DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION

Turkha Village

Botad District

PREPARED BY

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SAL COLLEGE OF ENGINNERING

(MR. DEEP PATEL)
NODAL OFFICERS NAME

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda,Ahmadabad– 382424 Gujarat

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CERTIFICATE

This is tocertifythatthefollowingstudentsofDegreeEngineeringsuccessfullysubmitted

DetailProjectReportfor

TURKHA VILLAGE

BOTAD DISTRICT

Under

VishwakarmaYojana: Phase-VIII

Inpartialfulfillmentoftheprojectofferedby

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

During the academic year 2020-21.

Thisproject work hasbeencarriedoutbythemunderoursupervisionandguidance.

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ABSTRACT

Vishwakarma yojana is constant circumstance type venture for the provincial zones which are need real improvement in zones to give better way of life and satisfy fundamental civilities of the residents. In this yojana we can attempt to diminish the separation between the provincial and metropolitan regions for forestalling movement of towns towards the urban areas from the metropolitan weight and furthermore we can attempt to make a superior network between the rustic and metropolitan regions.

The fundamental target of this yojana is – "production of the apparent multitude of essential offices or foundation, for example, Connectivity, metro, actual framework alongside the arrangement of economy age by keeping up the normal environmental factors of the region is the critical component of this yojana" Turkha is a town in Botad District of Gujarat State, India. It is found 15 km towards west from locale base camp Botad.

In view of the investigation visit, water flexibly to the locals is adequate by bore well framework at each home yet drinking water isn't accessible. Ground seepage framework is accessible in which the waste water is arranged to close by waterway because of which stream is contaminated. There is one town medical clinic outside the town. Creature Health Center is additionally accessible in the town. Power is accessible yet pitifully shorts are done for upkeep reason. The state of streets is Poor aside from entrance. There is little transportation office in the town. In the town absence of essential offices like public latrine, panchayat office isn't constructed, Drainage framework, Poor organization network, deficiency of water for water system there is no open nursery and so on

For best future improvement they need to improve their framework and furthermore utilize some development advances like legitimate organization association, wi-fi office. For advancement of the town framework offices like panchayat building, auxiliary school, school, ability improvement focus, farming examination place and public offices like bus stop, police post network corridor, bitumen street are required.

Based on the survey we tried to provide graph of required primary services to fulfill their needs. By offering these fundamental amenities to villager's migration rate will be decreased. We can additionally put into effect the waste series machine and drainage device in the village so villagers can stay existence healthy.

ACKNOWLEDGEMENT

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

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
NGO	Non-governmental organization
IRS	Internal Revenue Service
GETCO	Gujarat Energy Transmission Corporation
RCC	Reinforced Cement Concrete
SWOT	Strengths, Weaknesses, Opportunities, and Threats
MNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
GPS	Global Positioning System
LPCD	Liters per Capita per Day
ICT	Information and Communication Technology
IPT	Internet Protocol Telephony
BARC	Bhabha Atomic Research Institute
AKRUTI	Advance Knowledge and Rural Technology Implementation
CSR	Corporate Social Responsibility
CCTV	Closed-circuit television
RHDRF	Royal Hutt River Defense Forces
NHB	National Housing Bank
NCU	Northern credit union
TDO	Tactical Data Officer
DDO	Drawing and Disbursing Officer
RMC	Ready Mixed concrete
RTC	Real time clock
PIR	Passive infrared sensors
IOT	Internet of Things
LED	Light-emitting diode
UNICEF	United Nations Children's Fund
CAD	Computer-aided design
RCC	Reinforced concrete cement
OMC	Optimum moisture content
TPH	Tonnage per hour
PCC	Precast cement concrete
IAQ	Indoor air quality
EPA	Environmental protection agency
LCD	Liquid crystal display
NGO	Non-governmental organization

Chapter 1:Ideal village visit from District of Gujarat State (Civil Concept)

1.1 Background & Study Area Location:

Figure 1.1: Street view of Salangpur village

❖ **Background**

Above initial picture in figure one shows the Panchayat workplace of Salangpur village within the Botad District within the state of Gujarat, India. Second picture in figure one shows Botad-Barwala superhighway passes through the Salangpur village. The village of regarding 3000 lies at the b order of Ahmedabad district. The closest town is Botad. The village is regarding 153 kilometers far from Ahmedabad. to go to this place throughout the first morning, 10:30 pm & 12:30 pm buses run to and from Ahmedabad.

Figure 1.2: Hanumanji and BAPS Swaminarayan temple

Salangpur is thought throughout Asian country for the historic Shri Kashtabhanjan Hanumanji temple associate degreed BAPS Shri Swaminarayan Shikharbaddha mandir as shown in figure a pair of that is made in 1916 by Shastri Yagnapurushdas that is that the second highest temple in Gujarat at precisely 108 feet (108 is an auspicious range inside the Swaminarayan Sampraday). It's a headquarters and coaching hub for recently registered monks (sadhus).In Gujarati, 'Sarang' suggests that peacock. "Salangpur" - an area wherever peacocks live. There square measure several within the gardens of the Swaminarayan temple.Every year thousands of devotees gather at the temple to celebrate Holi - the competition of colors.

❖ **Study Area Location**

Figure 1.3: Satellite view of Salangpur village

- Above figure 3 shows satellite view of village
- Red line shows the border line of the village that is 4.2 km long.
- This village is coming underneath Botad district of Gujarat
- Village is found ten kilometers from Botad district that additionally far-famed for the closest town from Salangpur.
- Pin code is 382451.
- Coordinate's location (22°14N 71°44 E)
- Village is expanded in 1.5km diameter.
- Literacy rate is quite half-hour

1.2 Concept: Ideal Village:

"*All other pleasures and possessions pale into nothingness before service, which is rendered in a spirit of joy."*– Mahatma Gandhi

An ideal Indian village is thus made on lend itself to good sanitation. It'll have cottages with sufficient light-weight and ventilation designed of a cloth procurable inside a radius of five miles of it. The cottages can have courtyards facultative homeowners to plant vegetables for domestic use and to deal with their oxen. The village lanes and streets are freed from all evitable dirt. It'll have wells consistent with its wants and accessible to all or any. it'll have homes of worship for all, conjointly a typical installation, a village common for grazing its oxen, a co-operative farm, primary and secondary colleges during which industrial education are the central truth, and it'll have Panchayats for subsiding disputes.

It will manufacture its own grains, vegetables and fruit, and its own textile. this is often roughly my plan of a model village. Within the gift circumstances its cottages can stay what they're with slight enhancements. Given a decent zamindar, wherever there's one, or co-operation among the folks, virtually the complete of the program aside from model cottages will be found out at expenditure inside means that of the villagers together with the zamindar or zamindars, while not Government help. Therewith help there's no limit to the chance of village reconstruction.

But my task just is to get what the villagers will do to assist themselves if they need mutual co-operation and contribute voluntary labor for the good. I'm convinced that

they will, below intelligent steering, double the village financial gain as distinguished from individual financial gain. There square measure in our villages inexhaustible resources not for business functions in each case however actually for native functions in virtually each case. The best tragedy is that the hopeless temperament of the villagers to higher their ton.

The terribly 1st drawback the village employee can solve is its sanitation. it's the foremost neglected of all the issues that baffle staff which undermine physical well-being and breed malady. If the employee became a voluntary Bhangi, he would begin by aggregation night-soil and turning it into manure and sweeping village streets. He can tell folks however and wherever they ought to perform daily functions and speak to them on the worth of sanitation and therefore the nice injury caused by its neglect.

1.2.1 Objectives:

- Ensure that future development maintains the integrity of close natural areas and preserves groundwater quality and amount.
- Maintain sensible water quality and a healthy scheme in and round the watercourse.
- Maintain existing park land, natural surroundings areas and recreation areas at intervals the village.
- Encourage the supply of native business services at intervals the village.
- Promote development within the Village Core space.
- Broaden the allowable scale of home-based business uses to permit for a lot of dynamic use of residences within the village for tiny scale employment.
- Encourage slow and property development that maintains the village's rural and historic character and identity.
- Promote the event of vacant land and therefore the utilize of existing vacant buildings at intervals the village.
- Allow residential growth keep with the present character, building sizes, ton sizes and densities of the village.
- Promote a slow rate of growth for the village.
- Improve pedestrian and traffic safety at intervals the village.

1.2.2Live Case studies of ideal village of India/Gujarat:

A. Kalijharan, Sambalpur:

Figure 1.4:Kalijharan, Sambalpur

The village Kalijharan is the best village in which the Misereor supported project enabled the Mahila Mandals in sound a decent no of presidency schemes/programs for each people and community welfare and development.

Before the intervention of Misereor supported project, the villagers were unaware of presidency Schemes and Programs. There was acquit financial condition and food insecurity because of lack of Grain Bank within the village. The ladies weren't allowed to travel for meeting although the Mahila Mandal was fashioned long back in 2009. The cluster saving within the village by the ladies was stopped because of irregularity and mental object regarding the importance of collective saving and small enterprises.

B. Payvihir, Maharashtra:

Figure 1.5:Agriculture in Payvihir

An obscure village within the foothills of Melghat region of Amravati district in geographic area, Payvihir, has set an example for the country by systematically showing however communities and NGOs will work along to conserve the atmosphere and guarantee property sustenance for folks.

In 2014, Payvihir bagged the diversity Award from the United Nation's Development Program for turning a barren, 182-hectare land underneath community forest right, into a forest. Recently, the village additionally came out with box plan of commercialism organic sitafals (custard apples) and mangoes in Mumbai underneath their whole Naturals Melghat.

C. Odanthurai, Tamil Nadu:

Figure 1.6:Odanthurai-powers Odanthurai

Odanthurai, a Panchayat placed in Mettupalayam taluka of Coimbatore district, has been a model village for the opposite villages for quite a decade. The Panchayat has not solely been generating electricity for his or her own use, however additionally mercantilism power to Madras Electricity Board.

Having already won international acclaim through its distinctive welfare schemes and energy self-reliance drives, Odanthurai close to Mettupalayam has begun efforts to develop a corpus of Rs five large integer to put in wind and alternative energy farms. This project can alter free provides of electricity to over 8000 residents.

1.2.3The Idea of a Smart Village:

Smart Village Asian nation gets its foundation from sage Gandhi's vision of Adarsh Gram (model village) and Gram Swaraj (Village self-rule/independence). Gandhi in 2 texts, Hind Swaraj and Gram (Village) Swaraj, promotes the construct of integrated rural development to impact majority of the population, because the primary initiative when Asian nation Independence in 1947. The Eco desires Foundation has initiated the construct of "Smart Village".

Under this project the inspiration is adopting villages and golf shot efforts for property development by providing basic amenities like sanitation, safe water, internal road, tree plantation, and conservation. The inspiration is additionally operating for inculcating ethical values within the society and for up the quality of living of the villagers. Within the construct of "Smart Village" the event of the village shall be supported the 5 ways Retrofitting, improvement, inexperienced fields, e-Pan, Livelihood.

Under the construct of sensible Village, the inspiration has adopted Village Dhanora, District Dholpur, a little and remote village of Rajasthan to develop it as India's initial sensible Village. The village is set thirty metric linear unit removed from Dholpur district head quarter and 248 metric linear unit from Jaipur. The population of the village is concerning 2000. The village was destitute of its basic desires like sanitation, internal roads. it absolutely was conjointly facing numerous different similar issues like lack of access to potable water, non-availability of conservation system, encroachment on the roads, power fluctuation, non-availability of employment bound education, state and financial condition, therefore on then forth.

Prof. Priyanand Agale founding father of Eco desires Foundation and Dr. Satyapal Sing Meena (IRS) Joint commissioner of revenue enhancement has regenerate this idea into reality and currently Dhanora has become model of Rural Development. Dhanora village was conjointly given a reward by Prime minister of Asian nation man. Narendra Modi within the year 2018.

1.2.4 Ancient History Civil concept about Indian Village:

The history of Indian villages, in fact, goes back to the Vedic era once the kingdoms comprised a significant town and several other villages. The villages were a cluster of homes and also the close land was cultivated by the villagers. The conception of villages in India flourished throughout the late Vedic era or throughout the reign of the Mauryas. The Mauryaphratry was supported by Chandragupta Maurya throughout 323 B.C. and also the villages were a predominant a part of the Indian system at that point.

The villages were administered in an exceedingly structured approach, through a Gram Sabha throughout the Mauryaphratry. The non-secular and cultural state of affairs of the villages was primarily dominated by the Hindus, particularly the Brahmans. The class structure of Hinduism was strictly maintained throughout that amount.

However, the social system of the Indian villages modified drastically throughout the reign of Muslim emperors just like the Mughals or Afghans. This era within the history of Indian villages saw the villagers being influenced by Islam and also the equality for non-secular observe, among all elements of the society was conjointly maintained. Throughout country amount, the Indian villagers got influenced by the Christian non secular culture and an upscale diversity of many religions was seen throughout that amount. The social system within the Indian villages conjointly modified consequently with the amendment of spiritual and cultural eventualities.

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

- **Social details:**

The various families are Patel (Leuva Patel), Darbar (Kshatriya), Rajput, Darji, Kumbhar, Harijan, Bharvad, Kolietc. Schedule Caste (SC) constitutes 10.03 % while Schedule Tribe (ST) were 2.14 % of total population in Salangpur village.

- **Economic details :**

Particulars	Total	Male	Female
Total No. of Houses	656	-	-
Population	3,508	1,950	1,558
Child (0-6)	460	232	228
Schedule Caste	352	170	182
Schedule Tribe	75	39	36
Literacy	74.02%	84.46%	60.53 %
Total Workers	1,704	1 ,011	693
Main Worker	847	-	-
Marginal Worker	857	286	571

Table 1.1: Salangpur economic data

- **Demographic details**

Salangpur is a huge village positioned in Barwala Taluka of Ahmadabad district, Gujarat with overall 656 households residing. The Salangpur village has populace of 3508 of which 1950 are men even as 1558 are girls as in line with Population Census 2011.

In Salangpur village populace of youngsters with age 0-6 is 460 which makes up 13.11 % of overall populace of village. Average Sex Ratio of Salangpur village is 799 that's decrease than Gujarat nation common of 919. Child Sex Ratio for the Salangpur as in line with census is 983, better than Gujarat common of 890.

Salangpur village has decrease literacy fee as compared to Gujarat. In 2011, literacy fee of Salangpur village turned into 74.02 % as compared to 78.03 % of Gujarat. In Salangpur Male literacy stands at 84.46 % even as lady literacy fee turned in 60.53 %.

❖ **Infrastructure details**

In The Salangpur Village There Are sensible Infrastructure Facilities As Compared To different Villages Like, Big temples, Banks, Playground, Hotels, Primary Health Center, Aganwadi, Tourism building, Primary faculty Etc.

Drinking water (Daily/Alternate)	Alternatively weekly once
Amount of drinking water	500 liters
Overhead tank	2
Bore well	7
Drainage network (Open/ Covered)	Covered
Waste management	Municipal waste collection
Waste collection	Home to home waste collection
Water conservation project	Under water collection
Anganwadi	3
Primary school	1 (Governmentschool)
Secondary school	1 (Governmentschool)
Higher secondary school	1 (Governmentschool)
Panchayat office	1
Primary health	3
Multi-specialty hospital	1
Post office	1
APMC	1
Public garden	2
Electricity	24×7 supply only Friday breakdown
Cyber café	1

Table 1.2: Salangpur Infrastructure details

A. Physical amenities:

1. Water

Figure 1.7: Salangpur overhead tank

The village has two water tank of Capacity 5 lack liter. Narmada water pipe line is passing by through this village. There had been not canal for water supply and the water for domestic use such as bathing, washing garments and utensils and many others are on hand through bore well which on hand at every home.

2. Drainage system

Figure 1.8: Open drain of Salangpur

Underground drainage system is provided in total village. But there is not applicable system. For outlet of the waste water. Waste water is freed outdoor from the village through open drain. There is no waste Water cure plant. So, they people are now not dealt with waste water as irrigation purpose.

3. Solid waste management

In this village, solid waste is collected by municipality vehicle and damped outside the village. They are not burnt the solid waste so, less pollution is occur in this village. They people are not using bio gas plant. They are taking waste from house to house. Gram panchayat provide a bucket to the all people for Collection of the waste.

4. Electricity

Figure 1.9: Salangpur sub-station

There is a 66 KV sub-station that supplies power to the village. GETCO electricity provide the electrical energy to the village. Street light is additionally provided in the village. Villagers can get 24*7 electrical energy and solely Friday breakdown is carried out for maintenance. Single segment and 3 section electricity machine is on hand for farmer. Farmer can get right hour three phase electricity.

5. Road

Figure 1.10: Salangpur Street and Highway Road

First figure shows RCC road of Village having network of 70%. Width of road is 3 meters. Road surface is in good condition. But maintenance is required in some street. Second Figure shows the State highway road full made of bitumen in good condition.

B. Education management:

Figure 1.11: SalangpurAganwadi

Literacy level has constantly been up in all villages of Salangpur village. There is one government school in which primary and secondary schools and high-secondary schooling is provided. There are three Aganwadi in the village on the most important street and one commerce college in the village.

C. Transportation:

Figure 1.12: Salangpur bus-stand

Salangpur village is properly known for its tourism visit from all over the country. So the transport facility is nicely developed in the village through continuous management

in bus-stand which affords transportation amenities for 24 hours but there is no railway station which is very vital for achievement of facility.

1.4 SWOT Analysis of Ideal Village:

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

Table 1.3: SWOT analysis of ideal village

1.5 Future Prospects:

The village panchayat is planning to build a building in the village so that the students of the village do not have to go to another village for graduation studies and therefore save both their time and money.

1.6 Benefits of visit:

After visiting Adarsh Gaam we know what Adarsh Gaam is called and what we need to keep in mind while doing this project about our village. We also learn what issues need to be addressed to make our village an ideal one.

1.7 Civil aspects required in village:

A. Good Connectivity

Good connectivity is one of the most essential necessities of a perfect village. The village must be well-connected to other parts of the use by roads and additionally with the aid of rails, if possible. The streets and lanes of the village need to additionally be well maintained so that humans can effortlessly shuttle from one part to another.

B. Houses

The houses are neat and clean. They ought to be well-ventilated to permit free flow of mild and air. There need to be appropriate association for acceptable sanitation and drainage system.

C. Sufficient sources of potable water

A best village needs to have true supply of easy ingesting water. There must be ample wells, tube-wells and even submersibles to meet the wishes of the villagers. It would

help all and sundry get suitable drinking water. There have to additionally be separate ponds for villagers to take bathtub and to get water for their cattle.

D. Proper sanitation and drainage facilities

An ideal village needs to have true system of sanitation and drainage so that dirty water and waste can be effortlessly drained out. It would assist the village maintain easy and free from many diseases induced by means of filthy water. It would additionally retailer the villagers from water-logging in the course of the rainy season.

E. Healthcare Centers and hospitals

Besides food, the different most essential issue of human life is health. An perfect village have applicable amenities taking care of the health of the villagers as nicely as of their cattle and poultry. There have to be one-two healthcare centers relying upon the populace of the village. A small health facility also provides to the pleasant of such a village. Besides fitness centers for the villagers, veterinary dispensaries must also be there to take care of their live-stock.

F. Educational facilities

A perfect village has to have appropriate preparations of training for the children. There should be Primary faculties and High colleges so that the little youth want no longer go out of the village for education. Primary training should be free and compulsory for each and every baby up to a positive age. There have to also be gentle capabilities education centers and ideally a person education center for the elders who prefer to get education.

Chapter2: Village Literature Review

2.1 Introduction: Urban & Rural:

- **Urban:** An urban place is the location surrounding a city. Most inhabitants of urban areas have nonagricultural Jobs. Urban areas are very developed, meaning there is a density of human Structures Such as Houses, Commercial Buildings, Roads, Bridges, And Railways.

- **Rural:** A rural area is an open swath of land that has few houses or other buildings, and no longer very many human beings. A rural regions populace density is very low. Many people live in a metropolis, or urban place. Their homes and businesses are placed very near each other.

2.2 Importance of rural development:

Rural improvement is method of improving the first-rate of lifestyles and financial wellbeing of humans dwelling in rural areas, regularly pretty isolated and moderately populated areas. Education, entrepreneurship, physical infrastructure, and social infrastructure all play an essential function in developing rural regions.

By developing the rural areas, we can,
- Improve life style of the residential.
- Make easy life style of the villagers.
- Solve the problems about migration.
- Prevent the unemployment.
- Increase the literacy ratio.
- Increase growth rate of the country.

2.3 Different Definition of: Rural Urban Villages:

A village is a neighborhood larger than hamlet however smaller than town having populace range between hundreds to few thousands. Villages are permanent dwellings. In previous villages had been generally shape of community concerned in agriculture practice.

Definition of Rural Area:

- Census board defines “Urbanized area which is of group having population density of at least thousand people per square mile”. Whereas “rural area is any non-urban or non-highly rural Area”.
- The majority of the population of the region involved in agricultural practice is known as rural Area

2.4 Scenario: Rural village of India population Growth:

- During 2001-11 the growth of Rural Population has been 12.18%.
- Growth in Rural Population in India is steadily declining since 1991.
- Meghalaya (27%) & Bihar (24%) witnessed largest growth among States in 2001-11.
- Four States recorded decline in Rural Population during 2001-11. These are Kerala (by 26%), Goa (19%), Nagaland (15%) &Sikkim (5%).
- Out of the total of 1210.2 million populations in India, The size of rural population is 833.1 million (or68.84% of the Total Population) Urban population 377.1 million (or 31.16%)
- During 2001 – 2011 the population of the country
- Increased by 181.4 million
- Increase in Rural areas: 90.4 million
- Increase in Urban areas: 91.0 million

2.5 Scenario: Rural village of Gujarat as per Census 2011 and latest:

- For the first time since Independence, the absolute increase inPopulation is more in urban areas that in rural areas.
- Rural – Urban distribution: 68.84% & 31.16%.
- Level of urbanization increased from 27.81% in 2001 Census to31.16% in 2011 Census.
- The proportion of rural population declined from 72.19% to 68.84%.

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

Table 2.1: Population in crore

The slowing down of the overall growth rate of population is due to the sharp decline in the growth rate in rural areas, while the growth rate in urban areas remains almost the same.

	1991-2001	2001-2011	Difference
India	21.5	17.6	-3.9
Rural	18.1	12.2	-5.9
Urban	31.5	31.8	+0.3

Table 2.2: Growth rate in Population (in %)

2.6 Rural Development Issues – Concerns – Measures:

The following are the main Issue:

- Bad Road Network
- Unplanned Irrigation System
- Insufficient Sewer Line
- Poor Condition Of Houses
- Poor Conditions Of Public Buildings
- Unhygienic Environment

The rural development could be a technique of accelerating the general of the lifestyles and dwelling standards of the people of the village by means of supplying them varied rural facilities. The improvement of the agricultural areas may also be completed by way of supplying the villager's various facilities that includes: The better Infrastructure

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

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

The foremost priority with the government is to reinforce quality of life in villages in order that it's on a par with urban areas. The department has asked GPS to create the amenities offered through in progress schemes, together with the spiritual leader national rural employment guarantee act (MNREGA).

Since thegovernmentis committed to provide at least 55 literspercapita day (LPCD) of water to every family in a village, the GPS should focus on providing individual households tap connections.

At the same time, focus should also be given to construction of toilets for each household under the MNREGA and theNirmal Bharat Abhiyan. The department decided that Schools and anganwadis in villages should be provided with toilets even as panchayats have to take steps towards solid waste management.

2.8 Other Projects and Schemes:

Recently the gram panchayat had raised the fund for the construction of new gram Panchayat for the higher administration of the village. The gram panchayat with the help of the government has carried out the development of the street community from the last year. But the construction work is now not going on currently from final few months.

Chapter 3: Smart village concept idea and its visit (Civil Concept)

3.1 Introduction: Concepts, Definitions and Practices:

S	Skilled simple living and high thinking
M	Moral, methodical and modern.
A	Aware, adaptive and adjusting.
R	Responsive for co-operative movements and collective wisdom.
T	Techno survey for IT and transparent mobile usage harmonic relations.

Table 3.1: Smart village concept

❖ What Is Smart Village:

Villages equipped with all the trendy technologies while not destroying the nature will be outlined as good villages. for creating a village good, engineers alone cannot do something, support of the locals is incredibly necessary.

❖ The Practices:

Unfortunately, it's a reality that within the world 1.3 billion individuals still is besides access to electricity. Additionally, 3 billion even so cookery on dangerous and inefficient stoves. Several of them live in distant rural village communities. until such communities have got admission to present day power services, very little progress may be created to enhance their economies and enhance their lives.

3.2 Vision-Goals, Standards and Performance Measurement Indicators:

❖ Education:

Formal education to growing children that are done by establishment of college and schools and at identical time education and training villagers concerning their occupation, recent advances in various fields related to their occupation, which may vary from fully completely different villages from agriculture, handicraft, poultry, husbandry, dairy. Show them the advances at intervals the sphere and ways in which to boost. Concerning the native climate soil seeds which is economical methodology of farming. Scientific approach to farming.

❖ Health facility and hygiene :

Prevention is best than cure. Teach them the simplest way to keep up hygiene in surroundings and also the thanks to manage the setting to be healthy. Basic medical facilities to treat common ailments and especially women and youngsters.

❖ **Explore the resources:**

Educate and explore the natural resources out there and build an appropriate use of those e.g.,Gobar gas usage, rain water gathering, alternative energy to provide electricity, compost manure etc.

❖ **Electricity and communication:**

Electricity either by alternative energy or supply from the electronic board shall facilitate in some ways and prevents accidents like snake and insects bites. Correct road facility and transport for timely communication to cities and completely different facilities.

Formation of a community, regular meets and fitting of development of goals for village development.

Conserve forest and trees around villages and build it healthy place and better place than cities.

Sanitary toilets, correct water system, regular health checkups, teaching investments in banks and savings, management of money and benefits fromgovernment policies, many more.

3.3 Technological Options:

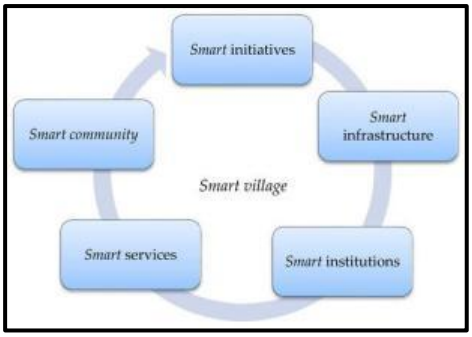


Figure 3.1: Smart village Technological options

- Smart initiatives.
- Smart infrastructure.
- Smart institutions.
- Smart services.
- Smart community.

3.4 Road Map and Safe Guards:

The perception of Indian villages has not modified a lot of although sure corrective policy measures and infrastructural reforms have taken place. Governments need to

rework our villages into sensible habitats by generating moneymaking economic opportunities and addressing the essential challenges rural areas face for many years. city and city add nearly two hundred migrants daily. a mixture of things like agriculture turning into less remunerative, poor civic services, defunct infrastructure, and inaccessibility of excellent career opportunities has accelerated the migration from rural areas to cities.

Like any different field agriculture has to be viewed with a brand new prism to create it economically gratifying. Most of the initiatives targeted to remodel agriculture have invariably been seen as financial aid gestures, not as a property business model in India. The country is supporting start-up culture to grant boost to businessperson skills among kids. There should be some provision wherever government bodies support the concept of revitalizing agriculture through varied transformative solutions like gap from marketplace for agriculture manufacture in strategically targeted locations for larger economic output, providing technical and funding to the new ideas of promoting and innovation.

3.5 Issues & Challenges:

There is a large demand for sensible technology to be employed in these sensible villages. there's a requirement of correct money resources and a market to make these sensible technologies. however as of currently there square measure tons of constraints to induce the system prepared for money resources moreover as for correct marketization.

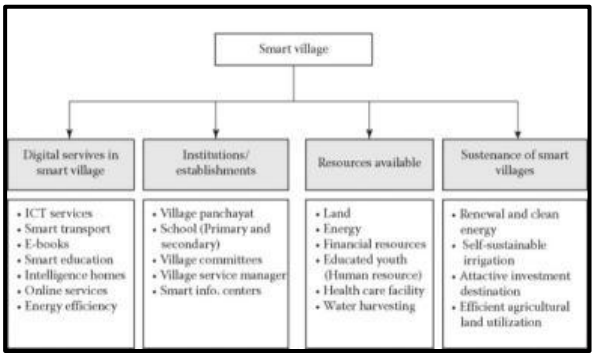


Figure 3.2: Ecosystem of smart village

❖ **Budget Constraints:**

There is a large issue of budget constraints that primarily has restricted innovative thinking and created obstacles for several alternative initiatives. The budget constraints have created several hindrances for tons of sensible initiatives that if properly nurtured can be additional cost- effective and economical.

❖ **Smart Technology:**

It is thought-about that sensible technology for these sensible villages remains within the precommercial or in some cases the abstract stage. And since the technology is

within the pre-mature or abstract stage, it generates uncertainties concerning come back on investment as so much as money parameters square measure involved. This conjointly leads to apprehension of a protracted payback amount, and investors square measure unwilling to take a position, that contributes to money uncertainties for sensible technology initiatives.

- **Lack of information:**

The other challenges associated with sensible village initiatives in india is that the lack of information of the folks using trendy technology. The citizens' expertise of those sensible technology initiatives has for the most part not been smart for many reasons, one among that is thanks to the scarcity of information of the people on the way to use trendy digital technologies, web and alternative trendy technology.

3.6 Smart Infrastructure – Intelligent Traffic Management:

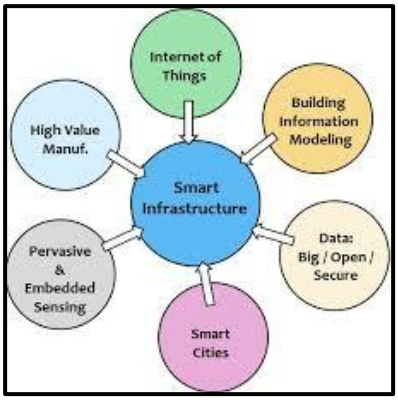


Figure 3.3: Smart village idea

Governments in several rising countries have tried to enhance livelihoods. Approaches and techniques that are used for urban development area unit usually not applicable to rural communities. Studies show that money allotted for rural development is usually not effectively spent because of distance, lack of infrastructure, lack of education, financial condition and alternative factors. Meanwhile, the gap in development between the town and country continues to grow, typically resulting in social and political instability, in each developing and developed countries.

Through in-depth enquiry of worldwide practices and considering rural development, and chosen case studies, careful thinking should run to incorporating problems with resilience, resourcefulness and also the involvement of communities at grassroots levels in realizing the transformation of rural settlements into sensible Villages.

3.7 Cyber Security:

Cyber security could be a hot topic within the context of sensible cities. Sensible objective to optimize cities in an exceedingly dynamic thanks to offer higher quality of life to cities through the applying of subject info and communication technology (ICT). The vary of areas wherever cities is smarter is wider it's development of cities related to

the unfold of a large-scale knowledge exchange. Growth of knowledge exchange controls several services and assets automation within the town.
As several important services become interconnected, the necessity for cyber security surges to shield knowledge exchanges will increase citizens' health and safety, additionally as privacy. However, there square measure presently no harmonical pointers or standards to model these knowledge exchanges. This motivates IPT operators, municipalities, policy manufacturers additionally as makers, answer suppliers and vendors to adopt specific solutions with low measurability and heterogeneous needs.

3.8 Retrofitting- Redevelopment- Greenfield Development District Cooling:

- **Working of district cooling:**

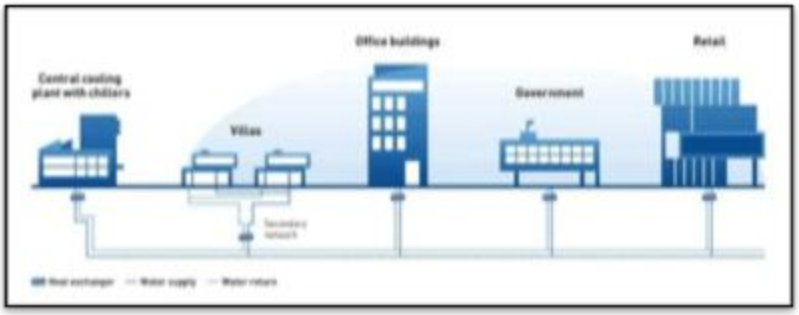


Figure 3.4: Working of district cooling

The fundamental plan behind fashionable district cooling is that the use of native energy sources: heat, cold and fuel sources that below traditional circumstances would be lost or stay unused. Cooling is made centrally and therefore the cooling media – cold water – is distributed to customers via a closed pipe network.

A heat exchange method within a station placed within the customer's premises transfers heat from the customer's internal cooling circuits into the network. This surplus heat will later be utilized in heating.

Sources of free cooling which will be controlled embody rivers, lakes, ocean and spring water. heat also can be born-again into cooling through associate degree absorption method. reckoning on native circumstances, free or cheap heat sources will embody biofuels, star panels and surplus heat from electricity co-generation (CHP). additionally, to sources of free cooling and absorption, district cooling also can build use of warmth pumps that manufacture heat and cold energy at the same time within the same method. Large-scale industrial chillers utilized in district cooling typically consume but 0.5 the electricity would like of individual chillers.

Besides the employment of native energy sources, another major advantage of district cooling is that the ability to store cooling energy over time. a method to try and do this is often to store cold water in tanks. Storage makes it potential to chop peak load and considerably optimize production.

3.9 Strategic Options for Fast Development:

Below are given the deigns of the 3 models of Area-based smart villagedevelopment:

Retrofitting can introduce coming up with in associate degree existing settled space to realize sensible town objectives, at the side of alternative objectives, to form the prevailing space additional economical and habitable. Looking on the prevailing level of infrastructure services within the known space and therefore the vision of the residents, the villages can prepare a method to become sensible.

Since existing structures are mostly to stay intact during this model, it's expected that additional intensive infrastructure service levels and an outsized range of sensible applications are packed into the retrofitted sensible town. This strategy may be completed in a very shorter timeframe, resulting in its replication in another a part of town.

Redevelopment can impact a replacement of the prevailing settled atmosphere and modify co-creation of a brand-new layout with increased infrastructure exploitation mixed land use and hyperbolic density. Renovation envisages a locality of quite fifty acres, known by urban native Bodies in consultation with voters.

Greenfield development can introduce most of the sensible Solutions in a very antecedently vacant space exploitation innovative coming up with, arrange funding and arrange implementation tools with provision for cheap housing, particularly for the poor.

Greenfield developments square measure needed around village so as to deal with the wants of the increasing population.

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

India could be a country of terribly high density with a population of 134 core. The population is colonized by nearly and most of the villages. Description of being numerous facilities for sanitation and water system are lacking in some elements of the country correct supply of water, individuals had to pump to greet or get hands water to meet their numerous domestic purposes.

There aren't any elements of the country having a correct system, they're conjointly equipped with correct sewer lines, manholes, numerous biogas plants, water treatment plants, that they are doing, maintenance of sewer lines they need no different possibility for effecting daily activities.

Provision of assorted technologies with technologies like water treatment plant like filter tank, aeration tank, deposit tank, natural process tank, higher water system pipes and networks enhance the standard of water system.Additionally, we've got technologies within the sanitation department that embrace correct underground sewer lines, manhole, convenience facilities etc.

❖ **Indigenous Water Purification Technologies:**

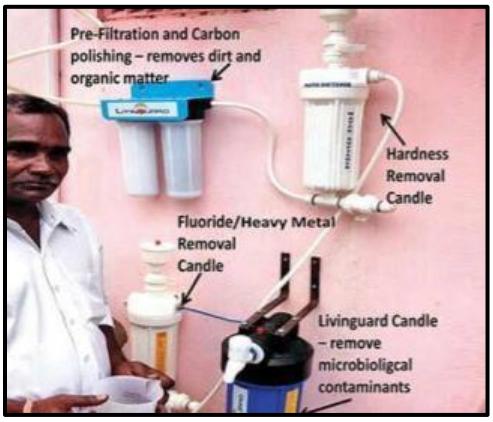


Figure 3.5: Indigenous Water purification system

These technologies will improve the standard of water of little villages similarly massive cities. It uses pressure driven membrane processes. they're appropriate for everybody capability units E.G., they're compatible with domestic level unit or community level unit for a large-scale unit. Water purification techniques use atomic power and solar power.

❖ **Environment Friendly Plasma Technologies:**

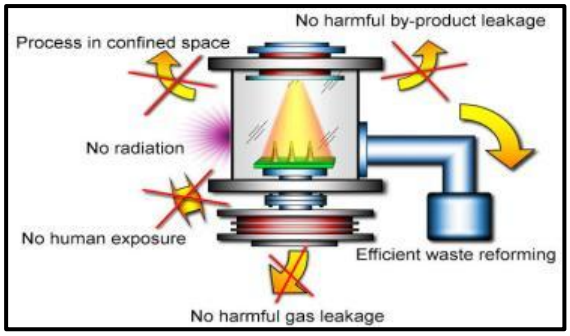


Figure 3.6: Plasma fabrication plant

Solid waste marketing sites or lowland sites need massive amounts of land that's not offered in urban areas. Setting of Solid Waste Pollution if Incubators not properly designed or operated.

Plasma fabrication plant is ideally suited to waste the treatment. risky and hepatotoxic compounds area unit broken by plasma technology elementary constitution at high temperature; Inorganic material is regenerate into shiny mass; And organic matter area unit transformation or vaporized, that is regenerate into gases (H2 & CO) and low organic compound gases once operated at low temperatures (500 – 600OC). Take away bodies also are being thought of exploitation plasma transformation.

❖ **Role of environmental atom techniques within the water resources development And Management**:

There are 2 sorts of isotopes, stable isotopes and hot isotopes. atom technology accustomed discover sorts of pollution in surface water and well water to assess the supply and origin of contamination, waste material dispersion in surface water bodies to assess changes thanks to well water salinity, future exploitation to hold out well water, for hydro-chemical investigation and for geochemical development well water.

❖ **The BARCUF membrane technology for domestic water apparatus's:**

Figure3.7: BARC filter plant

Water filters factory-made by Sondhaka on membrane-based water purification the technology has been developed by BARC. BARC Poly Sulfone Membrane has blessings high school technical school.02 micrometer or 20nm, straightforward kind issue, rugged (life of quite one year) and low maintenance (around Rupees five hundred per year). It's terribly straightforward to use and a really low-price answer for pollution.

Deployment of BARC domestic water apparatus in geographical region through AKRUTI program:

Rural Human and Resource Development Facility is Disarming BARC Technologies, Namlinisargun biogas, soil organic carbon testing kit, seed bank, domestic water purifier, prognosis, LLL, RIA, FSD, VTD; below AKRUTI (Advance information of Rural technology implementation) program. Activities area unit performed below the AKRUTI program survey for safe water, partnership with villagers, entrepreneurship development domestic water apparatus production and awareness programs for the advantages of use water. RHRDF has launched a theme for safe water for the village below CSR.

3.11 Initiatives in village development by local self-government:

In 1957, a committee held by Balwant Rai Mehta Committee studied the Community Development comes and therefore the National extension and assessed the extent to that the movement had succeeded in utilizing native initiatives and in making establishments to confirm continuity within the method of rising economic and social conditions in rural areas. The Committee control that community development would solely be deep and enduring once the community was concerned within the designing, decision-making and implementation method. The suggestions were for as follows:

- An early institution of no appointive native bodies and devolution to them of necessary resources, power, and authority.
- The fundamental unit of democratic spread was at the block/samiti level since the area of jurisdiction of the native body ought to neither be overlarge nor too little. The block was massive enough for potency and economy of administration, and tiny enough for sustaining a way of involvement within the voters.
- Such body should not be strained by an excessive amount of management by the government or government agencies.
- The body should be accepted for 5 years by indirect elections from the village panchayats, its functions ought to cowl the event of agriculture all told its aspects, the promotion of native industries and others.
- Services like drinking water, road building, etc., and the higher-level body, Zilla Parishad, would play an informatory role.

3.12 Smart Initiatives by District Municipal Corporation:

- Sufficient water supply
- Adequate electricity supply
- Sanitation and solid waste management
- Sufficient urban mobility and public transport
- Properhousing facility for the poor people
- Sufficient IT connectivity and digitalization
- Best governance, e-Governance and citizen participation
- Sustainable environment
- Security and privacy of citizens, particularly women, children and the elderly
- Health and education.

3.13 Any Projects contributed working by Government:

- Government bank provides banking facilities
- Road cleaning and waste removal by gram Panchayat
- Wi-Fi facility and communication facility in village
- Fire brigade facility by gram Panchayat

3.14 How to implement other Countries smart villages projects in Indian village context (Regarding Environment, Employment:

- By learning concerning the village standing of alternative countries, we are able to build some reports thereon and check out it to implement those facilities in our Indian village.
- By knowing regarding the issues of the Indian village, we are able to realize solutions so we are able to attempting to unravel those issues.
- Rising India's construction technology.
- By adopting the simplest concepts from the village of alternative countries.
- Try to convert associate degree capitalist to take a position from outside india.
- By hiring engineers and staff from overseas.

Chapter4: About Turkha village

4.1 Introduction:

4.1.1 About Turkha Village details:

Turkha is a village in Botad district of Gujarat state. The District Headquarter Quarter is located 16 kilometer west of Botad. 189 kilometers from the city Gandhinagar. Pin Code of Turkha is 364710

The educational standing of the individuals in Turkha is therefore sensible, Turkha's one school that provides primary, second and higher education. Domestic water system relies on bore well system that is provided in hour homes and water is taken out by pump (danki) or electrical pump. Pump system for excavation of water from bore is a lot of economic than electronic pump however its terribly slow system that is appropriate for low demand in house.

Toilet facilities are obtainable solely in50% of the house in Turkha, however a pair of public facility are provided within the village.

The main water supply of the village is that the canal for farming as a result of the most sources of financial gain is farming and animal breeding.

Some individuals are operating in diamond business in which they work as diamond sprucing staff and some of them are depends on article of clothing tailor business to satisfy their little expenses.

People of various castes live along within the village like Bharwad, Rajput, koli, Darbar etc. Some individuals are migrating to the town space for higher future and education. The population of the village is around 5000 – 6000.

4.1.2 Justification/ need of the study:

To study the various conditions of village like building construction, people, economic growth, future development, education in village etc.

4.1.3 Study Area:

Our study area depends on Turkha village that is found 15 km west District Head Quarters towards Botad, 189 km from the capital Gandhinagar.

4.1.4 Objectives of the study:

The various objectives of the study are:

- Embrace water management, property land use, data and technology, agricultural and rural development, women's development, teaching support skills, partaking in decision-making method and strengthen civil society.

- To facilitate programs on legal rights awareness for ladies, gender equity, aid cluster formations, trainings, rights of Dalit's, deprived youngsters, social group folks, persons with incapacity, homeless folks and other people living with HIV/AIDS.
- Providing micro-credit schemes, women's health programs, organic farming, and movement for land reforms.
- To supply education to youngsters that results in get dignified employment
- To fight against the unfold of COVID - 19 by serving to to develop community action through data and education and providing financial backing to the infected and affected families embrace youngsters for his or her property economic development.
- To facilitate and undertake biological process programs in impoverished communities that includes: aid and health education, water and sanitation, housing, education and attainment, programs for women's rights and women's leadership, development of community leadership, line of work skills coaching for various financial gain generation, agriculture, ecologically property development and surroundings education.
- To function a catalyst for lasting, positive amendment for low to moderate-income families/groups by providing sensible, innovative development assistance, serving to improve economic and support conditions, infrastructure and also the surroundings.
- To assist the children, develop the information and skills they have to become productive and supply support for non-formal teaching programs that focus totally on the wants of youngsters in danger, like street youngsters, kid labors, AIDS orphans, women and different vulnerable teams of youngsters.
- To promote community health care i.e., the formation of community health committees, and also the coaching of committee members and community doctors and to undertake community health programs.
- To undertake and promote agricultural primarily based activities like agro-forestry systems, acceptable agricultural technologies, crop production systems, financial gain generating activities, integrated persecutor management, INM, livestock health and insurance, livestock production, and plant genetic resource conservation and management.
- To setup coaching, demonstration and learning centers for analysis, designing and analysis of the comes and also the programs.

4.1.5 Scope of the Study:

- Rural road infrastructure: It provides quality and connectivity to individuals living in rural areas. It additionally provides the abundant required boost to agricultural activities by creating obtainable water, seeds and alternative raw materials to the farmers. By rising property, rural roads additionally enhance employment opportunities for the agricultural individuals in non-agriculture sector, thereby, increasing living opportunities. Rural roads additionally make sure that the agricultural areas are served with higher public services and all the advantages offered by the state reach the far-flung areas simply. They will even give access to education and health services.
- Rural electrification infrastructure: It essentially caters well to the necessities of agriculture and alternative activities together with irrigation pump sets, tiny and

medium industries, fabric and village industries, cold storage chains, aid and education

- Rural water system: It will cause property of systems and sources and tackle the matter of water quality, thereby, increasing physiological condition of individuals.
- Rural housing infrastructure: it's the potential to boost living customary of the individuals.
- Overall and as per varied studies, development of rural power, irrigation, water, sanitation and road infrastructure will increase productivity, savings, financial gain and business enterprise and lead to higher jobs and health of rural individuals.

4.1.6 Methodology Frame Work for development of your village:

- Identify people's desires and priorities in the Turkha village.
- Define activities that may mobilize the Turkha village community.
- Use resources from running government schemes.
- Repair and renovate existing infrastructure like Panchayat office, building, roads, street lights etc.
- Strengthen the Gram panchayatin Turkha village.
- Development of transparency and responsibility in Turkha village people.

4.1.7 Available Methodology for development of related to Civil:

- Development of Turkha village in terms of culture, society, economy, technology and health.
- To increase the population of Turkha village.
- To provide education and employment to rural youth, students and girls.
- To develop infrastructure facilities of Turkha village.
- To provide basic facilities in terms of drinking water, education, transport, electricity, sanitation, and communication in Turkha village.

4.2 Study Area Profile – Turkha village:

4.2.1 Study Area Location with brief History land use details:

Country	India
State	Gujarat
District	Botad
Nearest Town	Botad
Area	49.6288 km²
Government	Gram Panchayat
Population	5889
Time Zone	IST (Utc+5:30)
Pin Code	364710
Coordinates	22.1483° N, 71.5323° E

Table 4.1: Primary details of Turkha village

Turkha Village is found in Botad District. People of Turkha village mainly dependent on agricultural and diary business. Turkha village are known for diamond polishing

business. Maximum level of education is up to higher secondary school but there is no college. Water is obtained from bore well, canal and Narmada water pipeline.Road condition is poor and Electricity supply is not regular village. There is one government hospital for village people and animal hospital for cattle. Bank facility is also available and village is known for its temple located on uphill.

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

Figure 4.1: Study area location

4.2.3 Physical & Demographical Growth:

Turkhavillage is situated in BotadTaluka of Bhavnagar district, Gujarat. There are about 1199houses in village. There are 5889 people are living in Turkha village in which 2958 are men while 2931 are ladies.

4.2.4 Economic generation profile:

About2849number people in Turkha village are working in various activities. 69.95 percent of people are working in their own family business and 30.05 of people are workers or employees.801numberpeople were involved in cultivating business (owner or co-owner) while 1042 of people have been Agricultural laborers.

Figure 4.2: Cultivation of crops in Turkha village

4.2.5 Actual Problem faced by Villagers and smart solution:

Problems:

- Turkha village have absence of various important infrastructure building such as Panchayat office, public toilet, Cemetery, Public Garden, Community Hall and public garden.
- Electric supply is now not regular due to a number of renovation cut-offs.
- Waste water is drained into nearby MadhuRiver which causes pollution of water.
- Shortage in ground water at some stage in summer time which reasons trouble for village due to the fact village is usually use bore well water for domestic use.
- Road in village street is in poor condition.
- Poor residence conditions in which Houses are made of stone masonry.
- Migration of people due to unemployment.
- Lack of development in smart technology.

Solutions:

- Create better transport facilities.
- Improving irrigation methods and providing sufficient water supply system.
- Have a proper drainage system and water storage.
- Build a bituminous road for the outer road, and R.C.C. Also try roads and paver blocks for internal roads.
- Build a waste collection system in the village and try to use that waste to produce electricity.
- Harvest rainwater and try to store maximum rainwater, which is stored properly.
- Construction of various important infrastructure such as Gram Panchayat office, public toilet, Cemetery,Public Garden, Community Hall and public garden.
- More villagers can make money to build a home industry to prevent unemployment. Therefore, their economy will grow.
- Create a good infrastructure for the village so that their life time increases and at the same time it lasts longer.
- Create a better lifestyle for villagers to prevent migration.
- Create a community hall for social functions and village gatherings.
- Build a bus station to improve transport facilities.
- Make villagers aware of the use of smart technologies and better knowledge.
- Improve agricultural methods and strive for better and effective farming.

4.2.6 Social scenario:

Turkha village is known for diamond polishing business. People of Turkha village have small business-like sewing clothes, Flouring grains, provision stores, milkand small clinics Majorcrops are cotton, sugar cane, tea, wheat and vegetables produced in the village. Major people earn profits through farming, diamond polishing and dairy. There some provision shops at main road and some small medical clinics in the village.

4.2.7 Migration Reasons / Trends:

- Unemployment
- Poverty
- Poor Health Status
- For Better Education
- For Better Future
- Poor Connectivity with Urban Areas
- Lack Of Awareness
- Poor Infrastructure

4.3. Data Collection:

4.3.1 Methods for data collection:

We have visited the village and collected the various data by the method below -

- Most of the data is obtained by meeting sarpanchof Turkha village.
- Some of the data is obtained from villagers.
- By capturing photos of village.
- By visiting all the street, roads and building of village.

4.3.2 Primary details of survey details:

- Turkha village have absence of various important infrastructure building such as Gram Panchayat, post office, police station, overhead tank, community hall, agricultural research center, fire station, skill development center and colleges.
- Electric supply is now not regular due to a number of renovation cut-offs.
- Waste water is drained into nearby MadhuRiver which causes pollution of water.
- Shortage in ground water at some stage in summer time which reasons trouble for village due to the fact village is usually use bore well water for domestic use.
- Road in village street is in poor condition.
- Poor residence conditions in which Houses are made of stone masonry.
- Toilet facilities are available only in 50% of the house in Turkha, but 2 public facilities are provided in the village.
- The main water source of the village is the canal for farming because the main sources of income are farming and animal breeding.
- Some people are also working in diamond business in which they work as diamond polishing workers. So, of them are also depends on clothing tailor business to fulfill their small expenses.
- People of different castes live together in the village like Bharwad, Rajput, koli, Darbar etc. Some people are migrating to the city area for better future and education. The population of the village is around 5000 – 6000.

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

Average Size Of The House Is 650squareFeet.

4.3.4 No of Human being in One House: 4 to 6 houses in single houses.

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

The locally used materials in Turkha are brick, cement, aggregate, steel etc. which are common in urban areas. There are only 10 to 20 percent houses that are built are built of earth work. External materials should be used in villages like manure, steel, cement, aggregate etc.

4.3.6 Geographical Detail:

Country	India
State	Gujarat
District	Botad
Nearest Town	Botad
Area	49.6288 km²
Government	Gram Panchayat
Population	5889
Time Zone	IST (Utc+5:30)
Pin Code	364710
Coordinates	22.1483° N, 71.5323° E
Elevation:	128 meters / 419.95 feet

Table 4.2: Geographic details of Turkha village

4.3.7 Demographical Detail:

Schedule Caste (SC) people are 15.8% while Schedule Tribe (ST) people were 0% of whole population in Turkha village. Population of children in the village with age 0-6 is 783 which makes up 13.30 % of total population of people in village. People of various castes lives in villages like darbar, darji, bharwad, muslin, koli etc.

4.3.8 Occupational Detail:

In Turkha village more than 20% of people are involved in diamond polishing business, 65 to 70% of the people in this village are working in agricultural activities; this is the major source of income of the village. Some people are also involved in milk production business in the village, so the profits of the source is additionally approx. 20 to 29% of people are involved in milk production, some people are involved in running small shops like soda shop, grocery store, vehicle repair shop, clinic and others are doing labor work for money.

4.3.9 Agricultural Details:

Turkha village is surround by large number of agriculture land so the majority of people are cultivating various crops like cotton, wheat, corn, tal, tea, sugarcane etc and crop production is very high in monsoon season.

4.3.10 Physical Infrastructure Facilities - Manufacturing HUB / Ware Houses:

There are some small workshops of diamond polishing work in this village and few warehouses for storage of crops and milk in this village. This provides employment purpose to villagers.

Figure 4.3: Diamond polishing workshop in Turkha village

4.3.11 Tourism development available in the village for attracting the tourist:

Turkha is well known for its temple which attracts many people even year and also famous for its beautiful landscape.

4.4 Infrastructure Details:

4.4.1 Drinking Water / Water Management Facilities:

Figure 4.4: Bore well and Narmada canal in Turkha village

People of Turkha village are mainly depends upon Narmada canal water and bore well system for the purpose of drinking, agriculture for crops, domestic use, drinking for cattle etc. In bore well system water is excavated through hand pump or electric pump and in canal supply water is supplied through diesel pumps.

4.4.2 Drainage Network / Sanitation Facilities:

Figure 4.5: MadhuRiver in Turkha village

In Turkha village waste water is drained into public sewer which discharge the waste water into Madhvi River which results in pollution of river water and it is located outside of village.

4.4.3 Transportation & Road Network:

Figure 4.6:Street Roadand bus stand of Turkha village.

In Turkha village street road have poor condition bitumen road are available on village highway located outside of village and there is only one bus-stand in the village which is not in use because it has poor condition which needs maintenance or new bus stand building people generally use rickshaw, chagda, Bus etc for traveling outside of village.

4.4.4 Housingcondition:

Figure 4.7: Houses of Turkha village

Houses in theTurkha village housing conditions depends upon the residing standards of people greater than 60 percent of people like farmers,Laborers, workers and many others have stone masonry or brick masonry houses. 30 percent of people having good business have R.C.C. structure homes and some of them live in mud houses.

4.4.5Social Infrastructure Facilities,Health,Education, Community Hall, Library:

Figure 4.8: Animal hospital in Turkhavillage

There is one animal hospital in Turkha village for treatment of cattle like cows, buffalo, sheeps, horses and goats which plays an important role in developing agriculture and dairy industry.

Figure 4.9: Government school in Turkha village

Turkha village has one government school which provides primary secondary and higher education to the village children's and it is in good condition. But there is no College facility in Turkha village.

