

MUSIC GURUKUL- AN ARCHITECTURAL MANIFESTATION OF MUSIC AT AMRAVATI, ANDHRA PRADESH

By

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A REPORT

Submitted in partial fulfillment of the requirements for the degree of
Bachelor of Architecture.



University of Mumbai

2017

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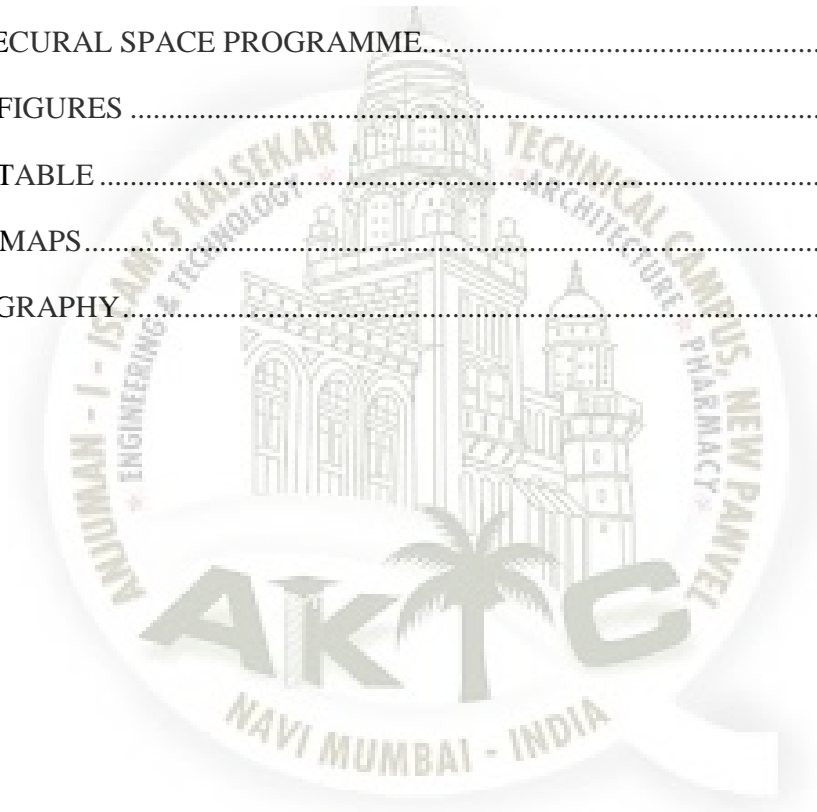
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I would also thank panel members (Prof. Sujit and Prof. Yaman) and Prof. Saddam for their assistance in providing information during the study.

Lastly, I would acknowledge all those people whose names cannot be mentioned here but have helped me during the case studies, site analysis as well as for providing the required data to make this thesis a satisfying effort from my part.

ABSTRACT

Music has always played a very important role. If we consider all the societies and cultures, music being an art form which speaks about the evolution of that society or culture. If we look back to the history of Indian Classical Music, it has developed through very intricate interactions amongst people of different cultures from many years which can be dated back to 3000-1200 BC.

However, the evolution of music got influenced from not only cultures but with the advancements and improvements in the music in terms of notations, scale, rhythm, instruments, language, etc. From these advancements the concept of *ragas* evolved which can be found in c.700 A.D. From c.1200A.D-c.1700A.D., various styles like *qawwali*, *naqsh* and many more other forms of music were invented. Eventually, *gharanas* which are also called as schools emerged which further led to the concept of performing and accommodation for the performers of royal courts who were accommodated by the royals. The *guru-shishya parampara* in music became more popular when the musicians performed in the royal courts in front of the people and the person who got interested in that style of music was free to take lessons from the *gurus* and staying with him at the same time. The performances in the royal courts thus further gave aesthetics to music. Thus, the *gharanas* gave music a new approach in terms of form and interpretation both in terms of music and architecture. The evolution of music thus did not remain confined to the notes or the rhythm but also started evolving in terms of the space and the quality.

The old tradition of music has to be preserved as they are a very important part of musical heritage. But, the approach for the Indian classical music, especially the *guru-shishya parampara* which was earlier followed as *gharana* style is becoming very superficial. Also, the *gharana* style of teaching is not becoming inviting for large number of people because of varied approach towards music and the wide range of music which is getting popular nowadays. Also, the absence of royal patronage has also resulted as a setback.

The mutual relations between the two art forms, that is, music and architecture will intervene a new approach where architecture will act as a tool which will express the art of music, especially the structure of *gharanas*, in terms of quality of space externally as well as internally which will increase the prominence of this style of school and thus provide a space for the *gharana* which are getting extinct in this date.

KEYWORDS: Indian Classical Music, *Guru-Shishya Parampara*, *Gharana*, Rhythm, Space, Manifestation.

2.1 INTRODUCTION

2.1.1 BACKGROUND STUDY

2.1.2 PROBLEM STATEMENT

2.1.3 OBJECTIVES

2.1.4 METHODOLOGY

- BASIC RESEARCH
- HISTORICAL RESEARCH
- INTERPRETATIVE RESEARCH

2.1.5 SCOPE

2.1.6 LIMITATION



2.1.1 BACKGROUND STUDY

Music has always been an important part in the Indian history. Music has never confined to just entertainment but also as a spiritual process of connecting oneself with the universe. It is also used as a medium for meditation.

But unfortunately, nowadays, the listeners or the admirers of Indian classical music are decreasing due to the changing preferences and the lack in the passage of the knowledge from the traditional *gharana* system teachers (*gurus*) to the students in which the students aspired in learning this knowledge fulfilled it by residing at the same place, learning music and after his share of learning is completed, he passes on his knowledge to the next generation and keeping this tradition alive.

Also, the *guru shishya parampara*(teacher-student system), which was earlier used as a traditional way of acquiring the knowledge of music is reducing day by day due to reasons like, the tradition or the culture is not being followed the way it was earlier. Also, the way of teaching Indian classical music is changing with the changing interests. Acquiring the knowledge of music has now confined to just getting the degree but not going into the depths of it by knowing the historical background, its significance and many such parameters. The reason may be due to the availability of time between, diversified preferences and interests, etc. Also, there are very less institutions which provide the scientific way of teaching this art.

But still there are certain groups of people who want to pursue and spread the knowledge of music from the knowledge acquired from their *gurus* to the youth, thus resulting in retaining the essence of Indian classical music and the process of spreading the same.

A music *gurukul* would help to rejuvenate the sincerity and the interest amongst the people in pursuing this art resulting in preserving the Indian history and culture of Indian classical music.

2.1.2 PROBLEM STATEMENT

The traditional way which was the *gharana* style of teaching is getting extinct and more of the commercialised way of teaching is taking place because of which the future of classical music in the country is not attracting the students to a training that goes with the time.

