DETAIL PROJECT REPORT

on

VISHWAKARMA YOJNA: VIII

AN APPROACH TOWARDS RURBANISATION

MOVIYA Village
RAJKOT District

PREPARED BY

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
Parmar Rakshit	Civil	180893106045
Jograjiya Payal	Civil	180893106023
Lunagariya Kevin	Electrical	180893109032

Shree LabhubhaiTrivediInstitute
of EngineeringandTechnology
Rajkot.

Assi.Prof. Mehul M. Chavda
Civil EngineeringDepartment.

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad 382424 Gujarat

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CERTIFICATE

ThisistocertifythatthefollowingstudentsofDegree/DiplomaEngineeringsuccessfullysubmitted

DetailProjectReportfor

VILLAGE : MOVIYA

DISTRICT : RAJKOT

Under

VishwakarmaYojana: Phase-VIII

In partial fulfillment of the project offered by

GUJARATTECHNOLOGICALUNIVERSITY, CHANDKHEDA

During the academic year 2020-21.

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

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ABSTRACT

The Government of Gujarat has launched VishwakarmaYojana: An approach towards Urbanization for the development of villages by identify the requirement of village and then implementation of that existing or new facility. The aim of this project is Developing village with a rural soul' but with all urban amenities that a city may have & provide basic facility in rural areas for minimize urbanization and give more employment chances infuture.
The main vision of this project given basic facilities like bank, post office, health care, transportation, local education, road, electricity, water problem solution, etc with todaytechniques.

The allocated village is Moviya near Rajkot. Moviya away 49.4KM from Rajkot. In Moviya village total population is 2252 where male is1154 and female is 1098. The main occupation in Moviya village is agricultural. Moviya is a small village but quite beautiful because of agricultural land.

The village condition is very poor. In this village approach road is made of bituminous and other roads are made of C.C. There is no any facility provide for solid waste management. In Thebachadavillage observed that there is no facilities like public latrine blocks, management of collecting waste from village, bus-stand, recreational centre, bank facilities, street lights, library, cyber cafe, bio-gas plant, etc.

In the part I, basic data collectd by ideal, smart and allocated village survey with the help of Sarpanch , Talati and Villagers. The requirements of various structures are finalize for the village development.The community hall should be built in village because in some function village people cannot afford the private venue for the function. The physical structure like public toilet is must be needed Component in village. And Public library, recreational zone are also needed and post office and bus stand require for enlargement. We design wind farm and solar panel for given low rate electricity villagers.

We can only approach to digital facilities and sustainable technology for our village. Because we cannot directly approach to latest technologies, we have to consider its future scope also. Now a days awareness is more required rather than technology. As our village is heritage site and surrounded by other religious temples we can develop it as tourism clustered.

Key Words: Design, Population, Smart Village, etc.

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

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ABBREVIATIONS

Short Name / Symbol	Full Name
HVAC	Heating Ventilation and Air conditioning systems
ATMS	Advanced traffic management system
LCPD	Liter capita per day
SWM	SWATCH BHARAT MISSION
PHC	Primary Healthcare Center
CLPR	Child labour prohibition and regulatuion
DRDA	District Rural Development Agency (drda)
UNICEF	United Nations childerens Fund
IRDP	Integrated Rural Develoment Program
FWP	Factory Wholesale price
NREP	National Rural Employment Programme
JRY	JawaharRozgarYojana
TRYSEM	Training Of Ruaral Youth For Self Employment
URDPFI	Urban And Regional Development Plan Formulation and Implementation
AMPC	Agricultural Product Market Committee
NGO	Non Governmental Organization
HVAC	Heating, Ventilation and Air Conditioning
CBD	Central Business Districts
LCPD	Litre Capita Per Day
MNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
GEB	Gujarat Electricity Board
ATMS	Advance traffic management system
ATM	Automated trailer machine
GSRTC	Gujarat State Road Transport Corporation
RO	Riverse osmosis

As per ideal village concept, the village must fulfill NAGAR. here NAGAR means Nal, Gutter And Rasta(Road). Honorable Prime Minister Narendra Modihase give this concept when he was Chief Minister ofGujarat.
The village all the facility available likes drinking water, education, PHC, drainage facility, transportation facility, etc. This all the facilities reduce the migration rate to the urbanarea.

Chapter :1

Ideal village visit of Nyara (Rajkot District, Gujarat)

Background & study area location:-

In this chapter, we include overall study of ideal village, visit of ideal village for the basic approach to develop ideas for our selected village, case study, literature review of ideal village, and all other information.

1) Background:

Once mahatma Gandhi said, The future of India lies in village. even today, village arethe Backbone in India.
Vishwakarma Yojana is government project for developing for various villages. In this project various detail of village like physical infrastructure facilities, social infrastructure facilities, demographical detail, occupational detail, etc various data are collected. And try to develop new
Facilities. Its main aim is to make village as modal or ideal village with provide more facilities.
Through various government department are involved in various infrastructuraldevelopment works, an ideal view and modern solution etc. can be provided by this project.

2) Study Area Location:

We are first visit of an ideal village Nyara of Rajkot district is taken asconcept of ideal village.
Detail about location of village is asfollow
Nyara is located at 20 km from Rajkot district ofGujarat.
Bharatbhai is Sarpanch of Nyaravillage.

Name of village:Nyara
Name of Taluka:Rajkot
Name of district:Rajkot
☐Population: 1747 (as per census 2011)

Figure 1.1: Sarpanch of Nyara village

Concept: Idealvillage

Case study of ideal village of Indianvillage:

The village has been developed in past few year. Before its development it is faced many problem like drinking water after its construct many check dam in village. And increase the water Managementfacility.
The village is having facilities such as Anganwadi, primary school, PHC, sub post office, electricity, solar street light, cricket ground, community hall, RO filter plant, WI-FIsystem.

Objective:

Prevent distress migration from rural area to urbanarea

To encourage people with new technology and beneficialuse.

To increase the standards of living in ruralarea.

To study strategic planning proposal in the form of Physical, Social andRenewable infrastructure facilities for the development ofvillages.

To study the future growth and future scenario ofvillage.

To study how to improve a facility of ruralareas.

The Idea of a model/SmartVillage:

It was the dream of our prime mister Shree Narendrabhai Modi to make the all villageas ideal/model by improving the allfacilities
The physical, social and economic development is increase the growth ofvillage.
Hygienes education, health promotion and environmental protection into action inrural communities.
Public awareness should be recognized as a process by which human being and villagerscan teach their fullestpotential

Ancient History Civil / Electrical concept about Indian Village /Foreign Countries Perspective and its Development:

About 20 km away from the district headquarters of Rajkot, this village shows how environmental management can bring about a socioeconomic turnaround. The villagers planted thousands of trees, and undertook stone-trenching, bonding and terracing in their fields on the lines of wm. The state government launched a wm project in 1995- 96 in this village, and the District Rural Development Agency (drda) allocated Rs 17 lakh. Since 1998 the villagers have implemented around 50 micro-watershed projects (a micro-watershed project is within an area of 500 ha).
Before 1988, most of the families used to migrate in search of livelihood. Migration for employment has ceased now. Today, there are just 50 families below the poverty line, as compared to 138 in 1988.
"In 1990, when water was scarce, my father used to earn Rs 1.5 lakh from his farms
Detail study (Socio economic, physical, demographic and infra- structure details of Ideal village / Smart Village with photograph)

Physical and demographicalgrowth:

Rajsamadhiyala village total population is 1467 among them 732 male and 735 female asper census2011.
There are about 325 houses in village and average family size is 5member.
Around 17 year ago, this village was suffering from the water crisis. Due to proper guidence of the sarpanch of village, new check dams are constructed and various other water shedsare created.
Now a days Rajsamadhiyala village has sufficient physical infrastructure like water tank, underground drainage, good road network, electricitydistribution.
This leads that the village is having water table near 20m from G.Land less than that in some areas Also village hadnt faced any problem during low rain, they able to growcrops.

Economicprofile:

Around 90 % of people of village iseducated.
70-75 % people of village is connected with theagriculture.
A high economical profile due to self employment and a good knowledge ofcrop.
About 5-10 % people is work in industries.

Social scenario:

In Nyara village all cast of people areliving.
In village all people living like afamily.
In village own Lokadalat for solving problem of villagepeople.
As well as Indian cultural, in village a provision of common town hall, temple, public garden and stadium.

Infrastructures facility:

The following facility available in Nyara village:

1. Drinking water: The main supply of water in village is from Narmada water through the pipelineat2-3 days interval. There are 10,000 liter water tank as reserve water for safe drinking water there are one ROplant and free for allpeople.

2. Road network and transportation facility:

All the road in village is cement concrete with underground drainage facility. There are transportation facility available like GSRTC bus and private vehicle because near the NH25 ispass

Figure 1.2: Road network Nyara village

3. Educationfacility:

In village has Anganwadi, primary school and secondary school with good condition. There is one library under in process. There is free WI-FI facilities in village own by panchayat office for learningpurpose

Figure1.3: primary school

4. Recreationalfacility:

In village there are 3 temple and one state level cricket ground for refreshment and sports encouragement to young generation.

Figure 1.4: Cricket Ground

5. Health CareCenter:

There is one primary health care center block for maintain health of villager sand for solution for diseases.

6. Communityhall:

The village has community hall with projector or meeting and visitors of village.

SWOT analysis of Ideal VillageStrengths:

High growthrate.
Employment
Door to door collection ofwaste.
Stronginfrastructure.
Education facilities availability up to higher secondarylevel.

Weakness:

Less sustainable eco-friendly environment in terms of capacity to green development infuture.

Figure 1.5: SWOTanalysis

Opportunities:

Involvement of government initiatedhealthprogram.

WIFI spotsdevelopment
Developed green infrastructureTech, solar panels, wasterecycle.
Development of special agricultural programs to various new techniques.

Threats:

Very less sustainability to environment infuture

Future prospects of the idealvillage

Green evolution, further improved educational system, gas lineetc.

Benefits of thevisits

Example for set up a village developmentproject.
To get insight into the socio-economic and cultural realities of rurallife.
Can able to know different types of the facilities infrastructure likes physical, social, social cultural sustainable and repair and maintenance related and also know about the basic facilities about the village which have to provide for every poorvillage.
Got information related various amenities from gram panchayat.

Chapter:2

About Village Literature Review

Introduction: Urban andRural

Urban area:

Urban may be defined as a place which satisfy the followingcriteria:

Minimum population of city is 5,000people.
Density of population at least 400persq.km.(1,000persq.mile)
At least 75 % of male is engaged in non-agriculturalactivities.
Urban comprised all territory, people and housing units in incorporated places of 2,500ormore.

Ruralarea:

Rural may be defined as a place which satisfy the followingcriteria:
An area with a population density is less than 400persq.km.
Village with clear surveyed boundaries but no municipalboard.
A minimum of 75 % male is involved in agricultural and alliedactivities.
It includes village andtown.
Rural area control by an executive body of a caste orvillage.

Ancient Villages/Different Definition of : Rural UrbanVillages

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

In the past, villages were a usual form of community for societies that practice subsistence agriculture, and also for some non-agricultural societies. The Industrial Revolution attracted people in larger numbers to work in mills and factories; the concentration of people caused many villages to growing to towns and cities. This also enabled specialization of labor and crafts, and development of many trades. The trend of urbanization continues, though not always in connection withindustrialization.

Definition of: Rural

In village population maybe less than 5000per 400sq.km. and a 75 % of maleinvolved in agricultural and allied activities.
Rural area control by an executive body of a caster orvillage.

Scenario: Rural/Urban India & Gujarat as per Census 2011 andlatest population

Census of India 2011 provisional data of population of rural and urbanarea:

TABLE 2.1: Population Table

Population	Total	Rural	Urban
Person	1,210,193,422	833,087,662	377,105,760
Males	623,724,248	427,917,052	195,807,196
Females	586,469,174	405,170,610	181,298,654

Ref:www.censusindia.gov.in

Gujarat rural population census2011:

The total population of Gujarat state is around 57.40% live in village of rural area. Inactual number of male and female are 17,799,159 and 16,895,450respectively.

The total population of rural area of Gujarat state was34,694,609.

TABLE 2.2: COMPARISON OF POPULATION BETWEEN URBAN AND RURAL

Sr. No.	Description	Rural	Urban
1	Population	57.40%	42.60%
2	Total population	34,694,609	25,745,083
3	Male population	17,799,159	13,692,101
4	Female population	16,895,450	12,052,982
5	Population growth	9.31%	36.00%
6	Sex ratio	949	880
7	Child sex ratio(0-6)	914	852
8	Child population(0-6)	4,824,903	2,952,359
9	Child percentage(0-6)	13.91%	11.47%
10	Literates	21,420,842	19,672,516
11	Average literacy	71.71%	86.31%
12	Male literacy	81.61%	90.98%
13	Female literacy	57.78%	70.26%

Ref:www.censusindia.gov.in

2.4) Rural Issues & Concerns:

Poverty:

Poverty in India is still a major issue even in this day and age. India an overall population of

Million, with 900 million people is living in rural area of the country. But According to United Nations Development Program Administrator achim Steiner, India lifted 271 million people out of poverty in just a 10 year time period from 2005/06 to2015/16.
A numbers of factor are responsible for poverty in the rural area in the India. Population depend on agricultural as their live hood, which in turn, is highly depends on rain pattern and monsoon.

Reason of Poverty:

Due to continuous rise in population, there is chronic unemployment and under employment in India. There is educated unemployment and disguised unemployment. Poverty is just the reflection ofunemployment.

The Indian economy is under developed due to low rate of growth. It is the main cause of poverty.

The steep rise in prices of product has affected the poor badly. They have becomepoorer.

The growth rate of the economy has been 3.7% and growth rate of population has been 1.8%. So compared to population, per capita growth rate of economy has been very low. It is the main cause ofpoverty.

Education:

Around 70% of Indian population is currently living in rural area. So the topic, rural education in Indian has extreme significance.

Causes:

The lack of sufficient funds is the main problem in the development ofeducation.
University, professional and technical education has become costly inIndia.
When intelligent, talented and deserving candidates do not get suitable jobs in the country, theyprefer to go abroad for seeking jobs. So our country is deprived of goodtalent.

Transport:

A major constraint with developing and maintaining rural roads is fact that they are, unfortunately. in rural area where they are needed are often difficult to access, logistics become complicated, local contacting capability is limited, engineer are few and far between, and younger engineer specially, are not keep to leave the urbanenvironment.

Transport plays a key role in responding to the problem of rural social exclusion. The often large distances between service and population center in rural area mean it is difficult for people with-out access to private transport. In, particular rural area around the world, an increasing number of ageing car driver has to make the transition to non-driver. Alternate transport will play a key role in keeping these people engaged in main stream society.

Water:

India lives in village, and more than 70% of our population with hundreds of millions of people are still living and working in rural area and village across India.

Water scarcity, which is broadly understood as the lack of access to adequate quantities of water for human and environmental uses, is considered to be one of the most important global risks for society.

Water scarcity in India is due to both natural and human-made causes. Main factors that contribute to water issues include poor management of resources, lack of government attention, and man-made waste.

India's drinking water crisis has become severe over the past decade. Increasing demands on available water resources for intensive agricultural practices and industrial use, together with deteriorating water quality, constrain drinking water availability despite massive outlays for drinking water and sanitation infrastructure.

Causes:

Improper management of waterstorage

Due to climatechange

Inefficient use of water foragriculture

Waterpollution

Electricity:

According to International Energy Agency, nearly 240 million Indians lacked lack access to electricity in 2017. One out of every five people around the world without access to power lives inIndia.

Some of the problems being faced by the Indian electricity power sector are: Inefficient coal linkages leading to huge losses to the private power generating companies. Lower than expected growth of electricity demand, leading to reduced PLF of existing plants. Financial stress to the generating companies.

Causes:

Inefficient state government-owned powerplants

High losses of distribution utilities

Thefts of electricity in ruralarea

ChildLabour:

The 2011 national census of India found the total no. of child laborers, aged 514, to be at 10.1 million And the total child population to be 259.64 million in that age group. The child labor problem is not unique to India; worldwide, about 217 million children work, manyfull-time.

As per the Child Labour (Prohibition and Regulation) Act, 1986, amended in 2016 ("CLPR Act"), a "Child" is defined as any person below the age of 14, and the CLPR Act prohibits employment of a Child in any employment including as a domestichelp.

Causes:

UNICEF suggests that poverty is the biggest cause of childlabor.

Most important factors driving children to harmful labor is the lack of availability and quality ofschooling.

Various Measures for Rural Development:

Rural Development implies both the economic betterment of people as well greatersocial transformation. Increased participation of people in the rural development programs, decentralization of planning, and greater access to credit are envisaged for providing the rural people with better prospect.

Many programs / plans such as IRDP, FWP, NREP, JRY and TRYSEM etc. have been developed and implemented for raising socio-economic sta- tus of the ruralpeople.

Policy for developing uplifting the lifestyle of thefarmers.

Policy of rural industrial development-integration off arming and industries,farmers

industrial co-operatives and industrialenterprises.

Modernization of rural society and cultural policies and planning for transfer of loyalty and values from traditional technology to modern technology.

Infrastructure facilities:

The development of village that could undertake as per the need of the village in particular in- clude physical infrastructure facilities like water, drainage, road, electricity, solid waste man- agreement and social infrastructure facilities like education, health, community hall, library & other and renewable energy like rain water harvesting, biogas plant, street light and sustainable development.

Guidelines/Norms for Villages for the provisions of different infrastructurefacilities:

TABLE2.3: URDPFI Standards(2014)

Facilities	Planning commission/ UDPFI norms	Required as per norms
Aanganwadi	Each village	1
Primary school	Each village	1
Secondary school	Per 7,500 population	1
Higher secondary school	Per 15,000 population	1
College	Per 1,25,000 population	1
GOVT./ Panchyat, dispensary	Each village	1

or sub PHC or health center		
PHC & CHC	Per 20,000 population	1
Child welfare and maternity home	Per 10,000 population	1
Hospital	Per 1,00,000 population	1
Pucca village approach road	Each village	
Bus/ auto stand provision	All village connected by PT (ST bus or auto)	1
Gram panchayat building	Each individual/ group panchayat	1
Post office	Per 10,000 population	1
AMPC	Per 1,00,000 population	1
Fire station	Per 1,00,000 population	1
Police station	Per 15,000 population	1
Community hall	Per 10,000 population	1

Importance in rural Context:

This will change the mentality of people of difference between urban and rurallifestyle image.
Rural region people will be facilitated as per requirement that will make their life non-compromise.

They will take more interest in developed their own business at local region theyleave.

It makes people more aware about the scholarship, policies& subsidies fromgovernment.

All the factor will be modernized by this concept, this will make peoples progressnicely andeconomically.
The combination of agricultural activity and business activity will make economymore powerful and stable as per currentscenario.

This will reduce the migration of rural region people to the urban region which is the main purpose of Rurbanisation get enough condition to develop both rural andurban are- as.

Sustainable Village Development concept:

Sustainable rural development is about improving the quality of life in a locality, including ecological, cultural, political, institutional, social and economical components with- out leaving any burden e.g., the result of a reduced natural capital and an excessive local debt- on future generations. In other words, prosperity and environmental sustainability of cities and towns are inextricably linked; therefore, human settlements can only maintain their prosperity when environmental and social objectives are fully integrated with economicalgoals.

Sustainable Smart Village project, in partnership with local NGOH and India, aims to improve villagers living conditions by creating a sustainable eco-village and ensuring holistic development supported by thecommunity.
There are five strands to the project elimination of child labor, health, social centers for citizens, the environment andmicrofinance.
Protecting and preserving natural, landscape and culturalresources.
The concept of sustainable development has beenand still issubject tocriticism. What, exactly, is to be sustained in sustainable development? It has been argued that there is no such thing as a sustainable use of a non-renewable resource, since any positive rate of exploitation will eventually lead to the exhaustion of Earth's finite stock; this perspective renders the Industrial Revolution as a wholeunsustainable.

"Sustainable development is development that meets the needs of the present without to promising the ability of future generations to meet their own needs."

Ancient / Existing Electrical concept Literature Review for village:

Long before any knowledge of electricity existed, people were aware of shocks from electric fish. Ancient Egyptain texts dating from 2750 BCE referred to these fish as the Thunder of the Nile, and described them as the protectors of all other. Electric fish were again reported millennia later by ancient Greek, Roman and Arabic naturalists and physicians. Severalancient

Writers, such as Pliny the elder and Scribonius Largus, attested to the numbering effect of electric shocks delivered by electric catfish and electric rays, and knew that such shocks could travel along conducting object. Patients suffering from aliments such as gout or headache were directed to touch electric fish in the hope that the powerful jolt might cure them. Possibly the earliest and nearest approach to the discovery of the identity of lighting, and electricity from any other source, is to be attributed to the Arabs, who before the 15th century the Arabic word for lighting had applied to the electricray.

Other Projects / Schemes:

Table 2.4: Other project

Sr. no.	Govt. schemes
1.	Pradhan Mantri gram Sahakyan (2000)
2.	Pandit deendayal upadhyaya grameen Kaushal yayojana
3.	Prime minister rural development fellows scheme
4.	Pradhan mantri awass Yojana
5.	Rajiv Gandhi grameen vidyukranthi yojana (2005)
6.	Swarnjayanti gram swarozgar Yojana

Chapter:3

Smart Cities/ Village Concept

Understanding Smart Cities:

Definition:

City that has sustainable development and high quality of life by way of economy, mobility, environmental, housing, utilities and governance using information and communicationtechnology.

A smart city is one that makes urban life comfortable and improves living standard through good governance, efficient health care service and education, 24×7 power and water supply, efficient transport, high quality sanitation, employment to the need and robust cyber connectivity and benefit all irrespective of income, age andgender.

Concept:

The smart village should have, Food security and Democratic engagement with local business And better Education, good health treatment, and available natural resources and Appropriate Rural Technologies. Smart village concept may play crucial role in maintaining the balance between the development of rural and urban areas and help to reduce migration of rural population in urban areas.

Figure 3.1: Smart Village Concept

Practices (civil & electrical):

Renewable energy

Provide basicinfrastructure.

Transportationfacility

Watermanagement

Energyconsumption

Health centerfacility

Libraryfacility

Wastemanagement

Rain water harvestingsystem

Recreationfacility

Smart City Development bench marks-Vision- Goals-Activities:

Bench marks:

Table 3.1: Bench mark for smart village

Parameters	Bench marks
Transport	Maximum travel time of 30 minutes in small and medium size citiesand 45 minute in metropolitan area.
	Continuousunobstructedfootpathofminimum2mwideoneitherside of all street with right-of-way 12 m or more.
	Dedicated and physically segregated bicycle tracks with a width of 2 m or more, one in each direction, should be provided on all street with carrige way larger than 10m.
	High-quality and high-frequency mass transport within 800 m of all residences in area over 175 person/hectare of built uparea.
	Access to paratransit within 300 m walkingdistance.
Special planning	175 person/hectare along transitcorridor.
	95%ofresidenceshouldhavedailyneedretail,parks,primaryschool, and recreational area accessible within 400 m walking distance.
	95% residence should have access to employment and public andinstitutional service by public transport or by bicycle or walk.
	At least 20% of all residential units to be occupied by economicallyweaker sectionineachtransitorienteddevelopmentzone800mfrom transit station.
	Atleast30%residentialand30%commercial/institutionalinevery Transit oriented development zone within 800 m of transit station.
Water supply	24 × 7 hour supply ofwater
	100% household with direct water supplyconnection
	135 liters of water supply per capita perday
	100% of metering of waterconnection
	100% efficiency in collection of water relatedcharges
Sewerage and sanitation	100% household should have access totoilets
	100% school should have separate toilet forgirls
	100% household should be connected to the waste waternetwork
	100% efficiency in the collection and treatment of wastewater
	100% efficiency in the collection of seweragenetwork
Solid waste management	100% households are covered by daily door-step collectionsystem.
	100% collection of municipal solidwaste

	100% segregation of waste atsource
	100% recycle of solidwaste
Storm drain water	100% coverage of road network with storm water drainagenetwork
	Aggregated number of incident of water logging reported in ayear
	100% rainwaterharvesting

Vision:

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

Goals:

Sustainable Infrastructure: Provide basic amenities as well as sustainable and smart infrastructure and increasing citizens accountability towardsit.
Safe City: Safer city for all groups and sections of thecity.
Change in Life: Improved quality of life through improved physical and social infra- structure and clean and greenenvironment

Smart Cities Standards:

Effective governance and efficient delivery of services.
International and Local targets, benchmarking andplanning.
Informed decision making and policyformulation.
Leverage for funding and recognition in internationalentities.
Transparency and open data for investment attractiveness.
A reliable foundation for use of big data and the information explosion to assist citiesin
Building core knowledge for city decision-making, and enable comparativeinsight.
Evaluate the impact of infrastructure projects on the overall performance of acity.

Smart Cities Performance Measurement Indicators:

1. **Physical infrastructure:** piped water, sewage systems, electricity, wastemanagement, knowledge infrastructure, health infrastructure, transport, roads,buildings
2. **Environmental sustainability:** Air quality, CO2 emissions, Energy, Indoor pollution, water, soil andnoise
3. **Quality of life:** Education, Health, Safety, Convenience andcomfort

Technological Options for Smart Cities:

1. **Smart buildings:-** Automated Intelligent Buildings, Heating Ventilation and Air conditioning systems (HVAC), LightingEquipment.
2. **Smart mobility:-** Intelligent mobility; Advanced traffic management system(ATMS), Parking management, ITS-enabled transportation pricingsystem.
3. **Smart education:-**Government-on-the-Go; e-Government, e-Education, Disaster managementsolutions.
4. **Smart healthcare:-**Intelligent Healthcare, Technology, Use of e-Health and m-Health systems, Intelligent and connected medicaldevices.

Road Map and Safe Guards for Smart Cities Safeguard:

The first step in establishing a road map for a smart city is to know why there is a need for a smart cityinitiative.

This can be done by studying the citys demographics, including there side who arethe .GIS is an essential economic development tool that many cities use for planning, analyses, and building lively communities that attract businesses andresidents.

The second step in establishing a smart city roadmap is by developing a policy that drives the wholeinitiatives.

The policy needs to define the roles, responsibilities, strategies, and objectives of the smart cities.

The third element in developing a smart city roadmap is engaging the citizens through the use of e-government and effective governance, which leads to the increase of efficiency- and enhancing delivery ofservices.

One goal of engaging the citizens is to build trust and make them part of thesolution.

Opendatathroughtheuseofmobileapplicationsisonewaytoestablishsuchanengagement- mobility is a gateway to building a civic engagement, as it allows the public to connect to the citys infrastructure to perform services whenever they want from wherever theyare.

Smart Cities: Issues & Challenges

1. **Financing**: Smart cities project is not smartly privileged, unfortunately, when it comes to funding. Financing is said to be one of the biggest challenges when it comes to the smart city challenge. The total investment approved under the smart city plans of 90 cities has gone to Rs1, 91,155cr. With the presence of state sponsored companies also the project seem to have no good start. Banks financing these projects as of now is the major reason of a considerable increase in the number of non-performing assets. The government is recently taking steps to finance these projects by making changes in the budget and we hope the problem is addressed tosoon.
2. **Urban Water and Sanitation Challenges:** More than 90% of the urban population has access to drinking water, and more than 60% of the population has access to basic sanitation. The problem of water scarcity in urban areas of developing countries is a major concern. It is estimated that by 2050, half of Indias population will be living in urban areas and will face acute waterproblems.
3. **Infrastructure:** Major metropolitan areas are already challenged with replacing decades- old infrastructure, such as underground wiring, steam pipes, and transportation tunnels, as well as installing high-speed internet. Broadband wireless service is increasing, but there are still areas in major cities where access is limited. Funding for new infrastructure projects is limited and approval processes can take years. Installing new sensors and other improvements cause temporary though still frustrating problems for people living in thesecities.

   Developers can help make it easier to install and utilize smart technology by considering these challenges at the very early stages of development.
4. **Corruption:** This point probably was meant to be from the first as this is the root cause for all above challenges. But if we talk about it solely this is also a major challenge. Both at center and state level corruption is responsible for all the co-ordination mismatch and time lag happening. The financial constraint also somehow creeps in because of this are- sue. Corruption in India is a challenge which has always been a reason for non-execution or ineffective execution of most big projects in thecountry.

SmartInfrastructure:

In a world where infrastructure is truly smart, sensing technologies are embedded in infrastructure

and the equipment it interacts with. These sensors are connected toa communication backbone which allows real-time data acquisition and analysis. The information gathered is analyzed, interpreted and delivered as reliable, robust and meaningful information to infrastructure providers, who can then make better-informed decisions about the structural health and maintenance of theirassets.

Inasensingenvironment,infrastructureisabletorespondinrealtimetousersneeds.

Self-aware infrastructure assets direct their own maintenance, leading tocondition-based Maintenance, reduced down time and greater operational efficiency of the infrastructure overall.

Cyber Security:

Cyber security is one of the necessary for smart city. Today Cyberspace touches almost every part of our daily life. While the smart city initiative focuses on sustainable development of our cities and digital technologies for integrated citizen service delivery, it demands a strong focus on cyber security.

Figure 3.2: cyber security

The threat from cyber-attacks and malware is not only apparent but also very worrisome. There cannot be a single solution to counter suchthreats.

Cyber security is the body of technologies, processes and practices designed to protect net- works, computers, programs and data from attack, damage or unauthorized access. In a computing context, security includes both cyber security and physicalsecurity.

District Cooling and Heating / Green Building:

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

Green building: By use of maximum natural resources and energy in building is called green building. Some of the more common green construction practices include:

Figure 3.3: Green building

Using sustainable building materials like recycled glass and steel, as well as renewable materials like bamboo andrubber.

protection from the effects of harmful UVlight

Adding water harvesting and purification systems that dont just manage, but also make The most use ofrainfall;

Using renewable energy to power the building for example, installing solar panelsystem.

Strategic Options for Fast Development:

Strategies for intelligent cities range from strategies for smart city development to strategies for digital growth and smart specialization, featuring different typologies depending on the goal and characteristics of the envisioned intervention.

Smart city strategies, in particular, may be sector focused (government, education, healthcare, mobility, tourism, etc.), cluster or district-focused (Central Business Districts, Residential Areas, University Campuses, Technology Parks, Transportation Hubs, etc.), smart infrastructure eco system focused (ramifying along the broadband economy, knowledge economy and green IT economy, etc.) Spatial and administrative criteria also apply, distinguishing local from regional and national strategies and reflecting the initiating challenges, character and development mix, especially if areas that call for special attention are included, for example green fields or brownfields.

Urban Water and Sanitation Challenges:

1)WaterChallenges:

More than 90% of the urban population has access to drinking water, and more than 60% of the population has access to basic sanitation. The problem of water scarcity in urban areas of developing countries is a major concern. It is estimated that by 2050, half of Indias population will be living in urban areas and will face acute waterproblems.

MostoftheIndiancitiesdependsuponundergroundwatertomeettheirurbanwaterdemand.

Thedailywatersupplyrateinthedevelopingcountriesisverylowcomparedtotheindustrial world.
The daily water required for one person is 135 lcpd. And in developed cities the daily water required is 235lcpd.
The prevailing water stress in many developing cities is not only due to source limitations but other factor such as poor distribution efficiency through city network and inequalities in service provision between the rich and thepoor.
One of the main reasons is the high rate of water losses from the distributionsystem.

Demographic, social and economic developments are the factors which in- crease pressure on waterresources.
Water availability, management and waste water disposal are three major issues relatedto water supply in the urbansettlement.

2) SanitationChallenges:

As a step towards this, India along with of the remember states of the UN committed to the new global goals for sustainable development, which included target to ensure everyone, everywhere, has access to basic toiletsby2030.
To make India ODF, just the construction of toilets is not enough. Areas such as behavior change, monitoring and tracking, and fecal sludge management are some of the other parameters that needattention.
Education around, and promotion of the usage of toilets are key to creating a truly SwachhBharat.
The SBM model offers of installment for delivery of the toilets in twoways:

Installment model: Where the ULB transfers money into the bank accounts of the people served in two or three installments for construction oftoilets.
Contractor model: Contractors are appointed and paid for by the localmunicipal
Contractor model: Contractors are appointed and paid for by the local municipal corporation to provide material and construct toilets in households. This is a fully sub sidised model where people get a freetoilet.

Initiatives in village development by local self-government:

1. **National Rural Health Mission (2005):** This mission serves health services to the poorest households in the remotest rural regions. The main aim of this mission provides accessible, affordable and good quality of health services to the rural householdpeoples.

2. **Rajiv Gandhi Gramin VidyukranthiYojana (2005):** This provides access to electricity to all rural households in fiveyears.

3. **Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) (2006):** This scheme enhanced livelihood security in rural areas by providing at least 100 days of guaranteed wage employment in a financial year and strengthening natural resource management.

Smart initiatives District Municipal Corporation:

In this initiative following listed district municipal corporation persons are responsible.

1. District Development Officer Chairman
2. Deputy District Development Officer - MemberSecretary
3. Executive Engineer (Panchayat, Road and Building)-Member
4. Chief District Health Officer Member
5. District Primary Education Officr Member
6. Programmer Officer Member

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

While it is difficult to know the exact number of NGOs in India, an exercise by the government found that at least 31 lakhs NGOs are operational in our highly populated land of unity in diversity. We have a plethora of volunteers working to the effect of social causes such as education, animal rights, and disaster relief and so on.

This goes to show that social service and giving back to the community, quite in-built values in our culture, are feathers in our cap. Here, we cover the success stories of 10 NGOs in India that are putting forth outstanding work in the healthcare sector to empower people.

