ARCHITECTURE THESIS REPORT 2019-2020

FOREST RESEARCH & TRAINING INSTITUTE, LUDHIANA, PUNJAB

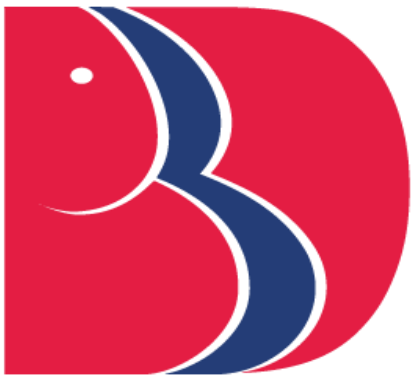
A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

BACHELOR OF ARCHITECTURE
IN
ARCHITECTURE

By
MOHAMMAD HAMZA AFTAB
(Enrollment No. - 1140101102)

Under the Supervision of
Prof. K.K.DIXIT

To the
School of Architecture



BBD UNIVERSITY

May, 2020

ACKNOWLEDGEMENT

I am highly indebted to the School of Architecture, **Babu Banarasi Das University,** Lucknow for providing me the opportunity to do study and evolve my design for ***"FOREST RESEARCH & TRAINING INSTITUTE"*** for the partial fulfilment of the requirements for the degree of Bachelor of Architecture. I sincerely thank Prof. K.K. Dixit sir my guide & Ar. Keshav Verma sir my supervisor for guiding me in every stage of evolution. I would also like to thank the Dean of school of Architecture Prof. Mohit Kumar Agarwal and the entire faculty for their kind support in evolution of project.

Also I would also like to thank my friends YASHASHWI SHARMA & HIMANSHU CHAUBEY my juniors MIRZA MAZHER HUSSAIN and CHARMAINE BEATRICE SYDNEY my senior Ar. SUMIT PRATAP SINGH for their keen support and enthusiastic approach in assisting. There has been strong support from my fellow mates. Lastly I would like to thank my parents and family member for always encouraging me morally.

MOHAMMAD HAMZA AFTAB
(Signatures of the candidate)

CERTIFICATE

I hereby recommend that the thesis, entitled “FOREST RESEARCH & TRAINING INSTITUTE”, prepared by Mr. MOHAMMAD HAMZA AFTAB under the supervision of my thesis guide, this is the bonafide work of the student and can be accepted as fulfillment for the award of BACHELOR’S DEGREE in (ARCHITECTURE) SCHOOL OF ARCHITECTURE, BBDU, LUCKNOW.

…… … PROF. K.K. DIXIT
(Signatures of the Supervisor)

……. PROF. MOHIT AGARWAL (DEAN)
SCHOOL OF ARCHITECTIRE

Recommendation:

ACCEPTED

NOT ACCEPTED

…….. EXAMINAR-1

……..… EXAMINAR-2

BABU BANARASI DAS UNIVERSITY, LUCKNOW

CERTIFICATE OF THESIS SUBMISSION FOR EVALUATION

1. Name: MOHAMMAD HAMZA AFTAB
2. Roll No. : 1140101102
3. Thesis title: **FOREST RESEARCH & TRAINING INSTITUTE, LUDHIANA, PUNJAB**
4. Degree for which the thesis is submitted:
5. Faculty of the University to which the thesis is submitted
6. Thesis Preparation Guide was referred to for preparing the thesis. YES NO
7. Specifications regarding thesis format have been closely followed. YES NO
8. The contents of the thesis have been organized based on the guidelines. YES NO
9. The thesis has been prepared without resorting to plagiarism. YES NO
10. All sources used have been cited appropriately. YES NO
11. The thesis has not been submitted elsewhere for a degree. YES NO
12. Submitted 3 spiral bound copies plus one CD. YES NO

……..
(Signature) of the supervisor

NAME, ADDRESS:

……
(Signature of the Candidate)

NAME: -

……

Roll no. :-

……

Enrollment no.: -

……

BABU BANARASI DAS UNIVERSITY, LUCKNOW

B.ARCH THESIS 2019-2020

CERTIFICATE

NAME OF STUDENT: **MOHAMMAD HAMZA AFTAB**

ROLL NO. : **1140101102**

DEPARTMENT: **BACHELOR OF ARCHITECTURE**

THESIS TITLE: **FOREST RESEARCH & TRAINING INSTITUTE, LUDHIANA, PUNJAB**

THESIS GUIDE: **Prof. K.K.DIXIT**

REMARKS: STATISFACTORY / NOT SATISFACTORY (In case of not Satisfactory give comment

……
Signature of thesis guide

……
Signature of External Examiner: 1

……
Signature of thesis coordinator

……
Signature of External Examiner: 2

……
Signature of Head of Department

……
Signature of Dean of School

FOREST RESEARCH &TRAINING INSTITUTE, LUDHIANA, PUNJAB

CONTENT

WHAT IS FOREST RESEARCH INSTITUTE:

The forest research institute is and institute of the Indian Council of Forest Research and Education and is a premier institution in the field of forestry research in India. It is located at Dehradun in Uttarakhand and is one of the oldest institution of its kind. In 1991, it was declared a deemed university by the Founded in 1878 British Imperial Forest School by Dietrich Brandis. In 1906, reestablished as the 'Imperial Forest Research Institute', under the British Imperial Forestry Services (IFS).The 'Indian Forest College' was established in 1938; officers recruited to the Superior Forest University Grants Commission.

FOREST RESEARCH and ARCHITECTURE:

Established as Imperial Forest Research Institute in 1906, the Forest Research Institute (FRI) Dehradun, was first situated at Chandhbagh (the present location of the Doon School) on the Mall Road. A much larger campus at the present location was acquired ca 1923. Construction of the new buildings commenced thereafter. Styled in Greco-Roman Architecture by C.G. Bloomfield, the main building was inaugurated in 1929 by then Viceroy Freeman Freeman-Thomas, 1st Marquess of Willingdon. It is now a National Heritage site.

Forest Research Institute Dehradun is among the oldest institutions of its kind and acclaimed the world over. The institute's history is virtually synonymous with the evolution and development of scientific forestry, not only in India, but over the entire sub-continent. Built over 450 hectares, with the outer Himalaya forming its back drop, the institute's main building combines Greco-Roman and Colonial styles of architecture, with a plinth area of 2.5 hectares. The building was listed for a time, in the Guinness Book of Records, as the largest purely brick structure in the world. The institute has a developed infrastructure of all equipped laboratories, library, herbarium, arboreta, printing press and experimental field areas for conducting forestry research, quite in keeping with the best of its kind anywhere in the world. It is 7 km from Clock Tower, on the Dehradun-Chakrata motorable road. It is the biggest forest based training institute in India. Most of the forest officers are a part of this institute. The FRI's building also houses a Botanical Museum and there are many different kind of trees from around the world.

ABOUT FOREST RESEACH & TRAINING INSTITUTE:

Forest Research is Great Britain's principal organisation for forestry and tree related research and is internationally renowned for the provision of evidence and scientific services in support of sustainable forestry. Forest Research works for and with many Government departments, all the devolved administrations, forestry and land management stakeholders, environmental NGO's, the European Union and internationally.X

WHAT DOES AN INSTITUTE INCLUDES:

It provides basic array of services:

• Instructional services including classroom, educational materials and equipment, office and storage, teachers, aides and other specialists.
• Food services including fully equipped kitchen, dining room, cooks, and other personnel.
• Residential services including furnished rooms, linen, laundry, house-parents, and other
personnel.
• Extracurricular and recreational services, both on the campus and the community.
• Health-care services including clinic and medical staff.
• Maintenance and administrative services.
• Training centers for employment generation.

The entire campus of the institute is designed, equipped and staffed specifically to meet the needs of the visually impaired children. In addition to the classroom teachers, there may be other specialists in physical education, orientation & mobility , activities of daily living, music, craft teaching, occupational therapy, career counselling, vocational counselling, social work and psychology. The educational materials, educational and mobility devices and specialized equipment are accessible to all the students throughout the campus.

AIM AND OBJECTIVE:

For institute advanced studies and research in forestry, wood science and technology, forest environment and ecology including Flora and Fauna. To find ways and means to enhance productivity and to obtain optimum amount pf produce from both natural and manmade forests and accordingly to undertake studies on nutritional requirements, seed testing and certification established of species, fertilizers trials improving yield of timber, fuel wood and fodder. Research of biological control of pests and plant diseases and any other field of research as the institute may deem necessary from time to time. To work as multidisciplinary and interdisciplina- ry research institute oriented to meet the requirements of the forestry and forest based industries.To undertake utilization research for determining the suitability of different species for different industries and constructional uses.To study and monitor the change in the quality of environment with reference to Biomass, production ,studies relevant to the management of Wildlife Sanctuaries,National Parks and Natural Conservation Reserves.

NEED:

With the increasing technology and population in Ludhiana. The forest cover is decreasing day by day. Forests have a profound influence on our lives:

*On our environment and health.
*On our access to green space.
*On our landscape and their biodiversity
*As a raw material for construction, fuel and other uses
*On livelihoods and the rural economy.
*So it is essential preserve them and also make provisions for their betterment by performing research based programme.
*And which is the only possible by evolving the project in the state.

There must be a full range of program options and support services so that the Individualized Education Program (IEP) team can select the most appropriate placement in least restrictive environment of each individual student.There must be adequate personel preparation programs to train staff to provide specializwd services which address the unique and non-academic curriculum needs of students with visual impairments.There must also be ongoing specialized personnel development opportunities for all staff working with these students as well as specialized parent education.

SITE STUDY:

INTRODUCTION TO THE PROPOSAL :-

The Forest Research Institute (FRI) is an institute of the Indian Council of Forestry Research and Education and is a premier institution in the field of forestry research in India. It is located at
Dehradun in Uttarakhand, and is among the oldest institutions of its kind. In 1991, it was declared a deemed university by the University Grants Commission.
Wildlife science is a upcoming discipline in India. One of the work objectives of forest research
institute is to strengthen the countrywide conservation effort through generation of scientific
information and creating a trained manpower base of biologists, wild life ecologist,
socio economist & managers.
The increase in human numbers and activity has had an enormous impact on the environment
. The diversity of life on earth has diminished. In less than 200 years, the planet has lost
6 million sq.km. of the forest and In the meanwhile a lot of wildlife species. Every
nation needs a comprehensive system of protected areas, but without adequate resources a system cannot be successful.

Indian Institute of Forest Management, Bhopal (IIFM)

Climate change and global warming is the greatest environmental challenge of the twenty-first century in India as well as globally. This leads the major global threats viz. poverty, hunger, population growth, armed conflict, air pollution, water pollution, displacement, soil degradation, deforestation and desertification. It is necessary to find a solution of climate change concern.
There are several approaches to slowing of this critical
situation in India. Forestry education is one of the best tool to fight these challenges
. Forestry education became a powerful tool to manage the natural resources in sustainable manner. In
India, forestry education was introduced first in 1976 at Solan. Forestry education is a process of alleviating teaching, learning, storytelling, acquisition of knowledge, skills, training, values, habits, beliefs and directed research of forestry subject.
Forestry science is an art and science (applied science as well as traditional science) to understanding, creating, managing, conserving and using wisely the natural resources for human and environmental benefits.

Forest Research Institute, Dehradun (FRI)

Kerala Forest Research Institute (KFRI)

HISTORY :-

It is one of the most ancient civilizations in the world with a distinguished culture. Punjabi language has its origins in the Indo-European family of languages which included Persian and Latin. A land of ethnic and religious diversity, it is birth place of a number of religious movements. Some of the prominent ones include Sikhism, Buddhism and many Sufi schools of Islam.
The Indian State of Punjab was created in 1947, when the partition of India split the former Raj province of Punjab between India and PakistanThe name Punjab is made of two words Punj (Five) + Aab (Water) i.e. land of five rivers. These five rivers of Punjab are Sutlej, Beas, Ravi, Chenab, and Jhelum. Only Sutlej, Ravi and Beas rivers flow in today's Punjab. The other two rivers are now in the state of Punjab, situated in Pakistan. The Punjab State is divided into three regions: Majha, Doaba and Malwa. Agriculture is the mainstay of Punjab's economy. Other major industries include manufacturing of scientific instruments, electrical goods, financial services, machine tools, textiles, sewing machines etc.. Punjab is considered to have the best infrastructure in India; this includes road, rail, air and river transport links that are extensive throughout the region. Punjab also has the lowest poverty rate in India and has won the best state performance award, based on statistical data compiled by the Indian Government.

LOCATION :-

Punjab extends from the latitudes 29.30° North to 32.32° North and longitudes 73.55° East to 76.50° East. Punjab is bounded on the west by Pakistan, on the north by Jammu and Kashmir, on the northeast by Himachal Pradesh and on the south by Haryana and Rajasthan.
Ludhiana is a city and a municipal corporation in Ludhiana district in the Indian state of Punjab. Ludhiana is located at 30.9°N 75.85°E. It has an average elevation of 244 metres (798 ft). Ludhiana is 107 kilometres west of the state capital, Chandigarh, on NH 95, and is centrally located on National Highway 44, which runs from New Delhi to Amritsar.

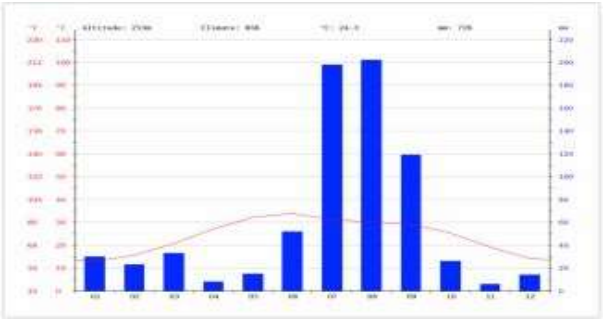
It is 315 km north of Delhi and 142 km southeast of Amritsar. The ground is of yellow sandstone and granite, forming small hillocks, plateaus and dips. The tree of largest natural extraction was the kikar, or Acacia indica, but has been supplanted by the eucalyptus, transplanted from rural Australia in the late 1950s by the government of Chief Minister Pratap Singh Kairon. Gulmohars and jacarandas were planted by the British along the avenues of Civil Lines, as were other flowering trees, while the Old City contains almost no vegetation or parks, except for a few isolated pipal trees, holy to the Hindus, as it is supposed to be the abode of Lord Shiva.

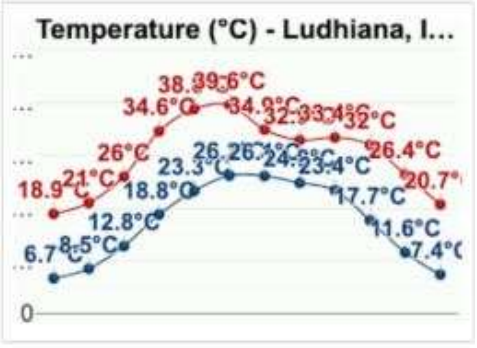
CLIMATE :-

Ludhiana features a humid subtropical climate under the Köppen climate classification, with three defined seasons; summer, monsoon and winter. Ludhiana on average sees roughly 890 millimetres of precipitation annually. The state has a balanced amalgamation of heat in summer, rain in monsoon and cold in winter. Punjab experiences both summer and winter to its extreme. It even receives abundant rainfall, which makes the state a very fertile land. The region lying near the foot hills of Himalayas receive heavy rainfall whereas the region lying at a distant from the hills, the rainfall is scanty and the temperature is high. The summer months span from mid April to the end of June. The rainy season in Punjab is from early July to end of September. October marks the beginning of the winter season. From December onwards, the winter becomes chilly. Most of the major festivals of Punjab, like Lohri, Holla Mohalla, Diwali, and Dussehra, fall during this period.