Figure 4.10: Government hospital in Turkha village

There is one government hospital in Turkha village which provides 24 × 7 health facilities to all the people which is located outside of village and it is in very good condition. It also provides ambulance facility which is very useful in emergency time.

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

Figure 4.11: Existing conditions of public buildings in Turkha village

Existing conditions of village road public toilet transportation facilities, drainage animal hospital, bus-stand, panchayat office etc. are in poor condition. The village road should developed by providing concrete block or CC roads.

Public toilet should be provided as per population of peoples. Public buildings such as community hall, panchayat office, bus-stand, public gardens, overhead tank, post office, police station etc. should be provided in the village.

4.4.7 Technology Mobile/ WIFI / Internet Usage Details:

Figure 4.12: Mobile tower

There are some mobile towers in Turkha village which provides good signal for calling and internet connection to the villagers with strong communication network.

4.4.8 OtherFacilities:

There is one animal hospital in Turkha village as shown in figure 22 and other facilities such as bank, hospital and agriculture facilities are available.

4.4.9Renewable energy source planning particularly for villages:

People of Turkha village consists large number of cattle which produces large quantity of cattle dung which can be used for generating natural gas in biogas plant

4.4.10 Irrigation Facilities:

60% of the farmers depend on the well and rain water for irrigation. Canal facilities are available in the village but due to some reasons there will be water shortage. Farmers are not using irrigation techniques like: drip irrigation, sprinkler irrigation.

Chapter 5: Technical Options with Case Studies

5.1 Concept (Civil):

5.1.1 Advance Sustainable construction techniques:

Here we have traced construction techniques that are still in use or in operation.

- **IoT Integrated Automated Building System**

The Internet of Things (IoT) provides the acceptance of heads in offices for information they did not doprevious methods of permission for this. These tiny connected sensors can also includebuilding projects designed to deliver method support. By model, IoTThe sensors are able to fluctuate in intensity and direct the required levels of light and air pressure inside the buildingestablished on climate, temperature and carbon dioxide tests.The head of office does not do thatyou should always be extremely stable in these adjustments or details from most machine bitsorganization.

- **Synthetic Roof Underlayment**

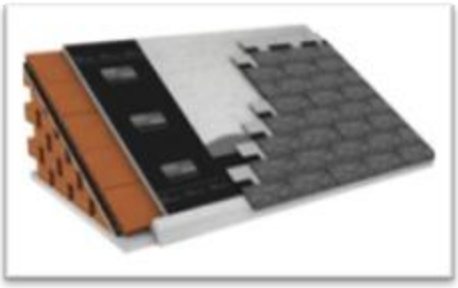


Figure 5.1:Synthetic Roof Underlayment

The roof paintings are usually black at the top based, which deteriorates moderately rapidly. Changing this layer is important to keep moisture without interior designs. Done The design of the roof of the house suggested another it looks small and clings to a mile of external air. This material uses a starting polymer from recycled materials. It's the same thing releases Precarious Common Compound from drawing.

- **Green Roofs**

Figure 5.2: Green Roofs

Continuation of selection on the roof of the house attractive buildings come in greenthe roof. Grass, flowers, plants, greensand additional natural vegetables in the arrangement property. The liquid of the storm is trapped insidedirt and more efficiently achieved there is a roof over the house. Coolingand heat charges are decreasing, toothe concept of the spirit is recreated.

- **Grid Hybrid System**

Harmless to the energy sources of the ecosystem conveys a tolerable way for relationships to have an impact on them logical structures, but a critical number of grid structures need to be collected for control workplaces through minimal access events based on daylight. Shortcut building uses stores spare power and licenses unlimited source of performance during the evening, every dignified day and in other unfavourable environmental conditions.

- **Passive Solar**

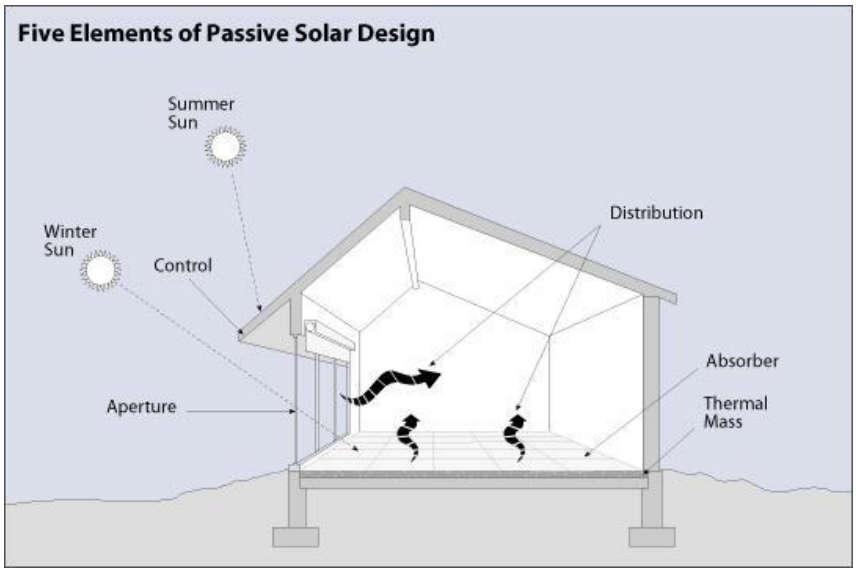


Figure 5.3: Elements of Passive Solar Design

An optional way to control sustainable sunlight fuel source to name the development on which it depends a consistent concept based on the sun. Office position as well the proposed suspension is applied with solar-based power to warmth in winter, though declining its effect during the warmer months.

- **Grey water Plumbing Systems**

Gray water structures reduce the need for a fresh water workshop, just like everything else without private streams can be controlled for reuse. Most popular resources because this water contains a water frame and toilets.

❖ **Electro chromic Glass**

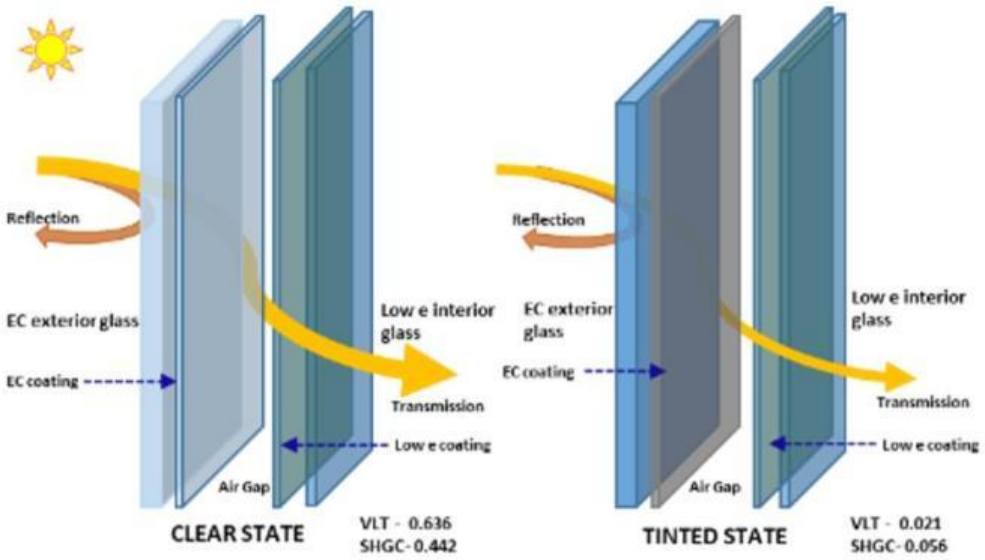


Figure 5.4: Electro chromic Glass in its clear and dark state

Electro chromic glass can move from clear to blurry depends on external elevators, for example, electricity radiation or UV rays. Discards the need for covers and other window dances, while converting to in line with current conditions for inefficiency. Additional benefits join corruption with broader genes most UV is emitted.

5.1.2 Soil Liquefaction:

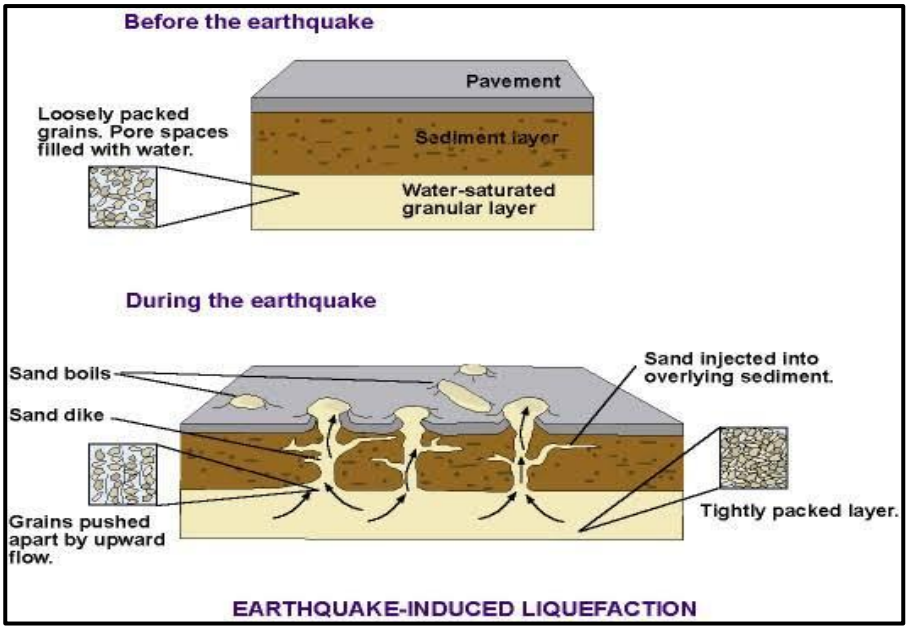


Figure5.5:Soil Liquefaction

Liquefaction, which might be outlined as a loss of strength and stiffness in soils, is one in every of the most important causes of harm to buildings associated infrastructure throughout an earthquake.

To beat an absence of comprehensive analyses of seismically induced physical change, this study reviews the characteristics of physical change and its connected injury to soils and foundations throughout earthquakes within the 1st a part of the ordinal century. supported unstable information analysis, microscopicphenomena of physical change.

❖ **Example of soil liquefaction**

The Niigata earthquake in 1964 caused an uproar in Niigata, Japan, which destroyed many buildings. Also, during the Rome Prieta earthquake, California in 1989, the melting of soil and debris used to fill the harbor caused significant erosion, cracking, and horizontal slippery surface in the Marina region of San Francisco.

❖ **There are two types of soil erosion**

1. Flowliquification

Flow liquification is a condition in which the static equilibrium is destroyed by static or heavy loads on soil deposit with low residual strength. Remaining power of wet soil. Solid loads, for example, can be used with new buildings on a slope that apply extra force to the soil below the foundation. Earthquakes, explosions, and hail driving all is an example of the powerful loads that can create the flow of flow. Once processed, the strength of the soil affected by the flow of exposure is no longer sufficient to withstand static pressures that were applied to the ground before the disturbance.Flow failure, can include the flow of bulk material, which is very complex large movements are actually driven by static pressures. As defined in state procedures phase, the disturbance required to create the flow rate, in some cases, can be severe.

2. Cyclic dissolution

'Cyclic liquefaction' is a soil condition in which large shear pressures are collected in reaction bicycle loading. A standard reference type for almost zero active appearance the pressure is 5% of the amplitude shear strain. This is a definition based on soil testing, usually made of cyclic triaxial, direct cyclic simple shear, or cyclic torsional shear type tools. These tests were performed to determine soil resistance to extinction by to view the number of loading cycles in a specific shear pressure shear required for induce 'failed'. Failure here is explained by the cutting procedures used above.

❖ **Precautionary measures in the event of exposure:**

Prevention of the effects of exposure to existing structures can be done several times

- Avoid the construction of structures on the ground which may have a liquid formulation process
- Preparing the foundations for the type of soil affected by depletion
- Improve or rehabilitate vulnerable soil before construction Structure

- The most common way to prevent the formation of liquids is basic soil ways to improve.

Another type of development is to replace the affected soil with the right amount of gravel.The best type of granulometric ground curve in a small area is found in this way. As flooding is one of the most important factors affecting the occurrence of molten liquid, standing stone drains are often used to move water faster because of it to enter. Stone columns are one of the best ways to reduce the strength of a liquid. Because they are formed by vibration, they increase the cohesion of the basic soil in the one hand, and because of its penetration into the water, it also allows the flow of water faster.

Also, there are chemical methods of soil compaction using cement, but they are less commonly used because they make no profit.

5.1.3 Sustainable Sanitation:

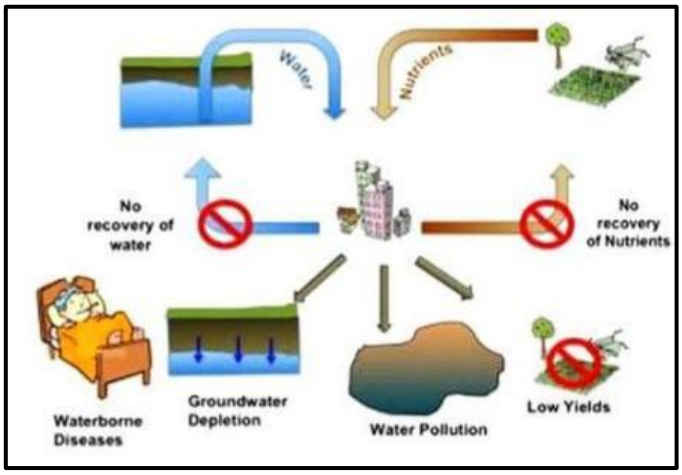


Figure 5.6:Sustainable Sanitation principle

The main objective of a sanitation system is to shield and promote human health by providing a clean setting and breaking the cycle of illness. so as to be property, a sanitation system has got to be not solely economically viable, socially acceptable, and technically and institutionally applicable, it ought to conjointly defend the surroundings and the natural resources.

Basic principle is that wastewater and excreta isn't considered as a waste, however as resources, that sanitation has got to be socially acceptable and may be as economically viable as potential. there's no one- fit-all approach a lot of rather, the foremost adequate answer has got to be found from case to case, considering climate and water convenience, agricultural practices, socio-cultural preferences, affordability, safety and technical conditions.

❖ **Research story of Mudichur Gram Panchayat**

Mudichur Town Panchayat in Kancheepuram district, Tamil Nadu sees a SWM model. It makes sense for more than 7 years now. What makes Mudichur click, while differentPanchayats, such models disappear after a while? Similarly, what Mudichur

does have given strength to different parts of the country? Mudichur is near Chennai, the result of the city's tradition of keeping your home clean, and staying indifferent to pornography in the city before it was common. Throwing out anything foolishly and blaming the neighbours for their cunning was a way of life. The movement of state-owned state-owned enterprises to what an open scam, it makes the Panchayat bosses chase the Panchayat open free (ODF). To achieve the status of a clean city, the GP president stepped up to plate and set the SWM system.

The task from Mudichur in SWM is that there is no shortage of development. What it is what is needed is a structured organizational structure (model), which they have developed in Mudichur.

Mudichur Panchayat took Inseparable and DRDA combined to form solid waste organizational structure. They do it by criticizing it for getting the norm, which makes us who we are select 'application'. Panchayat President, Mudichur with the help of a youth reunionand chose Green Friends) manages nuclear family waste properly. Emphasizing, a piece of the Indistinguishable (NGO) in making this building useful you have the right to be honoured So the Mudichur model has a few things to consider and safety measures in any case panchayat in need of reproduction.

❖ **The Steps in Solid Waste Management**

Preparation	**Planning**	**Organising**	**Implementation**	**Monitoring & Correctives**
•Panchayat functionaries meeting •Gram Sabha Meeting •Community Education •Identify infamous spots •Community Preparation	•Area Survey •Material Planning •Manpower Planning •Technical Planning •Financial Planning	•Manpower •Materials & Facilities •Technology •Funds •Coordination	•Segregation at Source •Collection •Secondary Segregation •Facility for Treatment & Treatment of Waste •Service charge Collection	•Household adherence •Feedback from Households •Feedback from Waste Collectors •Physical Verification •Corrective Measures

Table 5.1: Steps in Solid Waste Management

❖ **Community Preparation through IEC (Information-Education-Communication)**

- Waste Bins Distribution with handbills
- Students Orientation
- Cultural Evening
- IPC (Interpersonal Communication)
- SMS Alert
- Educative Information
- Rangoli Competition
- Clean the Commons Campaign

- Announcing Prizes & Gifts

❖ **Solid Waste Management Model**

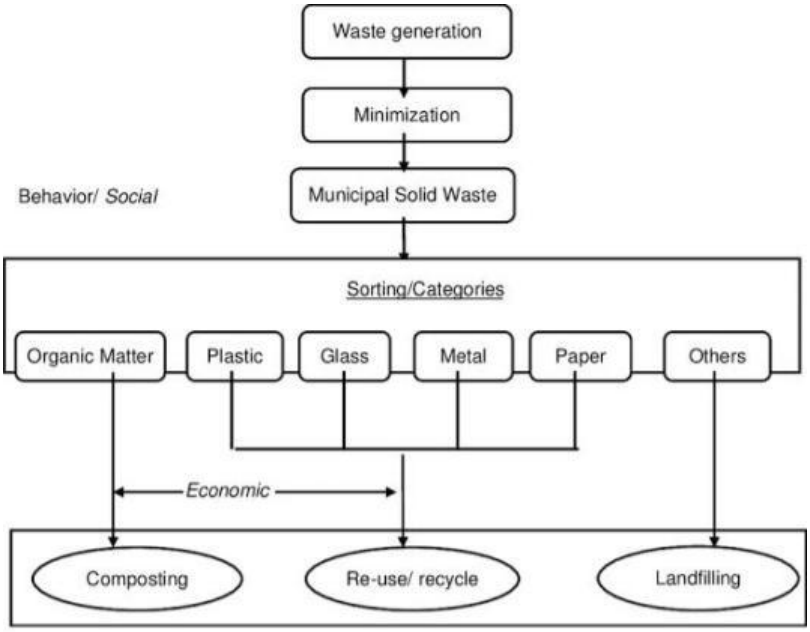


Figure 5.7: Solid waste management model

❖ **Sanitary disposal**

A common public dream shows the public a place used as a landfill, and they call it a landfill region. Leeway is not special and it is not clean. Garbage disposal should be deliberately managed without disturbing groundwater and air. There are some types that do not rot unusable squanders. They may lead to cleaning up garbage dumps. The key consideration while the foundation for the filling of clean land eliminates harmful impacts human welfare and the environment. A site to reduce the distance from human settlements has been selected.A rock bed is made to avoid spills, to think of anything, not to pollute dirt either water, mixed. After each filling or periodically the sand cable or surface is laid that, which blocks gases such as methane, emits carbon dioxide to deliver air pollution. Use with the possibility that we can reduce the risk of landfills by 10 to 15% by reducing,Re-use, re-use approach, tend to measure as a decent management process. 45% can go to a gasification plant, which heals the soil; and 40 percent may rework.

❖ **Tentative Budget of Income and Expenditure for a month**

(Assume: 1000 Households / 5000 population)			
Expenditure items	**Rs**	**Income sources**	**Rs**
Sanitation workers salary (Rs.5000 x 6 workers cover 450 HH in the morning & 450 in the evening)	30,000.00	Service charge (900 HH x Rs.40)	30,000
Supervisor's salary (1 person)	8,000.00	Shops, restaurants, marriage halls etc.	8,000

Consumables (bleaching powder etc.)	500	Sale of compost	2,000
Repair & maintenance of vehicles	2,000	Sale of Recyclables	2,000
TOTAL	40,500	Total	42000

Table 5.2: Tentative Budget of a month

❖ **Payment for Services**

The costs set for SWM offices as various supervisors are suggested under them. Next following the exciting cost of various control classes

1. The 'SWM' service fee will be paid to a hygienist orDisinfection chief) in the course of the action of the game plan managers before each multi-day month of times, unless otherwise determined. This is more straightforward to meet and hard to pay for. Receipt of paid collections will be requested by paying citizens.
2. Alternatively, corporate fines may be paid to the GP Office before the fifth dayFaithfully next month.
3. Payment of SWM organization under the terms and conditions set out in the standing order if not paid by the people within the stipulated time will be the same available in the same way as a mortgage.
4. Waste management given the reason for SWM will not be used in other ways, making SWM insist. In that case all the money spent on buses will be recovered double the cost.

Sr no	**User Category**	**Service Charge (monthly)**	**Remarks**
1	Households	Rs.30 /Rs.80	Payable monthly
2	Tea stalls	Rs.40	Payable monthly
3	Village restaurants and eateries	Rs.60	Payable monthly
4	Marriage halls	Rs 500	Payable after every marriage
5	Vegetable markets	Rs 30	Payable monthly
6	Grocery shops	Rs 40	Payable monthly
7	Schools and offices, if any	Rs 80	Payable monthly
8	Temples, churches, mosques etc. (unless they have their own waste disposal arrangement)	Rs 80	Collected from the community along with the collection made for temple festivals / local festivals.

Table 5.3: Payment for Services

5.1.4 Transport Infrastructure:

Transport infrastructure includes construction like canals, waterways, airways, railways, roads, and terminals, moreover as pipelines like seaports, provision depots, hauling terminals, warehouses, bus stations, train station, and airports.

Transport infrastructure will continue to be a key focus area for the new government funding of up to ₹ 30 trillion is expected over the next five years. Construction companies are

Figure 5.8: Transport infrastructure

They are likely to be the biggest beneficiaries and they will see a strong entry in the balance ₹ 15-18 trillion. Transport infrastructure is expected to continue as a key a focus area for the new bulk Government disbursements of up to ₹ 30 trillion expected over for the next five years. Government is possible it keeps going on the big plans was introduced at its last moment. Bharatmala pariyojana (Highways), Sagarmala (Ports), railway line channel reconstruction program, inland waterway development, Namami Gange, Swachh Bharat Mission, UDAN (Airports),AMRUT and Smart Cities (Urban Infra). The last five years (FY2014-FY2019) have beenhave seen government spending on sectors such as roads (increase by ~ 353% between FY2015 to FY2019), rail (increased by ~ 146% times between FY2015 toFY2019), a municipal train, etc., which is likely to grow steadily over the next five years.

According to the current government document, the next five years will see major infrastructure building in India. The main investment in the infra sector is proposed at ₹ 100 trillion over the next five years – a major increase from the current level of investment in the industry. Among the key components, transport infrastructure is expected to see the largest jump on the estimated $ 30-30-30 trillion of the next five years. Such the investment will provide huge long-term benefits to the Indian economy.

In the field of traffic, the manifesto states to build 60,000 km of National Highways over the next five years – at a standard rate of12,000 km per year. Given that the highway the pace of construction had greatly increased four to five years ago (highway speed construction has increased from 4,410 km toFY2015, reached 9,829 km at FY2018, and ~ 10,855Km in FY2019), and an equal number of under-Implementation projects, purpose apparentAchieved.

Transport structure plays an important role in the transition from medium to high salaries the economy. Theoretical and practical studies highlighted the positive relationship between high-quality infrastructure and economic efficiency (IMF, 2016). This organization strengthened by a number of funding mechanisms for transportation improvements infrastructure, and the following:

- A high-quality frame is a requirement for a compelling car foundation
- Product management area and travel development, respectively
- Strengthens focused financial activities and clears local barriers to competition.
- Effective logistics systems make the job easier by eliminating entry costs
- In foreign markets and in light of the competition of indigenous firms.
- Explorer transport network enhances the margin of economic gain through recovery
- Operate in markets and through the use of agglomeration profits, to promote the use of equipment
- Technology and allowing communication between businesses as well
- Workers focused on the most important areas in the economy (Graham, 2014).
- Infrastructure can be a useful planning tool for reporting on culture and the province
- Comparisons by combining rustic and remote areas with a more remarkable focus on nature and spending, puts in place additional public finance and reduction departmentsRelocation.

Figure 5.9: Railway Infrastructure

For trains, the manifesto has been raised the transformation of all active train tracks into wider ones gauge, electrical installation of all railways, and the completion of two dedicated assets corridor projects (EDFC, and WDFC) are2022. In addition, a large investment is also available considered near the train station is modern all over the country.Significant investments are also expected inmetros, airports, ports and inland waterways.

The municipal railway infrastructure is intended to be delivered to 50 cities from around 20 cities where the railway municipal project has so far been approved. In terms of airport infrastructure, target doubling the number of active airports from 101, currently. Similarly, port capacity aims to double in the next five years and the

Sagarmala project will soon-followed. The construction of internal waterways is one of the potential areas.India's Eleventh Agenda which identifies various shortcomings in the inclusive transport sector insufficient highways / highways, old technologies, full lanes and low speed rail, inadequate accommodation and train / road connections to ports and inadequate airports, air traffic control power, parking space and terminal at airports. Government intends to modernize, to expand, and integrate the country's transport activities. It also aims to integrate resources for this goal also gradually shifts the role of government from that of the producer to the empowerment. Over the years, Government has made great efforts to address the shortcomings of the sector and redesigning its transport facilities. These include:

- Increasing government transport subsidies to its five-year programs.
- The seven-year National Highway Development Plan is launched

In phases and is expected to be completed in 2012. Includes advanced connectivity between Delhi, Mumbai, Chennai and Kolkata, popularly known as Gold quadrilateral, in the first phase, the North-South and East-West corridors in the second phase, four lines over 12,000 miles in the third phase, two lights of 20,000km and six to use 6,500 km respectively in the fourth and fifth stages, an improvement of 1,000km of expressway in the sixth phase and other important highway activities in the seventh phase. Total expected investment is INR 2.2 trillion.

5.1.5 Vertical Farming:

Figure 5.10: Vertical farming

It is the practice of planting crops in vertical oriented areas. It often includes environmentally controlled agriculture, which aims to increase crop growth, and landless farming techniques such as hydroponics, aquaponics, and aeroponics. Other common building options for building vertical farming systems include buildings, shipping containers, tunnels and discarded mining shafts. As of 2020, there is an equivalent of 30 hectares (74 hectares) of the world's vertical farm. The modern concept of vertical farming was developed in 1999 by Dickson Despoiler, a professor of Public Health and Environment at Columbia University. Despoiler and his students came up with the design of a 50,000-square-foot farm building. Although this project has not yet been developed, it has broadly expanded the concept of vertical farming. traditional farming.

The great advantage of using vertical farming technology increases the yield of the crop which comes with a small area of land needs. Increased capacity to plant multiple plant

varieties at the same time because plants do not share the same parts of the world while growing is another desired benefit. In addition, the plants are resistant to weather disturbances due to their placement in the house, which means that few plants are lost due to extreme or unexpected weather conditions. Due to limited land use, direct farming should not interfere with native plants and animals, leading to continued conservation of native flora and fauna.

❖ **There are four key areas in understanding how vertical farming works:**

1. Body structure
2. Light
3. A place to grow
4. Factors of sustainability

First, the main purpose of vertical farming is to produce more food per square meter.To achieve this goal, plants are planted in rows integrated into the tower life structure. Second, a perfect combination of natural and synthetic lamps is used to maintain the perfect light level in the room. Technologies such as rotating beds are used to improve optimal lighting.Third, substitutes for aeroponic, aquaponic or hydroponic substitutes are used instead of soil. PeatAlgae or coconut shells and similar non-soil methods are very common in direct cultivation.Finally, the vertical farming method uses a variety of stabilization features to extinguish energy farming costs. In fact, direct farming uses less than 95% water.

❖ **Types of Direct Farming:**

1. Vertical farms:

Figure 5.11: Vertical farming in building

Abandoned buildings are often used for vertical farming, as a Chicago farm called "The Plant," which was transformed from an old meat packing plant. Still, new construction sometimes construction vertical construction farming systems.

2. Vertical farms with shipping container:

Figure 5.12: Vertical farming with shipping container

Redesigned shipping containers are very popular option of vertical farming systems for housing. Posting containers serve as standard chambers, modules for planting a variety of plants, and it is often transplantedLED lighting, vertical hydroponics, smart weatherControls, and sensor monitoring. In addition, by inserting a stack shipping container, farms can save space and more and achieve a higher yield with a square foot.

3. Deep farms:

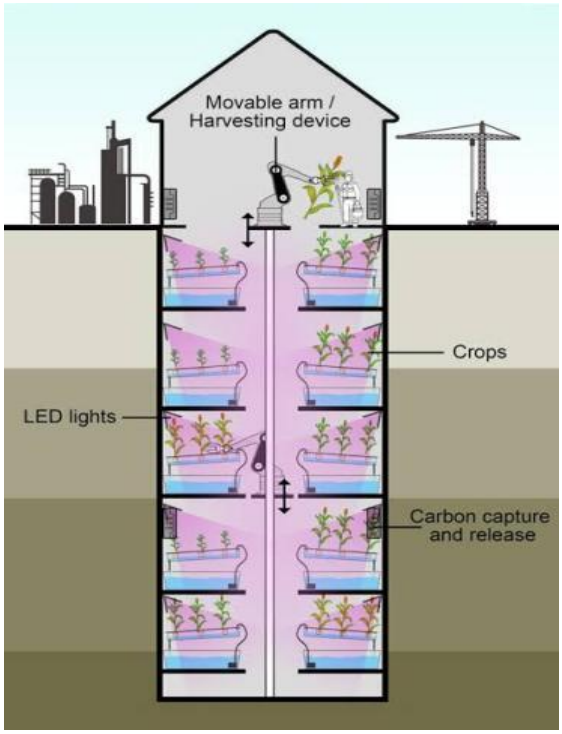


Figure 5.13: Deep farms

"Deep farm" is a vertical farm built from regeneration underground tunnels or discarded mining barrels. As the temperature and the subterranean moisture is usually cooled as well always, deep farms require less heat energy. It's deep farms can also use nearby groundwater to reduce the cost of water supply. Without lower costs, a deep farm can produce 7 to ninefold food is on a typical farm above ground the same area of land, according to SaffaRiffat, chairman of continuing Power at the University of Nottingham. Included with automated harvesting systems, these underground farms can be fully independent. direct farming technology faces economic challenges with significant initial costs compared to traditional farms. Victoria, in Australia, a "vertical vertical farm" can be expensive more than 850 times more than a square meter of arable land than atraditional farm in rural Victoria, Vertical farms are also facing high energy demand due to consumption additional light like LEDs. In addition, when renewable energy is used to meet this energy needs, stagnant farms can produce more pollution than traditional farms either seedling storage.Standing farming technology is still relatively new. Companies will still succeedProduce crops in moderation and make it economically possible to meet the growing demand for food.The operation of farms such as Aero Farms will determine how important the role isFarming will play out in the future to address the growing challenge of food demand.It is important to note, however, that technology for standing farms is also available adopted by other households in the agricultural sector, such as nursery, which can use it natural sunlight, even if it requires more wealth and longer routes in the market.

5.1.6 Sewage treatment plant:

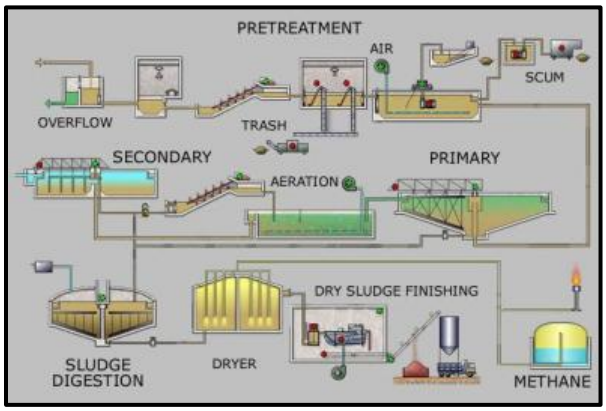


Figure 5.14: Sewage treatment plant

Sewage treatment is that the method of removing contaminants from municipal waste product, containing chiefly family waste and some industrial waste product. Physical, chemical, and biological processes are wont to take away contaminants and manufacture treated waste product that's safe enough for unleash into the setting.

- **Basic treatment**

It consists of temporary sewage seizures in a quiescent cavity when the heavy solids can settle down while oil, grease and light solidity float on it face. Planned and floating objects are removed and the remaining liquid is removed he may be released or receive

a second course of treatment. Other plants for sewage treatment connected to an integrated sewage system have a pass-through system after primary treatment. This means that during heavy rain events, for the second time and treatment programs in higher education institutions can be skipped by hydraulic protection overload, and the mixture of sewage and storm water gets only basic treatment.

❖ **Second treatment**

Removes melting and pauses biological issue. Secondly treatment is usually done by the natives, brought by water small host organisms' accommodation. Second treatment is possibleequires a separation process in order to remove small living organisms from purified water before discharge or top treatment. The second wastewater treatment works at a deeper level than the first and it is designed to significantly damage the ecosystem by using aerobic biological processes. It is done in one of three ways:

- **Bio filter** uses sand filters, contact filters or drip filters to ensure that any excess sewage is removed from the contaminated water.
- **Aeration** is a long process that increases oxygen saturation by introducing air in polluted water. Normally, the aeration process can last up to 30 hours, however it works very well.
- **Oxidation pools** are widely used in warmer climates, this method uses natural bodies of water like ponds, which allow polluted water to pass through a certain set time before storage for two to three weeks.Completing the second wastewater treatment allows for safe discharge from the area environment, reduces normal decaying pollutants to safe levels.

❖ **Tertiary treatment** is sometimes described as more than just primary and secondary education treatment to allow release from the most sensitive or fragile ecosystemrivers, slow-flowing rivers, coral reefs ...). Portable water is sometimes disinfected chemical or physical (e.g., pools and small implants) before flow into a river, stream, harbor, lake or swamp, or may be used for irrigation of a golf course, greenway or park. If it is clean enough, it can be used for groundwater regeneration or agricultural purposes.

Chapter6:Swatchh Bharat Abhiyan (Clean India)

6.1 Swatchhta needed in allocated village -Existing Situation with photograph:

Figure 6.1: Swachta needed in village

- Village Street and roads have lots of waste which lower the beautiful look of village.
- Waste water should bedisposed in Madhu River instead of sewer
- There is public toilet village especially for poor people
- Cattle dung is dumped everywhere instead of collecting at one place.
- There are dust containers or waste collecting vehicle.
- Awareness in village people is low for cleanliness in village.
- There is some small accumulation of water in village part which causes mosquito nuisance.

6.2 Guidelines – Implementation in allocated village with Photograph:

Figure 6.2: Swachta implemented in village

- Cleanliness provided in school, hospital and agganwadi.
- Road cleaning by the village people near their house.
- Providing awareness among the village people.

- Proper disposal of cattle dungs.
- Avoiding throwing of waste on the street which causes illness.
- Avoiding accumulation of water in village which causes mosquito nuisance.
- Providing Swachbharatposters at public places which brings awareness in villages.
- Proper disposal of waste water.
- Lowering household dump waste.
- Growing more trees and plants.

6.3 Activities Done by Students for allocated village with Photograph:

Figure 6.3: Explaining to Sarpanch about swach Bharat abhiyan

We have visited the Sarpanch of village and other several village people and provided various information about swach Bharat abhiyan and benefits to villagers by which they decided to implement swach Bharat abhiyan in village.

Chapter 7: Village condition due to Covid-19

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

Figure 7.1: Closed Situation in village due to COVID-19

39 individuals square measure up to now affected in Botad, Gujarat by novel corona virus covid-19. 15 out of 39 have recovered. In that one case of 30-year-old guy comes from Turkha village Sadly, zero patients have died thanks to corona virus in Botad, Gujarat. 24 patients are still in hospital and recovering.

- Lockdown at school, Aganwadi, banks, religious worship places and alternative public buildings.
- Most individuals are staying at home to fight against Covid 19 individual's pandemic.
- Increase in awareness in village folks by creating social distancing and sporting mask.
- Decrease in traveling outside of village specially by employees, employers and alternative business folks.
- School and school students which are studying in or outside the village are advised to study on-line from their home.
- People of villagers were fresh recent and healthy food like vegetables fruits and that they avoid outside food as so much as possible.

7.2 Activities Done by Students in Turkha village Clean with Photographs:

- Creating awareness regarding what are Covid-19 virus, however it unfolds and explaining however social distancing checks spread of coronavirus.
- Demonstrating however sporting of masks will scale back the danger of infecting others and protective ourselves.
- Correct methodology of exploitation and discarding the masks
- Distribution of masks to the villagers.
- Demonstration of correct methodology of laundry with soap.
- Effective use of sanitizers and distribution of sanitizers to the panchayet cleansing workers

Figure 7.2: Bringing awareness in Turkha village people

7.3 Any other steps taken by the villagers:

- In all gram panchayat of village use of Social Media WhatsApp group has been wont to produce awareness among the lots within the villages.
- Data at the grassroots level is being given to the area by swing posters everyplace. Regular cleansing operations area unit being administrated.
- Face masks area unit being distributed to the voters by Gram panchayat members and social organizations and citizens are being told not to touch their eyes, nose, and mouth, wash hands with soap often and maintain personal distance.
- In conjunction with ration distribution to villagers, fodder for abandoned cattle is also being provided by a work organization.

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

8.1 Design Proposals:

In our Turkha village there is absence of various infrastructure structures like Gram Panchayat office, community hall, overhead tank, public gardens, post office, fire station, library, skill development center etc. Road conditions of village is not good, most of the house in villages have bad conditions, waste management system is not proper, waste water is drained into nearby river which causes pollution of water in river. There is no cemetery in the village for people. There is no public garden in village. Condition of existing public building is not good.

Design Proposals:

- Panchayat office
- Community hall
- Garden
- Cemetery
- Public toilet
- Bus stand

8.1.1 Sustainable design: Gram Panchayat Building

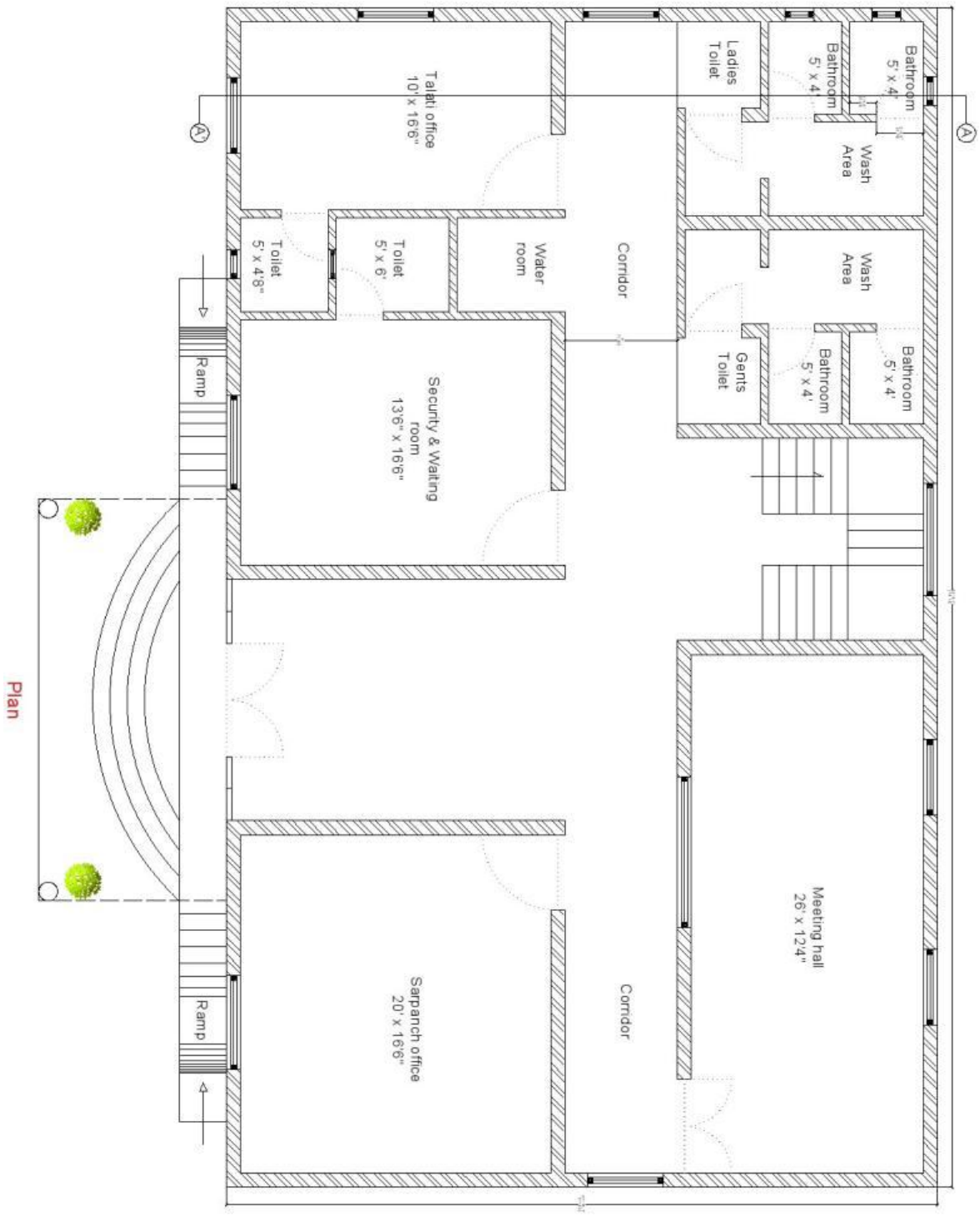


Figure 8.1: Plan of Panchayat Building

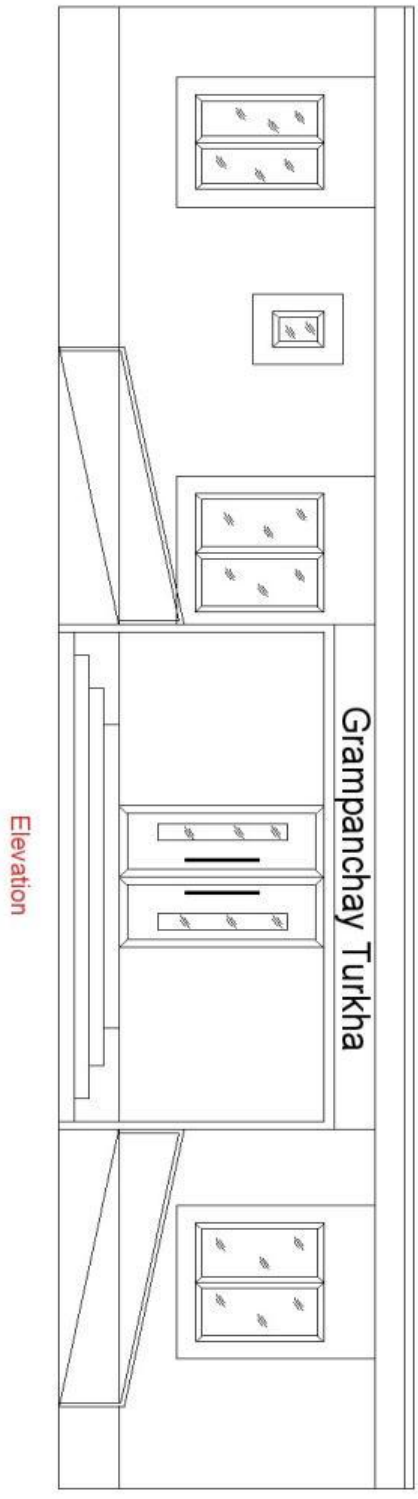


Figure 8.2: Elevation of Panchayat Building

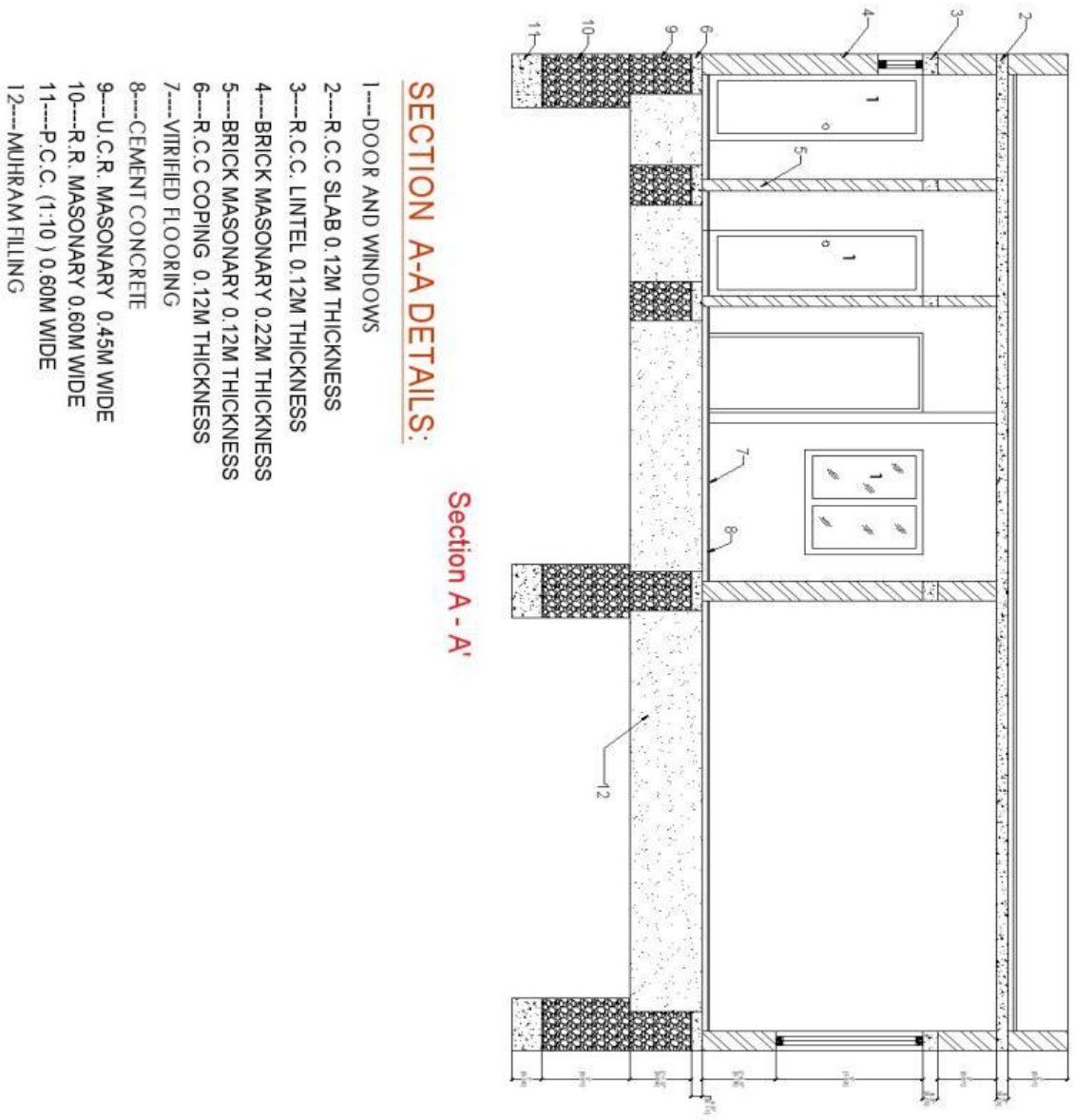


Figure 8.3: Section of Panchayat Building

Quantity Sheet		
Sr. No.	**Item**	**Quantity**
1	**Excavation in foundation**	
	Type 1 wall	46.47 m^3
	Type 2 wall	31.05 m^3
	Total Quantity	**77.50 m^3**
2	**PCC 1:10 in foundation**	
	Type 1 wall	11.51 m^3
	Type 2 wall	7.69 m^3
	Total Quantity	**19.20 m^3**
3	**Random rubble masonry in foundation**	
	Type 1 wall	34.93 m^3
	Type 2 wall	23.36m^3
	Total Quantity	**58.29 m^3**
4	**Un coursed masonry in foundation for main wall**	
	Type 1 wall	18.79 m^3
	Type 2 wall	12.58 m^3
	Total Quantity	**31.37 m^3**
5	**Un coursed masonry in foundation for partition wall**	
	Type 1 wall	4.88 m^3
	Type 2 wall	5.26 m^3
	Total Quantity	**10.14 m^3**
6	**R.C.C Coping at plinth level**	
	Type 1 wall	4.03 m^3
	Type 2 wall	3.04 m^3
	Total Quantity	**7.07 m^3**
7	**Moorum filling**	
	Full office area	**102.37 m^3**
8	**Brick work up to slab**	
	Type 1 wall	33.46 m^3
	Type 2 wall	36.13 m^3
	Deductions for openings	11.31 m^3
	Brickwork for steps	3.81 m^3
	Total Quantity	**62.09 m^3**
9	**R.C.C Slab**	**28.67 m^3**
10	**R.C.C lintel**	
	Type 1 wall	2.01 m^3
	Type 2 wall	1.48 m^3
	Total Quantity	**3.50 m^3**
11	**Brickwork for parapet**	
	Long wall	5.19 m^3
	Short wall	3.20 m^3
	Total Quantity	**8.40 m^3**
12	**Plaster work for inner walls**	

	Sarpanch office	98.22 m^2
	Entrance lobby	66 m^2
	Waiting room	62.41 m^2
	Talati office	64.26 m^2
	Meeting hall	85.65 m^2
	Staircase lobby	34.01 m^2
	Corridor	145.13 m^2
	Toilet	191.17 m^2
	Wash area	57.38 m^2
	Water room	2.58 m^2
	Staircase room	13 m^2
	Deductions	51.63 m^2
	Total quantity	**768.18 m^2**
13	**Plaster work for outer walls**	
	Long walls	173.31 m^2
	Short walls	104.46 m^2
	Deductions	23.29 m^2
	Total Quantity	**254.48 m^2**
14	**Tiles flooring**	
	Sarpanch room	30.62 m^2
	Entrance hall	19.32 m^2
	Waiting room	20.63 m^2
	Talati office	15.26 m^2
	Corridor	34.16 m^2
	Meeting hall	29.7 m^2
	Water room	2.58 m^2
	Toilet	23.76 m^2
	Entry passage	3.7 m^2
	Total Quantity	**180 m^2**
15	**Painting work for inner & outerside**	**1025 m^2**
16	**Framework for doors & Windows**	**59.66 m^2**

Abstract sheet					
Sr. No.	Item	Qty	Rate	Per	Amount
1	Excavation in foundation	77.50	92	m^3	7130
2	PCC 1:10 in foundation	19.20	5315	m^3	102048
3	Random rubble masonry in foundation	58.29	2792	m^3	162745.7
4	Un coursed masonry in foundation	41.51	3396	m^3	140968
5	R.C.C Coping at plinth level	7.07	5492	m^3	38828.44
6	Moorum filling	102.37	116	m^3	11874.92
7	Brick work up to parapet wall	62.09	5837	m^3	362419.3
8	Brick work for parapet wall	8.40	4578		38455.2
9	R.C.C Slab	28.67	4825	m^3	138332.8
10	R.C.C Lintel	3.50	350		1225

11	Plaster work for inner walls	768.18	94	m^2	72208.92
12	Plaster work for outer walls	254.48	112	m^2	28501.76
13	Tiles flooring	180	988	m^2	177840
14	Painting work for inner & outer side	1025	135	m^2	138375
15	Frame for doors & Windows	59.66	750		44745
	Total				1465698
	Add 2% Administrative charges				1495012
	Add 3% Contingencies charges				1539862
	Add 10% Contractor Profit				1693848
	Grand total				**Say1694000**