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

Human society is developing with rapid momentum and achieved various successes for making its livelihood better. The civilization is witness for various changes related to its the development through different catalysts like industrial development, revaluation, science and technology, etc. The present era is augmented on Information and Communication Technology. This technology has proved its potential in various sectors of development in urban and rural landscapes. Urban areas are seems to more inclined to accept and adopt Information and Communication Technology due to

advantages of literacy and better infrastructure as com- pared to rural areas. Due to such suitable situations of urban landscapes good amount of success of this technology is visible in the form of smart cities and better livelihood of residing human beings. But the problems, consequences and opportunities in urban areas are different for effective utilization of Information and Communication Technology for sustainable development of rural masses. The present research article discusses about rural development in developing world for the up liftment of livelihood of the rural masses and to take a look ahead at scientific developments and technologies that might be influential over the next 10 -20 years. The driving motivation behind the concept on Smart Village is that the technology should acts as a catalyst for development, enabling education and local business opportunities, improving health and welfare, enhancing democratic engagement and overall enhancement of rural village dwellers. The Smart Village concept aims to realize its goal through providing policymakers with insightful, bottomup analyses of the challenges of villagedevelopment.

Electrical concept:

Smart solutions for smart cities inevitably mean clean, green sources of energy. The shift to- wards distributed energy and the implications for the entire electricity value chain is something that needs to be understood and implemented.

Two years ago, in his Independence Day speech, Prime Minister Narendrabhai Modi promised to provide electricity to the 18,500 villages, which did not have electricity then, in 1,000 days. India will take nearly 20 years to electrify the existing unelectrified households if it continues with the current rate of household electrification, about 2 lakh households per month. In order to achieve the target by 2022, we need to increase the rate of household electrification by at least four times. However, even if we manage to achieve the feat, providing 24×7 electricity will remain a problem. In 2015, the Council on Energy, Environment and Water in collaboration with Columbia University conducted the largest energy access survey of its kind in India, access covering 714 villages in six major rural electrification deprived states Uttar Pradesh, Bihar, Jharkhand, Madhya Pradesh, Odisha and WestBengal.

On this note, the article will discuss about the requirement of achieving smart power in smart city. It will also inform about ways to address the T&Dchallenges.

Chapter:4

Introduction about the Moviya village in details

Introduction:

About Moviya Village details:

Moviya village 24 km away fromRajkot.
Padadhari, haripar khamta is near the village of Moviyavillage. Gujarati and Hindi is local language here.
Rajkot railway station is major railway station 23 km near to Moviyavillage.
Village peoples are mainly engaged with agricultural and industrialwork.
The main crops grown in village are cotton, groundnut andcumin.

Figure 4.1: Sarpanch and talatimantri of Moviyavillage

Facilities like road, housing, drinking water, dudhamandli, anganwadi, primary school, etc. available invillage.

Justification/ need of the study:

For purpose of data collection. Data regarding the demographic, geographic, social, economic, educational,etc.
To know the current development going on invillage.
To know the various benefits to villagers though various government schemes invillage.
Ultimately after visit of idea land smart village, this village gives the actual scenario of ruralarea.

Study Area:

As we got Moviya village for VY Phase-8, it became our study area. We studied/ observed multiple things related to the infrastructure of the village so that we can identify problems there and we can solve those problems as a civil engineer. We also visited the surrounding area, so that we can find out facilities that can beprovided.

Objectives of the study:

Our objectives for this study are:
To find problems/ faults/ deficiencies in existinginfrastructures.
To find missing amenities in thevillage.
To provide solutions to different problems.
To develop new infrastructure for Moviyavillage.
To improve the lifestyle of Moviyavillage.
In short, our objective is Urbanization of MoviyaVillage.

Scope of the Study:

The Study here would give us an opportunity to give facilities in Moviya village; at least on paper. Our designs can be useful for future development and Rurbanisation of thevillage.

It is very essential to develop village because Indias development depends upon the progress of thevillages.
India is agriculture country and poverty can be removedthrough improvement in agriculture.
Solutions of rural problems can bring the change in the ruralsociety.
The country and its society can be reconstructed only through ruraldevelopments.
For successful implementation of democratic decentralization the village community to be studied indetail.
The information and data from visit will help us to develop the methodology for improvement in village. The primary data collected through survey will give the level of services available in village and its requirements forimprovement.

Methodology Frame Work for development of your village:

Introduction of VishwakarmaYojana (phaseVIII)
Ideal, smart and allocated village visit for TECHNO-ECONOMICSURVEY
Meeting with sarpanch and talatimantri ofvillages
Meeting with village dwellers of Moviyavillage
Collection of data for physical, social, socio- cultural and other facilities availablein village.
Find out problem in existing facilities and proposal for required facilitiesfor development ofvillage.
Design proposal for physical and sustainabledevelopment
Literature review (prepare project)

List of Objects Available related to Civil / Electrical Methodology:

Moviya village has some basic facility as below:

Aanganwadi
Primaryschool
Water tankfacility
Panchyatbuilding

Figure4.2: primary school & panchayat building of Moviya village

PHCsub-center
Main road is cement concrete and other road is paver block
24 × 7 hours from GEB electricity available invillage
Solar street light is available but is requiredmaintenance

Moviya Study Area Profile:

Study Area Location:
Villagename : Moviya
Taluka:Rajkot
District:Rajkot
Coordinate: 22.1736° N, 70.1931°E
Language: Gujarati,Hindi

Figure 4.3: Location Of Moviya Village (Ref: http://maps.google.com)

Elevation/altitude: 574 m

Physical and Demographical growth

Table 4.1: Physical Growth of Moviya Village

Road network:	1.All connecting roads are bitumen road (good condition) 2.All connecting roads are bitumen road (good condition) 3.Paver block Road development is going on in village.
Transportationfacility	1. Nearest railway station 23Km.(Rajkot) 2. Nearest bus station 3 Km (padadhari cross road) 3.Bike, jeep, chhakado

Brief history:

Moviya village is located in Rajkot sub district of Rajkot District in state Gujarat in India. The total are of village is 1016.9 hector. The Population density of Moviya village is 2254. Village peoples are mainly engaged with agricultural, industries and other work. Major crops grown in village cotton, ground nut, cumin, bajari, etc.

Economic profile / Banks:

The major population of Moviya village is engaged with agricultural activities and other some people are doing industries work and other.

In Moviya village no any provision of Bank or ATM. The nearest Bank facility available city is padadhari about 3 km from Moviya village.

Social scenario:

Moviya village total population is 2254 among them 1are males and 568 are females as per census 2011. The population of children with age 0-6 is 134 which is 15% of total village population. There are about 251 houses in Moviya village and average family size is 5 members. Literacy rate of village was 80% as per census 2011. The geographical area of village is 1234.20hector.

Table 4.2: caste wise population of Moviya village

	Total	General	SC	ST	Child
Total	1161	1075	86	0	134
Male	1154	545	48	0	69
Female	1098	530	38	0	65

Actual Problem faced by Villagers and smart solution:

1. All the internal road of village is bad in condition due to construction of underground drainage line. And it is solved by repair of all the internal road.

Figure 4.4: Condition of Road

2. All the branch line of sewer is open due to this all sewer water is come on the road and it is reduce the appearance of village. It is solved by provion of closed type sewer in all branch sewer line.
3. The present panchayat building is totally poor in condition. So, it is required reconstruction of building for panchayatbuilding.
4. In village no any provision of solid waste collection. So, we are providing dustbin in each household and provide facility of collection solid waste at eachhousehold.
5. Village anganwadi is poor in condition because, during in rainy season water is leakage from slab and its floor condition is poor due to not provision of tiles. So, we give solution of treatment of water leakage from slab and construct new floor with tilesprovision.
6. In viilage all the solar street light is not in working condition. So, it required maintenance and repair.
7. In village no provision of public toilets. So, we are planning, design and estimating of its cost after this gives the detail its gram panchayat.
8. In village no any provision of renewablesources.

Preservation of traditions, Festivals, Cuisine:

Festivals:

In village all the festivals are celebrates like Diwali, Holi, Janmastami, Navratri, Sankrant and other festivals.

Traditions:

Preservation of Indian culture is too good. Peoples also wearing traditional wear as our Indian culture.

Cuisine:

Figure 4.5: NavratriCelebration

Peoples mostly eat Guajarati food. And it is cooked on theLPGgasstove.

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

Reason of migration:

Many people decide to migrate to have abetter life.

Employment opportunities are the most common reason due to whichpeoplemigrate.

Except this, lack of opportunities, better education, construction of dams, globalization, naturaldisaster (flood and drought) and sometimes crop failure forced villagers to migrate tocities.

Trends of migration:

Intra-state movement in the case of movement of people within the state itself, and inter- state movement when the migrants cross the borders of a state and settle down in another state.

Trends of migration of peoples are very high towards the urban areas. Because the biggest reasons of migration are peoples needs better facility like better health care, good transportation facility, and good quality of drinkingwater.

About three-fourths of all migrants were females; it becomes obvious that marriage was the prime reason for suchmigration.

Potentials of migrants:

If we are provide basic facility in village than the reduce the migration from rural tourban.

If we provide better education in rural area then reduce themigration.

Study area land use details:

We are observing different types of facility in Moviya Village by using techno economy survey and interaction with village Sarpanch, Talatimantri and dwellers. The various facilities and infra-structure are listed below:

Anganwadi

Primaryschool

Watertank

Temple

Data Collection of Moviya village:

Methods for data collection:

Self-survey ofvillage

Interaction with thevillagers.

Interaction with school principal, teachers, and head ofsahkarimandali.

Data collection of physical infrastructure facility, sustainable infrastructure facility, andother facility available invillage.

Primary data collection:

Introduction:

Moviya village is located in Rajkot district of Gujarat state. It is a small villagewith population of2252.

Sarpanch of Moviya village isbharatbhai.

Total area of village is 1016.9hectares.

The nearest village of Moviya ispadadhari.

Average size of the House:

The population of Moviya village is 2254 among them 1154 males and 1098 females. Total number of household in village is251.

Geo-tagging of house:

In Moviya village 90%pucca house and 10% kutchahouse

No of Human being in One House:

Average size of family in household is 5people.

Which Material used locally:

For the house, they used mainly bricks, sand, sand wood. As nearest area brick manufacturing is available so, in village bricks are economical forthem.

Out Sourced Material:

No sourcedmaterial

Labor work doing:

The most of villagers of Moviya is connected with farming. And some of them having connected with industrialwork.

Any Costing:

Due to good connectivity of road network the transportation is easy. But the village is inside of 3 km from padadhari road. So, villagers travel only in private chhakda. And GSRTC bus coming in village only two to three times. Due to this other cost ishigh.

Geographical Detail:

Table 4.3: Geographical detail of Moviya village		
Sr. no.	**Description**	Information/ detail
1	Area of village	1234-20-00 ha
2	Forest area	162-70-00 ha
3	Agricultural land area	909-10-00 ha
4	Residential area	4-047 ha
5	Nearest bus stand	Padadhari (3 km)
6	Nearest town	Rajkot (23 km)

Demographical Detail:

Table 4.4: Demographical growt					
Sr. no.	Census	Population	Male	Female	Total number of house hold
1.	2001	1068	554	514	232
2.	2011	2252	1154	1098	351

Occupational detail:

The major occupancies of village is connected with the agricultural and other is connected with industrial work.

Table 4.5: Occupational detail	
Major occupation group in village	**1.Agricultural**
	2. Industries work at Tramba Gam
	3. Other work

Agricultural Details / Organic Farming / Fishery:

In Moviya village 909.10 hector is agricultural land available for farming and tube well and well throught water is used for irrigation purpose. In village people depend only agricultural product like ground nut, cotton, vegetables, cumin,etc.

Manufacturing HUB / WareHouses:

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

Tourism Cluster:

No any tourism place in village.

Services Cluster:

Some small scale industries are available at padadhari gram at 3 km from village.

Male / Female Details:

This village 1154 male and 1098 female. All female are housewife, not engaged with any other work.

Cast Wise Population Details / Which ID proof using by villagers:

In village 1075 people is General cast, 86 people is SC cast and no any other cast people living in village.

Occupation wise Details / Majority business:

In village have 888 people engaged in either main or marginal work. 73% male and 28% female population are working people. 56% of total male populations are main workers and 2% are marginal.

Physical Infrastructure Facilities:

Cement concrete and paver block road
Transportationfacility
Electricfacility
All branch sewer is open and main sewer is underground
Watertank
Tube well andwell

Infrastructure Details:

Drinking Water:

In Moviya village drinking water is distributed through pipe line from water tank and in tank water is arrived from Narmada Yojana. This water is used only for drinking purpose it is not used for irrigation purpose. And other source of drinking water is its own well and tubewell.

Water Management Facilities:

All dwellers water is supplied from water tank through pipeline.
The capacity of water tank is 50,000 liter. For extra water requirement for village has protected well and its own tube well.

Figure 4.6: Water Tank

In village one PHC sub-center for maintain people health.

Education facility:

In village one Anganwadiand one primary school with play ground available. But in Anganwadi maintenance is required because during rainy season water is coming from slab. Primary school is good in condition, not any maintenance is required.

Figure 4.7: Sanitation Facility

Drainage Network:

In village the open drainage facility is available. Due to this during high flow the sewage is come on theroad. Due to this diseases are generated. And due to this pollution is generated. The main sewer line is underground.

Community Hall:

In village not provision of community hall.

Public Library:

In village not provision of public library.

Existing Condition of Public Buildings & Maintenance of existing Public Social Infrastructure:

Infrastructures:

Health facility:

Condition of primary school isgood

In Anganwadi maintenance and repair isrequired

Condition of panchayat building isgood.

Technology Mobile/ WIFI / Internet Usage Details:

All most 70% of people have smart phone and they have use internet, but there is no provision of WI-FI facility in village.

Sports Activity as Gram Panchayat:

There is no any sport activity organized by gram panchayat.

Socio-Cultural Facilities:

There is less socio-cultural facility is available and other facilities cover below:

Public Garden /Park/Playground:

There is no provision of public garden in village. But in primary school playground is available.

Sustainable Infrastructure Facilities &Repair& Maintenance:

In village no any provision of sustainable infrastructure facility. Solar light system is available but it is not in working condition. But it is required maintenance in village no provision of rain water harvesting system.

There is no bio gas plant, not liquid waste management system.

Any other details:

In village Pradhan mantri surksha vima yojana and sukaniya samrudhi yojana is available.

Electrical Concept:

Renewable energy source planning particularly for villages:

Renewable energy is energy from sources that are naturally replenishing but flow-limited; renewable resources are virtually inexhaustible in duration but limited in the amount of energy that is available per unit of time. Renewable energy plays an important role in reducing greenhouse gas emissions

Using renewable energy can reduce the use of fossil fuels, which are major sources of U.S. emissions. Renewable energy source like solar panels dont have any harmful byproduct. Local ecologies are not disturbed and the local sarent subjected to any health problem either.

Figure 4.8: Renewable Energy

Renewable energy sources like wind power plant may take up more space in comparison to say a coal power plant, but they are the most environmentally friendly sources of power out there.

There is no doubt that renewable energy source can kick-start development in rural area. It creates more jobs and provide cheaper energy to the locals. With proper management, it can also become a contributor to the local economy.

Irrigation Facilities:

In village for irrigation purpose well and tube well water is used by pumping method. And one river is flow behind the village also this water is used in irrigation.

Electricity Facilities with Area:

In village 24×7 hours electricity is available in each household. All the village road is solar street

Renewable energy sources like wind power plant may take up more space in comparison to say a coal power plant, but they are the most environmentally friendly sources of power out there.

There is no doubt that renewable energy source can kick-start development in rural area. It creates more jobs and provide cheaper energy to the locals. With proper management, it can also become a contributor to the local economy.

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In village for irrigation purpose well and tube well water is used by pumping method. And one river is flow behind the village also this water is used in irrigation.

Electricity Facilities with Area:

In village 24×7 hours electricity is available in each household. All the village road is solar street light is available but it is not in working condition.

Existing Institution like - Village Administration Detail Profile

Bachat Mandali:

In Moviya village no any such type of Bachatmandali at a village level. Villager Bachat account in post office.

DudhMandali:

In a Moviya village no any dudhmandali.

Mahila forum:

In Moviya village no any such type of mahila form.

Plantation for the Air Pollution:

No any plantation by panchayat for reduces air pollution.

Rain Water Harvesting:

In village no any provision for rain water harvesting. All the water is flow on road meet in drain- age and this water is disposal in river.

Agricultural Development:

No any agricultural development by agricultural cooperative society in village. The main crop grown in village is groundnut, cumin, cotton, bajri, etc.

Any Other:

In village no any other facilities

Chapter: 5

Sustainable Technical Options with Case Studies of the Existing Village

Concept (Civil):

Advance construction techniques:

As the construction, maintenance and operation of the built environment undergoes significant changes based on demands in lower energy consumption, low CO2 emissions, and higher durability and long lasting quality, the building industry is delivering with innovative solutions in new construction methods and technologies

Causes, Prevention and Repair of Cracks in Building / rectification of building tilt / rehabilitationtechniques:

Causes of cracks:

Ground movement (beneath foundations) caused by clay shrinkage, land slip, vibration, subsidence, settlement, heave, sway, and soon.

Foundation failure due to the decay of soft clay brick, concrete erosion due tochemical contaminants, and soon.

Moisture movement that causes materials to expand or contract, perhaps due to the presenceof vegetation or faulty or damageddrains.

Thermal movement that causes materials to expand or contract as temperature increases or decreases.

Suspended structures such as floors that deform underload.

Tree rootgrowth.

Prevention of crack:

A. To Prevent Cracks Due to MoistureMovement:

1) Select materials having small moisture movement eg bricks, lime stones, marbleetc
2) Plan for less richer cement content, larger size of aggregates and less watercontent.
3) Plan for offsets in walls for length of more than 600mm
4) Use of composite cement-lime mortar of 1:1:6 mix or weaker for plasteringwork
5)For brick work 2weeks time in summer and 3 weeks time in winter should be allowedbefore using from the date of removal fromkilns
6) Delay plastering work till masonry dried after propercuring

B. To prevent Cracks Due to ThermalMovement:

1)Dark coloured and rough textured materials on exteriors have lower reflectitivity andreact more for thermalexpansions
2)Plan for a layer of adequate thickness of good reflective surface over concrete roof slabsto Minimize these cracks
3)Slip joint should be introduced between slab and its supporting wall or the some lengthfrom the supporting wall or the slab should bear only on part width of thewall
4)Mortar for parapet masonry should be 1cement: 1 lime: 6sand
5)Good bond should be ensured between parapet masonry and concreteslab

C. To Prevent Cracks Due to ElasticDeformations:

1) When large spans cannot be avoided, deflection of slabs or beams could be reduced byin- creasing depth of slabs and beams so as to increase theirstiffness.
2) Adoption of bearing arrangement and provision of a groove in plaster at the junction ofwall and ceiling will be of some help in mitigating thecracks.
3) Allow adequate time lag between work of wall masonry and fixing oftiles

D. To Prevent cracks due to Foundation Movement and Settlement ofSoil:

1) Plan for under-reamed piles in foundation for construction on shrinkablesoils

2) Plan for plinth protection around thebuilding

3) Slip / expansion joints to ensure that new construction is not bonded with the old construction and the two parts (Old and new) are separated right from bottom to the top. When plastering the new work a deep groove should be formed separating the new work from theold.

E. To Prevent Cracks Due to Cracking Due toVegetation:

1) Do not let trees grow too close to buildings, compound-walls, garden walls, etc, taking extra care if soil under the foundation happens to be shrinkable soil/ clay. If any saplings of trees start growing in fissures of walls, etc. remove them at the earliestopportunity.
2) If some large trees exist close to a building and these are not causing any problem, as far as possible, do not disturb these trees if soil under the foundation happens to be shrinkableclay.

3) If, from any site intended for new construction, vegetation including trees is removed and the soil is shrinkable clay, do not commence construction activity on that soil until it has undergone expansion after absorbing moisture and hasstabilized.

Repair of Cracks in Building:

The crack is repaired by using following method:

Figure 5.1: Epoxy Injection Method

1. **Epoxy injection method: Epoxy** injections are used to fill the cracks that are as narrow as 0.05 millimeters. Under this method, the cracks on exposed surfaces are sealed injecting epoxy under the concrete. However, it is important to find and fix the root cause of cracks before injecting the epoxy into the cracks otherwise the cracks.

   will keep on emerging again and again. This method of crack repairing requires a lot of tact and skill-full execution so you need to be sure that the person executing the repairs knows his work.
2. **Routing and Sealing method:** Routing and sealing the cracks is a much more common and a much simpler method to repair cracks. That said, it can be only used in cases where only remedial crack repairing is required and structural repairs are not needed. This method simply involves enlarging the cracks on the surface and then filling and sealing it with a joint sealant. It is important to take care of the width to depth aspect ratio when sealing the joint so that there is enough room left for themovement.

Figure 5.2: Stitching Method

3. **Stitching the Cracks:** The stitching method is a simple and long lasting method of repairing cracked buildings. Under this procedure, holes are drilled to make entry and exit points across the cracked surface. A number of U-shaped metallic staples are then passed through the holes and anchored strongly in the holes with a grout or an epoxy based system.

4. **Drilling and Plugging:** If you need to repair vertical cracks that run in straight lines, this is a good method for its cost-effective and less time-consuming. Under this method, vertical holes are drilled in the cracks and a key is formed by passing down a grout. The grout key helps in preventing leakages and the consequent loss of soil from thewalls.

Disaster management in natural calamities:

The Disaster Management Act was passed by the LokSabha on 28 November 2005 and by the RajyaSabha on 12 December 2005 in India. National Disaster Management Authority (NDMA) is an agency of the Ministry of Home Affairs whose primary purpose is to coordinate response to natural or man-made disasters and for capacity-building in disaster resiliency and crisis re- sponse.

Various types of Roads / Intelligent transport system:

Various types of Roads:

1. **Earthen road:** This is cheapest type of road and it is made by using natural soil, clay, silt, sand,etc.
2. **Bituminous road:** A bituminous road is an asphalt concrete road, although it is rarely called a bituminous road where I come from. Bitumen is by definition any of various nat- ural substances, such as asphalt, consisting of mainly hydrocarbons. In this 2 type road are constructed.

1) Rigid pavement road
2) Flexible pavementroad

3. **Paver Block Road:** When there are underground utility lines below roadwhich
4. Need frequent repairs/ maintenance. Here you need to remove all wearing course and base, sub base to reach the utility lines, and want it done fast so that road is again available in original shape forusers.

Figure 5.3: Paver Block Road

Advantage:

Pavers require low maintenance as compared to the plain concrete or asphaltpavement.
Block paving is very durable and is expected to last reliably for at least 20years**.**
Paver has a unique quality to interlock with each other due to large availability of vari- ousshapes**.**
It is more environmentalFriendly.

5. **Plastic road:** Plastic roads are made entirely of plastic or of composites of plastic with other materials. Plastic roads are different from standard roads in the respect that standard roads are made fromasphalt concrete,which consists of mineral aggregates and asphalt. The implementation of plastics in roads also opens a new option for recycling post consumer plastics.

it is reduce the need of bitumen around 10%. It is also reduce cost around Rs. 5000/km of single lane road. Its maintenance cost is low compare to conventionalroad.

6. **Intelligent transport system:** An intelligent transportation system (ITS) is an advanced application which aims to provide innovative services relating to different modes of transport and traffic management and enable users to be better informed and make safer, more coordinated, and 'smarter' use of transportnetworks.

Various types of Environmental Factors:

Environmental factor or ecological factor or eco factor is any factor, a biotic or biotic, that influences living organisms. Biotic factors include ambient temperature, amount of sunlight,and pH of the water soil in which an organism lives. Biotic factors would include theavailability of food organisms and the presence of conspecifics, competitors, predators, andparasites.An identifiable element in the physical, cultural, demographic, economic, political, regulatory, or technological environment that affects the survival, operations, and growth of an organization.

Various environmental factors are:

Wind Effect:

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

Corrosion Effect:

Simply corrosion is the damage to metals over a period of time because of their reaction with the environment.

For civil and structural engineers corrosion is not just an aesthetic issue it causes severe damage and deterioration to buildings, bridges, equipment and pipelines. While the metal components on the exterior of the building are more liable to atmospheric damage and corrosion, the effect of corrosion on all the metal elements especially within the building like foundation and structural walls is equally bad.

EWaste disposal / Any West disposal:

There is no clear definition for electronic waste (e-waste) at this time, but if you can plug it in to an electrical outlet or it contains circuit boards or chips, it is most likely e-waste.

This term applies to consumer and business electronic equipment that is near or at the end of its useful life. These products can contain heavy metals like cadmium, lead, copper, and chromium that can contaminate theenvironment.

Examples of electronic wasteinclude:

TVs, computer monitors, printers, scanners, keyboards, cables, circuit boards, lamps, clocks, flashlight, calculators, phones, digital/video cameras, radios, DVD players, MP3 and CDplayers.

Figure 5.4: E- waste Management

Kitchen equipment (toasters, coffee makers, microwaveovens).

Corrosion Mechanism, Prevention & Repair Measures of RCC Structure:

In the presence of moisture, an oxidation reaction takes place on the energized area of the metal surface to elute metal as an ion (anode). A reduction takes place on low energy area (cathode). This process is called corrosion mechanism.

The annual cost due to corrosion of materials and of protection against corrosion will increase all over the world. These are countries will spend money for corrosion protection

Countries	EstimatedMoney
UnitedStates	13 Billiondollars
China	9 Billion dollars
Gulfcountries	11 Billion dollars
India	8.7 Billiondollars

Worldwide Corrosion in automobile fuel systems alone cost around 100 million dollars per year. Auto radiators account for about 52 million dollars. Normally in automobiles, the cost ofpainting comes around 1/3 of the vehicle cost. If we reduce corrosion or preventing corrosion will drastically change world economy.

Prevention & Repair Measures of RCC Structure:

Recently many of the Reinforced Concrete structures in contact with water (both seawater and freshwater) have been observed to be suffering from Corrosion Induced damages. The damagesobserved are concrete cracking, spalling of concrete, efflorescence, water leakages, rust spots, rusted rebars, broken rebars, etc.

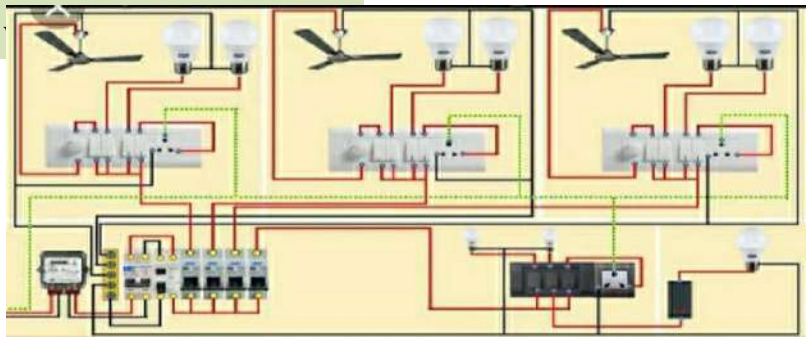
Concept (Electrical)

1) House wiringDesign

Introduction

Electricity requires an electric path to flow and there are many conducting materials used for this purpose. There are many semi conducting materials which are used to reduce the voltage and also drop the current flow.

Figure 5.5: House



There are non-conducting materials which are used as insulation during working on live-lines. In this unit we will study how the household or industrial wiring is done and what materials are essential for household or industrial wiring. We will also study the different types of wiring and how they is done.

Diagram

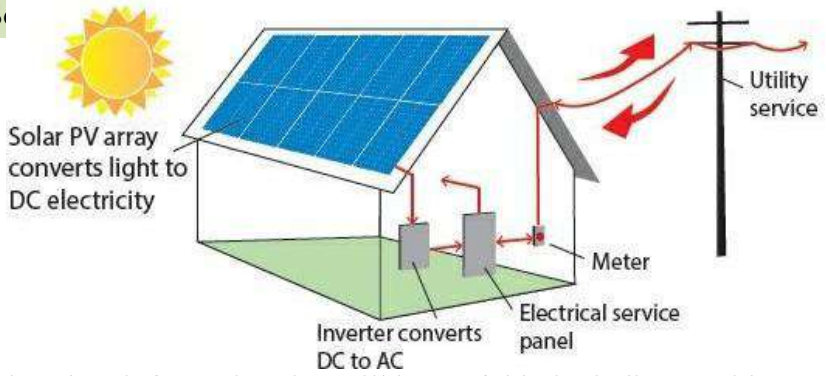
Figure 5.6: House wiring diagram

P=VICosø I=p/vCosø I=1903/2300.8I=10.34 A

2) SolarRooftop

As the demand for solar electric systems grows, progressive builders are adding solar photovoltaics (PV) as an option for their customers. This overview of solar photovoltaic systems will give the builder a basic understanding of:

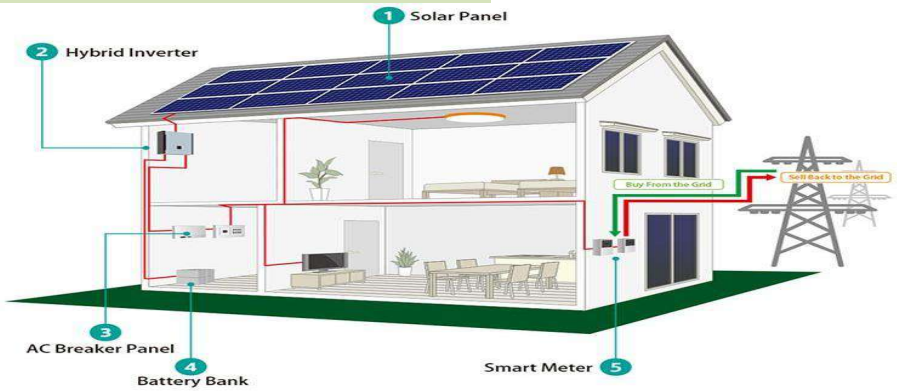
Figure 5.7: S



Emphasis will be placed on information that will be useful in including a grid-connected PV system in a bid for a residential or small commercial building. We will also cover those details of the technology and installation that may be helpful in selecting subcontractors to perform the work, working with a designer, and directing work as it proceeds. A summary of system types and components is given so the builder will know what to expect to see in a design submitted by a subcontractor or PVdesigner.

Design of RooftopSolar

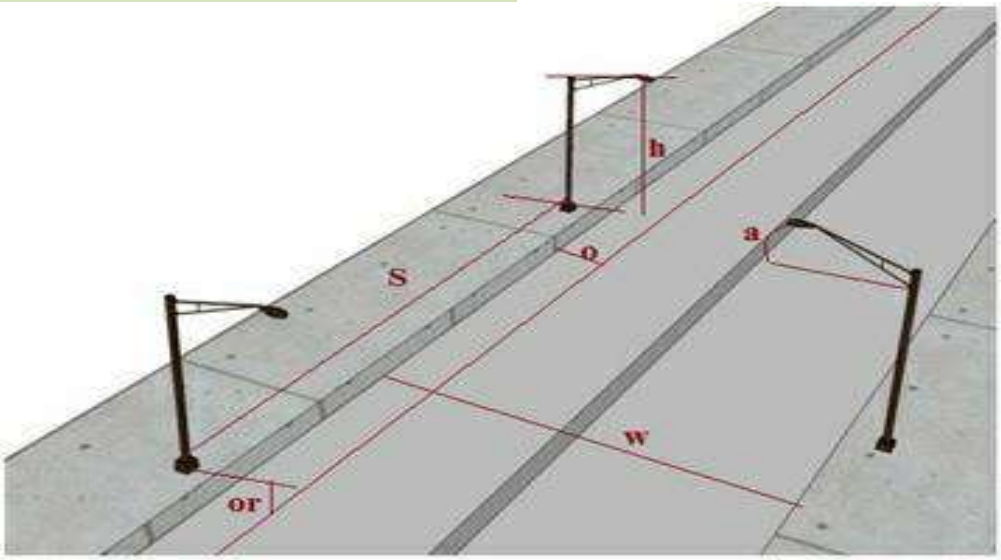
Figure 5.8



3) StreetLight

The street light does not need to setup the transmission online or route the cable and no any special managementandcontrolarerequired.Itcanbeinstalledintheentirepublicplace such as the square, the

parking lot, the campus, the street or the highway etc.Wearer going to design Street Light Installation for the main Street of our AllocatedVillage.



Chapter: 6

Swatchh Bharat Abhiyan (Clean India)

About Swatchh Bharat Abhiyan:

Swachh Bharat Abhiyan is a campaign that was launched on 2 October 2014 and aims to eradicate open defecation by 2019. The national campaign spans 4,041 statutory cities and towns. It is the current of a few prior campaigns, including Nirmal Bharat Abhiyan and the Total Sanitation Campaign, which had similar goals (see history section below).

The mission has two thrusts: Swachh Bharat Abhiyan ("gramin" or 'rural'), which operates under the Ministry of Drinking Water and Sanitation; and Swachh Bharat Abhiyan ('urban'), which operates under the Ministry of Housing and Urban Affairs.

As part of the campaign, volunteers, known as Swachhagrahis, or "Ambassadors of cleanliness", have promoted indoor plumbing and community approaches to sanitation (CAS) at the village level.

The Times of India reported that the idea for Swachh Bharat was developed in March 2014 at a sanitation conference organized by UNICEF India and the Indian Institute of Technology as part of the larger Total Sanitation Campaign, which the Indian government launched in 1999.

The Union Cabinet chaired by the Prime Minister, Shri Narendra Modi, today gave its approval for restructuring of the Nirmal Bharat Abhiyan (NBA) into Swachh Bharat Mission (Gramin) and re-vision in the components of the programme as follows:-

NBA will be restructured into the Swachh Bharat Mission with two sub-Missions - Swachh Bharat Mission (Gramin) and Swachh Bharat Mission (Urban). Budgetary provisions for the two sub-Missions will be provided separately in the demand for Grant of the Ministries of Drinking Water and Sanitation (for Gramin) and Ministry of Urban Development (for Urban). The

Mission will be kick-started on 2nd October 2014.If necessary, funds may be provided by re-appropriation or from the Contingency Fund.