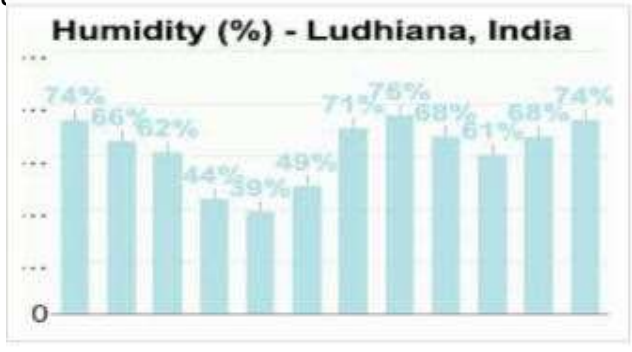
	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	12.9	15.6	20.7	27.1	32.2	33.9	31.2	30.1	28.7	26.3	19.2	14.2
Min. Temperature (°C)	5.7	8.2	12.8	18.4	23.8	26.9	25.6	25.6	23.9	17.2	9.9	5.9
Max. Temperature (°C)	20.1	23.1	28.7	35.8	40.7	41	35.6	34.4	34.6	33.4	28.5	22.6
Avg. Temperature (°F)	55.2	60.1	69.3	80.8	90.0	93.0	88.2	86.2	84.4	77.5	66.6	57.6
Min. Temperature (°F)	42.3	46.8	55.0	65.1	74.8	80.4	78.9	78.4	74.3	63.0	49.8	42.6
Max. Temperature (°F)	68.2	73.6	83.7	96.4	105.3	105.8	96.4	93.9	94.6	92.1	83.1	72.7
Precipitation / Rainfall (mm)	30	23	33	8	15	52	168	202	119	26	6	14

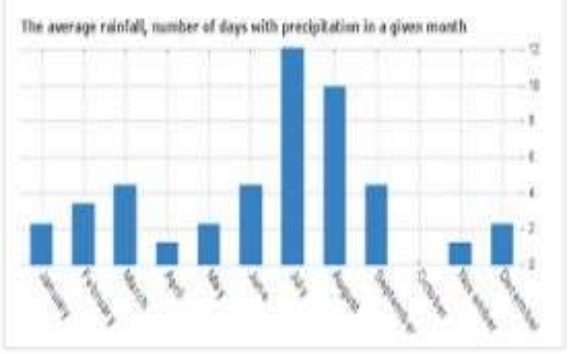
TEMPERATURE CHART BY MONTH

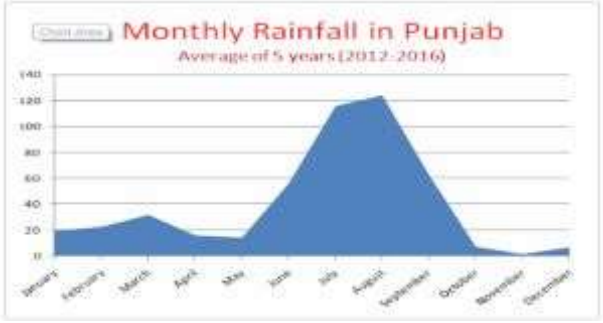




TEMPERATURE & CLIMATE - `GRAPH

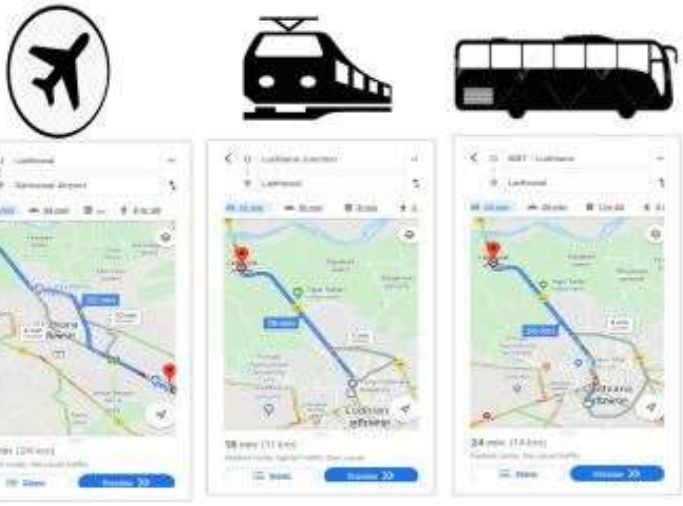






SITE ANALYSIS & APPROACH :-

Client: State Government of PUNJAB.
Location: Majara Kalan, Ladhowal, Ludhiana
Area: 6 Acre , 24281 sq.m.
F.A.R: 1.15 Min – 1.3 Max
Maximum Height: 18m
Proximity: Sahnewal Airport – 32 min (24 km)
Ludhiana Junction – 18 min (11 km)
ISBT Ludhiana – 24 min (14 km)
Vegetation: Small Grass, Shrubs & Trees (>10m)
Topography:
Climate: Humid Subtropical / 40°c - 5°c / 890mm rainfall



LANDMARKS :-

Hospital: Nitesh Medicose 3 min (1km) from site.

Police Station: 16 min (11 km) from site.

Fire Station: 16 min (11 km) from site.

Highway: 20 min (13km) from site.

Toll Plaza: 5 min (2.2 km) from site.

SERVICES :-

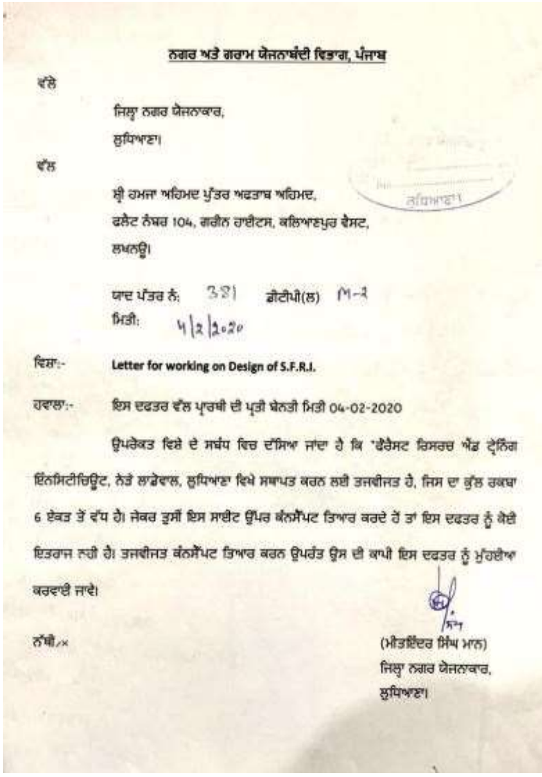
Main Sewer Line – 5 km apart from the site.

Manhole – directed towards sewer line.

Electric line – High tension line running
across with sub station 3 km from site.

Water – Underground Water.

SITE APPROVAL :-



ਨਗਰ ਅਤੇ ਗਰਾਮ ਯੋਜਨਾਬੰਦੀ ਵਿਭਾਗ, ਪੰਜਾਬ

ਵੱਲੋ

ਜਿਲ੍ਹਾ ਨਗਰ ਯੋਜਨਾਕਾਰ,
ਲੁਧਿਆਣਾ।

ਵੱਲ

ਸ੍ਰੀ ਹਮਜਾ ਅਹਿਮਦ ਪੁੱਤਰ ਅਫਤਾਬ ਅਹਿਮਦ,
ਫਲੈਟ ਨੰਬਰ 104, ਗਰੀਨ ਹਾਈਟਸ, ਕਲਿਆਣਪੁਰ ਵੈਸਟ,
ਲਖਨਊ।

ਯਾਦ ਪੱਤਰ ਨੰ: 381 ਡੀਟੀਪੀ(ਲ) ਐਮ-2
ਮਿਤੀ: 4/2/2020

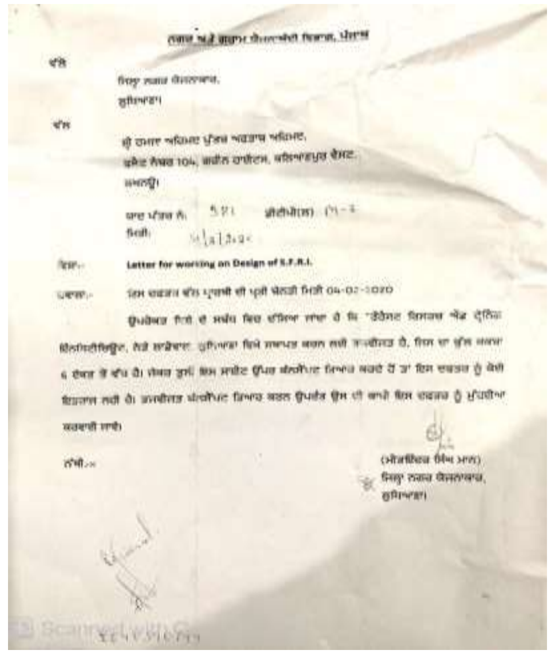
ਵਿਸ਼ਾ:- Letter for working on Design of S.F.R.I.

ਹਵਾਲਾ:- ਇਸ ਦਫਤਰ ਵੱਲ ਪ੍ਰਾਰਥੀ ਦੀ ਪ੍ਰਤੀ ਬੇਨਤੀ ਮਿਤੀ 04-02-2020

ਉਪਰੋਕਤ ਵਿਸ਼ੇ ਦੇ ਸਬੰਧ ਵਿਚ ਦੱਸਿਆ ਜਾਂਦਾ ਹੈ ਕਿ "ਫੌਰੈਸਟ ਰਿਸਰਚ ਐਂਡ ਟ੍ਰੇਨਿੰਗ ਇੰਨਸਿਟੀਚਿਊਟ, ਨੇੜੇ ਲਾਡੋਵਾਲ, ਲੁਧਿਆਣਾ ਵਿਖੇ ਸਥਾਪਤ ਕਰਨ ਲਈ ਤਜਵੀਜਤ ਹੈ, ਜਿਸ ਦਾ ਕੁੱਲ ਰਕਬਾ 6 ਏਕੜ ਤੋਂ ਵੱਧ ਹੈ। ਜੇਕਰ ਤੁਸੀਂ ਇਸ ਸਾਈਟ ਉੱਪਰ ਕੰਨਸੈਪਟ ਤਿਆਰ ਕਰਦੇ ਹੋ ਤਾਂ ਇਸ ਦਫਤਰ ਨੂੰ ਕੋਈ ਇਤਰਾਜ ਨਹੀ ਹੈ। ਤਜਵੀਜਤ ਕੰਨਸੈਪਟ ਤਿਆਰ ਕਰਨ ਉਪਰੰਤ ਉਸ ਦੀ ਕਾਪੀ ਇਸ ਦਫਤਰ ਨੂੰ ਮੁਹੱਈਆ ਕਰਵਾਈ ਜਾਵੇ।

ਨੱਥੀ:-x

(ਮੀਤਇੰਦਰ ਸਿੰਘ ਮਾਨ)
ਜਿਲ੍ਹਾ ਨਗਰ ਯੋਜਨਾਕਾਰ,
ਲੁਧਿਆਣਾ।



ਨਗਰ ਅਤੇ ਗਰਾਮ ਯੋਜਨਾਬੰਦੀ ਵਿਭਾਗ, ਪੰਜਾਬ

ਵੱਲੋ

ਜਿਲ੍ਹਾ ਨਗਰ ਯੋਜਨਾਕਾਰ,
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ਵੱਲ

ਸ੍ਰੀ ਹਮਜਾ ਅਹਿਮਦ ਪੁੱਤਰ ਅਫਤਾਬ ਅਹਿਮਦ,
ਫਲੈਟ ਨੰਬਰ 104, ਗਰੀਨ ਹਾਈਟਸ, ਕਲਿਆਣਪੁਰ ਵੈਸਟ,
ਲਖਨਊ।

ਯਾਦ ਪੱਤਰ ਨੰ: 381 ਡੀਟੀਪੀ(ਲ) ਐਮ-2
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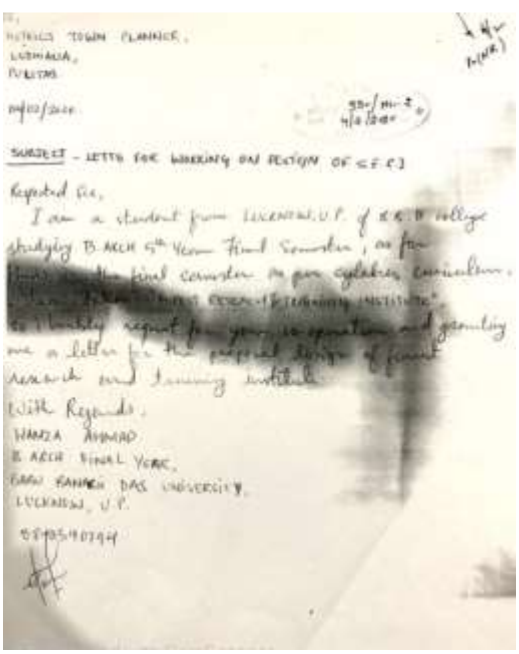
ਨੱਥੀ:-x

(ਮੀਤਇੰਦਰ ਸਿੰਘ ਮਾਨ)
ਜਿਲ੍ਹਾ ਨਗਰ ਯੋਜਨਾਕਾਰ,
ਲੁਧਿਆਣਾ।

TOP LEFT, RIGHT & BOTTOM LEFT - LETTER OF APPROVAL FOR RESEARCH & DESIGN OF FOREST RESEARCH INSTITUTE BY THE CHIEF TOWN PLANNER.



To,
District Town Planner,
Ludhiana,
Punjab

04/02/2020

SUBJECT - Letter for working on Design of S.F.R.I

Respected Sir,

I am a student from Lucknow, U.P. of B.B.D college studying B.Arch 5th Year Final Semester, as for [illegible] final semester as per syllabus curriculum, [illegible] Forest Research & Training Institute", so I kindly request for your co-operation and granting me a letter for the proposed design of forest research and training institute.

With Regards,
Hamza Ahmad
B.Arch Final Year,
Babu Banarsi Das University,
Lucknow, U.P.
[illegible]

TOP – CHIEF ARCHITECTS OF GREATER LUDHIANA DEVELOPTMENT AUTHORITY
BOTTOM - CHIEF TOWN PLANNER OF LUDHIANA

S.W.O.T ANALYSIS :-

STRENGTH:
The site location is on the outer areas with land use of both agricultural & Industrial use.
The land use will help in improvising of design & services.
Connected to the main highway for ease of transportation & movement.
Present in the greens which will provide it a focal point.

WEAKNESS:
In the outer area making it vulnerable to delay in infrastructure development.
No special views apart from greenery.

OPPURTUNITIES:
As well connected with public transport there is opportunity to create universal and culturally rich commercial and public spaces.
Access via two roads helps in planning of hotel, office, community spaces, shopping complex appropriately.
Generation of mixed use environment and a chance to create a new landmark in civil lines.

THREAT:
With factories and industries on a distance making it vulnerable for security reasons.

CASE STUDY

FOREST RESEARCH INSTITUTE(FRI),
DEHRADUN

INTRODUCTION

Forest Research Institute (FRI) , has its roots in the erstwhile Imperial Forest Research Institute established in 1906 to organise and lead Forestry rearch activities in the country. Its histrory is synonymous with evolution and development of scientific forestry not only in India but in subcontinent . In 1988 FRI and its research centers were brought under the administrative umbrella of India Council of Forestry & Education (ICFRE) under the ministry of Environment forest, Government Of India.

The institute, set in the sylvan surroundings of the Doon Valley , with the outer Himalayas forming its backdrop.

In December 1991, it was conferred the status of deemed university on the recommendation of University Grants Commission (UGC).

ARCHITECT & ARCHITECTURE

Architect C.G.BLOMFIELD styled the building in Greek Roman Architecture. The main buildings is National Heritage of India.

With the elements of colonial style and a plinth area of 2.8 hectare.

The ceilings, vaulted roofs domes & arcades are its main features.

Corinthian columns with Triangulat pediments.

SITE AREA : 409 Hectare
MUSEUM & ADMINISTRATIVE BLOCK : 2.8 Hactaer
ARCHITECT : C.B.Blomfield
ENGINEER : Ms.Rose
BUILDER : Sardar Ranjit Singh

LONGITUDE : 78.04 *E

LATITUDE : 30.19*N

LOCATION OF FRI Forest

Research Institute Dehradun (FRI) is situated in Dehardun which is the capital of Uttrakhand,India

It is situated near Ballupur adjacent to Indian Military ,Academy in Dehardun Vikas Nagar Poanta Sahib road , NH72.

CONNECTIVITY

Regional it is connected by main Dehradun railway station which is
6.3 Km and main bus station which is 8.1 Km away.
Also it is on NH72 which easily connects its with other regions.

LOCALLY

Locally FRI is connected with the city by bus services and vikam
rikshaw services.
Nearest bus stop id Balliwala Chowk bus stop which is 3.1 Km.

