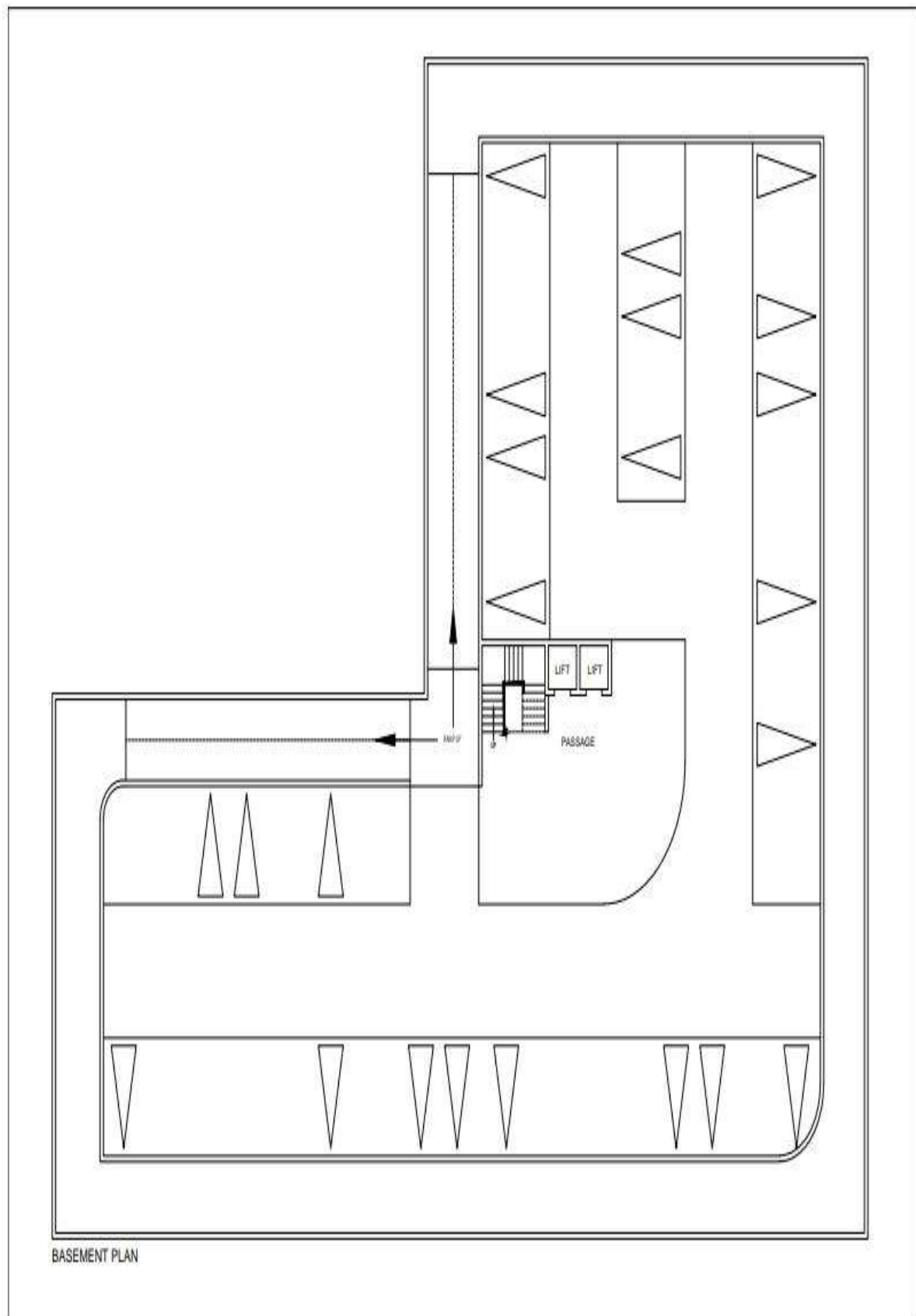
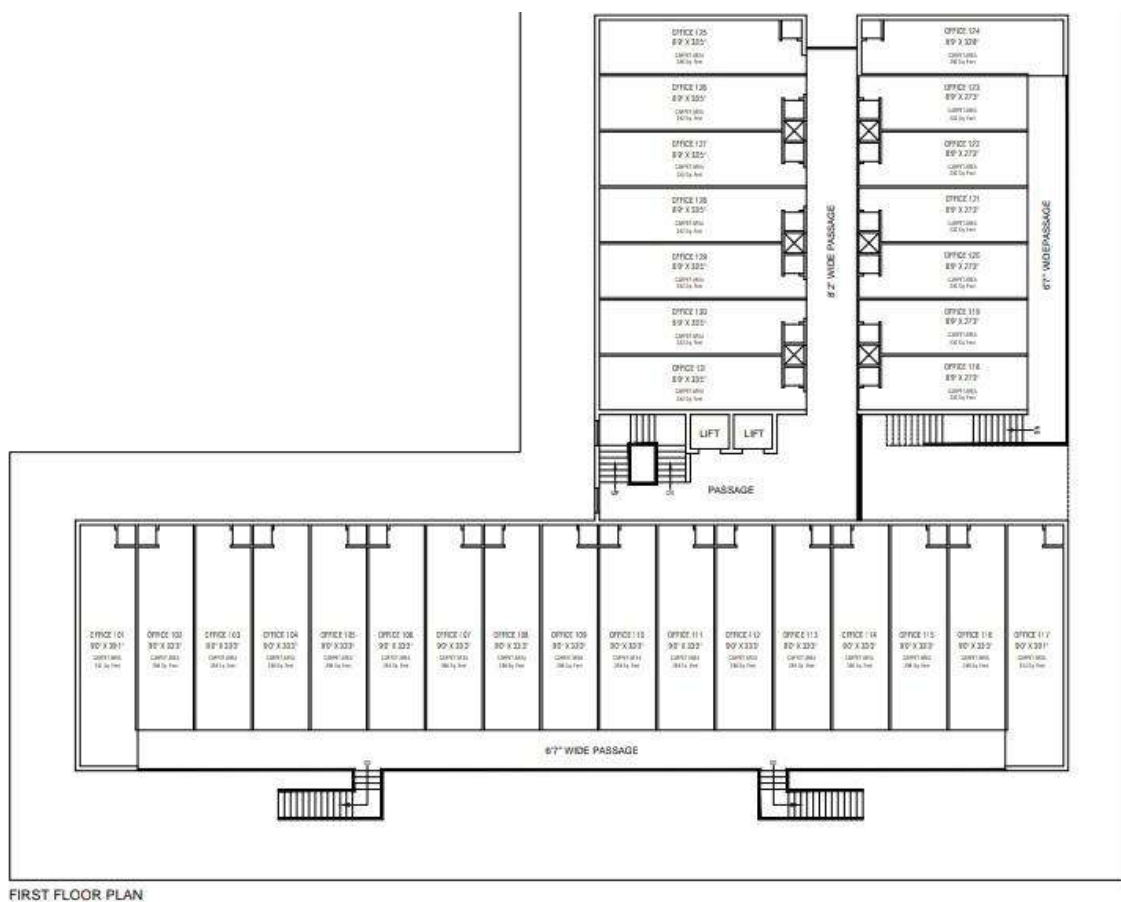
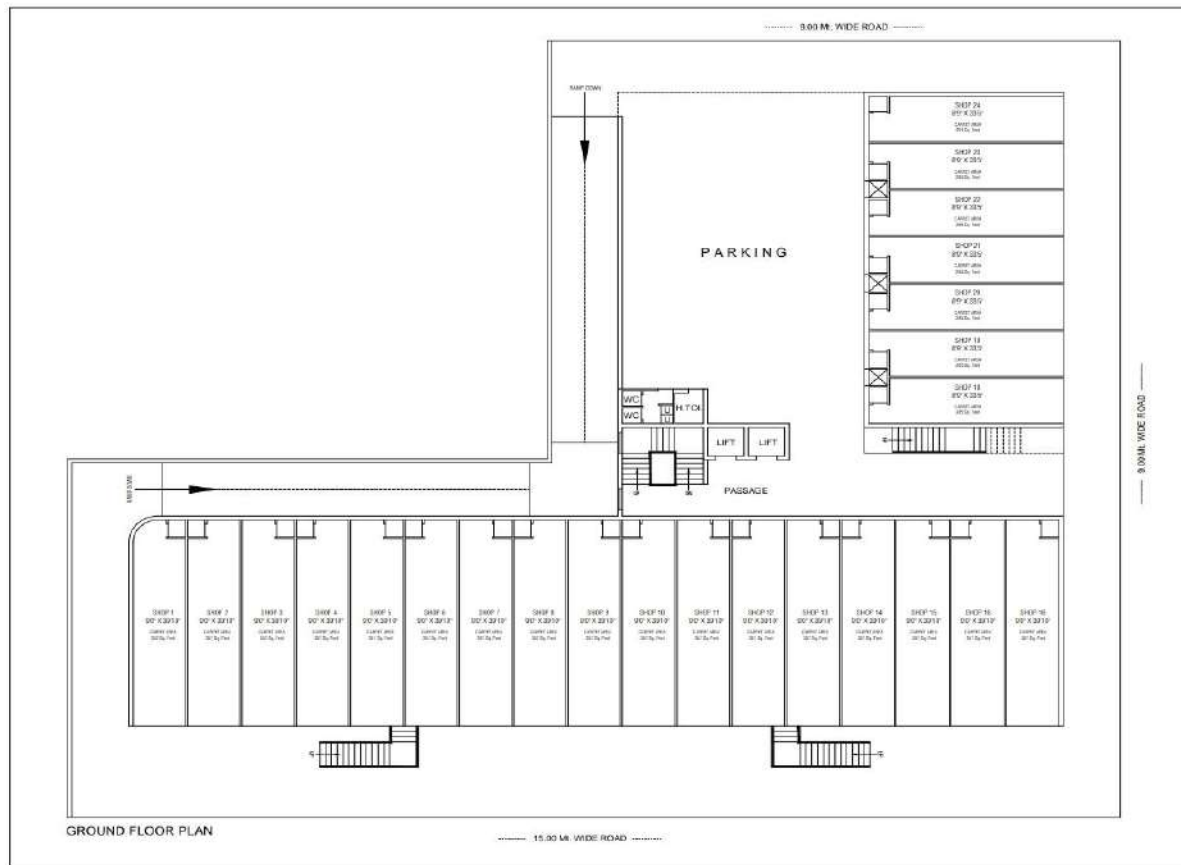
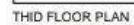