8.1.2 Physical design: Cemetery

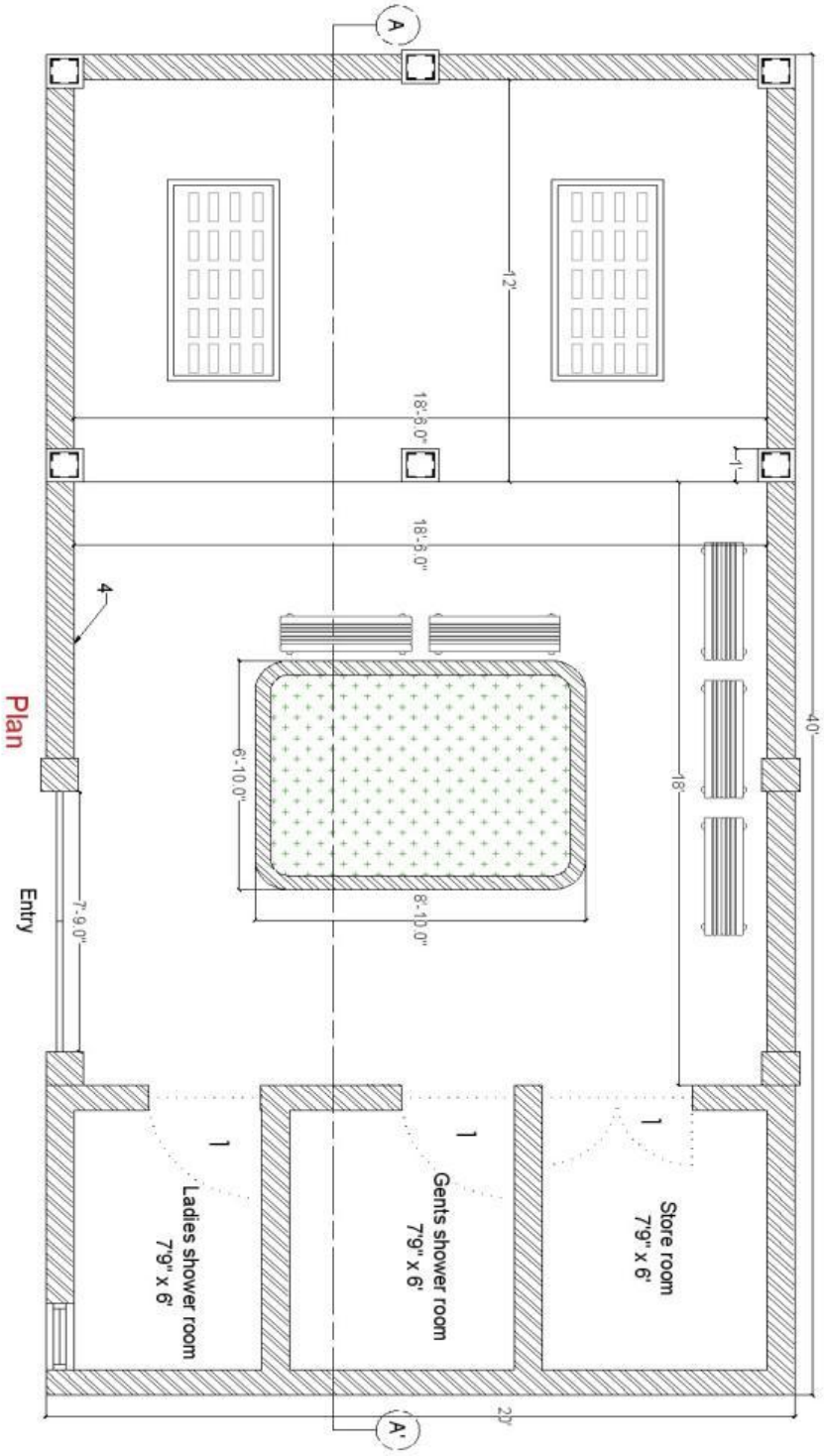


Figure 8.4: Plan of Cemetery

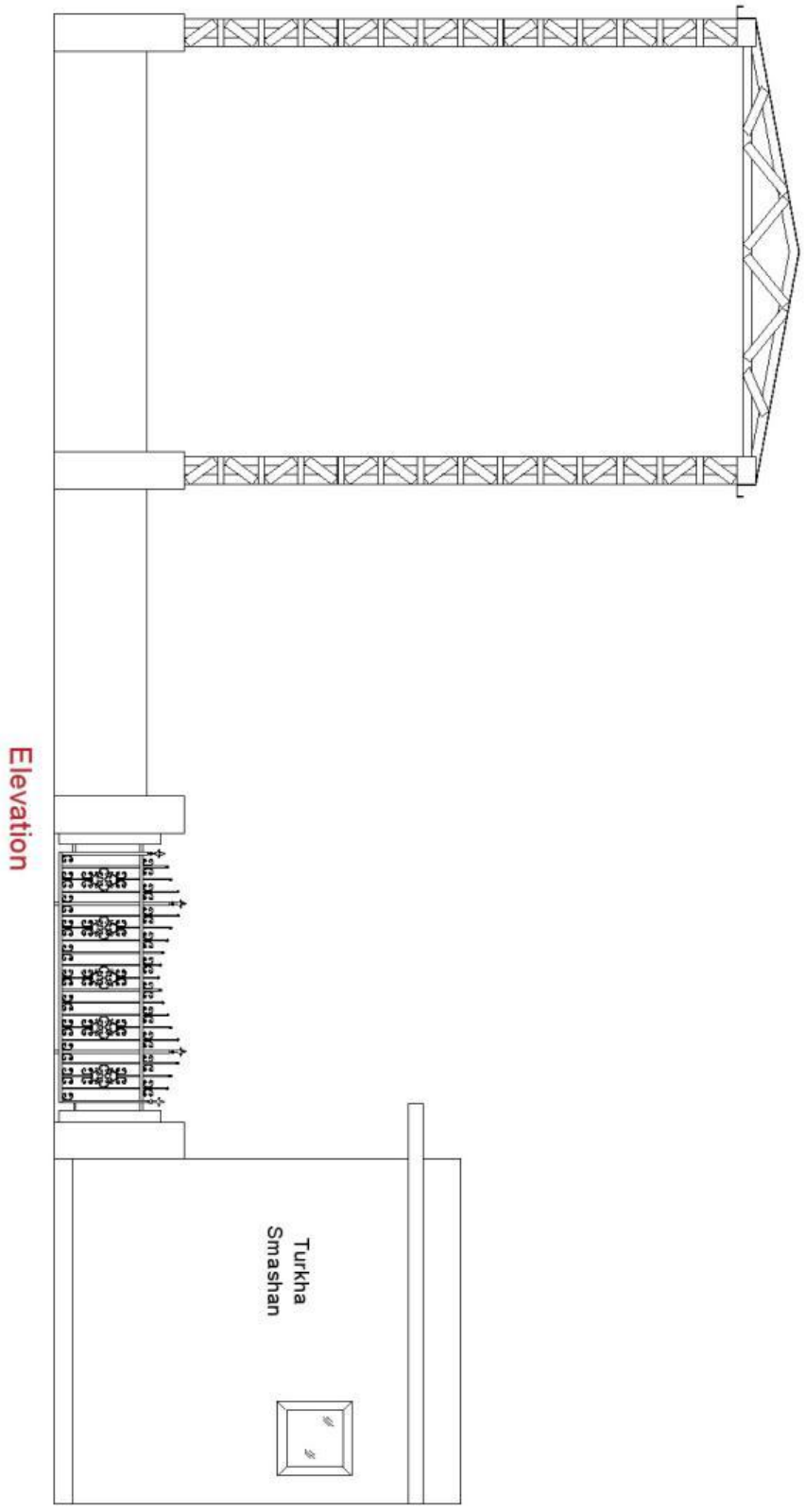


Figure 8.5: Elevation of Cemetery

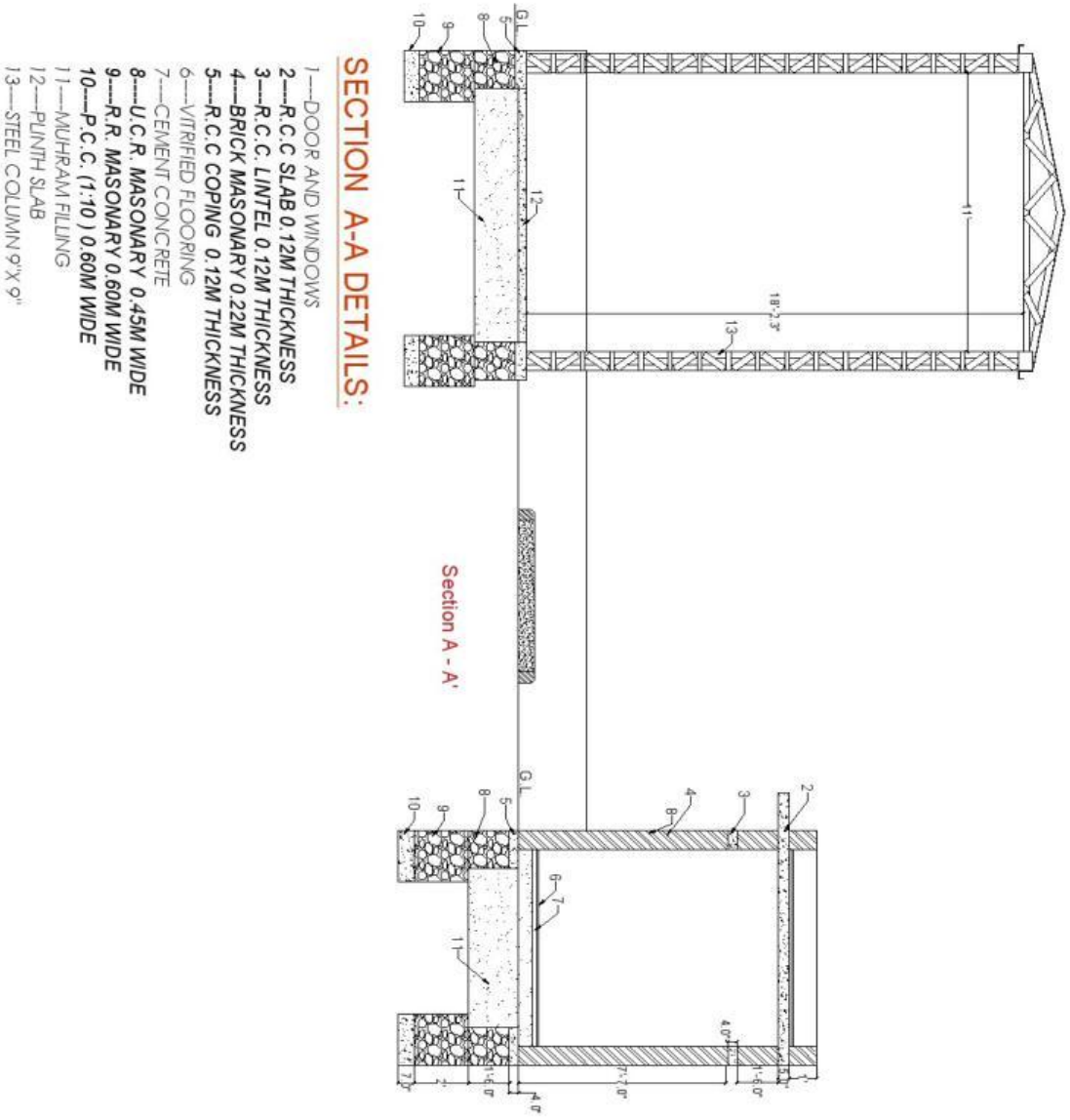


Figure 8.6: Section of Cemetery

Quantity Sheet		
Sr. No.	**Item**	**Quantity**
1	**Excavation in foundation**	
	Room foundation	
	Long wall	10.46 m^3
	Short wall	4.94 m^3
	Washroom foundation	
	Gents washroom	2.75 m^3
	Ladies washroom	1.56 m^3
	Shed foundation	
	Long wall	9.30 m^3
	Short wall	6.41 m^3
	Parapet wall	9.26 m^3
	Total Quantity	**50.30 m^3**
2	**PCC 1:10 in foundation**	
	Long wall	2.48 m^3
	Short wall	2 m^3
	Room wall	0.30 m^3
	Total Quantity	**4.78 m^3**
3	**Random rubble masonry in foundation**	
	Long wall	8.9 m^3
	Short wall	7.17 m^3
	Room wall	1.05 m^3
	Total Quantity	**17.12 m^3**
4	**Un coursed masonry in foundation**	
	Long wall	4.94 m^3
	Short wall	4.21 m^3
	Room wall	0.70 m^3
	Total Quantity	**9.85 m^3**
5	**R.C.C Coping at plinth level**	
	Long wall	1.31 m^3
	Short wall	1.12 m^3
	Room wall	0.18 m^3
	Total Quantity	**2.61 m^3**
6	**Earth filling**	
	Total area with full depth	**5.61 m^3**
7	**Brick work**	
	Room	
	Long wall	4.04 m^3
	Short wall	3.17 m^3
	Deductions for openings	0.73 m^3

	Compound wall	
	Long wall	2.75 m^3
	Short wall	0.84 m^3
	Deductions for openings	0.81 m^3
	Brickwork for square columns	1.21
	Parapet wall on room	
	Long wall	0.43 m^3
	Short wall	0.17 m^3
	Total Quantity	**12.53 m^3**
8	**R.C.C Slab**	**2.15 m^3**
9	**Tiles flooring in room**	**13.10 m^2**
10	**Cement concrete flooring**	**20.7 m^2**
11	**Lintel (RCC)**	
	Long wall	0.17 m^3
	Short wall	0.13 m^3
	Total Quantity	**0.30 m^3**

Abstract sheet					
Sr. No.	Item	Qty	Rate	Per	Amount
1	Excavation in foundation	50.30	92	m^3	4627.6
2	PCC 1:10 in foundation	4.78	5315	m^3	25405.7
3	Random rubble masonry in foundation	17.12	2792	m^3	47799.04
4	Un coursed masonry in foundation	9.85	3396	m^3	33450.6
5	R.C.C Coping at plinth level	2.61	5492	m^3	14334.12
6	Earth filling	5.61	116	m^3	650.76
7	Brick work	12.53	5837	m^3	73137.61
8	R.C.C Slab	2.15	4825	m^3	10373.75
9	Tiles work	13.10	988	m^2	12942.8
10	Cement concrete flooring	20.7	295	m^2	6106.5
11	Lintel (RCC)	0.30	350	m^2	105
12	Shed	Lump sum			150000
Total(excluding shed)					228933
Add 2% Administrative charges					233511
Add 3% Contingencies charges					240516
Add 10% Contractor Profit					264567
Total(including shed)					414567
Grand total					**Say 4,15,000**

8.1.3 Social design: Community Hall

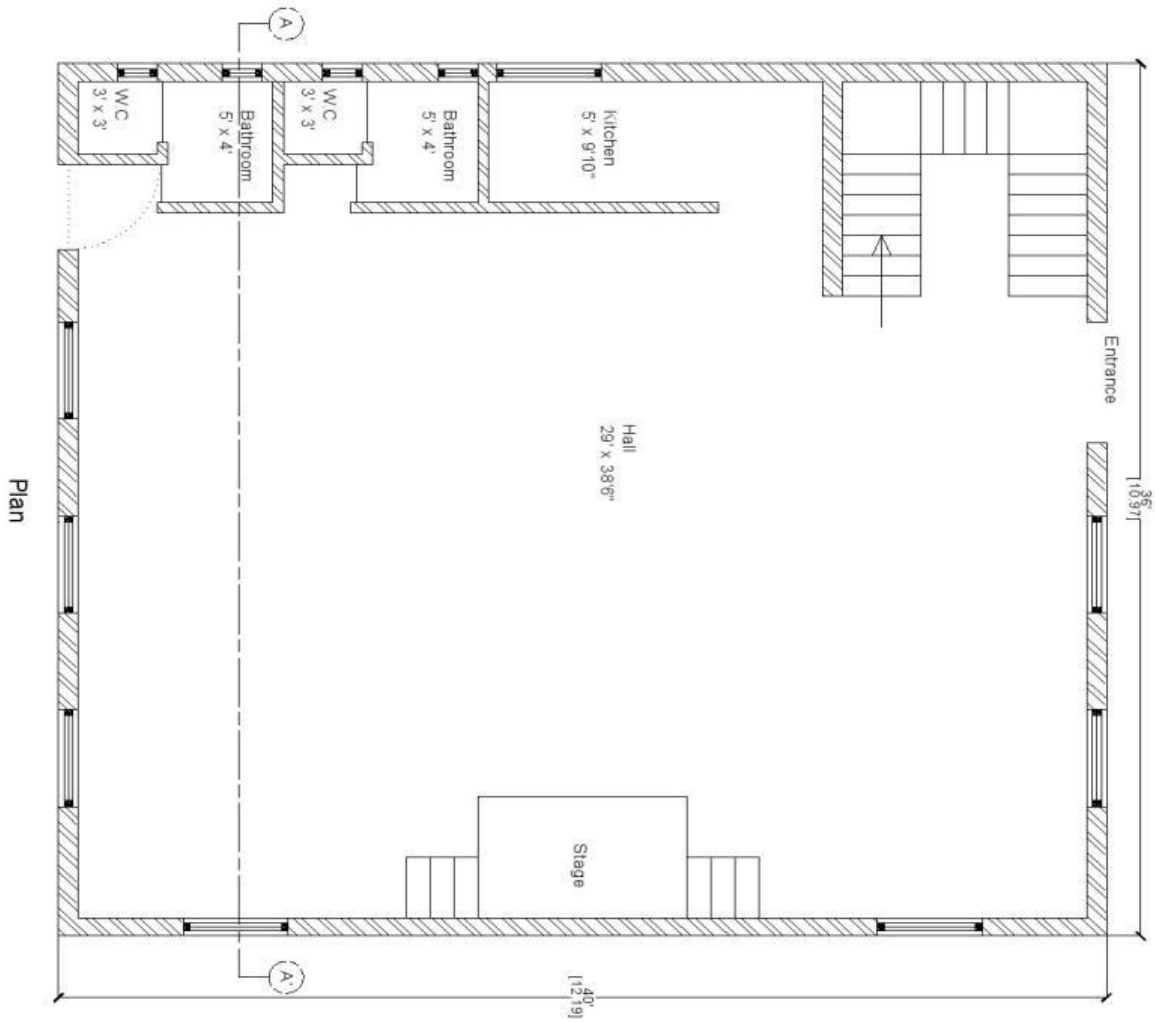


Figure 8.7: Plan of Community Hall

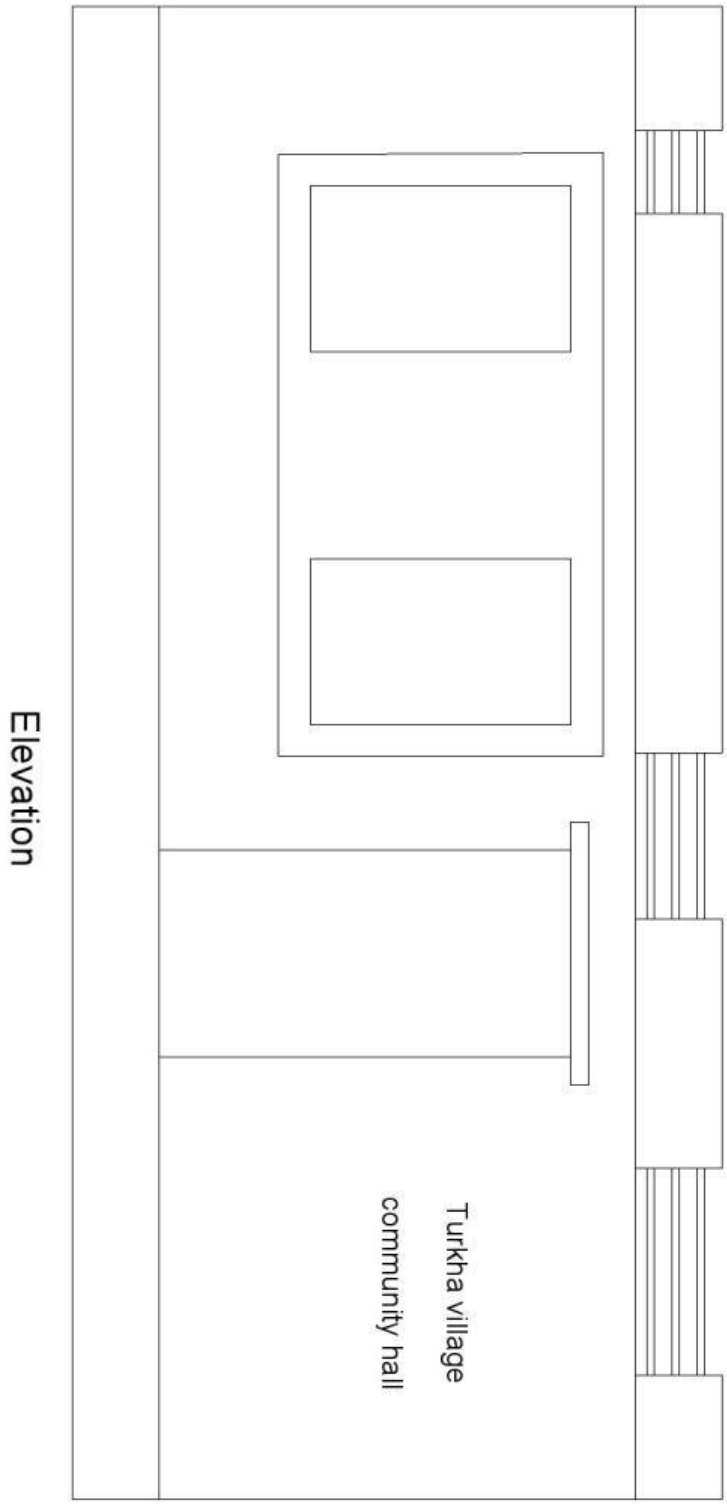


Figure 8.8: Elevation of Community Hall

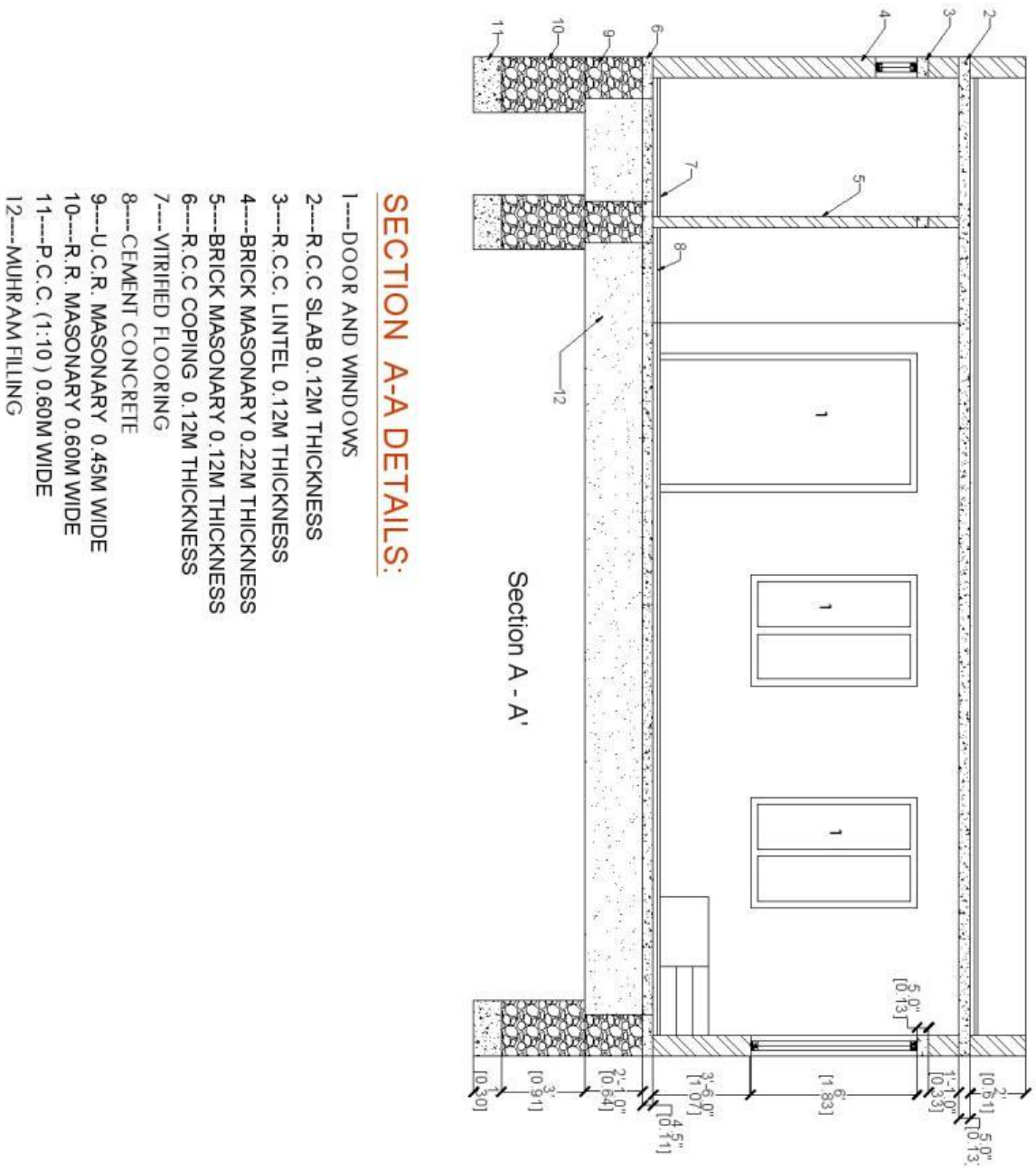


Figure 8.9: Section of Community Hall

Quantity Sheet		
Sr. No.	**Item**	**Quantity**
1	**Excavation in foundation**	
	Type 1 wall	37.06 m^3
	Type 2 wall	8.51 m^3
	Total Quantity	**45.57 m^3**
2	**PCC 1:10 in foundation**	
	Type 1 wall	9.19 m^3
	Type 2 wall	1.78 m^3
	Total Quantity	**10.97 m^3**
3	**Random rubble masonry in foundation**	
	Type 1 wall	27.93 m^3
	Type 2 wall	6.4m^3
	Total Quantity	**34.30 m^3**
4	**Un coursed masonry in foundation**	
	Type 1 wall	14.98 m^3
	Type 2 wall	3.83 m^3
	Total Quantity	**18.81 m^3**
5	**R.C.C Coping at plinth level**	
	Type 1 wall	2.56 m^3
	Type 2 wall	0.655 m^3
	Total Quantity	**3.22 m^3**
6	**Moorum filling**	
	Full hall area	**71.83 m^3**
7	**Brick work up to parapet wall**	
	Type 1 wall	36.86 m^3
	Type 2 wall	3.85 m^3
	Deductions for openings	7.9 m^3
	Total Quantity	**32.81 m^3**
8	**R.C.C Slab**	**17.36 m^3**
9	**Plaster work for inner walls**	
	Hall	225.94 m^2
	Kitchen	40.12 m^2
	W.C	26.11 m^2
	Bathroom	12.83 m^2
	Entry point in Hall 1	10.24 m^2
	Entry point in Hall 2	11.97 m^2
	Deductions	18.86 m^2
	Total quantity	**308.9 m^2**
10	**Plaster work for outer walls**	
	Long walls	106.11 m^2
	Short walls	118.43 m^2
	Deductions	10.92 m^2
	Total Quantity	**213.62 m^2**

11	**Tile's flooring**	
	Hall	103.43 m^2
	W.C	1.67 m^2
	Bathroom	1.83 m^2
	Kitchen	5.7 m^2
	Staircase	7.7 m^2
	Total Quantity	**120.33 m^2**
12	**Painting work for inner & outerside**	**522.50 m^2**

Abstract sheet					
Sr. No.	Item	Qty	Rate	Per	Amount
1	Excavation in foundation	45.57	92	m^3	4192.44
2	PCC 1:10 in foundation	10.97	5315	m^3	58313.00
3	Random rubble masonry in foundation	34.30	2792	m^3	95764.22
4	Un coursed masonry in foundation	18.81	3396	m^3	63873.68
5	R.C.C Coping at plinth level	3.22	5492	m^3	17685.65
6	Moorum filling	71.83	116	m^3	8308.57
7	Brick work up to parapet wall	32.75	5837	m^3	191158.47
8	R.C.C Slab	17.36	4825	m^3	83762
9	Plaster work for inner walls	308.9	94	m^2	29027.34
10	Plaster work for outer walls	213.62	112	m^2	24045.06
11	Tile's flooring	120.33	988	m^2	118886.04
12	Painting work for inner & outer side	522.50	260	m^2	135850
	Total				830867
	Add 2% Administrative charges				847484
	Add 3% Contingencies charges				872908
	Add 10% Contractor Profit				960198
	Grand total				**Say 960000**

8.1.4 Public toilet design:

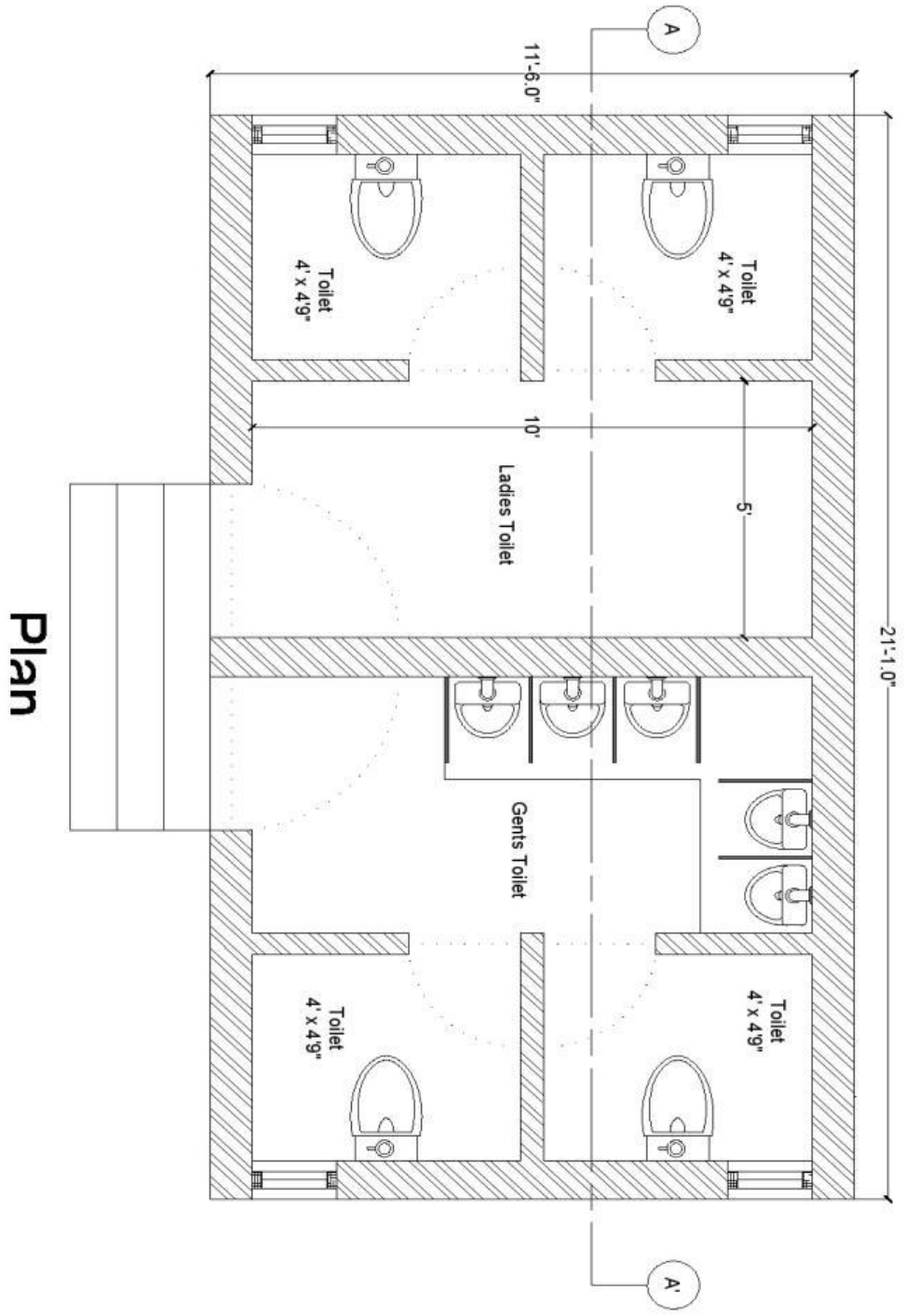


Figure 8.10: Plan of Public toilet

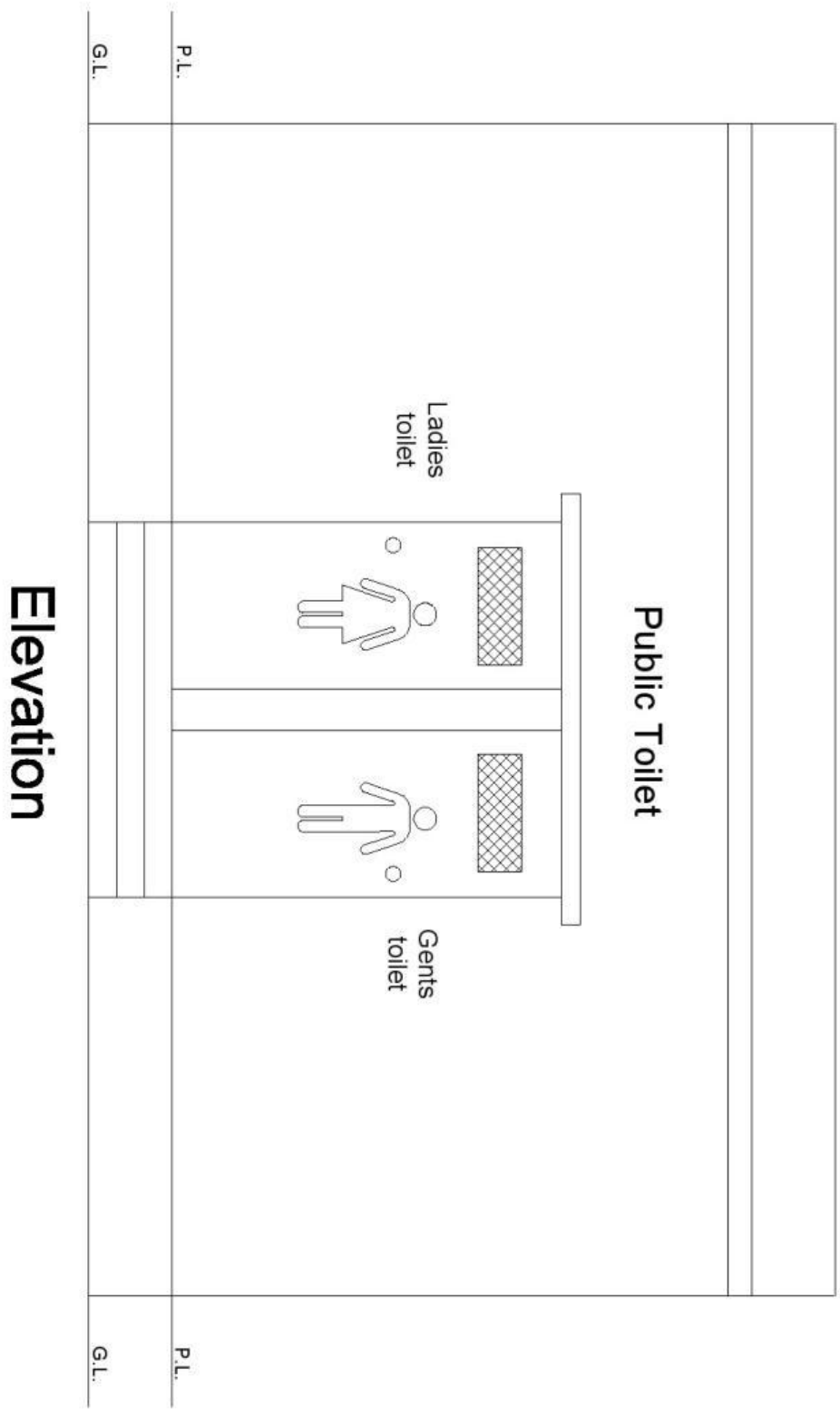


Figure 8.11: Elevation of Public toilet

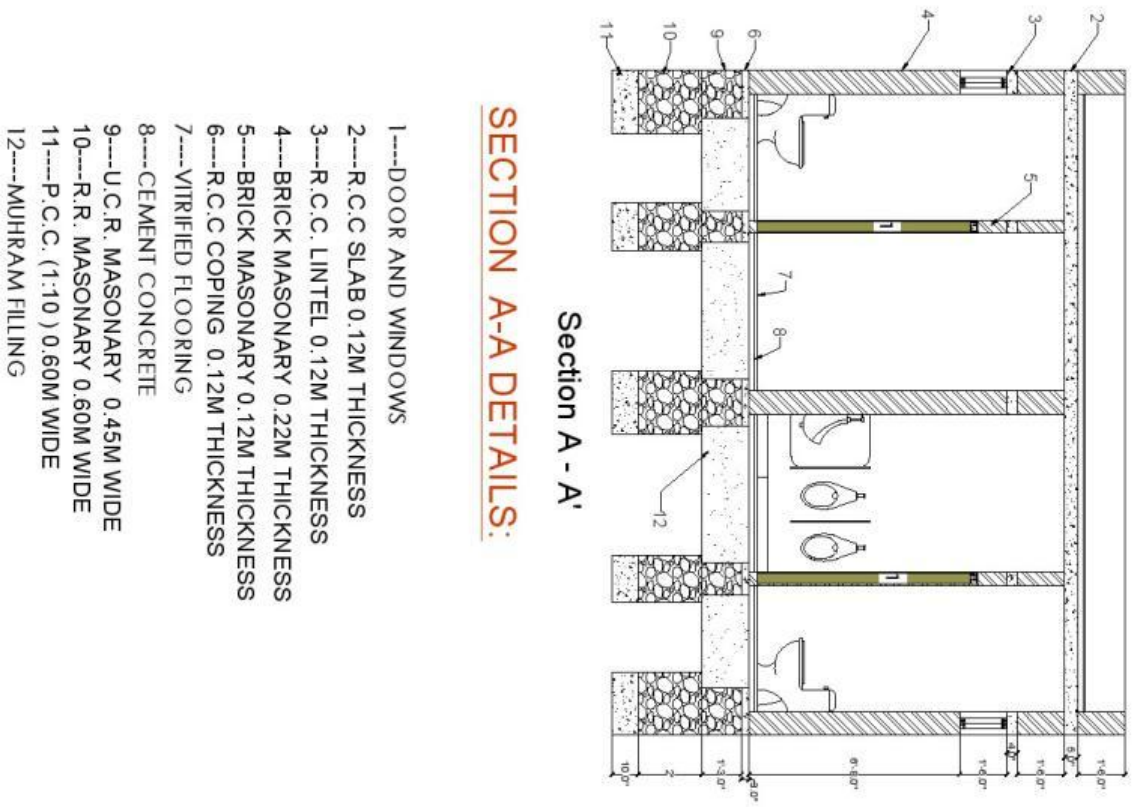


Figure 8.12: Section of Public toilet

Quantity Sheet		
Sr. No.	**Item**	**Quantity**
1	**Excavation in foundation**	
	Type 1 wall	10.16 m^3
	Type 2 wall	2.33 m^3
	Total Quantity	**12.50 m^3**
2	**PCC 1:10 in foundation**	
	Type 1 wall	2.99 m^3
	Type 2 wall	0.68 m^3
	Total Quantity	**4.27 m^3**
3	**Random rubble masonry in foundation**	
	Type 1 wall	7.17 m^3
	Type 2 wall	1.64m^3
	Total Quantity	**8.81 m^3**
4	**Un coursed masonry in foundation**	
	Type 1 wall	3.75 m^3
	Type 2 wall	0.85 m^3
	Total Quantity	**4.6 m^3**
5	**R.C.C Coping at plinth level**	
	Type 1 wall	1.13 m^3
	Type 2 wall	0.25 m^3
	Total Quantity	**1.38 m^3**
6	**Earth filling**	
	Total area with full depth	**5.38 m^3**
7	**Brick work up to parapet wall**	
	Type 1 wall	16.01 m^3
	Type 2 wall	3.37 m^3
	Steps	0.52 m^3
	Deductions for openings	1.72 m^3
	Total Quantity	**32.81 m^3**
8	**R.C.C Slab**	**2.36 m^3**
9	**Plaster work for inner walls**	
	Toilet	39.78 m^2
	Outer room	65.46 m^2
	Deductions	9.76 m^2
	Total quantity	**95.48 m^2**
10	**Plaster work for outer walls**	
	Long walls	55 m^2
	Short walls	30.1 m^2
	Deductions	5.72 m^2
	Total Quantity	**79.38 m^2**
11	**Tiles flooring**	
	Toilet	7.26 m^2
	Outer area	9.54 m^2

	Steps	1.7 m^2
	Total Quantity	**18.50 m^2**
12	**Painting work for inner & outerside**	**175 m^2**
13	**Parapet wall (Masonry)**	
	Long wall	1.40 m^3
	Short wall	0.7 m^3
	Total Quantity	**2.10 m^3**
14	**Parapet wall (Plaster)**	**4.2 m^3**
15	**Frames for doors & windows**	**3.63 m^3**

Abstract sheet					
Sr. No.	Item	Qty	Rate	Per	Amount
1	Excavation in foundation	12.50	92	m^3	1150
2	PCC 1:10 in foundation	4.27	5315	m^3	22695.05
3	Random rubble masonry in foundation	8.81	2792	m^3	24597.52
4	Un coursed masonry in foundation	4.6	3396	m^3	15621.6
5	R.C.C Coping at plinth level	1.38	5492	m^3	7578.96
6	Earth filling	5.38	116	m^3	624.08
7	Brick work	34.91	5837	m^3	203769.7
8	R.C.C Slab	2.36	4825	m^3	11387
9	Plaster work for inner walls	95.48	94	m^2	8975.12
10	Plaster work for outer walls	79.38	112	m^2	8890.56
11	Plaster work for parapet walls	4.2	112	m^2	470.4
12	Tiles work	18.50	988	m^2	18278
13	Painting work for inner & outer side	175	260	m^2	45500
14	Frame work for doors and windows	3.63	1450	m^3	5263.5
	Total				374801.46
	Add 2% Administrative charges				382297.48
	Add 3% Contingencies charges				393766.40
	Add 10% Contractor Profit				443143
	Grand total				**Say 4,43,000**

8.1.5 Public Garden Design:

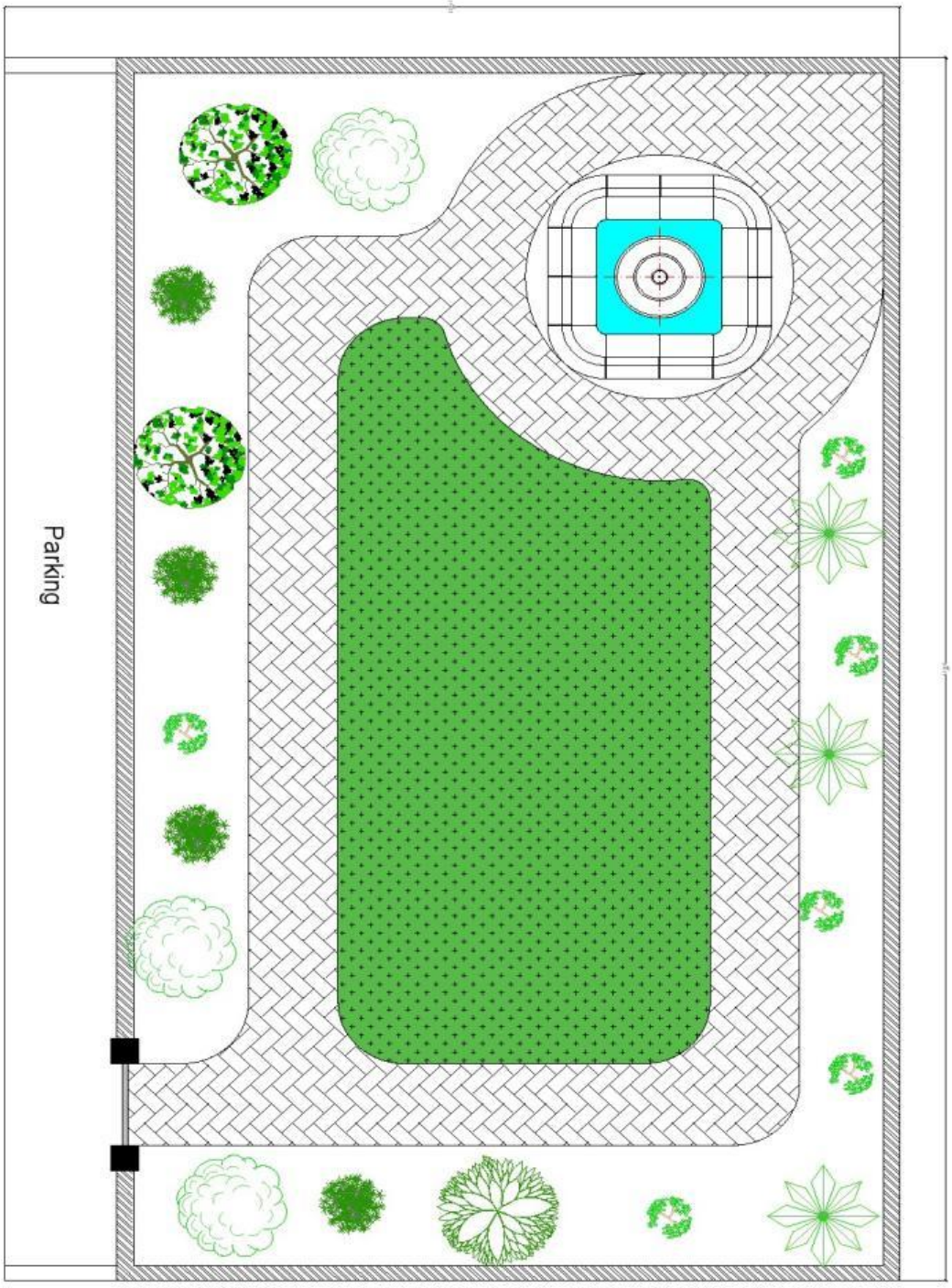


Figure 8.13: Plan of public garden

Quantity Sheet		
Sr. No.	**Item**	**Quantity**
1	**Excavation in foundation**	
	Long wall	7.31 m^3
	Short wall	4.56 m^3
	Total Quantity	**11.87 m^3**
2	**PCC 1:10 in foundation**	
	Long wall	2.92 m^3
	Short wall	1.82 m^3
	Total Quantity	**4.74 m^3**
3	**Brick masonry**	
	Long wall	17.50 m^3
	Short wall	11.24m^3
	Deductions	0.28
	Total Quantity	**28.46 m^3**

Abstract sheet					
Sr. No.	Item	Qty	Rate	Per	Amount
1	Excavation in foundation	11.87	92	m^3	1092.04
2	PCC 1:10 in foundation	4.74	5315	m^3	25193.10
3	Brick masonry	28.46	5837	m3	166121.02
4	Gardening & Plantation	Lump sump			25000
5	Amusement rides	Lump sump			30000
	Total(excluding lump sump rates)				192406
	Add 2% Administrative charges				196254
	Add 3% Contingencies charges				202141
	Add 10% Contractor Profit				222355
	Total(including lump sump rates)				277355
	Grand total				**Say 2,77,000**

8.1.6 Bus stand:

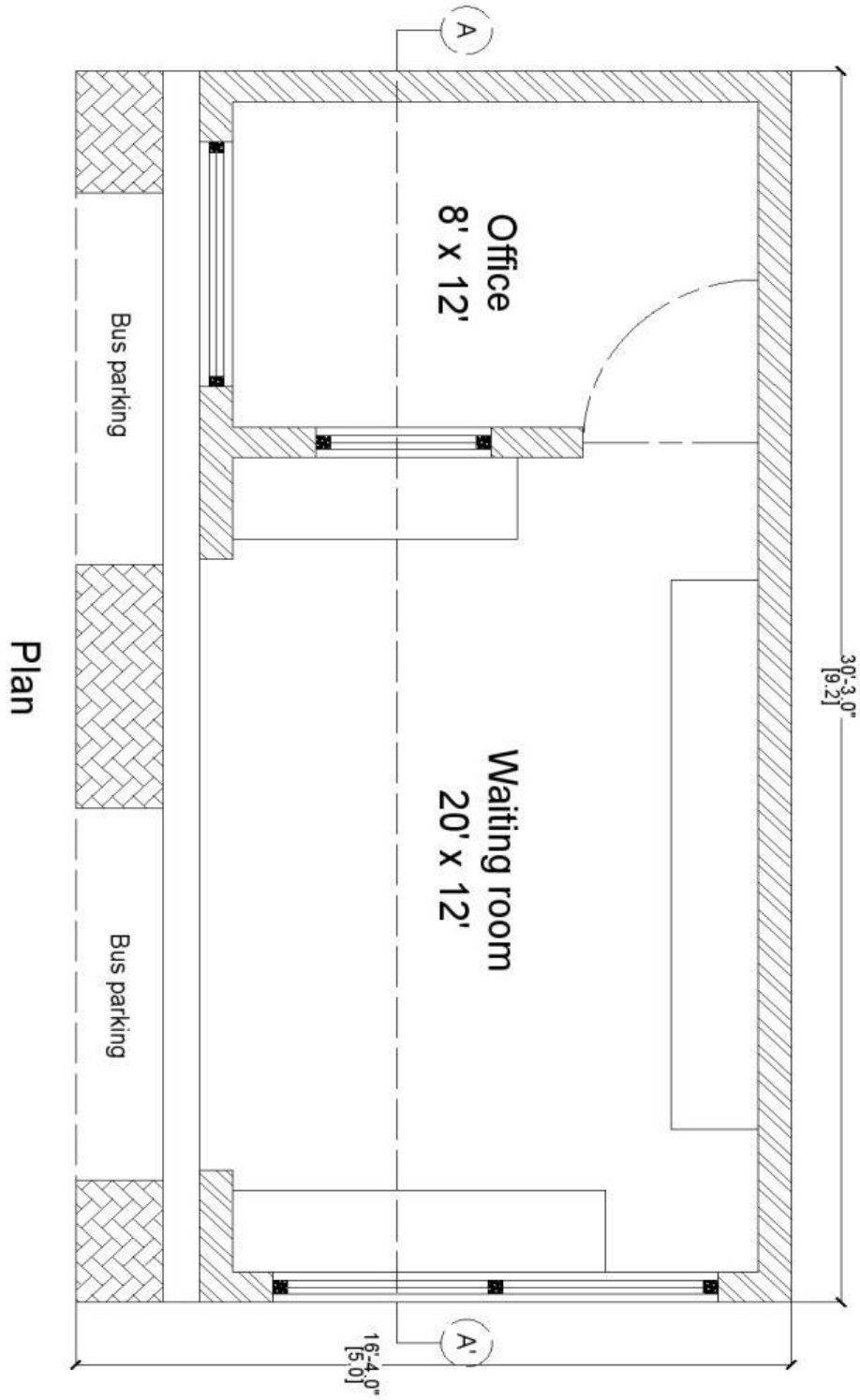


Figure 8.14: Plan of Bus stand

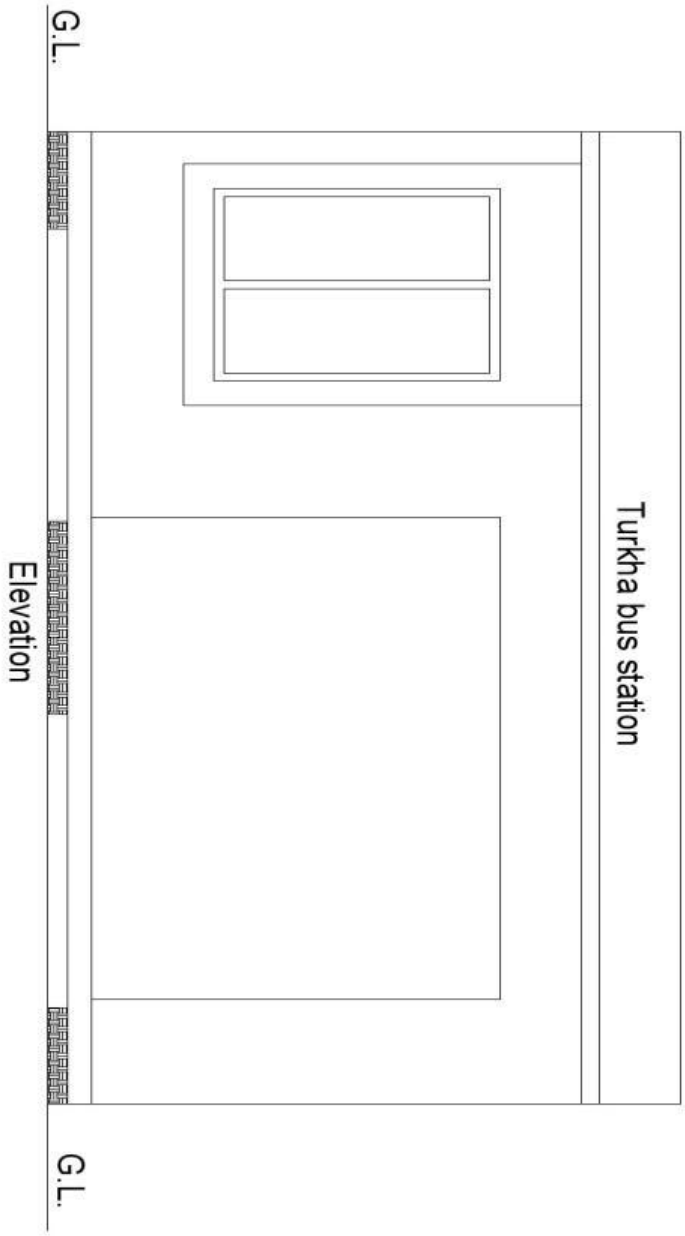


Figure 8.15: Elevation of Bus stand

Quantity Sheet		
Sr. No.	**Item**	**Quantity**
1	**Excavation in foundation**	
	Long wall	25.80 m^3
	Short wall	9.41 m^3
	Total Quantity	**35.21 m^3**
2	**PCC 1:10 in foundation**	
	Long wall	4.29 m^3
	Short wall	1.56 m^3
	Total Quantity	**5.86 m^3**
3	**Random rubble masonry in foundation**	
	Long wall	12.90 m^3
	Short wall	4.60m^3
	Total Quantity	**17.60 m^3**
4	**Un coursed masonry in foundation**	
	Long wall	5.37 m^3
	Short wall	2.16 m^3
	Total Quantity	**7.54 m^3**
5	**R.C.C Coping at plinth level**	
	Long wall	1.28 m^3
	Short wall	0.51 m^3
	Total Quantity	**1.80 m^3**
6	**Earth filling**	
	Total area with full depth	**22.48 m^3**
7	**Brick work up to slab level**	
	Long wall	20.14 m^3
	Short wall	9.24 m^3
	Steps & Platform	0.97 m^3
	Deductions for openings	6.41 m^3
	Total Quantity	**23.94 m^3**
8	**R.C.C (Seal Level)**	
	Long wall	0.55 m^3
	Short wall	0.25 m^3
	R.C.C (Lintel Level)	
	Long wall	0.70 m^3
	Short wall	0.30 m^3
	Deductions	**No**
	Total Quantity	**1.80 m^3**
9	**R.C.C Slab**	**6.21 m^3**
10	**Plaster work for inner walls**	
	Office plaster work	52.64 m^2
	Waiting room plaster work	122.08 m^2
	Deductions	30.50 m^2
	Total quantity	**144.21 m^2**
11	**Plaster work for outer walls**	

	Long walls	109.84 m^2
	Short walls	37.77 m^2
	Deductions	27.40 m^2
	Total Quantity	**120.20 m^2**
12	**Tiles work – Kotah stone**	
	Office	8.86 m^2
	Waiting room	32.22 m^2
	Other remaining space	1.31 m^2
	Steps & Platform	5.75 m^2
	Total Quantity	**48.14 m^2**
13	**Painting work for inner & outer side**	**260 m^2**
14	**Parapet wall (Masonry)**	
	Long wall	3.26 m^3
	Short wall	1 m^3
	Total Quantity	**4.26 m^3**
15	**Parapet wall (Plaster)**	**8.50 m^3**
16	**Frames for doors & windows**	**16.50 m^3**

Abstract sheet					
Sr. No.	Item	Qty	Rate	Per	Amount
1	Excavation in foundation	35.21	92	m^3	3239.32
2	PCC 1:10 in foundation	5.86	5315	m^3	31145.9
3	Random rubble masonry in foundation	17.60	2792	m^3	49139.2
4	Un coursed masonry in foundation	7.54	3396	m^3	25605.84
5	R.C.C Coping at plinth level	1.80	5492	m^3	9885.6
6	Earth filling	22.48	116	m^3	2607.68
7	Brick work	23.94	5837	m^3	139737.8
8	R.C.C (Seal & Lintel)	1.80	4825	m^3	8685
8	R.C.C Slab	6.21	4825	m^3	29963.25
9	Plaster work for inner walls	144.21	94	m^2	13555.74
10	Plaster work for outer walls	120.20	112	m^2	13462.4
11	Plaster work for parapet walls	8.50	112	m^2	952
12	Tiles work	48.14	1015	m^2	48862.1
13	Painting work for inner & outer side	260	125	m^2	32500
14	Frame work for doors and windows	16.50	750	m^3	12375
	Total				421716.81
	Add 2% Administrative charges				430150.32
	Add 3% Contingencies charges				443054.82
	Add 10% Contractor Profit				487360.30
	Grand total				**Say 4,87,000**

8.2 Reason for Students recommending this design:

- There is no bus station for transportation
- Fun There is no community hall for social functions and meetings.
- Infrastructural facilities are very poor.
- There is no gram panchayat office
- There is no system to store rainwater.
- Village has no public garden for the people and there are no children play Ground.
- More than half of the roads are in damaged condition.
- There is no cemetery in village.
- There is one public toilet which is not use because it is in very bad condition.
- There is no public library
- There many cattle dung heaps which can be used to produce natural gas in biogas plant.