VARIOUS COURCES

1).Masters Degree Programme (32 Students in each class)
*M.SC.Forestry
*M.SC. Wood Science & Technology
*M.SC.Enviroment Management
2).Post Masters Diploma
*Natural resource managment
*Non wood forest products
3).Post grad. Diploma in pulp & paper tech

Museum

FRI also contains a museum on forestry. It is open from 9:30am to 5:00pm daily, which an entry fee of ₹40 per person
and a nominal entry fee for vehicles.
There are six sections in the museum:

Pathology Museum
Social Forestry Museum
Silviculture Museum
Timber Museum
Non-Wood Forest Products Museum
Entomology Museum

WATER PIPES

WOODEN BENCH

POST BOX

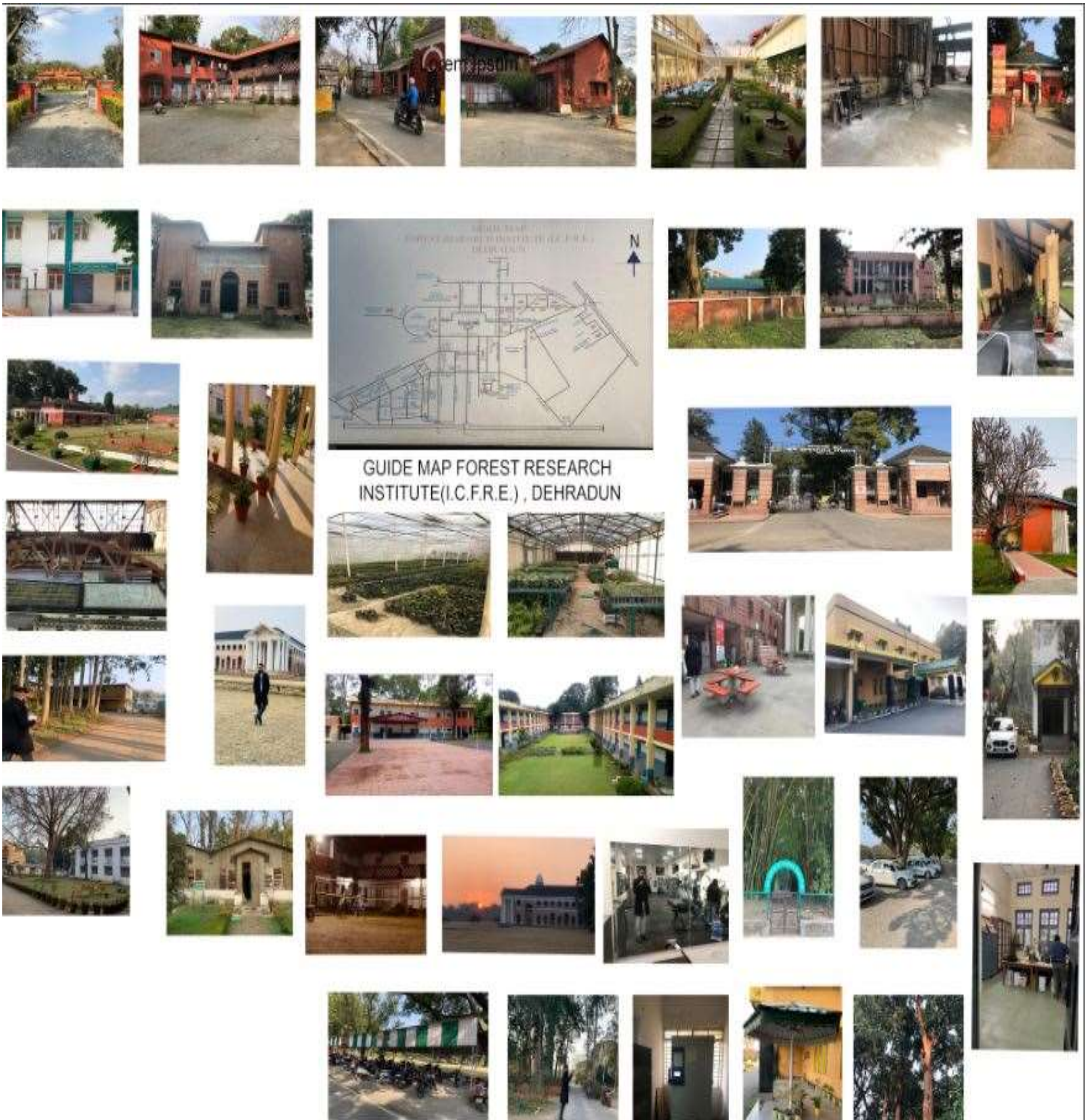
LANDSCAPING

SERVICES

*Services are provided in a systematic manner.
*old style water pipes are provided to remove rain water from the roofs.
*All services are underground.
*Fire hydrants are provided in each wings,
*Underground water tanks are installed for water servies.
*Post office is provided .

LANDSCAPING

1). Landscaping is not properly done except the drop off dround off around the building.
2). Expensive plants like Chandan, Seesham has beesn used for landscaping.
3).At eastern entry , an avenue has been created with trees



GUIDE MAP FOREST RESEARCH INSTITUTE(I.C.F.R.E.) , DEHRADUN

RESEARCH DIVISION

1. Bio-informatics GIS
2. Botany
3. Cellulose & Paper
4. Chemistry
5. Climatic change & forest influence
6. Ecology Envirinment
7. Forest Entomology
8. Genetics & Tree propation

SITE PLANNING

1). Visual axix has been created from the entry to the main building.
2). Main building is kept at the back side of the side in north direction near the forest area which also serves as research area.
3).Volume of the building as compared to the bulding bigger.
4). Big laws have been provided on all sides of the building makes it look huge making it an iconic building.

DOOR (2m-3m wide)

VAULT - ARCHES

OPEN COURTYARD IN

MASSING

1). Forest research institute (main building) is the main attraction.
2). Building area placed in irregular manner on the site.
3). Massing id done is such a way that the main building is the main attraction because of its proportion , architercture & landscape of its adjacent lawns and its round about.
4).The main building is G+1 with floor to floor height of 5m
5).Total height of the building is 12.5m wheras average height of the other buildings on site is 8m including the hostels of height 9m.
6).Other builfings area of different heights amd area according to purpose.
7).Naming of roads is done on the different elite people of that time.

STAIRCASE

MAIN BLOCK OF FRI

1). Main building has majorly six big musems, a big convocation hall , office & various landscaping courts of interaction.
2). The orientation of the buildings is in the East West direction.
3). The scientist here are divided in to grades G to B grade , G grade was the higest & B grade was the lowest grade.
4).The main building is designed in old roman /greek mix style with magnificient continous arches along the corridor.
5).The building has a drop of in the center.
6).The building is typically made of the greek roman having huge size column entablature and pediments .

7)The building has no of entries ,but main entry is from the front center .
8).The visual axis has been created in the building.
9). The surroundind was made in 19 th century with a Plinth level of 1500 mm, Sill level 450 mm & Floor to Floor height of 5m.
10). Three staircase have been provided with one main staircase in the middle of the building , along with one stair in each wing.
11).All the laboraties are placed in such a way that the sun required by the lab will get only that much light.
12). The corridor has vaulted arches & because of its time of construction ,size of doors & window varies widely from 2m to 3m in width.

MATERIALS

1). Fine exposed brickworks is done.
2). Teak wood is used for door & windows.It is also use for roofing.
3).Wall tiles are used in toilets and laboratries.
4).Mosaic tiles Kota & lime stone are used for flooring
5).Timber work can also for roof (rosewood) ,stair ,cabinates & etc.

MATERIALS

BUILDING TYPOLOGY

1). Main building was following Arcurated system.
2). Symmetry was maintaned throughout.
3). Courtyard planning ,levels were used in different buildings blocks.
4).The frame structure was used.
5).Brick domes and vault arches mere made.
6).Massive colandes are made in the fornt elevation
of building giving it a greek roman touch.
7).The building wase provided with proper rain water pipes to drain all water from the roofs and preventing to dampness & hence preventing harm to the foundation .

OPEN SPACES

OPEN SPACES

1). Enough parking spaces for all blocks.
2). Different trees were planted in the entire campus.
3). Very old trees were planted around the entran the main block.
4).Two weeler parking was semi-covered provide near acadmeic block & residences
5).Different landscaping were done according to the block and divisions.
6).Banboo garden and may more were made so t reserv different species of each plant.

MERITS & DEMERITS

MERITS

1). Location is a big advntage that area is well connected locally & regionally.
2). It has the largest Forest Research manpower on Asia.
3). The orientation is best sutied for the climate of doon.
4). The building has many openings which serives good ventilation & emergency exits as well.
5). Landscape, vegetation is heavy in the site which keeps the air fresh.
6). All services are propely & timmingly maintained.

DEMERITS

1). High maintenance cost because of the material used.
2). Proper parking is not given around the buildings due to scattered placing of blocks.
3). Movment in the campus without any vechial is very dificult because of distance between the blocks.
4). As the old workers are retyring & lack of replacement for new staff is leading to shutdown of meny departmens & workshops.

CASE STUDY

CSIR -CIMAP :-

Central Institute of Medicinal and Aromatic Plants (CIMAP) is a research institute of Council of Scientific and Industrial Research (CSIR) with its headquarter in Lucknow.
Founded in 1959.It is engaged in the field of science and business of medicinal and aromatic plants.CIMAP has four research centers situated in Bangalore, Hyderabad, Pantnagar and Purara (near Bageshwar, Uttarakhand)

CONNECTIVITY :-

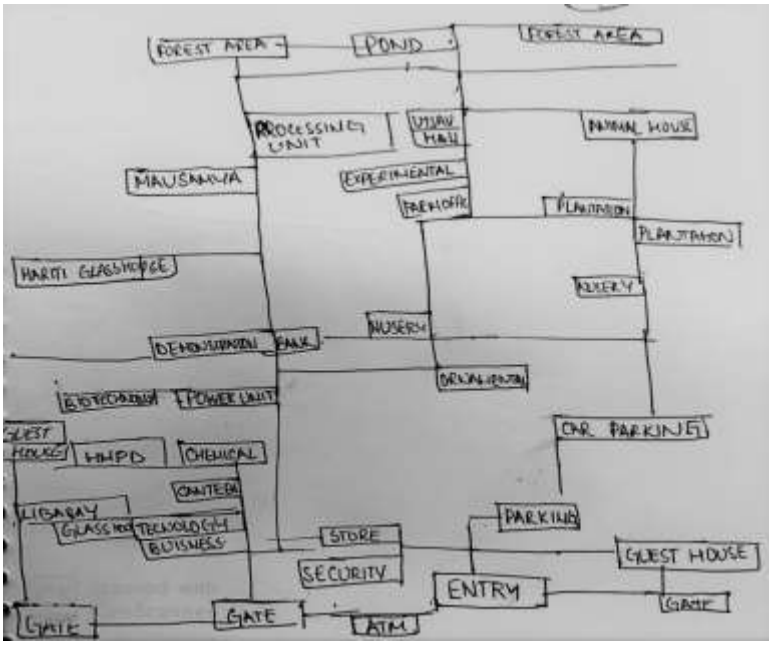
AIRPORT : 22km
RAILWAY STATION : 12km
BUS STATION : 18km

#IT HAS 7 GATES , WHICH INCLUDES 4MAIN ENTRY 2 &3 WHEELER PARKING.
#THERE IS A SECURITY CHECK POINT INCLUDING A STORE FOR SALE PRODUCTS.
#IT IS DIVIDED INTO THREE PHASE BUILDING ,
#AROMA VIP GUEST HOUSE AND ANOTHER FOR 3rd GRADE
#WHICH INCLUDES A GENERATOR FOOM HAVINH 7 OF THEM FOR BACKUPS.
#WORKSHOPS

#WORKSHOPS & UTSAV HALL ,AMINAL HOUSE , POND,etc.
#IT HAS FARM OFFICE GLASS HOUSES ,NUSERY & PROCESSING UNIT
#NO. OF RESEARCH UNITS WHICH HAS VERMICOMPOSITE AND etc.

#MAUSAMYA THE WEATHER FORCAST

GUIDE MAP



BUBBLE DIAGRAM

1. COVERED WALKWAY
2. WAITING AREA
3.BOILERS
4. POWER STATION

LITERATURE STUDIES

HIMALYAN FOREST
RESEARCH INSTITUTE ,SHIMLA

INTRODUCTION

Himalayan Forest Research Institute (HFRI), Shimla was established as High Level Conifer Regeneration Research Center during May 1977 for carrying
Out Research on problem associated with natural regeneration of Silver Fir & Spruce. The institute made its humble beginning from this center and at the time of re-organization of forestry research in India Council of Forestry & Education (ICFRE), Dehardun ,during 1998.
India appreciated the problem of Temperate Eco-system & decided to upgrade the Center into a full-fledged research institute .
This institute till date has made significant contribution to the artifical regeneration of Silver fir (Abies pindrow) and Spruce (Picea smithiana) by carrying out research on their seeds, nusery practices and planting technology.
Other notable achievements include development of nusery & planting techniques, etc. of other conifers like, Deoder , Taxus Chir-Pine, Blue-Pine, including their broadleaved associates like, Birdcherry, Horsechestnut, Oaks, Maples, Poplars & species endemic (sutiable) to the cold desert area . Research and extension activities of the institute include establishment & standardization of agro-forestry models in the lower and mid hills of Himachal Pradesh , eco - economic rehabilitation of mine damaged areas including organixing the workshops and trannings for the user group . Considerable work has been taken up in cold desert areas of Himachal Pradesh & Jammu & Kahimir for documentation of flora of such areas the standardization of nusery techniques for compatible to the cold deserts.

silver fir tree

Spruce tree

Himalayan Forest Research Institute (HFRI), Shimla specializes in solving uniqe ecological problems of the Indian state of Himachal Pradesh & Jammu & Kashmir. The institute conducts research on regeneration of natural temperate forest among others . Spread over 35 acers of area .

The main thrust area of Himalayan Forest Research Institute are as follow :

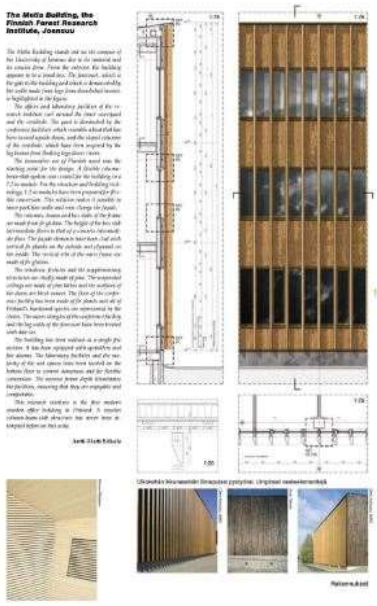
Development of the nusery techiques for devrlopment of quality planting stock.
Conducts & participates in the eco - rehabitation of cold dresert , mined areas & regeneration of degraded coniferouis and broadleaved forests.
Applied management of pasture lands , Pro-active conservations of agroforestry in lower hills .
The development of integrated Pest Managemen modles in Flora & Fauna of Shimla has been the main attraction for tourists to this hill-station .

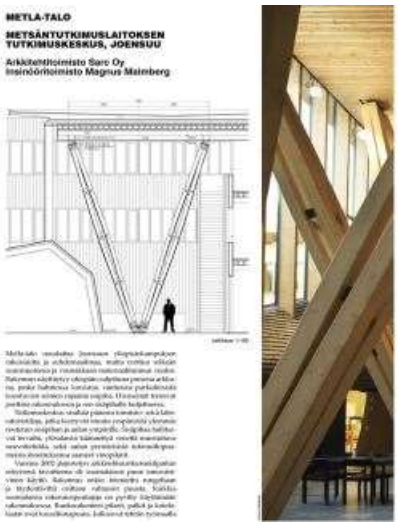
LITERATURE STUDY

FINNISH FOREST RESEARCH INSTITUTE, FINNLAND

The Finnish Forest Research Institute known as subordinate agency to the Ministry of Agriculture and Forestry of the Government of Finland.It has statutory duties to promote , throughresearch, the economical , ecological ,and socially sustainable management and use of the forests. Metla isone of Europe's largest forestryresearch institute.

The primary goal of the construction project was to use Finnish wood in innovative ways.
Hence, wood is the main material used throughout the building, form the Post-beam-slab system in thestructural frame of the exterior clading. The building fits in the cityscape in respect to its size, which is closely related to the adjoining buildings. However ,the clear dorm and the uniform materially achieved through the extensive use of the wood make it a sidtinct entity.





Architect : SA RC Architects
Location : Joensuu ,Finland
Building Owner : Senaatti-Kiinteistot
User : The Finnish Forest Research Institute,Joensuu Forest Research Institute
Constructed Area : 7,650 sqm
Project Year : 2004

Mission

The mission of Metla is to build the future of the forest sector of the Finland by producing and disseminating information and known - how for well - being of the society.

Research targetys

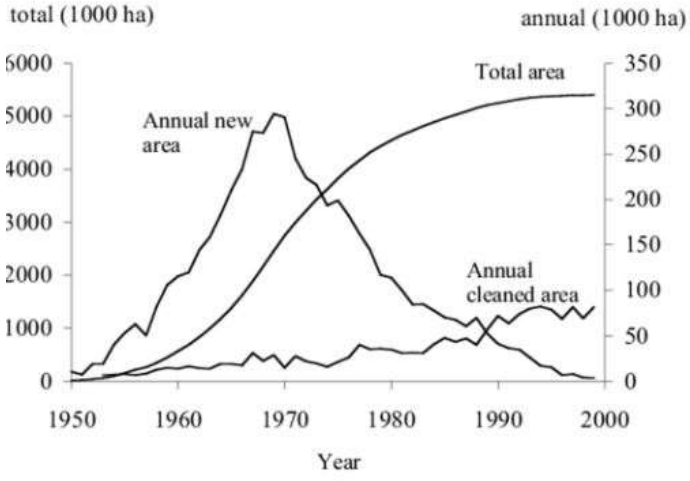
Important research topics include silviculture methods, physical and chemical characteristics of wood,logistics and procedural methods of harvestiong , biotechnology and its application, timber trade and industry including the new forms if enterprise, the new sources of livehood, such as nature & recreational tourism, profitability of timber production, operational performance of forest management and the timer market, forest energy and wood as building material.