1. Enhance the Unit cost of the Individual Household Latrine (IHHL) from Rs. 10,000 to Rs. 12,000 so as to provide for water availability, including for storing, hand-washing and cleaning oftoilets.

2. Central share for IHHLs to be Rs. 9,000 (75 percent) from Swachh Bharat Mission(Gramin). The State share to be Rs. 3,000 (25 percent). For North Eastern States, Jammu and Kashmir and Special Category States, the Central share will be 10,800 and the State share Rs. 1,200 (90 per- cent: 10 percent). Additional contributions from other sources will bepermitted.

3. Provision to be included in the Indira AwasYojana Programme for provision of functional toilets. Till such provision is made, existing arrangement of funding will be continued from the Swachh BharatMission (Gramin).

4. Provision for Information, Education and Communication (IEC) will be at8 percent of total project cost, with 3 percent to be utilized at the Central level and 5 percent at Statelevel.

5. Provision for Administrative Cost will be 2 percent of the project cost. Sharing pattern will be 75:25 between Centre andState.

6. Transfer of the responsibility of construction of all School toilets to the Department of School Education and Literacy and of Anganwadi toilets to the Ministry of Women and Child Development.

7. The strategy of implementation of the Sanitation Programme will focus on behavior change, triggering of the population with regard to toilet construction, and their use. Triggering of communities for behavior change and usage of toilets shall be given top priority to ensure in- creased demand, which will lead to use of assets created. Effective use of technology and media shall be done to communicate the message of the benefits of safe sanitation andhygiene.

Which type of swatchht aneeded in your village explaining Existing Situation with photograph?

In village no any provision for collection of solid waste. So in village required the method of sol- id waste collection. So increase the asthetic view of village. And no any provision of re-use of solid waste in village.

In village the main sewer line is closed and branch line is open. Due to open of branch line during in rainy season it is bloced due to plastic waste and other material. So it is required the all branch drain is make a closed type. So waste water is not come on the road and it is reduce the diseases due to wastewater.

The counter is a down counter that counts downwards from user entered number.

Figure 47: Waste Water Disposal

On reaching zero the switching cycle is turned off the system can be enhanced by adding a load output measuring system that lets user know when load collapses, so that system can directly provide the load life.

Guidelines for the process of the implementation in your villagewith Photograph:

In village for reduction of solid waste first provide dust bin by panchayat of village. And also pro- vide the door to door solid waste collection method at daily. And solid waste is dispose at land far distance away from village.

If the village area is small then the Tricycle method is adopted in village for collection of solid waste at door to door. If village area is large then provide the vehicle for solid waste collection. and give awareness of villagers about the swatch bharat mission to reduce the solid waste al- so reduce use of plastic. Panchayat is tried to make a village as a plastic free village.

Actual activity done by students for making your village clean with photo- graphs:

In village we have done activity like cleaning of road, cleaning of school compound,and other smallactivity.

we also discuss with sarpanch andTalati for which activity done for cleaning ofvillage.

We are also talk with villagers for clean village and usedustbin.

Figure 6.2: Provide Facility for Solid Waste Collection & cleaning of Road

Chapter: 7

Village condition due to covid 19

Taken steps in allocated village related to existing situation withphotograph

There is no any positive case invillage.
Gram panchayat distributed mask andsanitizer.
Gram panchayat written slogan for safety against covid19.
They also sanitize all village.
Villagers strictly follows guideline given by government.

Activities done by students for allocated village clean withphotograph

In Moviya village no activity done by student against covid19

Chapter: 8

Sustainable Design Planning Proposal (Prototype Design)- Part- I

8.1 Design Proposals:

Different facilities in Moviya village which we observed as below:

Physical Infrastructure facility:

Piped water supply todweller

Watertank

Undergrounddrainage

Cement concreteroad

Transportationfacility

Electricitydistribution

Social Infrastructure facility:

Anganwadi

Primaryschool

Socio-culture Infrastructure facility:

Temple

Sustainable Design:

1) Bio-Gas plant:

About existing Biogasplant:

In village no any existing biogas plant is available.

Biogas is a renewable, as well as a clean, source of energy. Gas generated through bio digestion is non-polluting; it actually reduces greenhouse emissions. No combustion takes place in the process, meaning there is zero emission of greenhouse gasses to the atmosphere; therefore, using gas from waste as a form of energy is actually a great way to combat global warming.

Physical Design:

1) Solid Waste Collection andmanagement:

Detail of waste collection Trip (Suggestion to GramPanchayat).
Timing for door to door waste collection = 8:00AM to1:00PM
Public dustbin should also empty everyday bysweeper.
Community skip container can be emptied by nearby corporation at every 3 alternateday.
Total no. of household in villagers = 2254 (As per Census 2011)
In village 351household.

Table 8.1: Abstract for Door to Door waste collection.
RATE AS PER SOR 2015-16 (R & B)

Sr. no.	Description	Nos.	Rate per unit Nos.	Cost (Rs)
			Purchase cost	
1	Waste collection tricycle	4	10000	40000
2	Public Dustbin	50	450	22500
3	Skip container bin	2	50000	100000
4	Dustbin for each household	251	120	30120
			Maintenance Cost (monthly)	
5	Man required (for collection waste)	4 X 30	350	42000
			Total purchase cost	192620
			Total maintenance cost	42000
			Total Initial cost	**Rs. 234620/-**

Maintenance charged should collect from each house hold = 42000/ 1161
= 36.18 /-

Says = Rs.36/-
permonthTotal charged collected =
36 X1161
= Rs.41796/-

Tricyclespecification:

Material : -HDPE
Color : - Green
Number of wheel :-3
No. ofbox : -6

Figure 8.1: Tricycle for Waste Collection

Dustbin Specification:

Material :- FRP
Capacity :- 240lit(Each)
Double bin (separate for dry and liquidwaste)
Material :-FRP
Dustbin for household

Figure 8.2: Public Dustbin

Socio Cultural Design:

8.1 Public Garden:

This drawing is available in page no: 181

Table 8.2: Quantity Sheet for Public Garden of Moviya Village

GARDEN						
QUANTITY SHEET						
Sr. No.	**Item Description**	**No.**	**Length (m)**	**Width/ Breadth (m)**	**Height/ Depth (m)**	**Quantity(m^3)**
1	**Earthwork in Excavation in Foundation:**					
	Footing 1mx1m	28	1.800	1.800	0.600	**54.43**
	Depth From GL = 0.6 + 0.6+ 0.6					
	0.6 =Extra For working space					
					Total Qty of Excavation =	**54.43**
2	**Footing PCC with 1:3:6 Ratio**					
	Footing	28	0.900	0.900	0.075	**1.70**
	Thickness = 0.075m					
	D = 0.150 + 0.6+ 0.150					
					Total Qty of Footing PCC=	**1.70**
3	**Footing RCC with 1:1.5:3Ratio**					
	Footing					
	Thickness=0.6m	28	0.600	0.600	0.400	**4.03**
					Total Qty of Footing RCC=	**4.03**
4	**Column up to Plinth Level RCC**					
	Column 1:1.5:3 Mix Ratio	28	0.230	0.230	0.125	**0.19**
					Total Qty of Footing Column=	**0.19**
5	**Plinth Beam RCC with 1:1.5:3 Ratio**					
		1	119.300	0.230	0.230	**6.31**

					Total Qty of Plinth Beam=	**6.31**
6	**Back-filling**					
6.a	**Back-filling In Footing**					
	Excavation Area	28	1.800	1.800	0.600	54.43
	Deduction					
	Footing P.C.C	-28	0.900	0.900	0.075	-1.70
	Footing RCC	-28	0.600	0.600	0.400	-4.03
	Footing Column	-28	0.230	0.230	0.125	-0.19
					6.a Total Qty=	**48.51**
6.b	**Back Filling from Ground Level to Plinth Level**					
	Plinth area in to in	1	20.880	19.810	0.200	82.73
					6.b Total Qty=	**82.73**
					Total Qty of Back Filling of 6a+6b=	**131.24**
7	**Brick Masonry with 1:4 Ratio**					
7a	**0.23m thick wall Brick Masonry**	1	119.300	0.230	0.900	24.70
					Total Qty of 0.23mt. Thick Walls=	**24.70**
7b	**0.1m thick wall Brick Masonry**	1	18.380	0.100	0.900	1.65
					Total Qty of 0.1 mt. Thick Walls=	**1.65**
					Total Qty of 7a+7b Walls=	**26.35**

8	**Brick Masonry in Stairs**					
		14.00	0.600	0.100	0.450	0.38
		14.00	0.400	0.100	0.450	0.25
		1.00	10.500	0.300	0.450	1.42
		1.00	10.500	0.300	0.230	0.72
		1.00	5.390	0.300	0.450	0.73
		1.00	5.390	0.300	0.230	0.37
		1.00	3.590	0.250	0.450	0.40
		1.00	3.590	0.250	0.230	0.21
		Total Qty of Brick Work in Stairs=				**4.48**
9	**Blocks for Walk Path Way**					
	0.06m Thick	1	20.880	15.470	0.060	19.38
		-1	11.560	6.450	0.060	-4.47
		-1	6.450	5.120	0.060	-1.98
		-1	4.050	2.300	0.060	-0.56
		-1	3.140	1.520	0.060	-0.29
		-1	2.950	1.720	0.060	-0.30
					Total Qty of Blocks=	**11.78**
10	**External Plaster with 1:4Ratio**					
	25MM Thick					
		1	226.960	0.025	1.015	5.76
					Total Qty of External Plaster=	**5.76**

(Rate as per SOR 2015-16 R &B)

Table 8.3: ABSTRACT SHEET FOR GARDEN				
Sr.	**ITEMS**	**QTY.**	**Rate/Per**	**AMOUNT**
1.	Earthwork in Excavation in Foundation	**54.43**	280 m3	15,240.00
2.	Footing P.C.C. with 1:3:6 Ratio	**1.70**	2507 m3	4261.00
3.	Footing R.C.C. with 1:1.5:3Ratio	**4.03**	1500 m3	6045.00
4.	Column up to Plinth Level R.C.C.	**0.19**	5000 m3	950.00
5.	Plinth Beam RCC with 1:1.5:3 Ratio	**6.31**	2000 m3	12,620.00
6.	Back-filling 6(A) & 6(B)	**131.24**	125 m3	16,40500
7.	Brick Masonry with 1:4 Ratio 0.23 MT. Thick Wall	**24.70**	2443 m3	60,342.00
8.	Brick Masonry with 1:4 Ratio 0.10 MT. Thick Wall	**1.65**	2443 m3	4031.00
9.	Brick Masonry In Staircase	**4.48**	2443 m3	10,945.00
10.	Blocks for Walk Path Way	**11.78**	430m2	5065.00
11.	External Plaster with 1:4Ratio	**230.36**	230 m2	52,982.00
12.	Trees	22	800/NOS.	17,600.00
	TOTAL :			**4,31,205.00**

8.2 Community Hall

This drawing is available in page no: 182

Table 8.4: Quantity Sheet for Community hall of Moviya Village

COMMUNITY HALL						
QUANTITY SHEET						
Sr. No.	**Item Description**	**No.**	**Length (m)**	**Width/ Breadth (m)**	**Height/ Depth (m)**	**Quantity(m^3)**
1	**Earthwork in Excavation in Foundation:**					
	Footing 1mx1m	9	2.200	2.200	1.000	**43.56**
	Depth From GL = 0.6 + 1 + 0.6					
	0.6 =Extra For working space					
					Total Qty of Excavation =	**43.56**
2	**Footing PCC with 1:3:6 Ratio**					
	Footing	9	1.300	1.300	0.075	**1.14**
	Thickness = 0.075m					
	D = 0.150 + 1.0 + 0.150					
					Total Qty of Footing PCC=	**1.14**
3	**Footing RCC with 1:1.5:3Ratio**					
	Footing					
	Thickness=0.6m	9	1.000	1.000	0.600	**5.40**
					Total Qty of Footing RCC=	**5.40**
4	**Column up to Plinth Level RCC**					
	Column 1:1.5:3 Mix Ratio	9	0.230	0.460	0.330	**0.31**
					Total Qty of Footing Column=	**0.31**

5	**Plinth Beam RCC with 1:1.5:3 Ratio**					
		1	51.430	0.230	0.450	**5.32**
					Total Qty of Plinth Beam=	**5.32**
6	**Back-filling**					
6.a	**Back-filling In Footing**					
	Excavation Area	9	2.200	2.200	1.000	43.56
	Deduction					
	Footing P.C.C	-9	1.300	1.300	0.075	-1.14
	Footing RCC	-9	1.000	1.000	0.600	**-5.40**
	Footing Column	-9	0.230	0.460	0.330	**-0.31**
					6.a Total Qty=	**36.71**
6.b	**Back Filling from Ground Level to L.C. Bed below Level**					
	Plinth area in to in	1	5.360	1.750	0.200	1.88
		1	14.720	9.120	0.200	26.85
					6.b Total Qty=	**28.73**
					Total Qty of Back Filling of 6a+6b=	**65.43**
7	**L.C. Bed RCC with 1:1.5:3 Ratio**					
		1	5.360	1.750	0.200	1.88
		1	14.720	9.120	0.200	26.85
					Total Qty of L.C. Bed=	**28.73**
8	**Brick Masonry with 1:4Ratio**					

8a	**0.23m thick wall Brick Masonry**	1	52.130	0.230	3.200	38.37
	Deduction					
	Window W	-2	1.800	0.230	1.200	-0.99
	Window W1	-6	1.520	0.230	1.200	-2.52
	Window W2	-1	1.200	0.230	1.200	-0.33
	Window W3	-3	0.900	0.230	1.200	-0.75
	M.D.	-1	1.200	0.230	2.100	-0.58
	Door D1	-1	0.910	0.230	2.100	-0.44
		Total Qty of 0.23mt. Thick Walls=				**32.76**
8b	**0.1m thick wall Brick Masonry**	1	41.490	0.100	3.200	13.28
	Deduction					
	Door D1	-7	0.910	0.230	2.100	-3.08
	Door D/V	-4	0.750	0.230	2.100	-1.45
	Vent v	-2	0.600	0.230	0.600	-0.17
		Total Qty of 0.1 mt. Thick Walls=				**8.59**
		Total Qty of 8a+8b Walls=				**41.35**
9	**Chhajja with 1:1.5:3 RCC Ratio**					
		2.00	1.820	0.540	0.150	0.29
		1.00	1.500	0.540	0.150	0.12

		2.00	2.100	0.540	0.150	0.34
		2.00	0.900	0.540	0.150	0.15
		1.00	1.200	0.540	0.150	0.10
		1.00	2.740	0.540	0.150	0.22
		1.00	5.700	0.540	0.150	0.46
		1.00	7.350	1.430	0.150	1.58
					Total Qty of Chajjas=	**3.26**
10	**Slab with 1:1:2 RCC Ratio**					
	0.15m Thick Slab	1	15.180	9.580	0.150	21.81
		1	5.820	1.520	0.150	1.33
					Total Qty of Slab=	**23.14**
11	**Parapet Wall**					
		1	52.130	0.230	1.000	11.99
					Total Qty of Parapet Wall=	**11.99**
12	**Internal Plaster with 1:4Ratio**					
	15mm thick					
		1	124.160	0.015	3.100	5.77
	Deduction					
	Window W	-2	1.800	0.015	1.200	-0.06
	Window W1	-6	1.520	0.015	1.200	-0.16
	Window W2	-1	1.200	0.015	1.200	-0.02
	Window W3	-3	0.900	0.015	1.200	-0.05
	M.D.	-1	1.200	0.015	2.100	-0.04
	Door D1	-15	0.910	0.015	2.100	-0.43

	Door D/V	-8	0.750	0.015	2.100	-0.19
	Vent V	-2	0.600	0.015	0.600	-0.01
					Total Qty of Internal Plaster=	**4.81**
13	**External Plaster with 1:4Ratio**					
	25MM Thick					
		1	52.520	0.025	4.800	6.30
	Deduction					
	Window W	-2	1.800	0.025	1.200	-0.11
	Window W1	-6	1.520	0.025	1.200	-0.27
	Window W2	-1	1.200	0.025	1.200	-0.04
	Window W3	-3	0.900	0.025	1.200	-0.08
	M.D.	-1	1.200	0.025	2.100	-0.06
	Door D1	-1	0.910	0.025	2.100	-0.05
	Vent V	-2	0.600	0.025	0.600	-0.02
					Total Qty of External Plaster=	**5.68**

(Rate as per SOR 2015-16 R &B)

Table: 8.5 ABSTRACT SHEET FOR COMMUNITY HALL				
Sr.	**ITEMS**	**QTY.**	**Rate/Per**	**AMOUNT**
1.	Earthwork in Excavation in Foundation	**54.43**	280 m3	15,240.00
2.	Footing P.C.C. with 1:3:6 Ratio	**1.70**	2507 m3	4261.00
3.	Footing R.C.C. with 1:1.5:3Ratio	**4.03**	1500 m3	6045.00
4.	Column up to Plinth Level R.C.C.	**0.19**	5000 m3	950.00
5.	Plinth Beam RCC with 1:1.5:3 Ratio	**6.31**	2000 m3	12,620.00
6.	Back-filling 6(A) & 6(B)	**131.24**	125 m3	16,40500
7.	Brick Masonry with 1:4 Ratio 0.23 MT. Thick Wall	**24.70**	2443 m3	60,342.00
8.	Brick Masonry with 1:4 Ratio 0.10 MT. Thick Wall	**1.65**	2443 m3	4031.00
9.	Brick Masonry In Staircase	**4.48**	2443 m3	10,945.00
10.	Blocks for Walk Path Way	**11.78**	430m2	5065.00
11.	External Plaster with 1:4Ratio	**230.36**	230 m2	52,982.00
12.	Trees	22	800/NOS.	17,600.00
	TOTAL :			**4,31,205.00**

8.3 Public library plan

This drawing is available in page no: 183

Table 8.6: Quantity Sheet for Public library of Moviya Village

PUBLIC LIBRARY

QUANTITY SHEET

Sr. No.	Item Description	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity(m^3)
1	**Earthwork in Excavation in Foundation:**					
	Footing	16	2.200	2.200	1.000	**77.44**
	Depth From GL = 0.6 + 1 + 0.6					
	0.6 =Extra For working space					
					Total Qty of Excavation =	**77.44**
2	**Footing PCC with 1:3:6 Ratio**					
	Footing	16	1.300	1.300	0.075	**2.03**
	Thickness = 0.075					
	D = 0.150 + 1.0 + 0.150					
					Total Qty of Footing PCC=	**2.03**
3	**Footing RCC with 1:1.5:3Ratio**					
	Footing					
	Thickness=0.6m	16	1.000	1.000	0.600	**9.60**
					Total Qty of Footing RCC=	**9.60**
4	**Column up to Plinth Level RCC**					
	Column 1:1.5:3 Mix Ratio	16	0.230	0.460	0.330	**0.56**

				Total Qty of Footing Column=		**0.56**
5	**Plinth Beam RCC with 1:1.5:3 Ratio**					
		1	59.440	0.230	0.450	**6.15**
				Total Qty of Plinth Beam=		**6.15**
6	**Back-filling**					
6.a	**Back-filling In Footing**					
	Excavation Area	16	2.200	2.200	1.000	77.44
	Deduction					
	Footing P.C.C	-16	1.300	1.300	0.075	-2.03
	Footing RCC	-16	1.000	1.000	0.600	**-9.60**
	Footing Column	-16	0.230	0.460	0.330	**-0.56**
					6.a Total Qty=	**65.81**
6.b	**Back Filling from Ground Level to L.C. Bed below Level**					
	Plinth area in to in	1	14.740	11.840	0.200	34.90
		-1	7.120	1.300	0.200	-1.85
		-1	1.610	1.380	0.200	-0.44
					6.b Total Qty=	**32.61**
				Total Qty of Back Filling of 6.a+6.b=		**98.42**
7	**L.C. Bed RCC with 1:1.5:3 Ratio**					
		1	14.740	11.840	0.200	34.90
		-1	7.120	1.300	0.200	-1.85
		-1	1.610	1.380	0.200	-0.44
					Total Qty of L.C. Bed=	**32.61**

8	**Brick Masonry with 1:4Ratio**					
8a	**0.23m thick wall Brick Masonry**	1	79.330	0.230	3.200	58.39
	Deduction					
	Window W	-1	5.190	0.230	1.520	-1.81
	Window W1	-3	1.830	0.230	1.200	-1.52
	Window W2	-5	1.200	0.230	1.200	-1.66
	Window W3	-2	0.600	0.230	1.200	-0.33
	Vent V	-2	0.600	0.230	0.600	-0.17
	M.D.	-1	1.200	0.230	2.100	-0.58
	Door D1	-4	0.900	0.230	2.100	-1.74
	Door D2	-2	0.750	0.230	2.100	-0.72
		Total Qty of 0.23mt. Thick Walls=				**49.86**
8b	**0.1m thick wall Brick Masonry**	1	9.820	0.100	3.200	3.14
	Deduction					
	Door D2	-6	0.750	0.100	2.100	-0.95
		Total Qty of 0.1 mt. Thick Walls=				**2.20**
		Total Qty of 8a+8b Walls=				**52.06**

9	**Chhajja with 1:1.5:3 RCC Ratio**					
		2.00	2.140	0.540	0.150	0.35
		2.00	4.270	0.540	0.150	0.69
					Total Qty of Chajjas=	**1.04**
10	**Slab with 1:1:2 RCC Ratio**					
	0.15m Thick Slab	1	15.200	12.300	0.150	28.04
		-1	6.660	1.070	0.150	-1.07
		-1	1.380	0.920	0.150	-0.19
					Total Qty of Slab=	**26.78**
11	**Parapet Wall**					
		1	58.890	0.230	1.000	13.54
					Total Qty of Parapet Wall=	**13.54**
12	**Internal Plaster with 1:4Ratio**					
	15mm thick					
		1	114.990	0.015	3.100	5.35
	Deduction					
	Window W	-2	1.800	0.015	1.520	-0.08
	Window W1	-3	1.520	0.015	1.200	-0.08
	Window W2	-5	1.200	0.015	1.200	-0.11
	Window W3	-2	0.900	0.015	1.200	-0.03
	Vent V	-2	1.200	0.015	0.600	-0.02
	M.D.	-1	0.910	0.015	2.100	-0.03
	Door D1	-8	0.750	0.015	2.100	-0.19

	Door D2	-16	0.600	0.015	2.100	-0.30
					Total Qty of Internal Plaster=	**4.50**
13	**External Plaster with 1:4Ratio**					
	25mm Thick					
		1	60.040	0.025	4.800	7.20
	Deduction					
	Window W1	-3	1.830	0.025	1.200	-0.16
	Window W2	-5	1.200	0.025	1.200	-0.18
	Window W3	-2	0.600	0.025	1.200	-0.04
	Vent V	-2	0.600	0.025	0.600	-0.02
	M.D.	-1	1.200	0.025	2.100	-0.06
					Total Qty of External Plaster=	**6.74**

(Rate as per SOR 2015-16 R &B)

Table 8.7: ABSTRACT SHEET FOR PUBLIC LIBRARY				
Sr.	**ITEMS**	**QTY.**	**Rate/Per**	**AMOUNT**
1.	Earthwork in Excavation in Foundation : 1.0 M x 1.0 M x 1.0 M	77.44	280 m3	21,683.00
2.	Footing P.C.C. with 1:3:6 Ratio	2.03	2507 m3	5090.00
3.	Footing R.C.C. with 1:1.5:3Ratio	9.60	1500 m3	14,400.00
4.	Column up to Plinth Level R.C.C.	0.56	5000 m3	2800.00
5.	Plinth Beam RCC with 1:1.5:3 Ratio	6.15	2000 m3	12,300.00
6.	Back-filling 6(A) & 6(B)	98.42	125 m3	12,303.00
7.	L.C. Bed RCC with 1:1.5:3 Ratio	32.61	150 m3	4892.00
8.	Brick Masonry with 1:4 Ratio 0.23 MT. Thick Wall	49.86	2443 m3	1,21,808.00
9.	Brick Masonry with 1:4 Ratio 0.10 MT. Thick Wall	2.20	2443 m3	5375.00
10.	Chhajja with 1:1.5:3 R.C.C. Ratio	1.04	2000 m2	2080.00
11.	Slab with 1:1:2 R.C.C. Ratio	26.78	3236 m2	86,660.00
12.	Parapet Wall	13.54	2443 m3	33,078.00
13.	Internal Plaster with 1:4Ratio	355.63	118 m2	41,965.00
14.	External Plaster with 1:4Ratio	287.73	230 m2	66,178.00
15.	Providing and Fixing white vitrified flooring policing etc. comp.	160.27	720 m2	1,15,395.00
16.	W/S and sanitation work	6 nos.W.C.	550/pc	3300.00
		2 nos. Wash Basin	1050/pc	2100.00
	TOTAL :			**5,51,407.00**

8.4 Bus Stand

This drawing is available in page no: 184

Table 8.8: Quantity Sheet for bus stand of Moviya Village

BUS STAND QUANTITY SHEET						
Sr. No.	**Item Description**	**No.**	**Length (m)**	**Width/ Breadth (m)**	**Height/ Depth (m)**	**Quantity(m^3)**
1	**PCC Base**					
	0.15m Thick	1	7.720	2.400	0.150	**2.78**
		Total Qty of PCC Base=				**2.78**
2	**Steel Plate Roof**					
	Thickness = 0.12m	1	8.800	2.940	0.120	**3.10**
		Total Qty of Steel Plate Roof=				**3.10**
3	**Steel Sheet Rounded Roof**					
	Thickness=0.015m	1	7.480	3.770	0.015	**0.42**
		Total Qty of Footing RCC=				**0.42**
4	**Steel Supports for Rounded Roof**					
		2	0.280	0.150	4.920	**0.41**
		Total Qty of Steel Supports=				**0.41**

(Rate as per SOR 2015-16 R &B)

Table 8.9: ABSTRACT SHEET FOR BUS STAND				
Sr.	**ITEMS**	**QTY.**	**Rate/Per**	**AMOUNT**
1.	P.C.C. Base	2.78	2507 m3	6970.00
3.	Steel Plate Roof 0.12 Mt Thick	3.10	3227 m2	10,004.00
4.	Steel Sheet Rounded Roof 0.15 Mt Thick	4.22	3227 m3	13,618.00
5.	Steel Supports for Rounded Roof	L.S.	L.S.	5000.00
6.	ColoringWork	L.S.	L.S.	5000.00
	TOTAL :			**40,592.00**

8.5 Panchayat Building

This drawing is available in page no: 185

Table 8.10: Quantity Sheet for panchayat building of Moviya Village

PANCHAYAT BUILDING

QUANTITY SHEET

Sr. No.	Item Description	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity(m^ 3)
1	**Earthwork in Excavation in Foundation:**					
	Footing	9	2.200	2.200	1.000	**43.56**
	Depth From GL = 0.6 + 1 + 0.6					
	0.6 =Extra For working space					
				Total Qty of Excavation =		**43.56**
2	**Footing PCC with 1:3:6 Ratio**					
	Footing	9	1.300	1.300	0.075	**1.14**
	Thickness = 0.075					
	D = 0.150 + 1.0 + 0.150					
				Total Qty of Footing PCC=		**1.14**
3	**Footing RCC with 1:1.5:3 Ratio**					
	Footing					
	Thickness=0.6m	9	1.000	1.000	0.600	**5.40**
				Total Qty of Footing RCC=		**5.40**
4	**Column up to Plinth Level RCC**					
	Column 1: 1.5:3 Mix Ratio	9	0.230	0.460	0.330	**0.31**

		Total Qty of Footing Column=				**0.31**
5	**Plinth Beam RCC with 1:1.5:3 Ratio**					
		1	29.050	0.230	0.450	**3.01**
		Total Qty of Plinth Beam=				**3.01**
6	**Back-filling**					
6.a	**Back-filling In Footing**					
	Excavation Area	9	2.200	2.200	1.000	43.56
	Deduction					
	Footing P.C.C	-9	1.300	1.300	0.075	-1.14
	Footing RCC	-9	1.000	1.000	0.600	**-5.40**
	Footing Column	-9	0.230	0.460	0.330	**-0.31**
		6.a Total Qty=				**36.71**
6.b	**Back Filling from Ground Level to L.C. Bed below Level**					
	Plinth area in to in	1	6.080	6.950	0.200	8.45
		-1	1.540	1.030	0.200	-0.32
		-1	1.000	0.980	0.200	-0.20
		6.b Total Qty=				**7.94**
		Total Qty of Back Filling of 6a+6b=				**44.64**
7	**L.C. Bed RCC with 1:1.5:3 Ratio**					
		1	6.080	6.950	0.200	8.45
		-1	1.540	1.030	0.200	-0.32
		-1	1.000	0.980	0.200	-0.20
		Total Qty of L.C. Bed=				**7.94**

8	**Brick Masonry with 1:4 Ratio**					
	0.23m thick wall Brick Masonry	1	41.700	0.230	4.050	38.84
	Deduction					
	Window W	-3	1.200	0.230	1.200	-0.99
	Vent V	-2	0.600	0.230	0.600	-0.17
	Door D1	-2	0.900	0.230	2.100	-0.87
	Door D2	-2	0.750	0.230	2.100	-0.72
	M.D.	-1	1.200	0.230	2.100	-0.58
		Total Qty of 0.23mt. Thick Walls=				**35.51**
9	**Chhajja with 1:1.5:3 RCC Ratio**					
		3.00	1.500	0.540	0.150	0.36
		1.00	1.000	0.540	0.150	0.08
		1.00	0.900	0.540	0.150	0.07
		Total Qty of Chajjas=				**0.52**
10	**Slab with 1:1:2 RCC Ratio**					
	0.15m Thick Slab	1	7.410	6.540	0.150	7.27
		-1	1.000	0.980	0.150	-0.15
		-1	1.540	1.030	0.150	-0.24
		Total Qty of Slab=				**6.88**
11	**Parapet Wall**					
		1	29.050	0.230	1.000	6.68

				Total Qty of Parapet Wall=		**6.68**
12	**Internal Plaster with 1:4 Ratio**					
	15mm thick					
		1	52.660	0.015	2.950	2.33
	Deduction					
	Window W	-3	1.200	0.015	1.200	-0.06
	Vent V	-2	0.600	0.015	0.600	-0.01
	Door D1	-4	0.900	0.015	2.100	-0.11
	Door D2	-4	0.750	0.015	2.100	-0.09
	M.D.	-1	1.200	0.015	2.100	-0.04
				Total Qty of Internal Plaster=		**2.01**
13	**External Plaster with 1:4Ratio**					
	25mm thick					
		1	29.870	0.025	4.650	3.47
	Deduction					
	Window W	-3	1.200	0.230	1.200	-0.99
	Vent V	-2	0.600	0.230	0.600	-0.17
	M.D.	-1	1.200	0.230	2.100	-0.58
				Total Qty of External Plaster=		**1.73**

(Rate as per SOR 2015-16 R &B)

Table 8.11: ABSTRACT SHEET FOR PANCHAYAT BUILDING				
Sr.	**ITEMS**	**QTY.**	**Rate/Per**	**AMOUNT**
1.	Earthwork in Excavation in Foundation : 1.0 M x 1.0 M x 1.0 M	**43.56**	280 m3	12,196.00
2.	Footing P.C.C. with 1:3:6 Ratio	**1.14**	2507 m3	2858.00
3.	Footing R.C.C. with 1:1.5:3Ratio	**5.40**	1500 m3	8100.00
4.	Column up to Plinth Level R.C.C.	**0.31**	5000 m3	1550.00
5.	Plinth Beam RCC with 1:1.5:3 Ratio	**3.01**	2000 m3	6020.00
6.	Back-filling 6(A) & 6(B)	**44.64**	125 m3	5580.00
7.	L.C. Bed RCC with 1:1.5:3 Ratio	**7.94**	150 m3	1191.00
8.	Brick Masonry with 1:4 Ratio 0.23 MT. Thick Wall	**35.51**	2443 m3	86,751.00
10.	Chhajja with 1:1.5:3 R.C.C. Ratio	**0.52**	2000 m2	1040.00
11.	Slab with 1:1:2 R.C.C. Ratio	**6.88**	3236 m2	22,264.00
12.	Parapet Wall	**6.68**	2443 m3	16,320.00
13.	Internal Plaster with 1:4Ratio	155.03	118 m2	18,294.00
14.	External Plaster with 1:4Ratio	137.15	230 m2	31,545.00
15.	Providing and Fixing white vitrified flooring policing etc. comp.	37.33	720 m2	26,878.00
16.	W/S and sanitation work	1 nos.W.C.	550/pc	550.00
		1 nos. Wash Basin	1050/pc	1050.00
	TOTAL :			**2,42,187.00**

8.6 Public Toilet

This drawing is available in page no: 186

Table 8.12: Quantity Sheet for toilet block of Moviya Village

TOILET BLOCKS

QUANTITY SHEET

Sr. No.	Item Description	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity(m^3)
1	**Earthwork in Excavation in Foundation:**					
	Footing 1mx1m	10	1.600	1.600	0.890	**22.78**
	Depth From GL = 0.3 + 1+ 0.3					
	0.6 =Extra For working space					
					Total Qty of Excavation =	**22.78**
2	**Footing PCC with 1:3:6 Ratio**					
	Footing	10	1.300	1.300	0.075	**1.27**
	Thickness = 0.075m					
	D = 0.150 + 1.0 + 0.150					
					Total Qty of Footing PCC=	**1.27**
3	**Footing RCC with 1:1.5:3 Ratio**					
	Footing					
	Thickness=0.6m	10	1.000	1.000	0.600	**6.00**
					Total Qty of Footing RCC=	**6.00**
4	**Column up to Sludge Tank**					
	Column 1:1.5:3 Mix Ratio	10	0.230	0.230	0.215	**0.11**
					Total Qty of Footing Column=	**0.11**