Figure No 114 design of Tulsi Square





COST

The “Tulsi square” nearly cost is nearly Rs.5 crore 32 lace began in 2020 and completed in 2021.

CONSTRUCTION

Built by “Maruti Construction” over 1 Engineer and 45 worker work for this project.





Figure No 115 photograph's during constructions work

PURPOSE OF “TULSI SQUARE”

The main purpose of “Tulsi Square” building center as a business place is to provide a better place for retailers. Aside from a good location, accessibility also creates the design to visit and shop at shopping center.



Figure No 116 Elevation and 3D view of Tulsi square

Advantages

- They provide a business place.
- There is a wide variety of product available.
- It is beneficial for a businessman to set up a store in a shopping mall.
- Increase in transport, service-se tore
- Local people getting employment

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

(For Jhalansar village development, villagers' happiness, comfortable and for enhancement of the village)

A) Immediately b) Within 1 year c) Long term (3-5 years) along with cost estimation.

Table No 37 impact on society

Sr. No	Design Name	Period to Implement	Amount (Rs)	Benefit
1	PHYSICAL INFRASTRUCTURE			
	BUS – STATION	Long Term (3-5 years)	2,35,916.93	-For easily and reliable facility transportation. -People waiting for the bus can sit well.
	PUBLIC – TOILET	Immediately	3,67,477.56	-Decrease health issue and improve cleanliness in village. -To keep clean the village.
2	SOCIAL INFRASTRUCTURE			
	ANGANWADI MAINTANCE	Long Term (3-5 years)	9,600	-Studying & playing for village children -Extra activity
	BANK	Immediately	8,211,023.26	-People can easily withdrawal & deposits money in bank - Increase facility of people
	PLAY GROUND	Long Term (3-5 years)	68,934	-children use for playing - the villagers do exercise like walking, running etc.
	PHARMACY STORE	Long Term (3-5 Years)	1,18,388	-easily available medicine -better information about medicine
3	SUSTAINBLE INFRASTRUCTURE			
	BIO – GAS PLANT	Long Term (3-5 years)	5,89,735.2	-It is very sustainable way to get energy in the village there is lot of dung so it is very economical -This is natural recourses and non polluting.
4	SMART VILLAGE DESIGN			
	SKILL DEVELOPMENT CENTER	Long Term (3-5 years)	7,56,082	-Small business hub. -Build a training center -Employment is available
	R. O. WATER PLANT	Long Term (3-5 years)	12,17,995	-clean and pure drinking water is available -reductions is illness

				-improvement
5	SOICIO – CULTURE INFRASTRUCTURE			
	COMMUNITY HALL	Immediately	9,11,944.58	-For general meetings & other small functions -Helpful for awareness program
	LIBRARY	Within 1 year	6,08,892	-improve literacy & increase education facility -learn about modern new technology. -provide computer center in library.
6	HERITAGE DESIGN			
	GATE	Long Term (3-5 years)	3,50,000	-it will provide aesthetic view to village -as heritage point of view village make beautiful.