Melta builds the future of the forest sector of finland by producing and disseminating information and know-how for the well-being of the society. Finland is the Europe's most forested country – ¾ of its land is under forest cover. By international comparison, finland relies more heavily on its forest's tan any other country in the world. Against this background it is easy to understand the importance of forest research in finland. Melta is the main forest research institute in finlandand one of the biggest forest research institute in finland. Melta's duties are defined by the law and statue to promote through research, the economical, ecological, and socially sustainable management and use of forests.

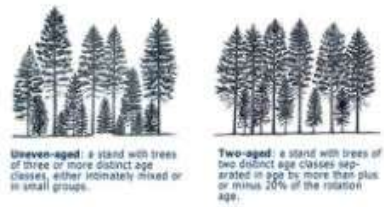
Forest based enterprise and business activities.
Social impact of forests.
Structure and functioning of forest ecosystems and
Information data bank on forestry and the forest environment.

The work places in the building surround a central courtyard and lobby. The entrance is flanked by the walls made of 100- year old timber. The courtyard itself id lifted above the buildings immediate surroundings and with the lobby and its restaurant form a meeting point for the staff of the forest research institute. The courtyard is dominated by tall pine trees growing through the terrace, a conference space that resembles an overturned boat and fish-chest inspired tilted wooden coulumns.

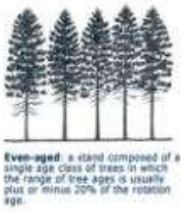
Rainscreen Wall Assembly

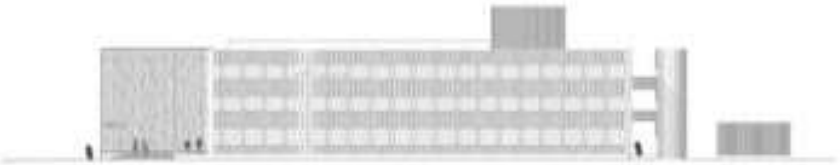


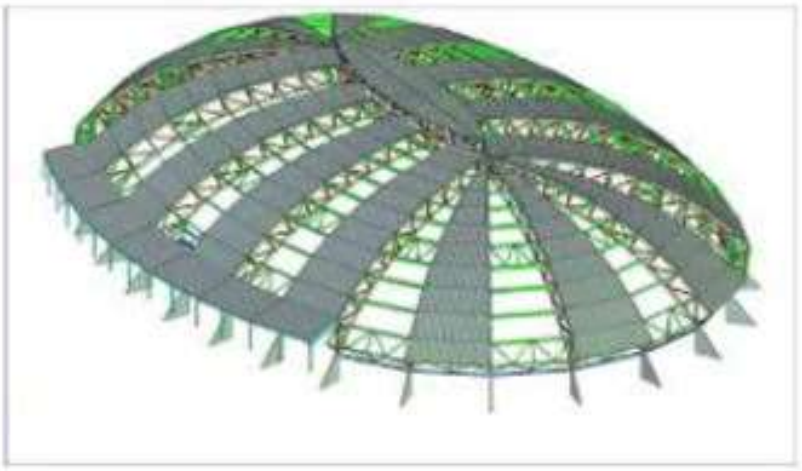
Plantation forestry



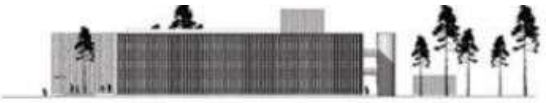
Tree plantations are crops, not ecologically functional forests

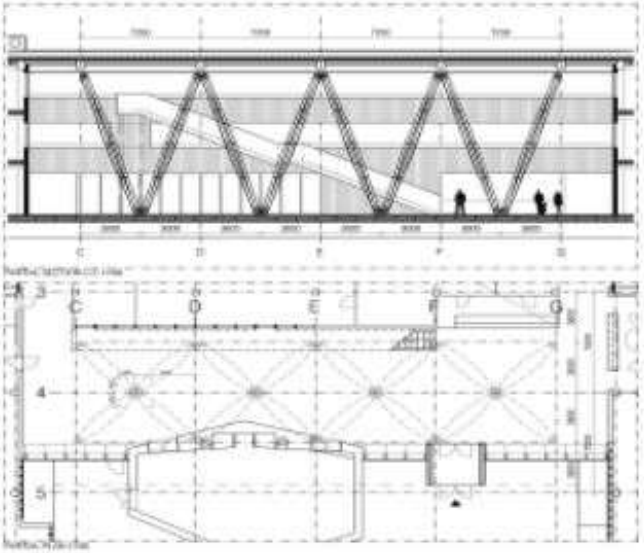






ROOF OF MELTA THE MULTIPURPOSE HALL





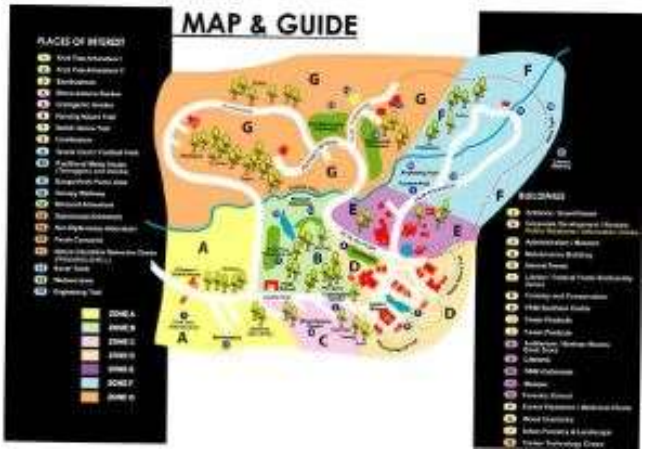
THE COLUMNS

Each column consists of four curved beams, laminated in shape and tied together with steel plates and bolts

LITERATURE STUDY

FOREST RESEARCH INSTITUTE, MALAYSIA

MAP LOCATION FRIM



OBJECTIVES

Generating scientific knowledge for the understanding, management, conservation and use
of forest resources; research and development.
Studying biodiversity to produce useful products through intensive research and development.
Developing related technology to fulfil the needs of the forestry industry.
Packaging research and development findings for dissemination to clients.
Commercializing research and development findings through technology transfer to all interested
parties.
Providing service to fulfil client needs.
Creating strategic co-operation with local and international agencies.
Raising public awareness regarding the importance of the environment and the conservation of
forest biodiversity.

FOREST RESEARCH INSTITUTE, MALAYSIA

he Forest Research Institute Malaysia is a statutory agency of the Government of Malaysia, under the
Ministry of Land, Water and Natural Resources (KATS). FRIM promotes sustainable management and
optimal use of forest resources in Malaysia by generating knowledge and technology through research,
development and application in tropical forestry. FRIM is located in Kepong, near Kuala Lumpur.
FRIM is the world's oldest and largest re-created tropical rain forest

HISTORY

In 1926, the chief conservator of the forest (equivalent to today's director of forestry), G.E.S Cubitt,
asked F.W. Foxworthy to establish a separate forest research unit for the Forestry Department.
It was Foxworthy who selected the present site, at Kepong. He was also to become the institute's
first chief research officer.

The site comprised an area that was practically stripped of its original forest cover except for a few
remnant trees at the more inaccessible localities. Lalang-grass scrub on the hillsides made way to
vegetable terraces on the lower slopes, while the valley cradled a few ponds, the left-overs of a past tin-mining operation.

Within two years in 1928, the first 42 hectares (100 acres) of experimental plantation (mainly dipterocarps, tall hardwood species) were in place, carefully nurtured into being using "nurse" trees of other species as shade and food providers (being nitrogen-fixers). By that time the construction of the main building had begun. Completed the following years, this building was to remain the sole centre for the laboratories, herbarium, and museum, as well as the Chemistry, Zoology and Sivilculture sections of the institute, until new buildings were added after World War II. The herbarium collection, that was also moved to Kepong, numbered 1,500 accessions.

The end of the decade saw some 125 hectares of plantation established at the institute.
Plantation trials with exotic species started in the early 1930s. The plantations covered
154 hectares just before the outbreak of World War II in Europe in 1939, and before the
Japanese occupation of the Malay Peninsula in 1941–1945. By this time the dipterocarp
and non-Dipterocarp arboreta contained 75 species (represented by 360 individual
trees), while the Herbarium collection numbered nearly 40,000 accessions.`

Formed : 1926; 94 years ago
Jurisdiction : Government of Malaysia
Headquarters : Kepong, Kuala Lumpur, Malaysia
Minister responsible : Xavier Jayakumar Arulanandam, Minister of Ministry of Water, Land and Natural Resources
Agency executive : Dato' Dr. Abd Latif Mohmod (Director General)
Parent agency : Ministry of Water, Land and Natural Resources Malaysia
Website : www.frim.gov.my

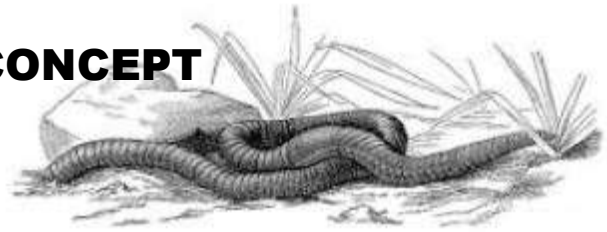
COMPARATIVE ANALYSIS & INFERENCES

S.NO.	PARAMETERS	FOREST RESEARCH INSTITUTE , DEHRADUN	HIMALAYAN FOREST RESEARCH INSTITUTE, SHIMLA	INFERENCES
1	SITE LOCATION	In the main city	In the outskirts surrounded by universities distance apart	Site should be near natural surrounding
2	SITE TOPOGRAPHY	levels	Contours / slope	Site topography should be uniform
3	PLANNING	Scattered placement of blocks & courtyard planning in individual blocks	Clustered block with courtyard planning	Planning should be done in respect to movement & accessibility
4	TYPOLOGY OF PLANNING OPEN SPACES / COURT	Scattered block planning	Cluster block with connectivity	According to the requirement of the site & design
5	ORIENTATION	North – south	east - west	In respect to the climate of the site
6	MATERIAL	Teak wood, vitrified tiles, kota stone, exposed brick work	Mix use	Locally available, eco-friendly & fire resistant materials
7	MOVEMENT	Due to mass diversions & branching of roads results in confusion	Cluster planning making each block accessible	According to the footfall & movement
8	OPEN SPACES / COURT	Each building / block has courtyard planning	Separate cluster courtyard	Planned for ventilation, lighting & movement
9	AUDITORIUM	Separate hall on purpose designed with arches & nature friendly	Projector fitted auditorium	Acoustics & furnishing
10	LIBRARY	Use of natural resources, cross ventilated & wifi facility	Natural lighting & ventilation	Natural resources

Forest Research Institute (FRI)

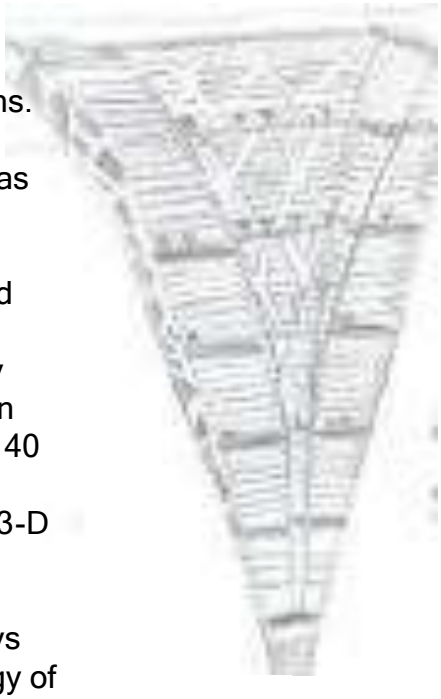
:-

CONCEPT



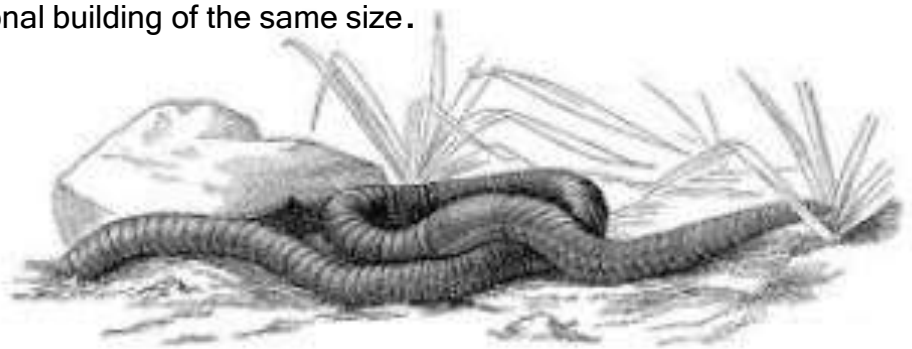
BIO-MIMICRY is the process of implimentation of biological traits or stratagies which we are implementing in our design ideology. in this scenario, for example the building has taken an inspiration from sustainable building stratagy used by the EARTHWORM, rather that eartworm at that point is unaware of these sustainable stratagies. Since, the building belongs to a humid subtropical climatic conditions these stratagies of earthworm's nesting & burrowing procedure can be considered as an suitable example for effecient design derrivation for the construction technique for the proposed design.

Biomimetics or biomimicry is the imitation of the models, systems, and elements of nature for the purpose of solving complex human problems. The terms "biomimetics" and "biomimicry" derive from Ancient Greek- bios, life. Living organisms have evolved well-adapted structures and materials over geological time through natural selection. Biomimetics has given rise to new technologies inspired by biological solutions. Humans have looked at nature for answers to problems throughout our existence. Nature has solved engineering problems such as self-healing abilities, environmental exposure tolerance and resistance, hydrophobicity, self-assembly, and harnessing solar energy.



Researchers studied the termite's ability to maintain virtually constant temperature and humidity in their termite mounds in Africa despite outside temperatures that vary from 1.5 °C to 40 °C.

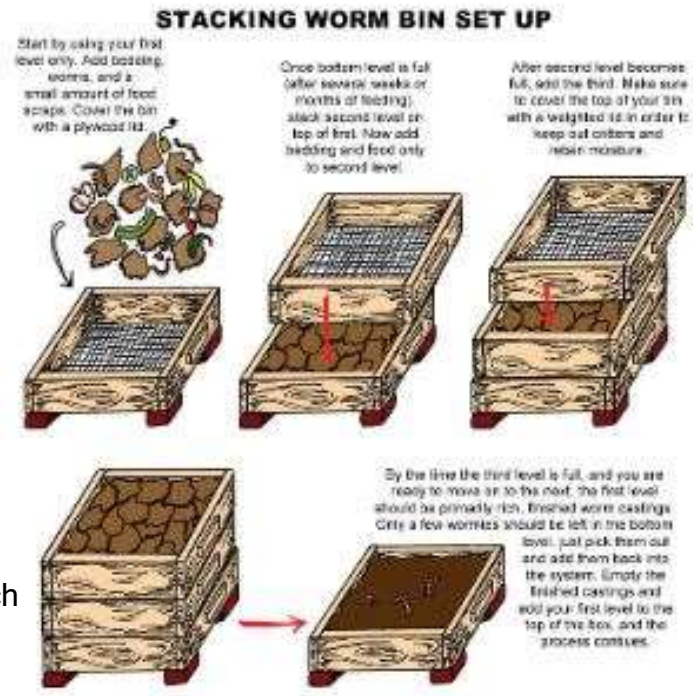
Researchers initially scanned a termite mound and created 3-D images of the mound structure, which revealed construction that could influence human building design. The Eastgate Centre, a mid-rise office complex in Harare, Zimbabwe, stays cool without air conditioning and uses only 10% of the energy of a conventional building of the same size.



5 Benefits of Worm Farming :-

Firstly, they help build good soil through their tunneling actions.

Secondly, while they are burrowing around, they are eating and processing the soil leaving behind these deposits of rich worm castings, that improve the soil in such a way that it maintains moisture for longer.



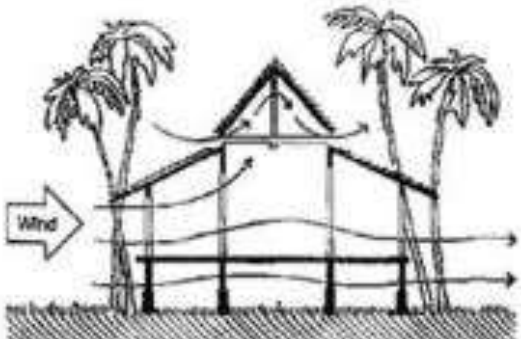
Thirdly, they are generated an endless supply of cheap compost that is chemically-free, eco friendly and uses up biodegradable matter that before you would have just thrown away.

Fourthly, by using worm compost it suppresses certain types of weeds that would grow if the compost were not present.