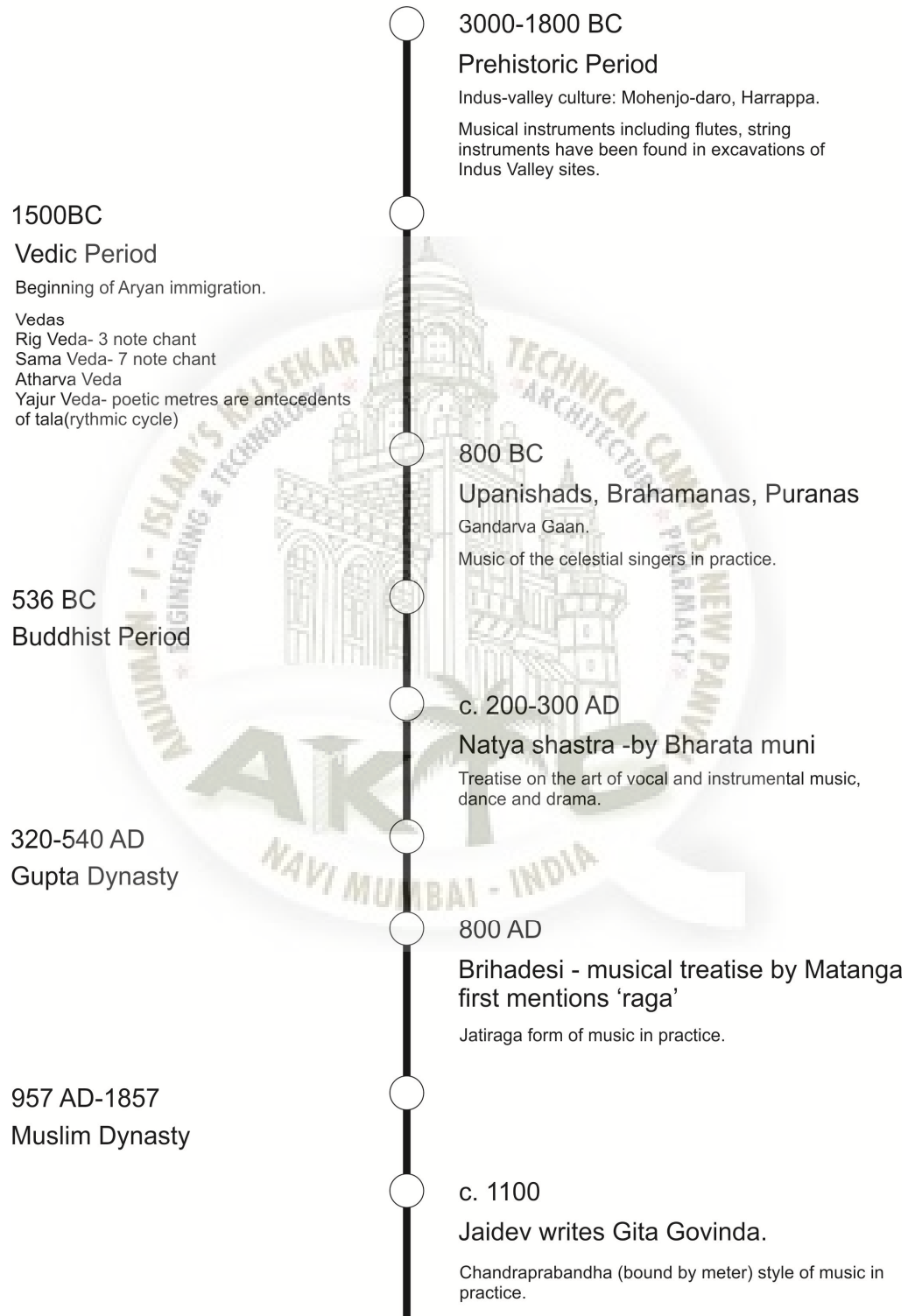
2.1.3 OBJECTIVES

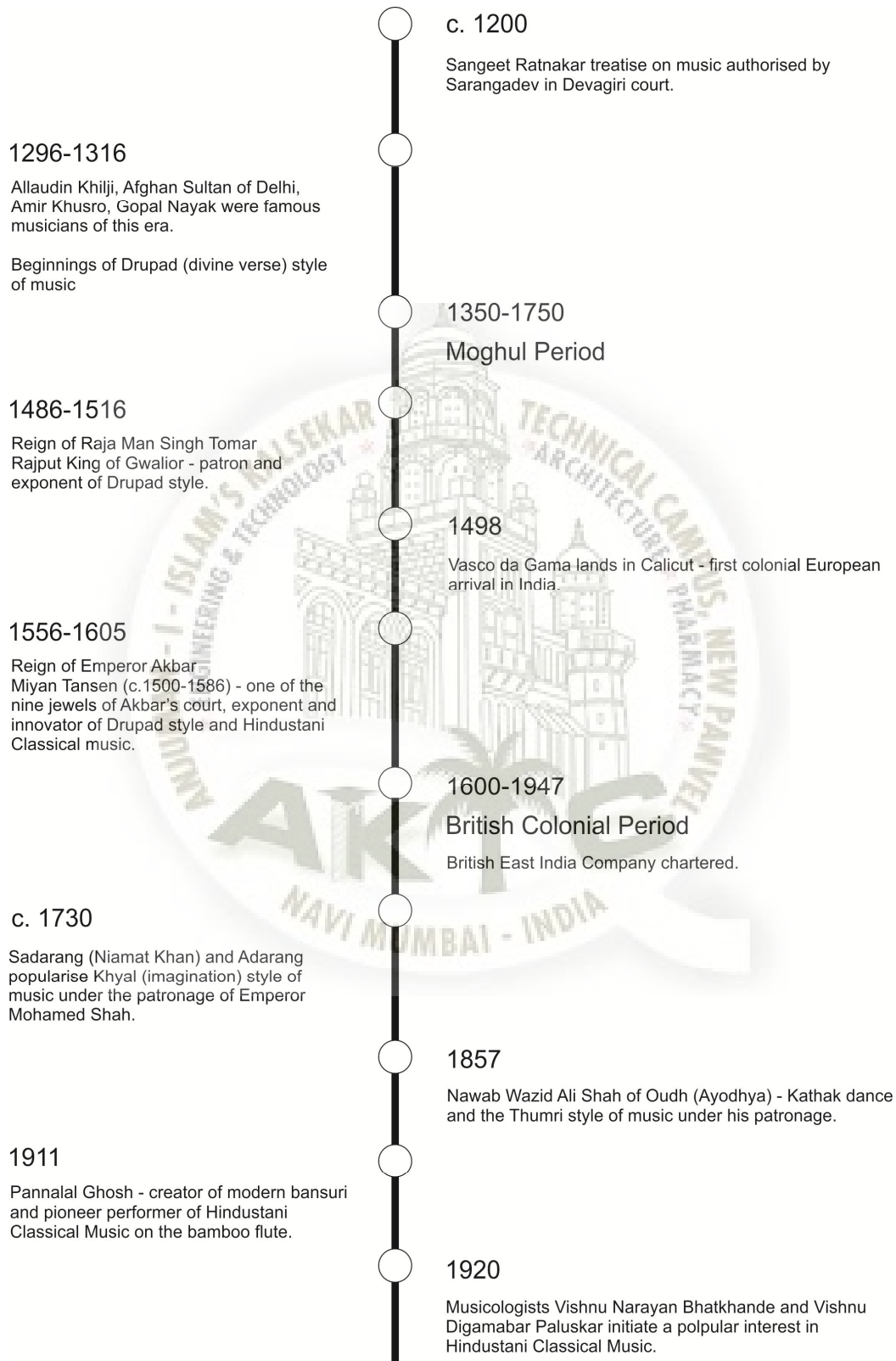
To create a training and a perseverance system in retaining the traditional Indian classical music, to increase its relevance by exhibiting the uniqueness and to enhance their skills through the process.

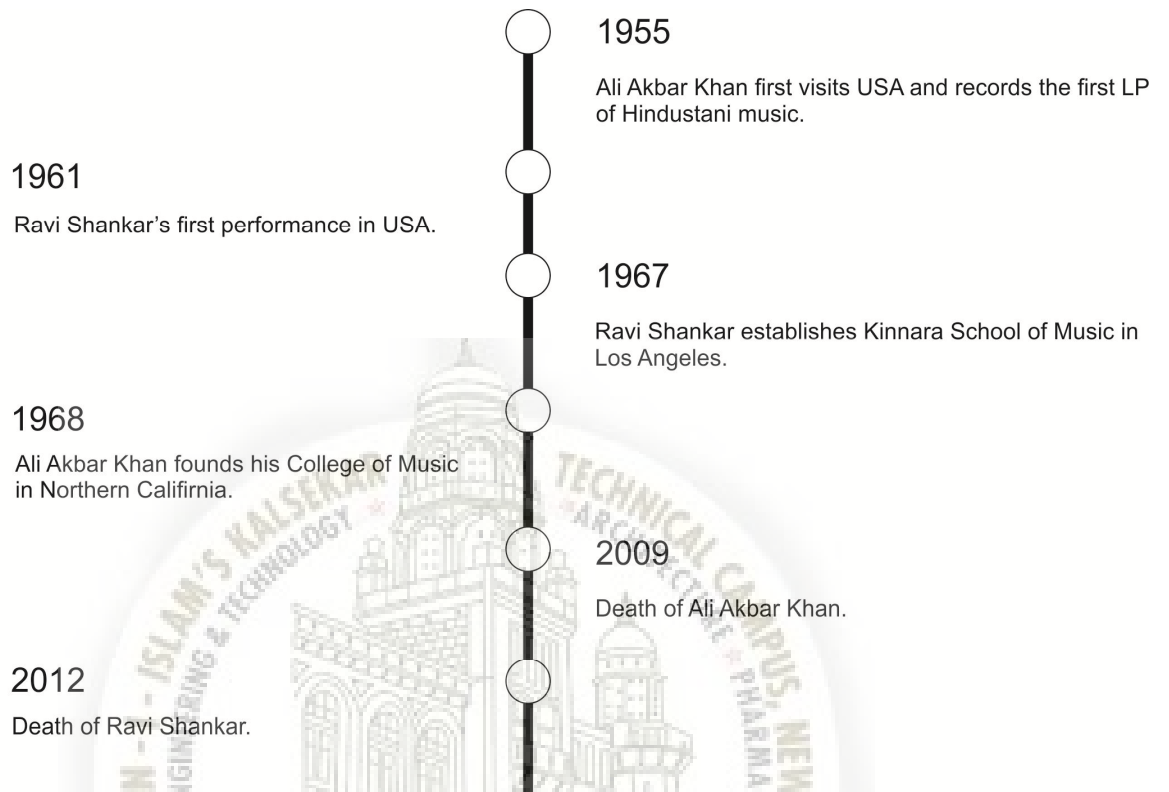
It will ensure an all round development of the students by getting a step-by-step training in the chosen style of *gharana*. It will also help in recognising an individual's talent and field of interest and will help in nurturing the same

Also, an establishment of integrated music school with residential facilities will be the main objective.