8.3 Benefits of villagers:

- By providing Gram panchayat office wecan solve local problem of villagers.
- Transport facilities for the public have been enhanced by constructing bus stands
- By creating a community hall, we can increase the community among the villagers.
- We can store water by creating a rainwater harvesting system problems of village people related to water.
- We can make it better by creating a public garden and children's play area
- By building roads, we can improve the transportation system for the villagers.
- By development of cemeteryin village people can perform cremation programs for their loved ones.
- By development of biogas plant, we can produce natural gas from cattle dung and other waste.
- By providing library we can increase knowledge and learning of village people.

Chapter9: Proposing designs for Future Development of the Village for the PART-II Design:

In the next semester we will provide various designs as shown below:

- **Overhead Tank:** Overhead tank will design of 8 lac capacities based upon population of village which can sufficient to fulfill the basic water requirements of people

- **Biogas plant:**Turkha village is consist of large number of cattle which produces large number of cattle dung and black soil from public sewer can be used to produce natural biogas, so the design of biogas plant is very important.

- **Road design: Road** condition in village is poor or broken condition which causes difficulty for villagers in transportation. Construction of road is required especially in monsoon season because water accumulation causes muddy road which causes mosquito nuisance as well as muddy road which makes total disturbance for villagers.

- **Water treatment plant:** Waste water from the village is directly drained into the Madhu River which causes pollution of river water, increase in death of river creatures such as fishes, under water plant etc. Moreover, polluted water cannot used for domestic and agricultural purposes. So, we will design water treatment plant which filter and makes water pollution free before discharging into river.

- **Chabutras:** The main purpose of designingchabutras is to provide grains,water,and shelter to all the birds. It also decreases in death of birds during all the season and it also improves aesthetic view of village.

- **Public library:** Most of the people of Turkha village are low educate and have low general knowledge specially youngsters of village are low educating which causes unemployment in various sectors, so the design of library is very important which provides various books, magazine and newspaper for purpose of reading and increasing knowledge.

Chapter10: Conclusion of the Entire Village Activities of the Project

Development is required for each rural and urban associate areas for higher livelihood and data technology can provide effective answer. There are thriving technologies accessible, which are enforced in urban areas. There's tremendous pressure on urban landscapes thanks to migration of rural people for lively hood. Good Villages won't solely reduce this migration however additionally irrigate the population result urban to geographical area.

Smart village construct can have potential to uplift the grass-root level of the country, thence adding feather within the overall development of Republic of India. Failure to utilize info technology tools for rural development is due to lack strategy, unfocused designing and specially watching and execution of the activities. All these activities ought to be self-addressed supported the varied rural things. A specially designed appropriate framework for rural areas on the grounds of Science, Technology, Engineering, Regulations and Management can play necessary role to create next generation good village.

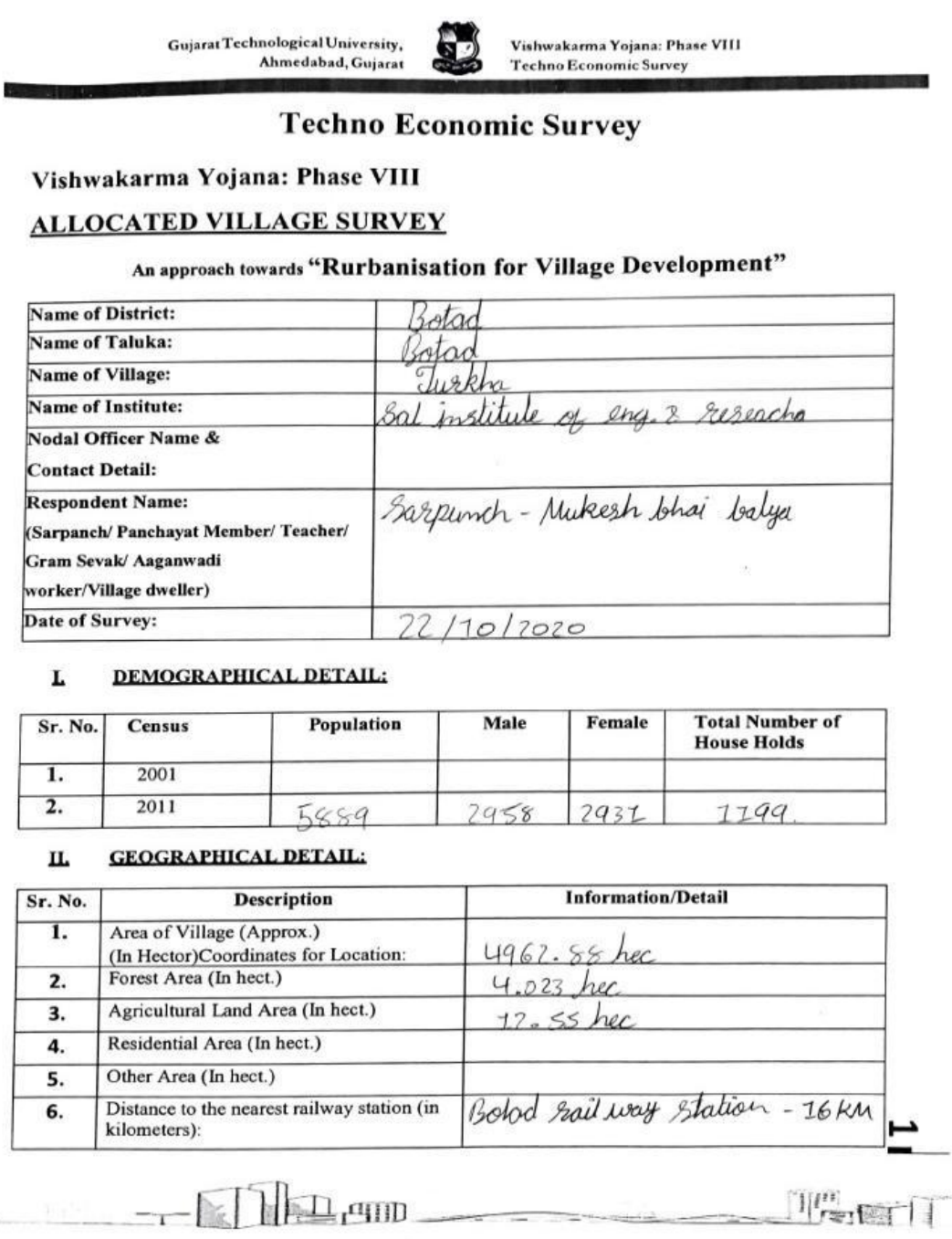
Benefit of the good village efforts square measure foretold to be tremendous. Smart village construct has high replication potential in different countries of developing world. The construct of good village might also be extended to little cities and conjointly townships close the large cities.

Chapter11: References refereed for this project

- **https:/ www.censusindia.gov.in**
- **https:// www.google.com**
- **Building and Town Planning by Dr. R P Rethaliya**
- **Professional Practice and Valuation by Dr. R P Rethaliya**
- **http://censusindia.gov.in – Census department website**
- **UDPFI Guideline 2014**
- **Schedule of rate 2014**
- **http://vy.gtu.ac.in – vishwakarma literatures**
- **Google maps**

Chapter12: Annexure attachment

12.1 Scanned form (part 1 & 2) allotted village:



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ALLOCATED VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

Name of District:	Botad
Name of Taluka:	Botad
Name of Village:	Turkha
Name of Institute:	Bal institute of eng. & researcha
Nodal Officer Name & Contact Detail:	
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sarpanch - Mukesh bhai balya
Date of Survey:	22/10/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	5889	2958	2931	1199

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	4962.88 hec
2.	Forest Area (In hect.)	4.023 hec
3.	Agricultural Land Area (In hect.)	12.55 hec
4.	Residential Area (In hect.)	
5.	Other Area (In hect.)	
6.	Distance to the nearest railway station (in kilometers):	Botad rail way station - 16 KM

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

III. OCCUPATIONAL DETAILS:

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

Major crops grown in the village:	1.	Cotton
	2.	Sorghum
	3.	Bajra

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

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	Other(Specify)Lake/ Pond			NO	
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:		NO	
	Underground Sump	Capacity:		NO	
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1	Pipe	yes		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road		yes		
	Main road		yes		
	Internal streets		yes		
	Nearest NH/SH/MDR/ODR Dist. in kms.	MDR	yes		
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)			NO	
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto	yes		
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	More than 6 hrs	yes		

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	Power supply for Domestic Use		Yes		
	Power supply for Agricultural Use		Yes		
	Power supply for Commercial Use		Yes		
	Road/ Street Lights		Yes		
	Electrification in Government Buildings/ Schools/ Hospitals				
	Renewable Energy Source Facilities (Y/ N)	Solar street light	Yes		
	LED Facilities		Yes		
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.		Yes		
	Location Condition				
	Community Toilet (With bath/ without bath facilities)		Yes		
	Solid & liquid waste Disposal system available		Yes		
	Any facility for Waste collection from road				
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)		Yes Yes Yes Yes Yes No		
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Pucca	Yes		75%

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	1	yes		
	Sub-Centre			No	
	PHC	1	yes		
	BLOCK PHC			No	
	CHC/RH			No	
	District/ Govt. Hospital			No	
	Govt. Dispensary	1	yes		
	Private Clinic	4	yes		
	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 village: .....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	1	yes		
	Primary School	1	yes		
	Secondary school	1	yes		
	Higher sec. School			No	
	ITI college/ vocational Training Center			No	
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities			No	

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

L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)				No
	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				No
	Birth & Death Registration Office	good		yes	

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

Suggestions if any:

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

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

Suggestions if any:

N.	Other Facilities	Condition		Available (YES)	Available (NO)
	1. Have these programme implemented the village?				No
	2. Are there any beneficiaries in the village from the following programme?				No
	3. Janani Suraksha Yojana				No
	4. Kishori Shakti Yojana				No
	5. Balika Samriddhi Yojana				No
	6. Mid-day Meal Programme				No
	7. Intergrated Child Development Scheme (ICDS)				No
	8. Mahila Mandal Protsahan Yojana (MMPY)				No
	9. National Food for work Programme (NFFWP)				No
	10. National Social Assistance Programme				No
	11. Sanitation Programme (SP)	good	inside village	yes	No
	12. Rajiv Gandhi National Drinking Water Mission				No
	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)	good		yes.	No
	18. Jawahar Rozgar Yojana (JRY)				No
	19. Indira Awas Yaojna (IAY)				No
	20. Samagra Awas Yojana (SAY)				No
	21. Sanjay Gandhi Niradhar Yojana (SGNY)				No
	22. Jawahar Gram Samridhi Yojana (JGSY)				No
	23. Other (SPECIFY)				

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Village Base Map Available: Hard Copy/Soft Copy				
2.	Recent Projects going on for Development of Village			No	
3.	Any NGO working for village development			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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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	NO NO NO NO NO NO	
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?	Daily	

IX. Smart Village / Heritage Details

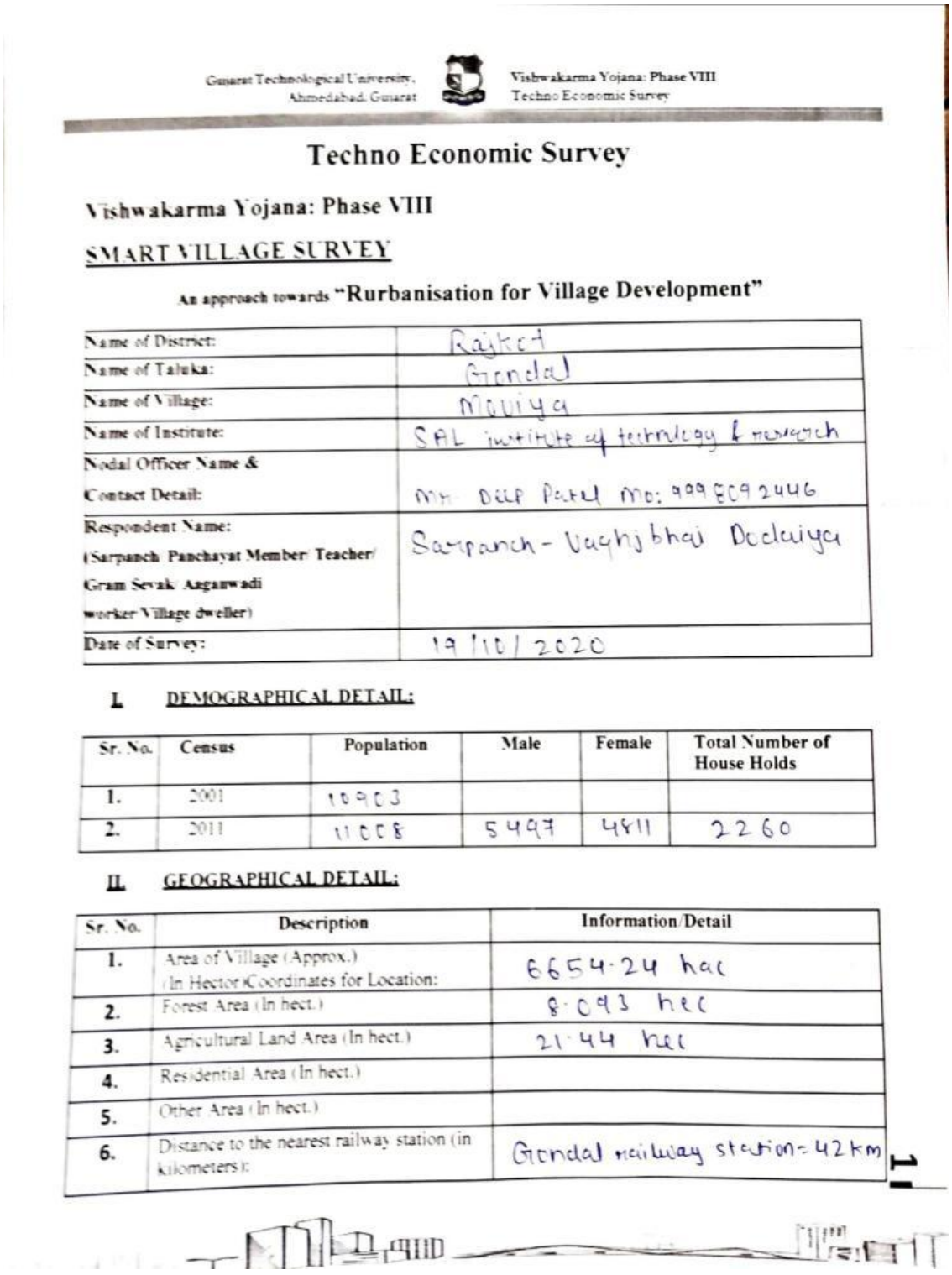
Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?		

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

સરપંચશ્રી
તુરખા ગામ પંચાયત

12.2 Scanned form (part 1 & 2) smart village:



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SMART VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

Name of District:	Rajkot
Name of Taluka:	Gondal
Name of Village:	Moviya
Name of Institute:	SAL institute of technology & research
Nodal Officer Name & Contact Detail:	Mr. Dilip Patel Mo: 9998092446
Respondent Name: (Sarpanch Panchayat Member/ Teacher/ Gram Sevak Anganwadi worker/Village dweller)	Sarpanch - Vaghjibhai Dodaiya
Date of Survey:	19/10/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	10903			
2.	2011	11008	5497	4811	2260

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector/Coordinates for Location:	6654.24 hac
2.	Forest Area (In hect.)	8.093 hec
3.	Agricultural Land Area (In hect.)	21.44 hec
4.	Residential Area (In hect.)	
5.	Other Area (In hect.)	
6.	Distance to the nearest railway station (in kilometers):	Gondal railway station = 42 km

7.	Name of Nearest Town with Distance:	Gondal - 5 km
8.	Distance to the nearest bus station (in kilometers):	Gondal bus station - 4.5 km
9.	Whether village is connected to all road for the any facility or town or City?	

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Agriculture
	2.	Handi craft
	3.	

Major crops grown in the village:	1.	Groundnut
	2.	cotton
	3.	pulses

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	Dwelling public tap	yes		
2.	**DUG WELL** Protected Well Un Protected Well	protected well	yes		
3.	**WATER FROM SPRING** Protected Spring Unprotected Spring	Protected spring rainwater	yes		
4.	Rainwater Tanker Truck Cart With Small Tank **SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water Hand Pump Other(Specify)**Lake/ Pond**	Harmeata channel hand pump	yes		

Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	yes		
	Underground Sump	Capacity:	yes		
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	Underground drainage line	yes		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road		yes		
	Main road		yes		
	Internal streets		yes		
	Nearest NH/SH/MDR/ODR Dist. in kms.	Grondal Highway	yes		
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)			No	Grondal railway station - 4·5km
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	GSRTC	yes		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto	yes		
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	more than 6hrs	yes		

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	Power supply for Domestic Use		yes		
	Power supply for Agricultural Use		yes		
	Power supply for Commercial Use		yes		
	Road/ Street Lights		yes		L.E.D Lights
	Electrification in Government Buildings/ Schools/ Hospitals		yes		
	Renewable Energy Source Facilities (Y/ N)		yes		Solar street Lights
	LED Facilities		yes		
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.		yes		
	Location Condition				
	Community Toilet (With bath/ without bath facilities)		yes		
	Solid & liquid waste Disposal system available		yes		
	Any facility for Waste collection from road		yes		
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	canal well tubewell bonewell	yes		
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Pucca	yes		80%

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	4	yes		
	Sub-Centre		no	no	
	PHC	1	yes		
	BLOCK PHC		no	no	
	CHC/RH		no	no	
	District/ Govt. Hospital		no	no	
	Govt. Dispensary	1	yes		
	Private Clinic	5	yes		
	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 village: .....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	4	yes		4
	Primary School	1	yes		1
	Secondary school	1	yes		1
	Higher sec. School	1	yes		1
	ITI college/ vocational Training Center	0		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: .....kms.				

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Suggestions if any:

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

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

Suggestions if any:

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

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

Suggestions if any:

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

17

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Village Base Map Available: Hard Copy/Soft Copy				
2.	Recent Projects going on for Development of Village	Swach Bharat	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	

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

8

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

IX. Smart Village / Heritage Details

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

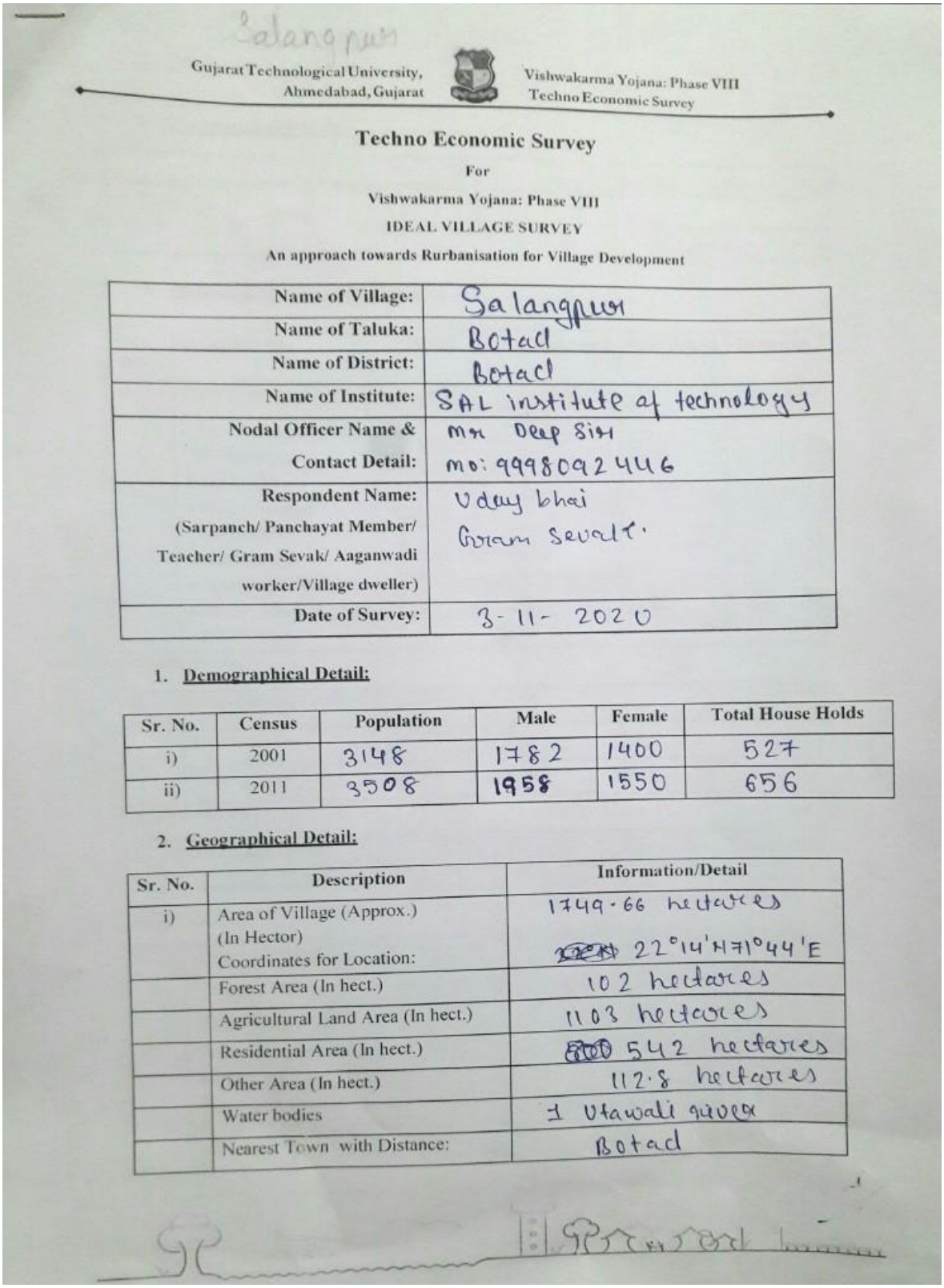
મોવિયા ગ્રામ પંચાયત તા: ગોંડલ

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

સરપચ
મોવિયા ગ્રામ પંચાયત

12.3 Scanned form (part 1 & 2) ideal village:



Salangpur

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

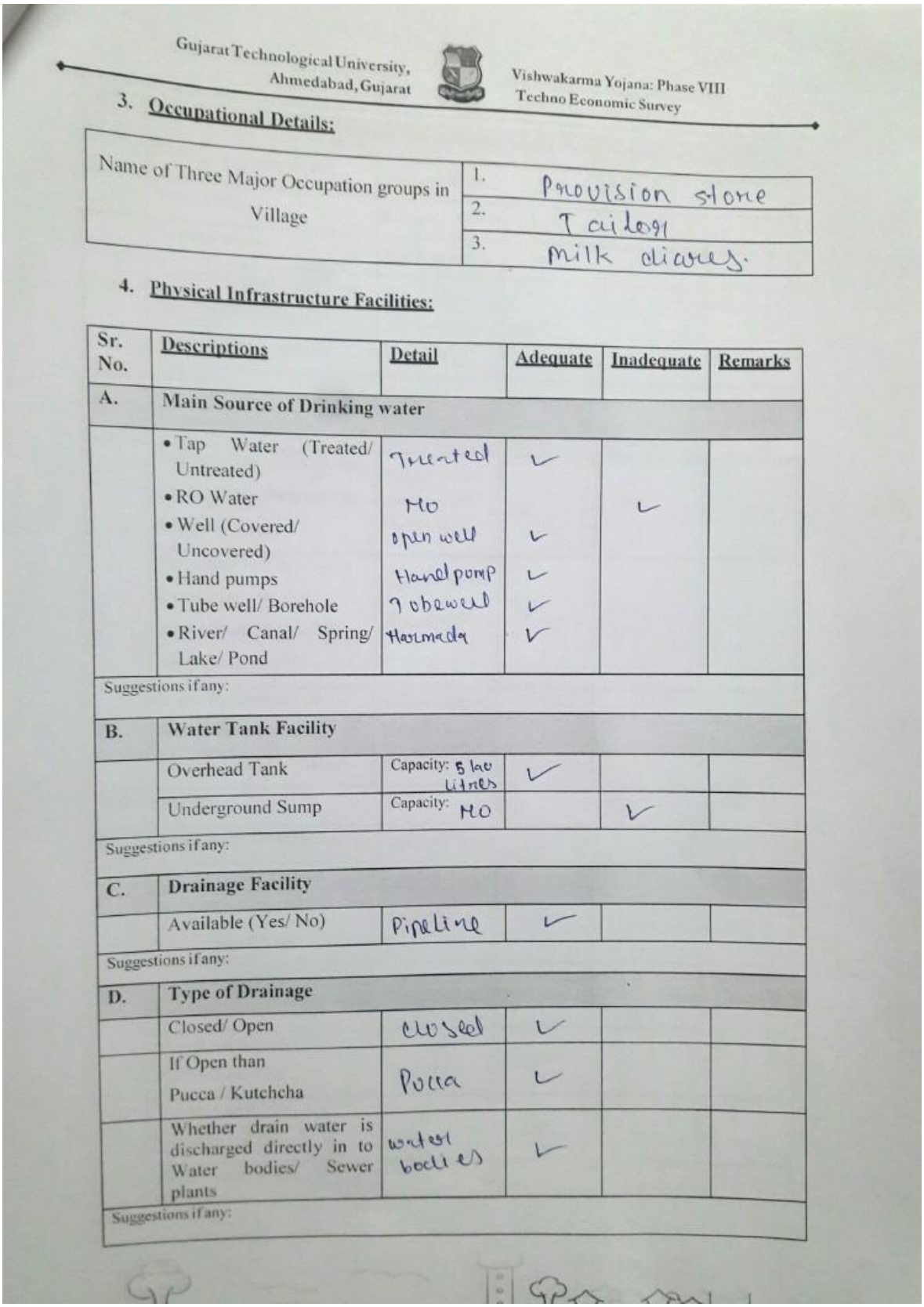
Name of Village:	Salangpur
Name of Taluka:	Botad
Name of District:	Botad
Name of Institute:	SAL institute of technology
Nodal Officer Name & Contact Detail:	Mr Deep Sir mo: 9998092446
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Uday bhai Gram Sevak.
Date of Survey:	3-11-2020

1. Demographical Detail:

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	3148	1782	1400	527
ii)	2011	3508	1958	1550	656

2. Geographical Detail:

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector)	1749.66 hectares
	Coordinates for Location:	22°14'N 71°44'E
	Forest Area (In hect.)	102 hectares
	Agricultural Land Area (In hect.)	1103 hectares
	Residential Area (In hect.)	542 hectares
	Other Area (In hect.)	112.8 hectares
	Water bodies	1 Utavali river
	Nearest Town with Distance:	Botad



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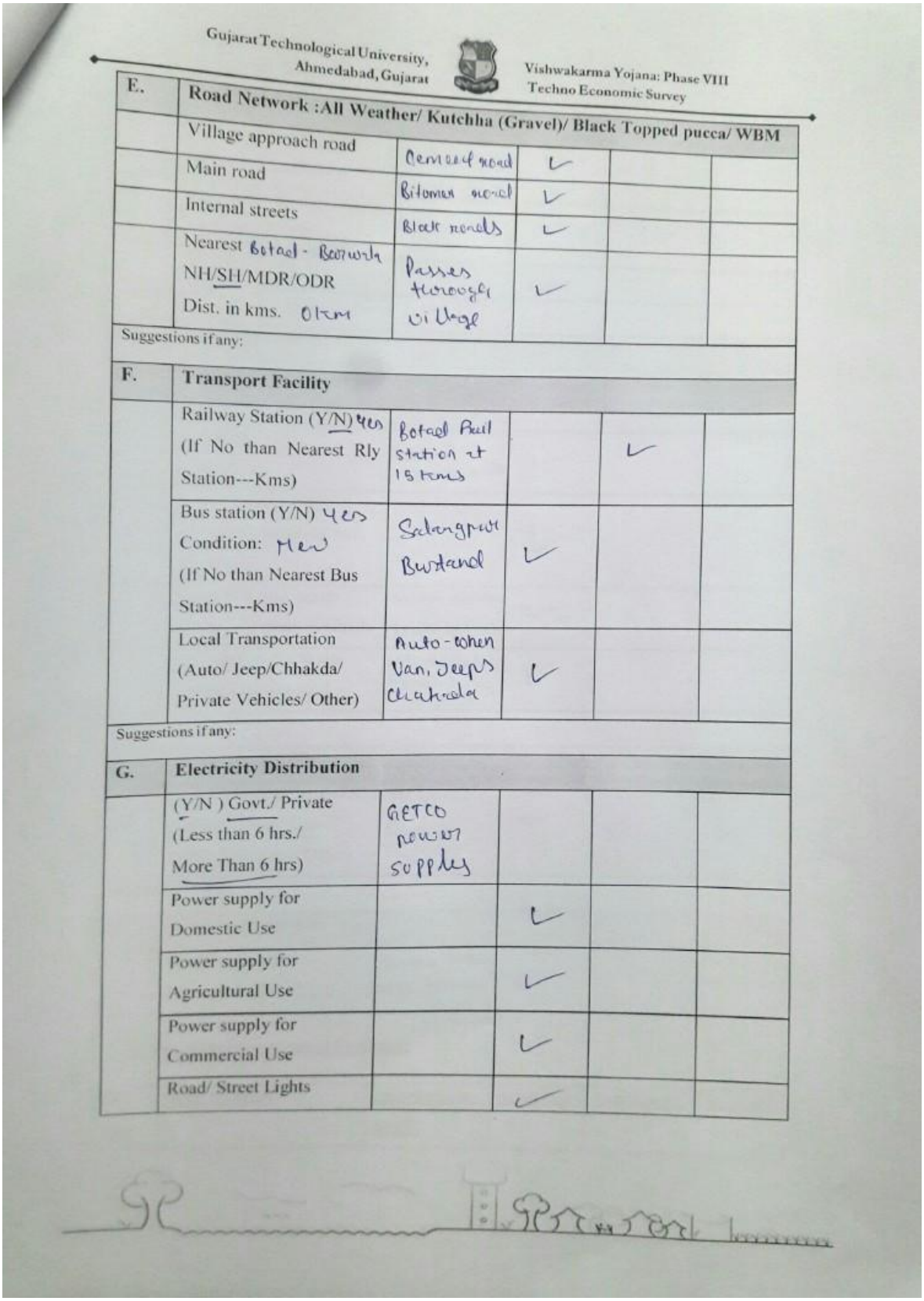
3. Occupational Details:

Name of Three Major Occupation groups in Village	1. Provision store
	2. Tailoring
	3. milk diaries.

4. Physical Infrastructure Facilities:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated)	Treated	✓		
	• RO Water	No		✓	
	• Well (Covered/ Uncovered)	open well	✓		
	• Hand pumps	Hand pump	✓		
	• Tube well/ Borehole	Tubewell	✓		
	• River/ Canal/ Spring/ Lake/ Pond	Narmada	✓		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 5 lac litres	✓		
	Underground Sump	Capacity: No		✓	
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	Pipeline	✓		
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	closed	✓		
	If Open than Pucca / Kutchcha	Pucca	✓		
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	water bodies	✓		
Suggestions if any:					



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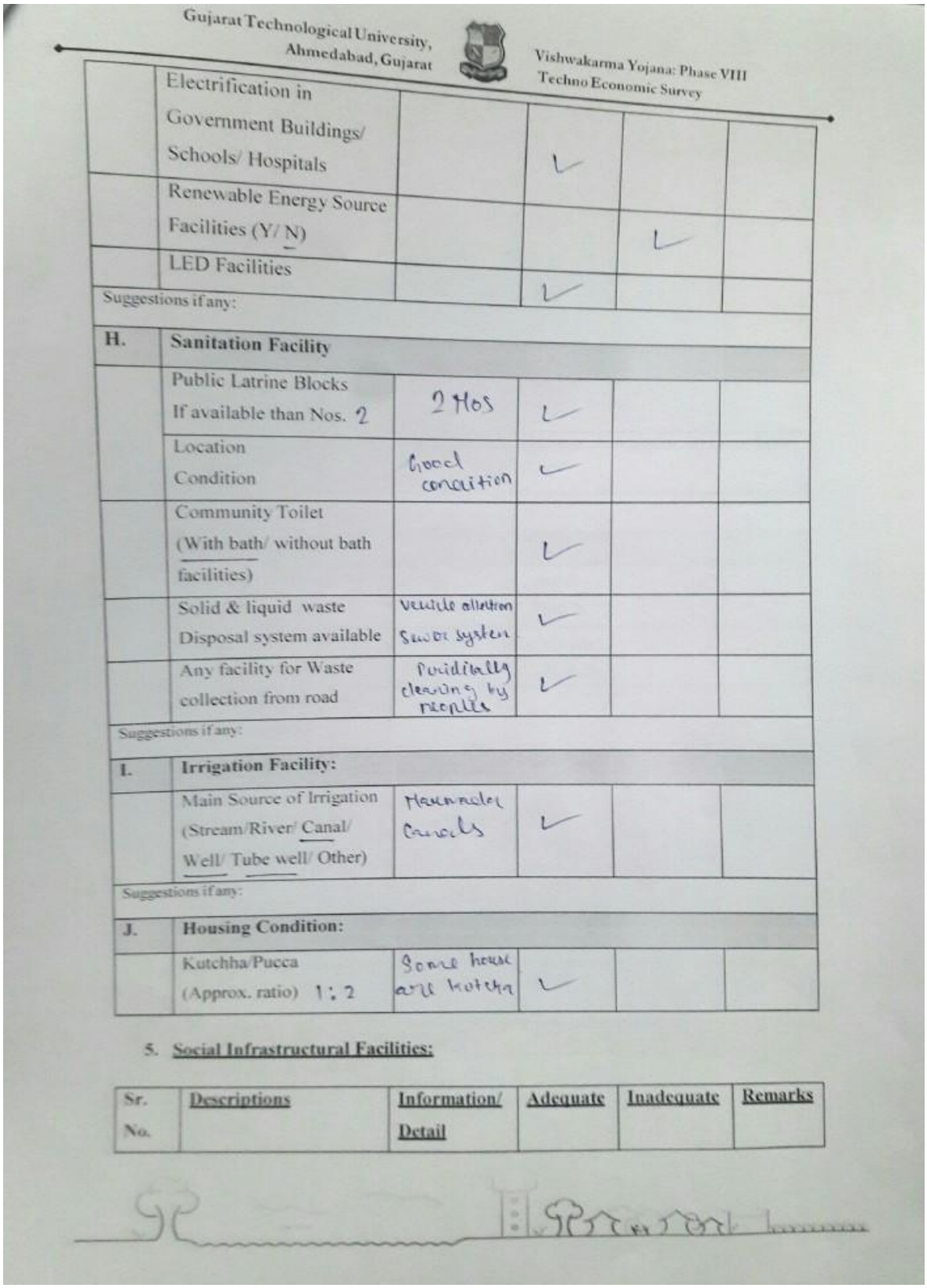
E.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	Cement road	✓		
	Main road	Bitumen road	✓		
	Internal streets	Black roads	✓		
	Nearest Botad - Barwala NH/SH/MDR/ODR Dist. in kms. 01km	Passes through Village	✓		
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) Yes (If No than Nearest Rly Station---Kms)	Botad Rail station at 15 kms		✓	
	Bus station (Y/N) Yes Condition: New (If No than Nearest Bus Station---Kms)	Salangpur Bustand	✓		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto-when Van, Jeeps Chakada	✓		
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	GETCO power supply			
	Power supply for Domestic Use		✓		
	Power supply for Agricultural Use		✓		
	Power supply for Commercial Use		✓		
	Road/ Street Lights		✓		



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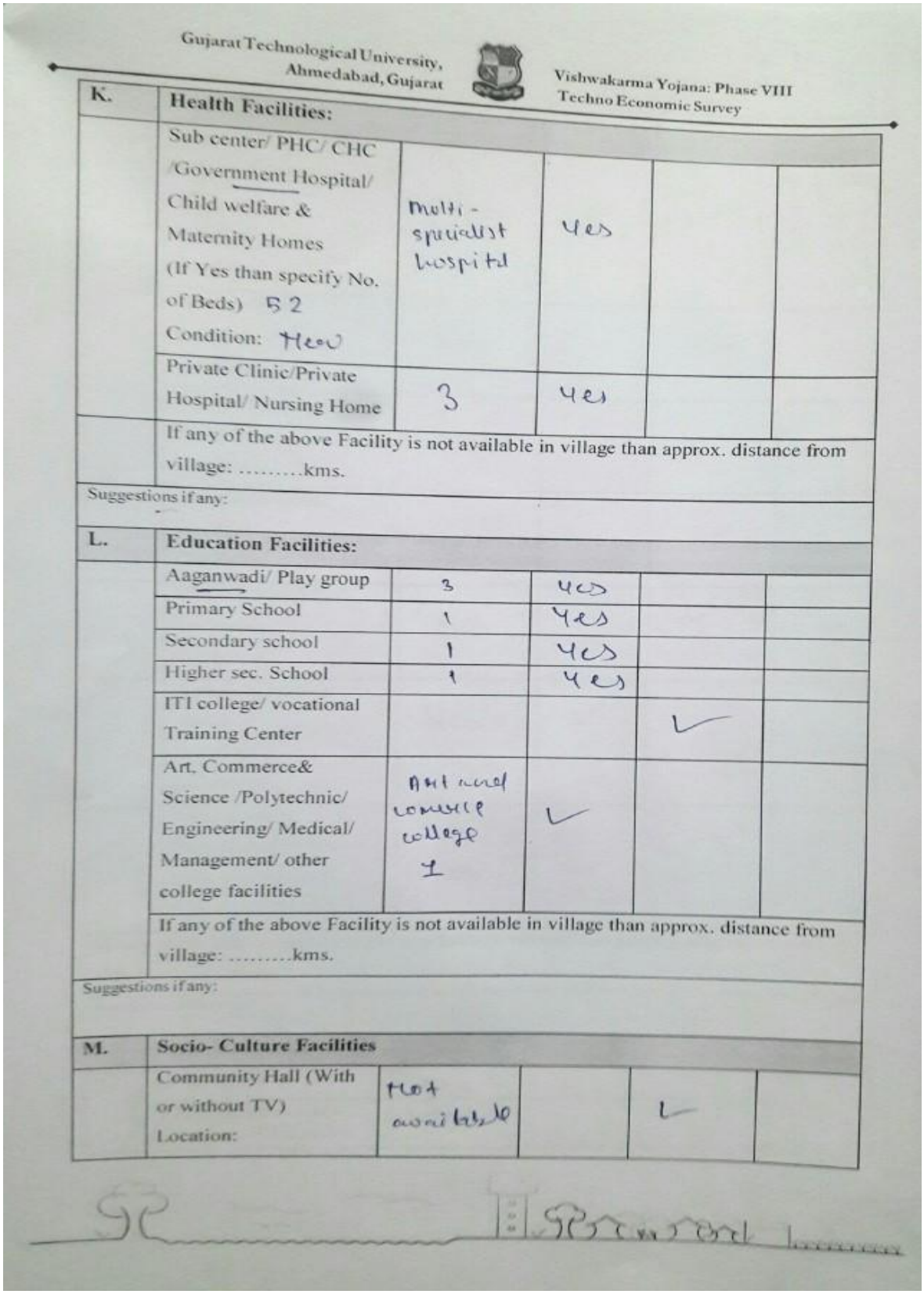
	Electrification in Government Buildings/ Schools/ Hospitals		✓		
	Renewable Energy Source Facilities (Y/ N)			✓	
	LED Facilities		✓		
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos. 2	2 Nos	✓		
	Location Condition	Good condition	✓		
	Community Toilet (With bath/ without bath facilities)		✓		
	Solid & liquid waste Disposal system available	Vehicle collection Sewer system	✓		
	Any facility for Waste collection from road	Periodically cleaning by people	✓		
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Narmada Canals	✓		
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio) 1:2	Some house are kutcha	✓		

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks



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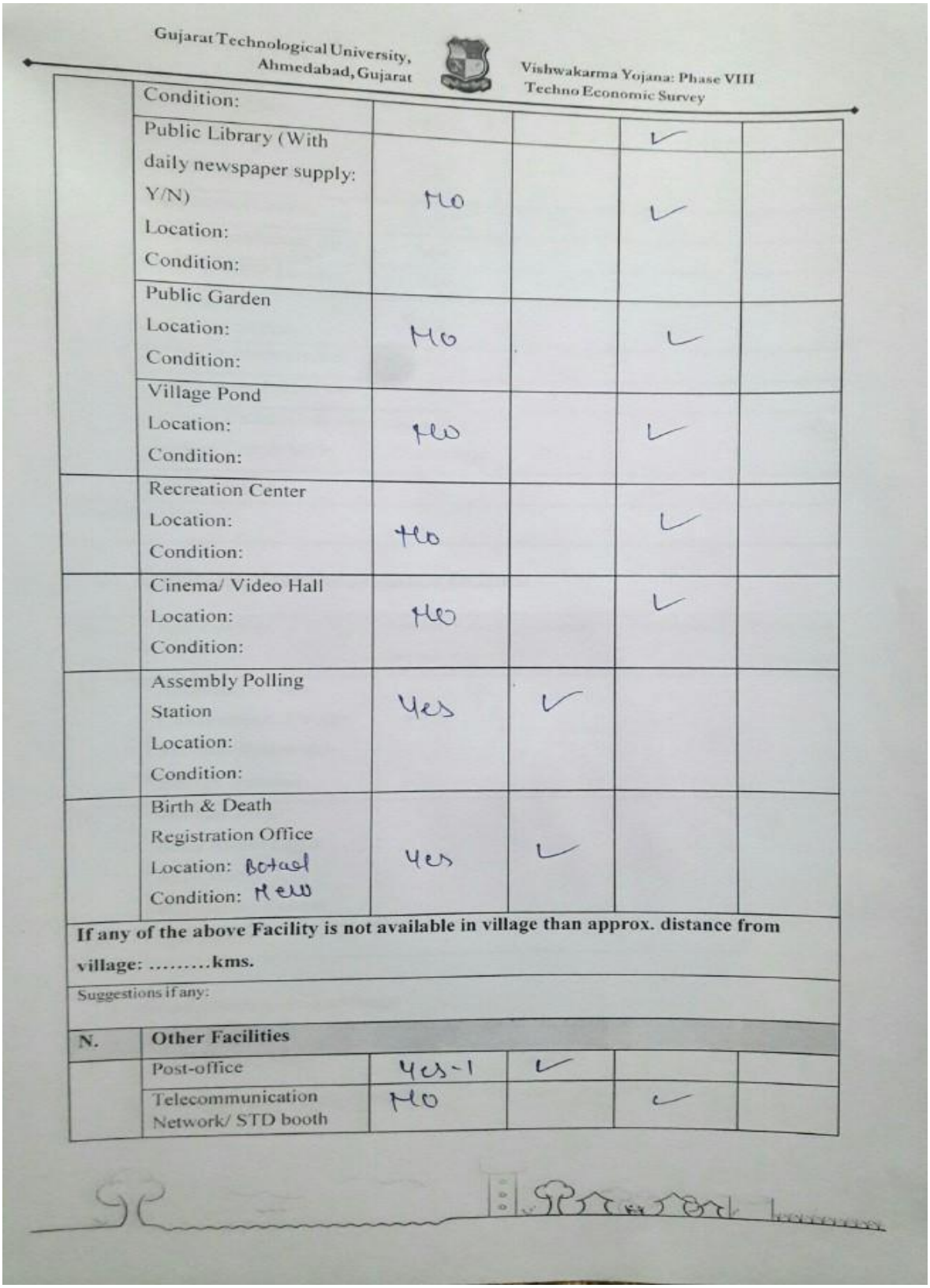
K.	Health Facilities:				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) 52 Condition: Good	Multi-specialist hospital	Yes		
	Private Clinic/Private Hospital/ Nursing Home	3	Yes		
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any: -					

L.	Education Facilities:				
	Aaganwadi/ Play group	3	Yes		
	Primary School	1	Yes		
	Secondary school	1	Yes		
	Higher sec. School	1	Yes		
	ITI college/ vocational Training Center			✓	
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	Art and commerce college 1	✓		
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					

M.	Socio- Culture Facilities				
	Community Hall (With or without TV) Location:	Not available		✓	



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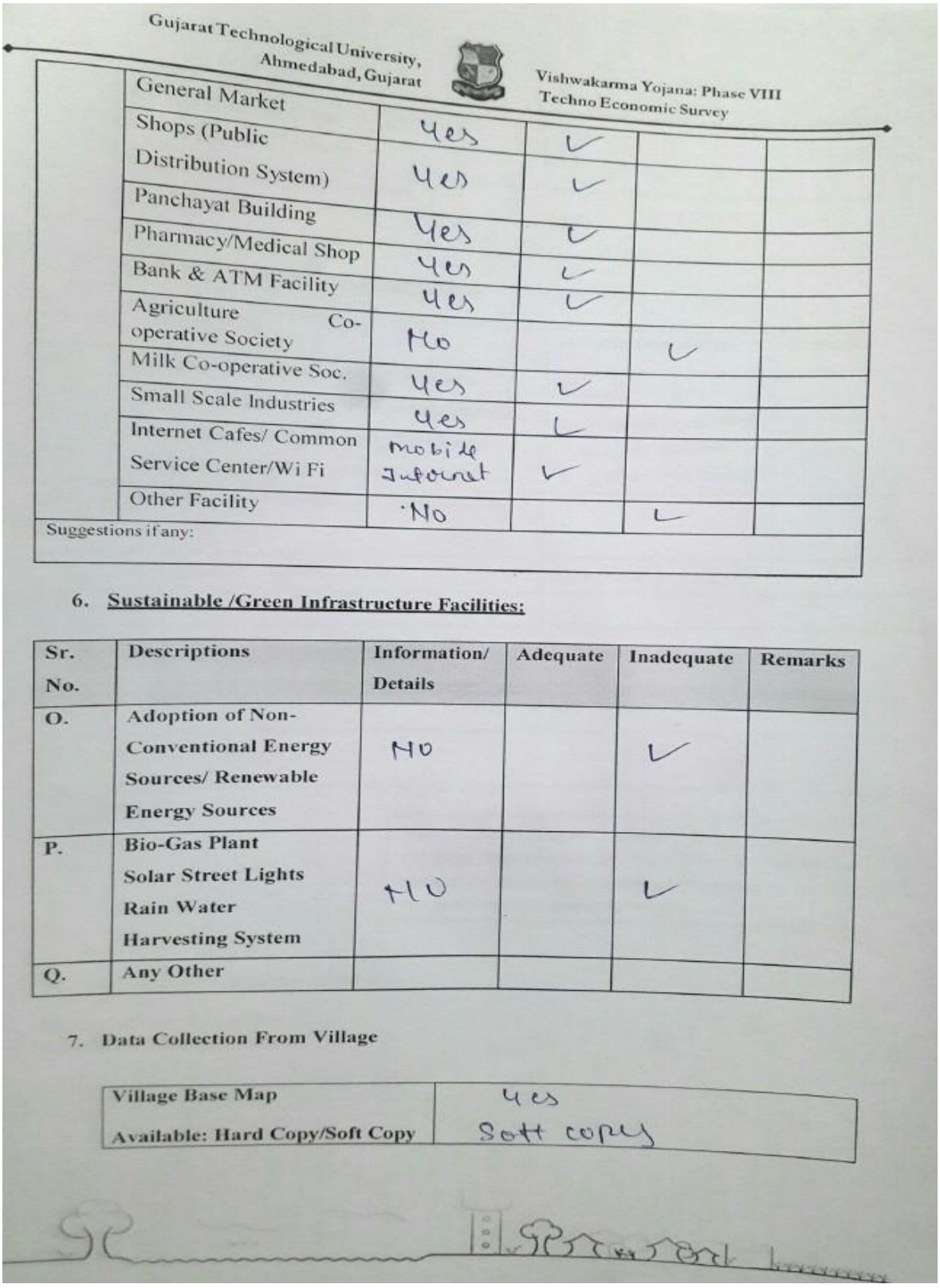
	Condition:			✓	
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	No		✓	
	Public Garden Location: Condition:	No		✓	
	Village Pond Location: Condition:	No		✓	
	Recreation Center Location: Condition:	No		✓	
	Cinema/ Video Hall Location: Condition:	No		✓	
	Assembly Polling Station Location: Condition:	Yes	✓		
	Birth & Death Registration Office Location: Botad Condition: New	Yes	✓		
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-1	✓		
	Telecommunication Network/ STD booth	No		✓	



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Techno Economic Survey

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

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

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

7. **Data Collection From Village**

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

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Vishwakarma Yojana: Phase VI
Techno Economic Survey

Recent Projects going on for Development of Village	NO
Any NGO working for village development	No NGO's.

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)	Repairs for building and sewer system at village	
2.	Additional Information/ Requirement		
3	west collection	in river	

9. **Smart Village Proposal Design**

Sr. No.	Descriptions	Information/ Detail	Remarks
1.		NO	

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

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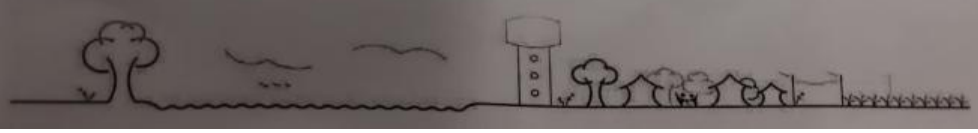


12.4 Gap Analysis of the Allocated Village:

VILLAGE GAP Analysis					
Village Facilities	Planning Commission/UDPFI Norms	Village Name:	Turkha		
		Population:	5889		
		Existing	Required as per Norms	Smart Vilage /Cities / Heritage Future Projection Design	Gap
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	1	1	0	0
Primary School	Each Per 2500 population	1	1	0	0
Secondary School	Per 7,500 population	1	1	0	0
Higher Secondary School	Per 15,000 Population	0	1	0	-1
College	Per 125,000 Population	0	1	0	-1
Tech. Training Institute	Per 100000 Population	0	1	0	-1
Agriculture Research Centre	Per 100000 Population	0	1	0	-1
Skill Development Center	Per 100000 Population	0	0	0	0
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	1	1	0	0
Primary Health & Child Health Center	Per 20,000 population	1	1	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 (iftoilet is not there in home, specially for slum pockets & kutcha house)	0	1	1	0
Physical Infrastructure Facilities					
Transportation		Adequate			
Pucca Village Approach Road	Each village	Yes	1	0	1
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	Yes	1	0	1
Drinking Water (Minimum 70 lpcd)		Adequate	0	0	0
Over Head Tank	1/3 of Total Demand	No	1	1	0
U/G Sump	2/3 of Total Demand	Yes	0	0	0
Drainage Network - Open		Adequate	0	0	0
Drainage Network - Cover		Yes	1	0	1
Waste Management System		Inadequate	1	1	0
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	0	1	1	0
community hall and Public Library	Per 15000 Population	0	1	1	0
Cremation Ground	Per 20,000 population	0	1	1	0
Post Office	Per 10,000 population	0	0	0	0
Gram Panchayat Building	Each individual/group panchayat	0	1	1	0
APMC	Per 100000 Population	0	0	0	0
Fire Station	Per 100000 Population	0	0	0	0
Public Garden	Per village	0	1	1	0
Police post	Per 40,000Population	0	0	0	0
Shopping Mall					
Electrical Design					
Electricity Network		Inadequate			1
Any Smart Village Facility					
Technology					
Solar street light		12	0	0	18 nos
Biogas plant		0	1	1	0
Wi-Fi service		0	0	0	0
Vehicle for waste collection		0	1	0	-1
		ESR cap	0		
		Sump cap	0		
		Lat	0		

12.5 Summary Details of All the Villages Designs in Table form as Part-I and Part-II

Village name:- Turkha Village		
Sr No.	Designs Part-I	Designs Part-II
1	Panchayat office	Road network
2	Community hall	Biogas plant
3	Public toilet	Rain water harvesting system
4	Cemetery	Eco sanitation
5	Garden	Chabutro
6	Bus stand	Library

12.6 Summary of Good Photographs in Table Format (village visits, Ideal, Smart Village or any other)

Smart village: -Moviya village

Figure 12.1: Gram panchayat office

Figure 12.2: ATM & bank

Figure 12.3: School

Figure 12.4:Community Hall

Figure 12.5: Anganwadi

Figure 12.6: Girls school

Figure 12.7: Health center

Figure 12.8: Entrance

Figure 12.9: Hearse vehicle

Figure 12.10: CCTV

Figure 12.11: House in village

Figure 12.12: Hospital

Ideal village:- Salangpur village

Figure 12.13: Temple

Figure 12.14: Streets

Figure 12.15: Dairy

Figure 12.16: Forest area

Allotted village:- Turkha village

Figure 12.17: Animal hospital

Figure 12.18: Solar light

Figure 12.19: Health center

Figure 12.20: Animal water drinking

12.7 Village Interaction with Sarpanch& Report with the photograph:

We present our work under VishwakarmaYojana VIII. We explain various topic about Vishwakarmayojana VII and also explain about various smart villages in India, Gujarat, and deficiencies as compared to them in our village Turkha. We also surveyed the villages and collect all the necessary data to compare our village with ideal village Salangpur. We provided all the facilities which had been help full in development by all Sarpanch.