5	**RCC Sludge Tank (1:1:2 Mix Ratio)**					
	CC Bed of Base of The Tank	1	8.23	2.39	0.2	**3.93**
		Total Quantity of CC Bed				**3.93**
	RCC Walls of The Tank	1	26.11	0.23	0.75	**4.50**
		-4	0.6	0.23	0.75	**-0.41**
		Total Quantity of RCC Walls				**4.09**
	Slab of The Tank	1	8.23	2.39	0.15	**2.95**
		-4	0.6	0.3	0.15	**-0.11**
		Total Quantity of Slab of The Tank				**2.84**
	Plaster of The Tank	8	1.93	1.77	0.02	**0.55**
		4	7.4	0.75	0.02	**0.44**
		-4	0.6	0.3	0.2	**-0.14**
		Total Quantity of Plaster of The Tank				**0.85**
6	**Back-filling**					
	Back-filling In Footing					
	Excavation Area	10	1.600	1.600	0.890	**22.78**
	Deduction					
	Footing P.C.C	-10	1.300	1.300	0.075	**-1.27**
	Footing RCC	-10	1.000	1.000	0.600	**-6.00**
	Footing Column	-10	0.230	0.230	0.215	**-0.11**
					Total Qty of Back Filling=	**15.40**
7	**Brick Masonry with 1:4Ratio**					

	0.23m thick wall Brick Masonry	1	26.250	0.230	2.900	17.51
	Deduction					
	Vent V	-4	0.600	0.230	0.600	-0.33
	Doors D	-4	0.750	0.230	2.100	-1.45
				Total Qty of 0.23mt. Thick Walls=		**15.73**
8	**Slab with 1:1:2 RCC Ratio**					
	0.15m Thick Slab	1	8.230	2.390	0.150	2.95
					Total Qty of Slab=	**2.95**
9	**Flush Tank**					
	Brick Work	1	26.110	0.230	0.900	**5.40**
	Internal Plaster	1	7.400	0.020	0.900	**0.13**
10	**Internal Plaster with 1:4Ratio**					
	20mm thick					
		8	1.93	1.77	0.02	**0.55**
		8	1.77	2.9	0.02	**0.82**
		8	1.93	2.9	0.02	**0.90**
		-4	0.6	0.6	0.2	**-0.29**
		-4	0.75	2.1	0.2	**-1.26**
		-4	0.6	0.3	0.2	**-0.14**
				Total Quantity of Toilets only		**0.57**
11	**Staircase**					
	CC Bed - Base of The Stairs	**1**	**8.23**	**1.65**	**0.14**	**1.90**

	Brick Work of Stairs Steps	**1**	**8.23**	**1.5**	**0.15**	**1.85**
		1	**7.73**	**1.25**	**0.15**	**1.45**
		1	**7.23**	**1**	**0.15**	**1.08**
		1	**6.73**	**0.75**	**0.15**	**0.76**
		1	**6.23**	**0.5**	**0.15**	**0.47**
		1	**5.73**	**0.25**	**0.15**	**0.21**
		Total Quantity of Brick Work of Stair				**5.82**
12	**External Plaster**					
	25mm thick	1	21.24	4.93	0.025	**2.62**
		-4	0.6	0.600	0.025	**-0.04**
		-4	0.750	2.100	0.025	**-0.16**
		Total Quantity of External Plaster				**2.42**

(Rate as per SOR 2015-16 R &B)

Table 8.13: ABSTRACT SHEET FOR PUBLIC TOILET

Sr.	ITEMS	QTY.	Rate/Per	AMOUNT
1.	Earthwork in Excavation in Foundation : 1.0 M x 1.0 M x 1.0 M	22.78	280 m3	6378.00
2.	Footing P.C.C. with 1:3:6 Ratio	1.27	2507 m3	3184.00
3.	Footing R.C.C. with 1:1.5:3Ratio	6.00	1500 m3	9000.00
4.	Column up to Plinth Level R.C.C.	0.11	5000 m3	550.00
5.	R.C.C. Sludge Tank (1:1:2 Mix Ratio)			
	(1) C.C. Bed of Base of The Tank	3.93	2507 m3	9852.00
	(2) R.C.C. Walls of The Tank	4.09	1500 m3	6135.00
	(3) Slab of The Tank	2.84	3236 m2	9190.00
6.	Back-filling 6(A) & 6(B)	15.40	125 m3	1925.00

7.	L.C. Bed R.C.C. with 1:1.5:3 Ratio	28.73	150 m3	4310.00
8.	Brick Masonry with 1:4 Ratio 0.23 MT. Thick Wall	15.73	2443 m3	38,428.00
11.	Slab with 1:1:2 R.C.C. Ratio	2.95	3236 m2	9546.00
12.	Flush Tank			
	(1) Brick Work	5.40	2443 m3	13,192.00
	(2) Internal Plaster	6.66	118 m2	786.00
13.	Plaster with 1:4Ratio	77.56	118 m2	9152.00
14.	Staircase			
	(1) C.C. Bed - Base of The Stairs	1.90	2507 m3	4763.00
	(2) Brick Work of Stairs Steps	5.82	2443 m3	14,218.00
15.	External Plaster	96.97	230 m2	22,303.00
15.	Providing and Fixing white vitrified flooring policing etc. comp.	14.40	720 m2	10,368.00
16.	W/S and sanitation work	4 nos.W.C.	550/pc	2200.00
		4 nos. Wash Basin	1050/pc	4200.00
	TOTAL :			**1,79,680.00**

Design proposal for Electrical:

13.7 House wiring Design

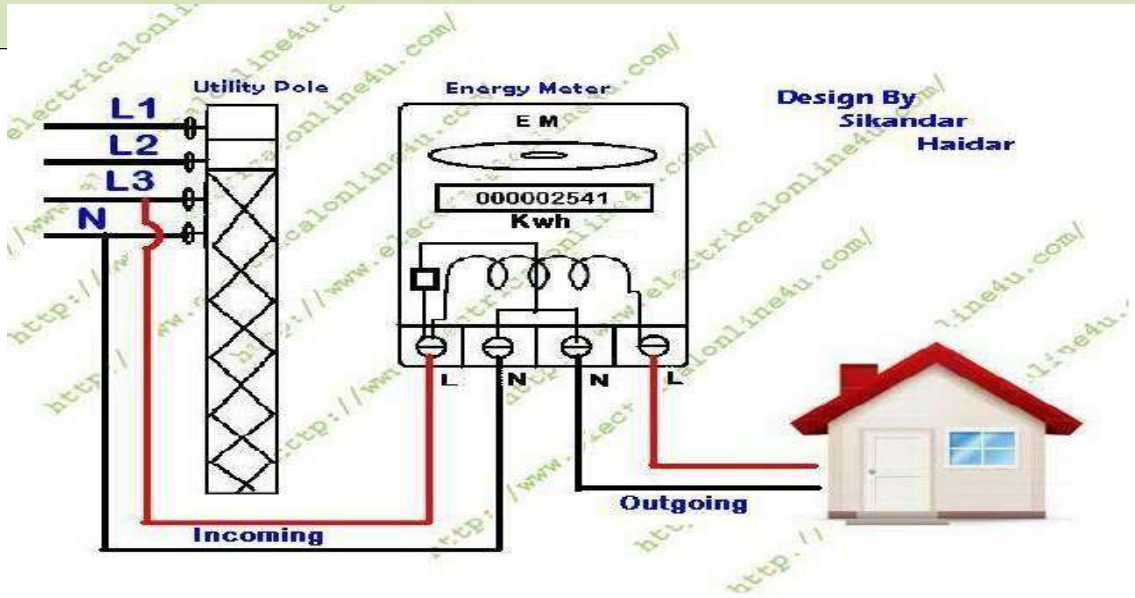


Fig 8.9 design of house wiring

Table 8.14 Cost Estimation for house wiring

Sr.No.	Material Name	Quantity	Watt	Total Watt	Cost /Quantity	Total cost
1	Fan	7	60	420	1400	9800
2	Tublight	7	40	280	350	2450
4	Tv	1	100	100	24000	24000
5	Refrigerator	1	250	250	30,000	30000
6	Motor	1	745	745	4500	4500
7	LED Lamp	12	9w	108	100	1200
8	Switch-5A 16A	35 6	-	-	15 20	525 120
9	Plug-5A 16A	8 6	-	-	20 40	160 240
10	Wire-1.5mm2 2.5mm2	- -	-	-	20 25	20/m 25/m
11	Switch Bord	8	-	-	150	1200
12	Regula	7	-	-	100	700
	Total Cost	-	-	-	-	74940

13.8 Solar rooftop

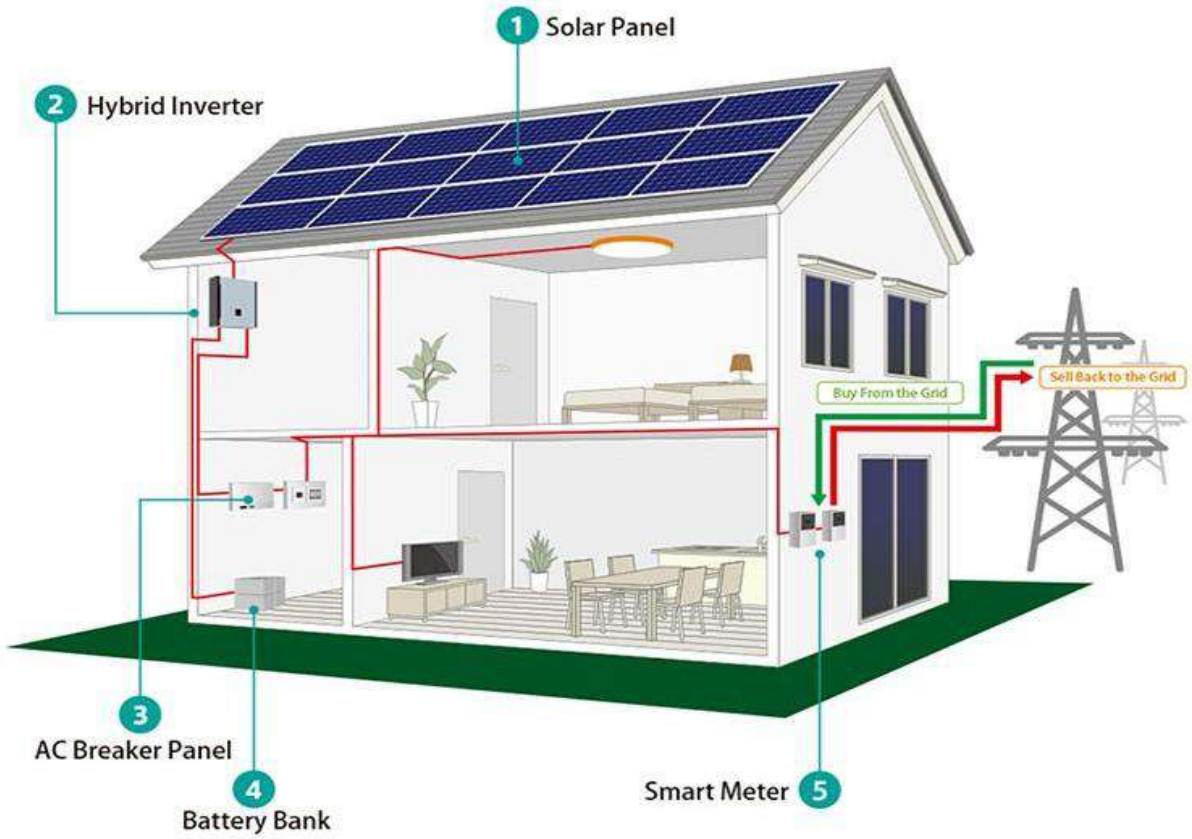


Fig 8.9 design of solar roof top

Table 8.15: cost estimate for solar

Table 8.15 : Cost Estimate For Solar Rooftop						
Sr.No.	**Equipment**	**Quantity**	**Kw/Equipment**	**Total Kw**	**Cost**	**Total Cost**
1	Solar Panel	6	330w	1kw	6000	36000
2	Inverter	1	2kw	2kw	15000	15000
3	Lighting Arrester	-	-	-	1600	1600
4	ACDB, DCDB	1	-	-	3000	3000
5	Total Cost	-	-	-	-	55600

13.9 Street light

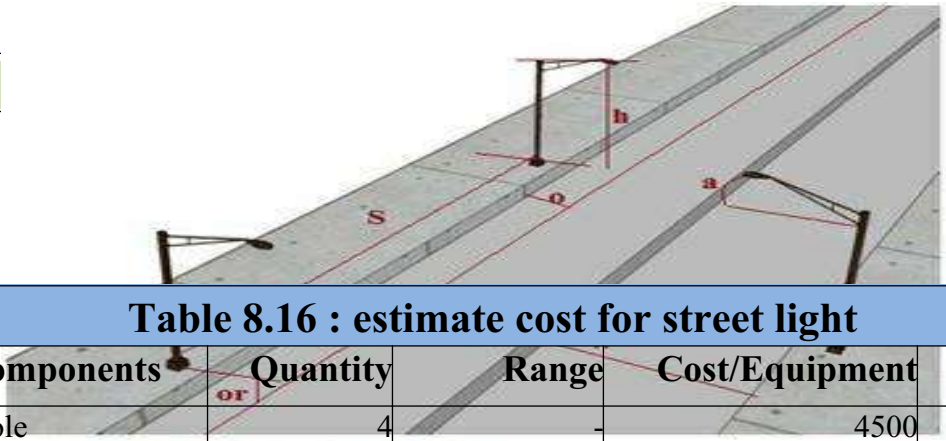


Fig 8.9 design of street light

Table 8.16 : estimate cost for street light

Sr.No.	components	Quantity	Range	Cost/Equipment	Total Cost
1	Pole	4	-	4500	4500
2	LED Lamp	4	20w	350	1400
3	Wire	1mm2	-	20	20
4	Total Cost	-	-	-	5920

Chapter: 9

Future Development of the Village (For the Part-II)

The study is aimed to know the basic scenario of village through techno economic survey and gap analysis done.

After the study we will try to make a master development plan of the village.
Also our focus will be making of sustainable or green village.
For maintenance purpose we should provide a maintenance plan which is economical and effective. It can be done by villagers them self.
For maintenance purpose we should provide a maintenance plan which is economical and effective. It can be done by villagers them self.
We are going to design of solid waste management system. It will help to villagers protect from various disease.
In the next semester we are going to design of bus stand. It helps to waiting passenger for bus.
In the future we design of solar streetlight.
We will also design proposal for other facilities.
In next part we will design Super Market, Bio-gas Plant, Aanganwadi Unit, Post office Building Police station because there is no facilities for Policemens.and we will Also provide ATM. We will improve our other design maximum as possible.

Chapter: 10

Conclusion

In first part of project we study the ideal village as Nyara and smart village as Thebachada, and identify existing facility like Aanganwadi, Primary school, Panchayat building, Public health centre, Road network, Bus stand, Drinking water sources and waste management system etc.

At the end of semester we finalize some of the facility which is not provided in allocated village and design them with approximate cost.

Village are is far from city, some of the facility is not available in village, we are likely going to design of public garden, public toilet, biogas plant, public health centre, bus stand and solid waste management.

As from Ideal village visit, we saw that all the success of village depend on the Sarpanch of village. A sarpanch is the only person who can increase the level of village in all aspects. There are so many Govt. scheme for villages and for villagers, but the Sarpanch is the only a Link between these two phases. With some little awareness and group work can achieve anything, which Thebachda village has proved.

Developing Smart Villages will enable new types of business models to emerge, such as portal-based services, and assist existing rural businesses to connect, integrate and cooperate better with urban-based businesses.

Smart Villages are, by definition, smart! Theyre good for the community, its economy and sustainability. By investing in your villages broadband infrastructure, you can ensure the prosperity and happiness of its future.

Chapter:11

References

Various books referred:

13.9.A SOR of R&Bdepartment

13.9.B Rate from market survey ofRajkot

13.9.C Estimation and costing in civil Engg. (B.N.Dutta)

13.9.D Rate from market survey ofRajkot

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www.sagy.gov.in
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Chapter: 12

ANNEXURE
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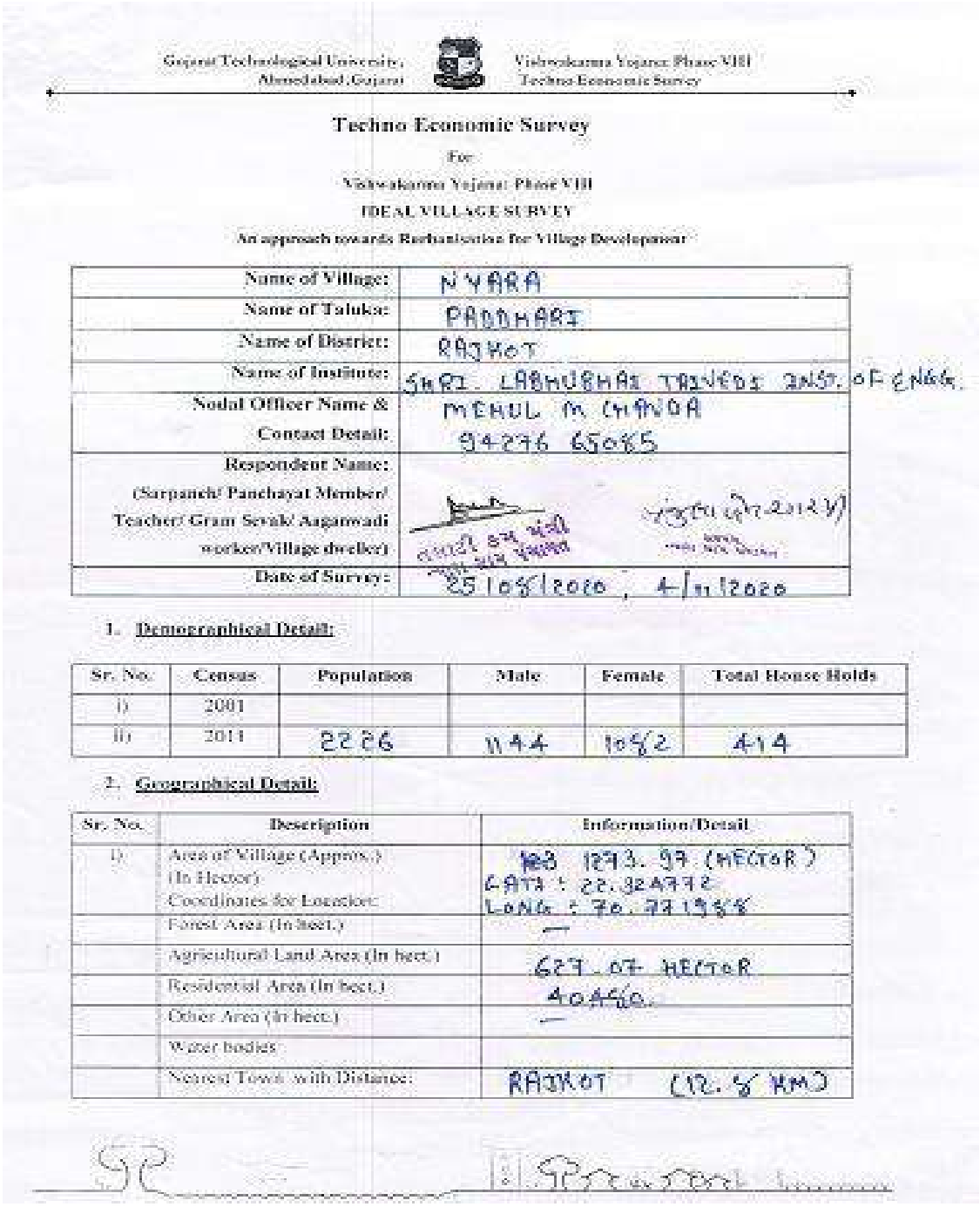
Ideal village nyara survey form



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 Rurbanization for Village Development

Name of Village:	NYARA
Name of Taluka:	PADDHARI
Name of District:	RAJKOT
Name of Institute:	SHRI LABHUBHAI TRIVEDI INST. OF ENGG.
Nodal Officer Name & Contact Detail:	MEHUL M CHAVDA 94296 65065
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	
Date of Survey:	25/05/2020, 4/11/2020

1. Demographical Detail:

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001				
ii)	2011	2226	1144	1052	414

2. Geographical Detail:

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector)	1893.97 (HECTOR)
	Coordinates for Location:	LATI : 22.324792 LONG : 70.721958
	Forest Area (In hect.)	—
	Agricultural Land Area (In hect.)	629.07 HECTOR
	Residential Area (In hect.)	40.460
	Other Area (In hect.)	—
	Water bodies	
	Nearest Town with Distance:	RAJKOT 12.5 KMS

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3. **Occupational Details:**

Name of Three Major Occupation groups in Village	1.	AGRICULTURAL
	2.	LABOUR WORK
	3.	SELF EMPLOYMENT

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)	COVERED	✓		
	• Hand pumps	NO	✓		
	• Tube well/ Borehole	TUBEWELL	✓		
	• River/ Canal/ Spring/ Lake/ Pond	NO		✓	
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	1 LAKH Lit.	✓	-
	Underground Sump	Capacity:	1 LAKH Lit.	✓	-
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	YES	✓		
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	CLOSED	✓		
	If Open than Pucca / Kutchcha	-	-	-	-
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	SEWER PLANTS	✓		
Suggestions if any:					

E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped paved/ WBM**				
	Village approach road	C.C.			
	Main road	W.B.M			
	Internal streets	C.C.			
	Nearest NH/SH/MDR/ODR Dist. in kms.	N.H. 3.6 KM			Nm.c S
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station=?Kms)	No KHANDHERI			3 KM
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	No RAJKOT 11 KM		✓	
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	8 PRIVATE VEHICLES	✓		
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	24 HOURS GOVT.	YES		
	Power supply for Domestic Use	✓	YES		
	Power supply for Agricultural Use	✓	YES		
	Power supply for Commercial Use	✓	YES		
	Road/ Street Lights	✓	YES		

	Electrification in Government Buildings/ Schools/ Hospitals	YES			
	Renewable Energy Source Facilities (Y/ N)	NO			
	LED Facilities	YES			
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	NO			
	Location Condition	~~IN VIL~~			
	Community Toilet (With bath/ without bath facilities)	NO			
	Solid & liquid waste Disposal system available	YES			
	Any facility for Waste collection from road	YES			
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	RIVER			
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	10% (KUTCHHA) 90% (PUCCA)			

3. Social Infrastructural Facilities:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

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

L.	Education Facilities:				
	Aaganwadi/ Play group	✓	YES		
	Primary School	✓	YES		
	Secondary school	X	NO		
	Higher sec. School	X	NO		
	ITI college/ vocational Training Center	X	NO		
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	X	NO		
	If any of the above Facility is not available in village than approx. distance from village: .20...kms.				
Suggestions if any:					

M.	Socio- Culture Facilities				
	Community Hall (With or without TV) Location:	YES WITHOUT T.V.			

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	Condition:				
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	DAILY NEWSPAPER YES			
	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:	No			
	Birth & Death Registration Office Location: Condition:	IN GRAM PANCHAYAT			
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			No	
	Telecommunication Network/ STD booth			No	

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

6. **Sustainable Access 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 No No			
Q.	Any Other	-	-	-	-

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	FROM GOOGLE MAP.

Recent Projects going on for Development of Village	No
Any NGO working for village development	YES

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)	School Buildings	
2.	Additional Information/ Requirement		

9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

Note: Photographs/ Videos/ 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: ruralvy@gtu.edu.in

Smart village thebachada surveyform

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Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	RAJKOT
Name of Taluka:	RAJKOT
Name of Village:	THEBACHDA
Name of Institute:	SHRI. LABHUBHAI TRIVEDI INST. OF ENGG
Nodal Officer Name & Contact Detail:	MEHUL M. CHAVDA 94276 65085
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	[illegible] (સરપંચ, ઠેબચડા ગ્રામ પંચાયત) ; [illegible] (તલાટી-કમ-મંત્રી, ઠેબચડા ગ્રામ પંચાયત)
Date of Survey:	22/04/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	1637	835	802	370
2.	2011	1922	989	933	382

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	AREA : 1221.96 (HECTOR) LATI : 22.275550, LONG : 70.914812
2.	Forest Area (In hect.)	—
3.	Agricultural Land Area (In hect.)	APPROX : 150 (HECTOR)
4.	Residential Area (In hect.)	—
5.	Other Area (In hect.)	—
6.	Distance to the nearest railway station (in kilometers):	14.7 KM (RAJKOT)

[illegible]

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7.	Name of Nearest Town with Distance:	RAJKOT (16 KM)
8.	Distance to the nearest bus station (in Kilometers): 1.5 KM	RAJKOT CENTRAL BUS STATION (15 KM)
9.	Whether village is connected to all road for the any facility or town or City?	YES.

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	FARMING
	2.	LABOUR WORK
	3.	

Major crops grown in the village:	1.	COTTON
	2.	GROUND NUTS
	3.	VEGETABLES.

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

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Suggestions if any:

B.	Water Tank Facility				
	Overhead Tank	Capacity:	1.0 LAC		
	Underground Sump	Capacity:			

Suggestions if any:

C.	The Type of Drainage Facility				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET		✓		

Suggestions if any:

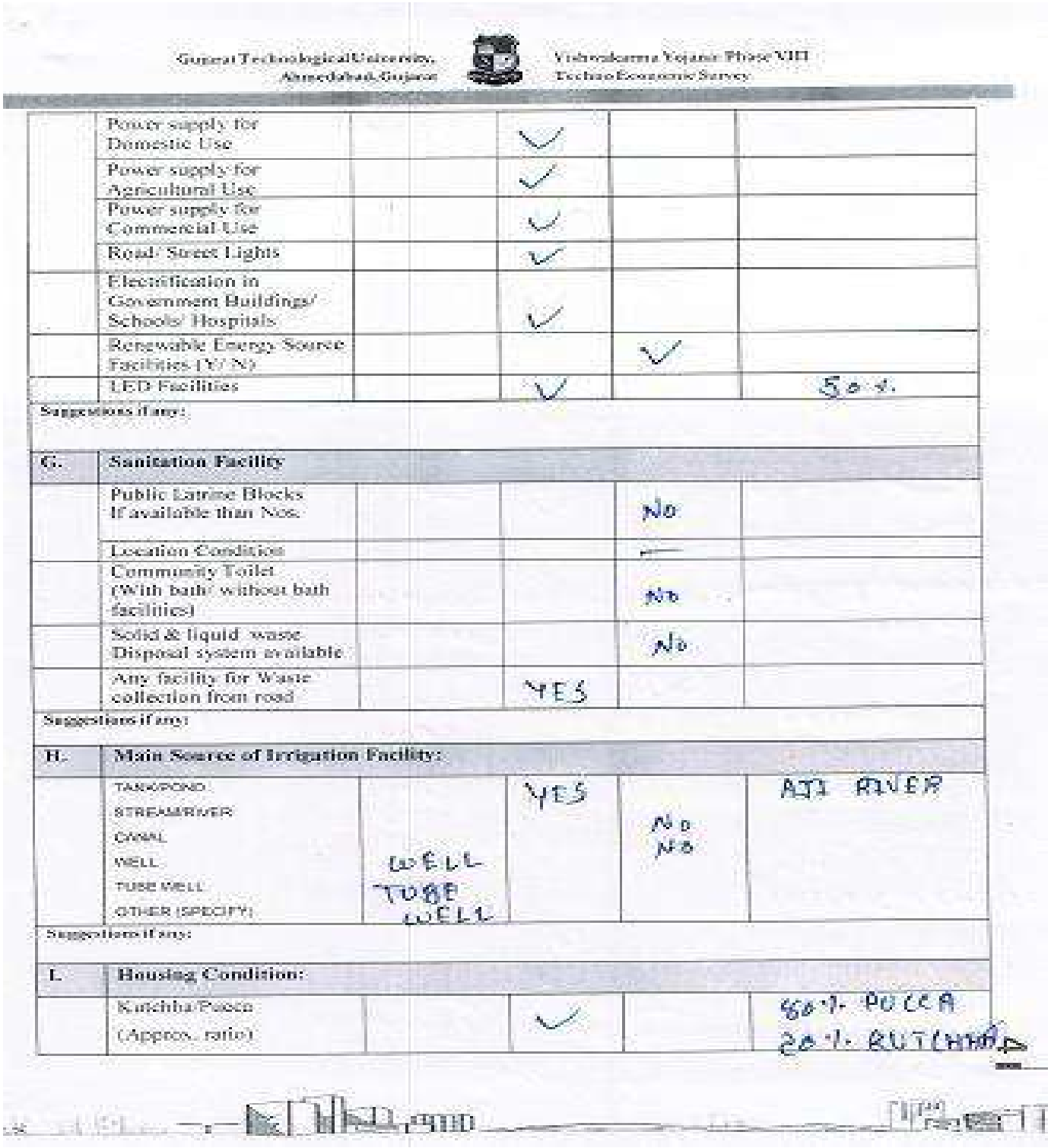
D.	Road Network : All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road		✓		
	Main road		✓		
	Internal streets		✓		
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH. (7 KMS)			RAJKOT - BHAVNAGAR HIGHWAY

Suggestions if any:

E.	Transport Facility				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO			RAJKOT (14.7 KMS)
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	YES CITY BUS STOP	-	-	RMTS BUS STOP
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	YES (AUTO)	-	-	AUTO, PRIVATE VEHICLES

Suggestions if any:

F.	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	YES GOVT.		-	24 HOURS



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	Power supply for Domestic Use			✓		
	Power supply for Agricultural Use			✓		
	Power supply for Commercial Use			✓		
	Road/ Street Lights			✓		
	Electrification in Government Buildings/ Schools/ Hospitals			✓		
	Renewable Energy Source Facilities (Y/ N)				✓	
	LED Facilities			✓		50 %.

Suggestions if any:

G.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.			No	
	Location Condition			—	
	Community Toilet (With bath/ without bath facilities)			No	
	Solid & liquid waste Disposal system available			No	
	Any facility for Waste collection from road		YES		

Suggestions if any:

H.	Main Source of Irrigation Facility:				
	TANK/POND		YES		AJI RIVER
	STREAM/RIVER			No	
	CANAL			No	
	WELL	WELL			
	TUBE WELL	TUBE WELL			
	OTHER (SPECIFY)				

Suggestions if any:

I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)		✓		80 % PUCCA 20 % KUTCHHA

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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			✓	
	Birth & Death Registration	Good		YES	

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

Suggestions if any:

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

9

Allocated village Moviya surveyform

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	RAJKOT
Name of Taluka:	PADDHARI
Name of Village:	MOVIYA
Name of Institute:	SHRI. LABHUBHAI TRIVEDI. INST. OF ENGG.
Nodal Officer Name & Contact Detail:	MEHUL. M. CHAVDA 94276 65085
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller):	[illegible] સરપંચ, મોવિયા ગ્રામ પંચાયત [illegible] તલાટી-કમ-મંત્રી, મોવિયા ગ્રામ પંચાયત
Date of Survey:	26/08/2020, 14/09/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	2136	1110	1026	420
2.	2011	2252	1154	1095	432

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	AREA : 1016.9 (HECTOR) LATITUDE: 23.02763, LONG: 72.52647
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	-
4.	Residential Area (In hect.)	-
5.	Other Area (In hect.)	-
6.	Distance to the nearest railway station (in kilometers):	PADDHARI RAILWAY STATION (1.5 KM).

	Other(Specify (Lake/ Pond	POND	✓		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	1 LAKH		
	Underground Sump	Capacity:	✓	✓	
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE	✓ YES			SOL.
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped paved/ WBM**				
	Village approach road	✓	PADHARI		
	Main road	✓			
	Internal streets	✓			
	Nearest NH/SH/MDR/ODR Dist. in kms.	✓			SH-25 RAJKOT-JAMNAGAR
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station 2 Kms)	PADDHARI 2 KM			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station 2 Kms)	PADDHARI BUS STAND 2 KM		NO	PADDHARI BUS STATION (2 KM)
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)				
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	GOVT. REGULAR	✓		MORE THAN 6 HOURS.

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

	Power supply for Domestic Use	YES	✓		—
	Power supply for Agricultural Use		✓		
	Power supply for Commercial Use		✓		
	Road/ Street Lights	YES	✓	—	
	Electrification in Government Buildings/ Schools/ Hospitals		✓		IN SCHOOL
	Renewable Energy Source Facilities (Y/ N)			✓	
	LED Facilities			✓	
Suggestions(if any):					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available then Nos.			✓	NOT AVAILABLE
	Location Condition				
	Community Toilet (With bath/ without bath facilities)			✓	
	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	POND	✓		
	STREAM/RIVER	RIVER (NARA)	✓		
	CANAL				
	WELL ✓				
	TUBE WELL	TUBE WELL	✓		
	OTHER (SPECIFY)				
Suggestions(if any):					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	85% 15%	✓ ✓		85% (PUCCA) 15% (KUTCHHA)

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	REQUIRED.	
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?		