CHRONOLOGY

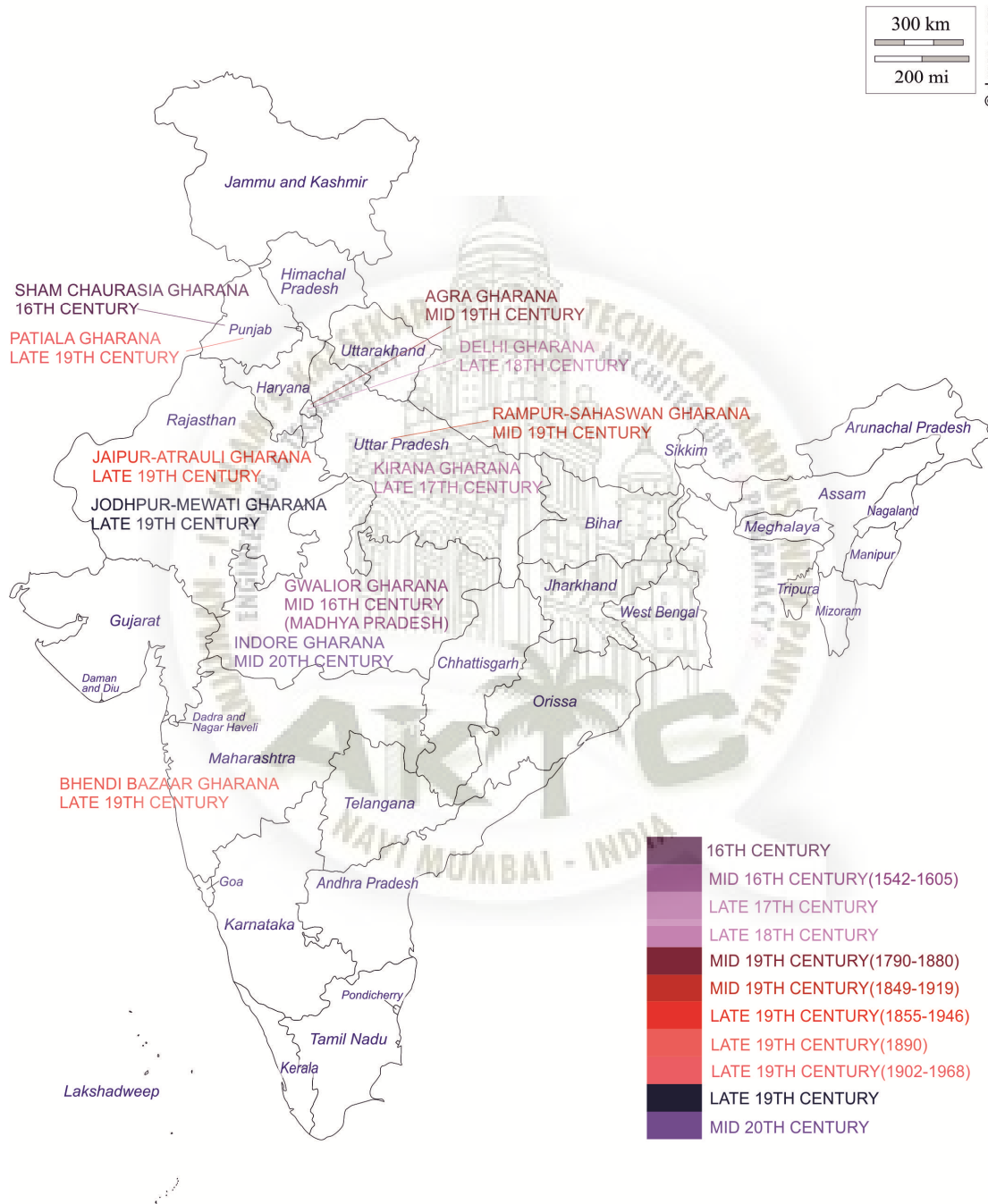






The legacy left behind these legendary figures is being nourished carefully by many students across the country. .

GHARANA CHRONOLOGY



2.1.4 METHODOLOGY FOR CASE STUDIES

- Historical Research: - This research will help understand the musical evolution in India with evolution and alterations in spaces with time.
- Interpretative Research: - This research as interpretative research is based on collecting, analysing and categorising the inter-relationships between the fields of architecture.
- To find and achieve the inter-relationship between these two fields and the study will be done from the raw data in both fields and analysing and categorising the data and form a theoretical framework to achieve the design process and lastly to study the architectural examples to illustrate the parallels between music and architecture.

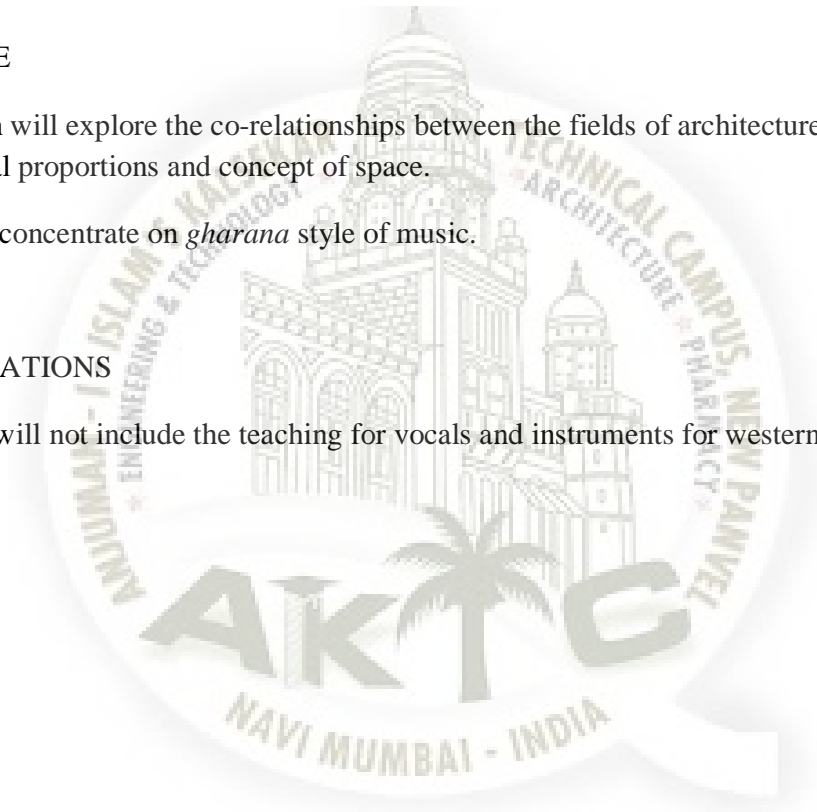
2.1.5 SCOPE

The research will explore the co-relationships between the fields of architecture and music with mathematical proportions and concept of space.

Also, it will concentrate on *gharana* style of music.

2.1.6 LIMITATIONS

The project will not include the teaching for vocals and instruments for western music.



3.2 LITERATURE REVIEW

3.2.1 DEFINITIONS AND DESCRIPTIONS

- MANIFESTATION
- *GHARANA*
- *GURUKUL*
- PARADIGM
- *VEDAS*

3.2.2 ARTICLES BY OTHER AUTHORS

NEWSPAPER ARTICLES

- 1) HINDUSTAN TIMES-AGRA *GHARANA* ON VERGE OF EXTINCTION
- 2) THE PATIALA *GHARANA* AND BEYOND

3.2.3 CASE STUDIES

- INTRODUCTION
- YEAR OF CONSTRUCTION
- PROJECT ARCHITECT
- SITE AREA
- NO. OF FLOORS
- PURPOSE OF CASE STUDY
- THEME OF PROJECT
- OBJECTIVE
- BASIC ZONING AND PLANNING
- SWOT ANALYSIS
- INFERENCE

3.2.1 DEFINITIONS AND DESCRIPTIONS

1) MANIFESTATION

An event, action, or object that clearly shows or embodies something abstract or theoretical.

OR

A version or incarnation of something or someone.

2) GHARANA

Any of the various specialist schools or methods of classical music or dance.