B) If possible, List the sources of the funding available with the Village gram panchayat

- Fourteen (14th) finance commission.
- ATVT Grant (Apno Taluko Vibrant Taluko)
- MLA Grant
- Member of Parliament Grant
- MGNREGA Grant (Mahatma Gandhi National Rural Employment Guarantee Act 2005)
- NREGA (National Rural Employment Guarantee act)
- Gram Panchayat Grant

16. Survey by Interviewing With Talati And / or Sarpanch

Vishwakarma Yojana: Phase VIII

JHALANSAR VILLAGE SUREY

As approach towards “Rurbanisation for village development”.

Table No 36 survey interview report

Sr.	Questions	Yes/ No	Remarks
1	What are the sources of income in village?	Yes	Agricultural production
2	What are the chances of employment in village?	No	
3	What are the special technical facilities in village?	No	
4	Is any debt on village dwellers?	No	
5	Are village people getting agricultural help?	Yes	PM Kishan Sanman Nidhi
6	Is women health awareness Program organized in village?	Yes	
7	Are women having opportunity to work and income?	Yes	
8	Child girl education is appreciated in village?	Yes	
9	Facility of vaccination to child is available in village?	Yes	In sub-center
10	Are village people aware about child vaccination and done to each and every child as per norms?	Yes	
11	Women help line number information is provided to village people?	Yes	1091 women help line no. provide
12	Is water scarcity in village? How many days per year?	Yes	Given in two days
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?	Yes	For threatening
16	Is any death of patient occurred due to unavailability of medical facility in village?	No	
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	Yes	Male Disability is more
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?	Yes	
20	Life Living standard of girls and women is appreciated and uplifted in village?	Yes	

17. Irrigation / Agriculture Activities And Agro Industry, Alternate Technics And Solution

GREEN HOUSE:-

Growing plants is both an art and a science. About 95% of plants, either food crops or cash crops are grown in open field. Since time immemorial, man has learnt how to grow plants under natural environmental conditions. In some of the temperate regions where the climatic conditions are extremely adverse and no crops can be grown man has developed methods of growing some high value crop continuously by providing protection from the excessive cold, which is called as Greenhouse Technology. So, Greenhouse Technology is the technique of providing favorable environment condition to the plants. It is rather used to protect the plants from the adverse climatic conditions such as wind, cold, precipitation, excessive radiation, extreme temperature, insects and diseases. It is also of vital importance to create an ideal micro climate around the plants. This is possible by erecting a greenhouse / glass house, where the environmental conditions are so modified that one can grow any plant in any place at any time by providing suitable environmental conditions with minimum labour.

Greenhouses are framed or inflated structures covered with transparent or translucent material large enough to grow crops under partial or fully controlled environmental conditions to get optimum growth and productivity.

CLASSIFICATION OF GREEN HOUSE:-

Greenhouse structure of various types is used for crop production. Although there are advantages in each type for a particular application, in general there is no single type greenhouse, which can be constituted as the best. Different types of greenhouses are designed to meet the specific needs. The different types of greenhouses based on shape, utility, material and construction are briefly given below:

1. Greenhouse type based on shape:-

For the purpose of classification, the uniqueness of cross section of the greenhouses can be considered as a factor. The commonly followed types of greenhouses based on shape are:

a) Lean to type greenhouse.

A lean-to design is used when a greenhouse is placed against the side of an existing building. It is built against a building, using the existing structure for one or more of its sides. It is usually attached to a house, but may be attached to other buildings.

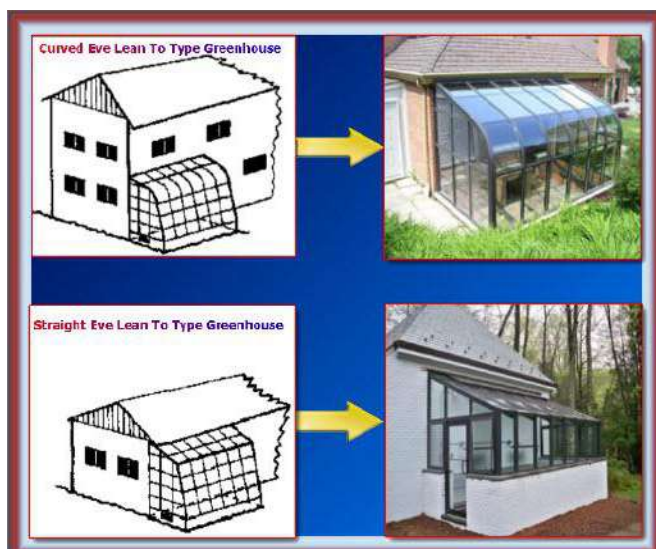


Figure No 117 lean to type greenhouse

The roof of the building is extended with appropriate greenhouse covering material and the area is properly enclosed. It is typically facing south side. The lean-to type greenhouse is limited to single or double-row plant benches with a total width of 7 to 12 feet. It can be as long as the building it is attached to. It should face the best direction for adequate sun exposure.

b) Even span type greenhouse.

The even-span is the standard type and full-size structure, the two roof slopes are of equal pitch and width. This design is used for the greenhouse of small size, and it is constructed on level ground. It is attached to a house at one gable end.