Figure 12.21: Interaction with Sarpanch of Turkha village

12.8 Sarpanch Letter giving information about the village development:

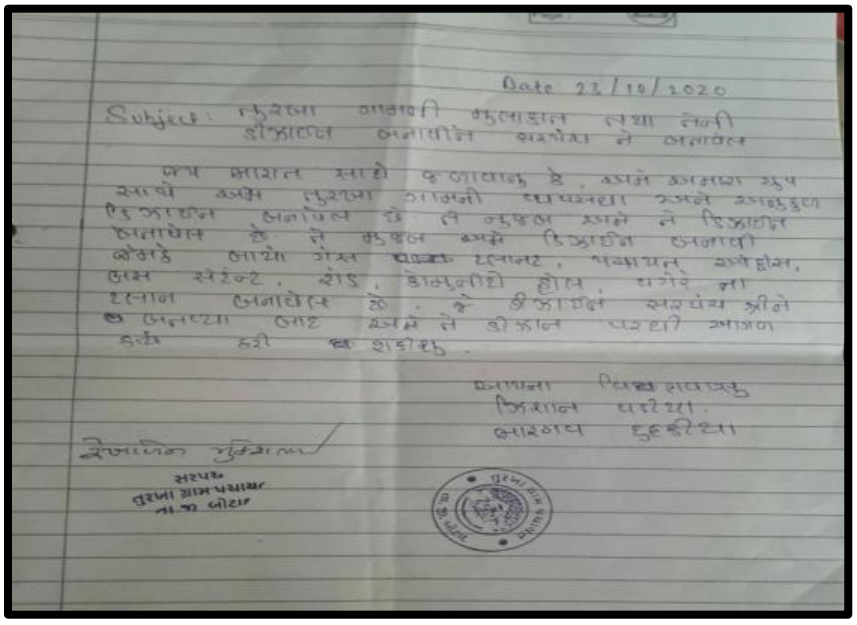


Figure 12.22: Sarpanch letter giving information about development

Chapter 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 Auto CAD designs

13.1 Design Proposals:

The main aim of this project is to provide development of various facilities which are needed in village in order to avoid migration of people who are willing to shift in other places for the purpose of jobs, education, better lifestyle and business development. So, in this semester we will provide various designs as shown below

13.1.1 Civil Design 1: Overhead Tank

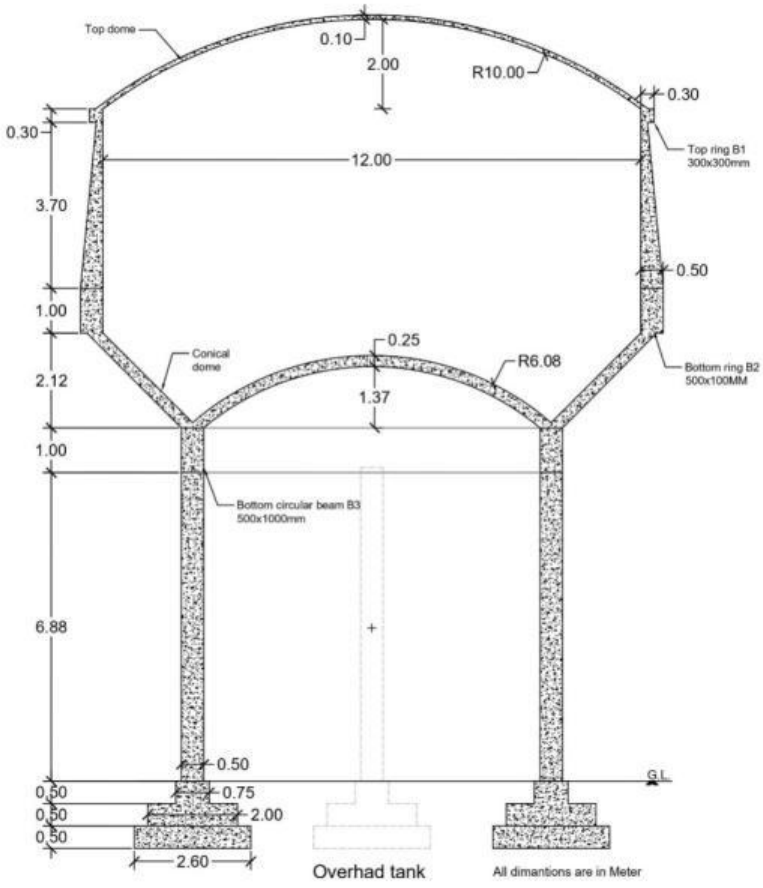


Figure 13.1: Overhead Tank

Design of overhead tank for Turkha village

Data:

- Population of Turkha
- village = 5,889 ≈ 6,000
- Requirement of water per person = 100 liters with fire.
- Overall water requires in Turkha village 6000 × 100 =600,000 liters.
- Height of staging =16m
- Wind load = 1.5 KN/m²
- S.B.C. of soil = 200 KN/m²
- Grade of concretes = μ 30
- Grade of steel = fe 415

❖ **DIMENSIONS**

- Diameter of cylindrical portion D =12m
- Diameter of lower ring D0 = 8m
- Rise of top dome = h1 =2m.
- Rise of bottom dome = h2 = 1.5 m.
- Height of conical dome = h3 = 2 m.

As per (IS: 3310, part-2, 2009)
σct= 1.5 N/m²
σcbt= 2.0 N/m²
σrt= 130 N/m²
σ cc = 8 N/m² IS: 3370, part-2, table
6 cbc = 10 N/m²

❖ **FOR THE DOME:**

$(2 R_1 - 2) \times 2 = 6 \times 6$
∴ R = 10 m
Sinθ 1= 6/10 = 0.60
θ1 = 36.86°

❖ **FOR BOTTOM DOME:**

(2 R2 = 1.5) × 1.5 = 4 × 4 R2 =6.08 m
Sinθ 2= 4/6.08 = 0.657
θ2 = 41.07°

❖ CAPACITY OF TANK:

$[\pi/4 \times D^2 \times h] + \pi/12 \times h0\ [D^2 + D0 + D \times Do] - \pi \times h2^2\ [3R2 - h2]$
∴ 6,00,000 liters= 600m³.
∴ $600 = x/4 \times 12^2 \times h + \pi/12 \times 2 \times (122 + 82 + 12 \times 8) - \pi/3 \times 1.5^2 \times (3 \times 6.08 - 1.5)$
∴ $600 = 113.09\ h + 159.17 - 39.44$
∴ $h = 4.24m \approx 5.0m$

❖ DESIGN OF TOP DOME:

R1 =10m,θ1 = 36.86°
Cosθ 1 =0.8

∴ Assume 100m thick slab of dome
Self-weight of dome =0.1 × 25=2.5 KN/m2
Live load total = 1.5 KN/m2
= 4.0 KN/m2

Meridional force =WR1 / 1+cosθ
T1 =4×10/1+0.8 = 22.22 KN/m

∴ Meridional stress = 22.22×10³/2200×1000 = 0.222 N/m²< 5 N/m² ∴ safe
Hoop force = WR1 [cosθ-1 / 1+ cosθ]

∴ Permissible stress in concrete in direct compression for u 30 concrete = 8 N/m²

T2 = 4×10 [0.8 - 1 / 1 +0.8]
∴ Hoop stress = 9.78×10³/100×1000 = 0.0987× N/m² < 8 N/m² - safe
Provide nominal reinforcement @ 0.24%
∴ Ast= 0.24/1000 × 1000 ×100 = 24 mm²
∴ Provide 5 and @ 200 mm c/c (25 mm²)

❖ TOP RING BEAM B1 :

D =12m
Meridional thrust per length of beam at lose
T1 = 22.22 KN/m

Horizontal component
= T1 cosθ 1
= 22.22 cosθ 1
= 22.22 × 0.8
W = 17.77 KN/m

Total hoop tension in ring beam
= WD/2 = 17.77×12/2 = 106.63 KN

∴ Steel required tension for hoop tension,
PermeStress in steel = 130N/m² (table-3.3)
= 106.62 × 10³ / 130
∴ Ast = 820 mm²
∴ Provide s bass of 12 mØ (ast- 904 mm²)
∴ Width of beam= 300 mm

Transformed area of section,

M = modular ratio = 9.33
At = Ac + m Ast = (Ag – Ast) + mAst = Ag+ (N-1) Ast
IS: 456-2000, Page: 80

A_t = Ag +(m-1) Ast=bD+(m-1) Ast=300 D +9.33×904
= 300D + 8434.22m²

∴ tensile stress in concrete ≤ 1.5 N/m²
106.62 ×10³ / 300D + 8434.32 ≤ 1.5

106.62×10³≤450D+12651.48
208.82≤D
∴ Provide D =300m
∴ Size of ring beam is 300 ×300m

Provide minimum shear reinforcement
Use 8mØ - 2 lagged stirrups
Ast= 2×π/4 ×8²=100m²
Ast= 0.87 × fy × Ast/ 0.46
= 0.87×415×100 / 0.4×300= 300m

∴ Provide 5mØ - 2-legged vertical straggle @ 225m C/C

❖ CYLINDRICAL WALL:

Maximum hoop tension at base of wall due to water pressure
T= γw.h.D/2 = 10×h×12/2 = 60h KN/m
Ast= T/130 = 60×h×10³ / 130 = 461.54hmm²

Depth from (h) m	**Area required Ast m² (461.54 h)**	**Area on each 1080 mm² (230.26 h)**	**Reinforcement provided on both sides (Horizontal)**
1	461.54	230.76	8 Ø @ 210 mm c/c (Ast = 239mm²)
2	983	461.54	10 Ø @ 170 mm c/c (Ast= 462 mm²)
3	1384.62	692.31	10 Ø @ 110 mm c/c (Ast = 714 mm²)
4	1846.76	983	12 Ø @ 120 mm c/c (Ast = 942 mm²)
5	2322.7	1162.35	16 Ø @ 170 mm c/c (Ast = 1183 mm²)

Table 13.1: Reinforcement details

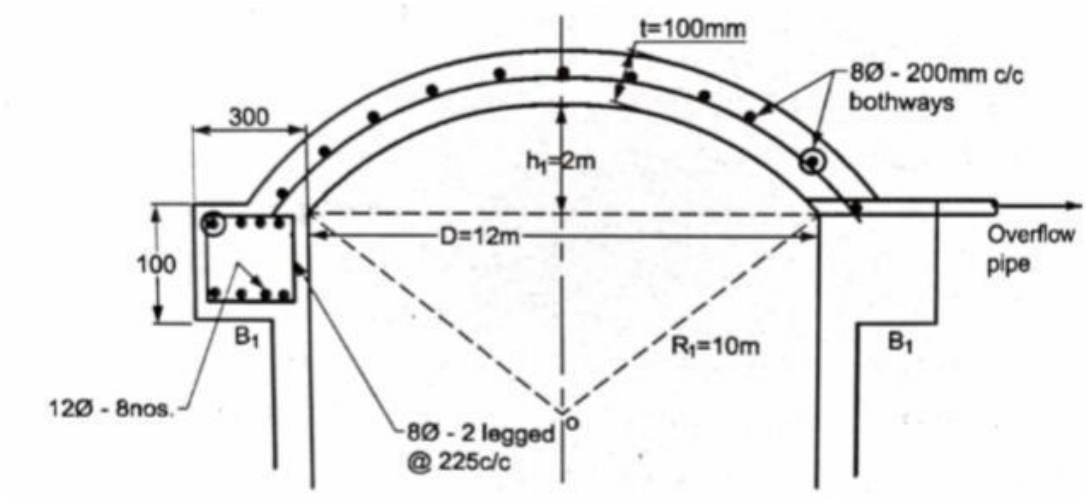


Figure 13.2: Top dome and ring beam reinforcement

Permissible stress in steel in tension = 130bN/m² (from table 3.3)
Maximum hoop tension of base, h=5mm

b = 1m = 1000mm
T = 60 × 5 = 300 KN.
AT = Ag + (M-1) Ast=1000t+9.33×(2×1183)=1000t+22074.78
σct=7.5 N/m²
∴(300×10³/1000t + 22074.78)≤ 1.5
∴ Provide t=250m thick wall at base and reduce it to 200mm at top
∴ Average thickness = 250+200/2=225m
Minimum reinforcement Pt =0.24%
∴ Ast= 0.24/100×1000×225=540mm²(for two focus)
∴ Area on each force=540/2 =270mm²
∴ Provide 8Ø=190mm c/c (265mm²) on each force

❖ **BOTTOM RING BEAM B2 :**

- Assume size of beam = 1000 × 500m
- Load due to top ring beam=22.22×0.6 = 13.33KN……1
- Load due to top ring beam=0.3×0.3×25 = 225KN/m……2
- Load due to cylindrical wall=0.225×4.2×25 = 23.625KN/m….3
- Height of wall=5-0.3(B1) - 0.5(B2) = 4.2m
- Load due to bottom ring beam= 1×0.5×25 = 12.5KN/m

TOTAL(W1) = 51.70KN/m……4

H1 = tan B =51.70×10= 51.70 KN/m
H2 = Horizontal water force per meter length of beam
= Vw×h×d =10×(5-0.25)×0.5=23.75KN/m

H = H1+ H2= 51.70 + 23.75 = 75.45 KN/m

Hoop tension = H.D/2 = 75.45×12/3= 452.75KN
∴Ast= (4527×10³)/70= 3480.30mm²

Provide 20Ø-12nos (Ast=3768mm²)
AT= Ag +(m-1)Ast= 1000×509+8.33×3769= 531396mm²
∴ σct= 452.7×10³/831396= 0.85 N/m² < 1.5 N/m²

Provide nominal stirrups 8mØ-4leggal
∴ Aso= 4×π/4×8²=200mm²
St = (0.87 × Ag × Ast) / 0.46 = (0.87 × 415 × 200) / 0.4× 1000 = 180.52mm
∴ Provide 8mØ - 4legged @ 180mm c/c.

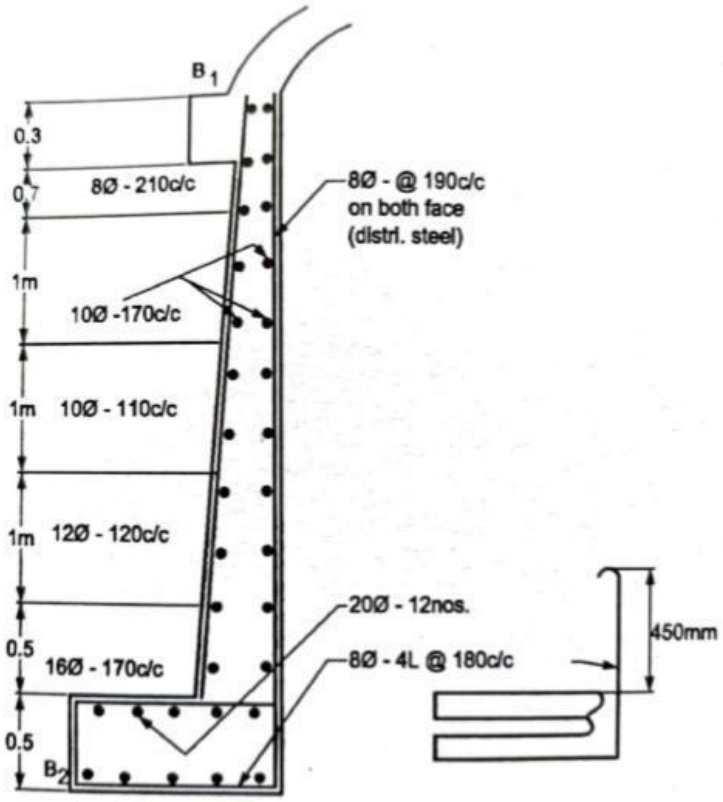


Figure 13.3: Reinforcement details for side wall and bottom ring beam

❖ CONICAL DOME

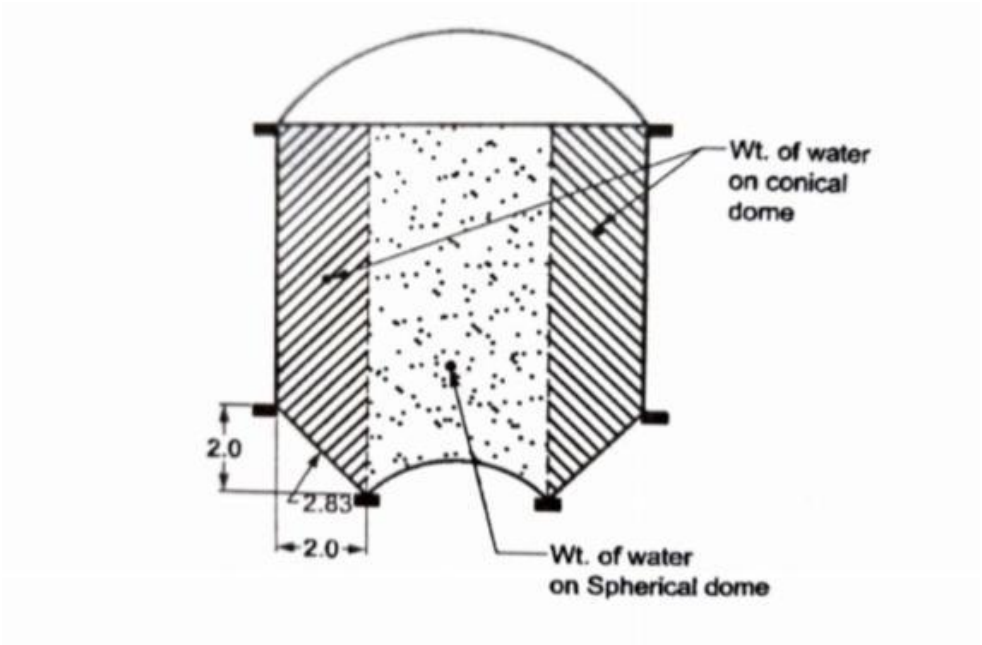


Figure 13.4: Conical dome

Average diameter of conical dome = (12+8)/2=10m
Average depth of water = (5+7) = 6m
Assume thickness of slab= 500m

Weight of water above conical dome.
= (π×10×6×2)×10=3770 KN
Width of slab = √ (2² +2²) = 2.83 m
∴ Width of slab =(π×10)×2.83×0.5×25=1112 KN
Weight from top dome cylindrical wall=(πD) w1=(π×12)×51.70=1949KN
Total load = 3772+1112+1949 = 6831 KN

∴ Load per meterlength (W2) at the base of conical dome slab.
W2 = 6831 / (π×8)= 272 KN/m
Cosß= W2/T3
T3 = 273/Cos45° =385KN
Meridional stress = 385×10³ / 1000×500 = 0.77 N/m²<σcc = 8N/m²…… Safe

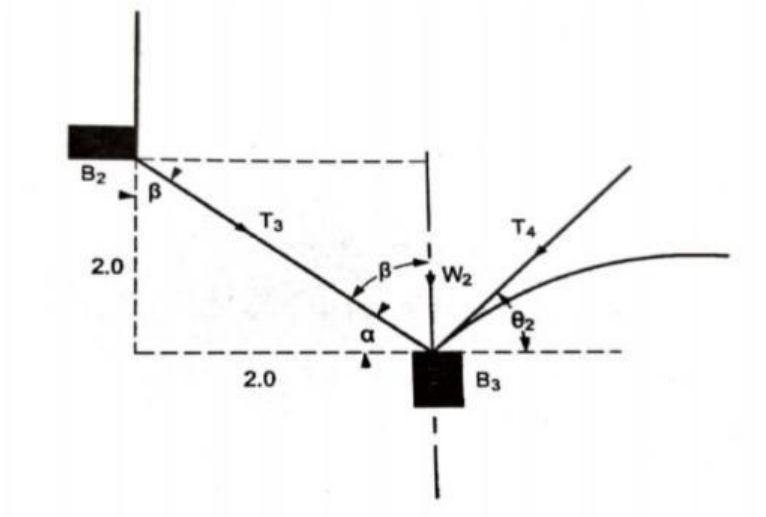


Figure 13.5: Meridional stress

❖ HOOP TENSION

θ =45°
P = water pressure = Vw × height of water KN/m²
Q =self-weight of slab = 0.50 × 25= 12.5KN/m²
Hoop tension = HT= (P –cosecθ+Qcotθ) D/2
∴ HT = (10×5) cosec45°+72.5cot45 ×12/2 = 499.25 KN
At bottom h =5+1=6m, D=10m
∴ HT = (10×7) cosec45°+(12.5cot45°)×8/2 = 446KN
∴ Maximum hoop tension at top = 499.26 KN

∴ Ast= (499.26×10³) / 130 =3840.46 mm²
∴ Ast on each face = 3840.46 / 2 = 1920.23 mm²
∴ Provide 16Ø=100mm c/c on each face
Ast= 0.24/100 ×500×1000= 1200mm²
∴ Area on each face =600mm²
∴ Provide 10Ø=@120mm c/c (Ast= 654mm²)
AT=(500×1000)+(9.33-1)×2×654=510895.64mm⁴
∴ σct= (499.26×10³) / 510895.64.= 0.977 N/m² ≤ 1.5 N/m² …OK

❖ BOTTOM SPHERICAL DOME

R2 = 6.08m
θ1 = 41.07°
Assume 250 mm thick slab
Self-weight of dome slab
=(2πR2)×h×t× intensity =2π×6.08×1.5×0.25×25=358.14KN

Volume of water above dome
$=\pi/4 \times 8^2\times(5\times2.0) =[(2\pi-6.08^2\times1.5)/3 -\pi/4\times8^2\times (6.8-1.5)/3]$
$=351.85-[116.13-76.73]=312.45mm^3$
∴ Wt of water above dome $=312.45\times10= 3724.5KN$
∴ Total load =385.74+3124.5
W =3482.64KN
Meridional thrust,
$T4 = W/(\pi.D.\sin\theta) = 3482.64 / (\pi\times8\sin41.07) =210.9KN/m^2$

∴ Meridional stress $= (210.92\times10^3)/1000\times250= 0.84N/m^2\leq6c=8N/m^2$ …SAFE
∴ Provide minimum reinforcement
$Ast= (0.24/100)\times1000\times290 = 600mm^2$
Provide 10mm diameter =@130mmc/c ($604mm^2$)
Self-weight of dome= $0.15\times25=6.25KN/m^2$
Weightof water above dome $=(572-1.5)\times10 =55KN/m^2$
Total =61.25KN/m

$T4 = WR/ (1+\cos\theta)=61.25\times6.08/ (1+\cos41.07°)$
$= (61.25\times6\ 08)/ (1+1+0.7) =212.30$ KN/m

❖ BOTTOM CIRCULAR BEAM B3

θ =45°
θ2 =41.07°
Inward thrust from conical dome.
$= T5\cos\theta$
$=385\cos45° =372.24$ KN/m

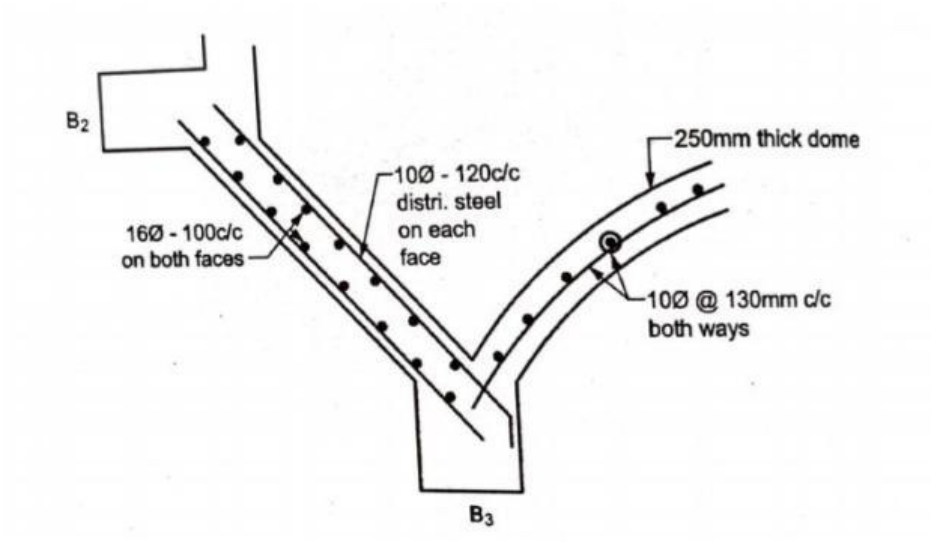


Figure 13.6: Reinforcement detail for conical dome and bottom spherical cone

Outward thrust from spherical down.
$=T4\cos\theta2$
$=210.92\cos41.07°$

=159KN/m
∴ Net inward thrust =272.24 – 159 =113.24KN/m
Hoop compression on beam= (113.24×8)/2 = 452.46KN
Assume size of beam=500×1000mm
∴ Hoop stress = 452.96×10³/500×1000=0.905 KN/m³<8N/m²
Vertical load on beam
= T3 sinθ+T4 sinθ2 =385sin45°+210.92sin41.07°=410.80 KN/m
Self-weightof beam =0.3 × 1.0 × 25 =12.5KN/m

❖ WIND FORCES ON COLUMN

Intensity of wind pressure =1.5KN/m²
Reduction coefficientfor circular shapes =0.7

Sr no	Description	Force KN	Distance from base (m)	Moment @ Base KN.m
1	Top dome 12.3 × 2.1 × ½ × 0.7 × 15	13.56	Assume θ base 1 m Below G.L. 25.0	325.44
2	Cylindrical wall 12.3 × 5 × 0.7 × 1.5	64.50	21.5	13870
3	Conical dome 12.3 + 8/2 × 2 × 0.7 × 18	21.32	78.0	383.76
4	Beam B3 (1×5) × 0.7 × 15	8.4	17.0	142.8
5	Column (SNOR) 5 × (0.5 < 16) × 0.7 ×15	42	9	378
6	Bracings 3 × (0.4 ×8) × 7.5	14.4	9	129.6
		Total Σhw =164.18 KN		ΣMW = 2746.64 KN.m

Table 13.2: Wind forces

∴ Shear per column= 1621.18/8= 20.52 KN
∴ ΣNwr/Σr²
Σr²=2 × 4² × 4 × 2.832=64mm²
Maximum compressionin further column on lowered side
ΣMwr/Σr² = (27466x4)/64= 17.66 KN

Maximum tension in further col. in vindaged side =171.66 KN

Horizontal shear=(c/c breaching) / 2 = 20.52 × 4.0/2=41. 04KN.m
Pu = 1.5 × 1450 = 2175 KN
e min = P/500 + D/30 = [(4000 - 1100)/500 + 500/30] = 23.86 mm

0.05D = 0.05 × 500 = 25 mm > min
Pn = 0.4 × fck × Ac + 0.67 × fy × Asc
2175 × 10^3 = 0.4 × 20 (π/4 × 500^2 × Asc) + 0.67 × 415 × Asc

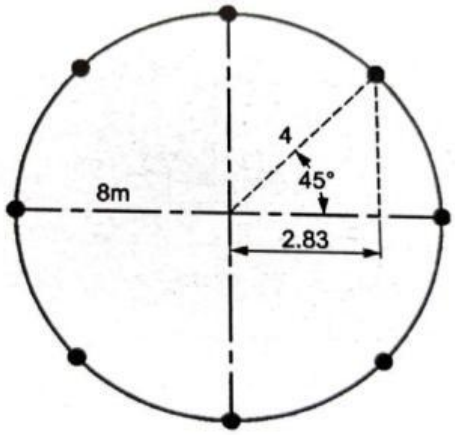


Figure 13.7: Reinforcement details

604203.7 = 270.05 Asc
Mini = 0.8 % [(0.8/100) ×(π/4) ×500^2] = 1571 mm^2
Asc = 2237.37 mm^2
Provide 8 more 20 mm diameter (2513 mm^2)

❖ LATERAL TIES

(IS: 456, page – 49)
Minimum diameter = 20/4 = 5 mm
6 mm ∴ use 6 mm diameter ties

❖ PITCH

16 × 20 = 320
500 mm
300 mm
∴ provide pitch = 300 mm c/c
Use 8 diameter ties 300 mm c/c

❖ WIND BRACINGS

Use size of bracing 400 × 400 mm
Maximum moment in col. = 41.04 KN.m
Maximum moment in brace. Yz occurs when blows to 1 to brace xy, PQY is triangle of moment.
Moment in brazes in yz from upper and lower col.
= 2 × moment in col. Y × √2
= 2 × 41.04 × √2

= 116 KN.m

D = 400 – 50 = 350 mm
SP: 16, Pg - 48
$Mu/bd^2 = (17.6 \times 10^6) / (400 \times 350)^2 = 2.36$
∴ L1 = 0.781
∴ Ast = $0.781/100 \times 400 \times 350 = 1093.4\ mm^2$

Provide 4 no's – 20 diameter ($1256\ mm^2$)
Due wind reversal moment will also reverse

❖ FOUNDATION

Maximum load on foundations = 1450 × 8 = 11600 KN
Add 10 % as self-weight of fatting
= 1160 KN
= 12769 KN
S.B.C of soil = 200 KN / m^2
Area required= $12,760/200 = 68.80 m^2$

Use circular raft foundation with x mm width.
∴ Outer diameter = 8+xm
∴ Inner diameter = 8-xm
∴ Area= $\pi/4\ [(8+x)^2-(8-x)^2] = 63.80$
∴ $\pi/4\ [64+16x+x^2-(64-16x+x^2)] = 63.80$
$64+16x+x^2-64+16x-x^2 = (63.80 \times 4)/\pi$
∴ 32x= 81.23
∴ x = 2.538 m
∴ Use 2.6 m wide soft
∴ D = 8+2.6 = 10.6m
d = 8-2.6= 5.4 m
$A = \pi/4 \times (10.6^2-5.4^2) = 65.34\ m^2$
Net upward pressure= $11600/65.34 = 177.53\ KN/m^2$
Net upward factored pressure = $1.5 \times 177.53 = 266.30\ KN/m^2$
Consider slab beam type soft with 750mm wide beam to accommodate 800mm wide columns.
Clear projection= (2.6-0.75)/2 = 0.925m
$Mu = Wl^2/2 = 266.30 \times 0.925^2/2 = 113.92 KN.m$

Now, $M\mu = 2.76\ bd^2$
$M\mu = 0.138\ fck.bd^2$, μ- 20 concrete

$D = \sqrt{(M\mu/2.76\ b)}$
$\sqrt{[(113.92 \times 10^6) / (1000 \times 2.76)]} = 203.16m$
Provide D = 500mm
D = 500 – 50= 450mm
$M\mu/bd^2 = (113.92 \times 10^6)/1000 \times 450^2 = 0.56$
Pt= 0.16%,SP-16, Pg-48
$Ast = 0.16/100 \times 1000 \times 450 = 720 mm^2$

Provide 12Ø @ 150 mm c/c (754 mm²)
District steel= 0.12/100 × 1000 × 500 = 600mm²
Provide 10Ø - 130 c/c (604 mm²)

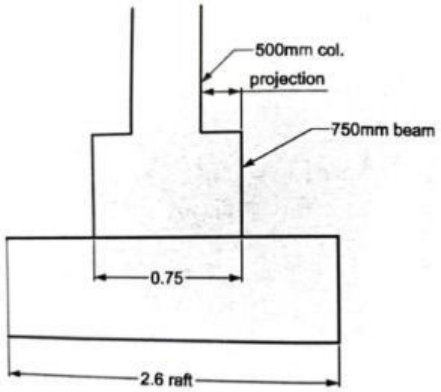


Figure 13.8: Foundation Section

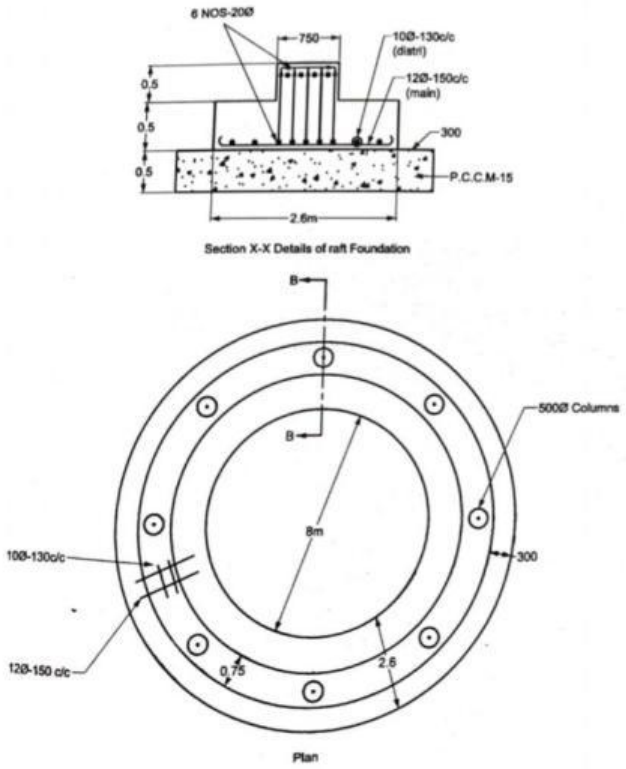


Figure 13.9: Foundation Plan

Measurement sheet						
Sr No	Item description	No	Length	Breath	Height	Quantity
1	**Excavation in foundation** $V = \pi \times 1.5 (4.65^2 - 3.35^2) = 50\ m^3$	1				**50 m^3**
2	**RCC work in foundation** **First step** $V = \pi \times 0.5 (4.65^2 - 3.35^2) = 16.33\ m^3$ **Second step** $V = \pi \times 0.5 (4.5^2 - 3.5^2) = 12.56\ m^3$ **Third step** $V = \pi \times 0.5 (4.18^2 - 3.81^2) = 4.64\ m^3$	1 1 1				16.33 m^3 12.56 m^3 4.64 m^3
					Total	**33.53 m^3**
3	**Earth filling in foundation** = Volume of excavation in foundation – Volume of RCC work in foundation $= 50 - 33.53 = 16.47\ m^3$					**16.47 m^3**
4	**RCC work above ground surface** **First layer** $V = \pi \times 7.88 (4.25^2 - 3.75^2) = 100\ m^3$ **Second layer** $V = 2.12 \times \pi / 3 \times (12.5^2 + 12.5 \times 8 + 8^2 - 12^2 - 12 \times 7.5 - 7.5^2) = 66.60\ m^3$ **Third layer** $V = \pi \times 1 (6.5^2 - 6^2) = 19.63\ m^3$ **Fourth layer** $V = [1/3 \times \pi \times 3.7 (6.5^2 + 6.15^2 + 6.5 \times 6.15)] - [\pi \times 6^2 \times 3.7] = 46.68\ m^3$ **Fifth layer** $V = \pi \times 0.3 (6.3^2 - 6^2) = 3.47\ m^3$ **Sixth layer** $V = [1/6 \times \pi \times 2.1(3 \times 6.15 \times 2.1^2)] - [1/6 \times \pi \times 2 (3 \times 6 \times 2^2)] = 14.06\ m^3$ **Seventh layer** $V = [1/6 \times \pi \times 1.62 (3 \times 4 \times 1.62^2)] - [1/6 \times \pi \times 1.37 (3 \times 3.75 \times 1.37^2)] = 11.57\ m^3$	1 1 1 1 1 1 1				100 m^3 66.60 m^3 19.63 m^3 46.68 m^3 3.47 m^3 14.06 m^3 11.57 m^3
					Total	**262.01 m^3**

Abstract sheet					
Sr no	Item description	Quantity	Rate	Per	Amount
1	Excavation in foundation	50 m^3	67.2	m^3	3360
2	RCC work in foundation	33.53 m^3	3600		120708
3	Earth filling in foundation	16.47 m^3	24		39528
4	RCC work above ground surface	262.01 m^3	3800		995638
					Rs 1159234
					Add 3 % contegenius = Rs 34777.02
					Add 2 % work charge establishment = Rs 23184.68
					~ Rs 1217195.7
					Say Rs 1220000

13.1.2 Civil Design 2: Biogas plant

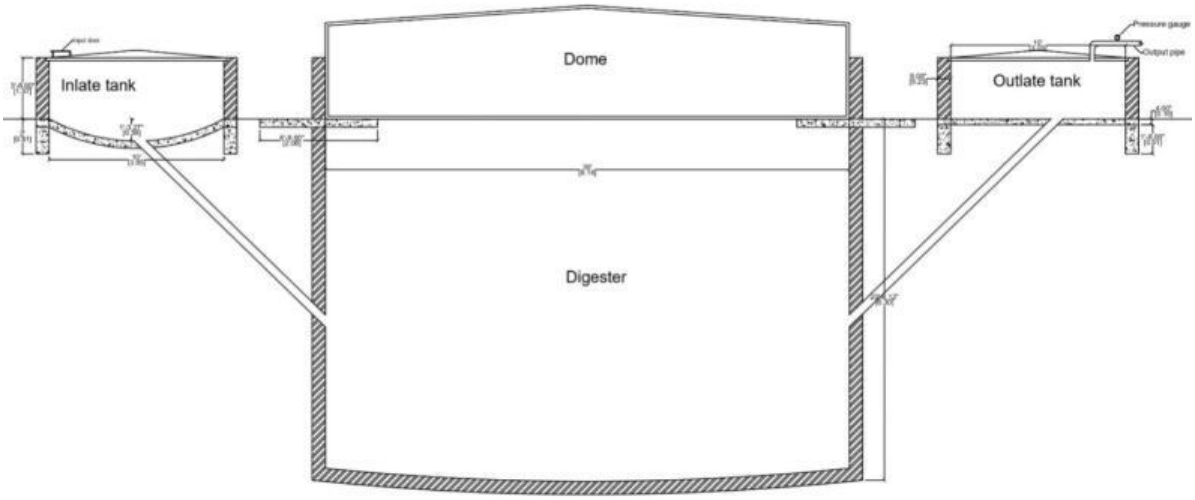


Figure 13.10: Biogas plant

Measurement sheet						
Sr no	Item description	No	Length	Breath	Height	Quantity
1	**Excavation in foundation** **Digester tank** $V = \pi \times 4.8^2 \times 6.3 = 456\ m^3$ **Inlet tank** $V = \pi \times 1.75^2 \times 0.61 = 5.86\ m^3$ **Outlet tank** $V = \pi \times 1.75^2 \times 0.61 = 5.86\ m^3$	 1 1 1				 456 m^3 5.86 m^3 5.86 m^3
					Total	**467.72 m^3**
2	**RCC work in tank** **Digester tank** $V = \pi \times 0.13\ (5.2^2 - 4.17^2) = 3.94\ m^3$	 1				 3.94 m^3

	Inlet tank side walls $V = \pi \times 0.61 (1.75^2 - 1.52^2) = 1.44\ m^3$	1				1.44 m^3
	Inlet tank bottom $V = [1/6 \times \pi \times 0.51 (3 \times 1.52 \times 0.51^2)] – [1/6 \times \pi \times 0.39 (3 \times 1.52 \times 0.39^2)] = 0.175\ m^3$	1				0.175 m^3
	Outlet tank side walls $V = \pi \times 0.61 (1.75^2 - 1.52^2) = 1.44\ m^3$	1				1.44 m^3
	Outlet tank bottom $V = \pi \times 1.52^2 \times 0.10 = 0.72\ m^3$	1				0.72 m^3
					Total	**7.71 m^3**
3	**Brick masonry work in tank** **Inlet and outlet tank** $V = \pi \times 1.07 (1.75^2 - 1.52^2) = 2.52\ m^3$	2				5.04 m^3
	Inlet and outlet tank $V = \pi \times 7.24 (4.8^2 - 4.57^2) = 50\ m^3$	1				50 m^3
					Total	**55.04 m^3**

Abstract sheet					
Sr no	Item description	Quantity	Rate	Per	Amount
1	Excavation in foundation	467.72 m^3	67.2	m^3	31430.78
2	RCC work in tank	7.71 m^3	3800		29298
3	Brick masonry work in tank	55.04 m^3	1896		104355.84
					Rs 165084.62
					Add 3 % contegenius = Rs 4952.53
					Add 2 % work charge establishment = Rs 3301.7
					~ Rs 173338.85
					Say Rs 174000

13.1.3 Civil Design 3: Road design

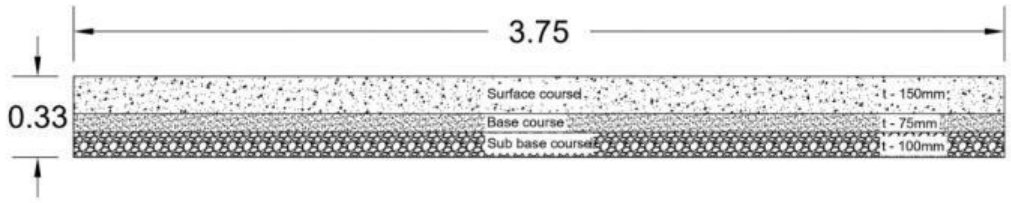


Figure 13.11: Road design

Estimate for 1 km length

Measurement sheet						
Sr No	Item description	No	Length	Breath	Height	Quantity
1	Excavation in soil by mechanical means	1	1000	3.75	0.33	**1237.5 m^3**
2	Construction of granular sub-base by providing graded Material, , carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface watering, rolling and compacting with vibratory power roller at OMC to achieve the desired density, complete as per clause 401	1	1000	3.75	0.1 m	**375 m^3**
3	(Providing and laying bituminous macadam as per clause 504 with mixed prepared in minimum 40-60 TPH capacity hot mix plant using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled to achieve the desired compaction)	1	1000	3.75	0.075 m	**281.25 m^3**
4	Providing and laying cement concrete for reinforced concrete	1	1000	3.75	0.15 m	**562.5 m^3**

	including form work, shuttering complete in as per drawings and specifications.					

Abstract sheet					
Sr no.	Item description	Quantity	Rate	Per	Amount
1	Excavation in soil by mechanical means	1237.5 m^3	101	m^3	124987.5
2	Construction of granular sub-base by providing graded Material, , carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface watering, rolling and compacting with vibratory power roller at OMC to achieve the desired density, complete as per clause 401	375 m^3	1412	m^3	529500
3	(Providing and laying bituminous macadam as per clause 504 with mixed prepared in minimum 40-60 TPH capacity hot mix plant using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled to achieve the desired compaction)	281.25 m^3	5078	m^3	1428187.5
4	Providing and laying cement concrete for reinforced concrete including form work, shuttering complete in as per drawings and specifications.	562.5 m^3	4596	m^3	2585250
					Rs 4667925 Add 5% contiguous = Rs 233396.25 Total = Rs 4901321.25 **Say Rs 4902000**

13.1.4 Civil Design 4: Waste water treatment plant

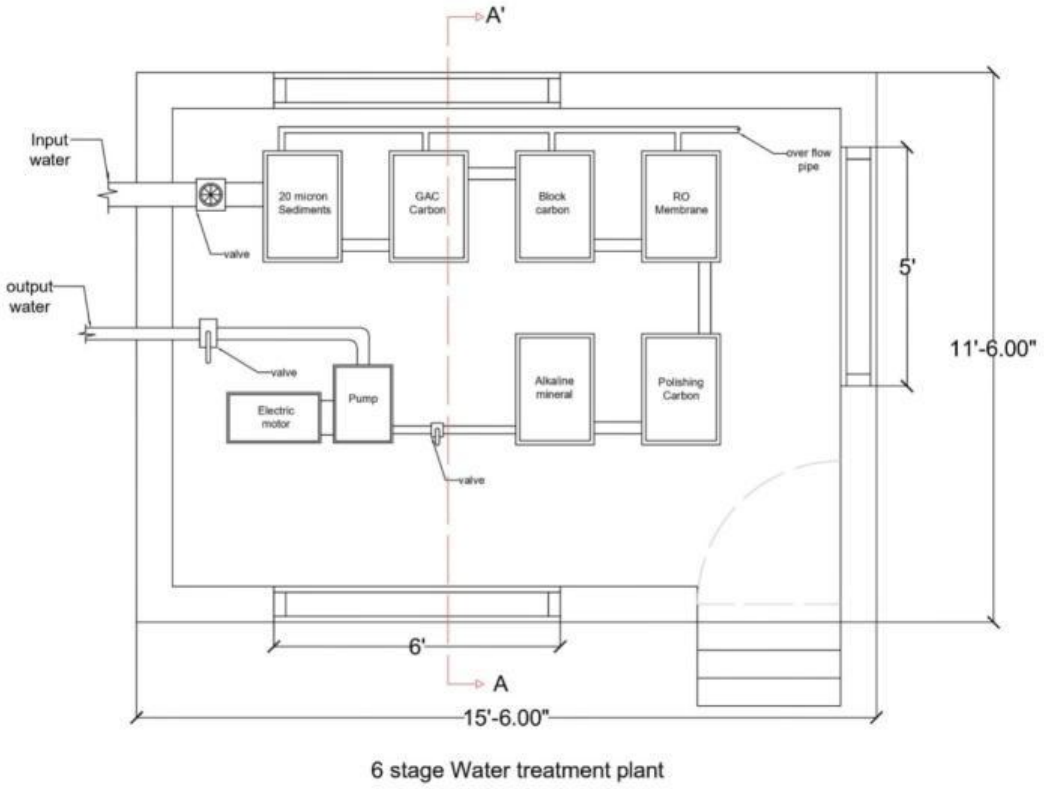


Figure 13.12: Waste water treatment plant

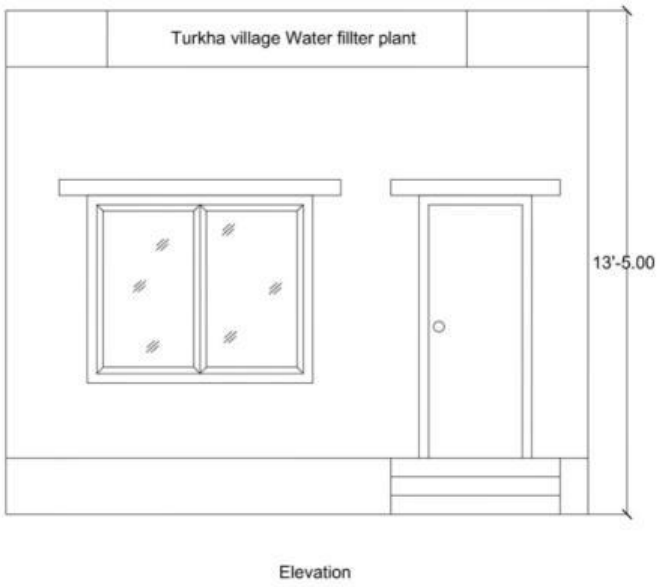


Figure 13.13: Waste water treatment plant elevation

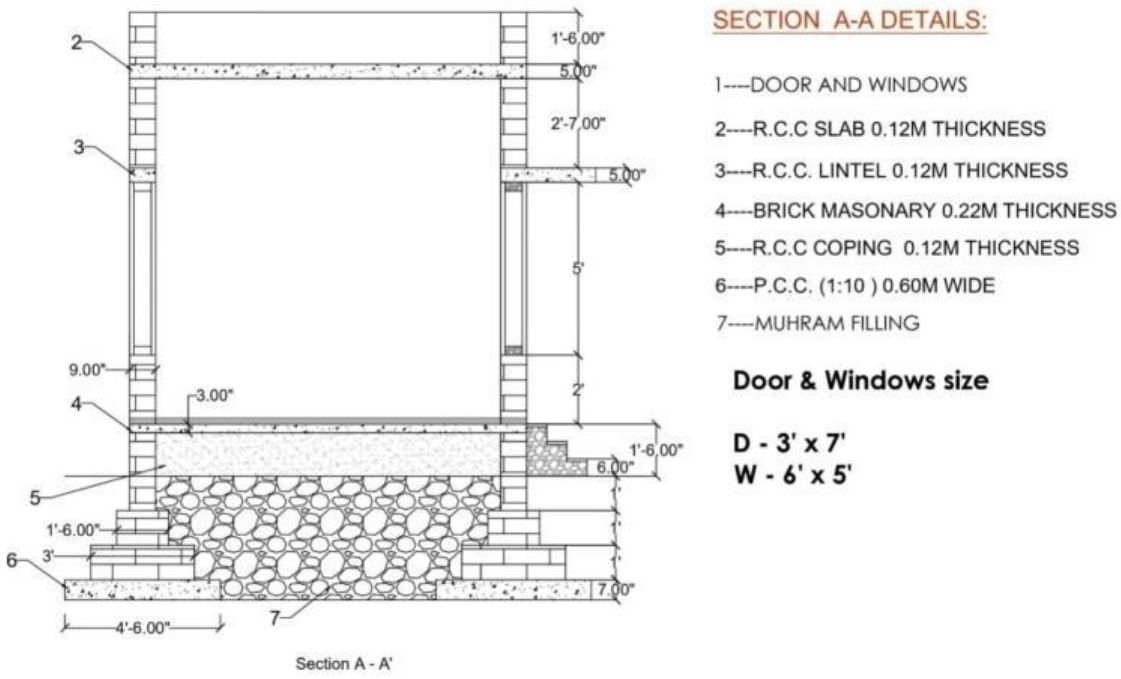


Figure 13.14: Waste water treatment plant section A-A

Stage 1: 20M Sediment Filter cartridge removes sediment, dirt, and rust from the feed water. Installed in a white housing with flat cap and ¼" FNPT connections.

Stage 2: Granular Activated Carbon (GAC) Filter Cartridge for removal of chlorine, taste and odor. Installed in a white housing with flat cap and ¼" FNPT connections.

Stage 3: Carbon Block Filter Cartridge for an additional layer of chlorine removal and 5 to 10 Micron sediment filtration. Installed in a white housing with flat cap and ¼" FNPT connections.

Stage 4: AMI® Made-in-USA Thin Film RO Membrane element to remove dissolved solids. Installed in a white membrane housing with ⅛" FNPT connections.

Stage 5: In-line GAC Filter for final polishing of taste and odor from water being delivered from the storage tank to the faucet.In-Line design with ¼" threaded female in/out connections and quick-connect fittings installed.

Stage 6: In-Line Mineral Cartridge to alkalize the water, raising pH, enhancing the flavor, and enriching water with natural minerals In-Line design with ¼" threaded female in/out connections and quick-connect fittings installed.