3) GURUKUL

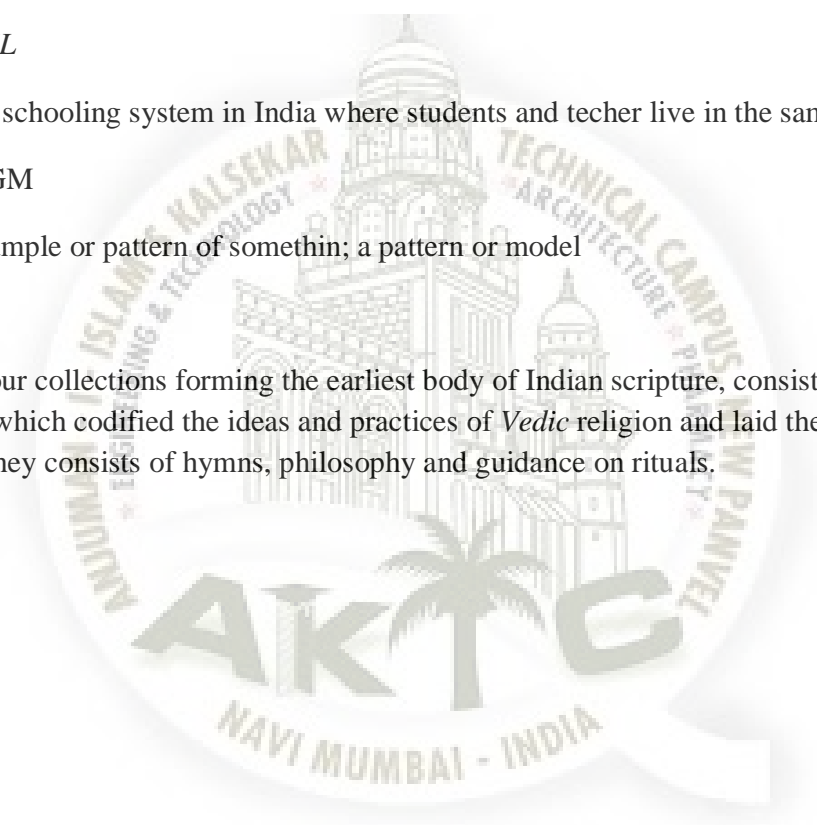
A residential schooling system in India where students and teacher live in the same house.

4) PARADIGM

A typical example or pattern of something; a pattern or model

5) VEDA

Any of the four collections forming the earliest body of Indian scripture, consisting of *Rig Veda*, *Sama Veda*, which codified the ideas and practices of *Vedic* religion and laid the basis of classical Hinduism. They consist of hymns, philosophy and guidance on rituals.



5/22/2017

Agra Gharana on verge of extinction | art and culture | Hindustan Times

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(<http://www.hindustantimes.com/>)

Agra Gharana on verge of extinction

The days of classical music's Agra Gharana seem to be numbered, with no takers or proponents in its very birth-place.

ART AND CULTURE ([HTTP://WWW.HINDUSTANTIMES.COM/ART-AND-CULTURE/](http://www.hindustantimes.com/art-and-culture/)) Updated: Jun 28, 2007 19:07 IST

 Brij Khandelwal
IANS

The Agra *Gharana*, one of the major streams of Hindustani classical music, is on the verge of extinction in the place of its birth. There are few patrons and the number of practitioners of this great musical tradition is dwindling.

The last of the illustrious representatives of the four-century-old Agra *Gharana*, Ustad Aqeel Ahmad Sahab, is leading a life of penury with no support from any quarter. The *ustad*, about 80 years old, is no longer able to give musical performances.

However, he continues to train a few passionate singers about the subtle nuances and variations that distinguish the Agra *Gharana* from other streams. But classical music aficionados wonder what is going to happen after him.

Jyoti Khandelwal, a teacher at the Lalit Kala Sansthan, says the old traditions have to be preserved because they are part of our musical heritage. "Only when we learn the old *Gharana* sangeet and have a sound grounding in classical streams can we do well in other forms of music," she adds.

Jitendra Raghvanshi, national secretary of the Indian People's Theatre Association (IPTA), laments the loss of interest in classical traditions.

"The young ones are veering towards pop musical streams which are neither soul satisfying nor soothing to the senses. Unlike other summer camps, we hold workshops on traditional folk music for children," he said.

Raghvanshi added that although the Agra *Gharana* was not popular in Agra, it had patrons all over India and was being kept alive by many classical singers.

Laiq Khan, the latest *ghazal* singing sensation of Agra, feels that singers who have solid grounding in classical music can make an impact. Khan says: "The Agra *Gharana* is not yet dead. It has admirers and patrons all over. But people in Agra are not taking pains to preserve and promote the rich tradition, which is sad indeed."

Debashish Ganguli, another of Agra's bright singing talents, said the Agra

<http://www.hindustantimes.com/art-and-culture/agra-gharana-on-verge-of-extinction/story-esQYavVd98f784LYAJNiol.html>

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Agra Gharana on verge of extinction | art and culture | Hindustan Times

Gharana

owed its birth to the efforts of Shamrang and Sasrang, two Rajput men who lived during the reign of Mughal emperor Akbar. The two later converted to Islam to be able to sing in the Mughal court. They are believed to have been relatives of Mian Tansen from Gwalior.

Ustad Faiyaz Khan later introduced several nuances to the musical form through voice modulation and stress on *aalaap* (non-metered opening section of Hindustani classical recital) and the rhythmic patterns of bandish (melodic composition fixed with words to a cycle of beats). The *ustad* is credited with founding the proper Agra *Gharana*. This school of music stresses on the melodic aspect of the raga and is replete with ornamentation.

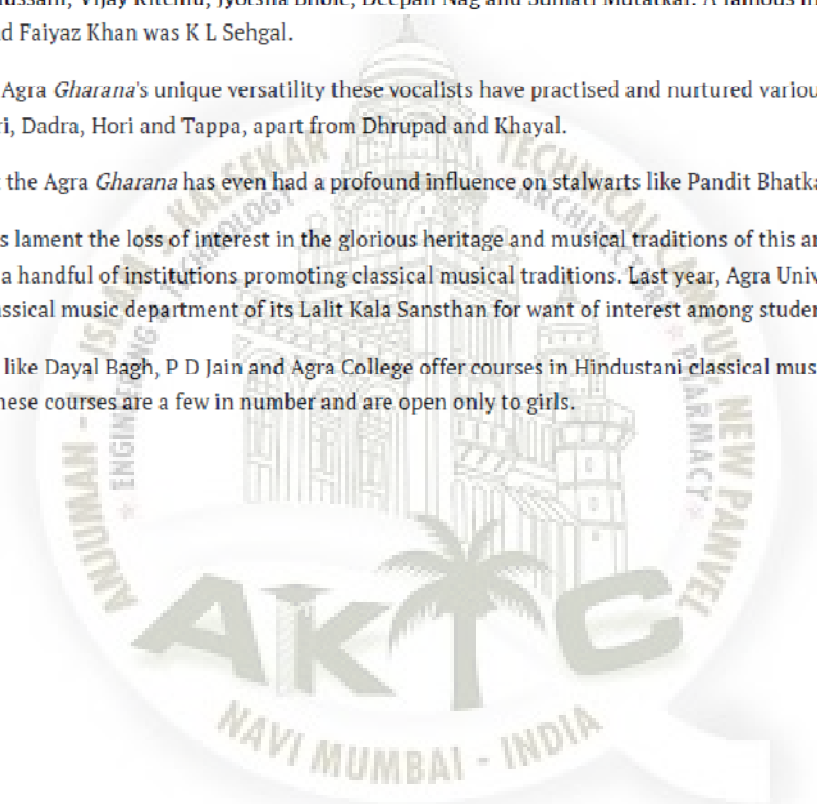
Renowned singers of this school include Sharafat Hussain Khan, Ustad Vilayat Hussain Khan 'Agrawale', Latafat Hussain Khan, Yunus Hussain, Vijay Kitchlu, Jyotsna Bhole, Deepali Nag and Sumati Mutatkar. A famous independent singer taught by Ustad Faiyaz Khan was K L Sehgal.

Reflecting the Agra *Gharana*'s unique versatility these vocalists have practised and nurtured various styles of singing such as Thumri, Dadra, Hori and Tappa, apart from Dhrupad and Khayal.

Some feel that the Agra *Gharana* has even had a profound influence on stalwarts like Pandit Bhatkande.

Agra musicians lament the loss of interest in the glorious heritage and musical traditions of this area. Unfortunately, there are only a handful of institutions promoting classical musical traditions. Last year, Agra University shut down the Hindustani classical music department of its Lalit Kala Sansthan for want of interest among students.

A few colleges like Dayal Bagh, P D Jain and Agra College offer courses in Hindustani classical music including the Agra *Gharana* but these courses are a few in number and are open only to girls.




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The Patiala Gharana and beyond | chandigarh | Hindustan Times

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The Patiala Gharana and beyond

At a recent seminar in the city, experts looked back at the lost glory of the Patiala Gharana and recalled the magical music that Ustad Bade Gulam Ali Khan (1902-1968), a famed exponent of the Gharana, created during his period. Writes Nirupama Dutt.

[CHANDIGARH \(HTTP://WWW.HINDUSTANTIMES.COM/CHANDIGARH\)](http://www.hindustantimes.com/chandigarh) Updated: Aug 17, 2014 09:36 IST Nirupama Dutt
Hindustan Times

At a recent seminar in the city, experts looked back at the lost glory of the Patiala Gharana and recalled the magical music that Ustad Bade Gulam Ali Khan (1902-1968), a famed exponent of the Gharana, created during his period. Many stories are recalled from the legendary life of the great maestro and a favourite among them is when filmmaker K Asif and music director Naushad requested him to sing two songs for Mughal-e-Azam.