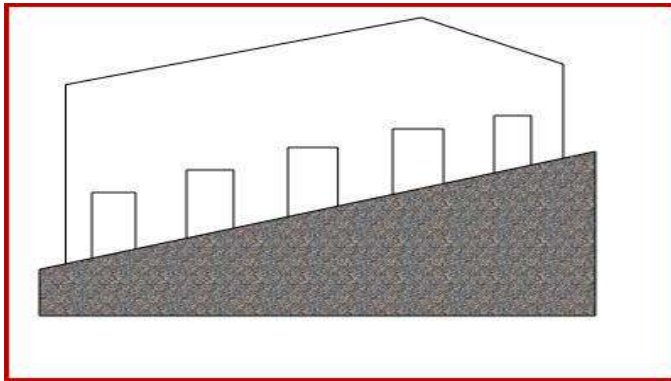
It can accommodate 2 or 3 rows of plant benches. The cost of an even-span greenhouse is more than the cost of a lean-to type, but it has greater flexibility in design and provides for more plants. Because of its size and greater amount of exposed glass area, the even-span will cost more to heat. The design has a better shape than a lean-to type for air circulation to maintain uniform temperatures during the winter heating season.



Figure No 118 Even span type greenhouse

A separate heating system is necessary unless the structure is very close to a heated building. It will house 2 side benches, 2 walks, and a wide center bench. Several single and multiple span types are available for use in various regions of India. For single span type the span in general, varies from 5 to 9 m, whereas the length is around 24 m. The height varies from 2.5 to 4.3 m.

c) Uneven span type greenhouse.



This type of greenhouse is constructed on hilly terrain. The roofs are of unequal width; make the structure adaptable to the side slopes of hill. This type of greenhouses is seldom used now-a-days as it is not adaptable for automation.

Figure No 119 uneven span type greenhouse

d) Ridge and furrow type.

Designs of this type use two or more A-frame greenhouses connected to one another along the length of the eave. The eave serves as furrow or gutter to carry rain and melted snow away. The side wall is eliminated between the greenhouses, which results in a structure with a single large interior. Consolidation of interior space reduces labour, lowers the cost of automation, improves personal management and reduces fuel consumption as there is less exposed wall area through which heat escapes. The snow loads must be taken into the frame specifications of these greenhouses since the snow cannot slide off the roofs as in case of individual free standing greenhouses, but melts away. In spite of snow loads, ridge and furrow greenhouses are effectively used in northern countries of Europe and in Canada and are well suited to the Indian conditions.



Figure No 120 rigid and furrow type greenhouse

e) Saw tooth type.



Figure No 121 saw tooth type greenhouse

These are also similar to ridge and furrow type greenhouses except that, there is provision for natural ventilation in this type. Specific natural ventilation flow path develops in a saw-tooth type greenhouse.

f) Quonset greenhouse.



Figure No 122 Quonset greenhouse

This is a greenhouse, where the pipe arches or trusses are supported by pipe purling running along the length of the greenhouse. In general, the covering material used for this type of greenhouses is polyethylene. Such greenhouses are typically less expensive than the gutter connected greenhouses and are useful when a small isolated cultural area is required.

These houses are connected either in free, standing style or arranged in an interlocking ridge and furrow. In the interlocking type, truss members overlap sufficiently to allow a bed of plants to grow between the overlapping portions of adjacent houses.

A single large cultural space thus exists for a set of houses in this type, an arrangement that is better adapted to the automation and movement of labour.

g) Interlocking ridges and furrow type Quonset greenhouse.



Figure No 123 interlocking ridge

Designs of this type use two or more A-frame greenhouses connected to one another along the length of the eave. The eave serves as furrow or gutter to carry rain and melted snow away. The side wall is eliminated between the greenhouses, which results in a structure with a single large interior. Consolidation of interior space reduces labour, lowers the cost of automation, improves personal management and reduces fuel consumption as there is less exposed wall area through which heat escapes.

The snow loads must be taken into the frame specifications of these greenhouses since the snow cannot slide off the roofs as in case of individual free standing greenhouses, but melts away. In spite of snow loads, ridge and furrow greenhouses are effectively used in northern countries of Europe and in Canada and are well suited to the Indian conditions.

h) Ground to ground greenhouse.



Figure No 124 ground to ground greenhouse

Free-standing greenhouse (ground to ground greenhouses), because of their cost, are one of the most popular styles of greenhouse structures. The free-standing greenhouse, ground to ground greenhouse can be designed as a high tunnel or as an environmentally controlled greenhouse. Free-standing greenhouses come in a wide variety of lengths and widths; most popular is the 30 ft wide ground to ground greenhouse. The ground to ground greenhouse often is the built with short sidewalls.

It is a free-standing greenhouse structure popular in reforestation for over-wintering; ground to ground greenhouse can also be designed with environmental controls and can be purchased with a number of different coverings. Ground to ground, free-standing greenhouses are popular in every climate; we have often supplied them for product, equipment, vehicle storage.

2. Greenhouse type based on Utility:-

Classification can be made depending on the functions or utilities. Of the different utilities, artificial cooling and heating are more expensive and elaborate. Hence based on this, they are classified in to two types.

a) Greenhouses for active heating.



Figure No 125 Greenhouse for active heating

During the night time, air temperature inside greenhouse decreases. To avoid the cold bite to plants due to freezing, some amount of heat has to be supplied. The requirements for heating greenhouse depend on the rate at which the heat is lost to the outside environment. Various methods are adopted to reduce the heat losses, viz., using double layer polyethylene, thermo pane glasses (Two layers of factory sealed glass with dead air space) or to use heating systems, such as unit heaters, central heat, radiant heat and solar heating system.

b) Greenhouses for active cooling.



Figure No 126 greenhouse for active cooling

During summer season, it is desirable to reduce the temperatures of greenhouse than the ambient temperatures, for effective crop growth. Hence suitable modifications are made in the green house so that large volumes of cooled air is drawn into greenhouse, This type of greenhouse either consists of evaporative cooling pad with fan or fog cooling . This greenhouse is designed in such a way that it permits a roof opening of 40% and in some cases nearly 100%.

3. Greenhouse type based on construction:-

The type of construction predominantly is influenced by structural material, though the covering material also influences the type. Higher the span, stronger should be the material and more structural members are used to make sturdy tissues. For smaller spans, simple designs like hoops can be followed. So based on construction, greenhouses can be classified as

a) Wooden framed structure.