IX. Smart Village / Heritage Details

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

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

For Any Administration queries/ Difficulties:
GTU VV Section
Contact No – 079-23267585
Email ID: rurban@gtu.edu.in

Table 12.5 GAP ANALYSIS

VILLAGE GAP Analysis

Village Facilities	Planning Commission/UDP FI Norms	Village Name:	Moviya		
		Population:		2154	
		Existing	Required as per Norms	Smart Vilage / Cities / Heritage Future Projection Design	Gap
Social InfrastructureFacilities					
Education					
Anganwadi	Each or Per 2500 population	2	1		1
Primary School	Each Per 2500 population	1	1		0
Secondary School	Per 7,500 population	0	0		0
Higher Secondary School	Per 15,000 Population	0	0		0
College	Per 125,000 Population	0	0		0
Tech. Training Institute	Per 100000 Population	0	0		0
Agriculture Research Centre	Per 100000 Population	0	0		0
Skill Development Center	Per 100000 Population	0	0		0
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	0	1		1
Primary Health & Child Health Center	Per 20,000 population	0	0		0
Child Welfare and Maternity Home	Per 10,000 population	0	0		0
Multispeciality Hospital	Per 100000 Population	0	0		0
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutcha house)	0	8		8
Physical InfrastructureFacilities					
Transportation		Adequate	1		0
Pucca Village Approach Road	Each village	Adequate	1		0
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	Adequate	1		0
Drinking Water (Minimum 70 lpcd)		Adequate	1		0
Over Head Tank	1/3 of Total Demand	Inadequate	0		1
U/G Sump	2/3 of Total Demand	Adequate	1		0
Drainage Network - Open		Inadequate	0		0
Drainage Network - Cover		Adequate	1		0
Waste Management System		Inadequate	0		1
Socio- Cultural InfrastructureFacilities					
Community Hall	Per 10000 Population	0	1		1
community hall and Public Library	Per 15000 Population	0	1		1
Cremation Ground	Per 20,000 population	0	0		0
Post Office	Per 10,000 population	0	1		1
Gram Panchayat Building	Each individual/group panchayat	1	1		0
APMC	Per 100000 Population	0	0		0
Fire Station	Per 100000 Population	0	1		1
Public Garden	Per village	0	1		1

Police post	Per 40,000Population	0	0		0
ShoppingMall					
Electrical Design					
Electricity Network		Adequate	1		0
Any Smart VillageFacility					
Technology					
		ESR cap	0		0
		Sump cap	0		0
		Lat	0		0

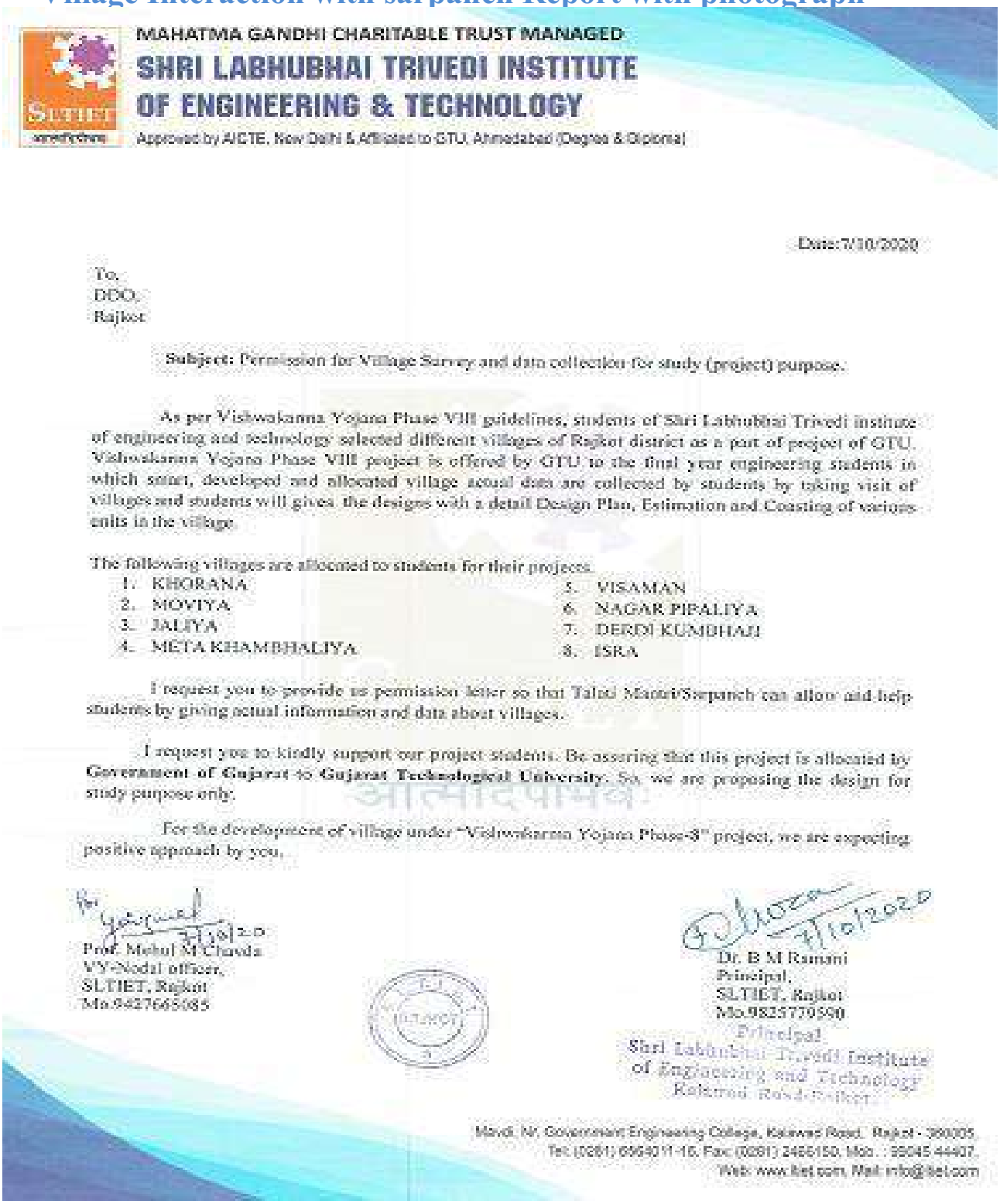
of GoodPhotographs

Nyara village photos

Thebchda village photos

Moviya village photos

Village Interaction with sarpanch Report with photograph



MAHATMA GANDHI CHARITABLE TRUST MANAGED
SHRI LABHUBHAI TRIVEDI INSTITUTE OF ENGINEERING & TECHNOLOGY
Approved by AICTE, New Delhi & Affiliated to GTU, Ahmedabad (Degree & Diploma)

Date:7/10/2020

To,
DDO,
Rajkot

Subject: Permission for Village Survey and data collection for study (project) purpose.

As per Vishwakarma Yojana Phase VIII guidelines, students of Shri Labhubhai Trivedi institute of engineering and technology selected different villages of Rajkot district as a part of project of GTU. Vishwakarma Yojana Phase VIII project is offered by GTU to the final year engineering students in which smart, developed and allocated village actual data are collected by students by taking visit of villages and students will gives the designs with a detail Design Plan, Estimation and Costing of various units in the village.

The following villages are allocated to students for their projects.

1. KHORANA
2. MOVIYA
3. JALIYA
4. META KHAMBHALIYA
5. VISAMAN
6. NAGAR PIPALIYA
7. DERDI KUMBHAJI
8. ISRA

I request you to provide us permission letter so that Talati Mantri/Sarpanch can allow and help students by giving actual information and data about villages.

I request you to kindly support our project students. Be assuring that this project is allocated by **Government of Gujarat** to **Gujarat Technological University**. So, we are proposing the design for study purpose only.

For the development of village under "Vishwakarma Yojana Phase-8" project, we are expecting positive approach by you.

Prof. Mehul M Chavda
VY-Nodal officer,
SLTIET, Rajkot
Mo.9427665085

Dr. B M Ramani
Principal,
SLTIET, Rajkot
Mo.9825779590

Principal
Shri Labhubhai Trivedi Institute of Engineering and Technology
Kalawad Road, Rajkot

Mavdi, Nr. Government Engineering College, Kalawad Road, Rajkot - 360005.
Tel: (0281) 6969011-15, Fax: (0281) 2466150, Mob. : 99045 44407.
Web: www.liet.com, Mail: info@liet.com

12.10 COMPREHENSIVE REPORT

CONCEPT

Vishwakarma Yojana is provides special scheme for development of village by GTU and Government of Gujarat in which students work together and collect data and information regards village development with the help of gram panchayat and stake holders. Village have some basic facilities likes drinking water, drainage system, pucca road, and other facilities like primary school, primary health center, community hall, library, public latrine block, are sufficient so that village can develop. So, we will give proposal regarding sustainable energy sources and solution related to infrastructure problems. Efforts have been made in this project work to identify and plan some of the below facilities for sustainable development of village and to meet need of future population. Vishwakarma Yojana is one of the initiatives towards Rurbanization that is village development by the government of Gujarat, which was allotted as a real time situation type project provides toGTU.

It is one of the strategies to reduce urban city pressure and lower the migration rate by developing village with a rural soul but with all urban amenities that a city may have. In this project the students meet the relevant citizens of village and survey the existing facilities. Then design of the sustainable infrastructure which is to be modified is carried out for the village. This includes implementation of engineering skills to prepare detailed project reports for village as a part of the final year project work. By this project certain experiences recreates a real work and need of application of an individual technical knowledge on any existing problems. Based on survey we tried to give design of basic facilities to fulfill their needs. By providing these basic facilities to village for reduce urban city pressure and decrease migration rate, which is ultimate aim of VishwakarmaYojana.

#Chapter: - 13#

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

13.1 Aanganwadi

This drawing is available in page no: 187

Table 13.1: Quantity Sheet for Aanganwadi

AANGANWADI						
QUANTITY SHEET						
Sr. No.	**Item Description**	**No.**	**Length (m)**	**Width/ Breadth (m)**	**Height/ Depth (m)**	**Quantity(m^3)**
1	**Earthwork in Excavation in Foundation:**					
	Footing 1mx1m	11	2.200	2.200	1.000	**53.24**
	Depth From GL = 0.6 + 1 + 0.6					
	0.6 =Extra For working space					
		Total Qty of Excavation =				**53.24**
2	**Footing PCC with 1:3:6 Ratio**					
	Footing	11	1.300	1.300	0.075	**1.39**
	Thickness = 0.075m					
	D = 0.150 + 1.0 + 0.150					
		Total Qty of Footing PCC=				**1.39**
3	**Footing RCC with 1:1.5:3 Ratio**					
	Footing					
	Thickness=0.6m	11	1.000	1.000	0.600	**6.60**
		Total Qty of Footing RCC=				**6.60**

4	**Column up to Plinth Level RCC**					
	Column 1:1.5:3 Mix Ratio	11	0.230	0.460	0.330	**0.38**
				Total Qty of Footing Column=		**0.38**
5	**Plinth Beam RCC with 1:1.5:3 Ratio**					
		1	50.30	0.230	0.450	**5.20**
				Total Qty of Plinth Beam=		**5.20**
6	**Back-filling**					
6.a	**Back-filling In Footing**					
	Excavation Area	11	2.200	2.200	1.000	53.24
	Deduction					
	Footing P.C.C	-11	1.300	1.300	0.075	-1.39
	Footing RCC	-11	1.000	1.000	0.600	**-6.60**
	Footing Column	-11	0.230	0.460	0.330	**-0.38**
					6.a Total Qty=	**44.87**
6.b	**Back Filling from Ground Level to L.C. Bed below Level**					
	Plinth area in to in	1	14.72	1.750	0.200	5.15
		1	10.44	1.750	0.200	3.65
					6.b Total Qty=	**8.80**
					Total Qty of Back Filling of 6a+6b=	**53.67**
7	**L.C. Bed RCC with 1:1.5:3 Ratio**					
		1	14.72	1.750	0.200	5.15
		1	10.44	1.750	0.200	3.65
					Total Qty of L.C. Bed=	**8.80**
8	**Brick Masonry with 1:4 Ratio**					
8a	**0.23m thick wall Brick Masonry**	2	50.30	0.230	3.35	82.13
	Deduction					
	Window W	-2	2.100	0.230	1.200	-1.16
	Window W1	-6	1.800	0.230	1.200	-2.98
	S.F.D.	-1	2.440	0.230	2.100	-1.17

	Door D1	-5	0.910	0.230	2.100	-2.19
					Total Qty of 0.23mt. Thick Walls=	**74.63**
8b	**0.1m thick wall Brick Masonry**	7	24.36	0.100	3.35	57.12
	Deduction					
	Door D1	-1	0.910	0.230	2.100	-0.44
	Door D/V	-4	0.750	0.230	2.100	-1.44
	Vent v	-4	0.600	0.230	0.600	-0.33
					Total Qty of 0.1 mt. Thick Walls=	**54.91**
					Total Qty of 8a+8b Walls=	**129.54**
9	**Chhajja with 1:1.5:3 RCC Ratio**					
		2	2.10	0.45	0.45	0.85
		6	1.80	0.45	0.45	2.18
		4	4.10	0.45	0.45	3.32
					Total Qty of Chajjas=	**6.35**
10	**Slab with 1:1:2 RCC Ratio**					
	0.15m Thick Slab	1	14.72	10.44	0.150	23.05
					Total Qty of Slab=	**23.05**
11	**Parapet Wall**					
		1	50.30	0.230	1.000	4.670
					Total Qty of Parapet Wall=	**4.67**
12	**Internal Plaster with 1:4 Ratio**					
	15mm thick					
		2	50.30	-	3.35	337.01
	Deduction					
	Window W	-2	2.100	0.015	1.200	-0.07
	Window W1	-6	1.800	0.015	1.200	-0.19
	S.F.D.	-1	2.440	0.015	2.100	-0.07
	Door D1	-5	0.910	0.015	2.100	-0.14
	Door D/V	-4	0.750	0.015	2.100	-0.09

	Vent V	-4	0.600	0.015	0.600	-0.02
		Total Qty of Internal Plaster=				**336.43**
13	**External Plaster with 1:4 Ratio**					
	25MM Thick					
		2	50.30	-	4.800	511.68
	Deduction					
	Window W	-2	2.100	0.015	1.200	-0.07
	Window W2	-6	1.800	0.015	1.200	-0.19
	S.F.D.	-1	2.440	0.015	2.100	-0.07
	Door D1	-5	0.910	0.015	2.100	-0.14
	Vent V	-4	0.600	0.015	0.600	-0.02
		Total Qty of External Plaster=				**511.19**

(Rate as per SOR 2015-16 R &B)

Table 13.2 : Abstract Sheet For Aanganwadi

Sr.	ITEMS	QTY.	Rate/Per	AMOUNT
1.	Earthwork in Excavation in Foundation : 1.0 M x 1.0 M x 1.0 M	53.24	280 m3	14,907.00
2.	Footing P.C.C. with 1:3:6 Ratio	1.39	2507 m3	3485.00
3.	Footing R.C.C. with 1:1.5:3 Ratio	6.60	1500 m3	9900.00
4.	Column up to Plinth Level R.C.C.	0.38	5000 m3	1900.00
5.	Plinth Beam RCC with 1:1.5:3 Ratio	5.20	2000 m3	10,400.00
6.	Back-filling 6(A) & 6(B)	53.67	125 m3	6709.00
7.	L.C. Bed RCC with 1:1.5:3 Ratio	8.80	150 m3	1320.00
8.A	Brick Masonry with 1:4 Ratio 0.23 MT. Thick Wall	74.63	2443 m3	1,82,321.00
8.B	Brick Masonry with 1:4 Ratio 0.10	54.91	2443 m3	1,34,145.00

	MT. Thick Wall			
9.	Chhajja with 1:1.5:3 R.C.C. Ratio	6.35	2000 m2	12,700.00
10.	Slab with 1:1:2 R.C.C. Ratio	23.05	3236 m2	74,590.00
11.	Parapet Wall	4.67	2443 m3	11,409.00
12.	Internal Plaster with 1:4 Ratio	336.43	118 m2	39,699.00
13.	External Plaster with 1:4 Ratio	511.19	230 m2	1,17,574.00
14.	Providing and Fixing white vitrified flooring policing etc. comp.	110.85	720 m2	79,812.00
15.	W/S and sanitation work	4 nos.W.C.	550/pc	2200.00
		3 nos. Wash Basin	1050/pc	3150.00
	TOTAL : Seven Lacks Six Thousands Two Hundred Twenty One Rupees Only.			**7,06,221.00**

13.2 ATM machine room

This drawing is available in page no: 188

Table 13.3: Quantity Sheet for ATM Machine Room

ATM MACHINE ROOM						
QUANTITY SHEET						
Sr. No.	**Item Description**	**No.**	**Length (m)**	**Width/ Breadth (m)**	**Height / Depth (m)**	**Quantity(m^3)**
1	**Earthwork in Excavation in Foundation:**					
	Footing 1mx1m	4	2.200	2.200	1.000	**19.36**
	Depth From GL = 0.6 + 1 + 0.6					
	0.6 =Extra For working space					
		Total Qty of Excavation =				**19.36**
2	**Footing PCC with 1:3:6 Ratio**					
	Footing	4	1.300	1.300	0.075	**0.50**
	Thickness = 0.075m					
	D = 0.150 + 1.0 + 0.150					
		Total Qty of Footing PCC=				**0.50**
3	**Footing RCC with 1:1.5:3 Ratio**					
	Footing					
	Thickness=0.6m	4	1.000	1.000	0.600	**2.40**
		Total Qty of Footing RCC=				**2.40**
4	**Column up to Plinth Level RCC**					
	Column 1:1.5:3 Mix Ratio	4	0.230	0.460	0.330	**0.13**
		Total Qty of Footing Column=				**0.13**
5	**Plinth Beam RCC with 1:1.5:3 Ratio**					
		1	17.64	0.230	0.450	**1.82**
		Total Qty of Plinth Beam=				**1.82**

6	**Back-filling**					
6.a	**Back-filling In Footing**					
	Excavation Area	4	2.200	2.200	1.000	19.36
	Deduction					
	Footing P.C.C	-4	1.300	1.300	0.075	-0.50
	Footing RCC	-4	1.000	1.000	0.600	**-2.40**
	Footing Column	-4	0.230	0.460	0.330	**-0.13**
					6.a Total Qty=	**16.33**
6.b	**Back Filling from Ground Level to L.C. Bed below Level**					
	Plinth area in to in	1	3.81	1.750	0.200	1.33
		1	5.01	1.750	0.200	1.75
					6.b Total Qty=	**3.08**
					Total Qty of Back Filling of 6a+6b=	**19.41**
7	**L.C. Bed RCC with 1:1.5:3 Ratio**					
		1	3.81	1.750	0.200	1.33
		1	5.01	1.750	0.200	1.75
					Total Qty of L.C. Bed=	**3.08**
8	**Brick Masonry with 1:4 Ratio**					
	0.23m thick wall Brick Masonry	1	17.64	0.230	2.90	11.76
	Deduction					
	Door D1	-1	0.910	0.230	2.100	-0.44
					Total Qty of 0.23mt. Thick Walls=	**11.32**
9	**Chhajja with 1:1.5:3 RCC Ratio**					
		1	3.81	0.60	0.15	0.34
					Total Qty of Chajjas=	**0.34**
10	**Slab with 1:1:2 RCC Ratio**					
	0.15m Thick Slab	1	3.81	5.01	0.150	2.86
					Total Qty of Slab=	**2.86**
11	**Parapet Wall**					
		1	17.64	0.230	1.000	4.05

		Total Qty of Parapet Wall=				**4.05**
12	**Internal Plaster with 1:4 Ratio**					
	15mm thick					
		1	17.64	-	2.90	51.15
	Deduction					
	R.S.	-1	3.35	0.07	2.100	-0.49
	Door D1	-1	0.910	0.015	2.100	-0.02
		Total Qty of Internal Plaster=				**50.64**
13	**External Plaster with 1:4 Ratio**					
	25MM Thick					
		1	17.64	-	3.800	67.03
	Deduction					
	R.S.	-1	3.35	0.025	2.100	-0.17
	Door D1	-1	0.910	0.025	2.100	-0.04
		Total Qty of External Plaster=				**66.82**

(Rate as per SOR 2015-16 R &B)

Table 13.4 Abstract Sheet For ATM Machine Room				
Sr.	**ITEMS**	**QTY.**	**Rate/Per**	**AMOUNT**
1.	Earthwork in Excavation in Foundation : 1.0 M x 1.0 M x 1.0 M	19.36	280 m3	5421.00
2.	Footing P.C.C. with 1:3:6 Ratio	0.50	2507 m3	1254.00
3.	Footing R.C.C. with 1:1.5:3 Ratio	2.40	1500 m3	3600.00
4.	Column up to Plinth Level R.C.C.	0.13	5000 m3	650.00
5.	Plinth Beam RCC with 1:1.5:3 Ratio	1.82	2000 m3	3640.00
6.	Back-filling 6(A) & 6(B)	19.41	125 m3	2427.00
7.	L.C. Bed RCC with 1:1.5:3 Ratio	3.08	150 m3	462.00
8.	Brick Masonry with 1:4 Ratio 0.23 MT. Thick Wall	11.32	2443 m3	27,655.00

9.	Chhajja with 1:1.5:3 R.C.C. Ratio	0.34	2000 m2	680.00
10.	Slab with 1:1:2 R.C.C. Ratio	2.86	3236 m2	9255.00
11.	Parapet Wall	4.05	2443 m3	9895.00
12.	Internal Plaster with 1:4 Ratio	50.64	118 m2	5976.00
13.	External Plaster with 1:4 Ratio	66.82	230 m2	15,369.00
14.	Providing and Fixing white vitrified flooring policing etc. comp.	61.71	720 m2	44,432.00
15.	W/S and sanitation work	0 nos.W.C.	550/pc	0000.00
		0 nos. Wash Basin	1050/pc	0000.00
	TOTAL : One Lacks Thirty Thousands Seven Hundred Sixteen Rupees Only.			**1,30,716.00**

13.3 Biogas Pant

In village no any existing biogas plant is available.

Biogas is a renewable, as well as a clean, source of energy. Gas generated through bio digestion is non-polluting; it actually reduces greenhouse emissions. No combustion takes place in the process, meaning there is zero emission of greenhouse gasses to the atmosphere; therefore, using gas from waste as a form of energy is actually a great way to combat global warming.

Design of bio gas plant:

- In Movaiya There are approx 25 cattles
- A healthy cow can produced about 10 kg of dung per day.

Total produced dung/day = 25 x 10 = 250 kg/day

Design of Digester:

Assume retention period ® = 60 days

Assume mixing proportion of solid and water = 1:1

Now total amount of slurry per day (S) = Total dung per day + water amount

= 250 + 250

= 500 lit/day= 0.50 m^3/day

Digester Volume = S x R = 0.50 x 60 = 30 m^3

Total digester volume (Vd) = $\pi r^2 h$ So, 30 =$\pi r^2 h$ assume h = 2.15m r = 2.25m

So, dimensions are h = 2.15m, r = 2.25m

Design of Gas Holder:

Assume digester temperature = 26-28oC Now,

Specific Gas Production (Gd) = 37 liter/day

Daily Gas Production G = Gd x Feed Volume = 37 x 500 = 18500 lit = 18.50 m^3

Now,

Assume Gas Holder capacity = 60%

Gas Holder Volume = Daily Gas Production X Capacity of Holder

= 18.50 x 0.60 = 11.10 m^3

So, take gas holder volume = 11 m^3

Now, provide volume of holder each unit = 11 m^3Provide cylinder shaped holder,

Therefore, Volume = $\pi r^2 h$

11 = $\pi r^2 h$ assume h = 2.15m, r = 2.25 m

So, dimension of the gas holder are h = 2.15 m, r = 2.25m

Design of Inlet and Outlet:

Total Volume of slurry mix deposit = 0.5m^3/ day

Assume single-time filling operation in plant.

So, take total volume of slurry = 0.5m^3/ day

Provide Rectangular tank.

So, Total volume for one time mixing of slurry = L x B x H

Assume rectangle chamber with proportion width to length = 1: 1.5

Assume depth of chamber is 1.50m

50 = 1.5B X B X 1.50

B = 1.66m, L = 2.50 X 1.5 = 6.225

So, Dimensions of inlet: L = 2.50m B = 1.66m H = 1.50m

Here, 6.225 m^3 / day required < 0.54 m^3 / day provided... Hence OK.

Provide same size of outlet also.

This drawing is available in page no: 189

Table 13.5: Quantity Sheet for Biogas plant

BIO GAS PLANT

QUANTITY SHEET

Sr. No.	Item Description	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity(m^3)
1	**Earthwork in Excavation in Foundation:**					
	Depth = 2.76 mt.	1	4.50	3.50	2.76	**43.47**
				Total Qty of Excavation =		**43.47**
2	**Base PCC with 1:3:6 Ratio**					
	Footing	1	4.50	3.50	0.15	**2.36**
	Thickness = 0.15					
				Total Qty of PCC=		**2.36**
3	**Providing and laying controlled cement concrete M15.**					
	Footing					
	Thickness=0.15	3	4.50	3.50	0.15	**7.08**
				Total Qty of M15		**7.08**
4	**Deduction of Manholes from the top Slab**					
		3	0.60	0.60	0.10	**0.108**
				Total Qty of Deduction		**0.108**
5	**Providing H.Y.S.D bar reinforcement for R.C.C work including bending binding and placing in position**					
		10.62	@	70kg/m^3	-	**744 kg**
				Total Qty of steel=		**744 kg**
6	**RCC heavy duty pipe**					
		1	3.00	-	-	3.00

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(Rate as per SOR 2015-16 R &B)

Table 13.6 Abstract Sheet For Bio Gas Plant				
Sr.	**ITEMS**	**QTY.**	**Rate/Per**	**AMOUNT**
1.	Earthwork in Excavation in Foundation	**43.47**	124 m3	5391.00
2.	Base PCC with 1:3:6 Ratio	**2.36**	2932 m3	6920.00
3.	Providing and laying controlled cement concrete M-15.	**7.08**	4077 m3	28,866.00
4.	Deduction of Manholes from the top Slab	**0.108**	5927 m3	641.00
5.	Providing H.Y.S.D bar reinforcement for R.C.C work including bending binding and placing in position	**744**	40 kg	29,760.00
6.	RCC heavy duty pipe	**3.00**	250 RMT	750.00
	TOTAL : Seventy Two Thousands Three Hundred Twenty Eight Rupees Only.			**72,328.00**

13.4 Police Station

This drawing is available in page no: 190

Table 13.7: Quantity Sheet for Police Station

POLICE STATION

QUANTITY SHEET

Sr. No.	Item Description	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity(m^3)
1	**Earthwork in Excavation in Foundation:**					
	Footing 1mx1m	12	2.200	2.200	1.000	**58.08**
	Depth From GL = 0.6 + 1 + 0.6					
	0.6 =Extra For working space					
				Total Qty of Excavation =		**58.08**
2	**Footing PCC with 1:3:6 Ratio**					
	Footing	12	1.300	1.300	0.075	**1.52**
	Thickness = 0.075m					
	D = 0.150 + 1.0 + 0.150					
				Total Qty of Footing PCC=		**1.52**
3	**Footing RCC with 1:1.5:3 Ratio**					
	Footing					
	Thickness=0.6m	12	1.000	1.000	0.600	**7.20**
				Total Qty of Footing RCC=		**7.20**
4	**Column up to Plinth Level RCC**					
	Column 1:1.5:3 Mix Ratio	12	0.230	0.460	0.330	**0.42**
				Total Qty of Footing Column=		**0.42**
5	**Plinth Beam RCC with 1:1.5:3 Ratio**					
		1	51.80	0.230	0.450	**5.36**
				Total Qty of Plinth Beam=		**5.36**
6	**Back-filling**					

6.a	**Back-filling In Footing**					
	Excavation Area	12	2.200	2.200	1.000	58.08
	Deduction					
	Footing P.C.C	-12	1.300	1.300	0.075	-1.52
	Footing RCC	-12	1.000	1.000	0.600	**-7.20**
	Footing Column	-12	0.230	0.460	0.330	**-0.42**
					6.a Total Qty=	**48.94**
6.b	**Back Filling from Ground Level to L.C. Bed below Level**					
	Plinth area in to in	1	11.280	1.750	0.200	3.948
		1	13.250	9.120	0.200	24.16
					6.b Total Qty=	**28.10**
					Total Qty of Back Filling of 6a+6b=	**77.04**
7	**L.C. Bed RCC with 1:1.5:3 Ratio**					
		1	11.280	1.750	0.200	3.948
		1	13.250	9.120	0.200	24.16
					Total Qty of L.C. Bed=	**28.10**
8	**Brick Masonry with 1:4 Ratio**					
8a	**0.23m thick wall Brick Masonry**	1	51.80	0.230	3.200	38.12
	Deduction					
	Window W	-1	2.440	0.230	0.600	-0.33
	Window W1	-2	1.800	0.230	1.200	-0.99
	Window W2	-9	1.200	0.230	1.200	-2.98
	Window W3	-1	0.670	0.230	1.200	-0.18
	M.D.	-1	1.200	0.230	2.100	-0.58
	Door D1	-7	0.910	0.230	2.100	-3.07
					Total Qty of 0.23mt. Thick Walls=	**29.99**
8b	**0.1m thick wall Brick Masonry**	5	4.43	0.100	3.200	7.08

	Deduction					
	Door D1	-0	0.910	0.230	2.100	0.00
	Door D/V	-6	0.750	0.230	2.100	-2.17
	Vent v	-3	0.600	0.230	0.600	-0.24
		Total Qty of 0.1 mt. Thick Walls=				**4.67**
		Total Qty of 8a+8b Walls=				**34.66**
9	**Chhajja with 1:1.5:3 RCC Ratio**					
		1	2.44	0.45	0.45	0.49
		2	1.80	0.45	0.45	0.73
		9	1.20	0.45	0.45	2.18
		Total Qty of Chajjas=				**3.40**
10	**Slab with 1:1:2 RCC Ratio**					
	0.15m Thick Slab	1	12.19	13.71	0.150	25.06
		Total Qty of Slab=				**25.06**
11	**Parapet Wall**					
		1	51.80	0.230	1.000	11.91
12	**Internal Plaster with 1:4 Ratio**					
	15mm thick					
		1	103.60	-	3.20	331.52
	Deduction					
	Window W	-1	2.440	0.015	0.600	-0.02
	Window W1	-2	1.800	0.015	1.200	-0.06
	Window W2	-9	1.200	0.015	1.200	-0.19
	Window W3	-1	0.670	0.015	1.200	-0.01
	M.D.	-1	1.200	0.015	2.100	-0.03
	Door D1	-7	0.910	0.015	2.100	-0.20
	Door D/V	-6	0.750	0.015	2.100	-0.14
	Vent V	-3	0.600	0.015	0.600	-0.01
		Total Qty of Internal Plaster=				**330.82**
13	**External Plaster with 1:4 Ratio**					
	25MM Thick					

		1	51.80	-	4.800	248.64
	Deduction					
	Window W	-1	2.440	0.025	0.600	-0.03
	Window W1	-2	1.800	0.025	1.200	-0.10
	Window W2	-9	1.200	0.025	1.200	-0.32
	Window W3	-1	0.670	0.025	1.200	-0.02
	M.D.	-1	1.200	0.025	2.100	-0.06
	Door D1	-7	0.910	0.025	2.100	-0.33
	Vent V	-3	0.750	0.025	2.100	-0.11
		Total Qty of External Plaster=				**247.67**

(Rate as per SOR 2015-16 R &B)

Table 13.8 : ABSTRACT SHEET FOR POLICE STATION

Sr.	ITEMS	QTY.	Rate/Per	AMOUNT
1.	Earthwork in Excavation in Foundation : 1.0 M x 1.0 M x 1.0 M	58.08	280 m3	16,262.00
2.	Footing P.C.C. with 1:3:6 Ratio	1.52	2507 m3	3811.00
3.	Footing R.C.C. with 1:1.5:3 Ratio	7.20	1500 m3	10,800.00
4.	Column up to Plinth Level R.C.C.	0.42	5000 m3	2100.00
5.	Plinth Beam RCC with 1:1.5:3 Ratio	5.36	2000 m3	10,720.00
6.	Back-filling 6(A) & 6(B)	77.04	125 m3	9630.00
7.	L.C. Bed RCC with 1:1.5:3 Ratio	28.10	150 m3	4215.00
8.A	Brick Masonry with 1:4 Ratio 0.23 MT. Thick Wall	29.99	2443 m3	73,266.00
9.	Chhajja with 1:1.5:3 R.C.C. Ratio	3.40	2000 m2	6800.00
10.	Slab with 1:1:2 R.C.C. Ratio	25.06	3236 m2	81,905.00
11.	Parapet Wall	11.91	2443 m3	29,097.00
12.	Internal Plaster with 1:4 Ratio	330.82	118 m2	39,037.00

13.	External Plaster with 1:4 Ratio	247.67	230 m2	56,965.00
14.	Providing and Fixing white vitrified flooring policing etc. comp.	144.00	720 m2	1,03,680.00
15.	W/S and sanitation work	6 nos.W.C.	550/pc	3300.00
		3 nos. Wash Basin	1050/pc	3150.00
	TOTAL : Four Lacks Sixty Six Thousands Two Hundred Five Rupees Only.			**4,66,205.00**

13.5 Post Office

This drawing is available in page no: 191

Table 13.9: Quantity Sheet for Post office

POST OFFICE

QUANTITY SHEET

Sr. No.	Item Description	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity(m^3)
1	**Earthwork in Excavation in Foundation:**					
	Footing 1mx1m	16	2.200	2.200	1.000	**77.44**
	Depth From GL = 0.6 + 1 + 0.6					
	0.6 =Extra For working space					
				Total Qty of Excavation =		**77.44**
2	**Footing PCC with 1:3:6 Ratio**					
	Footing	16	1.300	1.300	0.075	**2.02**
	Thickness = 0.075m					
	D = 0.150 + 1.0 + 0.150					
				Total Qty of Footing PCC=		**2.02**
3	**Footing RCC with 1:1.5:3 Ratio**					
	Footing					
	Thickness=0.6m	16	1.000	1.000	0.600	**9.60**
				Total Qty of Footing RCC=		**9.60**
4	**Column up to Plinth Level RCC**					
	Column 1:1.5:3 Mix Ratio	16	0.230	0.460	0.330	**0.55**
				Total Qty of Footing Column=		**0.55**
5	**Plinth Beam RCC with 1:1.5:3 Ratio**					
		1	55.08	0.230	0.450	**5.70**
				Total Qty of Plinth Beam=		**5.70**
6	**Back-filling**					
6.a	**Back-filling In Footing**					