The Ustad was at the apex of his fame and was hailed as an all-time great in Hindustani classical music. He declined at first saying, and rightfully so, that he did not sing for films. Asif placed before him a blank cheque and asked him to fill it out. The Ustad filled what was then an impossible sum: twenty-five thousand. To his surprise, it was accepted. The two numbers that he rendered, Shubh din aayo and Prem jogan banake, are now treasured in the history of cinema music. Gharana in music was a family of musicians with its special features was handed over through several generations from the Guru to the Shishya.

Among the different gharanas such as Jaipur, Kirana, Gwalior, Agra, Indore and others, the Patiala Gharana had its own special place of prominence. Exponents of the Patiala Gharana excelled in casting a spell on stage as they created music with its intricate tans and layakari. Purists often raised their eyebrows at the creative improvisations and the many different features from other gharanas that were aesthetically merged to take khayal gayiki to never-before heights and ending the concert with the singing of the thumri in Punjab Ang. As one explores the salient features of the Gharana, which went on to make magic in the light classical singing of say Nusrat Fateh Ali Khan rendering the qawwali or Gulam Ali unfolding the ghazal, one appreciates not just the creativity but the distinct Punjabi spirit. Punjab, with its peculiar geographical position, learnt to live with multi-culturalism.

The exponents of the Gharana had their roots in Kasur but they have imbibed the best from Jaipur and Delhi.

The style was Punjabi to the core, singing from the chest and not the throat. So was the Punjabi courage to experiment. The Gharana, like others, was scattered during the Partition. The absence of the princely patronage was a setback.

Now the time has come to look beyond Gharanas to the larger issue of the future of classical music in the country and attracting students to a training that goes with the times. While recalling the past glory, it is time to look forward to the future.

(The writer is a prominent art and culture critic.)



INFERENCE

The studies or the reasons of extinction of classical music are very superficial. It is not just the interest of the audience but also, it depends upon the current reasons of the disappearance of the same. At a very initial stage it is very important to appreciate the music by understanding it to its depth.

Secondly, if it has to be appreciated, it has to be made relevant with the current audience. To make or increase this relevance it is important to do several experiments and the process may be slow depending upon the acceptance of the concept. But this process needs to go parallel with the historical inventions and then only it will be appreciated. A superficial attempt may again result in extinction of this process.

These experiments are only possible when all the people with same concern come at one place and arrive at a solution, rather an invention and thus make progress or make relevant one of the celebrated art of our country, i.e. music. This will not be only dependant on vocal or notational aspects but should go hand in hand with the technological advancements.

Now, the progress is not limited only with the history, but to look at a larger perspective by recalling the history, it is time to look forward to the future. This will happen only when the students are attracted with training or a program that goes with the time.

Music should not be only heard but also be seen which can also be stated as a virtual experience. For this derivation art has a very important role to play in to extract elements of music. Also, it is not just arts but the mathematical proportions which help to derive to a design. It has to be a balance between both, i.e. the relation between the elements of music and architecture to control the aesthetics.

If there is an imbalance between them, then it becomes either too predictable or impossible to achieve the result. So, again it becomes important to experiment with different elements and to juxtapose the same, to obtain the desired result.

The conceptual arrival will happen only with collages and juxtapositions. After this it is important to merge into more visual aspects, i.e. the wall, ceilings, etc. In other words the volume, massing. Music has to exist with space. If a space is not created music has no existence for it to reach the audience. Sound has all to do with the spatial envelope as a paradigm of ruled surfaces.

CASE STUDIES

- 1) VISHWASHANTI SANGEET KALA ACADEMY
- 2) DR. GANGUBAI HANGAL GURUKUL
- 3) CHINMAYA NAAD BINDU GURUKUL
- 4) SWARNABHOOMI ACADEMY OF MUSIC
- 5) RED BULL MUSIC ACADEMY
- 6) HOUSE OF MUSIC
- 7) TOHOGAKUHEN SCHOOL OF MUSIC
- 8) SCIENCE AND MUSICAL EDUCATION CENTER SYMPHONY
- 9) MUSIC SCHOOL PROJECT CONCEPT "TALLER DE MUSICS"

VISHWASHANTI SANGEET KALA ACADEMY, LONI, PUNE

Vishwashanti Sangeet Kala Academy is situated besides Mulla Mutha river, Rajbaug, Loni, Pune. It is a 125-acre campus out of which 3-acres are dedicated to Sangeet Kala Academy. This land is owned by MAEER'S MIT Group of Institutions. The Sangeet Kala Academy teaches Hindustani vocal with instruments like *harmonium*, *tabla*, *bansuri*, *sitar* and also Hindustani *Sugam Sangeet* (light music). The site is a reclaimed land. The construction of the structures started from 2002 and some structures are still under construction. The main entrance is a 3-storeyed structure and the other structures are 2-storeyed.



Figure 1 Google Image

YEAR OF CONSTRUCTION: 2002

PROJECT ARCHITECT: Mangesh Karad

SITE AREA: 12000 SQ. M.

NO. OF FLOOR: G + 3

PURPOSE OF CASE STUDY: The purpose of this case study was to study the *gurukul* based teaching system and the space program.

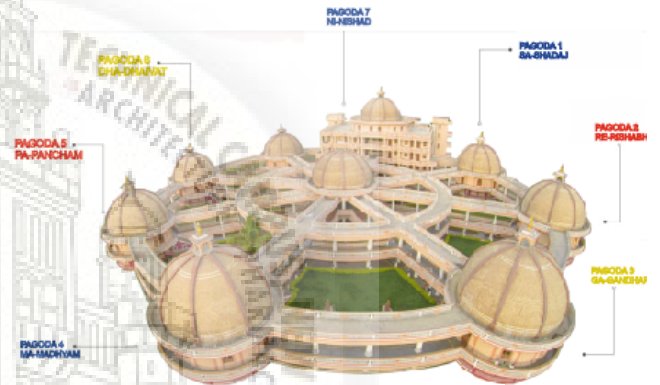


Figure 2 Concept

THEME OF THE PROJECT: The project is designed on the Indian concept of realising dignity and serenity through music and art. the 7 dome shaped structure symbolises 7 notes of music.

OBJECTIVE: This case study was done to understand the planning of the campus and individual modules with respect to the activities.

BASIC ZONING AND PLANNING PRINCIPLES:

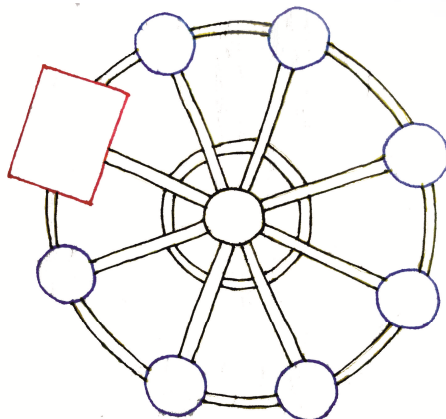


Figure 3 Zoning

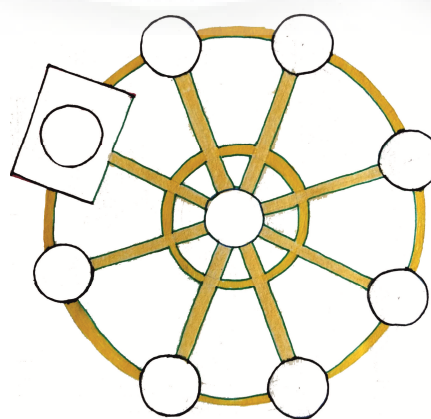


Figure 4 Zoning

LEGENDS

- Administration
- Classrooms
- Corridor Spaces
- Landscaped areas



Figure 5 Entrance, Admin Block and Hostel Block

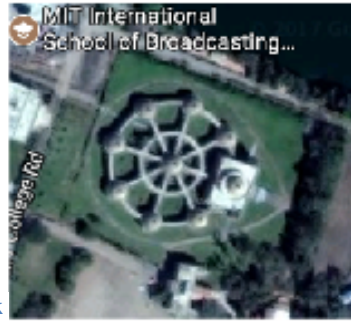


Figure 7 Plan

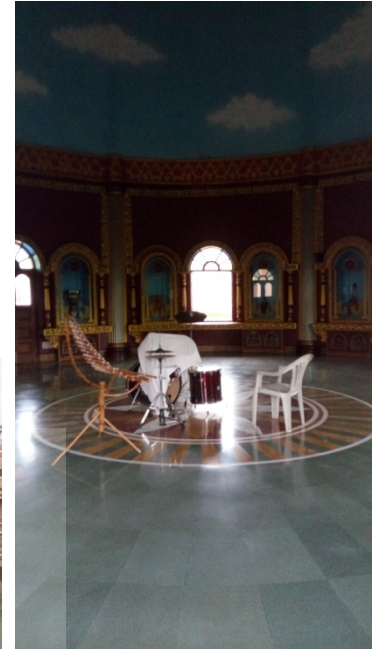


Figure 9 Classrooms



Figure 6 Interconnecting Corridors



Figure 8 Interconnecting Corridors

SWOT ANALYSIS

STRENGTH

The teaching system would attract more music learners.