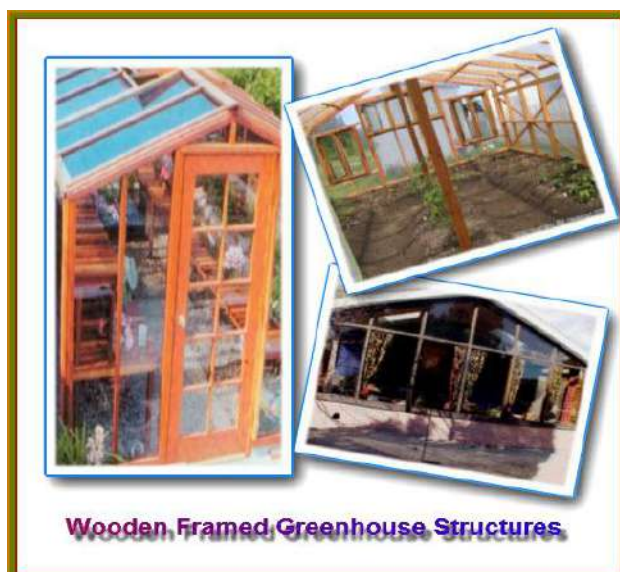


Figure No 127 Wooden framed structure

In general, for the greenhouses with span less than 6 m, only wooden framed structures are used. Side posts and columns are constructed of wood without the use of a truss. Pine wood 8 is commonly used as it is inexpensive and possesses the required strength. Timber locally available, with good strength, durability and machinability also can be used for the construction.

b) Pipe framed structure.



Figure No 128 Pipe framed structure

Pipes are used for construction of greenhouses, when the clear span is around 12m. In general, the side posts, columns, cross ties and purling are constructed using pipes. In this type, the trusses are not used.

c) Truss framed structure.

If the greenhouse span is greater than or equal to 15m, truss frames are used. Flat steel, tubular steel or angular iron is welded together to form a truss encompassing rafters, chords and struts. Struts are support members under compression and chords are support members under tension. Angle iron purlins running throughout the length of greenhouse are bolted to each truss. Columns are used only in very wide truss frame houses of 21.3 m or more. Most of the glass houses are of truss frame type, as these frames are best suited for pre-fabrication.



Figure No 129 truss framed green house structure

4. Greenhouse type based on covering material:-

Covering materials are the important component of the greenhouse structure. They have direct influence on greenhouse effect, inside the structure and they alter the air temperature inside. The types of frames and method of fixing also varies with covering material. Hence based on the type of covering material they may be classified as

a) Glass glazing.



Figure No 130 Glass glazing

Only glass greenhouses with glass as the covering material existed prior to 1950. Glass as covering material has the advantage of greater interior light intensity. These greenhouses have higher air infiltration rate which leads to lower interior humidity and better disease prevention. Lean-to type, even span, ridge and furrow type of designs are used for construction of glass greenhouse.

b) Fibre glass reinforced plastic (FRP) glazing

Polyvinyl chloride rigid panels, fibre glass-reinforced plastic, acrylic and polycarbonate rigid panels are employed as the covering material in the quonset type frames or ridge and furrow type frame. This material is more resistant to breakage and the light intensity is uniform throughout the greenhouse when compared to glass or plastic. High grade panels have long life even up to 20 years. The main disadvantage is that these panels tend to collect dust as well as to harbor algae, which results in darkening of the panels and subsequent reduction in the light transmission. There is significant danger of fire hazard.

Figure No 131 fiber glass reinforced plastic glazing

c) Plastic film

Figure No 132 plastic film

Flexible plastic films including polyethylene, polyester and polyvinyl chloride are used as covering material in this type of greenhouses. Plastics as covering material for greenhouses have become popular, as they are cheap and the cost of heating is less when compared to glass greenhouses. The main disadvantage with plastic films is its short life. For example, the best quality ultraviolet (UV) stabilized film can last for four years only. Quonset design as well as gutter-connected design is suitable for using this covering material.

i. UV stabilized LDPE film.



Greenhouse Technology is the technique of providing favorable environment condition to the plants. It is rather used to protect the plants from the adverse climatic conditions such as wind, cold, precipitation, excessive radiation, extreme temperature, insects and diseases. It is also of vital importance to create an ideal micro climate around the plants. This is possible by erecting a greenhouse where the environmental conditions are so modified that one can grow any plant in any place at any time by providing suitable environmental conditions with minimum labour.

Figure No 133 UV stabilized LDPE film

Greenhouses are framed or inflated structures covered with transparent or translucent U.V stabilized film large enough to grow crops under partial or full controlled environmental conditions to get optimum growth and productivity

ii. Net house.



Figure No 134 net house

Net houses are basically naturally ventilated climate controlled. Jain Net houses have a variety of applications, the majority being, growing of vegetables, floriculture, fruit crop growing for export market.

Jain Net houses are built of a Pre-galvanized channel cum tubular structure/ Tubular Structure wherein crops are grown under a favorable controlled environment and other conditions viz. temperature, humidity, light intensity, soil media, disease control, irrigation, Fustigation and other agronomical practices throughout the season irrespective of the natural conditions outside.

In conventional Agronomical practices, the crops are being grown / cultivated in the open field under natural conditions where the crops are more susceptible to sudden changes in climate i.e. temperature, humidity, light intensity, photo period and other conditions due to which the quality, yield of a particular crop can get affected and may be decreased.

d) Based on the cost of construction involved (which includes various factors mentioned from a to c)**i High cost Green House**

High level greenhouses have a wall height of at least 4 m with the roof peak being up to 8 m above ground level. These structures offer superior crop and environmental performance. High technology structures will have roof ventilation and may also have side wall vents. Cladding may be plastic film (single or double), polycarbonate sheeting or glass.



Environmental controls are almost always automated. These structures offer enormous opportunities for economic and environmental sustainability. Use of pesticides can be significantly reduced. High technology structures provide a generally impressive sight and, internationally, are increasingly being involved in agribusiness opportunities. Although these greenhouses are capital intensive, they offer a highly productive, environmentally sustainable opportunity for an advanced fresh produce industry. Investment decisions should, wherever possible, look to install high technology greenhouses.

Figure No135 High cost green house

Greenhouses vary in style, size and materials that are used to build it in order to fulfill any requirements and to suit any type of crop. The materials used to build the main structure of a greenhouse are timber, aluminum or steel. Timber frames are the traditional choice for garden greenhouses and hardwoods require low maintenance.

Aluminum alloy frames are more lightly, need only minimum maintenance but are extremely sturdy. Steel frames are very strong but must be treated regularly to prevent them from rust, but they are also cheaper than timber or aluminum frames. For glazing you can use glass or plastic panels. Size may also vary according to your necessities.

Many styles of greenhouses are available on the market, every one of them with specific qualities: some provide optimum ventilation, or best use of space, or conserve heat well or allow better light penetration but all of them are made in order to fulfill your personal preferences.

ii Medium cost Green House



Figure No 136 medium cost green house

Medium level greenhouses are typically characterized by vertical walls more than 2m but less than 4 m tall and a total height usually less than 5.5 m. They may have roof or side wall ventilation or both. Medium level greenhouses are usually clad with either single or double skin plastic film or glass and use varying degrees of automation.