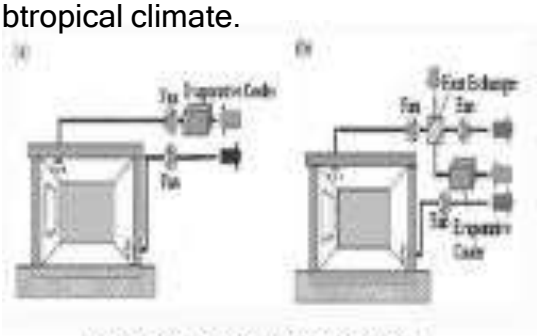
Fifthly, the worm compost also promotes better root growth and structure, and is an excellent medium for growing seedlings and seeds as it enhances germination and crop yields.

CLIMATE MEASURES

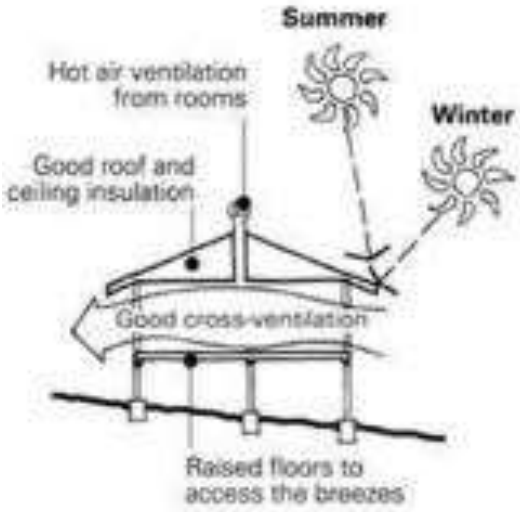
This type of climate is generally experienced around the eqautor for 20 - 40 latitude. The presence of rain & hot-humid summer. And extreme cold in winter.

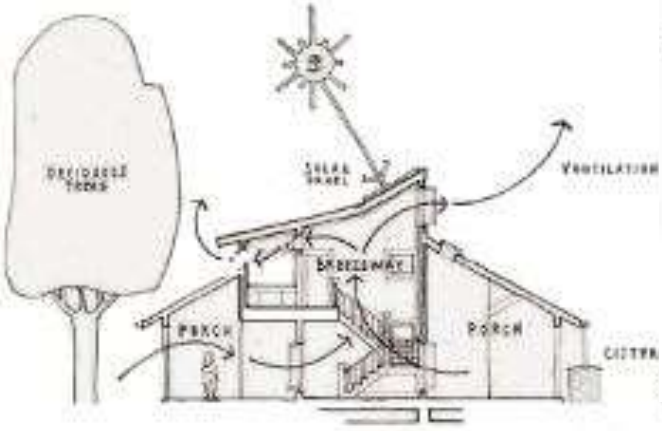


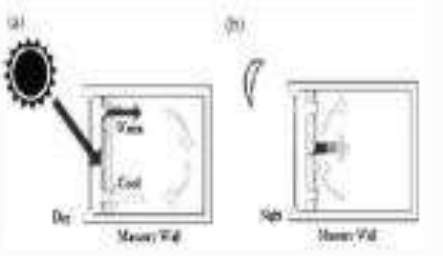
Passive cooling system has become an attractive option to design and modify homes to achieve thermal comfort. The system provides cooling through the use of passive processes, which often use heat flow paths that do not exist in conventional or bioclimatic buildings.
The procedure of selecting an appropriate passive cooling strategy has been developed for the residences and buildings in a hot and humid subtropical climate.



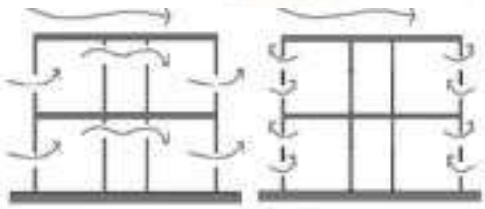
Evaporative Cooling Strategy
(a) - Direct Cooling Strategy
(b) - Indirect Cooling Strategy







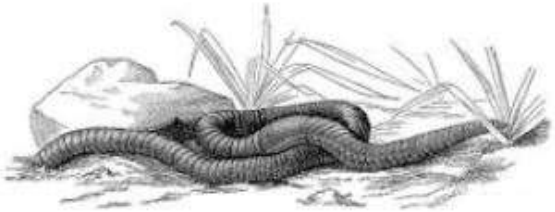
HIGH Thermal Strategy
(a) - High thermal mass during day.
(b) - High thermal mass during night.

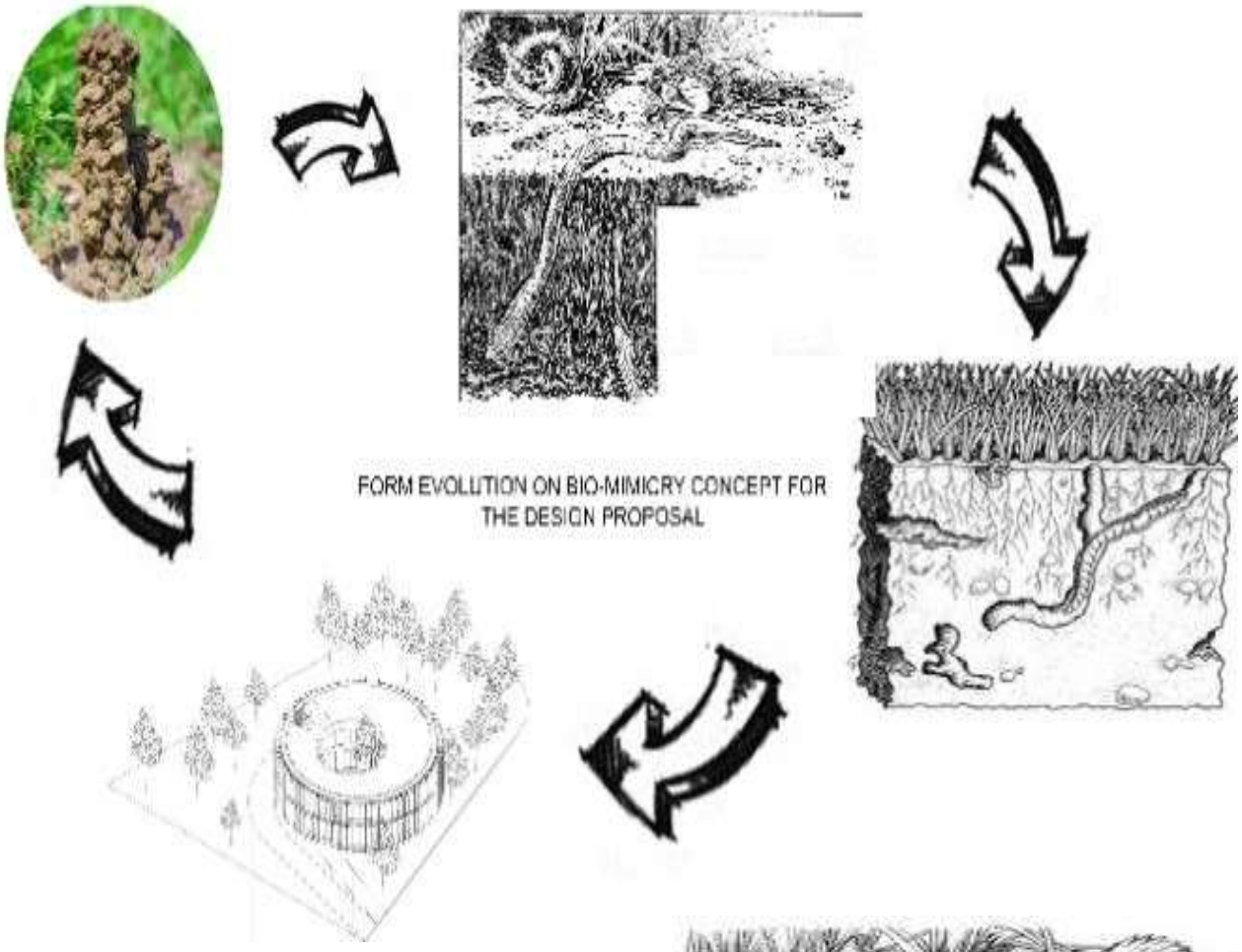


Natural Ventilation Strategy
(a) - Cross Ventilation
(b) - Single Sided Ventilation

Reduction of energy consumption in buildings can be achieved by simple methods and techniques using an appropriate building design and energy-efficient system and technology, such as passive cooling system.

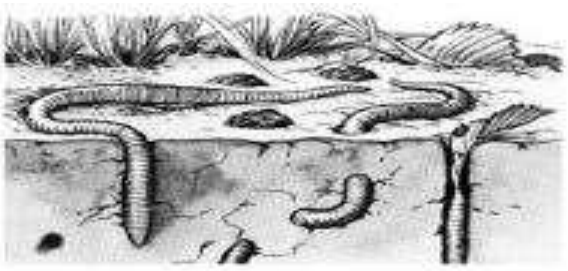
FORM EVOLUTION:-



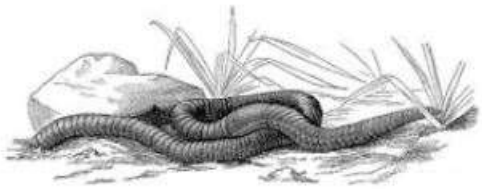


FORM EVOLUTION ON BIO-MIMICRY CONCEPT FOR THE DESIGN PROPOSAL

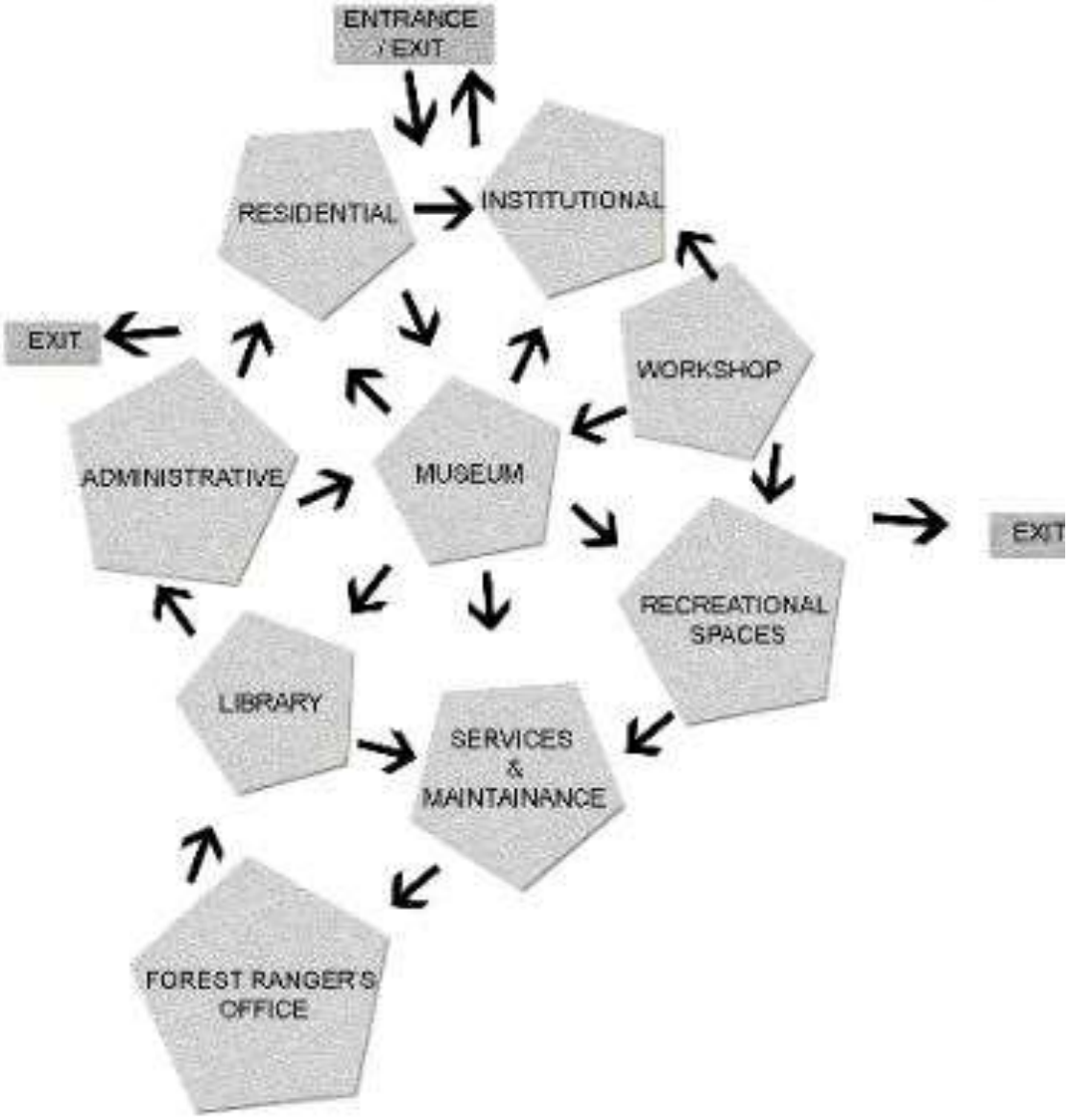
DESIGN FORMATION / EV(:-



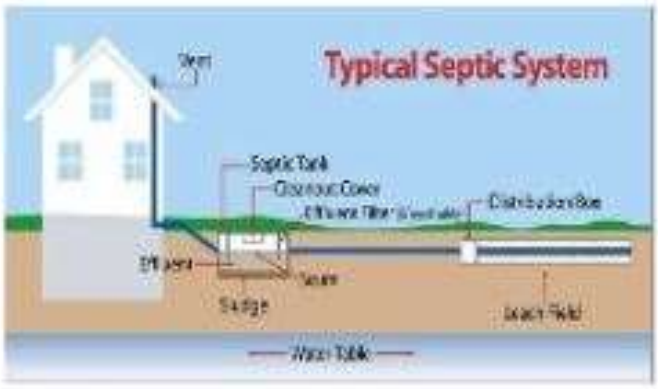
* ENTRANCE GATE IS DESIGNED SAME AS THE BURROW ENTRANCE FOR THE SUB STRUCTURE WHICH CREATES A BUFFER SPACE FROM THE OUTER ENVIRONMENT.
* THE SUB-STRUCTURE OR SO CALLED THE GROUNDSCRAPER IS BUILT WITH MINIMUM CONSUMPTION OF MODERN TECHNOLOGIES & MAXIMUM USE , UTILISATION OF NATURAL RESOURCES.