WEAKNESS

The design does not include technological advanced areas.

OPPORTUNITY

The audition process will only take the best students

THREAT

The structure is not the barrier free design.

CEILING DOMES

The sound moves towards the constructive centre thereby creating echoes. The sound diffusing elements should be placed on the curved surfaces in order for the sound to be dispersed in many directions. The working stations should not be placed in the centre of the construction. Instead, furniture with sound diffusing properties should be placed in the centre.

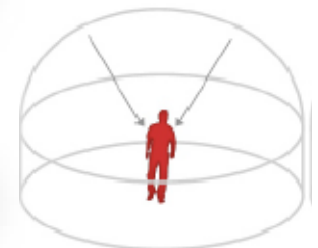


Figure 10

INFERENCE:

The program and the interaction process.

Also the admission process on the basis of audition which will allow only the best candidates.

Planning follows symmetry.

Geometry in terms of elevation is following dome shaped structure.



Figure 11

DR. GANGUBAI HANGAL GURUKUL, HUBLI, KARNATAKA

Gangubai Hangal Gurukul of Music is located in Hubli, Karnataka. It is a 5-acre campus which comprises of accommodation facilities for students and *gurus*. It also consists of dedicated classrooms for different *gharanas*. Gangubai Hangal Gurukul of Music is established by Government of Karnataka. The gurukul consists of 6 *gharanas* and 6 teachers and 6 students per teacher. The students unit is G+1 structure and the *guru* houses are ground floor structure which are constructed in locally available materials which compliments on to the climate and has used eco-friendly techniques for the structure to sustain. The land is contoured and the design is such that the contours are not disturbed and the topography is incorporated in the design.



Figure 12 Google Image

YEAR OF CONSTRUCTION: 2009

PROJECT ARCHITECT: Praveen Bavdekar

SITE AREA: 20,000 SQ. M.

NO. OF FLOORS: G + 1



Figure 13 View

PURPOSE OF CASE STUDY: This study was done to observe and understand the structure and *gharana* style of music and the space program provided for the same.

THEME OF THE PROJECT: The project is about weaving two strands of pedagogical philosophies, the eastern and the western, into a spatial fabric. It is quite innovative with its forms and spaces as well as the use of traditional forms and materials.

OBJECTIVE: In this case study the main focus was on the pure *gharana* based music *gurukul* where the system of *guru-shishya parampara* was followed. Also, the concept of using the land as it is by not disturbing its topographical features and incorporating the same in the design. Also, the campus is innovative with its forms and spaces and also use of traditional materials in a contemporary way.

BASIC ZONING AND PLANNING PRINCIPLES



Figure 14 Zoning

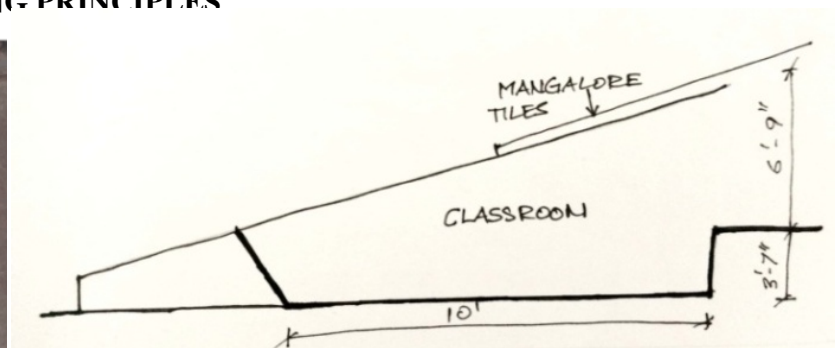


Figure 15 Schematic Section

Figure 15 Schematic Classroom Section

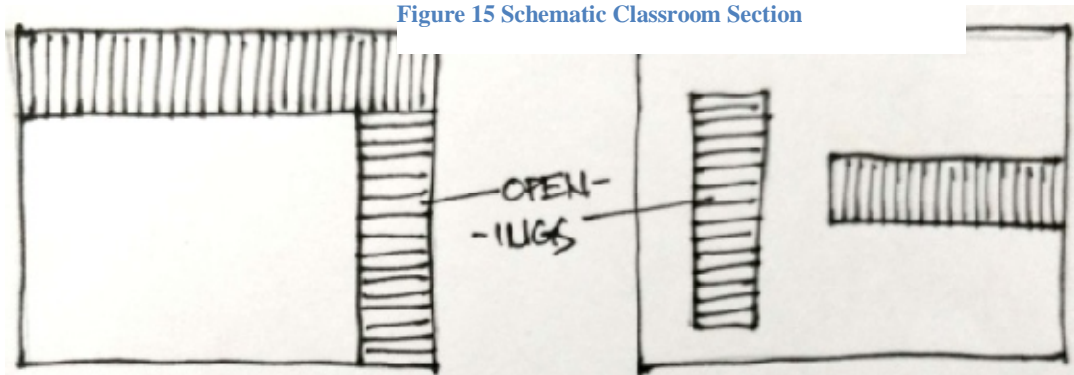


Figure 16 Openings



Figure 17 Schematic Student Accommodation Room

SWOT ANALYSIS:**STRENGTH :**

The program holds very traditional way of learning.

WEAKNESS :

The design does not include technological advanced areas.

OPPORTUNITY :

The audition process will only take the best students.

THREAT :

The structure is not the barrier free design.

INCLINED CEILING:

Inclined ceiling have both a sound spreading and sound concentrating effect.

In most cases, the sound is concentrated because the sound regulation of the area around the inclined ceiling has not been considered carefully. The wall area opposite the inclined ceiling should also be equipped with sound absorbing materials.

All surface above normal ceiling height (2.60 M) including the end walls should be equipped with sound absorbers.

INCLINED WALLS:

Inclined walls have both a sound spreading and sound

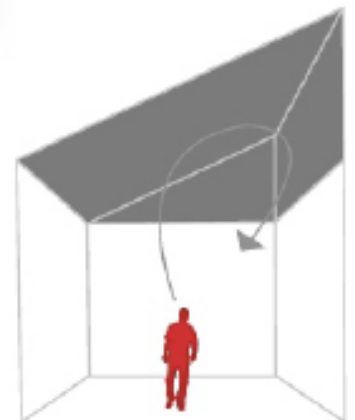


Figure 18

concentrating effect.

The sound spreading effect is achieved by inclining the wall in proportion to other walls and ceiling.

In general, the walls inclined by more than 6 degrees ensures an excellent sound diffusion.

The most sound diffusion is obtained by applying several angles.

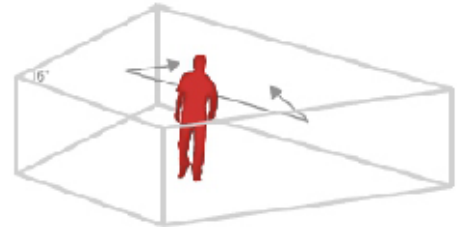


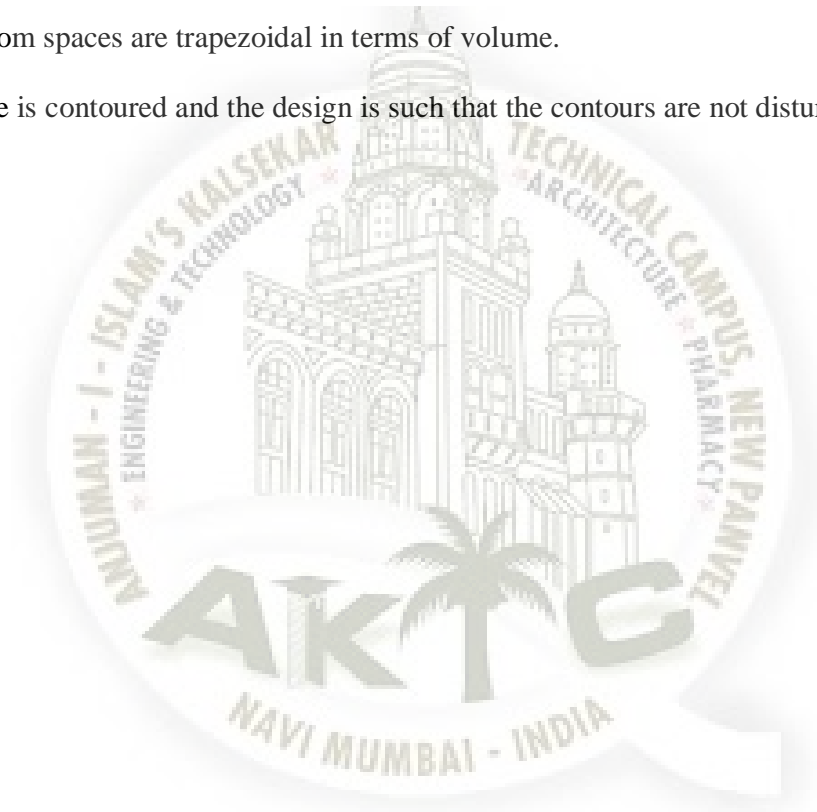
Figure 19

INFERENCE:

The traditional way of teaching that is, the *guru shishya parampara*. Also, the program concentrates on teaching the gharana style of music.