Medium level greenhouses offer a compromise between cost and productivity and represent a reasonable economic and environmental basis for the industry. Production in medium level greenhouses can be more efficient than field production. Hydroponic systems increase the efficiency of water use. There is greater opportunity to use non-chemical pest and disease management strategies but overall the full potential of greenhouse horticulture is difficult to attain

iii Low cost Green House

These greenhouses are less than 3 m in total height. Tunnel houses, are the most common type. They do not have vertical walls. They have poor ventilation. This type of structure is relatively inexpensive and easy to erect. Little or no automation is used. While this sort of structure provides basic advantages over field production, crop potential is still limited by the growing environment and crop management is relatively difficult.



Figure NO 137 low cost green house

Low level greenhouses generally result in a suboptimal growing environment which restricts yields and does little to reduce the incidence of pests and diseases. Pest and disease control, as a result, is normally structured around a chemical spray program. Low technology greenhouses have significant production and environmental limitations, but they offer a cost effective entry to the industry.

ADVANTAGE OF GREEN HOUSE:-

- The yield may be 10-12 times higher than that of outdoor cultivation depending upon the type of greenhouse, type of crop, environmental control facilities.
- Reliability of crop increases under greenhouse cultivation.
- Ideally suited for vegetables and flower crops.
- Year round production of floricultural crops.
- Off-season production of vegetable and fruit crops.
- Disease-free and genetically superior transplants can be produced continuously.
- Efficient utilization of chemicals, pesticides to control pest and diseases.
- Water requirement of crops very limited and easy to control.
- Maintenance of stock plants, cultivating grafted plant-lets and micro propagated plant-lets.
- Hardening of tissue cultured plants
- Production of quality produce free of blemishes.
- Most useful in monitoring and controlling the instability of various ecological system.
- Modern techniques of Hydroponic (Soil less culture), Aeroponics and Nutrient film techniques are possible only under greenhouse cultivation.

18. Social Activities – Any Activates Planned By Students

1. Beti bachao beti padhavo:-

Manusmriti has written – “Where women are respected, God resides there.” But at present, it is happening in the opposite direction. Hon’ble Prime Minister Shri Narendra Modi launched a campaign dedicated to daughters on January 22, 2015, in Panipat, Haryana, called “Beti Bachao Beti Padhao Abhiyan”.

Our country, the number of women is decreasing compared to men. Between 0-6 years of age, the number of girls in the ration of 1000 boys is continuously declining from the year 1961. The number of girls in the year 1991 was 945 and in 2001 it decreased to 927 and in 2011 it was 918.

This campaign has been started in 100 districts with low sex ratio. The main objectives of this campaign include the elimination of female feticide, increasing the level of girl child literacy, curbing prejudice of gender discrimination and awareness campaign, improving girl child nutrition and health level, opportunities for girls to go ahead and Providing a safe environment, etc.

If the daughters of the country will not be safe and educated, the condition of the country and society will not change. It is not just a government scheme but the collective responsibility of every citizen of the country. If we do not be cautious today, we will invite a terrible crisis not only for our own generation, but also for the next generation.



Figure No 138 beti bachao beti padhavo

2. One-day Health Awareness / Education Camp:-

- Health is a causative factor that affects country's aggregate level of economic growth. Since development is a consequence of good health, even the poorest developing countries should make it a priority to invest in the health sector. Unfortunately, health has been poorly invested in by countries with low human development, and the health sector still remains largely untapped and continues to suffer neglect.
- India's rank in the Human Development Index Report 2018 (130 out of 189 countries) issued by the UNDP depicts the level of ignorance of the health sector in a country like India.



Figure No 139 one day health awareness

- India is one of the fastest growing economies of the world. The very essential components of primary health care– promotion of food supply, proper nutrition, safe water and basic sanitation and provision for quality health information concerning the prevailing health problems – is largely ignored. Access to healthcare services, provision of essential medicines and scarcity of doctors are other bottlenecks in the primary health care scenario

3. Swachata abhiyaan in Village:-

- Cleanliness is not a job which we have to do to earn money however, it is a very good habit which we should do to earn a good health and healthy life. Cleanliness is a greatest virtue which should be followed by everyone as a great responsibility to enhance the standard of life. We should take care of our personal cleanliness, pet animal cleanliness, environment cleanliness, surrounding cleanliness and work place cleanliness. We should not cut trees and do more plantations for maintaining the cleanliness of our environment.
- Jhalansar have become Open defecation free village. In this village every house have Toilet.
- It also started Door to Door waste collection system.

- The only Part at which it is lacking is the Drainage system which is still not implemented in the village.
- The cleanliness of village need more frequent approach. Fogging technology need to be used more frequently so the disease due to flies and mosquitoes get reduced.
- We as a team decided to talk to the people of village and take their opinion on the matter of cleanliness and they want the same as what we analysis by seeing village.
- So we talk about this matter to the sarpanch and talati mantra and they assured us that they are working towards it but they need more fund from government to execute this project.
- We also checked the cleanliness of the primary schools and their toilet and also talk this about with children and cleanliness importance.



Figure No 140 Swatchhta Abhiyaan in village

19. JHALANSAR VILLAGE SAGY Questionnaire Survey form with the Sarpanch Signature

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Jhalansar Gram Panchayat: Jhalansar Ward No. _____
 Block: Junagadh District: Junagadh
 State: Gujarat LS Constituency: Junagadh

1. Family Identity and Size

Name of Head of Household	<u>Arjunbhai Mushabhai Thelai</u>					Male/Female	<u>M</u>
SECC Survey ID:		Family Size	<u>9</u>	Over 18	<u>6</u>	6 to 18	<u>3</u>

2. Category & Entitlement Details (Tick as appropriate)

Social Category ¹		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
<u>Harunbhai</u>	<u>52</u>	<u>M</u>	<u>N</u>	<u>2</u>	<u>4</u>	<u>Y</u>	<u>Y</u>	<u>0</u>
<u>Tubai ben</u>	<u>47</u>	<u>F</u>	<u>N</u>	<u>2</u>	<u>3</u>	<u>Y</u>	<u>Y</u>	<u>0</u>
<u>Sultan bhai</u>	<u>25</u>	<u>M</u>	<u>N</u>	<u>2</u>	<u>5</u>	<u>Y</u>	<u>Y</u>	<u>0</u>
<u>Afseem ben</u>	<u>22</u>	<u>F</u>	<u>N</u>	<u>2</u>	<u>4</u>	<u>Y</u>	<u>Y</u>	<u>0</u>