	Excavation Area	16	2.200	2.200	1.000	77.44
	Deduction					
	Footing P.C.C	-16	1.300	1.300	0.075	-2.02
	Footing RCC	-16	1.000	1.000	0.600	**-9.60**
	Footing Column	-16	0.230	0.460	0.330	**-0.55**
					6.a Total Qty=	**65.27**
6.b	**Back Filling from Ground Level to L.C. Bed below Level**					
	Plinth area in to in	1	14.590	1.750	0.200	5.10
		1	13.400	1.750	0.200	4.69
					6.b Total Qty=	**9.79**
					Total Qty of Back Filling of 6a+6b=	**75.06**
7	**L.C. Bed RCC with 1:1.5:3 Ratio**					
		1	14.590	1.750	0.200	5.10
		1	13.400	1.750	0.200	4.69
					Total Qty of L.C. Bed=	**9.79**
8	**Brick Masonry with 1:4 Ratio**					
8a	**0.23m thick wall Brick Masonry**	2	55.08	0.230	3.35	84.87
	Deduction					
	Window W1	-1	1.800	0.230	1.200	-0.49
	Window W2	-9	1.200	0.230	1.200	-2.98
	Window W3	-1	0.990	0.230	1.200	-0.27
	M.D.	-1	1.200	0.230	2.100	-0.58
	Door D1	-5	0.910	0.230	2.100	-2.19
					Total Qty of 0.23mt. Thick Walls=	**78.36**
8b	**0.1m thick wall Brick Masonry**	9	17.23	0.100	3.35	51.94
	Deduction					
	Door D1	-1	0.910	0.230	2.100	-0.44
	Door D/V	-4	0.750	0.230	2.100	-1.44
	Vent v	-2	0.600	0.230	0.600	-0.16
					Total Qty of 0.1 mt. Thick Walls=	**49.90**
					Total Qty of 8a+8b Walls=	**128.26**

9	**Chhajja with 1:1.5:3 RCC Ratio**					
		9	1.20	0.45	0.45	2.18
		2	1.80	0.45	0.45	0.73
		2	2.34	0.45	0.45	0.95
					Total Qty of Chajjas=	**3.86**
10	**Slab with 1:1:2 RCC Ratio**					
	0.15m Thick Slab	1	12.19	8.20	0.150	15.00
		1	14.59	4.06	0.150	8.88
					Total Qty of Slab=	**23.88**
11	**Parapet Wall**					
		1	55.08	0.230	1.000	12.66
					Total Qty of Parapet Wall=	**12.66**
12	**Internal Plaster with 1:4 Ratio**					
	15mm thick					
		2	55.08	-	3.35	369.02
	Deduction					
	Window W2	-9	1.200	0.015	1.200	-0.19
	M.D.	-1	1.200	0.015	2.100	-0.03
	Door D1	-5	0.910	0.015	2.100	-0.14
	Door D/V	-4	0.750	0.015	2.100	-0.09
	Vent V	-2	0.600	0.015	0.600	-0.01
					Total Qty of Internal Plaster=	**368.56**
13	**External Plaster with 1:4 Ratio**					
	25MM Thick					
	Deduction					
	Window W2	-9	1.200	0.025	1.200	-0.32
	M.D.	-1	1.200	0.025	2.100	-0.06
	Door D1	-5	0.910	0.025	2.100	-0.24
	Vent V	-2	0.750	0.025	2.100	-0.07
					Total Qty of External Plaster=	**263.69**

(Rate as per SOR 2015-16 R &B)

13.10 Abstract Sheet For Post Office				
Sr.	**ITEMS**	**QTY.**	**Rate/Per**	**AMOUNT**
1.	Earthwork in Excavation in Foundation : 1.0 M x 1.0 M x 1.0 M	77.44	280 m3	21,683.00
2.	Footing P.C.C. with 1:3:6 Ratio	2.02	2507 m3	5065.00
3.	Footing R.C.C. with 1:1.5:3 Ratio	9.60	1500 m3	14,400.00
4.	Column up to Plinth Level R.C.C.	0.55	5000 m3	2750.00
5.	Plinth Beam RCC with 1:1.5:3 Ratio	5.70	2000 m3	11,400.00
6.	Back-filling 6(A) & 6(B)	75.06	125 m3	9382.00
7.	L.C. Bed RCC with 1:1.5:3 Ratio	9.79	150 m3	1468.00
8.A	Brick Masonry with 1:4 Ratio 0.23 MT. Thick Wall	78.36	2443 m3	1,91,433.00
8.B	Brick Masonry with 1:4 Ratio 0.10 MT. Thick Wall	49.90	2443 m3	1,21,905.00
9.	Chhajja with 1:1.5:3 R.C.C. Ratio	3.86	2000 m2	7720.00
10.	Slab with 1:1:2 R.C.C. Ratio	23.88	3236 m2	77,276.00
11.	Parapet Wall	12.66	2443 m3	30,929.00
12.	Internal Plaster with 1:4 Ratio	368.56	118 m2	43,491.00
13.	External Plaster with 1:4 Ratio	263.69	230 m2	60,649.00
14.	Providing and Fixing white vitrified flooring policing etc. comp.	152.25	720 m2	1,09,620.00
15.	W/S and sanitation work	4 nos.W.C.	550/pc	2200.00
		2 nos. Wash Basin	1050/pc	2100.00
	TOTAL : Seven Lacks Thirteen Thousands Seven Hundred Fourty One Only.			**7,13,741.00**

13.6 Super Market

This drawing is available in page no: 192

Table 13.11: Quantity Sheet for Super Market

SUPERMARKET

QUANTITY SHEET

Sr. No.	Item Description	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity(m^3)
1	**Earthwork in Excavation in Foundation:**					
	Footing 1mx1m	4	2.200	2.200	1.000	**19.36**
	Depth From GL = 0.6 + 1 + 0.6					
	0.6 =Extra For working space					
		Total Qty of Excavation =				**19.36**
2	**Footing PCC with 1:3:6 Ratio**					
	Footing	4	1.300	1.300	0.075	**0.50**
	Thickness = 0.075m					
	D = 0.150 + 1.0 + 0.150					
		Total Qty of Footing PCC=				**0.50**
3	**Footing RCC with 1:1.5:3 Ratio**					
	Footing					
	Thickness=0.6m	4	1.000	1.000	0.600	**2.40**
		Total Qty of Footing RCC=				**2.40**
4	**Column up to Plinth Level RCC**					
	Column 1:1.5:3 Mix Ratio	4	0.230	0.460	0.330	**0.14**
		Total Qty of Footing Column=				**0.14**
5	**Plinth Beam RCC with 1:1.5:3 Ratio**					
		1	63.68	0.230	0.450	**6.59**
		Total Qty of Plinth Beam=				**6.59**
6	**Back-filling**					
6.a	**Back-filling In Footing**					
	Excavation Area	4	2.200	2.200	1.000	19.36
	Deduction					
	Footing P.C.C	-4	1.300	1.300	0.075	-0.50
	Footing RCC	-4	1.000	1.000	0.600	**-2.40**

	Footing Column	-4	0.230	0.460	0.330	**-0.14**
					6.a Total Qty=	**16.32**
6.b	**Back Filling from Ground Level to L.C. Bed below Level**					
	Plinth area in to in	1	19.20	1.750	0.200	6.72
		1	12.64	1.750	0.200	4.42
					6.b Total Qty=	**11.14**
					Total Qty of Back Filling of 6a+6b=	**27.46**
7	**L.C. Bed RCC with 1:1.5:3 Ratio**					
		1	19.20	1.750	0.200	6.72
		1	12.64	1.750	0.200	4.42
					Total Qty of L.C. Bed=	**11.14**
8	**Brick Masonry with 1:4 Ratio**					
8a	**0.23m thick wall Brick Masonry**	2	63.68	0.230	3.35	98.13
	Deduction					
	Window W	-9	1.800	0.230	1.200	-4.47
	Window W1	-1	1.200	0.230	1.200	-0.33
	R.S.	-1	2.500	0.230	2.100	-1.20
	Door D	-5	0.910	0.230	2.100	-2.19
					Total Qty of 0.23mt. Thick Walls=	**89.94**
8b	**0.1m thick wall Brick Masonry**	9	16.37	0.100	3.35	49.35
	Deduction					
	Door D	-5	0.910	0.230	2.100	-2.19
	Door D/V	-2	0.750	0.230	2.100	-0.72
	Vent v	-2	0.600	0.230	0.600	-0.16
					Total Qty of 0.1 mt. Thick Walls=	**46.28**
					Total Qty of 8a+8b Walls=	**136.22**
9	**Chhajja with 1:1.5:3 RCC Ratio**					
		9	1.800	0.45	0.45	3.28
		1	1.200	0.45	0.45	0.24
		2	0.600	0.45	0.45	0.24
					Total Qty of Chajjas=	**3.76**

10	**Slab with 1:1:2 RCC Ratio**					
	0.15m Thick Slab	1	19.20	12.64	0.150	36.40
					Total Qty of Slab=	**36.40**
11	**Parapet Wall**					
		1	63.68	0.230	1.000	14.64
					Total Qty of Parapet Wall=	**14.64**
12	**Internal Plaster with 1:4 Ratio**					
	15mm thick					
		2	63.68	-	3.35	426.65
	Deduction					
	Window W	-9	1.800	0.015	1.200	-0.29
	Window W1	-1	1.200	0.015	1.200	-0.02
	R.S.	-1	2.500	0.015	2.100	-0.07
	Door D1	-5	0.910	0.015	2.100	-0.14
	Door D/V	-2	0.750	0.015	2.100	-0.04
	Vent V	-2	0.600	0.015	0.600	-0.01
					Total Qty of Internal Plaster=	**426.08**
13	**External Plaster with 1:4 Ratio**					
	25MM Thick					
		2	63.68	-	4.800	611.32
	Deduction					
	Window W	-9	1.800	0.015	1.200	-0.29
	Window W1	-1	1.200	0.015	1.200	-0.02
	R.S.	-1	2.500	0.015	2.100	-0.07
	Door D1	-5	0.910	0.015	2.100	-0.14
	Vent V	-2	0.600	0.015	0.600	-0.01
					Total Qty of External Plaster=	**610.79**

(Rate as per SOR 2015-16 R &B)

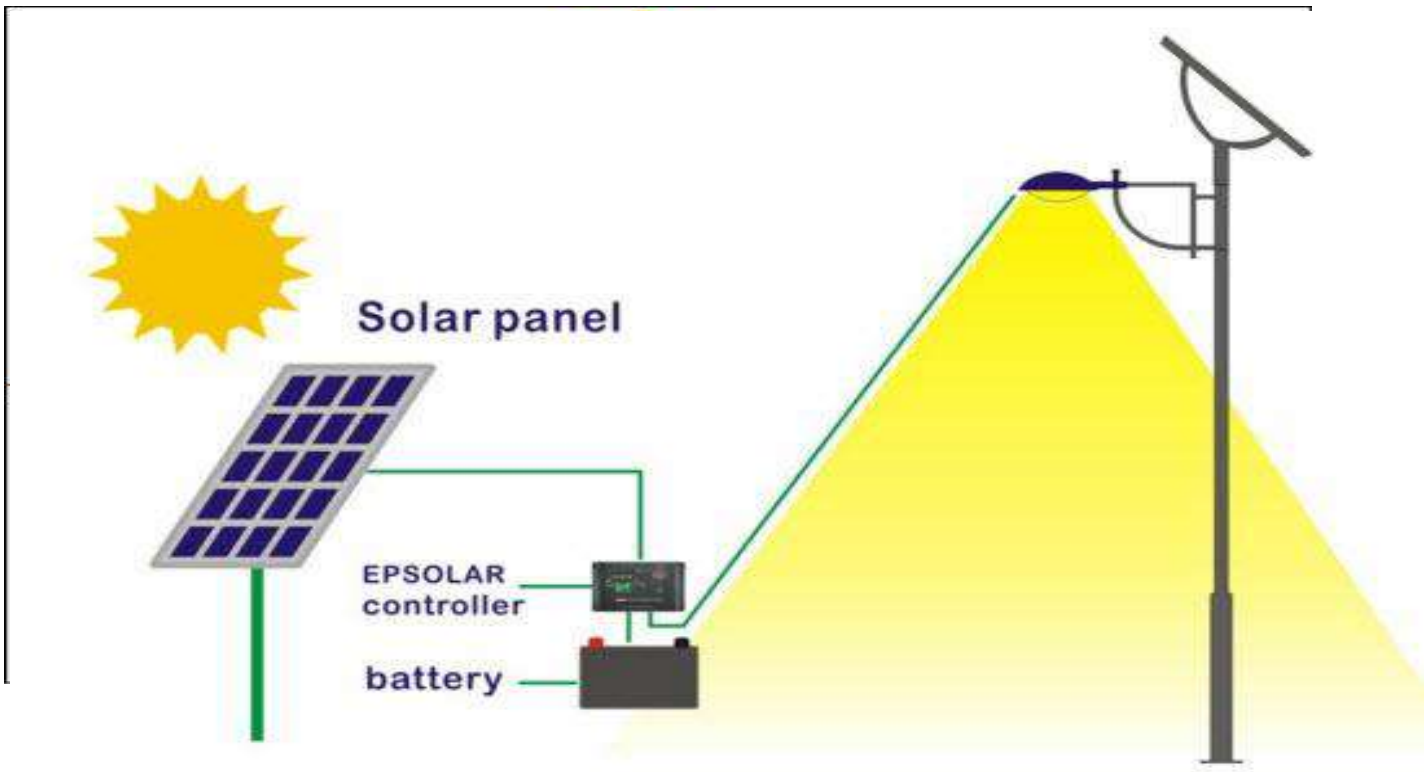
Table 13.12 : Abstract Sheet For Super Market

Sr.	ITEMS	QTY.	Rate/Per	AMOUNT
1.	Earthwork in Excavation in Foundation : 1.0 M x 1.0 M x 1.0 M	19.36	280 m3	5420.00
2.	Footing P.C.C. with 1:3:6 Ratio	0.50	2507 m3	1254.00
3.	Footing R.C.C. with 1:1.5:3 Ratio	2.40	1500 m3	3600.00
4.	Column up to Plinth Level R.C.C.	0.14	5000 m3	700.00
5.	Plinth Beam RCC with 1:1.5:3 Ratio	6.59	2000 m3	13,180.00
6.	Back-filling 6(A) & 6(B)	27.46	125 m3	3433.00
7.	L.C. Bed RCC with 1:1.5:3 Ratio	11.14	150 m3	1671.00
8.A	Brick Masonry with 1:4 Ratio 0.23 MT. Thick Wall	89.94	2443 m3	2,19,723.00
8.B	Brick Masonry with 1:4 Ratio 0.10 MT. Thick Wall	46.28	2443 m3	1,13,062.00
9.	Chhajja with 1:1.5:3 R.C.C. Ratio	3.76	2000 m2	7520.00
10.	Slab with 1:1:2 R.C.C. Ratio	36.40	3236 m2	1,17,790.00
11.	Parapet Wall	14.64	2443 m3	35,765.00
12.	Internal Plaster with 1:4 Ratio	426.08	118 m2	50,278.00
13.	External Plaster with 1:4 Ratio	610.79	230 m2	1,40,481.00
14.	Providing and Fixing white vitrified flooring policing etc. comp.	209.84	720 m2	1,51,084.00
15.	W/S and sanitation work	2 nos.W.C.	550/pc	1100.00
		1 nos. Wash Basin	1050/pc	1050.00
	TOTAL : Eight Lakcs Sixty Seven Thousands One Hundred Eleven Rupees Only.			**8,67,111.00**

13.7 Solar Irrigation System

Farmer have always played a significant role in our society as they provide the worlds population with food. However, one may forget that, not only do they provide food but they also provide energy, which now

a days, is of paramount importance, especially as in light of renewable energies.



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they have a surplus, resell it to companies. Solar energy might be one of the easiest ways for farmers to produce energy. Indeed farmers usually have several large buildings whose roofs are directly under the sun, without being hindered by the shadows of the trees, turning them into an ideal place to settle aphotovoltaic system. Therefore, the use of solar energy in agriculture is becoming increasingly popular and the energy produced from this renewable source can be used either on the farm or in the local power grid, providing the farmer with an additional income.

Table 13.13 : Abstract Sheet For solar Irrigation System

Sr.No.	Equipment	Cost
1	Solar Panel	24000
2	Inverter	16000
3	Submersible Pump	7000
4	Buttary	8500
5	Total Cost	55000

13.8 Solar Street light

Fig 13.8: Design of Solar Street light

The solar-powered street light works on the principle of solar cells or PV cells to absorb solar energy in the daytime. The PV cells convert solar energy to the electrical energy. The converted energy is stored in the battery and the solar street lights use solar energy. Nowadays solar street lights are available beside the roads. At night time, the lamps start automatically and it uses the electrical energy which is stored in the battery. Every day this process continues

Table 13.14 : Abstract Sheet For solar Street light

Sr.No.	Equipment	Cost
1	Solar panels	3000
2	Buttary	5000
3	LED Light	3500
4	Controllar	5000
5	Wire	2500
6	Instillation Cost	4000
7	Pole	8500
8	Total Cost	31,500

13.9 Water level Indicator

Water level indicator definition: A water level indicator is a system that relays information back to a control panel to indicate whether a body of water has a high or low water level. Some water level indicators use a combination of probe sensors or float switches to sense water levels. The Water Level Indicator employs a simple mechanism to detect and indicate the water level in an overhead tank or any other water container. according to Electronics Hub.

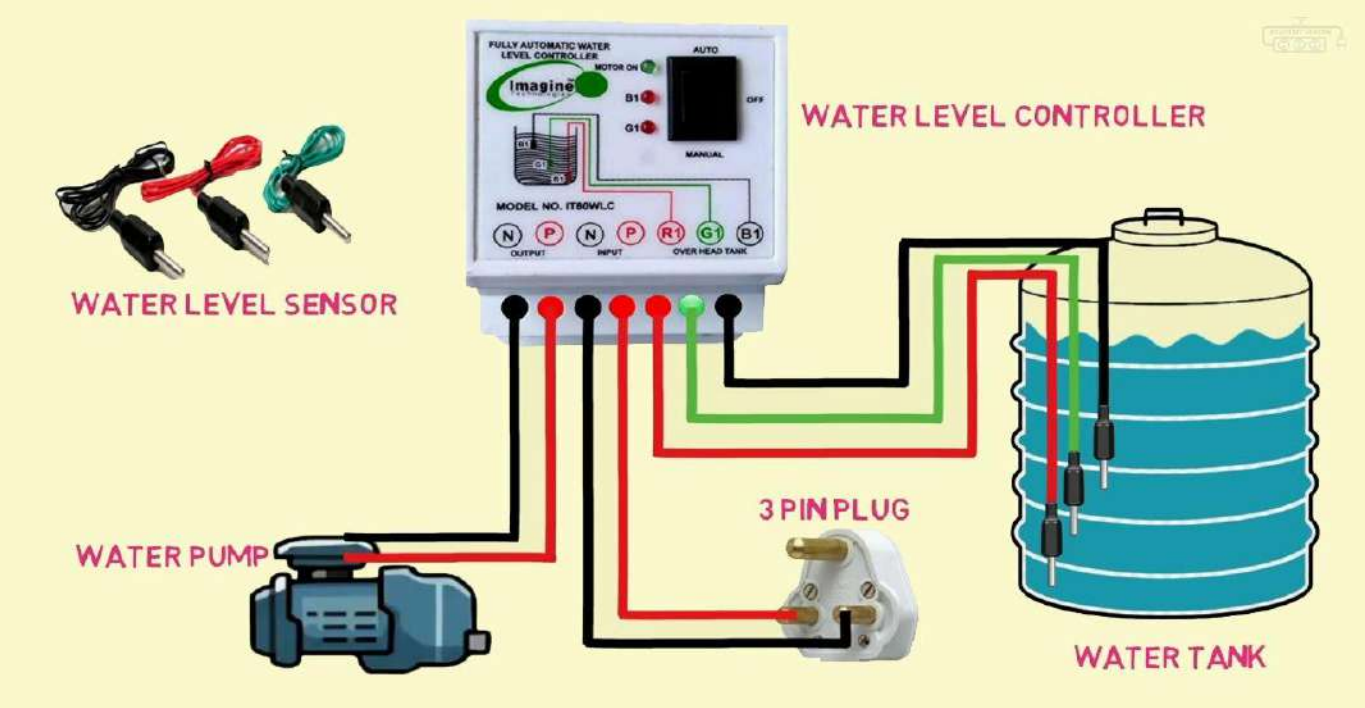


Fig 13.9: Design of Water Level Indicator

A water level indicator sensor, also known as a probe sensor, is what tells the control panel that corrective action is needed. A combination of high and low sensors are used to tell the control panel when water levels are too high or too low. The control panel will then automatically turn the pump on or off depending on the corrective action needed.

Table 13.15 : Abstract Sheet For Water Level Indicator

Sr.No.	Equipment	Cost
1	Water pump	7500
2	Sensor	200
3	Controller	800
4	Water Tank	4500
5	Total Cost	13000

#Chapter 14#
Technical Options with Case Studies

14.1 Civil Engineering

14.1.1 Advance Earthquake Resistance

Techniques for Earthquake Resistant Design of Structures

There are many known and practiced measures to protect against seismic threats. Lets take a Look at some of the earthquake resistant techniques used by the engineers world over to Minimize the damage to structures due to earthquakes

Advantages of earthquake resistant buildings

The earthquake resistant buildings can easily tolerate the shocks of earthquake by taking the Minimum amount of structural damages.

Due to the strong structure the earthquake resistant buildings are also resistant to other natural disasters also and the longevity of such buildings is also great.

The structural degradation over time is very minimum for these buildings so there are minimum costs for maintenance such buildings.

Disadvantages of earthquake resistant buildings

Earthquakes can be very dangerous, if you are in the wrong place. They can make buildings fall down and set off landslides, as well as having many other deadly effects.

14.1.2 Seismic Retrofitting of Buildings

The seismic retrofitting of reinforced concrete buildings not designed to withstand seismic action is considered. After briefly introducing how seismic action is described for design purposes, methods for assessing the seismic vulnerability of existing buildings are presented. The traditional methods of seismic retrofitting are reviewed and their weak points are identified.

Modern methods and philosophies of seismic retrofitting, including base isolation and energy dissipation devices, are reviewed. The presentation is illustrated by case studies of actual buildings where traditional and innovative retrofitting methods have been applied.

Seismic retrofitting of constructions vulnerable to earthquakes is a current problem of great political and social relevance. Most of the Italian building stock is vulnerable to seismic action even if located in areas that have long been considered of high seismic hazard. During the past thirty years moderate to severe earthquakes have occurred in Italy at intervals of 5 to 10 years. Such events have clearly shown the vulnerability of the building stock in particular and of the built environment in general. The seismic hazard in the areas, where those earthquakes have occurred, has been known for a long time because of similar events that occurred in the past.

It is therefore legitimate to ask why constructions vulnerable to earthquakes exist if people and institutions knew of the seismic hazard. Several causes may have contributed to the creation of such a situation. These are associated to historical events, fading memory, greed, avarice, poverty and ignorance.

Among historical events particularly relevant are wars, epidemics, and natural disasters which may limit, in a significant way, the available resources of a country. In such circumstances there is a tendency to build with poor materials and without too much attention to good construction techniques and safety margins. A situation of this kind occurred in Italy and in Japan after the Second World War and similar situations have occurred in Italy many times in the past. In such a situation it is possible that the phenomenon of fading memory occurs and past memories are easily erased.

14.1.3 Advance Practices in Construction field in Modern Material, Techniques and Equipments

The construction industry is repeatedly criticized for being inefficient and slow to innovate. The basic methods of construction, techniques and technologies have changed little since Roman times. But the application of innovation in the construction industry is not straight forward. Every construction project is different, every site is a singular prototype, construction works are located in different places, and involve the constant movement of personnel and machinery. In addition, the weather and other factors can prevent the application of previous experience effectively.

The term 'advanced construction technology' covers a wide range of modern techniques and practices that encompass the developments in materials technology, design procedures, quantity, surveying, facilities management, services, structure analysis and design, and management studies.

Incorporating advance construction technology into practice can increase levels of quality, efficiency, safety, sustainability and value for money. However, there is often a conflict between traditional industry methods and innovative new practices, and this is often blamed for the relatively slow rate of technology transfer within the industry.

Advanced construction technologies

I. 3D printing
II. Materials
III. Building information modeling (BIM)
IV. Cladding systems
V. Computer aided design and computer aided manufacturing (CAD/CAM).
VI. Computer numerical control
VII. Construction Innovation Hub
VIII. Construction plant
IX. Modern methods of construction
X. Modular construction
XI. Offsite manufacturing
XII. Prefabrication and preassembly
XIII. Research and development
XIV. Site investigations and surveying
XV. Substructure works
XVI. Water engineering
XVII. Temporary works
XVIII. Smart technology
XIX. Robotics
XX. GPS controlled equipment

To understand all how and about of super performing construction materials we must study materials according to their use from very root to tip. By that way we can easily conclude and infer about the application, implementation and feasibility of that particular construction material. Elements of construction where these smart materials and techniques shall be implemented are:

Foundation	Plinth	Beam	Column
Wall	Sill	Window	Door
Roof	parapet	Skylights	Finishing work

185

Construction materials are said to be super performing when they

I. Save overall building energy
II. Make building esthetically pleasing
III. Cut cost of construction
IV. Easily available
V. Increase life span of building
VI. Upgrade building quality
VII. Make the building safe for living

Super Performing Materials

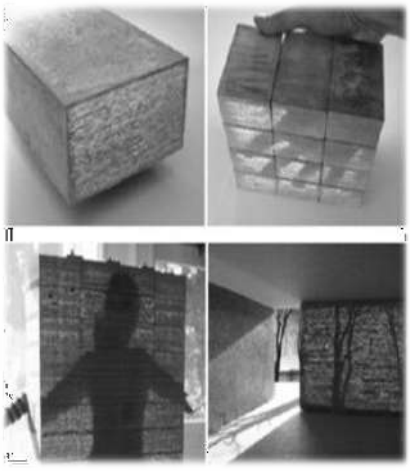
1. Advancements in Concrete

High Performance Concrete

Lafarge has developed a whole new family of concretes called Ductal. These concretes have high compressive and flexural strength, and their special characteristics enable the achievement of outstanding architectural feats. Ductal concrete incorporates strengthening fibers and opens the horizon to ultra- high performance due to its special composition which provides it with outstanding strength, six to eight times greater than traditional concrete (under compression).Fiber-reinforced means that it contains metal fibers which make it a ductile material. Highly resistant to bending, its great flexural strength means it can withstand significant transformations without breaking. Ductal also comes with organic fibers for applications with less load and for advanced architectural applications.

Light Transmitting Concrete

The days of dull, grey concrete could be about to end. A Hungarian architect has combined the worlds most popular building material with optical fiber from Schott to create a new type of concrete that transmits light. A wall made of LitraCon allegedly has the strength of traditional concrete but thanks to an embedded array of glass fibers can display a view of the outside world, such as the silhouette of a tree, for example. Thousands of optical glass fibers form a matrix and run parallel to each other between the two main surfaces of every block, explained its inventor Áron Losonczi. Shadows on the lighter side will appear with sharp outlines on the darker one. Even the colours remain the same. This special effect creates the general impression that the thickness and weight of a concrete wall will disappear. The hope is that the new material will transform the interior appearance of concrete buildings by making them feel light and airy rather than dark and heavy.



Pervious Concrete

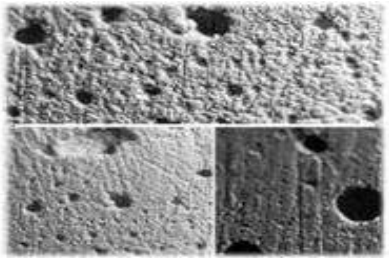
Pervious pavement is a cement-based concrete product that has a porous structure which allows rainwater to pass directly through the pavement and into the soil naturally. This porosity is achieved without compromising the strength, durability, or integrity of the concrete structure itself. The pavement is comprised of a special blend of Portland cement, coarse aggregate rock, and water. Once dried, the pavement has a porous texture that allows water to drain through it at the rate of 8 to 12 gallons per minute per square foot. Tests conclude that a square foot of Bahia sod drains at the rate of 2 1/2 to 3 gallons per minute. According to the manufacturer, this rapid flow-through ratio inspired the phrase the pavement that drinks water.

Aerated Concrete

It was discovered in 1914 in Sweden that adding aluminum powder to cement, lime, water, and finely ground sand caused the mixture to expand dramatically. The Swedes allowed this foamed concrete to harden in a mold, and then they cured it in a pressurized steam chamber-- an autoclave. Autoclaved aerated concrete is produced by about 200 plants in 35 countries and is used extensively in residential, commercial, and industrial buildings. At a density of roughly one-fifth that of conventional concrete and a compressive strength of about one- tenth, AAC is used in load-bearing walls only in low- rise buildings. In high-rises, AAC is used in partition and curtain walls.

Floating Concrete

By replacing sand and gravel with tiny polymeric spheres, University of Washington materials scientists have created a concrete stronger than traditional concrete but so light it floats in water. The team won the regional American Society of Civil Engineers Concrete Canoe Competition last year.



2.Foamed Aluminum

Light-as-air, stronger-than-steel materials are just beginning to shape our world. Foamed aluminum first emerged from the lab in the frame of a 1998 Karman concept car. Ten times stronger than traditional aluminum at just one tenth the weight, the material allows a more fuel-efficient vehicle. Its isotropic cellular structure helps the frame absorb shock and serves as an insulating firewall between the engine and the rest of the car. The foaming process can also be applied to steel, lead, tin, and zinc.The product is a high strength, extremely light weight material that possesses high durability, excellent finish and lasting value. The foam comes in an assortment of densities and sizes up to five feet wide and up to fifty feet long. It has numerous applications including architectural, automotive, marine, military, aviation, transportation, electronics, appliances, and signage.

3.Woven Stainless steel

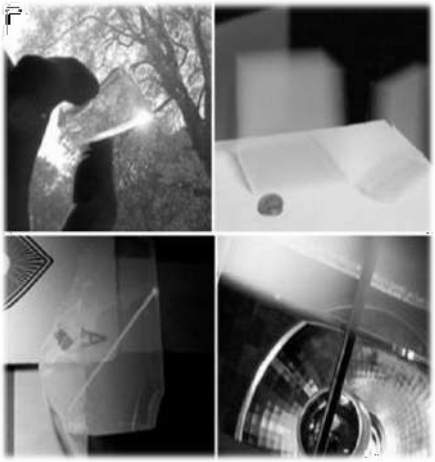
K5 New York is now offering woven stainless steel in 18 different weaves, produced in Switzerland by G. Bopp. This product has been used in projects as diverse as railing systems and furniture components. Custom weaves and patterns are also possible.

4.Creative Weave Metal Mesh

Metal meshes have been known as decorative and functional design elements i years. During the continuous product development along with ordinary use s became clear that metal meshes also have considerable technical advantages wh the field of architecture. Today, the architect has a wide range of mesh samples a up to eight meters, which allow for great design flexibility. Woven metallic mesh convey a new dimension to any space. They can be used as projection screens, a acoustic characteristic, are suitable for the use in public building, opera house a

5. Aerogel

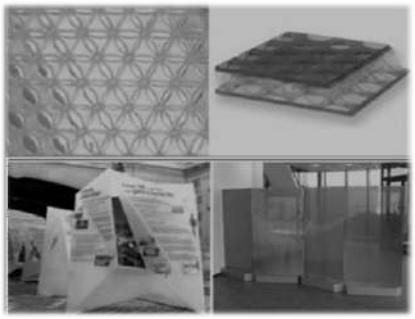
Aerogel or Air glass is a transparent material that looks like glass, insulates better than mineral wool and is more heat resistant than aluminum. The material has many interesting properties and possible applications such as insulation in windows and solar collectors, windows in firewalls, a component in air- conditioning equipment, etc. Aerogel is molded, giving the possibility of getting different shapes: cylinders, cubes, plates of varying thickness etc. Chemically, Aerogel is composed of quartz and a great deal of air, making it fragile. The grains of quartz are small compared to the wavelength of light, giving Aerogel good transparency properties. At around 750°C (1380°F), it starts to shrink and slowly collapses to a piece of ordinary quartz. Aerogel can be cut with a band saw and holes can be drilled with a metal drill. It should be noted that Aerogel is non- flammable and non-toxic.



6. Laminated Thermo Plastic Panels

Blizzard Composite GmbH manufactures high- tech plastic composites for the architectural field as well as the trucking industry. Their core expanding machinery heats up and vertically expands solid thermoplastic sheets, which are then processed into sandwich panels by lamination equipment. Due to the unique geometry of the Pep Core, the panels are of low weight and provide an excellent combination of high stiffness and compressive strength.

7. Super Black



British scientists have invented the darkest material on Earth. The super-black coating was developed by researchers at the National Physical Laboratory in London. It could revolutionize optical instruments because it reflects 10 to 20 times less light than the black paint currently used to reduce unwanted reflections. The key to the nickel and phosphorous coatings blackness is that its surface is pitted with microscopic craters. Super-black is especially effective at absorbing light which hits it at an angle. With the light source at right angles, the coating reflects less than 0.35%. Black paint reflects about 2.5% - seven times more.

8. Banner works

Koryn Rolstad is a Seattle-based industrial artist who leads an integrated team of industrial designers, graphic designers, project managers and production staff in creating large-scale aerial sculptures and public art installations around the world. Known as Banner works, her pieces dexterously cross the boundaries between sculpture and signage, art and engineering.

9.Tension Fabric Structure

Transform its provocative tension fabric structures are appropriate for use in entertainment venues, special events, exhibits & trade shows, or anywhere that fabric architecture is appropriate. Made of nylon spandex, the structures offer a viable surface for any type of projection or lighting display, including front and rear projected video. It is also possible to print on the fabric via silk-screening or dye sublimation digital printing.