The class room spaces are trapezoidal in terms of volume.

Also, the site is contoured and the design is such that the contours are not disturbed.



CHINMAYA NAADA BINDU GURUKUL, KOLWAN, PUNE

Chinmaya Naada Bindu Gurukul is located in the Kolwan village, Pune, India. It is a gurukul that comprises of training under music and dance. It is 65-acre campus and propagates the wisdom of the *vedas* through the performing arts. It has a goal of teaching art forms in a vast sense of theory and practice.

YEAR OF CONSTRUCTION: 2009

PROJECT ARCHITECT: Nitin Killawala,
Shailesh Bagtharia



Figure 20 Google Image

SITE AREA: 65-acres

PURPOSE OF CASE STUDY: In this case study the structure holds the traditional use of built and open space and incorporating the same into the design.

THEME OF THE PROJECT: The primary aim was to serve a venue for various national and international camps. The master plan for the same offered a unique challenge in the integration of the spiritual as well as the residential clusters. A continuous spine towards the western edge of the campus serves a principle tie along which a sequence of spaces unfolds.

OBJECTIVE: This study comprises of the use of natural elements incorporated in the design the way they used to be in the historical times.

BASIC ZONING AND PLANNING PRINCIPLES



Figure 21 Plan



Figure 22 View



Figure 23 View Showing Open Area for Lectures

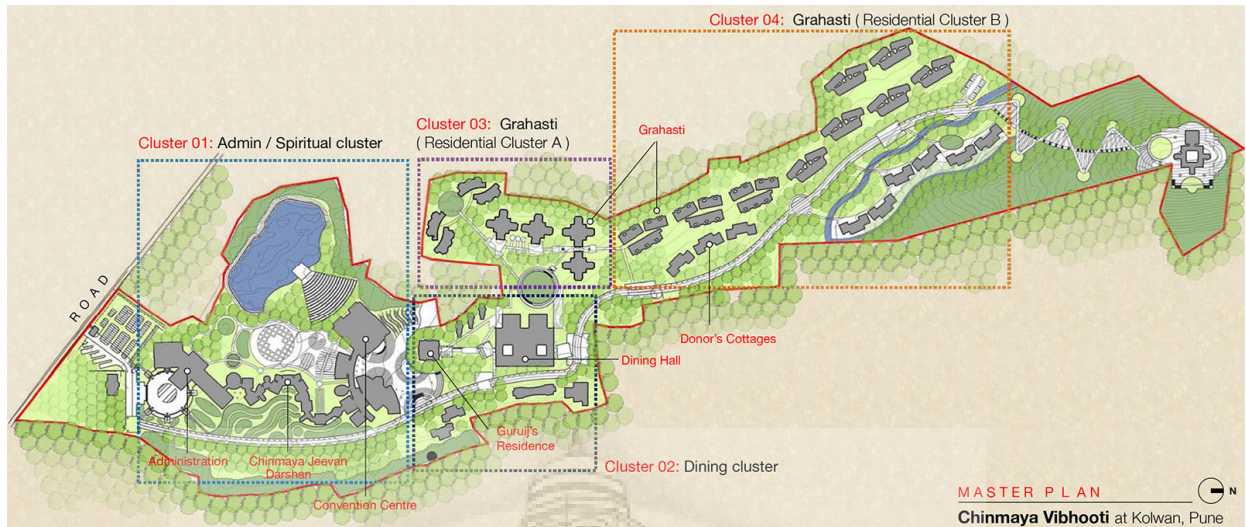


Figure 24 Master Plan

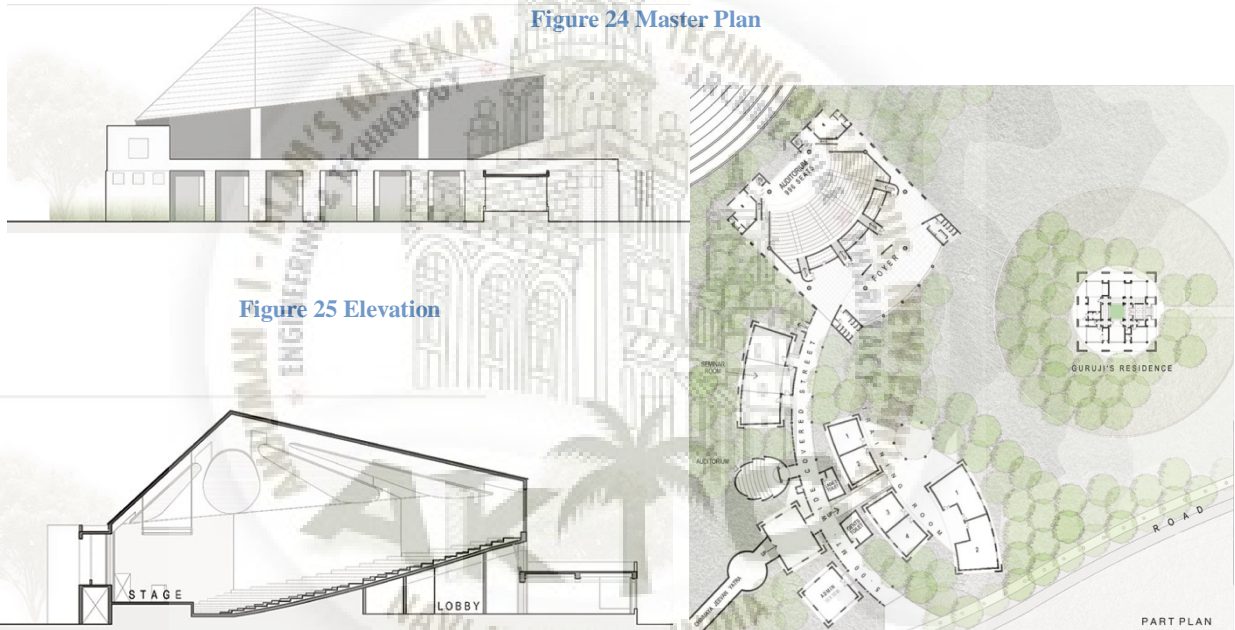


Figure 25 Elevation

Figure 27 Part Plan

Figure 26 Schematic Section of Auditorium

SWOT ANALYSIS:

STRENGTH:

It holds a very strong ancient way of teaching.

WEAKNESS:

Importance given to only particular language

OPPORTUNITY:

The integrated way of teaching may attract the users

THREAT:

People may lose interest in the learning process due to conciseness.

INFERENCE:

The ancient way of teaching in open space. Integrated spaces which interacts with open spaces.

SWARNABHOOMI ACADEMY OF MUSIC, CHENNAI, TAMIL NADU

Swarnabhoomi Academy of Music is a part of an institutional hub of a 600-acre satellite township which is equidistant from the major nodes like Chennai and Pondicherry, along the East Coast Road which is global and cross-cultural in nature.

YEAR OF CONSTRUCTION: 2010

DESIGN TEAM: Prasana, Tamizh, Ramakrishnan, Vighnesh, Sabrish, Vijendranath, Balasubramian.

SITE AREA: 16,000 SQ.M

BUILT UP AREA: 31,500 SQ.FT

PURPOSE OF THE CASE STUDY: To understand the spaces which are given in a western music school so as to make the gurukul system also more adaptive.

THEME OF THE PROJECT: The design is inspired graphically from the musical notion, neutral clefs, piano keys, equalizer bars, etc. These simple rectangular forms were used for seaters and planters, to symbolize the activity in these areas where there is no specific agenda thrown into the mind and mind can work at any level - (free from boundaries).

OBJECTIVE: To make spaces in gurukul more adaptive in the way they are given in these western institutes and also to understand how these institutes are made technologically advanced.

BASIC ZONING AND PLANNING PRINCIPLES:

Figure 28 Top View



Figure 29 Abstraction of Piano



Figure 30 Main Building Entrance



Figure 31 Abstraction of Piano

SWOT ANALYSIS:**STRENGTH**

The dedicated practice rooms / musical huts provide students to practice individually.

WEAKNESS

The periphery or the context has not yet been developed.