Measurement sheet						
Sr no	Item description l 4.5 m b 3.27	No	Length	Breath	Height	Quantity
1	**Excavation in foundation** Length = 5.86 m, breath = 4.64 m	1	5.86 m	4.64 m	1.09 m	**29.63 m³**
2	**P.C.C. work in foundation** Long walls = 5.86 m Short walls = 3.26 m	2 2	5.86 m 3.26 m	1.37 m 1.37 m	0.18 m 0.18 m	2.9 m³ 1.6 m³
					Total	**4.5 m³**
3	**Brick masonry upto plinth** **First step** Long walls = 5.41 m Short walls = 2.35 m **Second step** Long walls = 4.95 m Short walls = 2.81 m **Third step** Long walls = 4.72 m Short walls = 3.05 m	 2 2 2 2 2 2	 5.41 m 2.35 m 4.95 m 2.81 m 4.72 m 3.05 m	 0.91 m 0.91 m 0.475 m 0.475 m 0.22 m 0.22 m	 0.3 m 0.3 m 0.3 m 0.3 m 0.68 m 0.68 m	 2.95 m³ 1.28 m³ 1.41 m³ 0.8 m³ 1.41 m³ 0.91 m³
					Total	**8.76 m³**
4	**Muhram filling in plinth** First layer Second layer Third layer Fourth layer	 1 1 1 1	 3.12 m 3.58 m 4.04 m 4.28 m	 1.9 m 2.35 m 2.82 m 3.05 m	 0.18 m 0.3 m 0.3 m 0.3 m	 1.06 m³ 2.5 m³ 3.41 m³ 3.9 m³
					Total	**10.87 m³**
5	**Earth filling in plinth**	1	4.28 m	3.05 m	0.38 m	**4.96 m³**
6	**R.C.C. flooring on plinth**	1	4.72 m	3.5 m	0.07 m	**1.15 m³**
7	**First class brick masonry in superstructure** Long walls = 4.72 m Short walls = 3.05 m First step Second step Third step **Deduction for doors and windows**	 2 2 1 1 1 1	 4.72 m 3.05 m 0.91 m 0.91 m 0.91 m 0.91 m	 0.22 m 0.22 m 0.22 m 0.22 m 0.22 m 0.22 m	 3.37 m 3.37 m 0.15 m 0.3 m 0.45 m 2.13 m	 7 m³ 4.52 m³ 0.03 m³ 0.06 m³ 0.09 m³ **11.7 m³** -0.42 m³

	Door Window	3	1.52 m	0.22 m	1.82 m	-1.82 m³ **-2.24 m³**
					Total	**9.46 m³**
8	**Flooring work**	1	4.28 m	3.05 m		**13.05 m²**
9	**R.C.C. lintel and chajja** **Lintels** Long wall Short wall **Chajja**	 1 2 1	 4.72 m 3.05 m 4.72 m	 0.22 m 0.22 m 0.75 m	 0.127 m 0.127 m 0.127 m	 0.13 m³ 0.17 m³ 0.45 m³
					Total	**0.75 m³**
10	**R.C.C. slab**	1	4.72 m	3.5 m	0.127 m	**2.09 m³**
11	**Plaster work in outer walls** Long walls Short walls Chajja **Deduction for door and window** Door Window	 2 2 2 1/2 2/2	 4.72 m 3.5 m 4.72 m 0.91 m 1.52 m	 - - 0.75 m - -	 4.06 m 4.06 m 2.13 m 1.82 m	 38.32 m² 28.42 m² 7.08 m² **73.82 m²** -0.96 m² -2.7 m² **-3.66 m²**
					Total	**70.16 m²**
12	**Plaster work for inner walls** Long wall Short walls Ceilings **Deduction for door and window** Door Window	 2 2 1 1/2 2/2	 4.28 m 3.05m 4.28 m 0.91 m 1.52 m	 - - 3.05 m - -	 3 m 3m - 2.13 m 1.82 m	 25.68 m² 18.3 m² 13.054 m² **57.034 m²** -0.96 m² -2.76 m² **-3.72 m²**
					Total	**53.3 m²**

Abstract sheet					
Sr no	Item description	Quantity	Rate	Per	Amount
1	Excavation in foundation	**29.63 m³**	67.2	m³	1991.14

2	P.C.C. work in foundation	4.5 m^3	1900	m^3	8550
3	Brick masonry upto plinth	8.76 m^3	1756	m^3	15382.56
4	Muhram filling in plinth	10.87 m^3	200	m^3	2174
5	Earth filling in plinth	4.96 m^3	28	m^3	138.8
6	P.C.C. flooring on plinth	1.15 m^3	2747	m^3	3159
7	First class brick masonry in superstructure	9.46 m^3	1896	m^3	17936.16
8	Flooring work	13.05 m^2	600	m^2	7830
9	R.C.C. lintel and chajja	0.75 m^3	3800	m^3	2850
10	R.C.C. slab	2.09 m^3	4200	m^3	8778
11	Plaster work in outer walls	70.16 m^2	95	m^2	6665.2
12	Plaster work for inner walls	53.3 m^2	100	m^2	5330
					Rs 80784.86
					Add 3 % contegenius = Rs 2423.54
					Add 2 % work charge establishment = Rs1615.7
					~ Rs 84824.1
					Say Rs85000

13.1.5 Civil Design 5: Chabutra

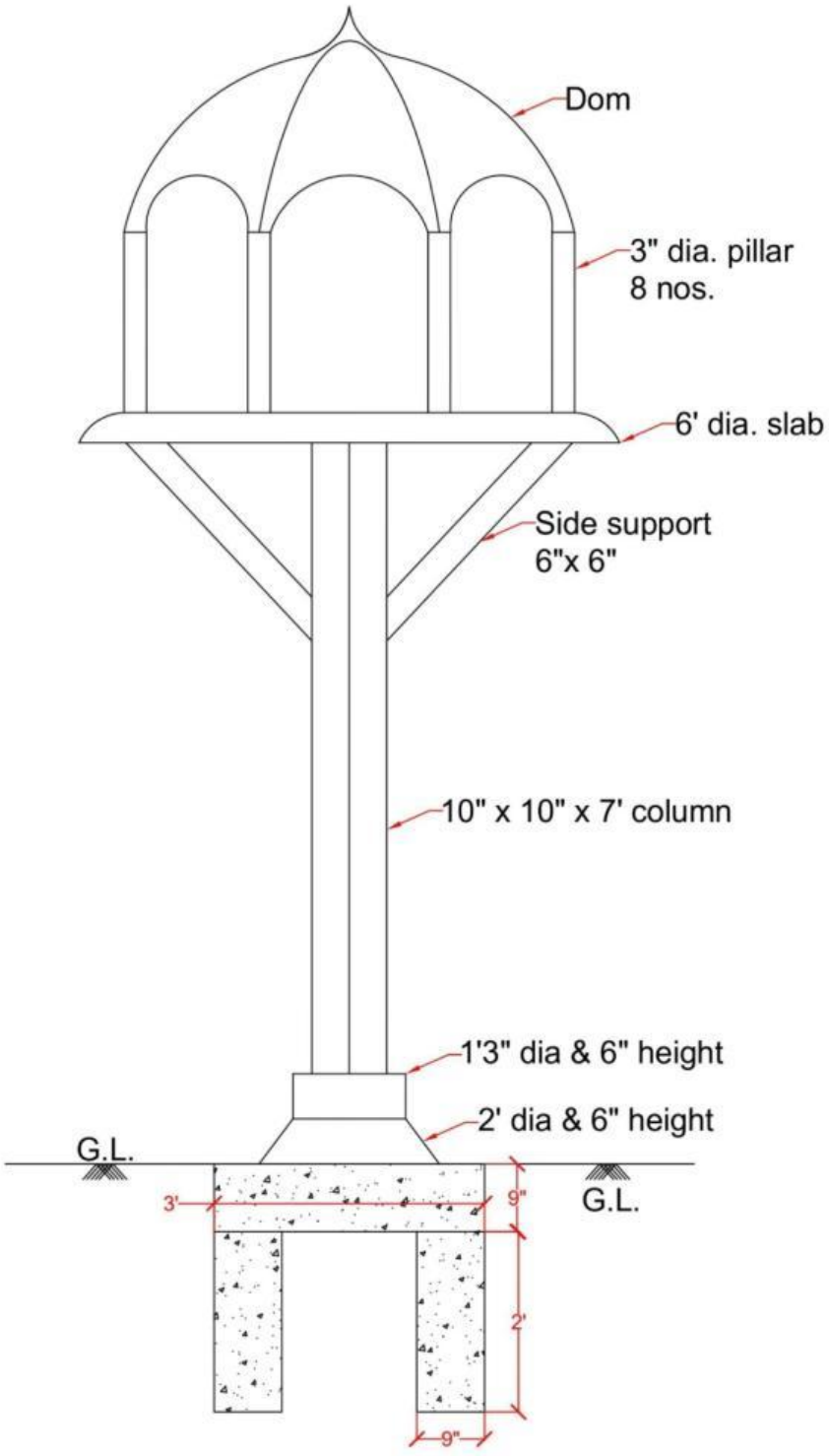


Figure 13.15: Chabutra

Measurement sheet						
Sr No	Item description	No	Length	Breath	Height	Quantity
1	**Excavation in foundation** Length = 0.92 m, breath = 0.92 m	1	0.92 m	0.92 m	0.83 m	**0.7 m³**
2	**RCC work in foundation** First layer Length = 0.7 m, breath = 0.23 m Second layer Length = 0.92 m, breath = 0.92 m	4 1	0.7 m 0.92 m	0.23 m 0.92 m	0.61 m 0.23 m	0.4 m³ 0.2 m³
					Total	**0.6 m³**
3	**Earth filling in foundation** Length = 0.46m, Breath = 0.46m	1	0.46 m	0.46 m	0.61 m	**0.13 m³**
4	**RCC work above ground level** **First layer (volume of frustum of pyramid)** $V = h/3 \times [A1 + A2 + \sqrt{A1\ A2}]$ $V = 0.15/3 [0.36 + 0.67 + \sqrt{0.36} \times 0.67]$ $V = 0.076$ m³ **Second layer (volume of cylinder)** $V = \pi r^2 h$ $V = \pi \times 0.19^2 \times 0.15$ $V = 0.017$ m³ **Third layer (Column)** Length = 0.25 m, Breath = 0.25 m **Fourth layer (circular slab)** $V = \pi r^2 h$ $V = \pi \times 0.91^2 \times 0.128$	1 1 1 1	 0.25 m	 0.25	 2.1 m	0.076 m³ 0.017 m³ 0.13 m³ 0.33 m³

	V = 0.33 m³ **Fifth layer (cylindrical pillars)** V = πr²h V = π × 0038² × 0.61 V = 0.0027 m³	8				0.022 m³
					Total	**0.575 m³**

Abstract sheet					
Sr no.	Item description	Quantity	Rate	Per	Amount
1	Excavation in foundation	0.7	67.2	m³	47
2	RCC work in foundation	0.6	3600	m³	2160
3	Earth filling in foundation	0.13	24	m³	3.12
4	RCC work above ground level	0.575	3800	m³	2185
					Rs 4395.12
					Add 3 % contegenius = Rs 131.85
					Add 2 % work charge establishment = Rs 97.9
					Rs 4624.12
					Say Rs 4700

13.1.6 Civil Design 6: Public library

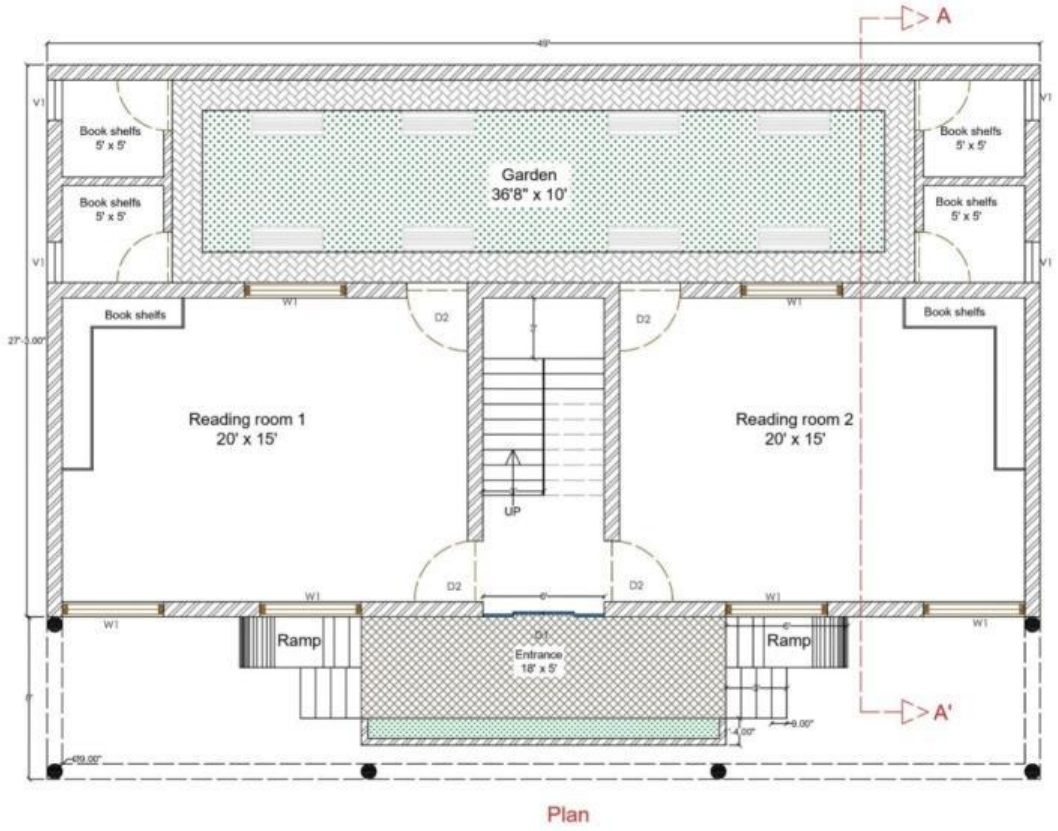


Figure 13.16: Public library plan

Figure 13.17: Public library elevation

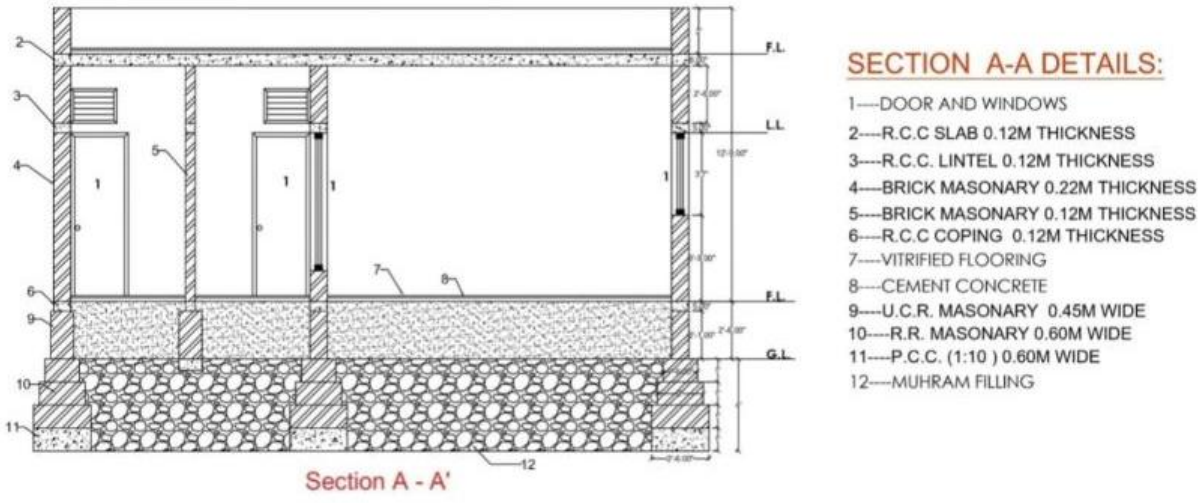


Figure 13.18: Public library section A-A

Measurement sheet						
Sr no.	**Item description**	**No**	**Length**	**Breath**	**Height**	**Quantity**
1	**Excavation for foundation in ordinary soil**					
	Long walls Length = 15.31 m	3	15.31 m	0.76 m	1.21 m	42.23 m³
	Short walls Length 1 = 4.22 m Length 2 = 2.62 m	4 2	4.22 m 2.62 m	0.76 m 0.76 m	1.21 m 1.21 m	15.52 m³ 4.81 m³
	Below entrance Length = 5.48 m	1	5.48 m	0.3 m	0.3 m	2.46 m³
	Ramp Length = 1.82 m	2	1.82 m	0.3 m	0.3 m	0.82 m³
	Stair section Length = 0.92 m	2	0.91 m	0.3 m	0.3 m	0.41 m³
					Total =	**66.25 m³**
2	**P.C.C. in Foundation c.m(1:10)**					
	Long walls Length = 15.31 m	3	15.31 m	0.76 m	0.3 m	10.47 m³
	Short walls	4	4.22 m	0.76 m	0.3 m	3.84 m³

	Length 1 = 4.22 m Length 2 = 2.62 m	2	2.62 m	0.76 m	0.3 m	1.20 m³
					Total =	**15.55 m³**
3	**Random rubble (R.R) masonry uptoground level c.m (1:4)** • **First step** **Long walls** Length = 15.31 m **Short walls** Length 1 = 4.22 m Length 2 = 2.62 m • **Second step** **Long walls** Length = 15.31 m **Short walls** Length 1 = 4.22 m Length 2 = 2.62 m • **Third step** **Long walls** Length = 15.15 m **Short walls** Length 1 = 4.4 m Length 2 = 3.26m	 3 4 2 3 4 2 3 4 2	 15.31 m 4.22 m 2.62 m 15.31 m 4.22 m 2.62 m 15.15 m 4.8 m 3.26 m	 0.76 m 0.76 m 0.76 m O.6 m 0.6 m 0.6 m 0.45 m 0.45 m 0.45 m	 0.3 m 0.3 m 0.3m 0.3 m 0.3 m 0.3 m 0.3 m 0.3 m 0.3 m	 10.47 m³ 3.89 m³ 1.19 m³ 8.26 m³ 3.03 m³ 0.94 m³ 8.13 m³ 2.6 m³ 0.88 m³
					Total	**37.4 m³**
4	**Uncoursedrandom stone (U.C.R) masonry upto plinth** Length 1 = 15.15 m Length 2 = 4.35 m Length 3 = 2.82 m Length 4 = 4.77 m	 3 4 4 2	 15.15m 4.35 m 2.82 m 4.77 m	 0.45 m 0.45 m 0.45 m 0.45 m	 0.74 m 0.74 m 0.74 m 0.74 m	 15.13 m³ 4.79 m³ 3.75 m³ 3.17 m³
					Total	**26.84 m³**
5	**R.C.C coping on plinth** Length 1 = 15.15 m Length 2 = 4.35 m Length 3 = 2.82 m Length 4 = 4.77 m	 3 4 4 2	 15.15m 4.35 m 2.82 m 4.77 m	 0.45 m 0.45 m 0.45 m 0.45 m	 0.12 m 0.12 m 0.12 m 0.12 m	 2.45 m³ 0.93 m³ 0.60 m³ 0.55 m³

					Total	**4.5 m³**
6	**Earth filling in plinth** Reading room Staircase Garden Book shelf room Entrance platform	 2 1 1 4 1	 5.87 m 1.6 m 10.9 m 1.3 m 5.03 m	 4.34 m 4.34 m 2.82 m 1.3 m 1.06 m	 0.76 m 0.76 m 0.76 m 0.76 m 0.76 m	 38.72 m³ 5.3 m³ 21.43 m³ 3.13 m³ 4.03 m³
					Total	**74.60 m³**
7	**Cement concreting at floor level** Reading room Staircase Book shelf room Entrance platform	 2 1 4 1	 5.87 m 1.6 m 1.3 m 5.48 m	 4.34 m 4.34 m 1.3 m 1.52 m	 0.07 m 0.07 m 0.07 m 0.07 m	 3.56 m³ 0.48 m³ 0.12 m³ 0.6 m³
					Total	**4.76 m³**
8	**First class Brick work in super structure c.m. (1:4)** Length 1 = 14.93 m Length 2 = 4.57 m Length 3 = 3.04 m Length 4 = 3.04 m Length 5 = 1.52m Step 1 Step 2 Step 3 Step 4 Ramps V = 0.5×0.76×0.76×1.82 = 0.52 m³ Entrance platform plinth walls Length 1 = 5.48 m Length 2 = 1.3 m **Deduction for door, window and lintels** D1 = 1.82×2.13 m D2 thick wall = 0.91×2.13 m D3 partition wall = 0.91×2.13 m	 3 4 2 2 2 2 2 2 2 2 1 2 1 4 4 6 4	 14.93 m 4.57m 3.04 m 3.04 m 1.52 m 0.76 m 0.76 m 0.76 m 0.76 m 5.48 m 1.3 m 1.82 m 0.91 m 0.91 m 1.52 m 0.6 m	 0.228 m 0.228 m 0.114 m 0.114 m 0.22 m 0.22 m 0.22 m 0.22 m 0.228 m 0.228 m	 3.12 m 3.12 m 3.12 m 3.12 m 3.12 m 0.2 m 0.4 m 0.6 m 0.8 m 1.06 m 1.06 m 2.13 m 2.13 m 2.13 m 1.22 m 0.45 m	 31.86 m³ 13 m³ 4.32 m³ 2.16 m³ 1.08 m³ 0.06 m³ 0.13 m³ 0.2 m³ 0.23 m³ 1.05 m³ 1.32 m³ 0.31 m³ **55.72 m³** 0.88 m³ 1.76 m³ 0.88 m³ 2.53 m³ 0.24 m³

	W = 1.52×1.22 m V = 0.6×0.45 m **Lintel** Length 1 = 14.93 m Length 2 = 4.57 m Length 3 = 3.04 m Length 4 = 3.04 m Length 5 = 1.52 m	 3 4 2 2 2	 14.93 m 4.57 m 3.04 m 3.04 m 1.52 m	0.228 m 0.228 m 0.114 m 0.228 m 0.228 m 0.228 m 0.228 m 0.228 m 0.114 m 0.114 m	 0.12 m 0.12 m 0.12 m 0.12 m 0.12 m	 1.18 m³ 0.5 m³ 0.16 m³ 0.08 m³ 0.04 m³ **-8.25 m³**
					Total	**47.46 m³**
9	**R.C.C. work inlintel** Length 1 = 14.93 m Length 2 = 4.57 m Length 3 = 3.04 m Length 4 = 3.04 m Length 5 = 1.52 m	 3 4 2 2 2	 14.93 m 4.57 m 3.04 m 3.04 m 1.52 m	0.228 m 0.228 m 0.228 m 0.114 m 0.114 m	 0.12 m 0.12 m 0.12 m 0.12 m 0.12 m	 1.18 m³ 0.5 m³ 0.16 m³ 0.08 m³ 0.04 m³
					Total	**1.96 m³**
10	**R.C.C. work in slab** Slab1 Slab2	 1 2	 14.93 m 3.38 m	 5.02 m 1.86 m	 0.12 m 0.12m	 9 m³ 1.5 m³
					Total	**10.5 m³**
11	**Plaster work in inner in side walls and ceilings** • **Reading room** Wall 1	 4	 4.67 m	 -	 3.12 m	 57.03 m²

	Wall 2 Ceiling • **Staircase** Wall 1 Wall 2 Ceiling • **Garden** Wall 1 Wall 2 • **Book shelves** Wall 1 Wall 2 **Deduction for door, window and ventilation** D1 D2 W V	4 2 2 2 1 2 2 16 4 1/2 8/2 6/2 4/2	6.09 m 6.09 m 4.57 m 1.82 m 4.57 m 11.15 m 3.04m 1.52 m 1.52 m 1.62 m 0.91 m 1.52 m 0.6 m	- 4.57 m - - 1.82 m - - - 1.52 m 	3.12 m - 3.12 m 3.12 m - 3.12 m 3.12 m 3.12 m - 2.13 m 2.13 m 1.22 m 0.6 m	76 m² 55.66 m² 28.51 m² 11.35 m² 8.31 m² 69.57 m² 18.96 m² 75.57 m² 9.24 m² **410.2 m²** 1.93 m² 7.75 m² 5.56 m² 0.57 m² -15.9 m²
					Total	**394.40 m²**
12	**Plaster work for outer wall** Wall 1 = 14.93 m Wall 2 = 8.3 m **Deduction for door, window and lintels** D W V	2 2 1/2 4/2 4/2	14.93 m 8.3 m 1.53 m 1.52 m 0.6 m		4.5 m 4.5 m 2.13 m 1.22 m 0.48 m	134.4 m² 74.7 m² **209.07 m²** 1.03 m² 3.7 m² 0.57 m² **-5.3 m²**
					Total	**203.76 m²**
13	**Marble flooring** Reading room Book shelf Staircase	 2 4 1	 6.04 m 1.52 m 1.82 m	 4.57 m 1.52 m 4.57 m		 55.52 m² 12.16 m² 8.32 m²

	Entrance Ramp slope Steps	1 2 8	5.48 m 6.5 m 0.74 m	1.52 m 0.74 m 0.22 m		8.35 m² 9.62 m² 1.3 m²
					Total	**94.97 m²**

Abstract sheet					
Sr no.	**Item description**	**Quantity**	**Rate**	**Per**	**Amount**
1	Excavation for foundation in ordinary soil	66.25	67.2	m³	4452
2	P.C.C. Foundation c.m (1:10)	15.55	1700	m³	26435
3	Random rubble (R.R) masonry upto ground level c.m (1:4)	37.4	1756	m³	67664.4
4	Uncoursed random stone (U.C.R) masonry upto plinth	26.84	3100	m³	83204
5	R.C.C coping on plinth	4.5	275	m³	20515
6	Earth filling in plinth	74.60	3600	m³	17136
7	Cement concreting at floor level	4.76 m³	3800	m³	17100
8	First class Brick work in super structure c.m. (1:4)	47.46 m³	1896	m³	89984.16
9	R.C.C. work in lintel	1.96 m³	4200	m³	8232
10	R.C.C. work in slab	10.5	4200	m³	44100
11	Plaster work in inner in side walls and ceilings	394.40	105	m²	41412
12	Plaster work for outer wall	203.76	96	m²	15500.96
13	Marble flooring	94.97	1700	m²	161449
					Rs601254.52
					Add 3% contegenius =Rs18037.62
					Add 2% work charge establishment = Rs12025.08
					~ Rs 631317.22
					= Rs 632000

13.2 Reason for Students Recommending this Design:

- **Overhead Tank:**Overhead tank will design of 8 lac capacity based upon population of village which can sufficient to fulfill the basic water requirements of people

- **Biogas plant:**Turkha village is consist of large number of cattle which produces large number of cattle dung and black soil from public sewer can be used to produce natural biogas, so the design of biogas plant is very important.

- **Road design:**Road condition in village is poor or broken condition which causes difficulty for villagers in transportation. Construction of road is required especially in monsoon season because water accumulation causes muddy road which causes mosquito nuisance as well as muddy road which makes total disturbance for villagers.

- **Waste water treatment plant:**Waste water from the village is directly drained into the Madhu River which causes pollution of river water, increase in death of river creatures such as fishes, under water plant etc. Moreover, polluted water cannot used for domestic and agricultural purposes. So, we will design water treatment plant which filter and makes water pollution free before discharging into river.

- **Chabutras:**The main purpose of designing chabutras is to provide grains, water,andshelter to all the birds. It also decreases in death of birds during all the season and it alsoimprovesaesthetic view of village.

- **Public library:**Most of the people of Turkha village are low educate and have low general knowledge specially youngsters of village are low educate which causes unemployment in various sectors, so the design of library is very important which provides various books, magazine and newspaper for purpose of reading and increasing knowledge.

13.3 Benefit of the villagers

There arevariousbenefits which can be provided to the villagers by development of various types infrastructures given below:

- **Physical infrastructure:** Condition of residential building road structure should be improved and other structures such asGram Panchayat,cemetery, college building, water treatment plant, street lighting, public toilet and bus stand should be constructed.

- **Social cultural infrastructure: Various** social cultural infrastructure such as community hall, police station,Bird platforms and public garden should be built.

- **Sustainable Infrastructure Facilities:**Water treatment plant,biogas plant, Overhead tank, Rainwater harvesting system, overhead tank and solar street lighting.

If these all the infrastructure are available for village people, then they will avoid shifting in other towns because they have healthy life, education, employment opportunities, business opportunities and other wellbeing programs which makes their life happy.

Chapter 14: Technical Options with Case Studies

14.1 Civil Engineering:

14.1.1 Advanced Earthquake Resistant:

To build an earthquake-resistant structure, engineers need to strengthen the structure and withstand the force of an earthquake. Since an earthquake releases gravity from a building from one side, the strategy is to move the building in a different direction. Here are some of the methods used to help buildings withstand earthquakes.

A. Flexible Foundation design

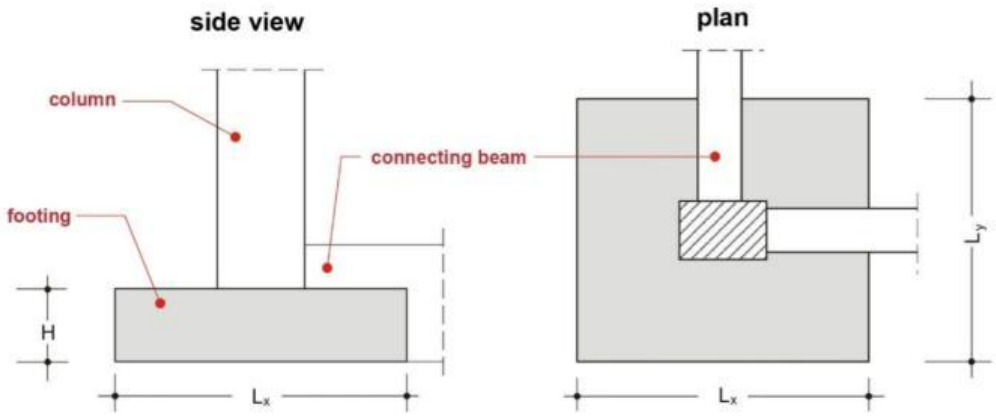


Figure 14.1: Flexible foundation

To withstand the force of the earth is to "lift" the foundation of the building above the earth. Basic separation involves building a structure over flexible packs made of steel, rubber, and lead. When the foundation is shaken during an earthquake, the isolators vibrate while the structure itself remains stable. This effectively helps to absorb earthquake waves and prevent them from moving around the structure.

B. Damping of Counter Forces

This method is useful for construction of earthquake-resistant buildings. It consists of shock absorbers which reduces the shockwave magnitude and building remains steady. There are mainly two types methods which is pendulum dampers and vibrational control devices

❖ **Vibrational Control Device**

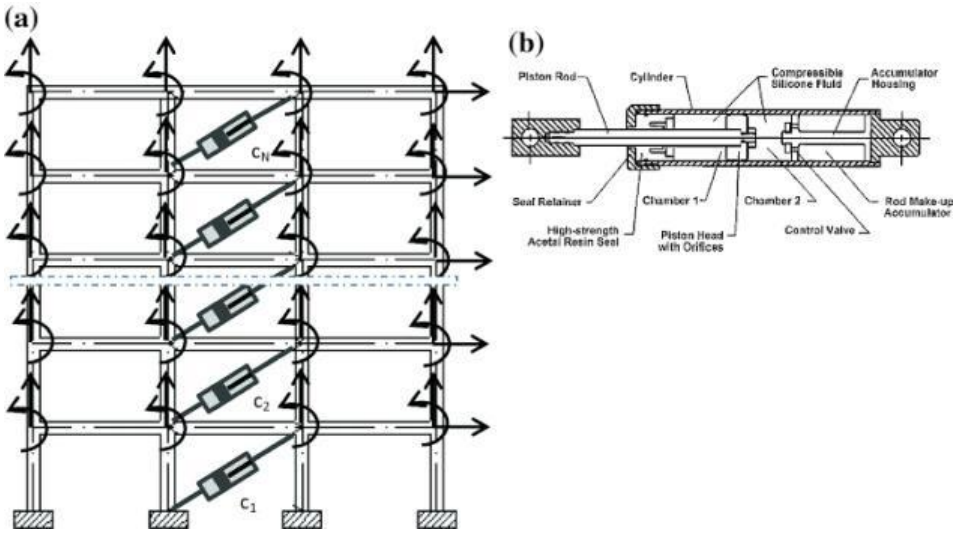


Figure 14.2: Viscose dampers

The first method involves placing dampers at each level of the structure between the column and the beam. Each damper has piston heads inside a cylinder filled with silicone oil. In the event of an earthquake, the structure transfers vibration power to the pistons, pushing the oil. The energy is converted into heat, dispersing the vibrating energy.

❖ **Pendulum Power**

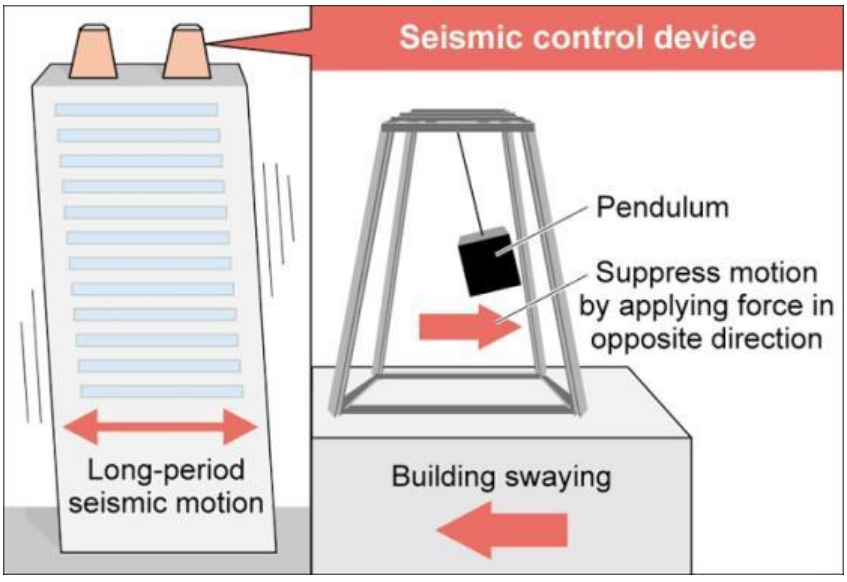


Figure 14.3: Pendulum Power

Another way to soften the power of the pendulum, which is used mainly in large buildings. Engineers have installed a large ball with steel cords with a hydraulic system on top of the building. When the structure begins to soften, the ball acts as a pendulum

and moves to the other side to stabilize the direction. Like seawater, these features are designed to match and contrast the structure of a building in the event of an earthquake.

C. Buildings from Vibrations

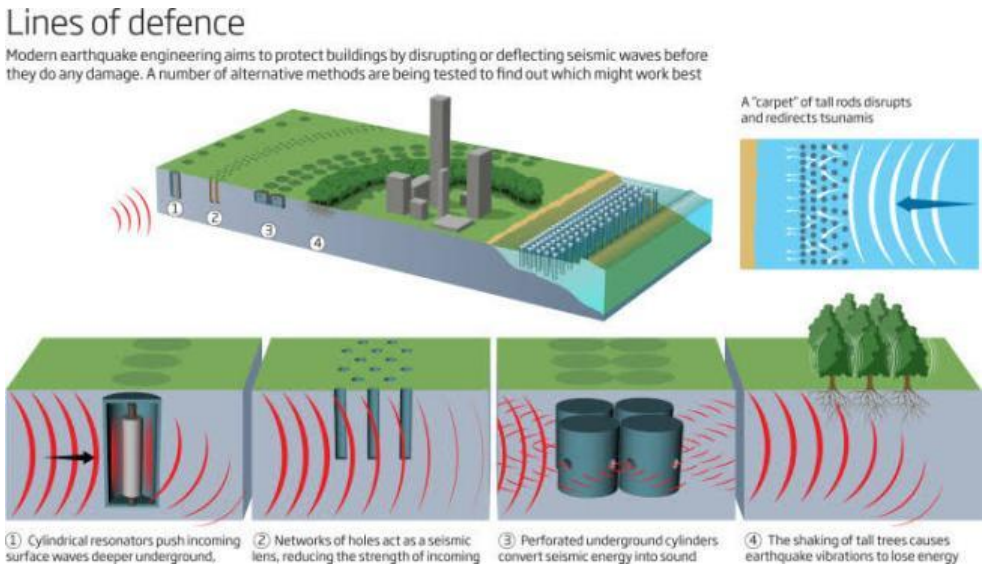


Figure 14.4: Movers and shakers

Instead of simply resisting the force, researchers are experimenting with ways that buildings can deviate and reverse the force of earthquakes completely. Equipped with an "earthquake-resistant blanket", the invention includes a 100-piece plastic and concrete ring that covers at least three feet below the base of the building.

As the waves of an earthquake hit the rings, they were forced to pass over the outer rings to make it easier to navigate. As a result, they are moved away from the building and into the ground plates.

D. Reinforcement the Building's Structure

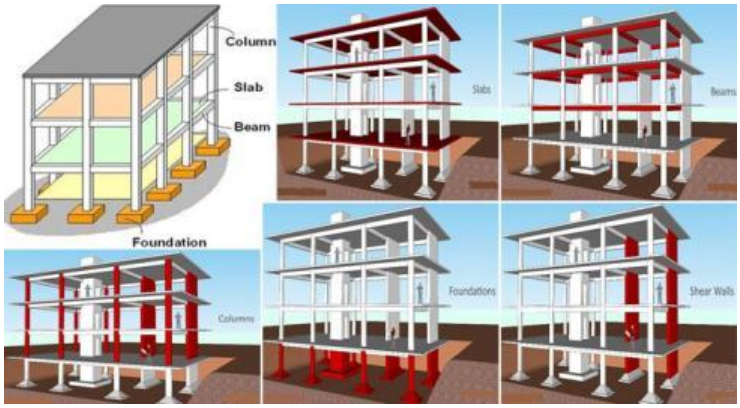


Figure14.5: Components of Building structure

To withstand the fall, the buildings need to redistribute their energy during the earthquake event. Shear walls, cross braces, diaphragms, and moment-resistant frames are in the middle of reinforcing the structure.

Shear Walls is an auxiliary construction technology that helps transfer energy from earthquakes. Made of panels, these walls help the building maintain its shape during movement. Shear walls are usually supported by diagonal cross braces. These steel poles have the ability to support pressure and stiffness, which helps withstand pressure and restore strength to the base.

Diaphragms are an integral part of structural design. Consisting of the floor of the building, the roof, and the floors on which they are placed, the abbreviations help to remove the tension on the floor and force the straight structures of the building.

Frame-resistant frames provide a lot of flexibility in building construction. This structure is placed between the members of the structure and allows the columns and beams to bend while the members remain strong. Therefore, the building is able to withstand a great deal of earthquakes while allowing designers to have more freedom of planning.

14.1.2 Seismic Retrofitting of Buildings:

Earthquake Rehabilitation Techniques are needed for concrete construction that is at risk of damage and earthquake power failure. For the past three decades, there has been a number of earthquakes on average each year. Such events lead to damage to concrete structures and failures. The aim is therefore to focus on a few specific processes that can improve the practice of assessing earthquake risk of existing reinforced concrete structures and their re-stabilization using a variety of new methods such as basic separation and weight loss. So Seismic Retrofitting is a collection of Earth engineering reduction strategies. It is especially important for historical monuments, earthquake zones, and tall or expensive buildings.

A. Introduction to Seismic Retrofitting Techniques

- Earthquakes wreak havoc on the health, finances, and infrastructure.
- Improving certain building systems (existing structures) to make them more resistant to earthquakes (earthquake resistance) is very important.
- Buildings can be (a) Earthquakes damaged, (b) Earthquakes are in danger
- Reconstruction proves that it is a better economic consideration and a place of immediate refuge from problems than restoring a building.

B. Seismic Retrofitting of Concrete Structures

It is a modification of existing structures to make them more resilient to earthquakes, landslides, or earthquakes. Retrofit techniques also apply to other natural hazards such as tropical storms, hurricanes, and strong winds from thunderstorms.

C. Need for Seismic Retrofitting

- Ensuring the safety and security of the building, staff, building operation, equipment and inventory.
- It is important to reduce the risk and loss of non-construction materials.
- Particularly concerned with building development to reduce the risk of earthquakes.
- Important buildings must be strengthened by services that are considered essential after an earthquake such as hospitals.

D. Classification of Retrofitting Techniques

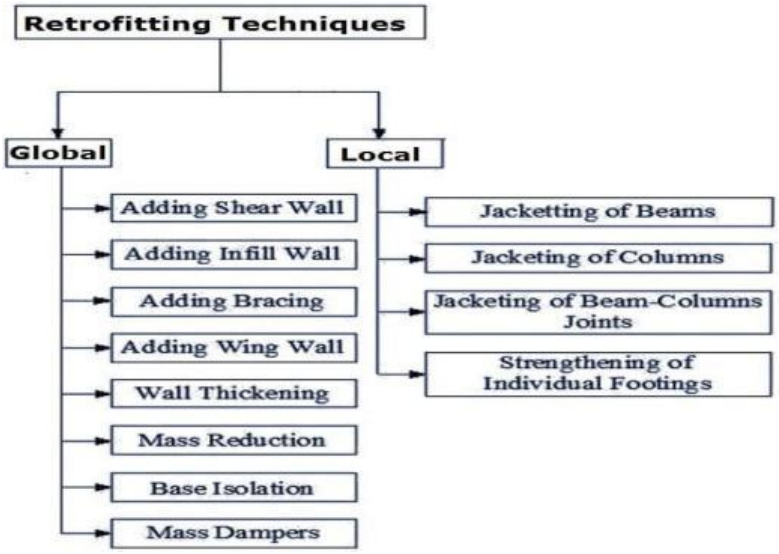


Figure 14.6: Retrofitting Techniques for R.C.C. Structures

1. Adding New Shear Walls

Figure 14.7: Additional Shear Wall

- It is commonly used to reconstruct reinforced non-ductile reinforced concrete structures.
- Can more stuff be streamed? In place or previously made concrete objects.
- New elements are best placed outside the building.
- It is not popular inside the building to avoid internal molding.

2. Adding Steel Bracings

- An effective solution when large openings are needed.
- Potential advantages due to high strength and durability, open natural lighting can be provided, the cost of the work is small because the cost of the foundation can be reduced and add very little weight to the existing structure.

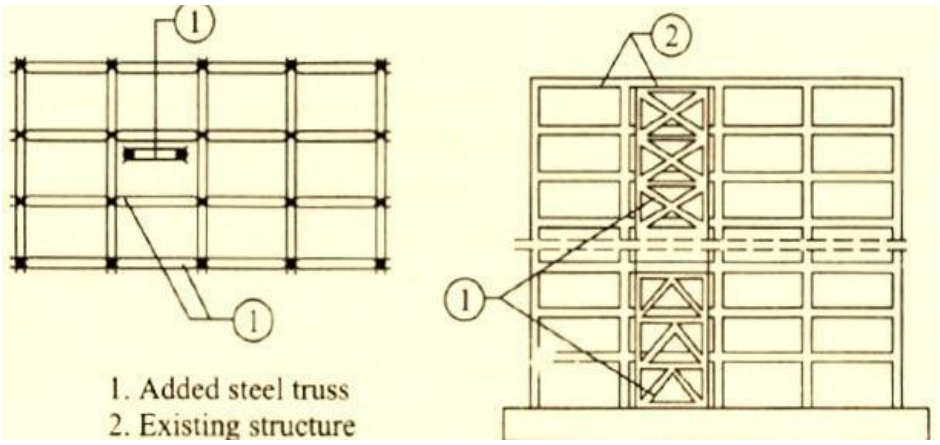


Figure14.8: Reinforced Concrete Building retrofitted by steel bracing

3. Jacketing (Local Retrofitting Technique)

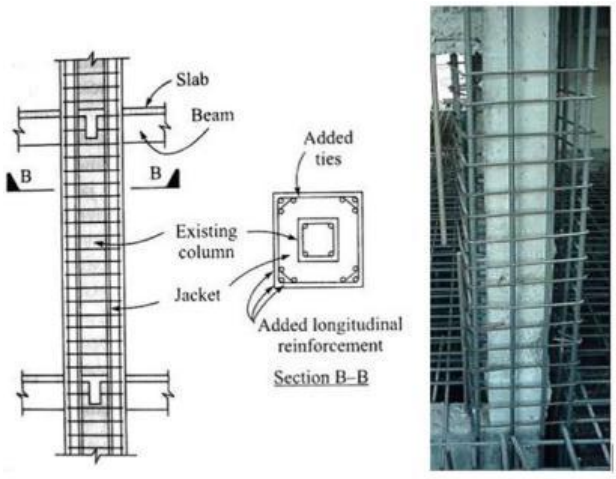


Figure 14.9: Beam Jacketing

This is a very popular way to strengthen building blocks.

- **Types of Jacketing:** Iron coat,Certified concrete box,Fiber Reinforced and Polymer Composite (FRPC) jacket.

- **Purpose of dressing:** Increasing the confinement of concrete**,** increasing shear strength andincreasing flexural strength.

4. Base Isolation (or Seismic Isolation)

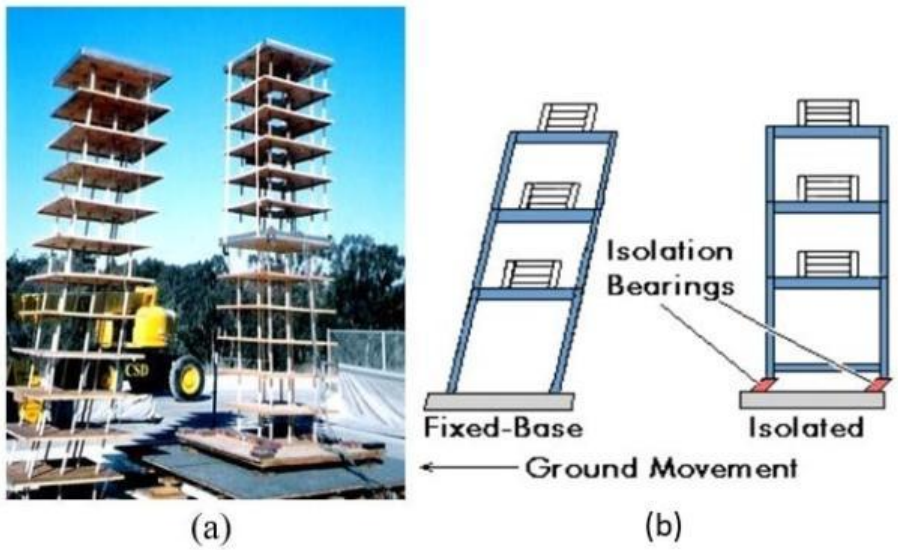


Figure 14.10: Structures with base isolation (a)Model Under Test (b) Diagrammatical Representation

Subdivision of the structure above the foundation is known as the basic division. It is the most powerful tool in controlling the vibration process.

5. Mass Reduction for Retrofitting

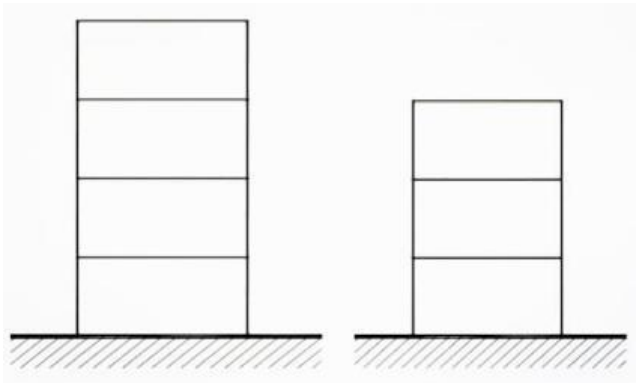


Figure 14.11: Seismic Retrofitting by removal of storey.

This can be achieved, for example, by removing one or more floors as shown in the Diagram. From this it is clear that weight loss will lead to a decrease in time, which will lead to an increase in the required strength.

6. Retrofitting by Wall Thickening Technique

The existing walls of a building are added certain thickness by adding bricks, concrete and steel aligned at certain places as reinforcement, such that the weight of wall increases and it can bear more vertical and horizontal loads, and also its designed under special conditions that the transverse loads does not cause sudden failure of the wall.

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

❖ **Modernequipment's**

Modern equipment certified in architecture may be listed below

- Chain and pulley block
- Grouting pumps
- Sprayers for painting work
- Tile cutters
- Portable hand drilling machines
- Horizontal trolleys, wheelbarrows
- Pumps
- Vibrators for compaction of concrete, surface vibrators
- Auto ramming concrete block machine
- Sand washing machine
- Vertical lifts, hoists, winches
- M.S. tubular scaffolding, and formwork
- Concrete mixers
- Cranes
- Earth excavators
- Earthmovers

❖ **Building construction technique:**

Other new, less expensive and time-consuming techniques used to build advanced construction technologies are

A. Light weight concrete blocks

Figure 14.12:Light weight concrete blocks

The size of standard concrete varies from 2200 to 2600 kg / m3 and that of lightweight concrete varies from 300 to 1850 kg / m^3.

Profit

- Reduction of dead load.
- Increases work continuity.
- Reduces administrative costs.
- This leads to light building construction.
- It is useful for buildings that live in weak soils.

B. Ferrocrete Method

Figure 14.13: Wire mesh and cement

Ferrocrete contains wire mesh and cement. The wire fence is closely separated and lined with a rich mixture of cement.

Benefits

- It has a high degree of strength in weight and good crack behavior compared to the R.C.C.
- It can be used for septic tanks, water tanks, fishing boats, roofs and wall panels for low-cost homes, bio-gas digesters, silos, kitchen, door and window frames, cabinets, etc.
- Cheaper than standard concrete.

C. Earthly machinery

Figure 14.14: Types of heavy equipment

With mass excavation operations & a large amount of filling, land grabbing machines are helpful. Save more time and energy.

Benefits

- Save time.
- Cost effective.
- Save employees.
- It is used for mass excavation and for filling basements, ditches, etc.

D. Tunnel formwork technique

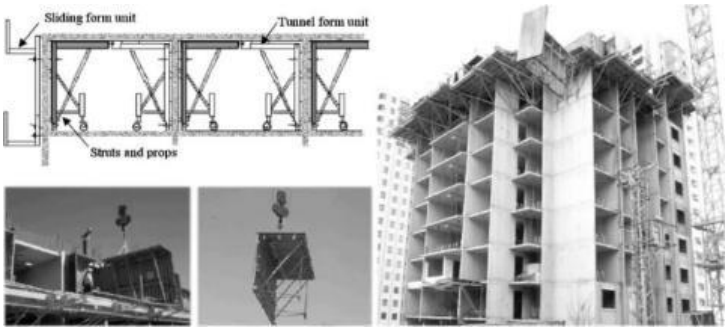


Figure 14.15:Tunnel formwork technique

In the manufacture of a number of high-rise buildings, a smooth tunnel structure can be used.

Benefits

- Save time to close and turn off time.
- An additional number of forms duplicates
- More accuracy in the work.
- Reduce staff.
- Increased quality as a whole, by reducing costs.
- It is best suited for the same vertical height.

E. Precast components

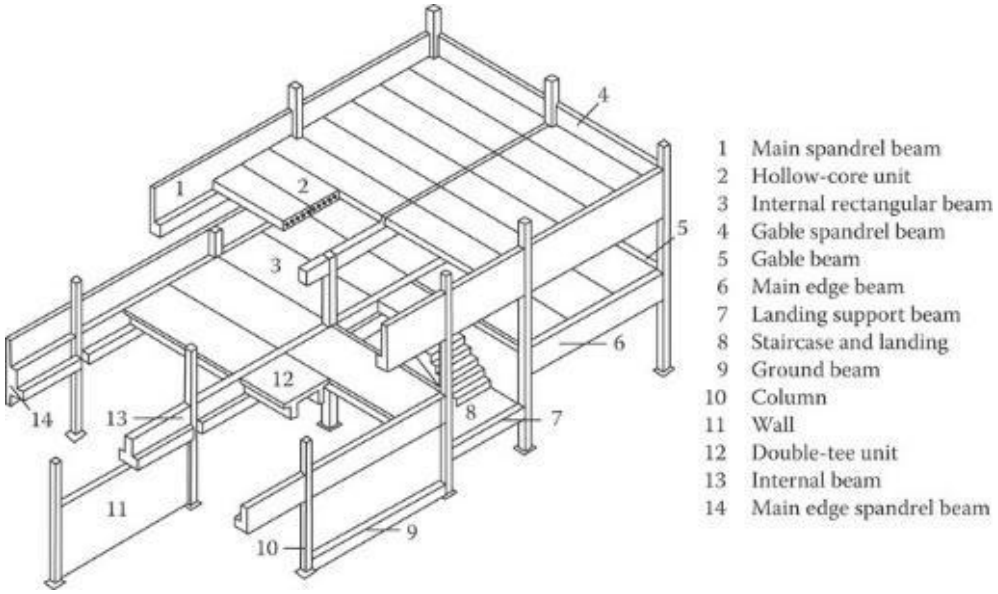


Figure 14.16: Precast components

They are factory-made building materials that are assembled to form a building.

Benefits

- Controlled quality of final product.
- Better healing and higher energy due to the use of equipment.
- Save space for raw material mining.
- Reduce the need for skilled workers.
- Increase build speed due to compatible and easy joining methods.
- Save, full project time.
- Job integrity can be eliminated and many jobs can be taken over at once.

❖ **Modern materials**

Here are 6 new things that can change a business structure for the better:

A. Mass timbering

Figure 14.17: Mass timbering

People have been building with wood since they first came out of the caves, but in modern times, things like cement and metal have all taken the place of tall buildings. There is a good reason for this: Wood is often weaker than other materials and is at risk of fire.

The woodcut class includes several types of wood, especially timber combined with timber. Sticky glue consists of several pieces of wood that are glued together and are useful for building strong beams. Divided wooden beams are made of pieces of wood that are attached to flexible surfaces and form large panels that can support a lot of weight.

Both types of wood are surprisingly fire resistant. The Atlantic reports that the outer layers form a chart when burned which helps to cover some wood. In the fire tests, they have shown the ability to maintain their structural integrity.

Many planks support the capture of carbon as trees grow and their texture in buildings. According to a study in the Journal of Sustainable Forestry, with sustainable forest techniques, 14 to 31 percent of air pollution can be prevented by replacing wood with materials used in buildings and bridges.

B. Self-Healing Material

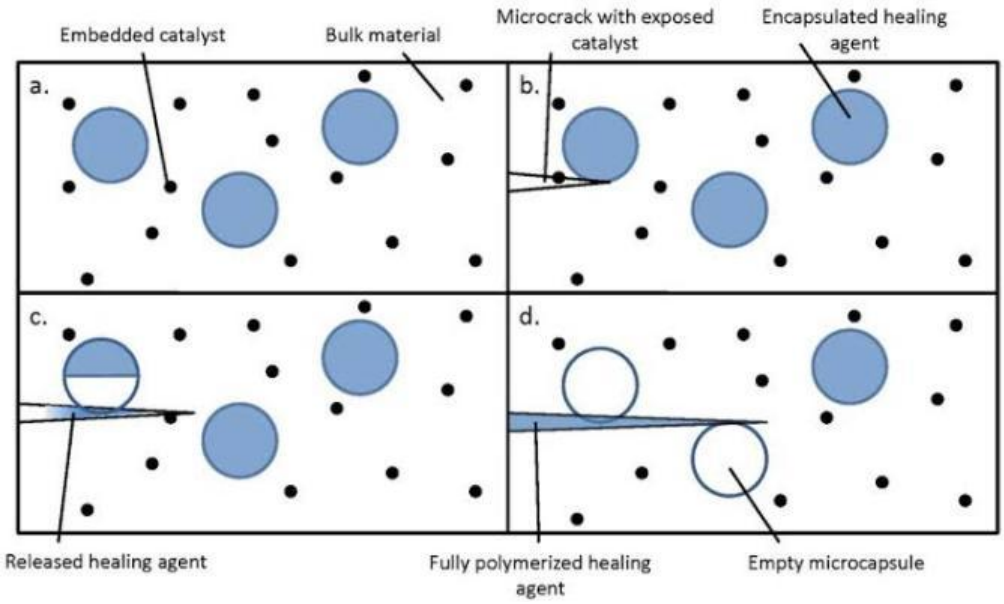


Figure 14.18: Self-Healing Material

Also of interest is the recent development of self-healing cement. As mentioned above, even a small crack in a concrete building can start to be a very, very expensive problem. According to City Lab, recent scientists have found a new way to use living ammunition to help repair concrete when cracks appear.

The solution consists of small, water-repellent tablets that can be mixed with wet concrete. Once the concrete is set and dried, the characters are present in the suspended animation – like packs of dry yeast. When crack opens to concrete and fills with water, however, it begins to grow and produce calcite, a crystalline form of calcium carbonate found in marble and limestone. The calcite fills the cracks in the concrete and hardens it, preventing the crack from getting wider.

Self-healing concrete can help buildings, tunnels, bridges, and other structures to last longer without significant repairs or restoration. The money that would be saved over time is hard to calculate, such as reducing carbon emissions. That said, costs are currently much higher than for conventional concrete, and if they do not fall, this could be an option for long-term projects.

C. Air Purification Bricks

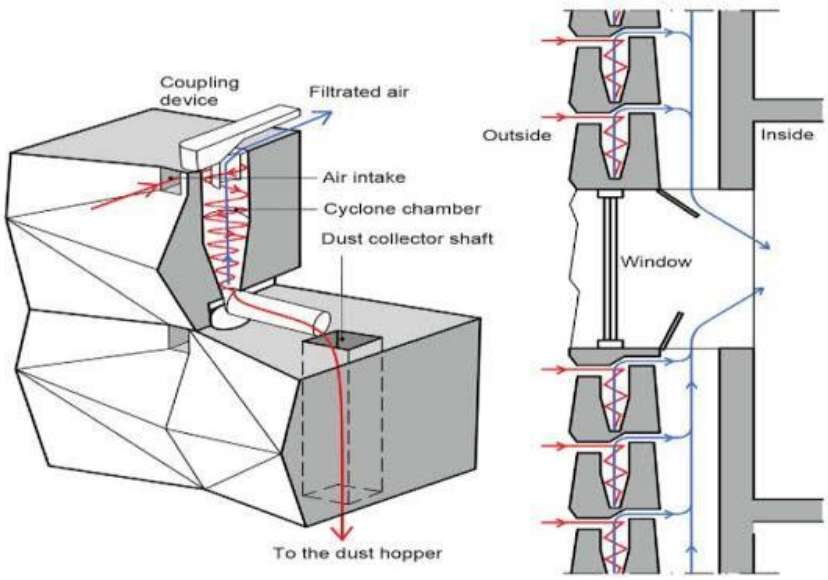


Figure 14.19: Air purification bricks

Indoor air quality (IAQ) is becoming increasingly important for commercial properties as we gain a better understanding of how built-up areas affect the lives of those who live and work in them. There is no shortage of ways to improve IAQ, but most of them require the use of energy to filter air. That emits a lot of carbon and other pollutants in the long run.

This inertial system uses bricks outside the building to filter heavy particles into the air as it enters space. Concrete bricks add air to the inner storm filter section that separates heavy objects and throws them down to the top of the wall. Fresh air is then pumped into the building, either mechanically or by idle, and care can simply remove and drain the hopper from time to time.

D. Strand Rod

Figure 14.20: Strand Rod

The rods are known as thermoplastic carbon fiber composite called CABKOMA Strand Rod which is five times lighter than steel rods of the same strength designed for an amazing design. And they work really well and the structure is well balanced beyond the normal operating requirements for seismic reinforcement. The composite is covered with inorganic and synthetic fibers as well as thermoplastic resin finishes, using dynamic forces to create the simplest seismic reinforcement system.