10. Other Super Performing Multi Purposed Material

Geoweb: Cellular confinement system for vertical vegetation for green walls**.**
Aero Formed Aluminum: Tightly corrugated aluminum sheets as in bamboo mats.
Flexible Framing Track: For flexible outlining and fencing. A fence framed in metallic frame.
3D Molded Plywood: Fast manufacturing furniture.
Corrugated Glass: For inside esthetics and thermal insulation.
Braille Tiles: Exclusively for people with weak eye sight or completely blind when it comes to universal design.

Some Repurposed Materials and techniques

Rubber Sidewalks: Sidewalks or walkways made using used tires and hard boarding sheets.
Strawboard: Made from agro waste mainly.
Bagasse Boards: Boards made of material left from sugarcane after extracting juice.
Natural Fiber Insulation: Insulation panels made out of used cloths.
Frit: Fine powdered glass from waste with ceramics remolded for reuse**.**
Acousti-cell: Boards made for acoustics from rubber shredding.
Plasphalt: Plastic blended with asphalt on roads for waste management.
Fly-Ash Concrete: Using Fly-ash residue as strengthening material with cement

Some Super Performing Safe materials

I. Collapse preventing Structure
II. Bombproof fiber material
III. High pressure metal laminates
IV. Stratified wood panels

14.1.4 Engineering Aspects of Soil mechanics - Environmental Impact Assessment

Environmental Impact Assessment

The program serves a diverse student population, a majority of who elect to specialize in structural engineering. For example, in fall of 2004 and Fall of 2005, 52% of the undergraduate students taking the environmental course specialized in structural engineering, and 30% specialized in transportation engineering. Only 18% of the undergraduate students actually specialized in environmental engineering. Since a majority of the students taking the course did not specialize in environmental engineering, the required environmental engineering course was considered to be irrelevant by many of the students.

In response to these factors, a required course called Environmental Impact Assessment (EIA) has been introduced into the curriculum, just before the required Environmental Engineering (EnvE) course. The EIA course introduces environmental concepts as a means to perform environmental assessment, a practice employed by engineers of all specializations to develop more sustainable engineering designs. As such, the EIA course focuses on the environmental
media of greatest relevance to EIA, namely air, water, soil, and sound; the physical and chemical descriptions of these media; and the transport and transformation of pollutants in and across these media. Environmental engineering practices to reduce these pollutant concentrations at the source or in the environment are only introduced, and only to make students aware of conventional means to mitigate environmental impact. Conventional methods of drinking water, waste water, and air pollution treatment are now the focus of attention in the revised EnvE course. The primary goals of the EIA course are to engage all CE students regardless of their specialization, and create an interdisciplinary forum to discuss and evaluate some of the social, economic, and environmental issues associated with CE projects. The secondary goals of the course are to prepare students for two higher level required courses, and promote the utility and importance of environmental engineering and thus recruit more students into the field of study.

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

The most basic concepts in planning and design of water supply systems are already well shaped and currently widely used. The unique system provides the drinking quality water; regardless that many users of high quantity water would tolerate water of lesser quality. Sometimes users of large quantities of non-drinking water quality may construct a separate system, as an economical solution. Regardless of the availability of advanced technology, research and development in many areas promise the planning and design of better water supply systems in the future.

Sewerage is the infrastructure that conveys sewerage, surface runoff using Sewer. It encompasses components such as receiving drains, manholes, pumping stations, stored overflows and screening chambers of the combined sewer or sanitary sewer.

Type of Sewerage system

- Combined system
- Separate system
- Partiality separate system

Wastewater is any water that has been contaminated by human use. Wastewater is "used water from any combination of domestic, industrial, commercial or agricultural activities, surface runoff or storm water, and any sewer inflow or sewer infiltration".[1] Therefore, wastewater is a byproduct of domestic, industrial, commercial or agricultural activities. The characteristics of wastewater vary depending on the source. Types of wastewater include: domestic wastewater from households, municipal wastewater from communities (also called sewage) and industrial wastewater. Wastewater can contain physical, chemical and biological pollutants.

Sustainable development can be defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.Sustainable development also focuses on finding better ways of doing things without affecting the quality of our life.

Type of Sustainable development

I. Human sustainability
II. Human sustainability aims to maintain and improve the human capital in society.
III. Social sustainability
IV. Economic sustainability
V. Environmental sustainability

14.2 Electric Engineering

14.2.1 Design of Power Electronics converter

A power electronic converter uses power electronic components such as SCRs, TRIACs, IGBTs, etc. to control and convert the electric power. The main aim of the converter is to produce conditioning power with respect to a certain application

14.2.2 Electronic Soft Starter for 1/3 Phase Induction Motor for Agriculture

A motor soft starter is a device used with AC electrical motors to temporarily reduce the load and torque in the power train and electric current surge of the motor during start-up. It can consist of mechanical or electrical devices, or a combination of both.

The ac motor starters are increasingly becoming popular due to its controlled soft-starting capability. The ac motor starter provides limited starting current and hence conventional electromagnetic line starters and reduced voltage starters are replaced with ac motor starters. Thyristor-based soft starters have many desirable properties and provide a viable solution to starting problems in three phase induction motors. These power semiconductor based starters are cheap, simple, and reliable and occupies less volume. The power density of these soft starters is also very high. A three phase induction motor produces electromagnetic torque on its shaft but initial switching instants of all three phases to the supply produces pulsations on the electromechanical torque when it is controlled by a direct- online starter. These severe pulsations in electromagnetic torque might cause shocks to the shaft and hence to the driven equipment. These pulsations might damage mechanical system components, such as shafts, couplings and gears etc. The electromagnetic torque pulsations also causes long term effects on various mechanical system components if the strength of materials is exceeded which might lead to fatigue also. The reduced voltage starting by soft starters eliminates stress from the electrical supply and it also reduces the possibility of voltage dip and brown out conditions. Soft and smooth starters provide smooth acceleration of rotor of three phase induction motor. Reduced voltage starting reduces high amount of starting torque applied on the shaft and therefore eliminates the shock on the driven load. An instantaneous high amount of starting torque can cause a jolt on the conveyor which can damage products, pump cavitations and water hammer in pipes. Therefore, a soft starter ramps up the voltage applied to the motor from the initial voltage to the full voltage. The voltage is initially kept low to avoid sudden jerks during the start. The voltage and torque increases gradually so that the induction motor starts to accelerate. This ramp up voltage provides sufficient torque for the load to accelerate gradually and hence mechanical and electrical shocks are minimized from the system, The voltage supplied to stator windings are adjustable and it has ramp characteristics

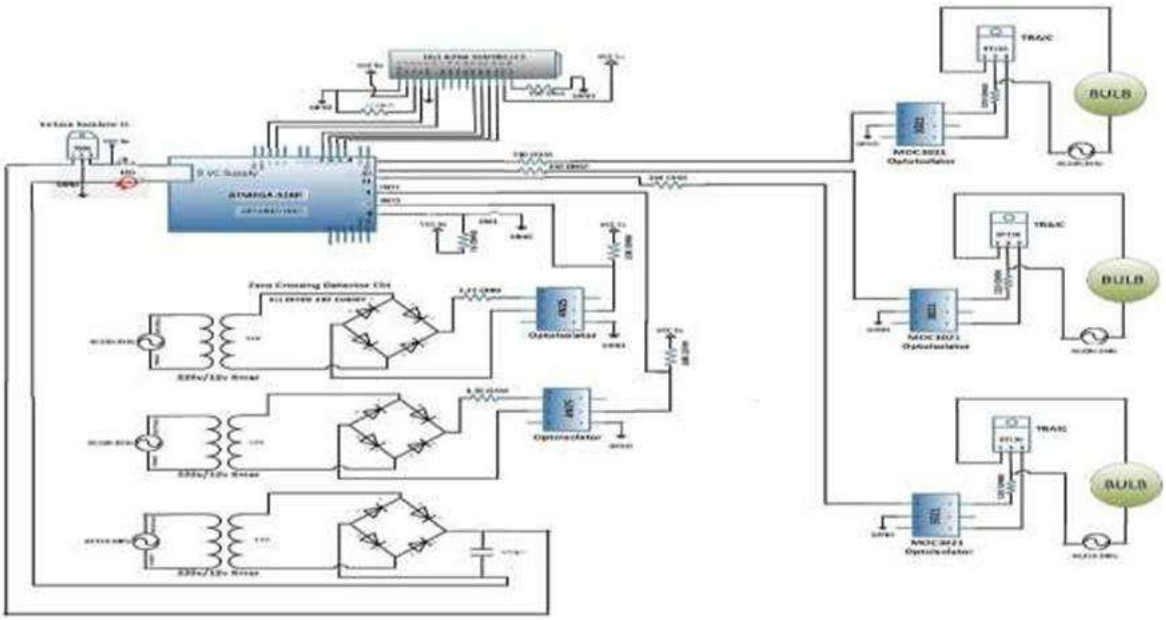
CIRCUIT DIAGRAM

The circuit diagram of soft-starting of three phases IM is shown in Fig.1. The circuit diagram comprises of voltage regulator, zero crossing detector, bridge rectifier, 4N25 opt-Isolator, Atmega 328P microcontroller

and TRIAC circuit. TRIAC circuit performs the role of soft starter in each phase of three phase induction motor. TRIAC circuit basically consists of two ant parallel SCRs connected back to back. This soft starter is used to give soft starring to Induction motor.

A 12 V DC regulated supply is obtained with the help of step-down transformer and bridge circuit. The step down transformer converts 230V to 12V ac supply and then it is fed to bridge circuit. The bridge circuit in turn converts ac supply to dc supply. This dc supply is given to regulator IC to get positive 12V dc regulated supply. The main part of the circuit is zero crossing detector circuit which is made up of four diodes connected to form bridge rectifier circuit and output of bridge rectifier is fed to 4N25 optoIsolator. Then output of 4N25 optoIsolator is applied to interrupt pin of At mega 328P. Whenever the input AC waveform crosses the zero reference point, a high pulse signal triggered from 4N25 optoIsolator is given to interrupt pin of At mega 328P. When At mega 328P receives high signal from interrupt pin, it interrupts At mega

328P by providing high signal on interrupt pin and then it initiates delay counter from that point and hence it provides triggering pulse to gate signal of TRIAC through MOC3021 optoIsolator.



Initially, the program provides maximum time delay to reduce the power supplied to motor and gradually decreases the delay to zero value and therefore provides full power to the motor. The capacitors are used in above circuit diagram to provide voltage regulation. The cathodes of SCRs in TRIAC circuit are connected to load terminals of induction motor.

The proposed soft starter is tested and hardware prototype is created to understand the operation of starter for three phase Induction motor. The hardware prototype for soft-starting is shown in Fig.. The components used in soft-starters are shown in tabular form.

After a series of experimentation on hardware prototype, it is found that the voltage limiting process in the soft starting is efficient method as compared to direct on line and star-delta starter. The amount of voltage is controlled or adjusted by changing the firing angle of SCRs.

Advantages and Disadvantages of Soft Starter

The soft starters used in three phase induction motor eliminate high inrush current and high mechanical torque on startup. It reduces cable and switch-gear rating in power supply network. It prevents any dip in line voltage. The soft starter has desirable features of soft, step-less acceleration & deceleration. It also avoids current and torque peaks and provides less electrical stress on the power supply network and

mechanical stress on entire drive. It reduces stress on couplings and other transmission devices such as gear boxes, shafts, belts etc. The soft starters also suffer from certain drawbacks like harmonics, problems of speed regulation, dependency of acceleration and deceleration time on load etc. It produces harmonics less

than inverter. The operating speed of an electric motor is fixed throughout the operation. The speed regulation of an electric motor is not possible when soft-starters are employed in three phase induction motor. The speed regulation is possible only at the time of starting and stopping of motor. The acceleration & deceleration time also depend on load.

Sr no.	Name of component	Using rating of component	Number of component
1	Transformer	220-240/12V	3
2	Diode	2 1N4007	13
3	Opto-isolator	4N25	2
4	Arduino	ATMEGA328P	1
5	LCD Display	16*2	1
6	Voltage regulator IC	7805	1
7	Capacito	470uF	1
8	TRIAC	BT136	3
9	Toggle switch	120	1
10	Resistance	330 1000 3.3 k 10 k	3 4 3 2 2
11	Bulb	60W	3

14.2.3 Advanced Wireless Power Transfer System

The project is a device to transfer power wirelessly instead of using conventional copper cables and current carrying wires. The concept of wireless power transfer was introduced by Nikolas Tesla. This power is made to be transferred within a small range only for example charging rechargeable batteries etc.

14.2.4 Industrial Temperature Controller

As the name implies, a temperature controller is an instrument used to control temperatures, mainly without extensive operator involvement. A controller in a temperature control system will accept a temperature sensor such as a thermocouple or RTD as input and compare the actual temperature to the desired control temperature, or set point. It will then provide an output to a control element.

Good example would be an application where the controller takes an input from a temperature sensor and has an output that is connected to a control element such as a heater or fan. The controller is usually just one part of a temperature control system, and the whole system should be analyzed and considered in selecting the proper controller.

Advantages of Industrial Temperature Controller

Easy to Implement
Easy to stabilize faster response than just P controller
No steady state error

Disadvantages of Industrial Temperature Controller

Long settling time Steady state error
Can amplify high frequency noise

Narrower range of stability

14.2.5 Accident Alerts in Modern Traffic Signal Control System -Camera Surveillance System

If the speed exceeds the particular value, it sends signal to the other side vehicle to be alert. It also alerts the other side vehicle when someone crosses one side. Thus the high speed vehicle can be traced easily. This project is very much used in traffic controller. It is very accurate and cost effective.

The microcontroller unit calculates the speed=displacement/time taken. If the speed exceeds the particular value, it sends signal to the other side vehicle to be alert. It also alerts the other side vehicle when someone crosses one side. Also it captures the high speed vehicle.

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

Table 15.1 Design Impact On Society

Design name	Estimated construction time	Estimated cost in RS.	Time will benefit	Funding sources
PART I DESIGN				
CIVIL ENGINEERING DESIGN				
Bus Stand	1 to 1.5 month	40592.00	The advantage of all designs is that they are available immediately after completion	District panchayat
Community Toilet Block	2 to 3 month	179680.00		Loc Sabah government
Public Garden	1 to 2 month	431205.00		Local government
Public Library	3 to 3.5 month	551407.00		District panchayat
Community Hall	6 to 7 month	717875.00		Local government
Panchayat Building	Approx 1 year	242187.00		State government
ELECTRICAL ENGINEERING DESIGN				
Street Light	Half month	5920.00	Same as above	Local government
House Wiring	15 to 20 days	74840.00		Owner
Solar Rooftop	2 to 3 days	55600.00		Local government
PART II DESIGN				
CIVIL ENGINEERING DESIGN				
ATM Machine Room	Approx 1 month	130716.00	The advantage of all designs is that they are available immediately after completion	Through the bank
Post Office	2 to 3 month	713741.00		State government
Biogas Plant	Approx 25 days	72328.00		Local people &local government
Aanganwadi	Approx 2 month	706221.00		Local government
Police Station	4 to 5 month	466205.00		Local government
Super Market	3 month	867111.00		Taluka panchayat
ELECTRICAL ENGINEERING DESIGN				
Solar Irrigation	8 to 10 days	55000.00	Same as above	Local government
Solar Street Light	5 to 7 days	31500.00		Local government
Water Level Indicator	Half month	13000.00		State government schemes

#Chapter 16#
Survey by Interviewing With Talati or Sarpanch

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

CHAPTER- 16

Sr.	Questions	Yes/ No	Remarks
1	What are the sources of income in village?	YES	TAX COLLECTION
2	What are the chances of employment in village?	YES	25 %.
3	What are the special technical facilities in village?	No	–
4	Is any debt on village dwellers?	No	–
5	Are village people getting agricultural help?	YES	75 %.
6	Is women health awareness Program organized in village?	No	
7	Are women having opportunity to work and income?	YES	15 %.
8	Child girl education is appreciated in village?	YES	70 %.
9	Facility of vaccination to child is available in village?	YES	-
10	Are village people aware about child vaccination and done to each and every child as per norms?	YES	100 %.
11	Women help line number information is provided to village people?	No	–
12	Is water scarcity in village? How many days per year?	No	–
13	Is village under any debt?	No	–
14	Is any serious issue due to debt from bank or any person happened in village?	No	–
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	No	–
16	Is any death of patient occurred due to unavailability of medical facility in village?	No	–
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	No	–
18	Is village improvement is observed in comparative scenario from past to present?	YES	15 %.
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	90 %.

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

11/05/2021

#Chapter 17#
Irrigation / Agriculture Activates and Agro Industry, Alternate Techniques and Solution

Irrigation activates
Irrigation helps to grow agricultural crops, maintain landscapes, and revegetate disturbed soils in dry areas and during periods of less than average rainfall. Irrigation also has other uses in crop production, including frost protection, suppressing weed growth in grain fields and preventing soil consolidation

Irrigation system
a system of supplying (land) with water by means of artificial canals, ditches, etc, esp. to promote the growth of food crops. a sophisticated irrigation system. 2. a system used to clean the stool out of the colon.

Major problem in irrigation activates
Two of the most common problems with farm irrigation systems have to do with irrigation scheduling. Likewise, starting an irrigation cycle too late or not running the system for a long enough period of time is considered under watering and can cause reduced yields and poor crop quality which can affect price

Solution of irrigation activates problem
Water run-off and pooling You can also adjust the valves and nozzles to deliver water at slower rates to allow adequate time for the water to soak into the soil. In some instances, a drip irrigation system may be the best solution.

Types of irrigation system
I. Surface irrigation running or impounding water over the surface and allowing it to saturate the soil to some depth.
II. Sprinkle irrigation. Spraying water into the air and allowing it to fall on to plants and soil as
III. Simulated rainfall
IV. Drip irrigation.
V. Subsurface eluders
VI. Sub irrigation.

Agro Industry
An agro-industry is an enterprise that processes bio-mass, i.e. agricultural raw materials, which include ground and tree crops as well as livestock and fisheries, to create edible or usable forms, improve storage and shelf life, create easily transportable forms, enhance nutritive value, and extract chemicals.

Type of agro farming
I. Alternative farming techniques
II. Bio dynamic farming
III. Eco farming
IV. HOMA
V. India
VI. LEISA
VII. Natural farming
VIII. Organic farming
IX. Perm culture
X. Polyculture

#Chapter 18#
Social Activities

We have planned many activities in allocated village but all activities postponed due to covid pandemic.

We planned activities list given below with description.

1 children camp:-
We planned small camp for children this camp we planed give basic knowledge of computer, how to write proper exam, information about E- learning platform, etc.

2 Awareness camp:-
We also planned for small 100 to 200 people awareness camp for villager.tin this camp we give information about, agriculture, unbelief , government schema, and many more .

3 tree plantation:-
We planned for around 200 tree pant in Khorana village. For this activity we see the place outside of Khorana village. In this plantation we use neem, mango, Banyan, Ficus religiosa , low water need tree, long life tree, etc. in this activity we have get planed for help by some NGO of Rajkot.

We planned all activity during the project but due to this pandemic not possible any one.

#Chapter 19#

SAGY Questionnaire Survey form with the Sarpanch Signature

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: MOVIYA Gram Panchayat: MOVIYA Ward No. 1

Block: PADDHARI District: RAJKOT

State: GUJARAT L S Constituency: RAJKOT

1. Family Identity and Size

Name of Head of Household	NAVINBHAI R. KOTHARI							Male/ Female	M
SECC Survey ID:		Family Size	3	Over 18	2	6 to 18	1	Under 6	

2. Category & Entitlement Details (Tick as appropriate)

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

2. Adults (above 18 years)

Name	Age	Sex M/F / O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/ N)	Bank A/C (Y/N)	Social Security Pension[5]
NAVINBHAI R. KOTHARI	42	M	N	MARRIED	12th	Y	Y	
BHAVISHABEN N. KOTHARI	41	F	N	"	9th	Y	Y	

3. Children from 6 years and up to 18 years

Name	Age	Sex M/F/O	Disability Y/N	Marital Code*	Level of Education: Code#	Going to School /College (Y/N)	Current Class	Computer Literate Y/N
VIDHI N. KOTHARI	14	F	N	-	1	Y	8	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)

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	No	No
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	0 M
Community Water Tap	Yes / ~~No~~	
Hand Pump (Public / Private)	Yes / ~~No~~	
Open Well(Public / Private)	Yes / ~~No~~	
Other (mention):		

11. Source of Lighting and Power

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

12. Landholding (Acres)

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

13. Principal Occupations in the Household

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

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

15. Agriculture Inputs ✓

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

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

Name	Unit	Quantity

17. Livestock Numbers

Cows: 1	Bullocks: 0	Calves: 2
Female Buffalo: 0	Male Buffalo: 0	Buffalo Calves: 0
Goats/ Sheep: 0	Poultry/ Ducks: 0	Pigs: 0
Any other: Type _____		No. _____
Shelter for Livestock: Pucca / Kutcha / None		
Average Daily Production of Milk(Litres): _____		

18. What games do Children Play

Cycling

19. Do children play musical instrument (mention)

Schedule Filled By:
Principal Respondent:
Date of Survey: 11/05/2021

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

I. Basic Information

a. Gram Panchayat: MOVIYA

b. Block: 1

c. District: RAJKOT

d. State: GUJARAT

e. Lok Sabha Constituency: RAJKOT

f. Number of Wards in the Gram Panchayat: 7

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages:
MOVIYA

Demographic Information

Number of Households 432 Total Population 2252 Male 1154 Female 1098

SC HHs 31 ST HHs — OBC HHs 113 Other HHs —

I. Access to Infrastructure / Facilities / Services

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
a.	ANM/ Health Sub Centre	Y	IN VILLAGE
b.	Nearest Primary Health Centre (PHC)	Y	3 KM
c.	Nearest Community Health Centre (CHC)	Y	2 KM
d.	Nearest Post Office	N	—
e.	Nearest Bank Branch (Any)	Y	7.5 KM
f.	Nearest Bank with CBS Facility	N	—
g.	Nearest ATM	N	—
h.	Nearest Primary School	Y	IN VILLAGE
i.	Nearest Middle School	Y	"
j.	Nearest Secondary School	Y	"
k.	Nearest Higher Secondary School / +2 College	Y	3 KM
l.	Nearest Graduate College	Y	28 KM
m	Nearest ITI / Polytechnic Centre	Y	7 KM
n	Kisan Seva Kendra	Y	IN VILLAGE

	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	N	N
p	Nearest Agro Service Centre	N	N
p	MSP based Government Procurement Centre	N	N
q	Milk Cooperative /Collection Centre	Y	IN VILLAGE
r	Veterinary Care Centre	N	N
s	Ayurveda Centre	N	N
t	E – Seva Kendra	N	N
u	Bus Stop	Y	1 KM
v	Railway Station	N	N
w	Library	N	N
x	Common Service Centre	N	N

IV. Sports Facilities in the Gram Panchayat

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

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 2 (POOR CONDITION)

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: 1

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)	–	–	–	–	GOVT.	YES	–
b.	Kerosene	0	–	–	–	GOVT.	YES	–
c.	Other (mention)	–	–	–	–	–	–	–

(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 _____	MOVIYA	- -
b.	Hand Pump Coverage in Villages:	Covered _____ Not Covered _____	- -	MOVIYA
c.	Coverage under Covered Drains:	Covered _____ Not Covered _____	MOVIYA	- -
d.	Coverage under Open Drains:	Covered _____ Not Covered _____	-	-
e.	Villages with Household Electricity Connection (Numbers)	Connected _____ Not Connected _____	MOVIYA (432)	-

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land		d.	Pasture / Grazing Land	0	g.	Check Dam	0
b.	Irrigated Land	588 HECT.	e.	Forests/ Plantations	7 HECT.	h.	Wells/Bore Wells	3
c.	Un-irrigated Land	5 HECT.	f.	Other Common Land	0	i	Tanks /Ponds	2

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

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)	2
b)	Number of Households receiving pension (old age, widow, disability)	2
c)	Number of eligible Households who are not receiving pension	430
d)	Number of Households eligible for Ration Card	432
e)	Number of eligible HHs having ration cards	0
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	38
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	0
h)	Number of active Job Card holders under MGNREGA	73
i)	Number of Job Card holders who completed 100 days of work during 2013-14	36
j)	Number of shops selling alcohol	0
k)	Number of BPL families	112
l)	Number of landless households	0
m)	Number of IAY beneficiaries	63
n)	Number of FRA[2] beneficiaries	0
o)	Number of Community Sanitary Complexes	0
p)	Number of Households headed by single women	2
q)	Number of Households headed by physically handicapped persons	0
r)	Total number of Persons with Disability in the village	0
s)	Number of SHGs	0
t)	Number of active SHGs	0
u)	Number of SHG Federations	0
v)	Number of Youth Clubs	0
w)	Number of Bharat Nirman Volunteers	0

Name and Signature of Surveyor and Respondent'

RAKSHIT N. PARMAR [signature] N.P. Surveyor	[signature] PRI Respondent (Preferably Gram Panchayat Chairperson)	[signature] 11/5/21 Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	11/05/21 Date of Survey

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

4

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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: MOVIYA
b. Ward Number: 1
c. Gram Panchayat: MOVIYA
d. Block: RAJKOT
e. District: RAJKOT
f. State: GUJARAT
g. Lok Sabha Constituency: RAJKOT
h. Number of Habitations / Hamlets in the Gram Panchayat: _____
i. Names of Habitations / Hamlets: -

Demographic Information

Number of Households 432 Total Population 2252 Male 1154 Female 1098

SC HHs 31 ST HHs - OBC HHs 113 Other HHs -

II. Access to Infrastructure/Amenities etc.

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
a.	Nearest Primary School	Y	IN VILLAGE
b.	Nearest Middle School	Y	"
c.	Nearest Secondary School	Y	"
d.	Kisan Seva Kendra	Y	IN VILLAGE
e.	Milk Cooperative /Collection Centre	N	-
g.	Health Sub Centre	Y	IN VILLAGE
h.	Bank	Y	1 KM
i.	ATM	N	-
j.	Bus Stop	Y	1 KM
k.	Railway Station	N	-

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

1

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SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

ii. Road Connectivity

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

If 3 mention the name of the habitations where not available: 1 - All

iii. Drinking Water Facilities

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

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

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

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

iv. Coverage of Habitations under Waste Management System

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

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

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

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

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

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

. 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: 2 NONE

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

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

i. Sports Facilities in the Village

a.Number of Play Grounds in the Village (minimum size 200 square meters): NO

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

ii. Education, ICDS

a. Number of Anganwadi Centres: 2 (POOR CONDITION)

c. Schools (Number)

Primary Private: N Primary Govt.: 1

Middle Private: N Middle Govt.: 1

Secondary Private: N Secondary Govt.: 1

Higher Secondary Private: N Higher Secondary Govt: 1

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	0	g.	Check Dam	0
b.	Irrigated Land	586 HECT.	e.	Forests/ Plnatations	7 HECT.	h.	Wells/Bore Wells	3
c.	Un-irrigated Land	5 HECT.	f.	Other Common Land	0	I	Tanks /Ponds	2

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	73
2	Number of active Job Card holders who have completed 100 days of work	36
3	Number of shops selling alcohol	0
4	Number of BPL families	112 112
5	Number of landless households	0
6	Number of IAY beneficiaries	63
7	Number of FRA beneficiaries	0
8	Number of common sanitation complexes	0
9	Number of SHGs	0
10	Number of active SHGs	0
11	Existence of SHG Federation in the Village (Yes / No)	0
12	Number of Youth Clubs	0
13	Number of Bharat Nirman Volunteers	0

Name and Signature of Surveyor and Respondent'

RAKSHIT N. PARMAR R.N.P. Surveyor	(ગુજરાતી લખાણ) PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	(ગુજરાતી લખાણ) Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	11/05/21 Date of Survey

#Chapter 20#
TDO-DDO-Collector email sending Soft copy attachment in the

#Chapter 21#
Comprehensive report for the entire village

It is one of the strategies to reduce urban city pressure and lower the migration rate by developing village with a rural soul but with all urban amenities that a city may have. In this project the students meet the relevant citizens of village and survey the existing facilities. Then design of the sustainable infrastructure which is to be modified is carried out for the village. This includes implementation of engineering skills to prepare detailed project reports for village as a part of the final year project work. By this project certain experiences recreates a real work and need of application of an individual technical knowledge on any existing problems. Based on survey we tried to give design of basic facilities to fulfill their needs. By providing these basic facilities to village for reduce urban city pressure and decrease migration rate, which is ultimate aim of Vishwakarma Yojana.

Vishwakarma Yojana is provides special scheme for development of village by GTU and Government of Gujarat in which students work together and collect data and information regards village development with the help of gram Panchyat and stake holders. Village have some basic facilities likes drinking water, drainage system, pucca road, and other facilities like primary school, primary health center, community hall, library, public latrine block, are sufficient so that village can develop. So, we will give proposal regarding sustainable energy sources and solution related to infrastructure problems. Efforts have been made in this project work to identify and plan some of the below facilities for sustainable development of village and to meet need of future population. Vishwakarma Yojana is one of the initiatives towards Urbanization that is village development by the government of Gujarat, which was allotted as a real time situation type project provides to GTU.

Under this project we survey about village, village people, village condition, etc. after study all point we conclude 12 design of civil engineer and 6 design of electrical engineer.

Name of civil engineering design is, 1.Bus stand, 2.Coomunity toilet block, 3.Public garden, 4.Public library, 5.community hall, 6.Panchayat building, 7.ATM machine room, 8.post office, 9. Biogas plant, 10.Police station, 11.aanganwadi, 12.super market.