ZONING :-


ENTRANCE / EXIT
RESIDENTIAL
INSTITUTIONAL
EXIT
WORKSHOP
ADMINISTRATIVE
MUSEUM
EXIT
RECREATIONAL SPACES
LIBRARY
SERVICES & MAINTAINANCE
FOREST RANGER'S OFFICE


Vent pipe
Water tank may be hand filled
Seat cover
Access cover
Liquid
Digester


Typical Septic System
Vent
Septic Tank
Distribution Box
Effluent
Sludge
Leach Field
Water Table

CONCEPT STAGE PANNEL JURY:

AREA ANALYSIS

FORREST RESEARCH & TRAINING INSTITUTE, PUNJAB

REQUIREMENTS AND AREA ANALYSIS

TOTAL SITE AREA	24,281	Sq.m.	6
GROUND COVERAGE (PERMISSIBLE)	50%	ACHIEVED G.C.	
PERMISSIBLE F.A.R.	1.5	MAX. HEIGHT	
ACHIEVED F.A.R.	0.37	ACHIEVED HEIGHT	
SETBACKS	Front : 15 M and Sides : 9 M		

S.No.	Name of the Spaces	No. Of Units	Standards (Neufert)		FRI, Dehradun Case Study 1	FRI, Shimla Litreature Study 1	CIMAP, Lucknow Case Study 2	Resultant Area per Unit	Resultant Area
			Area		Area	Area	Area		
		No.	Sq.m.		Sq.m.	Sq.m.	Sq.m.	Sq.m.	Sq.m.
A.	ADMINISTRATION BLOCK								14%
a	ENTRANCE FOYER AND RECEPTION	1		0.8 sqm/p	25				100
b	WAITING AREA	1				36			
c	CONFERENCE HALL	1		1.4 sqm/p			40		40
d	MULTI PURPOSE HALL	1		1.1 sqm/p			40		50
e	SEMINAR ROOMS	2		0.8 sqm/p				20 sqm	40
f	DIGITAL LIBRARY	1		0.05 sqm/capita			150		2,000
g	LOUNGE	1		0.9 sqm/p					20
h	OFFICES (Ante Room + Toilets)	4		10-15-25 sqm	32	30	16	25 sqm	100
i	RECORDS ROOM	1		20 sqm			16		20
j	STORE ROOMS	2		15 sqm				12 sqm	24
k	PANTRY	1		0.4 sqm/p					16
l	TOILETS	MALE	1wc, 1 wb, 1 u @ 25m					5wc,wb 5u	50
		FEMALE	1wc, 1wb @ 20f					4wc 4wc	40
	TOTAL AREA								2,500
	TOTAL AREA (WITH WALLS)			10%					2750
	TOTAL AREA (WITH CIRCULATION)			30%	500				3575
B.	MUSEUM								31%
a	ENTRANCE FOYER	1		0.8 sqm/p	600	250			250
	RECEPTION - HELP DESK								
	TICKET COUNTERS	2			40			8 sqm	16
	CLOAK ROOM	1		4 sqm/100p	40	12			40
	SECURITY	1							
b	MUSEUM SHOP	1			200	15			100
c	INFORMATION CENTRE	1			180				150
d	ORIENTATION ROOM / GALLERY	1			240				200
e	PERMANENT EXHIBITIONS			5-10 sqm/exhibit	3,800	3,200			3,000
f	FOREST THEATRE	1							200
g	TEMPORARY EXHIBITIONS	1		5-10 sqm/exhibit	550	488	120		300
h	MULTIPURPOSE / MULTIMEDIA HALL	1		1.1 sqm/p	300				300
i	AUDIO-VISUAL ROOM	1							80
j	CAFÉ	1		1.5 sqm/p	150 + 60	280			80
k	MANAGEMENT OFFICE	1		25 sqm		350			25
l	STORE ROOMS	4		15 sqm	100	180		15 sqm	60
m	TOILETS	3 MALE	1wc, 1wb, 4u @ 200m					15wc,wb 10u	150
		3 FEMALE	2wc, 1wb @ 200f					20wc, 15wb	100
	TOTAL AREA								5,051
	TOTAL AREA (WITH WALLS)			10%					5556.1
	TOTAL AREA (WITH CIRCULATION)			40%	19,000				7778.54

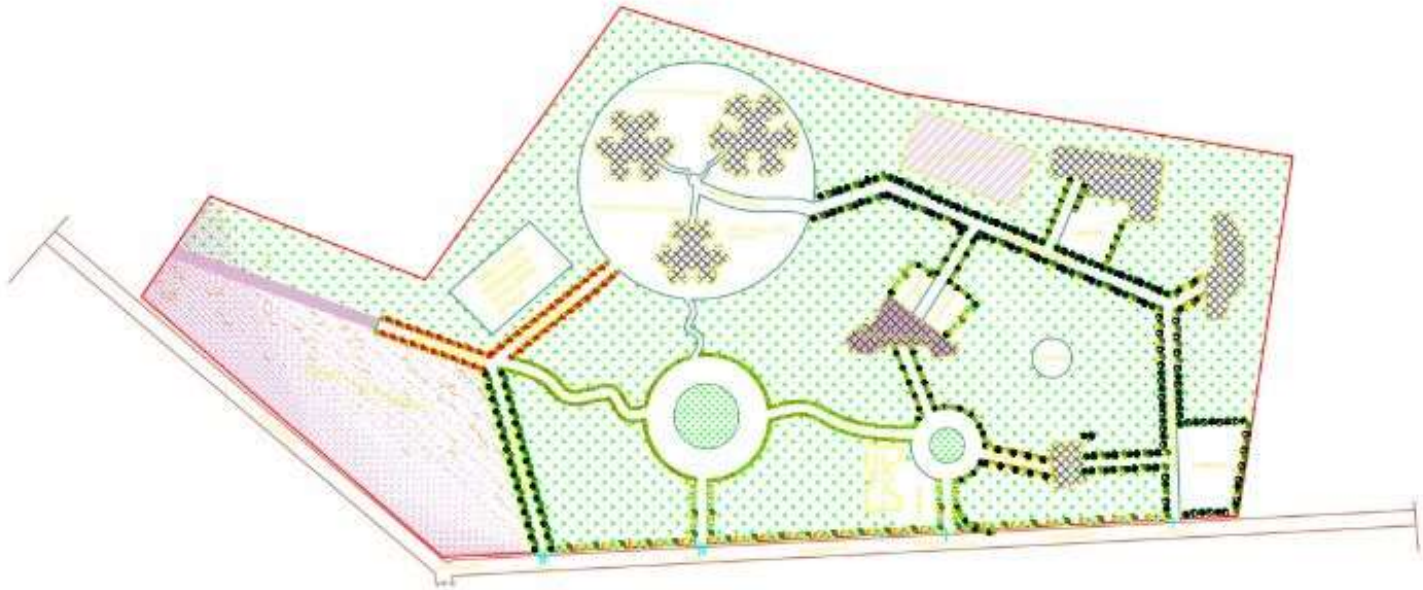
C.	AUDITORIUM								6%
a	ENTRANCE	1		20%					130
	RECEPTION								
	TICKET COUNTERS	2						8 sqm	16
	CLOAK ROOM	1		4 sqm/100p					20
	SECURITY								
b	SEATING - 300 CAPACITY	1		1.2 sqm/p			150 (144p)		460
c	STAGE	1		10%					60
d	GREEN ROOMS, STORE ROOMS	3		10-12 sqm			10	12 sqm	36
e	PROJECTOR ROOM	1		15-20 sqm			10		10
f	LIGHT AND SOUND CONTROL ROOM	1					10		10
g	PRESS GALLERY	1		1.5 sqm/p					30
h	V.I.P. LOUNGE	1		0.6 sqm/p					15
i	OFFICE (Ante Room + Toilets)	1		20-30 sqm					25
j	PANTRY	1		0.4 sqm/p					25
k	TOILETS	MALE		2wc, 1wb , 1u @ 200m				3wc 2wb 1u	50
		FEMALE		3wc, 2wb @ 200f				3wc 2wb	15
	TOTAL AREA								**902**
	TOTAL AREA (WITH WALLS)			10%					**992.2**
	TOTAL AREA (WITH CIRCULATION)			30%					**1289.86**
D.	RESTAURANT / CAFETERIA								4%
a	FOOD COURT - 200 Indoor, 100 Outdoor Capacity	1		1.5 sqm/p			75	300 + 75	375
b	KITCHEN	1		0.5 sqm/p			20		150
c	PANTRY	1		0.4 sqm/p					50
d	STORE	1		10%					60
e	UTILITY AREA	1							35
f	TOILETS	MALE		1wc, 1wb , 1u @ 50m					40
		FEMALE		2wc, 2wb @ 50f					30
	TOTAL AREA								**740**
	TOTAL AREA (WITH WALLS)			10%					**814**
	TOTAL AREA (WITH CIRCULATION)			20%					**1058.2**

E.	EDUCATIONAL BLOCK - 300 STUDENTS								29%
a	OFFICES	4		15-20 sqm	15 - 30		16	15 sqm	60
b	STAFF ROOM	2		25-30 sqm			30		60
c	MULTIPURPOSE / DISCUSSION HALL	1	150 STUDENTS	1.1 sqm/p	650				165
d	SEMINAR HALL	1		0.8 sqm/p					80
e	LECTURE THEATRES - EACH 30 CAPACITY	8		0.8 sqm/p			20 - 30	24 sqm	192
f	INNOVATION CENTRE	1		1.1 sqm/p					70
g	R & D LABORTORIES								
	PILOT PLANTS	5		52 sqm/machine	850	100		800 sqm	4,000
	OTHERS	1		20 sqm/machine		100		20 sqm	50
	APPLICATION LABORATORIES	2		50 sqm/lab	800			50 sqm	100
	TESTING LABORATORIES	2		50 sqm/lab	1,200			40 sqm	80
	BLENDING UNITS	2		52 sqm/lab	20			30 sqm	60
	PACKAGING UNITS, STORAGE	1		52 sqm/lab	60	100			60
h	LAB ATTENDANTS' OFFICE	2		15 sqm	12			12 sqm	24
i	STORAGE	2				100		20 sqm	40
j	TOILETS - STAFF & VISITORS	MALE		1wc, 1wb , 2u @ 60m				2wc,wb 4u	30
		FEMALE		2wc, 1wb @ 40f				4wc, 2wb	20
	TOTAL AREA								**5,091**
	TOTAL AREA (WITH WALLS)			10%					**5600.1**
	TOTAL AREA (WITH CIRCULATION)			30%					**7280.13**

F.	ACCOMODATION								9%
a	V.I.P. GUEST HOUSES				1,200				520
	ENTRANCE LOBBY - RECEPTION, WAITING	1		1.6 sqm/p					40
	GUEST HOUSE - 1BHK UNITS	16		30 sqm/room		5 x 24 sqm		30 sqm	480
b	HOSTEL				2,530				1,250
	ENTRANCE LOBBY - RECEPTION, WAITING	1		1.5 sqm/p					80
	DORMITORIES - 8 bedded	25		3 sqm/p				30 sqm	700
	COMMON ROOM	1							80
	WARDENS' ROOM (M/F)	2		10 sqm				15 sqm	30
	DINING AREA	1		0.7 sqm/p	700				140
	KITCHEN, PANTRY, STORAGE	1		0.4 sqm/p					80
	TOILETS - COMMON	2 MALE	2wc, 2wb, 2u, 3 bath @25m					10wc,wb,u,b	80
		2 FEMALE	1wc, 1wb, 1 bath@ 10f					8wc,wb,b	60
	TOTAL AREA								1,770

	TOTAL AREA (WITH WALLS)			10%					1947
	TOTAL AREA (WITH CIRCULATION)			20%					2336.4
G.	GARDEN / PARK								
a	LANDSCAPING								
b	MEDITATION SPACES, JOGGING TRACKS								
c	GREENHOUSES (PUBLIC AND KNOWLEDGE CENTRE)	2			260 each			300 sqm	600
d	WORKSHOP ORIENTATION SPACE	1						40 sqm	20
e	STORE ROOM / SHED	1							30
f	AMENITIES								
H.	GENERAL FACILITIES								
a	OAT	1		0.9 sqm/p			80		450
b	CHILDREN GAMING & PLAY ZONE	1							200
c	SECURITY								
d	GUARD ROOMS	2			8		6	10 sqm	20
	RETIRING ROOMS								40
	SURVEILANCE / CONTROL ROOM	1							50
	TOTAL AREA								310
	TOTAL AREA (WITH WALLS)			10%					341
	MAINTAINANCE / SERVICES								5%
I.	AC PLANT ROOM	1							100
a	DG ROOM	1					100		60
b	PUMP ROOM	1							50
c	WATER TREATMENT PLANT	1							100
d	A.H.U.			1-each fl (10%)			10		40
e	SERVER ROOM	1							20
f	CABLE ROOM	1							20
g	ELECTRICAL PANEL ROOM	1							16
h	ELECTRICAL ROOM	6			100		20	5 sqm	30
i	METER ROOM	1							16
j									
	TOTAL AREA								452
	TOTAL AREA (WITH WALLS)			10%					497.2
	TOTAL AREA (WITH CIRCULATION)			20%					596.64
	TOTAL BUILT UP AREA								24,256
	PARKING								
J.	FOUR WHEELERS	150	12.5			150 spaces			1,875
	TWO-WHEELERS	50	2.25			50 spaces			115
	BUSES	5	26			5 spaces			130
	SERVICE VEHICLE - FIRE FIGHTING TRUCK	1	50						50
	TOTAL AREA								2,170

SITE PLAN



SITE PLAN FOR THE PROPOSED FOREST RESEARCH & TRAINING INSTITUTE, LUDHIANA, PUNJAB

FOREST RESEARCH & TRAINING INSTITUTE PUNJAB

DRAWING NAME:

SITE PLAN

NORTH:

N

MOHAMMAD HAMZA AFTAB

B.ARCH 5th YEAR 10th SEMESTER

2019-2020

ARCHITECTURAL THESIS

B.B.D.U , LUCKNOW

STAGE :-

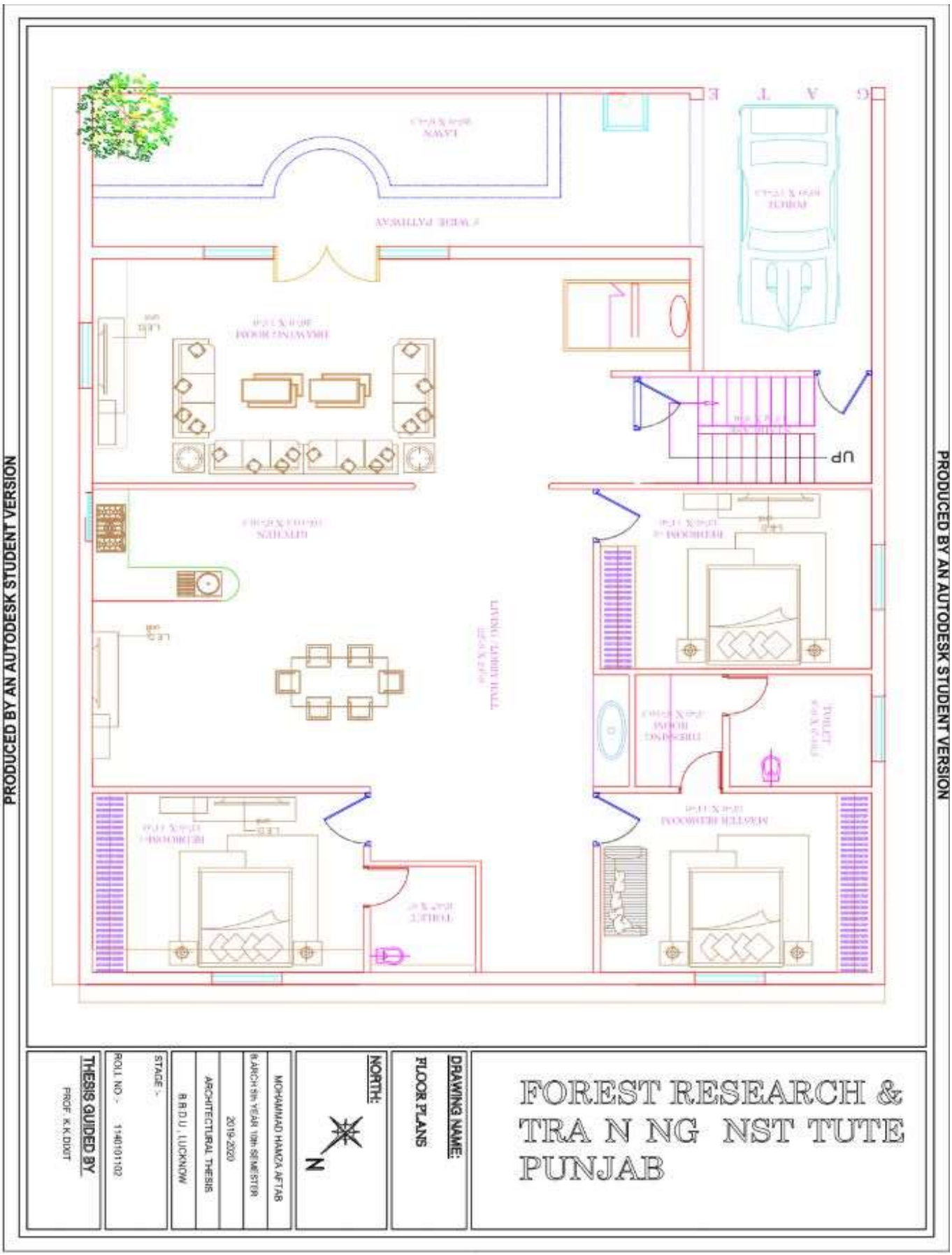
ROLL NO - 1140101102

THESIS GUIDED BY

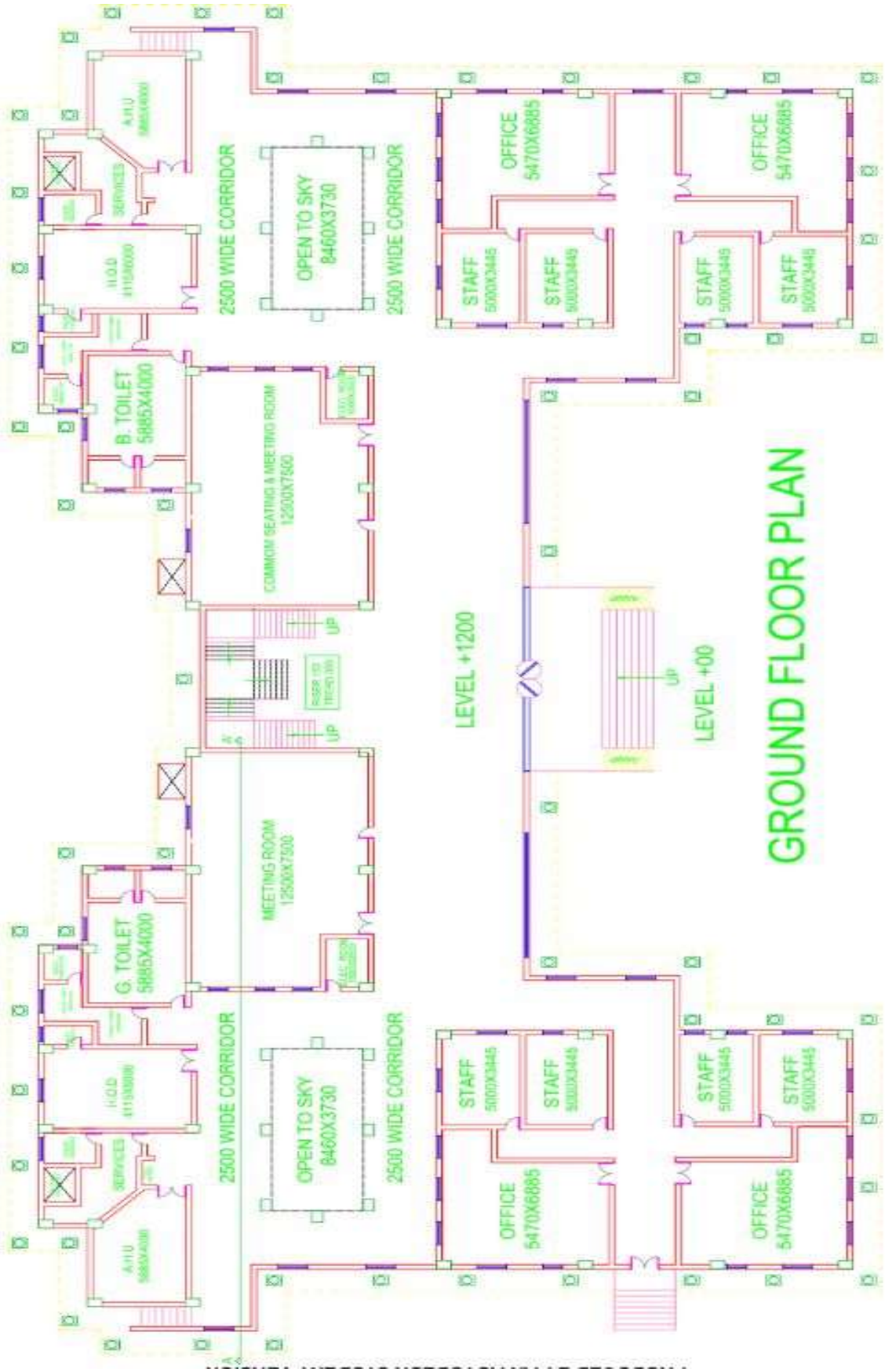
PROF. K.K.DIXIT

FLOOR PLANS

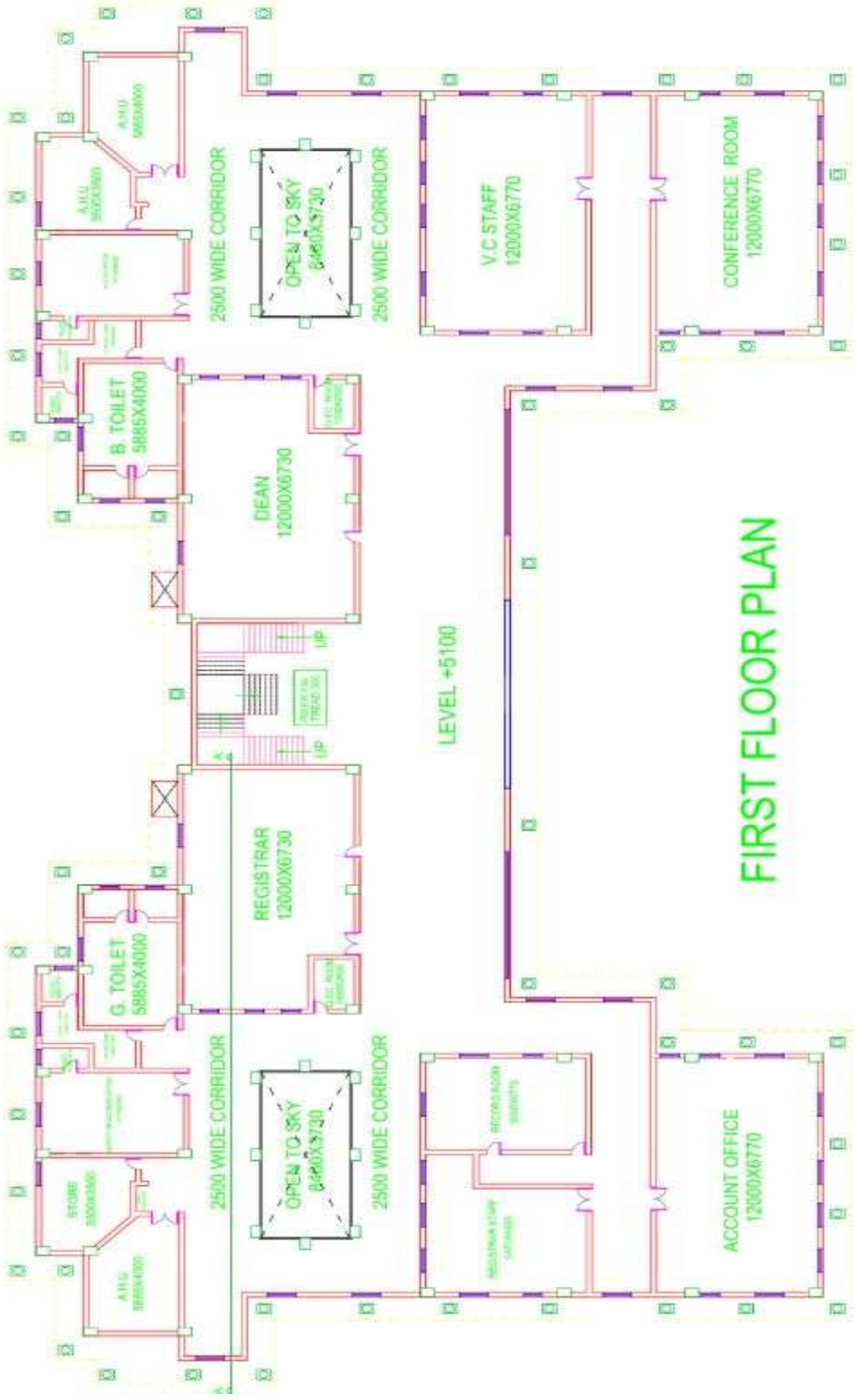
DIRECTORS RESIDEINCE



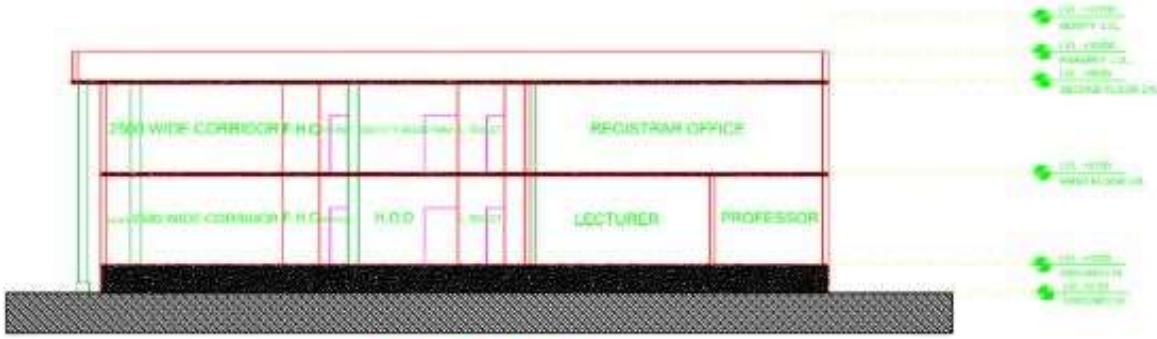
ADMIN BUILDING GROUND FLOOR PLAN



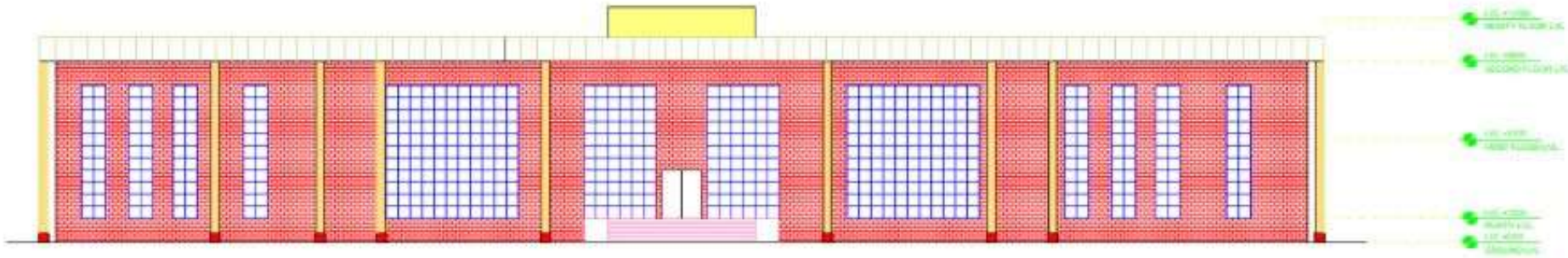
ADMIN BUILDING FIRST FLOOR PLAN



SECTION ELEVATION



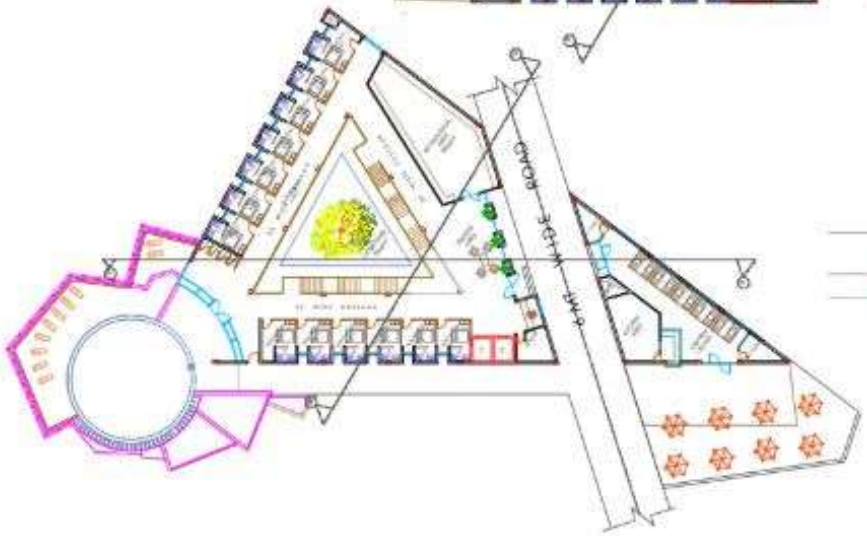
SECTION A-A'

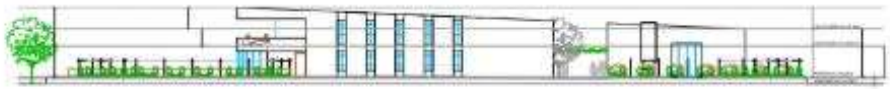


ELEVATION

ADMIN BUILDING`

HOSTEL & GUEST HOUSE FLOOR PLAN





STUDENT HOSTEL & GUEST HOUSE

FOREST RESEARCH & TRAINING INSTITUTE PUNJAB

DRAWING NAME:

FLOOR PLANS , SECTION, ELEVATION.

NORTH:

N

MOHAMMAD HAMZA AFTAB

B.ARCH 5th YEAR 10th SEMESTER

2019-2020

ARCHITECTURAL THESIS

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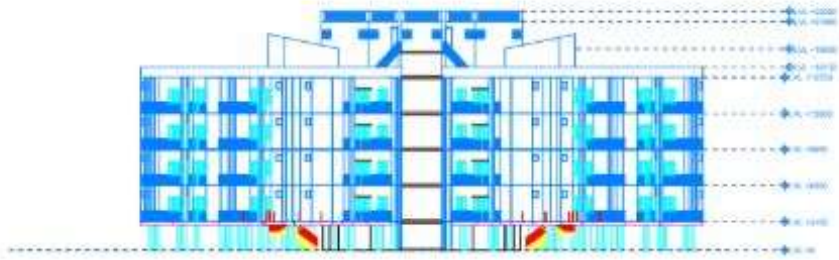
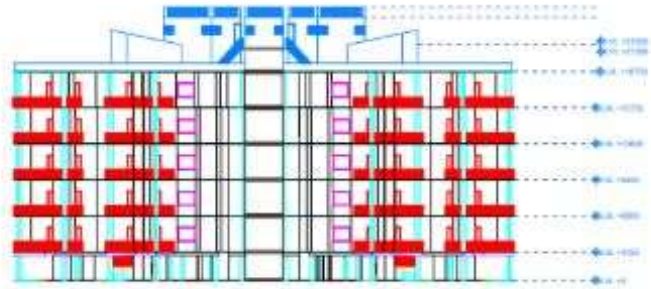
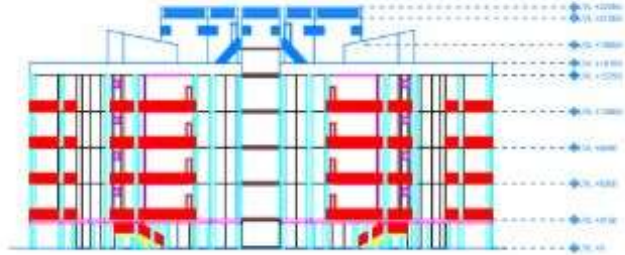
HOSTEL & GUEST HOUSESECTION ELEVATION



FRONT ELEVATION 3BHK



FRONT ELEVATION 2 BHK



FRONT ELEVATION 1 BHK

FOREST RESEARCH & TRAINING INSTITUTE PUNJAB

DRAWING NAME:
ELEVATION

NORTH:

MOHAMMAD HAMZA AFTAB

B.ARCH 5th YEAR 10th SEMESTER

2019-2020

ARCHITECTURAL THESIS

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STAGE :-

ROLL NO :- 1140101102

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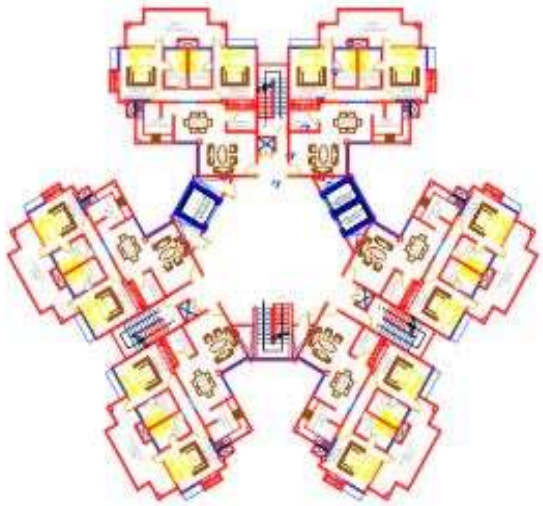
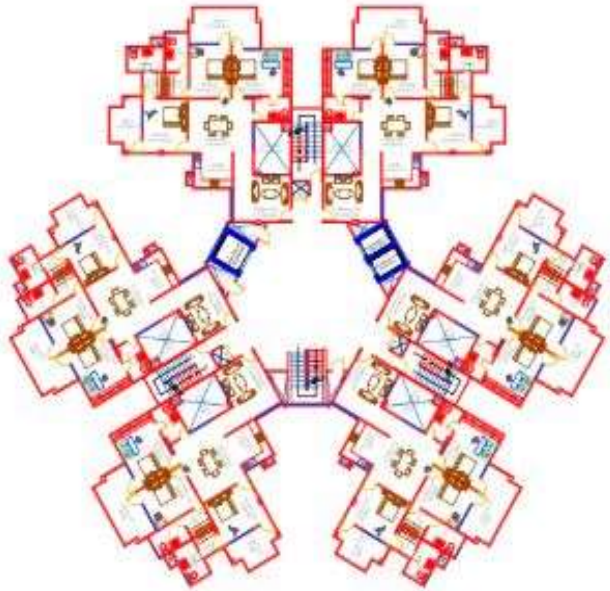
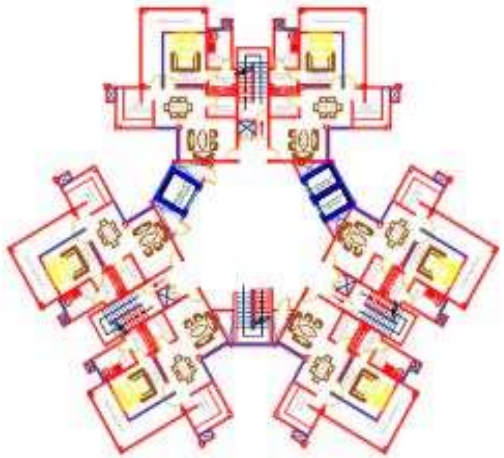
HOUSING FLOOR PLAN



2 BHK



3 BHK



1 BHK

FOREST RESEARCH & TRAINING INSTITUTE PUNJAB

DRAWING NAME:

FLOOR PLANS

NORTH:

MOHAMMAD HAMZA AFTAB

B.ARCH 5th YEAR 10th SEMESTER

2019-2020

ARCHITECTURAL THESIS

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STAGE :-

ROLL NO - 1140101102

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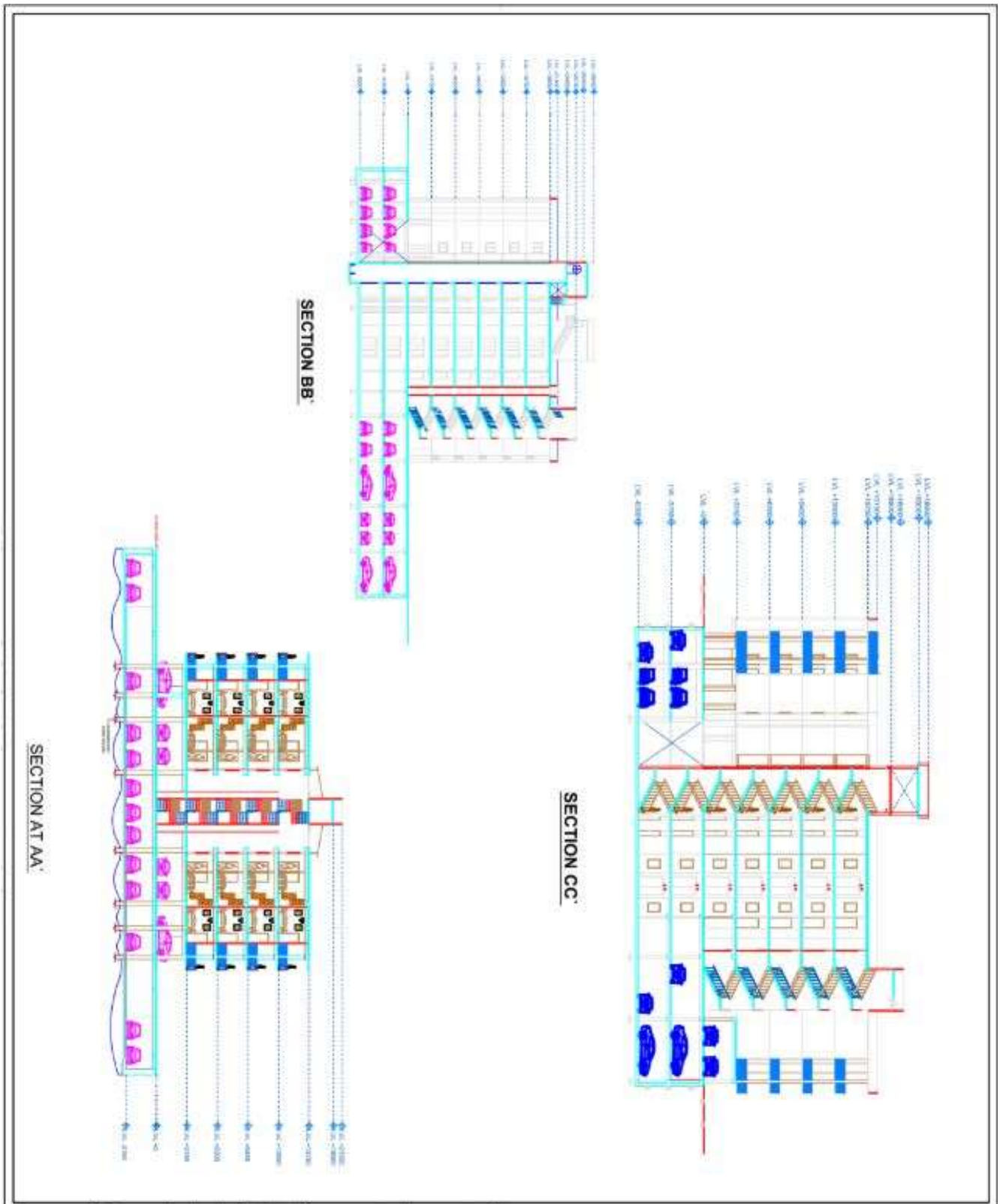
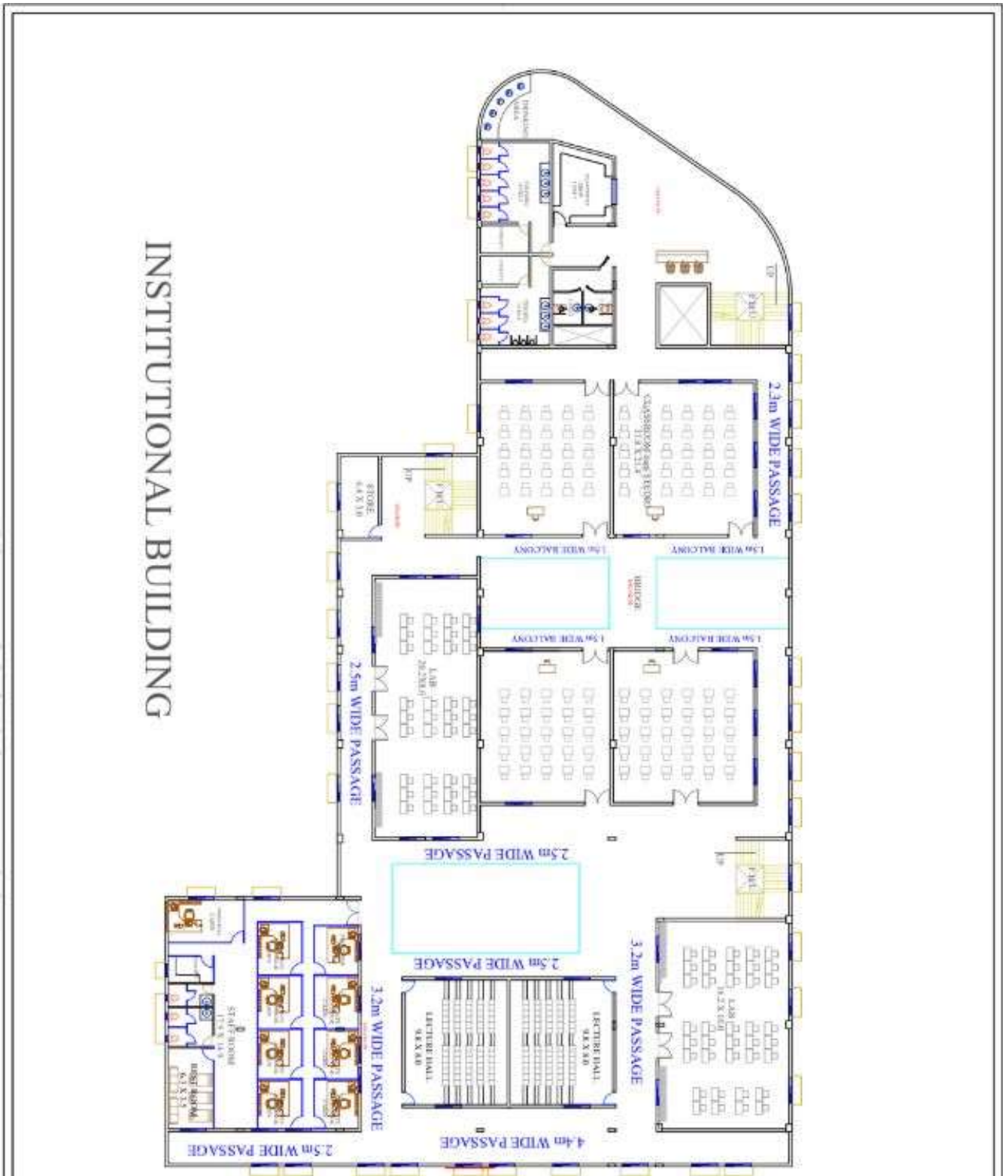
HOUSING SECTION ELEVATION



INSTITUTIONAL BUILDING PLAN



FOREST RESEARCH & TRA N NG NST TUTE PUNJAB

DRAWING NAME:
FLOOR PLANS

NORTH:
N

MOHAMMAD HAMZA AFTAB
B.ARCH 5th YEAR 10th SEMESTER
2019-2020
ARCHITECTURAL THESIS
B.B.D.U. LUCKNOW

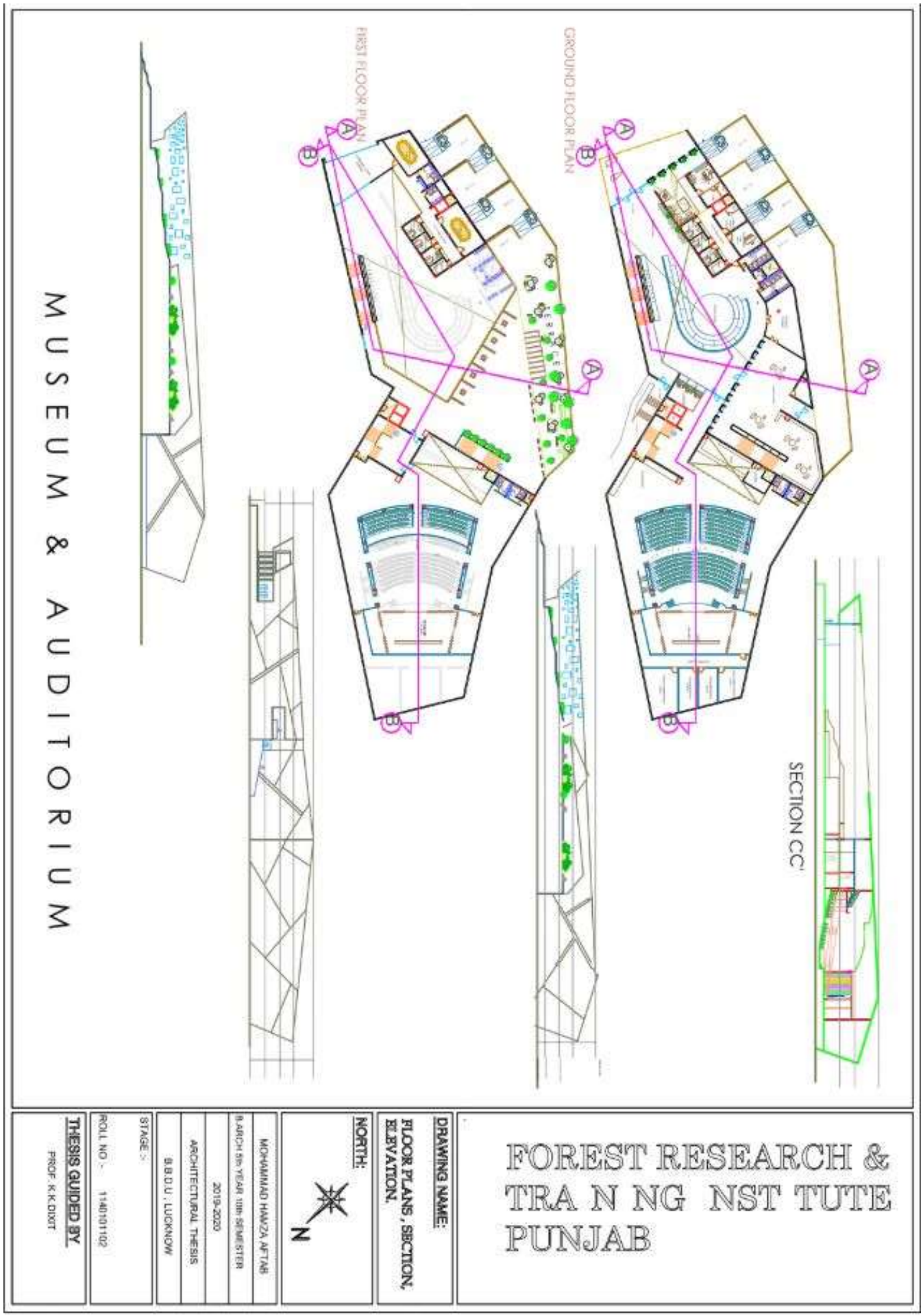
ROLL NO :- 1140101102

STAGE :-

THESIS GUIDED BY
PROF. K.K.DIXIT

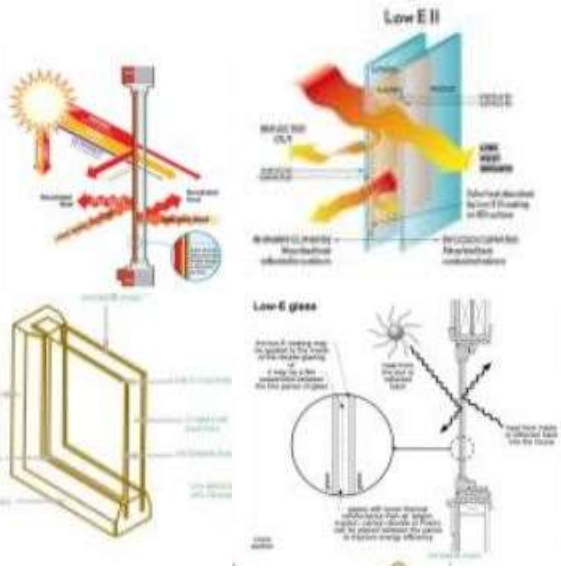
EMERGENCY CLINIC PLAN

MUSEUM & AUDITORIUM PLAN



ELECTIVE

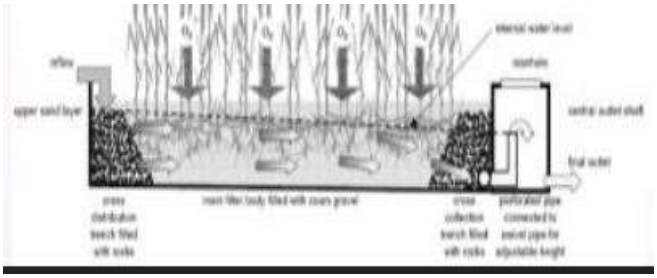
CONSTRUCTION TECHNOLOGY



1.LOW-EMISSIVITY

Energy-efficient glazing, such as Low-glass block portion of the UV and infrared light, while allowing a high percentage of visiblelight to come through. The result is less need for artificial lighting, a reduction is long-wave heat gain/loss , increased comfort/productivity for a buliding occupants and an overall reduction of heat usage.

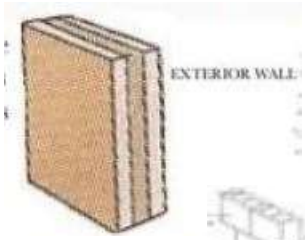
2.RAIN WATER HARVESTING

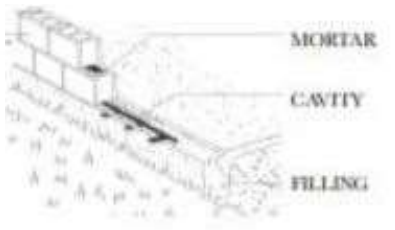


Water conservation measures are essintial for-

1.Adopt policy of zero water discharge.
2.Recycle water after treatment.
3.Reuse for toilet flushing ,air-conditioning and eventually,
for hoticulture.
4.Rain water harvesting and groundwater recharge

3.FLY-ASH BRICKS

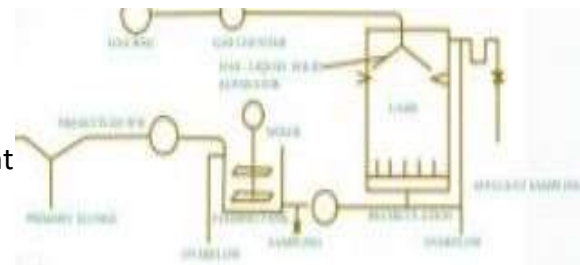




Double walls filled with glass or mineral wood to reduce heating.

1.The fly-ash bricks carries High compressive strength.
2.It provide good thermal insulation tham red clay Bricks, fly ash bricks are cheaper as compaired to clay bricks.
3.Fly -asg bricks are environment friendly

4.WATER WASTE MANAGMENT



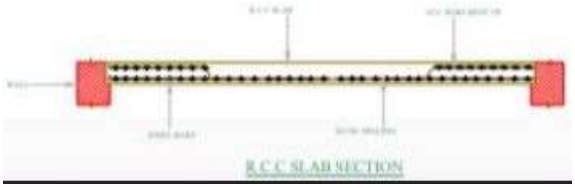
Waste Water to be treated by mechanical:

1.Utlise existing water body on site.
2.Minimise power consumption.
3.Multiple treatment levels achived at minimal cost.

Sewerage:

1.treatment to use mechanical as well as alternative(constructed weland) technology formultilevel treatment.
2.Sewer line to fllow natural slope. ETP(Effluent Treatment Plant) siting at low end of site.
3.Reuse treated water in flushing/ gorticulture.

5.R.C.C SLAB



1.Slab supported on 2 sides & bending takes place predomintaly on 1 direction only is called one way slab.
2.On the other hand, when slab is supported on all 4 sides & bnding takes place in 2 direction are said to be two way slab.