3. Children from 6 years and up to 18 years

Name	Age	Sex M/F/O	Disability Y/N	Marital Code ⁶	Level of Education Code ⁷	Going to School/College (Y/N)	Current Class	Computer Literate Y/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 Immunised Y/N	Mother's Age at the time of Child's Birth
<u>Arman</u>	<u>1</u>	<u>M</u>	<u>N</u>	<u>N</u>	<u>Y</u>			
<u>Damini</u>	<u>2</u>	<u>M</u>	<u>N</u>	<u>N</u>	<u>Y</u>			
<u>Sahib</u>	<u>3</u>	<u>M</u>	<u>N</u>	<u>N</u>	<u>N</u>			

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 8 - 04, Class 10 - 05, Class 12 - 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 / <u>NO</u>	Yes / <u>No</u>	Yes / <u>No</u>
Children	Yes / <u>NO</u>	Yes / <u>NO</u>	Yes / <u>No</u>

8. Consumption of Tobacco

	Smoking	Chewing
Adults	<u>N</u>	<u>N</u>
Children	<u>N</u>	<u>N</u>

9. House & Homestead Data

Own House: Yes / <u>NO</u>	No. of Rooms: <u>2</u>
Type: Kutch / Semi Pucca / <u>Pucca</u>	
Toilet: <u>Private</u> / Community / Open Defecation	
Drainage linked to House: <u>Covered</u> / Open / None	
Waste Collection System: Door Step / <u>Common Point</u> / No Collection System	
Homestead Land: Yes / <u>NO</u>	Kitchen Garden: Yes / <u>NO</u> / <u>N</u>
Compost Pit: Individual / Group / <u>None</u>	Biogas Plant: Individual / Group / <u>None</u>

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

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

11. Source of Lighting and Power

Electricity Connection to Household: Yes / <u>No</u>
Lighting: Electricity / Kerosene / Solar Power
Mention if Any Other:
Cooking: <u>LPG</u> / Biogas / Kerosene / Wood / Electricity
Mention if Any Other:
If cooking in Chullah: <u>NO</u> / <u>mal</u> / Smokeless

12. Landholding (Acres)

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

13. Principal Occupations in the Household

Livelihood	Tick if applicable
Farming on own Land	<u>✓</u>
Sharecropping / Farming Leased Land	<u>X</u>
Animal Husbandry	<u>✓</u>
Pisciculture	<u>X</u>
Fishing	<u>X</u>
Skilled Wage Worker	<u>✓</u>
Unskilled Wage Worker	<u>✓</u>
Salaried Employment in Government	<u>X</u>
Salaried Employment - Private Sector	<u>X</u>
Weaving	<u>X</u>
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 / <u>No</u>
Do you use Chemical Insecticides	Yes / <u>No</u>
Do you use Chemical Weedicides	Yes / <u>NO</u>
Do you have Soil Health Card	Yes / <u>NO</u>
Irrigation: <u>None</u> / Canal / Tank / Borewell / Other	
Drip or Sprinkler Irrigation: Drip / Sprinkler / <u>None</u>	

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

Name	Unit	Quantity
<u>Wheat</u>	<u>KG</u>	<u>250</u>
<u>Bajra</u>	<u>KG</u>	<u>200</u>

17. Livestock Numbers

Cows: <u>X</u>	Bullocks: <u>✓</u>	Calves: <u>X</u>
Female Buffalo: <u>✓</u>	Male Buffalo: <u>X</u>	Buffalo Calves: <u>X</u>
Goats/ Sheep: <u>X</u>	Poultry/ Ducks: <u>X</u>	Pigs: <u>X</u>
Any other: Type <u>NO</u> No.		
Shelter for Livestock: Pucca / <u>Kutcha</u> / None		
Average Daily Production of Milk (Litres): <u>5</u>		

18. What games do Children Play

Play with toys

19. Do children play musical instrument (mention)

NO

Schedule Filled By: C. Unjia & S. S. S.

Principal Respondent:

Date of Survey: 17-03-2021

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: Jhalansar
b. Block: Junagadh
c. District: Junagadh
d. State: Gujarat
e. Lok Sabha Constituency: Junagadh
f. Number of Wards in the Gram Panchayat: 8
g. Number of Villages in the Gram Panchayat:

h. Names of Villages: Jhalansar

Demographic Information

Number of Households 412 Total Population 2378 Male 1269 Female 1127
SC HHs 30 ST HHs 45 OBC HHs 20 Other HHs 25

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	Y	-
b.	Nearest Primary Health Centre (PHC)	Y	-
c.	Nearest Community Health Centre (CHC)	N	-
d.	Nearest Post Office	Y	-
e.	Nearest Bank Branch (Any)	N	5 km
f.	Nearest Bank with CBS Facility	N	12 km
g.	Nearest ATM	N	5 km
h.	Nearest Primary School	Y	-
i.	Nearest Middle School	Y	-
j.	Nearest Secondary School	Y	-
k.	Nearest Higher Secondary School / +2 College	N	12 km
l.	Nearest Graduate College	N	4 km
m.	Nearest ITI / Polytechnic Centre	N	12 km
n.	Kisan Seva Kendra	Y	-

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)	60
b) Number of Households receiving pension (old age, widow, disability)	20
c) Number of eligible Households who are not receiving pension	40
d) Number of Households eligible for Ration Card	346
e) Number of eligible HHs having ration cards	346
f) Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	50
g) Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	-
h) Number of active Job Card holders under MGNREGA	80
i) Number of Job Card holders who completed 100 days of work during 2013-14	70
j) Number of shops selling alcohol	-
k) Number of BPL families	24
l) Number of landless households	-
m) Number of IAY beneficiaries	50
n) Number of FRA ² beneficiaries	-
o) Number of Community Sanitary Complexes	-
p) Number of Households headed by single women	40
q) Number of Households headed by physically handicapped persons	1
r) Total number of Persons with Disability in the village	14
s) Number of SHGs	-
t) Number of active SHGs	-
u) Number of SHG Federations	-
v) Number of Youth Clubs	2
w) Number of Bharat Nirman Volunteers	-