Name of electrical engineering design is 1. Street light, 2.house wiring, 3.Solar rooftop, 4.solar irrigation system, 5.solar Street light and 6.water level indicator

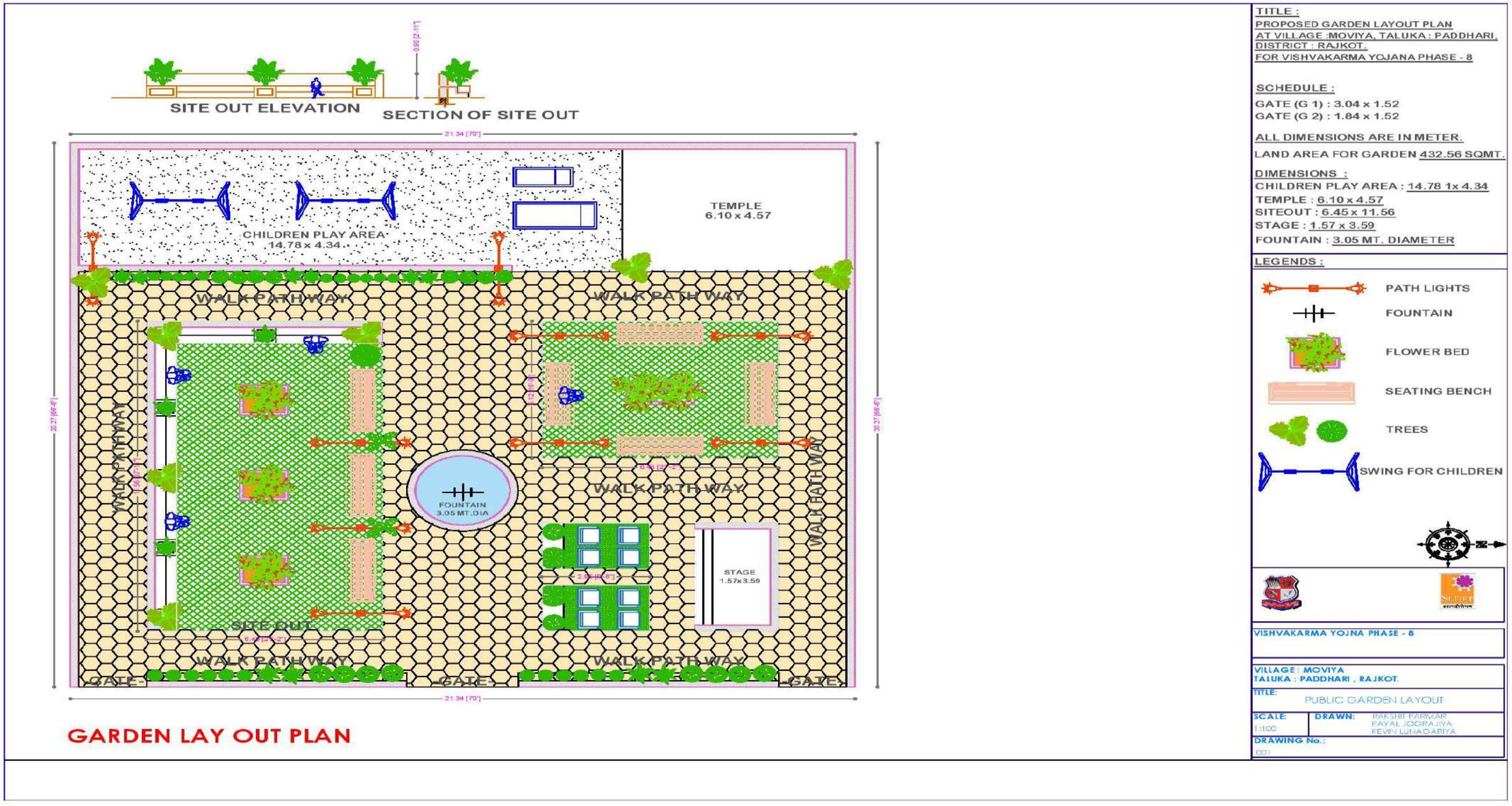


Fig 8.3: Design of public garden

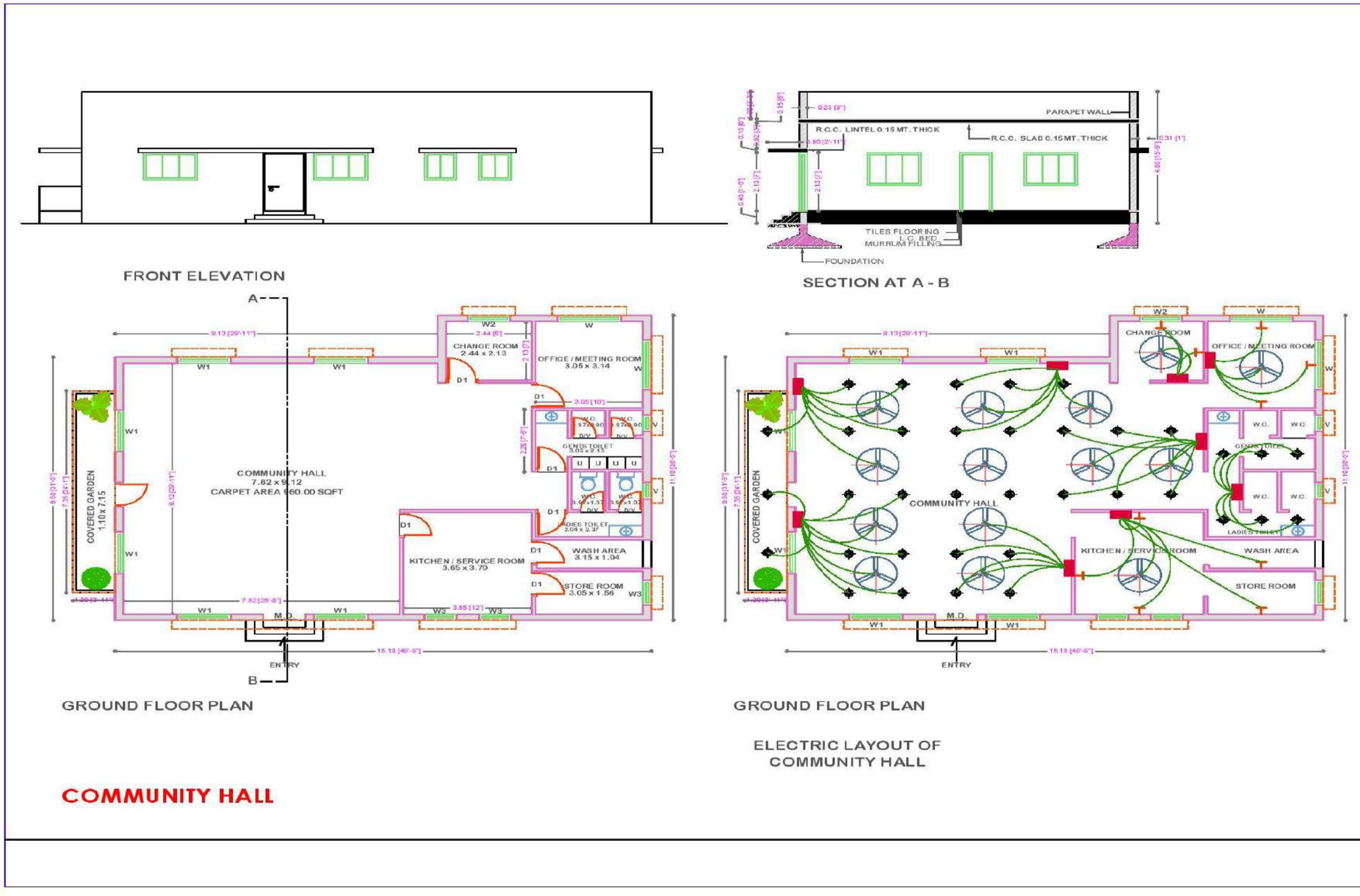


Fig.8.4: Design of Community hall

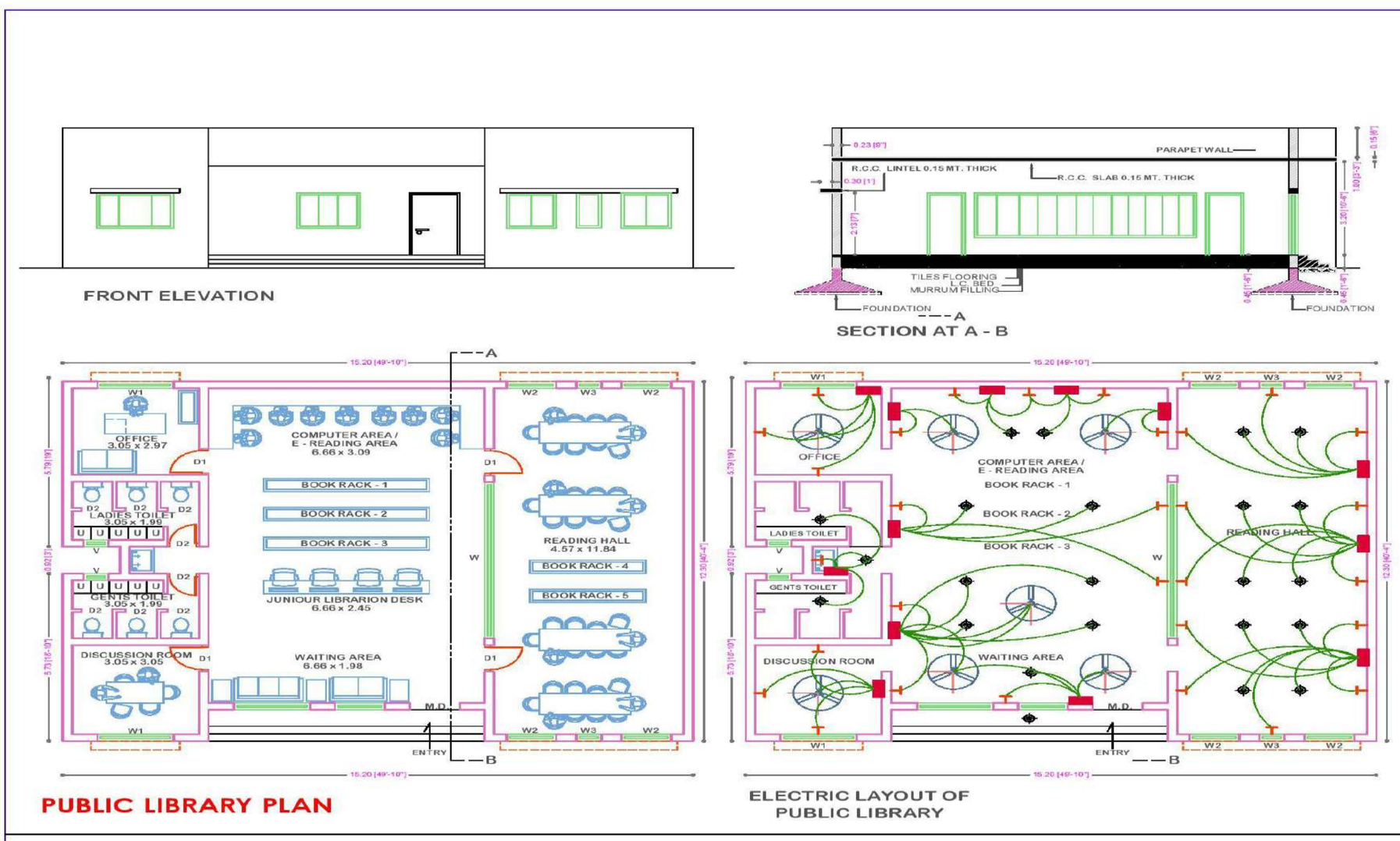


Fig.8.5: Design of Public library

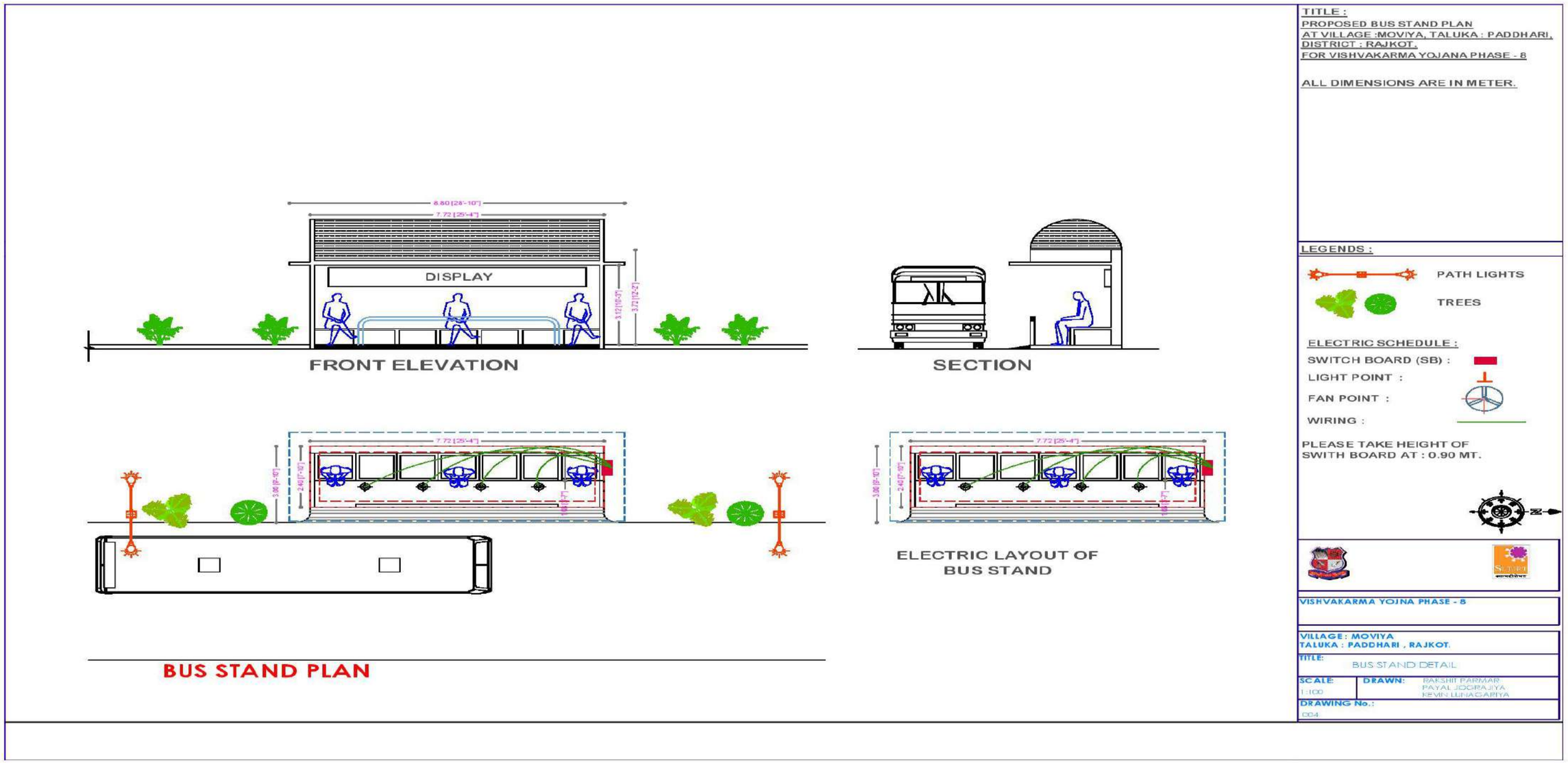
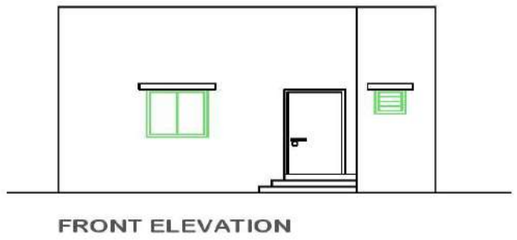
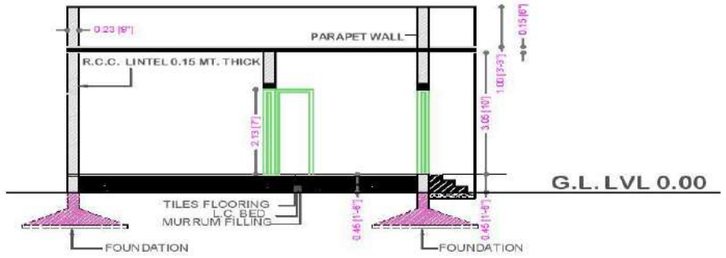
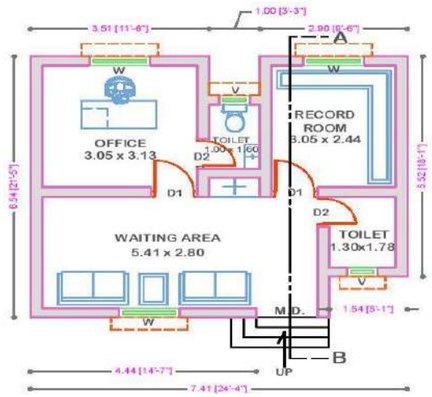


Fig 8.6: Design of Bus stand

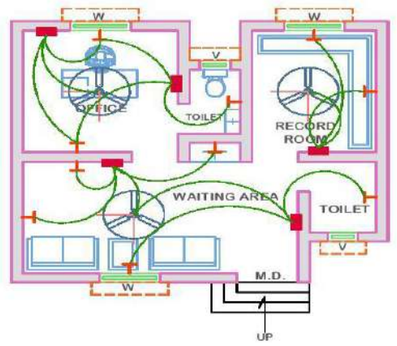




SECTION AT A - B



GROUND FLOOR PLAN



ELECTRIC LAYOUT OF PANCHAYAT BUILDING

ELECTRIC SCHEDULE :
SWITCH BOARD (SB) :
LIGHT POINT :
FAN POINT :
WIRING :

PANCHAYAT BUILDING PLAN

TITLE :
PROPOSED PANCHAYT BUILDING PLAN
AT VILLAGE :MOVIYA, TALUKA : PADDHARI,
DISTRICT : RAJKOT.
FOR VISHVAKARMA YOJANA PHASE - 8

ALL DIMENSIONS ARE IN METER.

SCHEDULE :
M.D.: 1.20 x 2.10
D1 : 0.90 x 2.10
D2 : 0.75 x 2.10
W : 1.20 x 1.20
V : 0.60 x 0.60

ELECTRIC SCHEDULE :
SWITCH BOARD (SB) :
LIGHT POINT :
FAN POINT :
WIRING :
PLEASE TAKE HEIGHT OF
SWITH BOARD AT : 0.90 MT.

VISHVAKARMA YOJNA PHASE - 8

VILLAGE : MOVIYA
TALUKA : PADDHARI , RAJKOT.
TITLE: PANCHAYAT BUILDING
SCALE: 1:100
DRAWN: RAJESHI PARMAR, PAYAL JOGRAJIYA, KEVIN LUNAGARIYA
DRAWING No.: 005

Fig 8.7: Design of Panchayat building

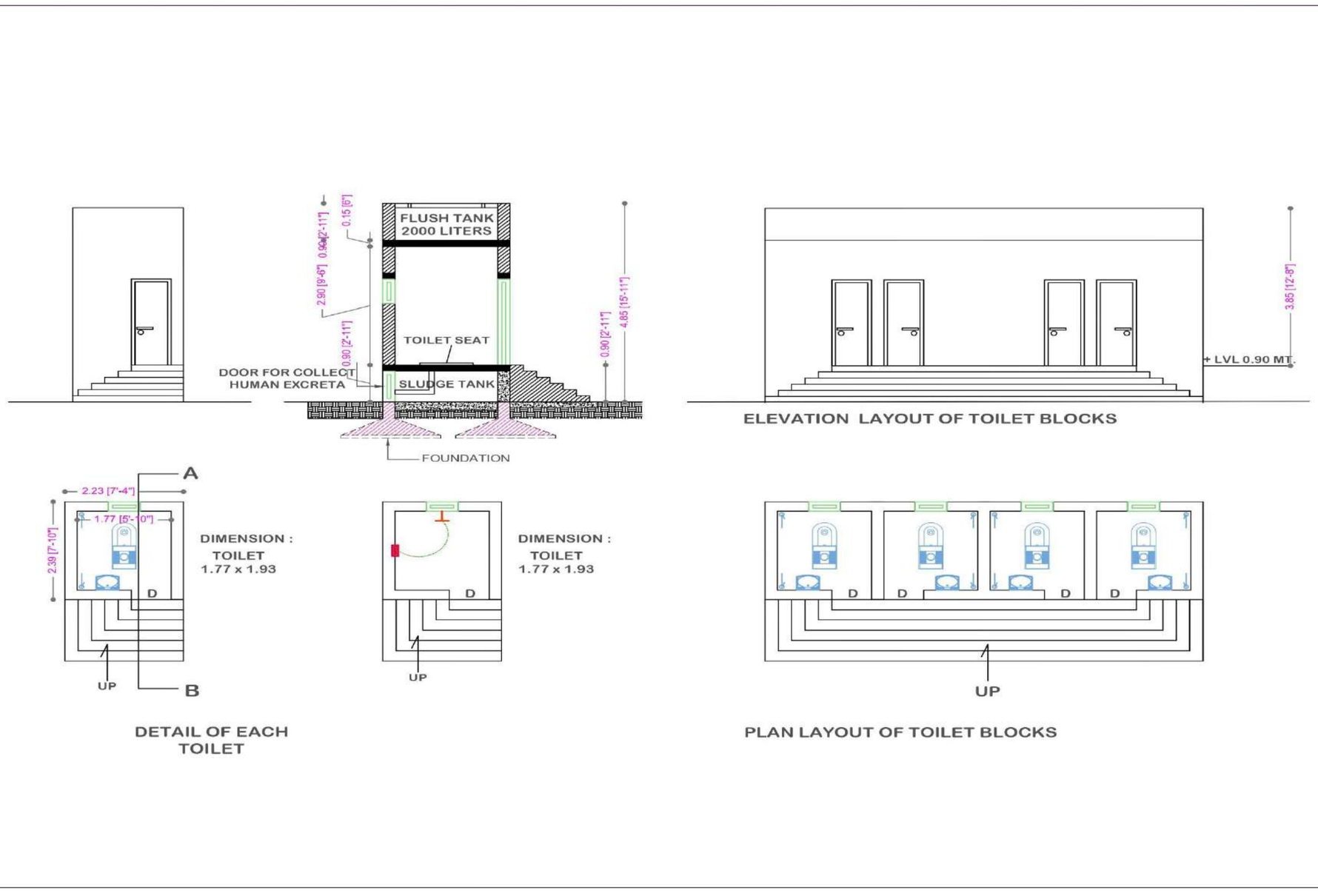


Fig 8.8: Design of Public toilet

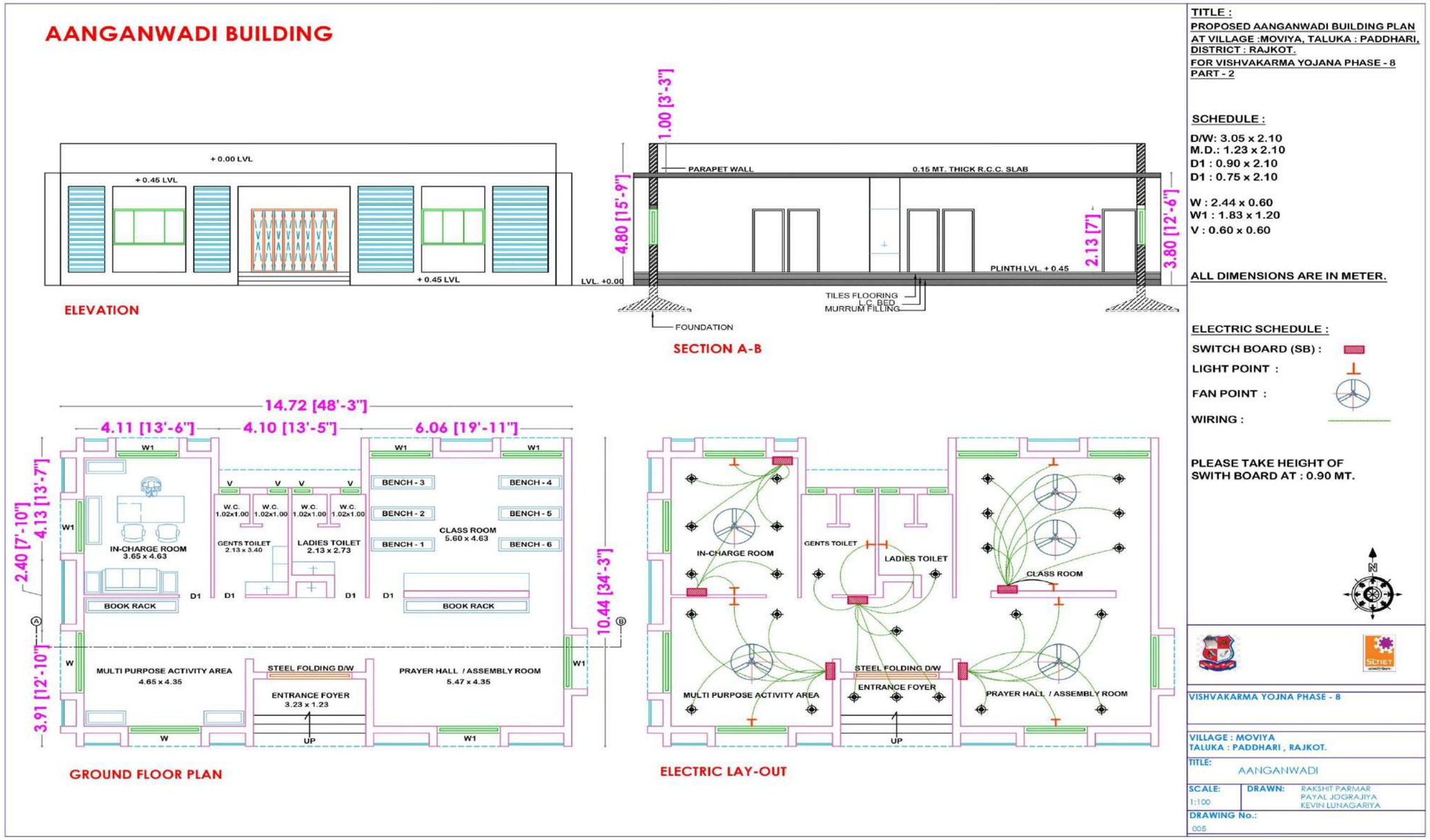


Fig 13.1: Design of Aanganwadi building

Fig 13.2: Design of ATM machine room

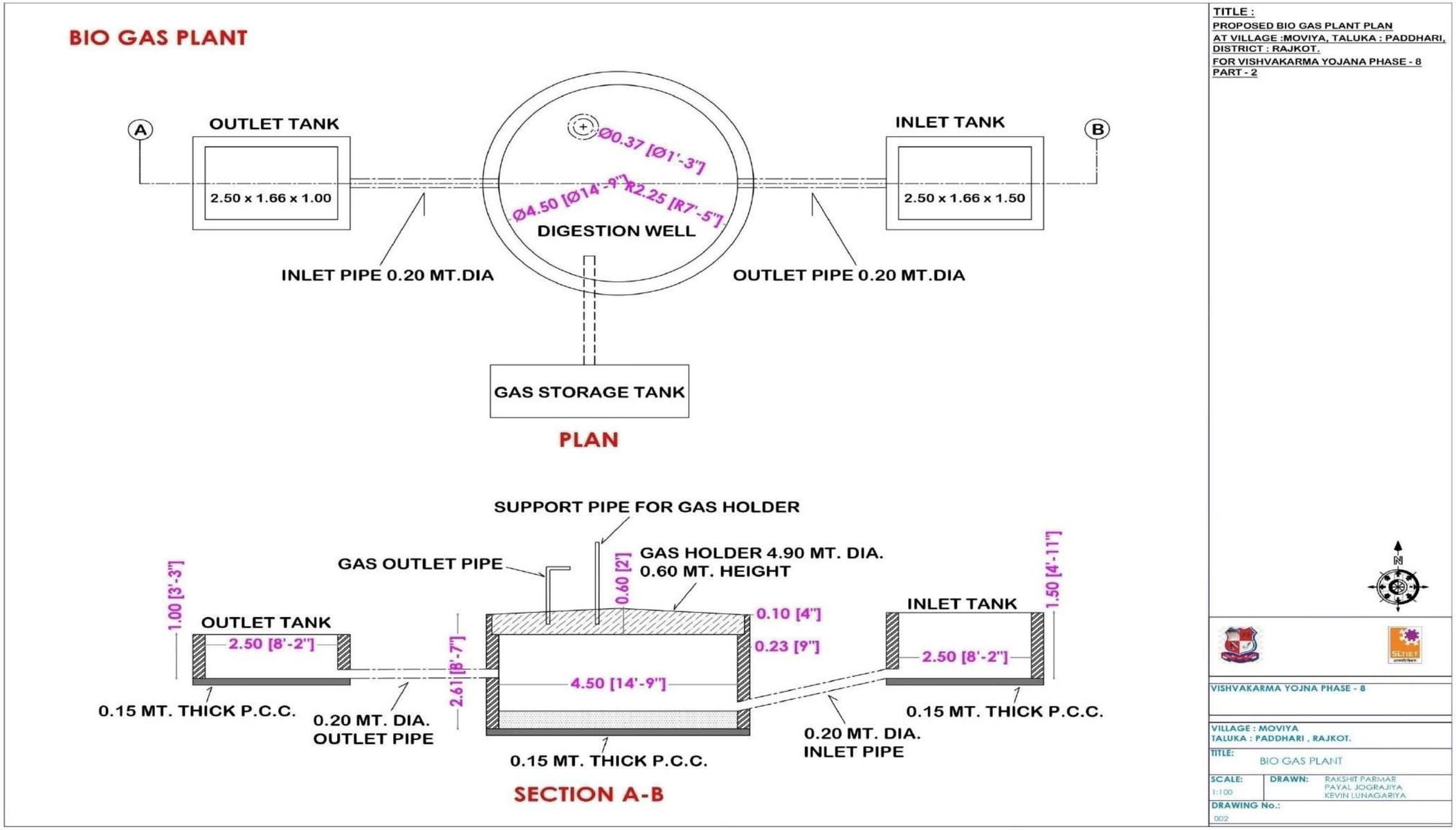


Fig 13.3: Design of Bio gas plant

Fig 13.4: Design of Police station

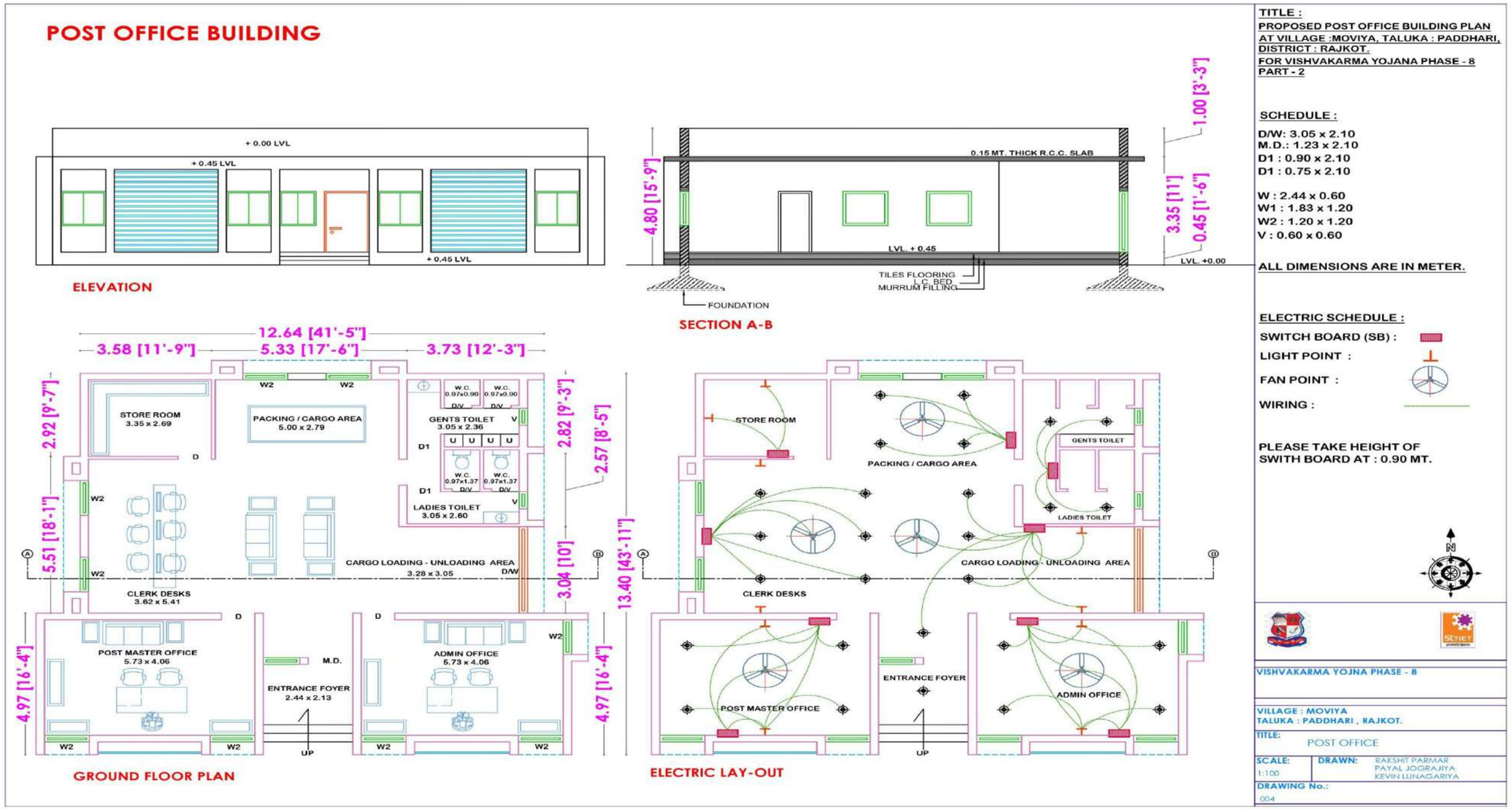


Fig 13.5: Design of Post office building

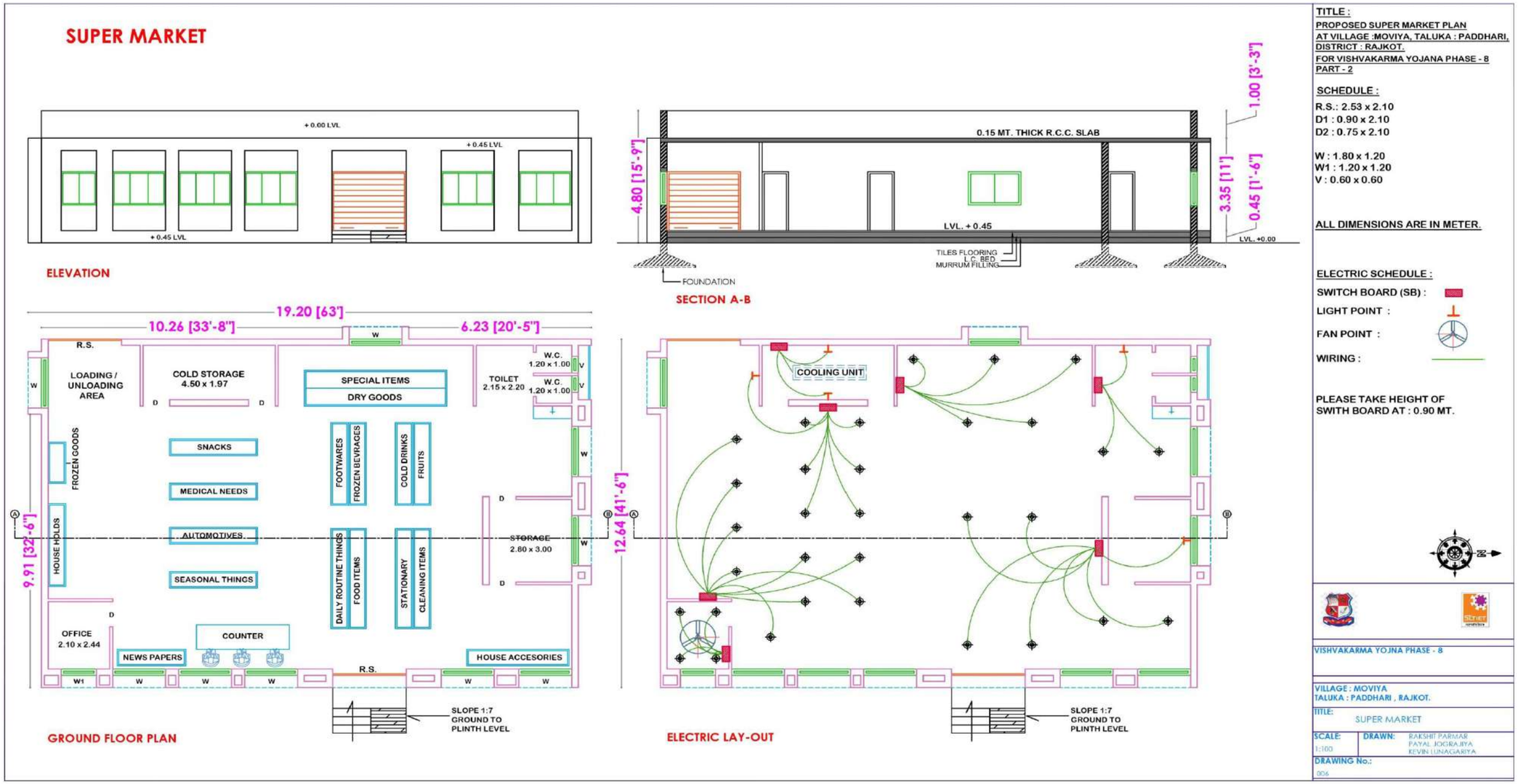


Fig 13.6: Design of Super market