E. Passive Cooling Ceramics

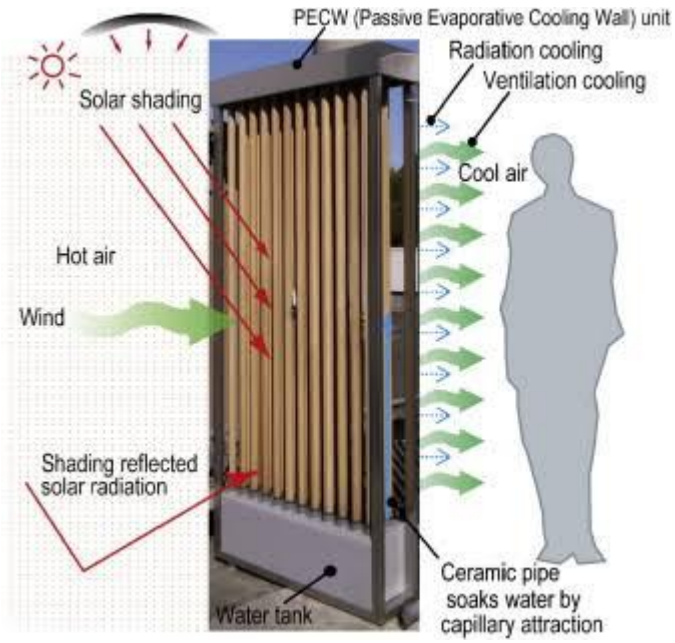


Figure 14.21: Passive Cooling Ceramics

A fan is an energy-intensive process that causes the most part of the world's carbon emissions. Low-cost cooling methods have been used for centuries, but many do not work when it is very hot outside and many conflict with the cooling done instead of support. Recently, however, students at the Institute for Advanced Architecture of Catalonia's Digital Matter Intelligent Constructions studio came up with a façade made of clay composite and hydrogel that cools buildings in the same way that the skin cools our bodies.

Our bodies sweat to cool us. When our skin is wet, heat gets into the water, and hot water particles evaporate, removing heat as well. This functionality works the same way. Water collects hydrogel drops placed in a clay mixture.

14.1.4 EngineeringAspects of Soil mechanics – Environmental Impact Assessment:

Once it has been accepted that soil is a building, its importance in Civil Engineering becomes paramount. Geotechnical engineer should be as knowledgeable about this subject matter as any other building material.

The study of Earth Engineering is particularly important in terms of infrastructure development and construction, namely, highway and airport parks, foundations and underground structures, retaining walls and installations and multi-site buildings.

The foundation is considered to be the most important part of any building and it is in this sense that the stability of the whole structure depends. Since the capacity of the foundation load has a direct relationship with soil characteristics, the importance of soil research should not be underestimated.

❖ **Soil Engineering Highlights**

The word 'soil' is derived from the Latin word solium, that is, the surface of the earth that can be dug or powdered, in particular, the open ground material where plants grow.

The term ‘soil’ in soil engineering is defined as a composite material composed of solid particles, produced by the scattering of rocks. The empty space between the particles can contain air, water, or both. Solid particles can contain organic matter. Ground particles can be subdivided in ways such as roughness in water.The natural core of mineral particles composed of solid and solid bonds is called ‘rock’.

The application of the rules and regulations of machinery and equipment to hold water in engineering problems in dealing with soil is often referred to as Land Mechanics. The term soil engineering is used to cover a wide range which means that it is a practical science rather than a basic or mathematical basis. Therefore, Soil Engineering is an applied science that deals with the application of ground mechanical principles in practical problems.It includes spatial research, design and construction of foundations, storage facilities and land structures.

❖ **Soil as Foundation Material**

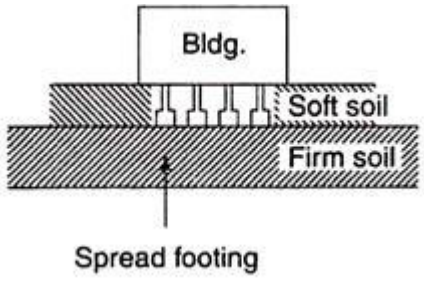


Figure 14.22: When the firm soil is near ground surface a feasible means of transferring the concentrated loads from the walls of columns of building buildings to the soil is through spread footing

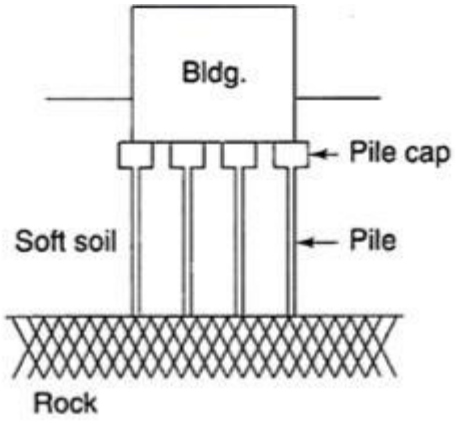


Figure 14.23: When firm soil is not near the ground surface a common means of transferring the weight of structure to ground surface is through vertical member

In the design of any foundation system, the central problem is to prevent dwellings large enough to damage the building. The extent of the permissible approval depends on the size, type and use of the building, the type of foundation, the underground source of residence, and the location of the building. In most cases, a critical payment is not a complete payment but rather a separate charge, which is a concurrent move of property.

❖ **Embankment on Soft Soil**

Although a metal storage tank is a flexible structure, a 1.5 m living space is too large to be tolerated.

Soil engineering research shows that the most cost-effective solution to the foundation problem of the tanks consists of forming a hole in the ground at the site to compress the soft soil, remove the hole and finally by placing the tank in prepared soil. This process is called preloading.

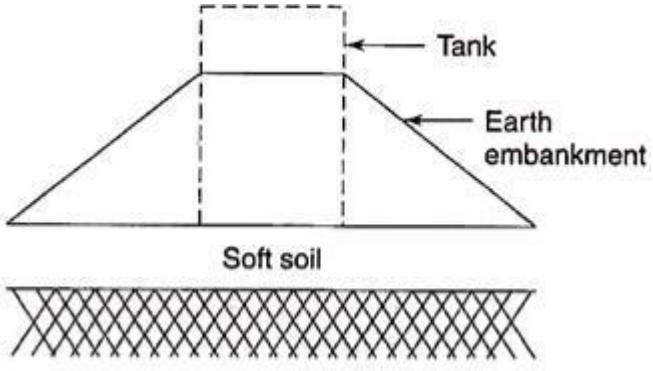


Figure14.24: Preloading

❖ **Foundation Heave**

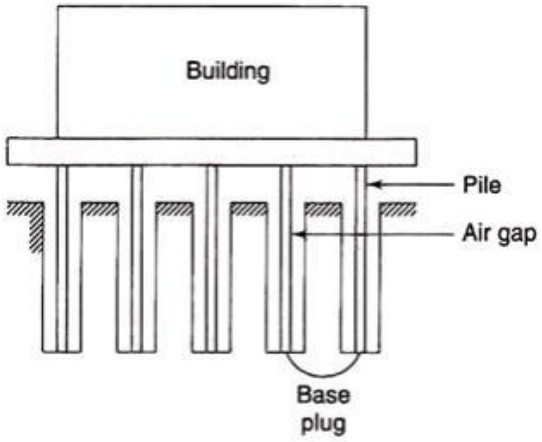


Figure 14.25: Foundation heave

In arid regions, the soil dries out and shrinks during the dry season and expands as moisture becomes available.

Water — rainwater — or from capillary.

When an inaccessible area is placed on top of the soil, it prevents evaporation. Obviously, the lighter the structure, the more the soil will lift. Heave problems are often associated with light structures such as small buildings, dumping areas of dams and roadways.

To avoid a major problem the first holes are drilled in the ground. Steel shells are placed and the basic concrete plugs and piles are poured.

At the bottom of the building around the piles an air gap remains, which serves to reduce the amount of soil (by allowing evaporation) and to allow the area of the matter without disturbing the structure.

❖ **Soil as Building Materials**

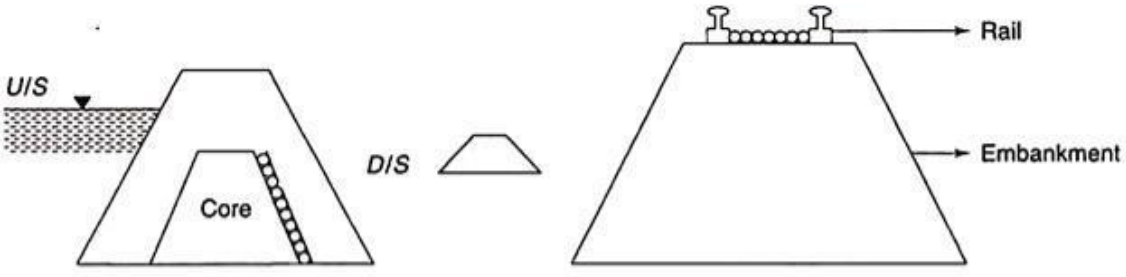


Figure 14.26: Earth membrane dam and Roofed Road

Soil is the only building material found in the area. The land is used for the construction of monuments, tombs, dwellings, walkways and water storage structures.

A. Earth and membrane dam
B. Roofed road

❖ **Slope and Excavation**

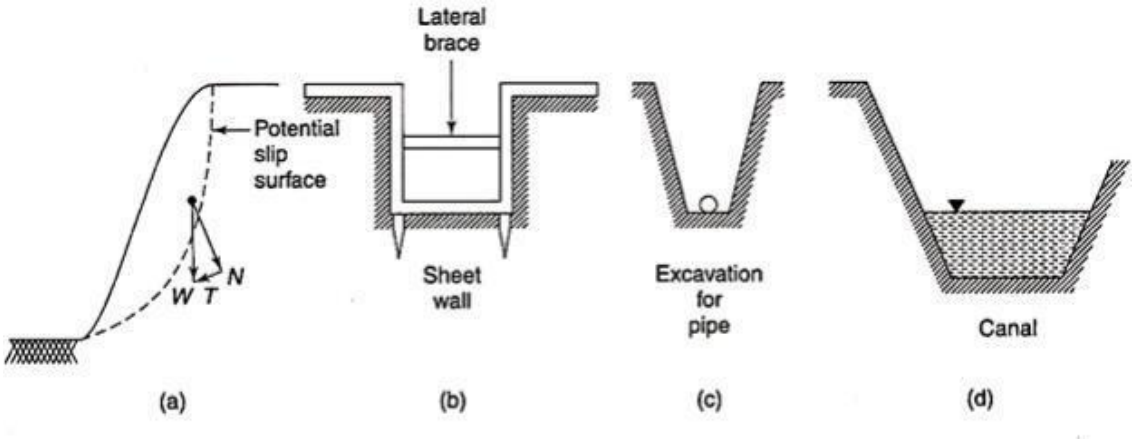


Figure 14.27: Slope and excavation

When the surface of the soil is horizontal there is a fraction of the gravitational force that tends to lower the soil. Strength analysis should be performed.

❖ **Underground Structure**

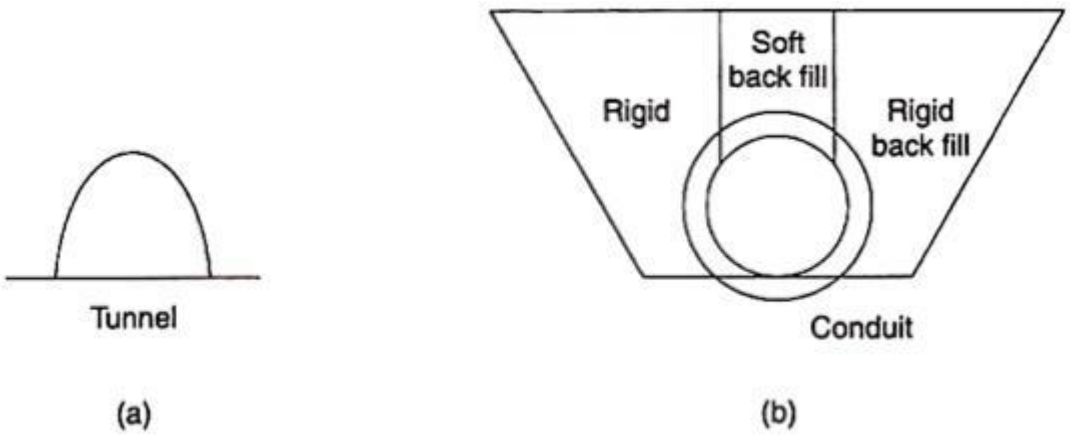


Figure 14.28: Tunnel and conduit

Drainage, barrels and canals require an assessment of the grounding capacity of these buildings.

❖ **Special Issues of Soil Engineering**

A. Vibration:

Some granular soil can be easily protected by vibration. The building can occupy a large area due to vibration – (a) compressors and (b) wind turbines.

B. Explosions and earthquakes:

Consequences in the formation of the earth's crust created by the eruption of quarries and other explosions for construction purposes. Similar problems arise as a result of earthquakes.

C. Snow:

Snow High Problems – When they come in contact with moisture and are below freezing temperatures, they can dehydrate and increase significantly. Such heights are strong enough to move and adjacent structures and can cause serious melting problems due to excess moisture.

A civil engineer designing highways and air traffic controls in cold climates should select a combination of basic soil and plumbing to prevent snow from rising or to form a mound to withstand the weak soil that occurs in the spring melt.

D. Regional Settlements:

Excessive pumping of oil and water from the ground can create large areas in a large area.

The first step in mitigating such regional delays is to identify the earth's stressors as fluids are released, and then look at how to replace lost fluids.

❖ **Engineering Solutions**

State engineers meet with construction on the ground, in the ground and in the ground.

Interpretation of insufficient and contradictory data, selection of soil boundaries, solution modification, etc., requires experience and a high level of engineering judgment.

While sound knowledge of soil mechanics is important to a soil engineer, engineering judgment is often a distinguishing feature of a prominent soil engineer.

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

❖ **Water supply system:**

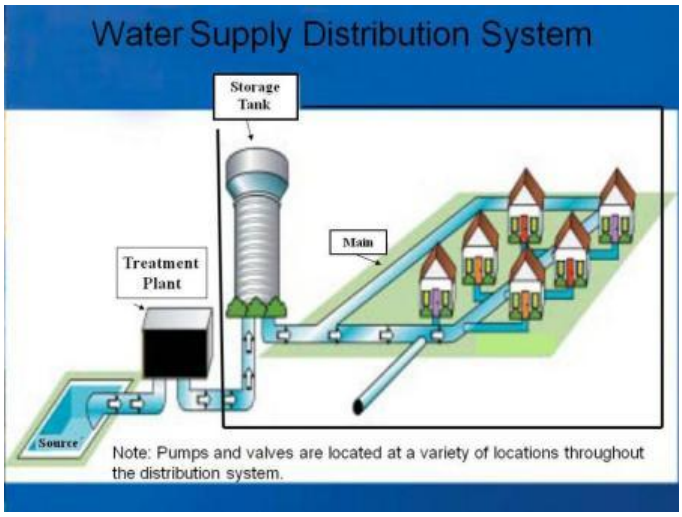


Figure 14.29: Water distribution system

Water distribution systems consist of a series of connected objects which includes:

- Pipes
- Last places
- Parts that supply drinking water

Water distribution systems meet fire protection requirements:

- At home
- Schools
- Hospitals
- Businesses
- Industries
- Other buildings

Public water systems rely on distribution systems to provide uninterrupted supply of safe drinking water pressed to all consumers. Distribution system pipes draw water from anywhere:

- The place of treatment to the consumer.
- Source to the consumer if treatment is not available.

Distribution programs travel about a million miles across the United States. They represent a large number of visible water supply infrastructure. The sadness of the distribution system can create ongoing or persistent health risks.

A. Water quality and distribution system

New pipelines are being installed in distribution systems as development progresses. Additions cause wide variations in:

- Pipe sizes
- Building materials

- Methods of construction
- Age within individual distribution systems and nationwide

As these systems age, deterioration may occur due to corrosion, erosion of building materials, and external pressure. Deterioration of water distribution systems could lead to:

- Breaking pipes and storage areas
- Inflation due to fluctuations in water pressure
- Great breaks

B. Protect water quality from distribution systems

The following EPA rules for drinking water relate to distribution systems

- Extra Water Treatment Rules (disinfection residues and hygiene residues)
- Phases 1 and 2 Infections and Infectious Diseases (DBPR) (monitoring DBPs in the distribution system)
- Groundwater Law (Sanitation Research)
- Complete Revised Coliform Law (to monitor contamination in distribution systems)

C. Cross Connection Control Manual

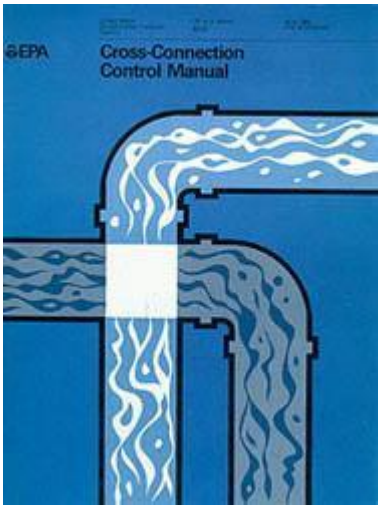


Figure 14.30: Cross Connection Control manual

This Connection Management Manual is designed as a tool for:

- Health workers
- Water workers
- Plumbers
- Any others who are directly or indirectly involved in water supply and distribution systems
- Designed to be used in teaching, management, and technology in multimedia control systems.

❖ **Waste water**

Used wastewater is affected by domestic, industrial and commercial use. The composition of all wastewater is constantly changing and changing drastically, which is why it is so difficult to pinpoint the meaning of the word itself.

The wastewater composition is 99.9% water and the remaining 0.1%. This 0.1% contains organic matter, microorganisms and inorganic compounds. Wastewater is discharged into various places, such as lakes, lakes, streams, rivers, rivers and seas. Polluted water also includes stormwater runoff, as hazardous materials wash away roads, parking lots, and roofs.

Figure 14.31:Waste water

A. Types of polluted water

It is often used interchangeably with the word sewage, "sewage" basically means any ponds that pass through the wild. Before entering a wastewater treatment plant, wastewater is sometimes referred to as wastewater or raw sewage.

Domestic wastewater comes from activities such as toilet use, bathing, food preparation and washing. Commercial wastewater comes from non-domestic sources, such as beauty salons or beauty salons, for example. This wastewater can contain hazardous substances and requires special treatment or disposal. Industrial wastewater comes from industrial or commercial production processes, such as agriculture, and is often more difficult to treat than domestic waste. The composition of industrial wastewater varies from industry to industry.

B. The natural content of wastewater

The body's wastewater content is made from human waste, protein, vegetables and sugar from food preparation, and soaps. Some of this organic matter is dissolved in water and some are present as separate particles. The only part of the body that is insoluble in the water is the solids. Contaminated water is treated to remove as many organisms as possible.

C. Effects of small insects

Bacteria and soils that occur naturally consume organic waste from contaminated water and use it as a source of food and energy for rapid growth. In a natural aquatic environment where there is a lot of oxygen dissolved in water, aerobic bacteria eat organic matter and form a slime of new bacterial cells and dissolved salt waste products.

When contaminated water is left alone, anaerobic bacteria decompose waste and release odorous gases such as hydrogen sulphide. Fragrant gases such as methane and carbon dioxide can also be released.

When there is a lot of wastewaters, all the oxygen will be depleted and anaerobic bacteria will take over, causing the water to flow. This is ultimately dangerous for fish and other oxygen-dependent species, sometimes creating dead areas.

D. Inorganic matter

Unusual minerals, metals and chemicals, such as sodium, copper, lead, and zinc are common in contaminated water from all sewage and wastewater. They can come from industrial and commercial sources, storm water, and the inflows and outflows of broken pipes. Many inanimate objects are stable and cannot be easily broken by living organisms in polluted water.

E. Nutrients

Excess nutrients such as phosphorus and nitrogen can cause eutrophication, which can also be toxic to aquatic animals. This also promotes overgrown crop growth and reduces the availability of oxygen, converting habitats and endangering certain species.

F. Other wastewater pollutants

Bacteria, bacteria and pathogens in polluted water can pollinate beaches and pollute fish. Coliform bacteria in human waste are usually harmless, but there are bacteria that can affect human health. These could be typhoid bacteria or viruses like hepatitis B, for example. Direct contact with these germs or water pollution can cause diseases as a result.

❖ **Sewerage system**

About half the government populationwho use water in kitchens and bathrooms in their homes and for commercial and industrial usage, send sewage to medical plants. More than half of waste water comes from businesses and industries. In addition, approximately half of the total flow of seawater pipelines is due to the runoff of weather-laden roads and underground cracks and faulty connections that allow groundwater into the system.

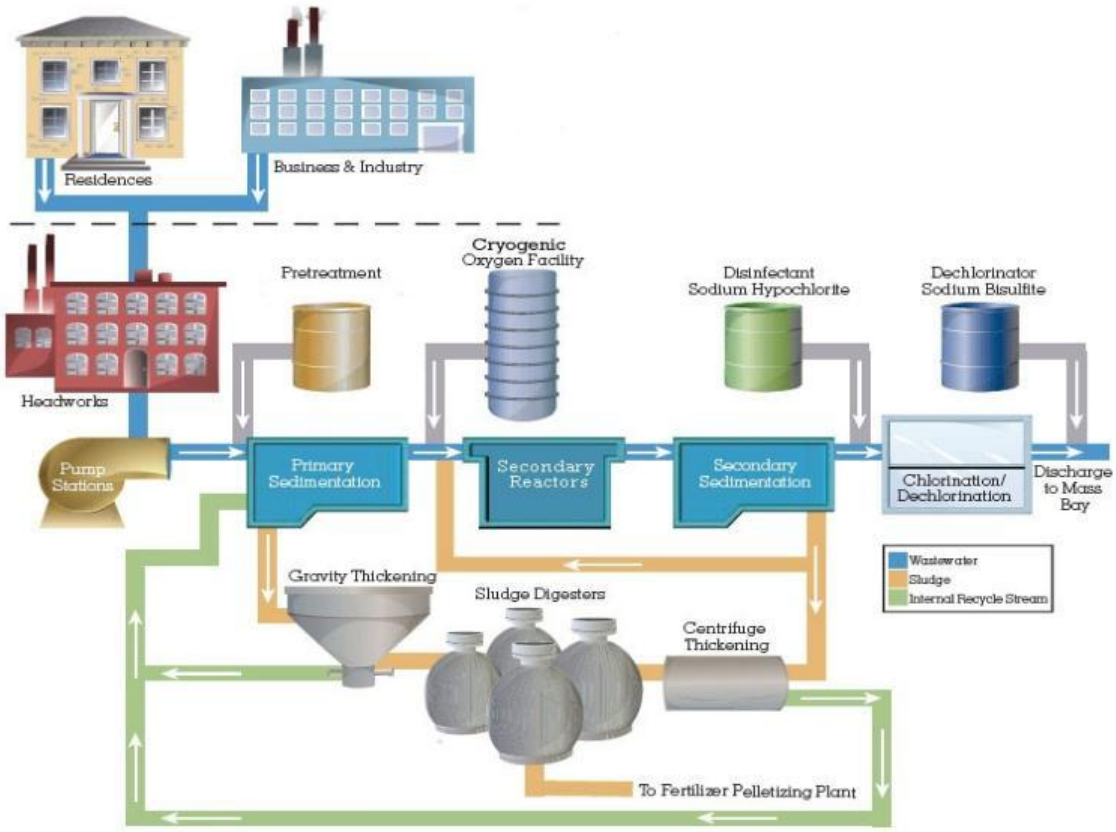


Figure 14.32: Treatment plant

The faces run through three different pipes. Domestic or industrial water is piped to the building's pipes to the toilet, which is managed and operated by city and city sanitation departments. Theselocal sewers carry interceptor sewers. The sewer pipes, which range from 8 to 11 inches in diameter, carry wastewater from the region totreatment plants. Although most of the wastewater flows with gravity, some low-lying areas need to be pumped.

Working of treatment plant

The treatment process is as follows:

A. Collection and Demolition

Sewage is piped from communities to many heads where bricks, logs and other large items are removed. Pumps pump sewage through deep rocky tunnels to treatment plant.

B. Initial treatment

Mud and sand settle in a tank called a grit chamber. Later, the material, known as grit and testing, is moved to a landfill to be disposed of safely.

C. Basic treatment

Sewage then flows into basic settling tanks where up to 60% solid in the waste stream remains as a mixture of sewage and water. This basic treatment removes very few toxic chemicals.

D. Second Treatment

In the second stage of treatment oxygen is added to the contaminated water to accelerate the growth of micro-organisms. These microbes then eat up the debris and settle to the bottom of the second settlement tanks. After the second treatment, 80-90% of the person's stool and other solids were removed. A large proportion of toxic chemicals are also eliminated by this process.

E. Disposal of treated water

The wastewater is disinfected before being discharged into available water. This portable wastewater river, known as the sewage, flows through a Outfall Tunnel on a solid rock below sea level. The last line includes different discharge points known as diffusers. This outlet provides a much higher rate of mixing and filtration than is possible with current extraction in shallow water.

Sludge from primary and secondary treatments is being processed continuously in Sludge digesters, where they are mixed and heated to reduces their volume again and kills the harmful bacteria's.

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

Sr no	Design name	Implementation (Already Done)	Remarks / Reason
1	Overhead tank	0 %	Funds are not Available
2	Biogas plant		
3	Road Design		
4	Water treatment plant		
5	Chabutra		
6	Public library		

Table 15.1: Existing scenario of implementation

- **Overhead Tank:** Overhead tank will design of 8 lac capacities based upon population of village which can sufficient to fulfill the basic water requirements of people.

- **Biogas plant:** Turkha village is consist of large number of cattle which produces large number of cattle dung and black soil from public sewer can be used to produce natural biogas, so the design of biogas plant is very important.

- **Road design:** Road condition in village is poor or broken condition which causes difficulty for villagers in transportation. Construction of road is required especially in monsoon season because water accumulation causes muddy road which causes mosquito nuisance as well as muddy road which makes total disturbance for villagers.

- **Water treatment plant:** Waste water from the village is directly drained into the Madhu River which causes pollution of river water, increase in death of river creatures such as fishes, under water plant etc. Moreover, polluted water cannot used for domestic and agricultural purposes. So we will design water treatment plant which filter and makes water pollution free before discharging into river.

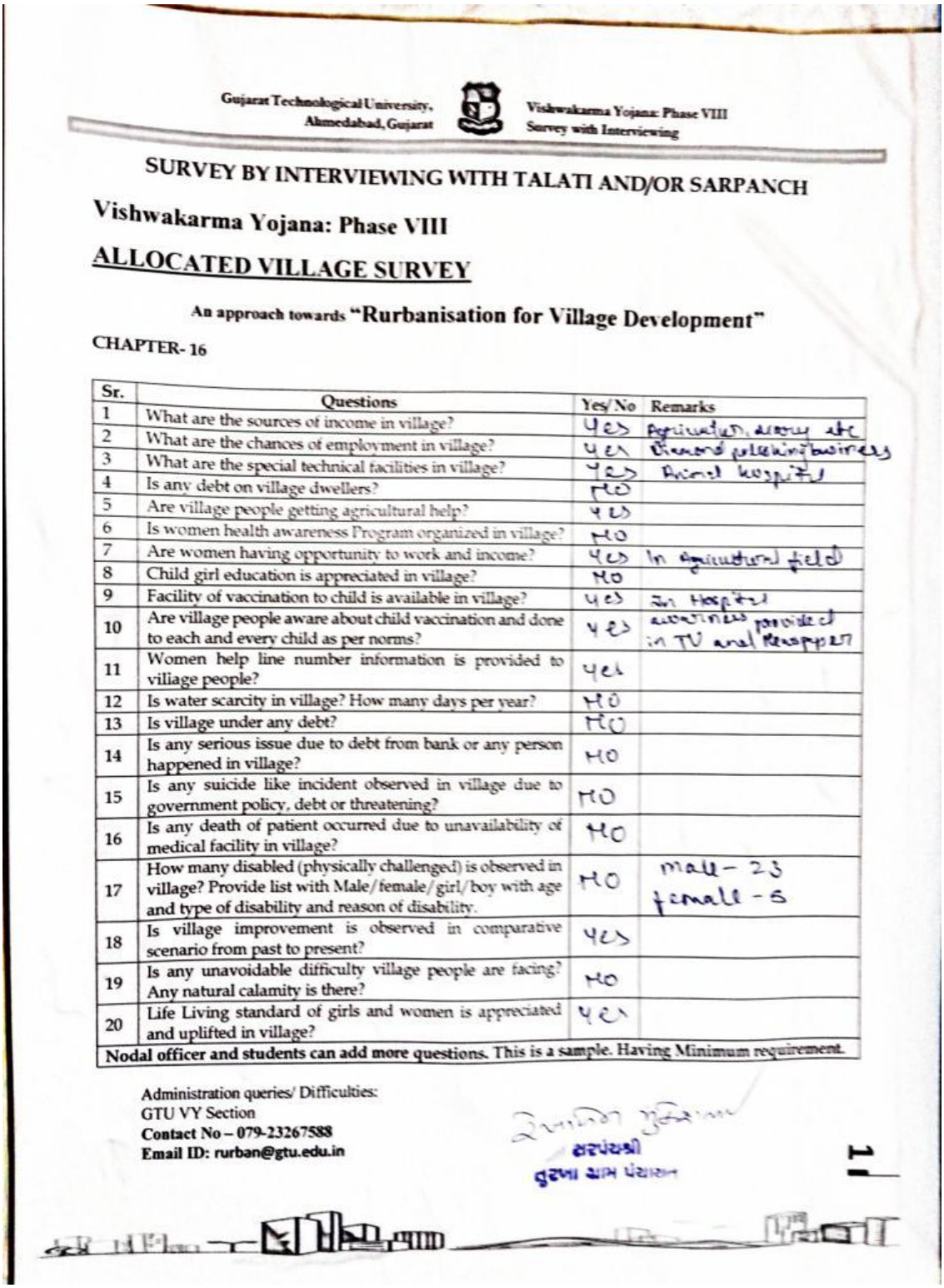
- **Chabutra:**The main purpose of designing chabutras is to provide grains,water,andshelter to all the birds. It also decreases in death of birds during all the season and it also improves aesthetic view of village.

- **Public library:** Most of the people of Turkha village are low educate and have low general knowledge specially youngsters of village are low educated which causes unemployment in various sectors, so the design of library is very important which provides variousbooks, magazine and newspaper for purpose of reading and increasing knowledge.

Sr. No	Design Name	Period	Amount Expenditure	Benefit
1	Overhead Tank	2 years	Rs 1220000	Delivery of water to all the users, moderately at a constant level. Water pressure depends on the distance of the tank from the ground and the progression being fed.
2	Biogas plant	1year	Rs 174000	Cattle dung and black soil from public sewer can be used to produce natural biogas.
3	Road design	3 years	Rs 4902000 Per km	It will Provide continuity in moving people and agriculturalproduct from rural communities to urban areas.
4	Waste water treatment plant	2 years	Rs 85000	The amount of waste that is usually released into the river is reduced thus improving village environment's health.
5	Chabutra	1 year	Rs 4700	For the purpose of wellbeing of birds and heritage aesthetic view of village.
6	Public library	1 year	Rs 632000	It will provide advice and connections to health, housing and literacy to village people.

Table 15.2: Details of implemented plans

Chapter 16: Survey by Interviewing with Sarpanch



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

CHAPTER- 16

Sr.	Questions	Yes/No	Remarks
1	What are the sources of income in village?	Yes	Agriculture, dairy etc
2	What are the chances of employment in village?	Yes	Diamond polishing business
3	What are the special technical facilities in village?	Yes	Animal hospital
4	Is any debt on village dwellers?	No	
5	Are village people getting agricultural help?	Yes	
6	Is women health awareness Program organized in village?	No	
7	Are women having opportunity to work and income?	Yes	In agricultural field
8	Child girl education is appreciated in village?	No	
9	Facility of vaccination to child is available in village?	Yes	In Hospital
10	Are village people aware about child vaccination and done to each and every child as per norms?	Yes	awareness provided in TV and Newspaper
11	Women help line number information is provided to village people?	Yes	
12	Is water scarcity in village? How many days per year?	No	
13	Is village under any debt?	No	
14	Is any serious issue due to debt from bank or any person happened in village?	No	
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	No	
16	Is any death of patient occurred due to unavailability of medical facility in village?	No	
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	No	male - 23 female - 5
18	Is village improvement is observed in comparative scenario from past to present?	Yes	
19	Is any unavoidable difficulty village people are facing? Any natural calamity is there?	No	
20	Life Living standard of girls and women is appreciated and uplifted in village?	Yes	

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

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

સરપંચશ્રી
તુરખા ગામ પંચાયત

1

Chapter 17: Irrigation Activities and Agro Industry, Alternate Techniques and Solution

17.1 Irrigation Activity:

Major infrastructure problems were a factor increasing agricultural production and production provides water for irrigation purposes. As rainfall continues unabated, the need to focus more lies in the management of water resources. Farmers they need to be encouraged to save water by using the right method of planting on their farms.

Sukhbhadar River is a river in Turkha village in Botad district of Gujarat whose origin is Vadihills. The length of river is 194 km. The total catchment area of the basin is 2005km².

Location	
Village	Turkha
District	Botad
State	Gujarat
Physical characteristics	
Discharge location	Arabian Sea, India
Orgin	Vadi hills
Length	194 km (121 mi)
Width	20 to 50 metres
Average depth	2 to 6 metres
No of check dams	8 nos
Catchment area	2005 km²
Availablity of water	All season

Table 17.1: Madhvi river details

17.2 Agro Industry:

Turkha is primarily an agricultural region with Cotton and Groundnut as the leading crop. The other major crops grown are Juar, Wheat, Sesame, and Pulses. About 47 percent of the world is controlled with small and medium scale farmers and an average catch size of 2.88 Ha.

Unemployment is a major threat to agricultural development in the region. Improved credit flow of agricultural machinery should be ensured. Banks can increase adopted JLG funding strategy to enable SF / MF to procure farming equipment and equipment.

Raising animals, especially dairy farmers, is a very useful and useful job. Since milk offers quick returns and close to stable prices, banks can pay freely to ensure compliance arrangements and farms/ dairy communities. Banks can also encourage farmers to take on raising the calf again/livestock farming, as active activities with financial assistance.

A major driver of capital investment for private companies is investment debt. Immediately action is required to increase its share of total agricultural debt.

17.3 Alternate Technics and Solution:

A sustainable farming system does not have to be just organic farming. There are many pathways that lead to many sustainable systems over time and that may be as much as 100 percent organic or at least from a large portion.

The following strategies for sustainable farming and practices are just a few examples of the many ways in which we can benefit from more sustainable agriculture.

A. Biodynamic farming

Figure 17.1: Biodynamic farming over organic and inorganic farming

Biodynamics incorporates growing natural and universal practices based on the philosophy of "anthroposophy." Farmers are encouraged to treat their farm as a single entity where the cultivated species come together and support each other's lives.

Biodynamics farm poultry and pigs

This includes keeping animals on the farm in a way that helps to supplement soil fertility and improve plant growth. One of the building blocks of biodynamics is the high diversity of beneficial plants, animals and insects. The goal is to create a sustainable system that benefits us and other living things.

Biodynamics emphasizes the importance of reducing the use of external inputs (such as introducing soil fertilization) by making the necessary life and soil fertility for on-site food production. This is achieved through the implementation of practices such as composting, animal manure in livestock, crop closure or rotation of associated crops.

It also places great importance on working with the natural environment and its effects on the earth's vegetation, plants, and animals during the different cycles of the moon and the sun. Biodynamic practices can be applied to farms that grow with a variety of products, gardens, vineyards, and other forms of agriculture.These new farming methods include growing plants without soil, feeding the plants with special nutrients that are added to the water.

In hydroponic systems, plants are planted by roots directly in a mineral solution or by roots in a waterless environment such as dust or perlite.Aquaponics combines the rearing of aquatic animals (such as fish) with the growth of hydroponic plants. In aquaponic systems, water containing waste products from aquatic fish is used to feed hydroponic plants. After the water has been used by the plants, the water is returned to the system for reuse by the fish.

Both hydroponic and aquaponic systems are available on a variety of scales, from small home systems to commercial scale systems.

B. Animal husbandry

Figure 17.2: Animal husbandry in Turkha village

Sustainable animal farming is possible and best for everyone. Not only is it good for the environment and our nutritional needs, but it is also good for animals. Animals raised on pasture or in their favorite habitat live under minimal pressure, close to their natural way of life. They can also establish contact with other animals and behave in a way that is natural to them (roll in the mud, pick the plants they want to eat, relax, play).

Allowing animals to eat and live-in pastures is much healthier for animals than the practice of closed animal enclosures. You will also notice that these animals are clean, smell better, and have a curiosity in their eyes. Their health and happiness in the quality

of the products we get from them. Delicious meat, yellow eggs, milk are rich in mineral and vitamin content.

As animals and grasslands have evolved into beneficial relationships for both, pastures and other pastoral systems enrich the world in many ways. Compost replenishes nutrients in the soil, completing the natural cycle of nutrients. The soil is regenerated by the action of animal hooves and the great diversity of plants thrives because the animals suppress the dominant species, giving way to a variety of rare plants.Grass also grows stronger root systems and more stems after feeding and trampling the hooves. This helps to prevent erosion, build up soils with rich vegetation of various pastures, destroy carbon dioxide from the atmosphere, and maintain grasslands that can hold many other species of wildlife and insects.

C. Natural pest management

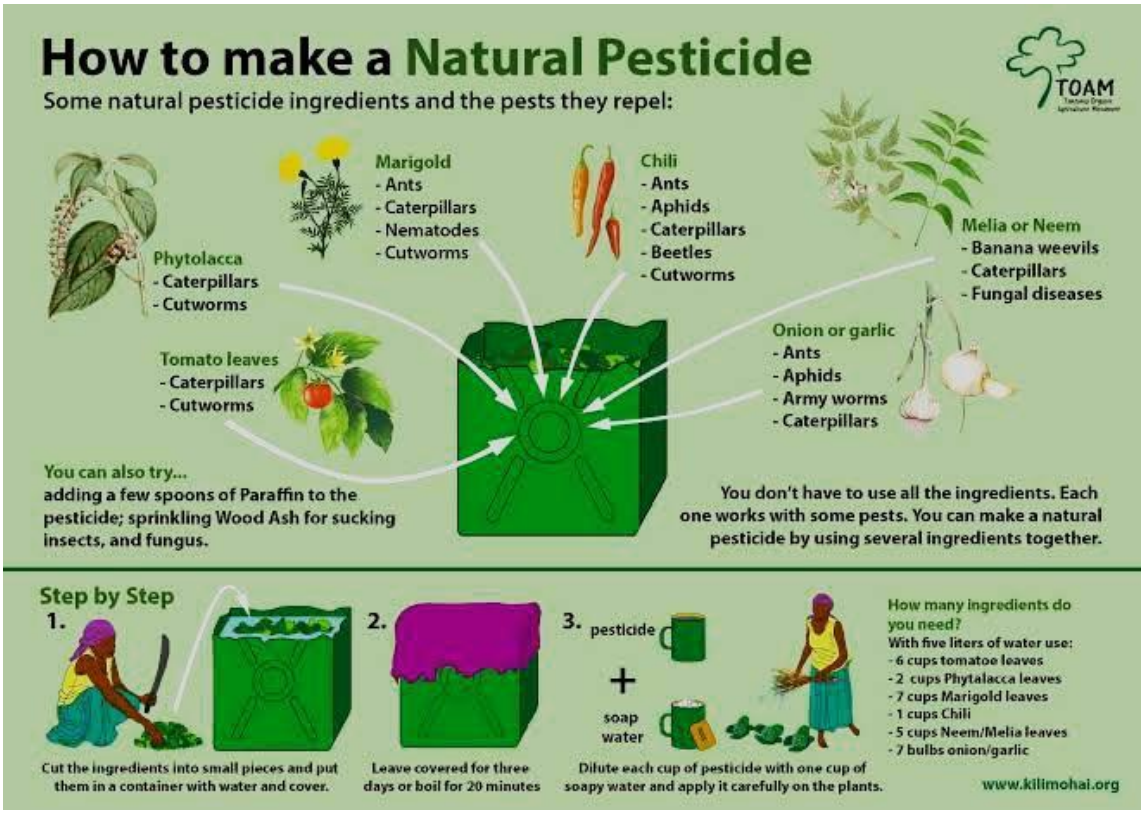


Figure 17.3: Procedure for making natural pesticide

One of the main objectives of sustainable agricultural practices is to prevent the use of synthetic pesticides and other chemicals that should reduce disease and bacterial infections. Incorporating an increasing amount of chemicals to increase food intake is not part of the long-term solution and does not help our health. Farmers from sustainable farms, therefore, seek solutions to the environment and try to re-create insect-resistant conditions.

They achieve this by using a collection of practices that strengthen the natural resilience of plants and practices that disrupt insect cycles.

Extensive crop diversification, crop rotation and crop rotation are some of the methods that have proved to be effective. The key to their success lies in distributing selected insect food sources by mixing plants they do not like. In addition, a variety of crops attract a wide variety of insects and some of them are natural predators, helping to maintain their proportions, thus mimicking the natural environment.

Farmers can also release or provide habitat for beneficial insects (such as ladybugs, lacewings, and flying parasites), as well as to encourage other organisms (such as birds and bats) that will act as plant-eating insects.

D. Polycultures and crop rotation

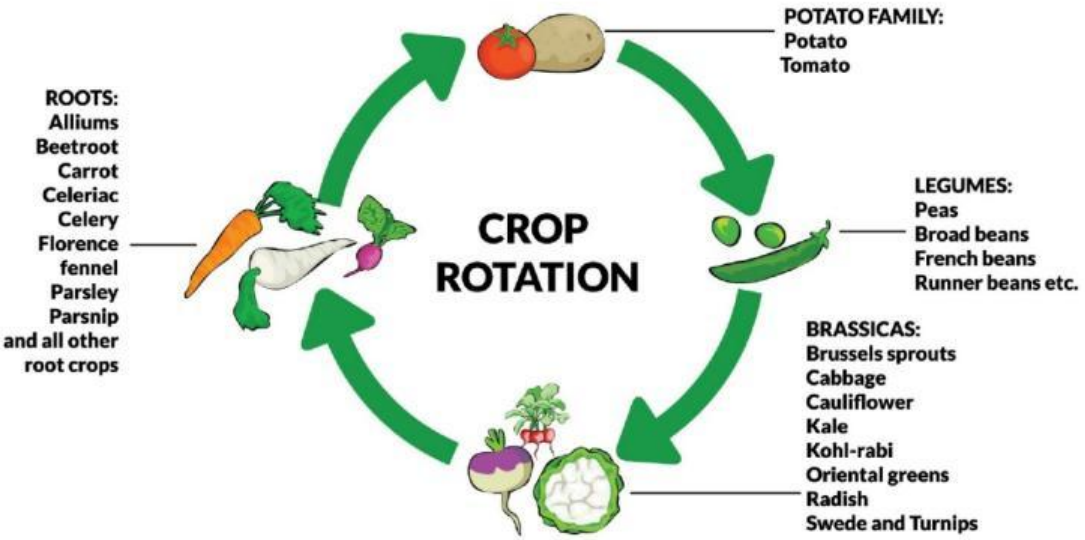


Figure 17.4: Crop's rotation cycle

Both methods seek to mimic natural processes to achieve the best results. Cultivating Polyculture involves planting many varieties in one place. These types are often compatible and aim to produce a wide range of products in a single structure while making full use of available resources. Biodiversity makes the system more resilient to climate change, promotes better nutrition and uses natural methods to maintain soil fertility.

Crop rotation is based on growing a series of different plant species in the same area at successive times. Scheduled cycles can vary from growing season to a few years or very long periods. It is one of the most effective agricultural management practices used to prevent land losses.By separating locally grown plants into polycultures and by growing crop rotations, farmers can significantly reduce the risk of disease and pest infestation. This is because their developmental cycles are disrupted by crop rotation. These practices also lead to a reduction in the need for fertilizers and pesticides.

Chapter 18: Social Activities – Any Activates Planned by Students

18.1 Teaching Learning activities

When we talk about the growth of the Turkmen city, we look at a variety of things and education is one of them. While urban schools have access to infrastructure, facilities and top teachers, rural schools are still struggling to access basic infrastructure such as toilets. Lack of teaching staff and motivation among students are two factors contributing to the poor quality of education in Turkish schools. 85% of public schools are in rural areas, and do not receive the benefit of quality education.

It aims to improve the quality of education in the remotest regions of the Turkish city through digital classes. The overarching goal of the organization is striving to create a home country that is knowledgeable and empowered with quality education.

We want to look at practical solutions to the problem. The idea is to improve student learning outcomes by bringing learning modules, students and technology together

- **How does this work?**

The digital classroom has a 32" LCD screen with a powerful camera and conference threads. Classes are taken to train volunteers from around the world via Skype. The eVidyaloka team organizes classroom and institutional sessions according to the size of the group and the availability of teaching volunteers. These teachers include housewives, hardworking women, and even senior retirees who have retired from various occupations, including the military.

The focus is on Government schools and local NGOs and partners in these areas play a critical role in the delivery model. In addition to identifying schools and active involvement with local regulatory authorities, local partners actively monitor classroom set-up and progressive child attendance rates. The target students are aged 11-14 and are taught Mathematics, Science and English through the same curriculum as determined by the local State Board.

These lessons are very useful and apply to the normal life of these students and are therefore the most important to us at the moment.

- **The challenge**

While India is short of 1.2 million teachers, and we have more than 40 million graduates over the past 20 years who can be a ready source of entry.

Turkha village often have difficulty connecting with the most common power cuts, hindering the normal teaching process. Part of the digital class infrastructure is why it includes power recovery in emergencies. In areas where there is no electricity, it should beoperated with other power supplies such as Solar.

Also, identifying students who are open to learning about this type of classroom model has taken some time. They should therefore partner with various local NGOs as they will become better acquainted with their specific circumstances

Although language is considered a barrier, the teaching team has successfully overcome this by using effective content management that allows volunteers to become accustomed to teaching in their native language, which is their mother tongue – even though it was not their native language during school days.

❖ **The future**

This fabric made by integrating international teaching resources with rural children has great potential to address the fundamental issue of quality education

The great lessons we have learned are that higher education is the most important thing today. If we give it to even one child, it becomes stronger and lights up the whole village

When a child becomes confident and eager to pursue his or her studies, that in itself is the first sign of what might be a decision to change a child's life. If we give it to even one child, it becomes stronger and lights up the whole village.

18.2 Awareness camp:

The purpose of the AwarenessCamp Program is to bring young people directly into the community and make efforts to improve their lives. Volunteers should devote their hours to general work in developing an approved village. The awareness is pregnant as an opportunity to stay with the community for some days, and to hear about people's circumstances and problems. Volunteers need to be encouraged to take steps to improve their status. Although the focus of the awareness camps changes from time to time and the planned programs are designed to respond to the needs of the community at the grassroots level, other broad areas of activity are listed below

A. Enrichment and Environment

As the main theme of the special tent program would be for Sustainable Development, environmental activities, enrichment will be organized under the themefor a Better Place. Tasks under this subheading will include, among others, including:

- Tree planting, conservation and conservation.
- Creation of parks / gardens
- Construction and maintenance of rural roads, pipelines, etc. to keep the environment clean.
- Construction of toilets etc.
- Cleaning of wells and springs.
- The popularity and construction of Gobar gas plants, the use of unconventional energy.
- Sanitation and refuse removal.

- Preventing soil erosion, and working for soil conservation.
- Water management and plain development.
- Preservation and preservation of monuments, and the creation of awareness of the preservation of cultural heritage in the community.

B. Health, Family Welfare and Nutrition Program

- Mass immunization program.
- Working with people on nutrition programs with the help of Home Science students and medical college students.
- Provision of clean and safe drinking water.
- Integrated child development programs.
- Health education, AIDS awareness and primary health care.
- A program of public education and family welfare.
- Lifestyle training and counseling centers.

C. Programs aimed at raising awareness of women's empowerment

- Programs to educate and inform women about women's rights both constitutionally and legally.
- Create awareness among women that they may also contribute to the economic and social well-being of the community.
- Create awareness among women that no job or occupation is open to them as long as they acquire the necessary skills.
- Teaching women sewing, embroidering, knitting and other skills where possible.

D. Social Service

- Works in hospitals, for example, works as ward visitors to entertain patients, assist patients, organize work or leisure activities for long-term patients, out-of-departmental patient care services including guiding visitors through hospital procedures, writing letters and reading to hospitalized patients; tracking patients discharged from hospital by making home visits and workplaces, assistance with running medical facilities etc.
- Co-operate with child welfare or disability.
- Work in institutions intended for physical and mental disability.

E. Blood donation planning, eye promise programs

- Work in Cheshire homes, orphanages, nursing homes, etc.
- Working in women's welfare organizations.

- The prevention of informal settlements through social education and community activities.

F. Product-oriented programs

- Working with people and defining and teaching advanced agricultural practices.
- Rat control practices on land.
- Pest control.

G. Soil testing, soil health care and soil conservation

- Assistance with agricultural machinery repairs;
- Work to promote and strengthen co-operative communities in the districts;
- Assistance and guidance in poultry farming, rearing, animal health care etc .;
- Small cash increases and Bank loan assistance.

H. Disaster Relief and Response Work

- Assisting the authorities in distributing supplies, medicines, clothing, etc.
- Assisting health managers with vaccinations and immunizations, providing medication etc.
- Co-operating with local people in rebuilding their huts, cleaning up wells, building roads, etc.

I. Education and Recreation

- Adult education (temporary programs.
- Preschool education programs.
- Programs for the continuation of school leavers, the training of students from the weakest grades.

J. Work on buildings

- Cultural and social participation programs including the use of mainstream media for teaching and recreation, community singing programs, dance etc.
- The organization of youth clubs, rural land for traditional sports in partnership.
- Programs that include discussions on the elimination of social evils such as communism, castism, regionalism, impunity, drug use, etc.
- Non-youth / rural education.
- Legal education, consumer awareness.

18.3 Business idea for self-help:

There are other businesses that are only suitable in rural areas as an agricultural-related business

A. Chickens on the farm

Figure 18.1: Poultry farm

Opening a poultry farm does not require much land. Only on your own or with the help of others can you start this business easily. You will have to raise a small chicken until you wait for something and then sell and leave.First, you can start this business in agreement with the seller. For this you will be given chicken, their food and everything, you will have to raise the chickens up to a certain month or weight depending on their need. You will be paid either for the number of chickens or for the weight. Payment is largely based on the weight of the chickens.

It is not recommended that you do everything yourself in the first place. As that can cost more money and you may face losses as you have no contacts and you should not risk starting your business.it would be better if you start it with a contract.

B. Fishing farm

Figure 18.2: Fishing farm

Just like raising chickens you can also do a fishing business. You need to understand something about this business as it is not easy. You need enough land for a fishing business. You need to be very careful in this business as one single mistake can lead to huge losses.The disease of one fish or one infected fish can damage the fish of the whole lake. So you need to be more careful in this business.

You can sell your fish directly at the market if the quantity is not very high but if the quantity is large you can export as well. You prefer to raise the most sought-after fish and get more profit, for example, Rahu, catfish, Hilish, Mangur, etc.

C. Drinking water

Figure 18.3: Drinking water, home business ideas

Usually people used handcuffs, lakes, rivers etc. in the village. But now almost everyone has a hand pump in their homes and people are starting to get drinking water canes. You can start this business with a lot of money. You can start a store in your home. If possible, you can take four wheels like tata Mahindra to carry sticks. You can handle even two wheels at first.

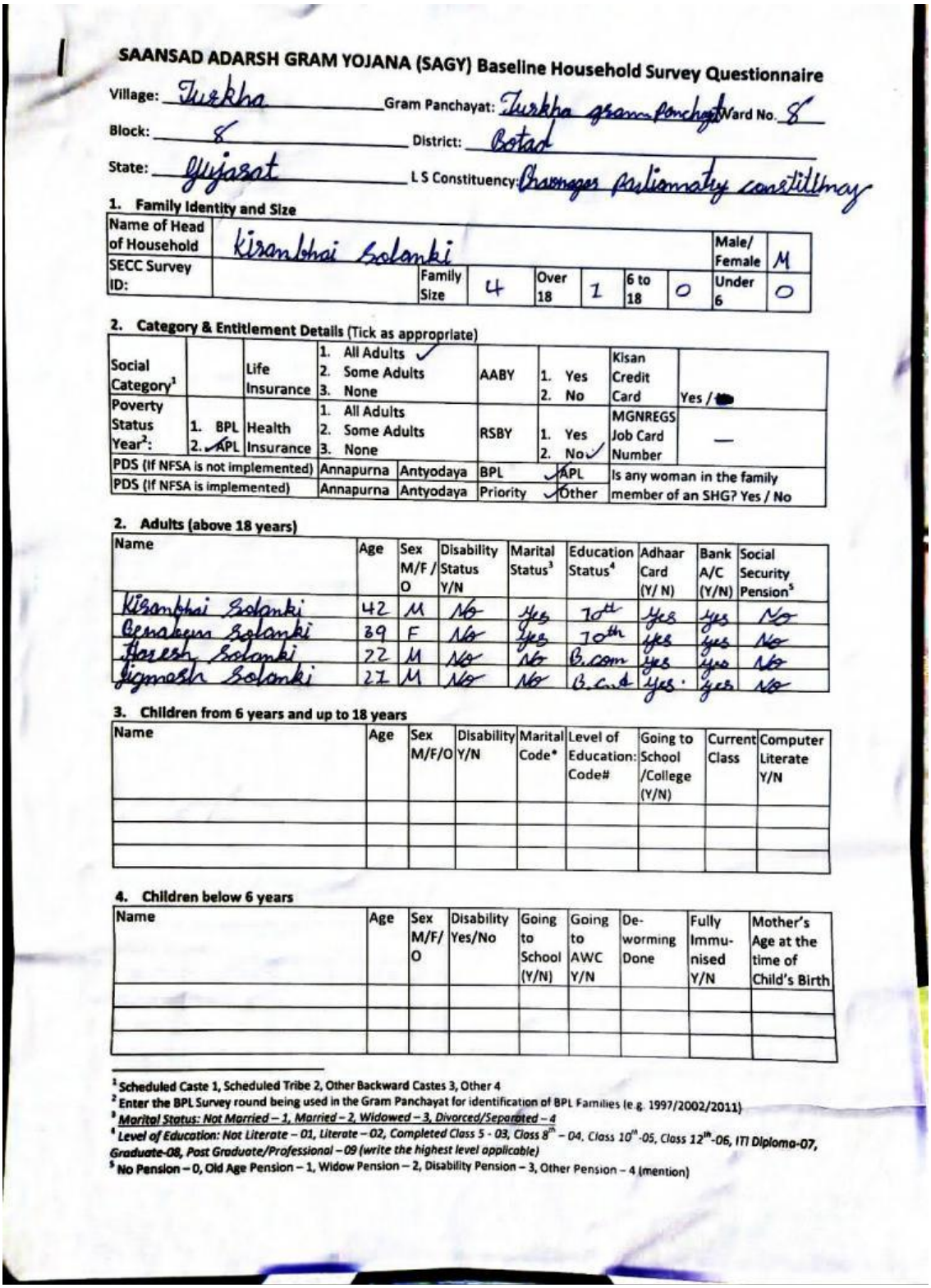
If you do not find the delivery home free then you can still run your business as the people themselves would come to your store and take the sticks and deliver them on their own. Since you belong to the same city, it would be easier for you to promote your business.