Name and Signature of Surveyor and Respondent¹

Kakwisa Gaurish Sanketa Sushma Surveyor	Pranav Kumar સરપંચ ગ્રામ પંચાયત અધિકારી Gram Panchayat Chairperson	Kakwisa સહાયક ગ્રામ-મંત્રી Official Representative (Preferably seniormost Government official in the Gram Panchayat)	17-03-2021 Date of Survey
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¹ The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006

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	2	11 km
p	Nearest Agro Service Centre	2	11 km
p	MSP based Government Procurement Centre	2	11 km
q	Milk Cooperative / Collection Centre	1	-
r	Veterinary Care Centre	2	11 km
s	Ayurveda Centre	2	11 km
t	E - Seva Kendra	1	-
u	Bus Stop	1	-
v	Railway Station	2	11 km
w	Library	2	11 km
x	Common Service Centre	1	-

IV. Sports Facilities in the Gram Panchayat

a. Number of Play Grounds in the GP: Total 0 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: 2

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: 1 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)	Yes		✓			200 m	
b. Kerosene	Yes		✓			200 m	
c. Other (mention)	-		-			-	

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 ✓ <u>good</u> Not Covered	Jhalansar	
b.	Hand Pump Coverage in Villages:	Covered ✓ <u>good</u> Not Covered	Jhalansar	
c.	Coverage under Covered Drains:	Covered ✓ <u>good</u> Not Covered	Jhalansar	
d.	Coverage under Open Drains:	Covered Not Covered ✓ <u>good</u>	Jhalansar	
e.	Villages with Household Electricity Connection (Numbers)	Connected ✓ <u>good</u> Not Connected	Jhalansar	

VIII. Land and Irrigation

VIII. Land and Irrigation								
	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	1530.70	d.	Pasture / Grazing Land	-	g.	Check Dam	10
b.	Irrigated Land	1021.48	e.	Forests/ Plantations	-	h.	Wells/Bore Wells	300
c.	Un-irrigated Land	95.40	f.	Other Common Land	4113.52	i.	Tanks /Ponds	2

¹ Mention the number of Villages Covered and Not Covered

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		
m	Common Service Centre	N	3 kms
n	Veterinary Care Centre	Y	
		N	11 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-All 2-None 3-Some

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

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

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

IV. Coverage of Habitations under Waste Management System

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

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

b. Coverage under Open Drains: 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: _____

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: _____

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

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

VI. Sports Facilities in the Village

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

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

VII. Education, ICDS

a. Number of Anganwadi Centres: 2

c. Schools (Number)

Primary Private: - Primary Govt.: 1

Middle Private: - Middle Govt.: 1

Secondary Private: 1 Secondary Govt.: 1

Higher Secondary Private: - Higher Secondary Govt.: -

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire
This questionnaire should be filled for each of the villages in the selected Gram Panchayat

I. Basic Information

- a. Village: Jhalansar
 b. Ward Number: _____
 c. Gram Panchayat: Jhalansar
 d. Block: Junagadh
 e. District: Junagadh
 f. State: Gujarat
 g. Lok Sabha Constituency: Junagadh
 h. Number of Habitations / Hamlets in the Gram Panchayat: _____

- i. Names of Habitations / Hamlets: Jhalansar

Demographic Information

Number of Households 472 Total Population 2398 Male 1267 Female 1127
 SC HHs 30 ST HHs 45 OBC HHs 20 Other HHs 25

II. Access to Infrastructure/Amenities etc.

I. Access to Infrastructure / Facilities / Services	Located in the Village	If located elsewhere (N), distance in kms from the village
	Yes (Y)/No(N)	
a. Nearest Primary School	Y	-
b. Nearest Middle School	Y	-
c. Nearest Secondary School	Y	-
d. Kisan Seva Kendra	Y	-
e. Milk Cooperative /Collection Centre	Y	-
f. Health Sub Centre	Y	-
h. Bank	N	5 km
i. ATM	N	5 km
j. Bus Stop	Y	-
k. Railway Station	Y	-

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

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	1530.90	d. Pasture / Grazing Land	-	g. Check Dam	10
b. Irrigated Land	1021.98	e. Forests/ Plantations	-	h. Wells/Bore Wells	300
c. Un-irrigated Land	95.40	f. Other Common Land	415.52	i. Tanks /Ponds	2

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	80
2	Number of active Job Card holders who have completed 100 days of work	80
3	Number of shops selling alcohol	0
4	Number of BPL families	21
5	Number of landless households	-
6	Number of IAY beneficiaries	50
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	2
13	Number of Bharat Nirman Volunteers	-

Name and Signature of Surveyor and Respondent

Kalavijay Chavhan	જામ પંચાયત જાલણસર	કલવિજય ચવહાણ	17-03-2021
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

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



VISHWAKARMA YOJNA: VIII

1 message

Patel Gunjan <gunjanpatel664@gmail.com>
To: ddo-jun@gujarat.gov.in

Fri, Jun 11, 2021 at 9:56 PM

Dear Sir,

I am kalariya Gunjan and savaliya sagar student of Civil Engineering at Balaji Engineering College, Junagadh . I am sending this email with attached soft copy report jhalansar village report, which is part of our undergraduate final year semester project and Vishwkarma Yojna phase VIII. Please find the attachments.

21. Comprehensive report for the entire village

- As per the guideline of Vishwakarma yojana VIII we visited Jhalansar village is a Junagadh taluka in Junagadh district of Gujarat state, India. It is located 16Km from Junagadh. Jhalansar village population is 2398.
- To know or to understand the actual necessities of village and interact with Sarpanch, Talati and other village dwelled.
- Techno-economic survey forms give much information about village by interacting with Sarpanch and Talati. But interactions with village dealers and observation of village condition are required.
- We visited all the internal part of the village and interacted with villagers directly and ask them about the present situation of village. We conducted a techno-economic the gap analysis and provide the necessary facilities to village. We saw that as per UDPEI Norms there are some non-adequate facilities.
- We provide Bio-gas Plant, Bus-Stand, Bank, Public-toilet, Community Hall and Gate. Then in second Stage we will provide Play-Ground, Anganwadi, R. O. Water Plant, Skill-Development Center and Library. We explained all the parameters of various design such as sustainable, physical, social, socio-culture, smart and heritage village design.
- Our team of vy thanked all the member of the village for their support during this work period and made them understand that the implantation of such facilities can build implantations of such facilities can build a better village and hence lead to build a strong town.
- The presentation was very much interactive and helpful to understand various amenities to be designed at village level for the overall development of the Jhalansar village as Rurbanisation