D. Oil mills

Figure 18.4: Oil mills

Due to the shortage of oil mills, people go to faraway places to obtain pure oil or are forced to sell the product at a lower price. If you raise enough money you can set up oil mills. As people grow mustard, beans, nuts etc. in their fields they often extract oil from mills for use. People may not extract as much oil as they are used for. The leftovers are used by them as cattle feed. Since this is done by all the villagers in the village you would not need customers.

Chapter19: Turkha Village SAGY Questionnaire Survey form with the Sarpanch Signature(Scanned copy attachment in the soft copy report and original copy in hardbound report)



SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Turkha Gram Panchayat: Turkha gram panchayat Ward No. 8

Block: 8 District: Botad

State: Gujarat L S Constituency: Bhavnagar parliamentary constituency

1. Family Identity and Size

Name of Head of Household	Kiranbhai Solanki							Male/ Female	M
SECC Survey ID:		Family Size	4	Over 18	1	6 to 18	0	Under 6	0

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 /
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]
Kiranbhai Solanki	42	M	No	Yes	10th	Yes	Yes	No
Geetaben Solanki	39	F	No	Yes	10th	Yes	Yes	No
Hareshh Solanki	22	M	No	No	B.com	Yes	Yes	No
Jignesh Solanki	27	M	No	No	B.C.A	Yes	Yes	No

3. Children from 6 years and up to 18 years

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

4. Children below 6 years

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

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

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

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

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

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

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

5. Hand washing

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

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

7. Do members take Regular Physical Exercise

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

8. Consumption of Tobacco

	Smoking	Chewing
Adults	Yes	Yes
Children	No	No

9. House & Homestead Data

Own House: Yes / ~~No~~	No. of Rooms: 3
Type: ~~Kutcha~~ / ~~Semi Pucca~~ / Pucca	
Toilet: Private / ~~Community~~ / ~~Open Defecation~~	
Drainage linked to House: Covered / ~~Open~~ / ~~None~~	
Waste Collection System	Door Step / Common Point / No Collection System
Homestead Land: Yes / No	Kitchen Garden : ~~Yes~~ / No
Compost Pit: ~~Individual~~/ Group/ ~~None~~	Biogas Plant: ~~Individual~~/ ~~Group~~/ None

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

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

11. Source of Lighting and Power

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

12. Landholding (Acres)

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

13. Principal Occupations in the Household

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

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

15. Agriculture Inputs

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

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

Name	Unit	Quantity
Cotton		90%
Sugarcane		70%
Groundnut		40%

17. Livestock Numbers

Cows: 15	Bullocks: 4	Calves: ___
Female Buffalo: 40	Male Buffalo: 3	Buffalo Calves: 6
Goats/ Sheep: 104	Poultry/ Ducks: —	Pigs: —
Any other: Type Horse	No. 38	
Shelter for Livestock: Pucca / ~~Kutcha~~ / ~~None~~		
Average Daily Production of Milk(Litres): 60 lit		

18. What games do Children Play
cricket, wallyball. running games. kabaddi. etc.

19. Do children play musical instrument (mention)
No

Schedule Filled By:
Principal Respondent:
Date of Survey:

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: Turkha.

b. Ward Number: 8

c. Gram Panchayat: Turkha gram panchayat.

d. Block: 8

e. District: Botad.

f. State: Gujarat

g. Lok Sabha Constituency: Bhavanagar parliamentary constituency

h. Number of Habitations / Hamlets in the Gram Panchayat: 1

i. Names of Habitations / Hamlets:

Turkha gram panchayat.

Demographic Information

Number of Households 1799 Total Population 5589 Male 2958 Female 2631

SC HHs 937 ST HHs 1 OBC HHs 249 Other HHs 18.

II. Access to Infrastructure/Amenities etc.

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
a.	Nearest Primary School	yes	
b.	Nearest Middle School	yes.	
c.	Nearest Secondary School	yes.	
d.	Kisan Seva Kendra	No	
e.	Milk Cooperative /Collection Centre	No	
g.	Health Sub Centre	yes	
h.	Bank	yes	
i.	ATM	yes	
j.	Bus Stop	No	
k.	Railway Station	No	16Km from Botad.

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

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society	No	
p	Nearest Agro Service Centre	No	16KM from Botad
p	MSP based Government Procurement Centre	No	16KM from Botad
q	Milk Cooperative /Collection Centre	No	16KM from Botad
r	Veterinary Care Centre	Yes	
s	Ayurveda Centre	Yes	
t	E – Seva Kendra	No	16KM from Botad
u	Bus Stop	No	
v	Railway Station	No	
w	Library	No	
x	Common Service Centre	Yes	

IV. Sports Facilities in the Gram Panchayat

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

b. Mini Stadium : 0 Yes(Y) /No (N) *(Playground with equipment and sitting arrangement)*

V. Education, ICDS

a. Number of Angan Wadi Centres: 1

b. Number of villages without Angan Wadi Centres 0

Names of such villages: _____

c. Schools (Number)

Primary Private: 0 Primary Govt.: 1

Middle Private: 0 Middle Govt.: 1

Secondary Private: 0 Secondary Govt.: 1

Higher Secondary Private: 0 Higher Secondary Govt: 0

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)	✓	✓		✓		Turkha	
b.	Kerosene	✓			✓		Turkha	
c.	Other (mention)	X						

2

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

VII. Coverage of Villages under different Facilities & Services

	Parameter	Villages Status[1]	Names of Villages Covered	Names of Villages not Covered
a.	Piped Water Supply Coverage to Villages	Covered ✓ / Not Covered	Turkha village	
b.	Hand Pump Coverage in Villages:	Covered ✓ / Not Covered	Turkha village	
c.	Coverage under Covered Drains:	Covered ✓ / Not Covered	Turkha village	
d.	Coverage under Open Drains:	Covered ✓ / Not Covered	Turkha village.	
e.	Villages with Household Electricity Connection (Numbers)	Connected ✓ / Not Connected	Turkha village 1009 connections	

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	18.64 hec.	d.	Pasture / Grazing Land	5	g.	Check Dam	8
b.	Irrigated Land	12.55 hec.	e.	Forests/ Plantations	4.023	h.	Wells/Bore Wells	24
c.	Un-irrigated Land	45.55 hec.	f.	Other Common Land	18	i	Tanks /Ponds	2.

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

3

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

IX. Parameters relating to Households & Institutions

		Number
a)	Number of eligible Households for pension (old age, widow, disability)	8
b)	Number of Households receiving pension (old age, widow, disability)	0
c)	Number of eligible Households who are not receiving pension	45
d)	Number of Households eligible for Ration Card	302
e)	Number of eligible HHs having ration cards	188
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	0
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	0
h)	Number of active Job Card holders under MGNREGA	0
i)	Number of Job Card holders who completed 100 days of work during 2013-14	0
j)	Number of shops selling alcohol	0
k)	Number of BPL families	36
l)	Number of landless households	0
m)	Number of IAY beneficiaries	0
n)	Number of FRA[2] beneficiaries	0
o)	umber of Community Sanitary Complexes	2
p)	Number of Households headed by single women	56
q)	Number of Households headed by physically handicapped persons	13
r)	Total number of Persons with Disability in the village	202
s)	Number of SHGs	0
t)	Number of active SHGs	0
u)	Number of SHG Federations	0
v)	Number of Youth Clubs	1
w)	Number of Bharat Nirman Volunteers	0

Name and Signature of Surveyor and Respondent'

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

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

4

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: Turkha

b. Block: B

c. District: Botad

d. State: Gujarat

e. Lok Sabha Constituency: Bhavnagar parlimentry

f. Number of Wards in the Gram Panchayat: 6

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages:

Turkha village.

Demographic Information

Number of Households 1799 Total Population 5889 Male 2958 Female 2937

SC HHs 937 ST HHs 1 OBC HHs 249 Other HHs 18.

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	yes	
b.	Nearest Primary Health Centre (PHC)	yes	
c.	Nearest Community Health Centre (CHC)	yes	
d.	Nearest Post Office	yes	
e.	Nearest Bank Branch (Any)	yes	
f.	Nearest Bank with CBS Facility	yes	
g.	Nearest ATM	yes	
h.	Nearest Primary School	yes	
i.	Nearest Middle School	yes	
j.	Nearest Secondary School	yes	
k.	Nearest Higher Secondary School / +2 College	No	15 KM from Botad.
l.	Nearest Graduate College	No	15KM from Botad
m	Nearest ITI / Polytechnic Centre	No	18Km from Botad
n	Kisan Seva Kendra	No	15KM from Botad

1

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

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: Some Society

iii. Drinking Water Facilities

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

If 3 mention the name of the habitations not covered:

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

If 3 mention the name of the habitations not covered:

b. Coverage under Open Drains: 1 *(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: All*(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): 2.

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 1

c. Schools (Number)

Primary Private: 0 Primary Govt.: 1

Middle Private: 0 Middle Govt.: 1

Secondary Private: 0 Secondary Govt.: 1

Higher Secondary Private: 0 Higher Secondary Govt: 1

2

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	No
2	Number of active Job Card holders who have completed 100 days of work	No
3	Number of shops selling alcohol	No
4	Number of BPL families	308
5	Number of landless households	42
6	Number of IAY beneficiaries	No
7	Number of FRA beneficiaries	No
8	umber of common sanitation complexes	3
9	Number of SHGs	No
10	Number of active SHGs	No
11	Existence of SHG Federation in the Village (Yes / No)	No
12	Number of Youth Clubs	—
13	Number of Bharat Nirman Volunteers	—

Name and Signature of Surveyor and Respondent'

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

3

Chapter20: TDO-DDO-Collector emails sending soft copy attachment in the report

SAL EDUCATION

Deep Patel <deep.patel@sal.edu.in>

Development scenario of Turkha village, Botad, Gujarat

1 message

Deep Patel <deep.patel@sal.edu.in> Mon, Jul 19, 2021 at 1:27 PM
To: collector-botad@gujarat.gov.in

Respected sir/madam,

We are students of SAL Institute of Technology & Engineering Research Center, Ahmedabad affiliated to Gujarat Technological University. GT assigned us the Vishwakarma Yojna Phase-VIII project in which we have to survey an ideal and smart village. Based on that we have to design various facilities for any undeveloped village. We have selected Turkha village in Botad district to propose various development works.

As part of Vishwakarma Yojna's guidelines we have been asked to inform concerned officers about our project.

Please find herewith attachment of our project report.

Thanking you & Regards,
ZeeshanVadia (180673106045)
Bhargav Dudakiya (180673106516)

DPR_Turkha Village_VY Phase II_SALITER_067.pdf
17683K

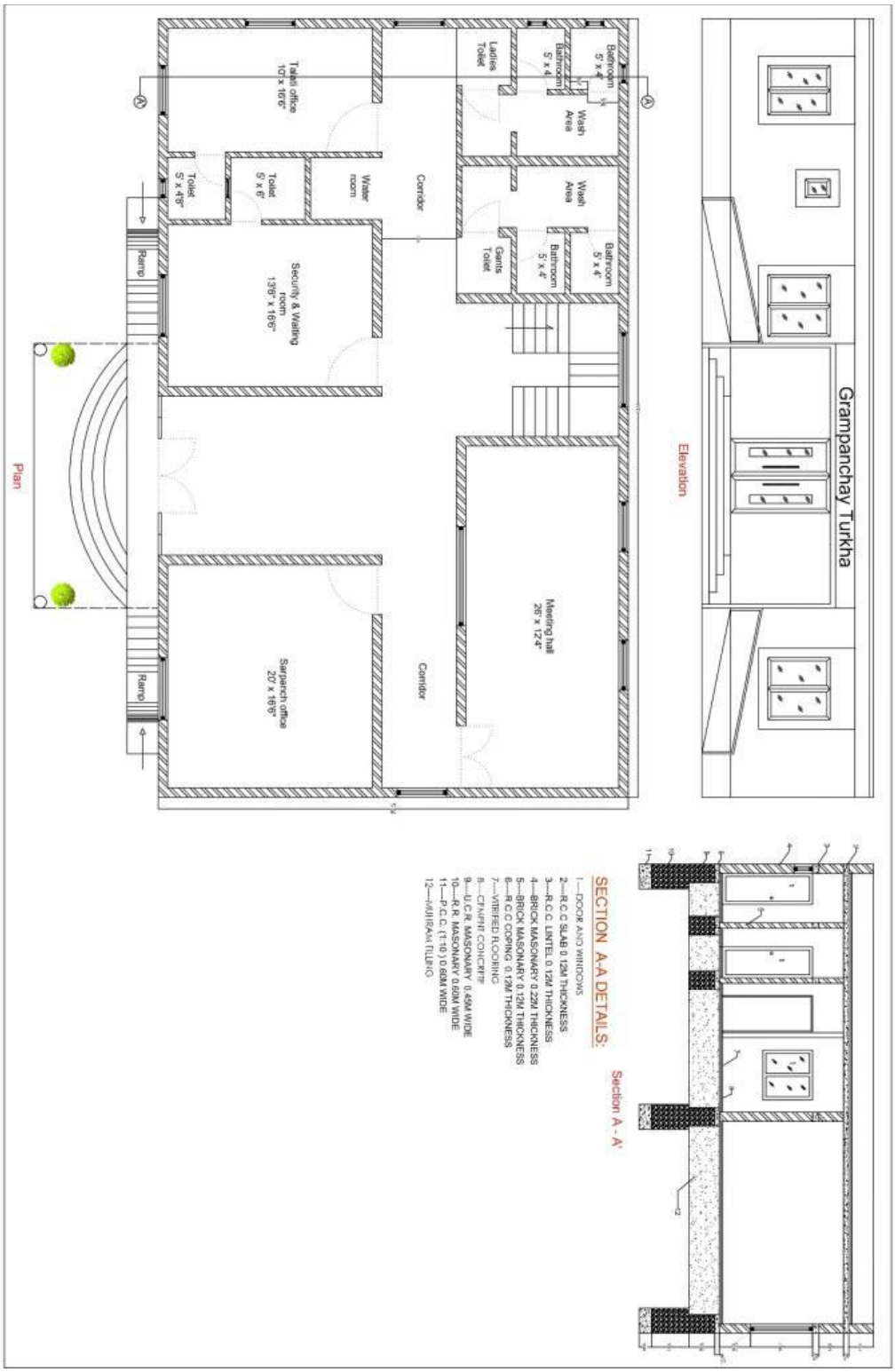
Chapter21: Comprehensive report for the entire village

Vishwakarma Yojana provides a special village development scheme by GTU as well Gujarat Government where students work together and collect information and information about spatial development with the help of a gram panchayat and participants. The village has some basic features. Institutions prefer drinking water, water supply system, pucca road, and other facilities such as primary school,basic health center, community hall, library, public toilet, are enough for the districtcan improve. Therefore, we will provide a proposal on sustainable energy sources and related solutionsin infrastructure problems. Efforts have been made in this project to find and edit othersof the following areas for sustainable rural development and meeting the needs of future people.Vishwakarma Yojana is one of the initiatives towards rural regeneration which is the development of the villageby the government of Gujarat, assigned as a real-time project type projectGTU.

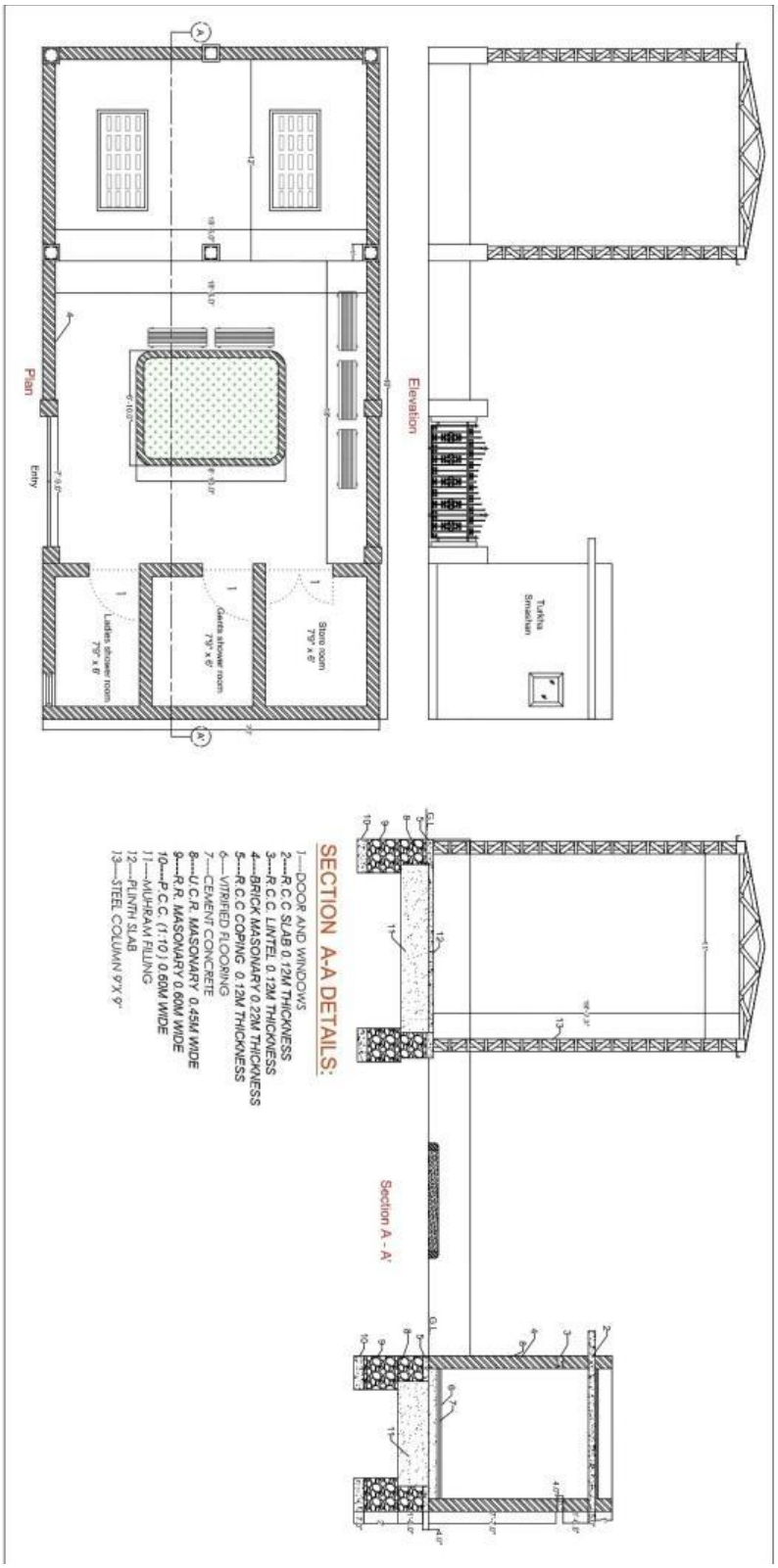
It is one of the best ways to reduce the pressure on the city and to reduce its mobility a thriving village with a “rural soul” but with all the urban features a city can have. In this caseProduce students to meet with relevant village residents and inspect existingbuildings. After thatconstruction of sustainable infrastructure to be repaired for the city. Thisincludes engineering skills development to prepare detailed reports of the village project such as part of the project work in the final year. With this project some experience restores real work as wellthe need for the application of individual technical knowledge to existing problems.

Based onResearch has tried to provide the construction of basic facilities to meet their needs. By providing these basicsresources in the village to reduce urban pressure and reduce the rate of migration, which in the end the purpose of Vishwakarma Yojana.

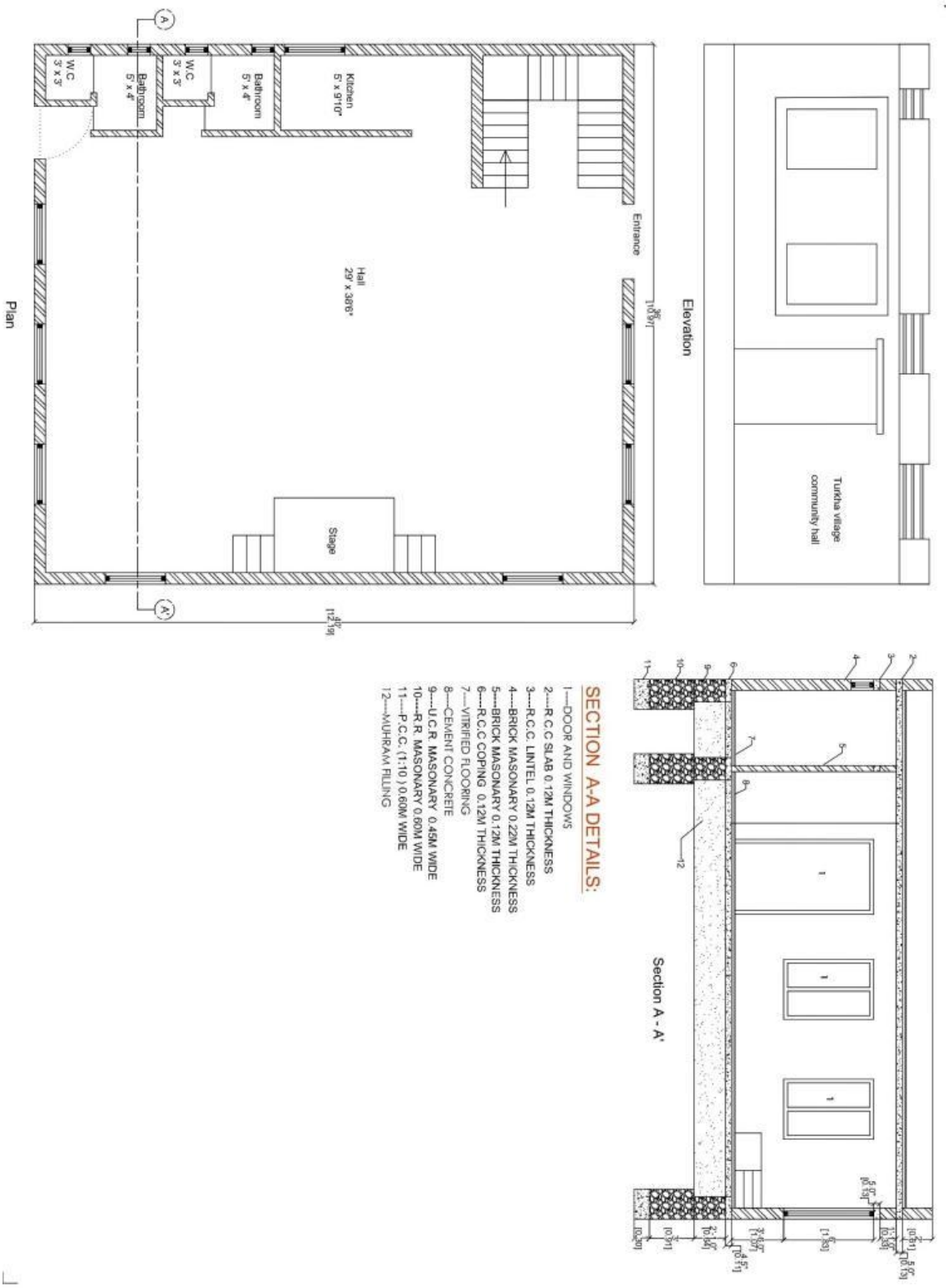
Design infrastructure: Gram Panchayat Building
Village: Turkha
District: Botad



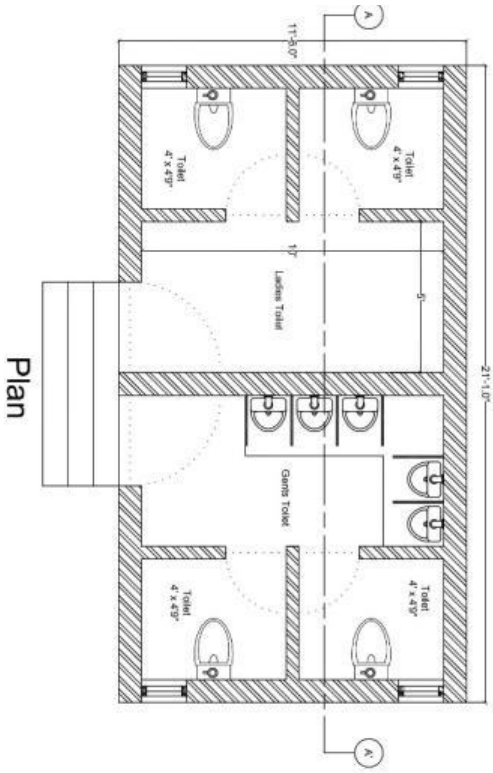
Design infrastructure: Cemetery
Village: Turkha
District: Botad

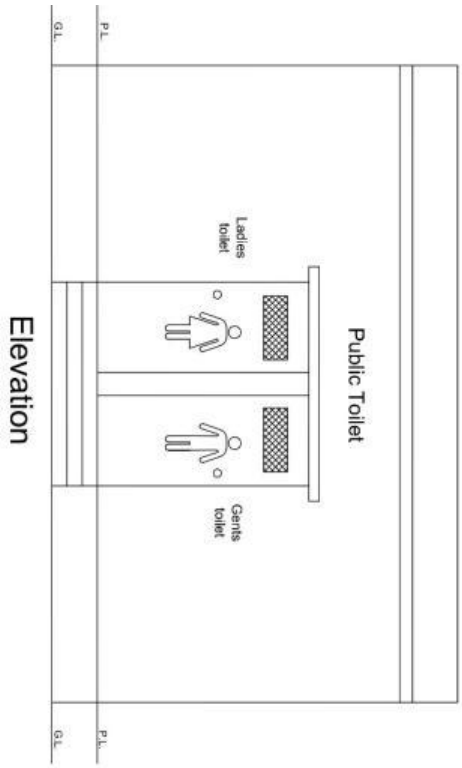


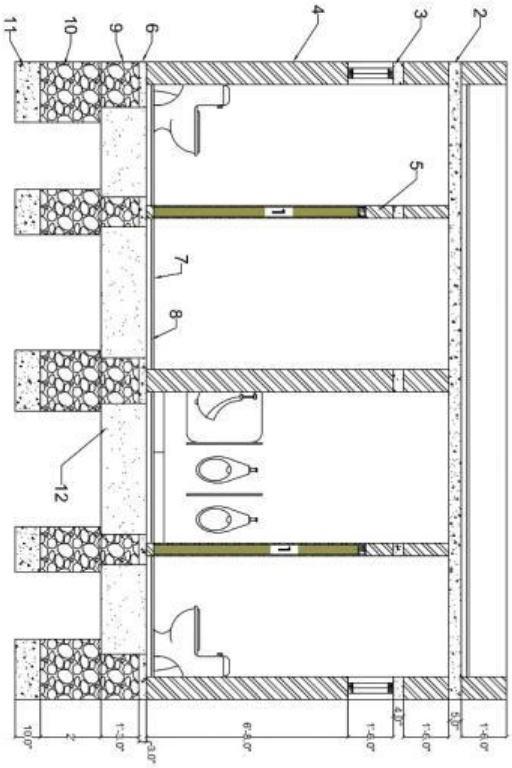
Design infrastructure: Community Hall
Village: Turkha
District: Botad



Design infrastructure: Public toilet
Village: Turkha
District: Botad



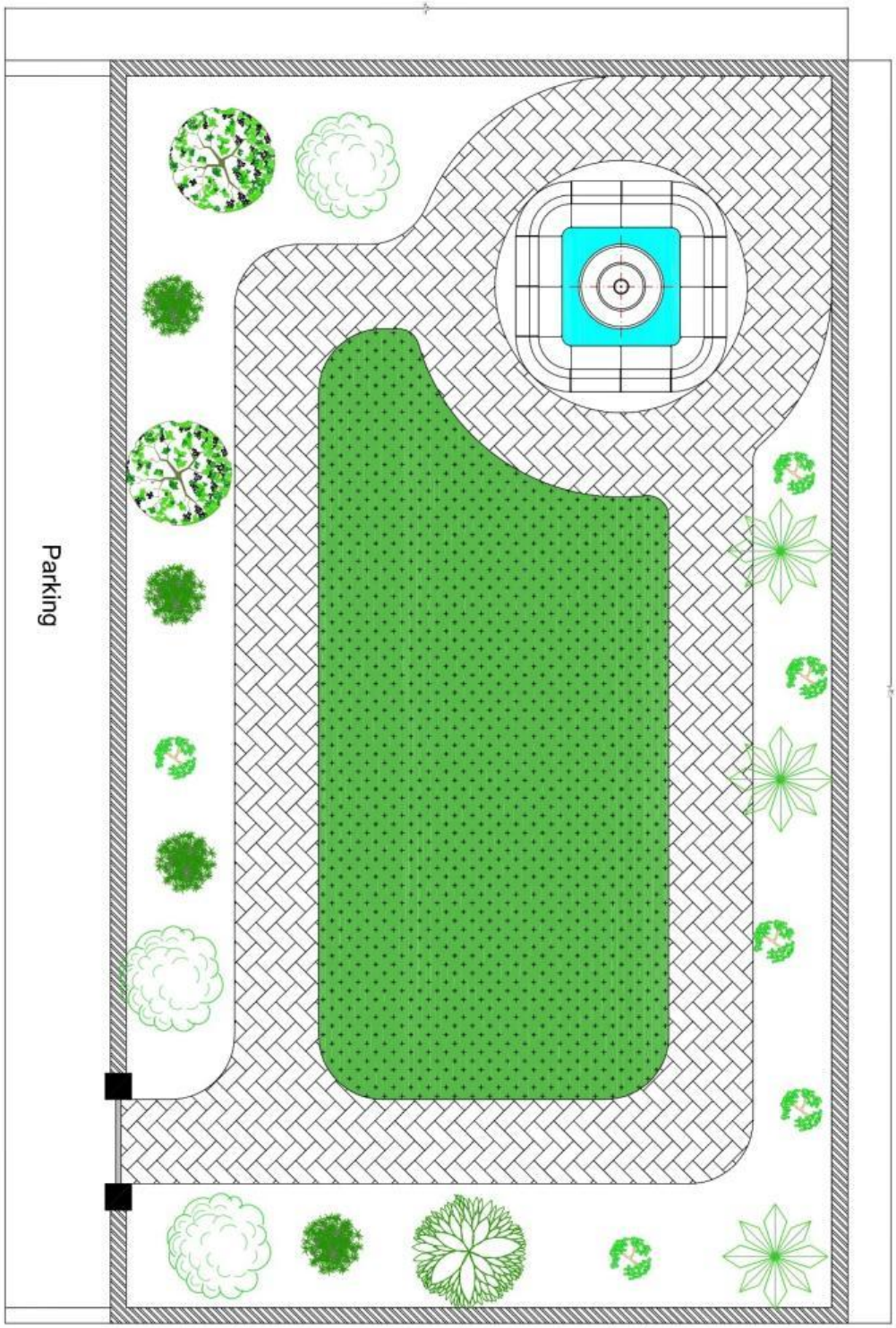




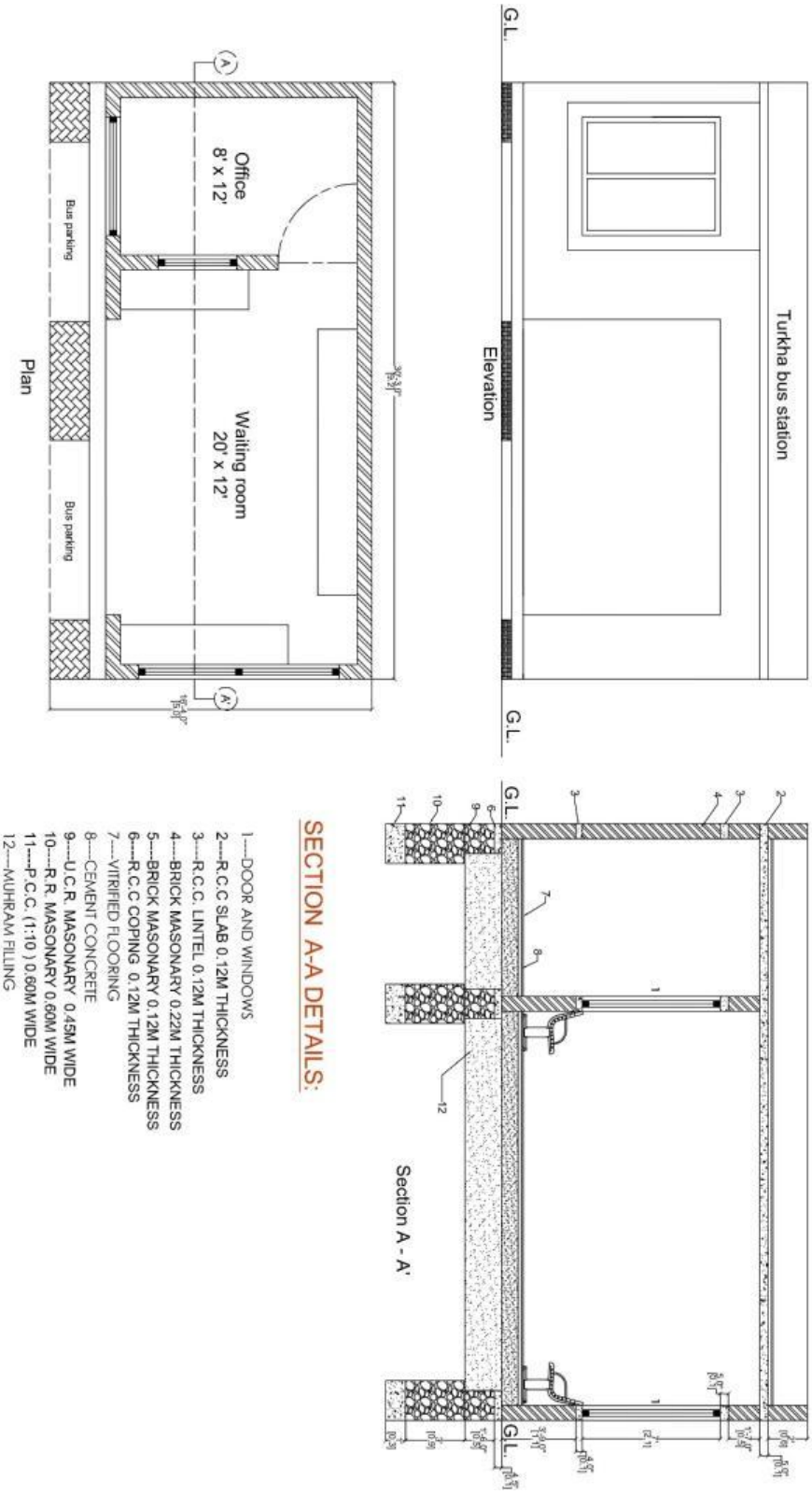
SECTION A-A DETAILS:

1----DOOR AND WINDOWS
2----R.C.C SLAB 0.12M THICKNESS
3----R.C.C. LINTEL 0.12M THICKNESS
4----BRICK MASONARY 0.22M THICKNESS
5----BRICK MASONARY 0.12M THICKNESS
6----R.C.C COPING 0.12M THICKNESS
7----VITRIFIED FLOORING
8----CEMENT CONCRETE
9----U.C.R. MASONARY 0.45M WIDE
10----R.R. MASONARY 0.60M WIDE
11----P.C.C. (1:10) 0.60M WIDE
12----MUHRAM FILLING

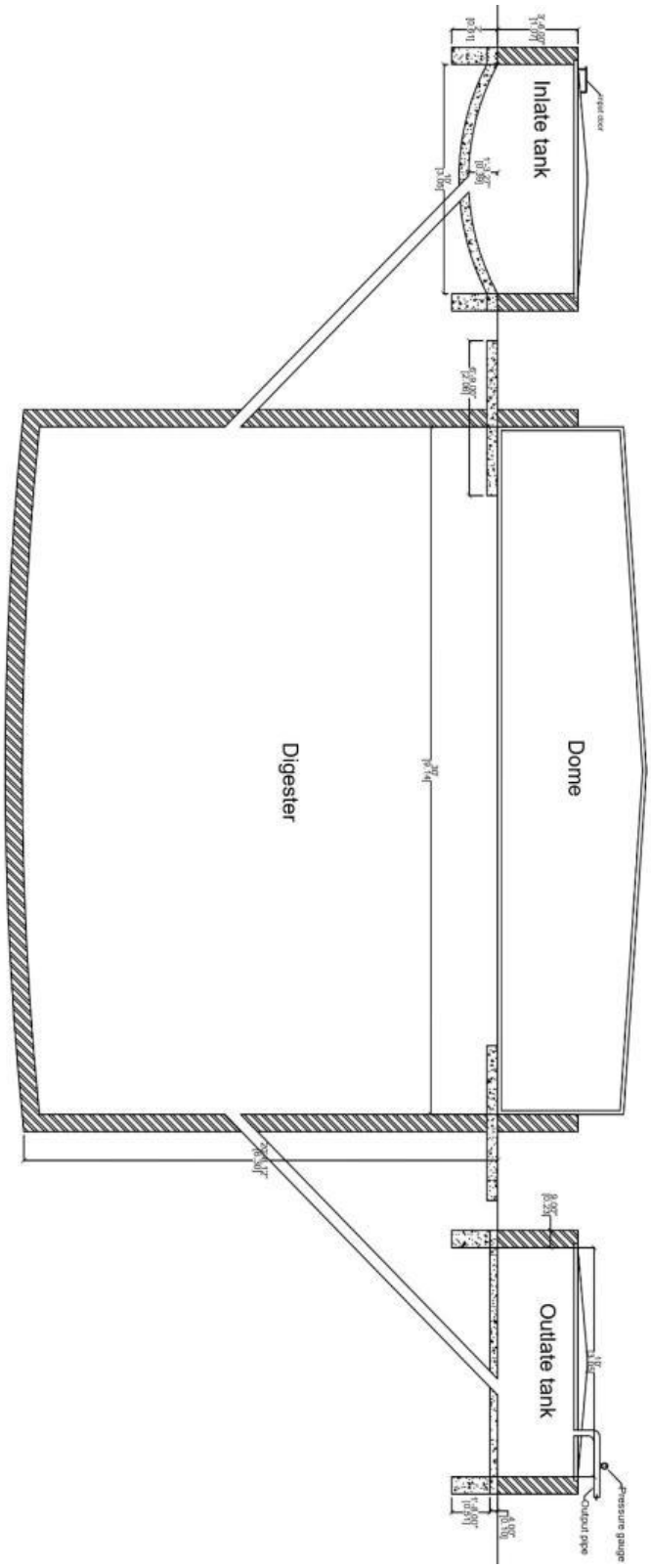
Design infrastructure: Public Garden
Village: Turkha
District: Botad



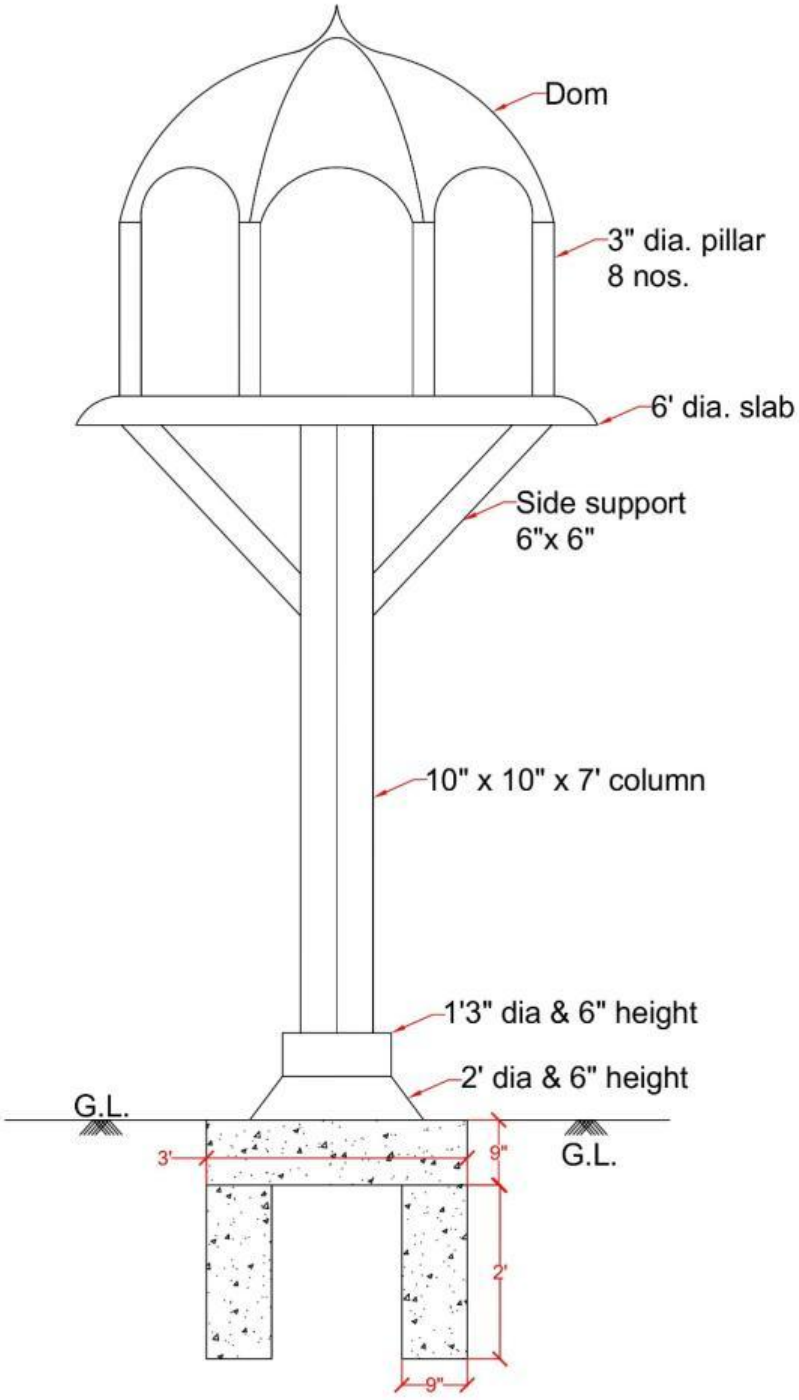
Design infrastructure: Bus stand
Village: Turkha
District: Botad



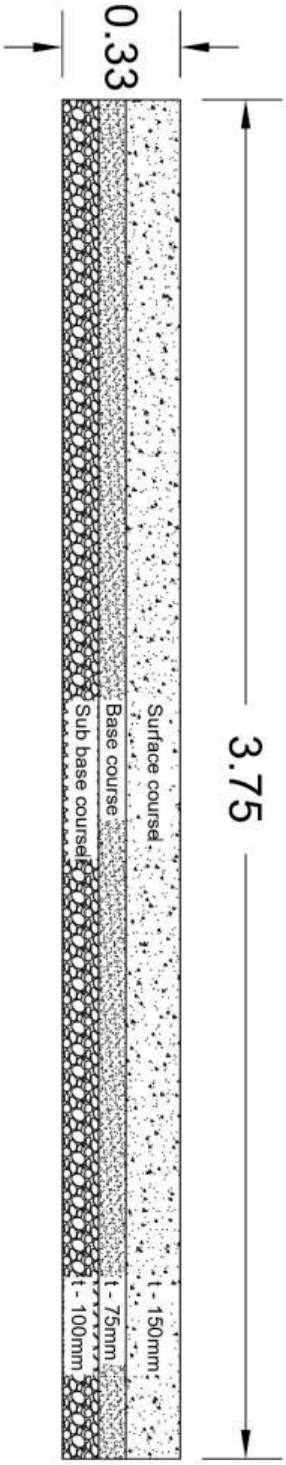
Design infrastructure: Biogas plant
Village: Turkha
District: Botad



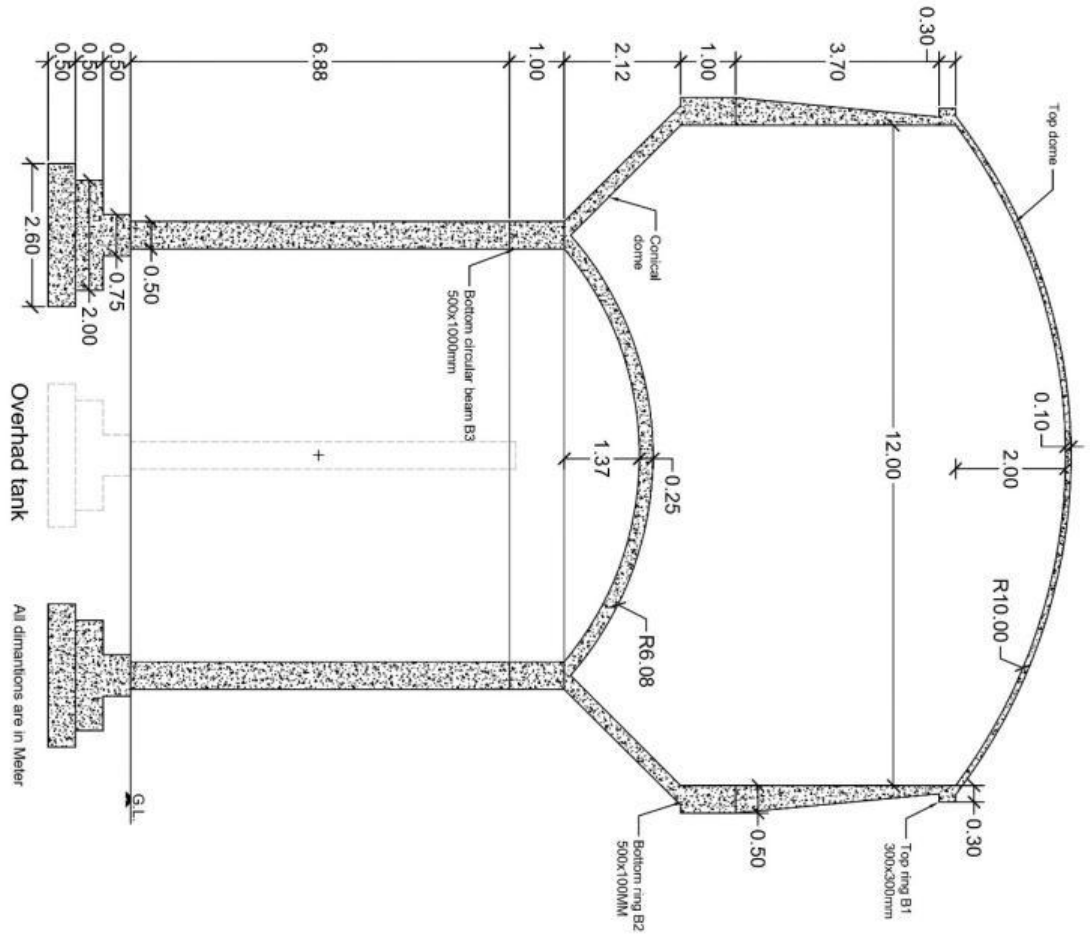
Design infrastructure: Chabutra
Village: Turkha
District: Botad



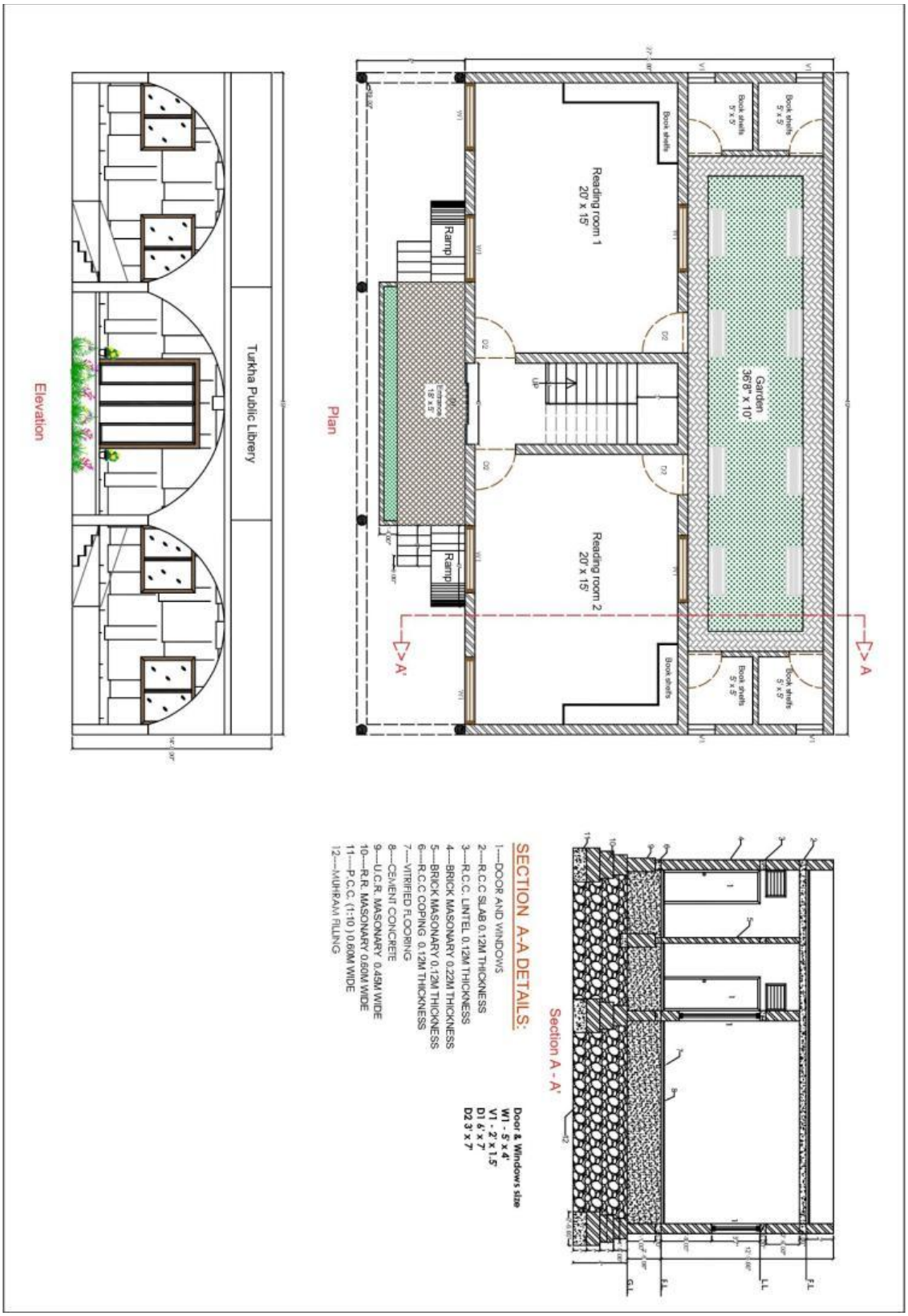
Design infrastructure: R.C.C. Road cross section
Village: Turkha
District: Botad



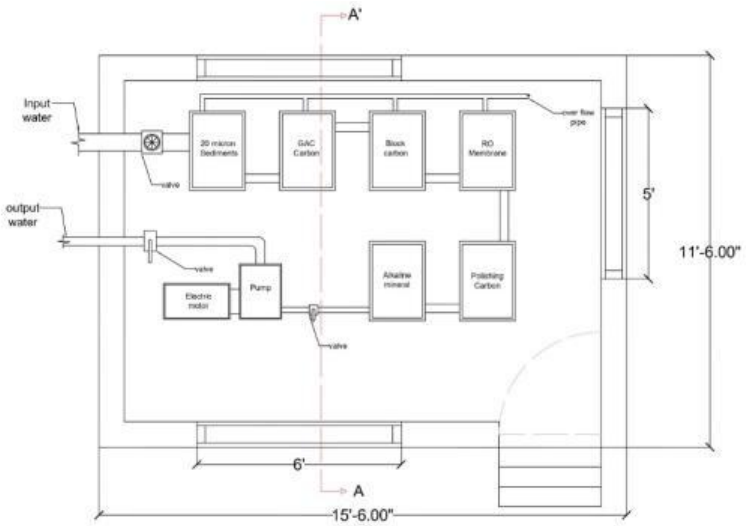
Design infrastructure: Overhead tank
Village: Turkha
District: Botad



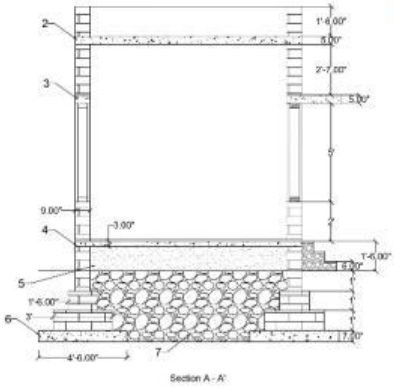
Design infrastructure: Public Library
Village: Turkha
District: Botad



Design infrastructure: Treatment plant
Village: Turkha
District: Botad



6 stage Water treatment plant

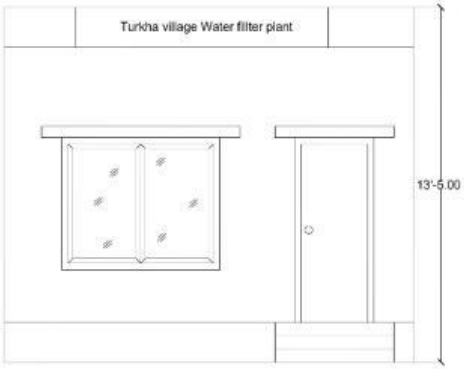


SECTION A-A DETAILS:

1----DOOR AND WINDOWS
2----R.C.C SLAB 0.12M THICKNESS
3----R.C.C. LINTEL 0.12M THICKNESS
4----BRICK MASONARY 0.22M THICKNESS
5----R.C.C COPING 0.12M THICKNESS
6----P.C.C. (1:10) 0.60M WIDE
7----MUHRAM FILLING

Door & Windows size

D - 3' x 7'
W - 6' x 5'



Elevation