OPPORTUNITY

The interaction of the built and open spaces helps or gives a sense of freedom or flexibility to students.

THREAT

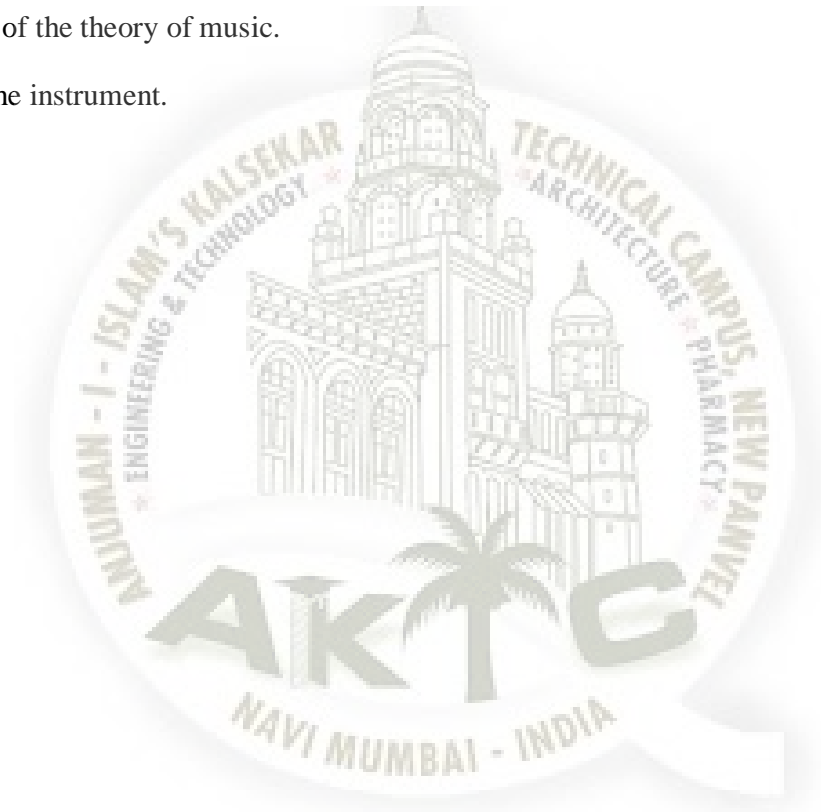
The future development of the context may make the structure lose its identity.

INFERENCE:

Abstraction of the musical instrument.

Abstraction of the theory of music.

Related to the instrument.



HOUSE OF MUSIC, BOLOGNA, ITALY

House of Music, Bologna, Italy is located in a portion of the former Lamborghini manufacturing area which has been restored and renovated with the help of municipality and is transformed into a leisure park. The has bicycle paths which are connected to the city centre. The structure is a space which is used at any point of time for purposes like gathering space which are not related to music.

YEAR OF CONSTRUCTION: 2017

PROJECT ARCHTECT: Mario Cucinella
Architects

SITE AREA: 500 SQ. M.

NO. OF FLOORS: Ground Floor

PURPOSE OF THE STUDY: To study the transparency between the structure and public though they are having different purpose.

OBJECTIVE: To study the use of materials and the abstraction of the spaces from the musical instruments.

THEME OF THE PROJECT: The house of music was born out of the desire to create structures and spaces suitable for two programs:

- (A) Concert Promotion (B) Musical Teaching In The Municipality.

The language is inspired by the musical tradition, resulting in a building comprising various independent elements, not unlike the instruments in an orchestra, which collectively enhance the whole.

BASIC PLANNING AND ZONING



Figure 33 Natural Lighting



Figure 32 Google Image

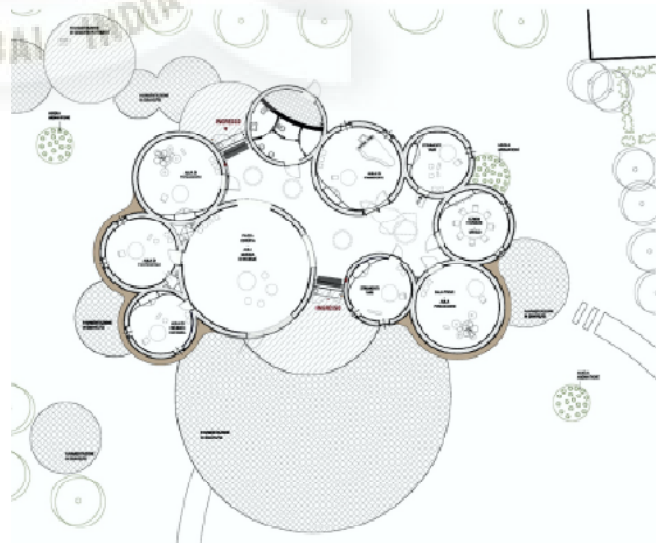


Figure 34 Plan

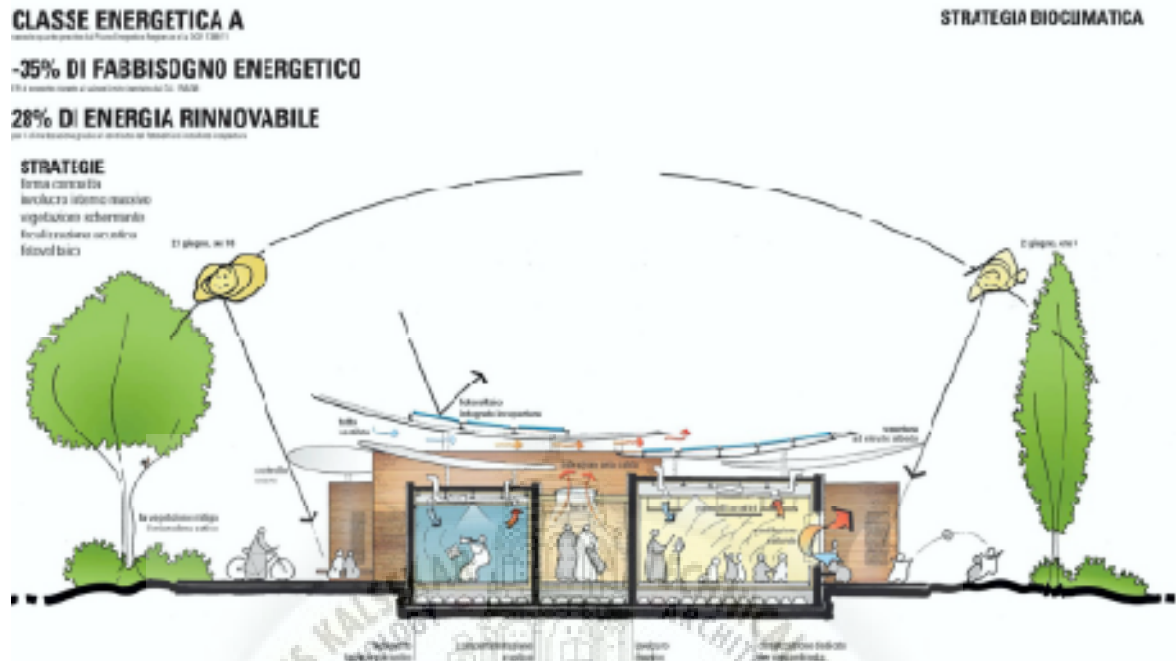


Figure 35 Section Showing use of Natural Light and Ventilation

SWOT ANALYSIS:

STRENGTH:

Since it is a leisure park, people coming or passing over from will be more thus, increasing interest and curiosity.

WEAKNESS:

Flexibility of the users.

OPPORTUNITY:

Interactive space will invite more number of people.

THREAT:

Since it holds activities other than music, the very main identity is lost.

INFERENCE:

Ventilated facade cladding.

Gathering place for community.

Internal discussion space.

RED BULL MUSIC ACADEMY, METADERO, MADRID

The Red Bull Music Academy (RBMA) is a nomadic annual music festival. This festival is held from the last 14 years in different cities of the world. It welcomes 60 pre-selected international participants with musicians, producers, DJs which allows them to interact and exchange knowledge in the world of music. In 2011, it was going to be held in Tokyo, but because of the devastating effects of earthquake, the location had to be changed. So, within five months the industrial warehouse complex in Madrid was designated as the event's new location.

YEAR OF CONSTRUCTION: 2011

PROJECT ARCHITECT: Maria Langarita Victor Navarro

NO. OF FLOORS: Ground Floor

PURPOSE OF STUDY: To study the use of materials and the temporariness of the structure.

OBJECTIVE: The objective was to not just study the use of materials but also to see the reusability of the materials and also the spaces derived from the same.

THEME OF THE PROJECT: The theme of this project depends on the following points:

- 1) **DEADLINES AND BUDGET:** The construction had to be completed in two months, implementing solutions that would require only light construction.
- 2) **REGARDING CONSTRUCTION:** Not modifying the warehouse itself, but rather leaving it exactly as it was before the intervention.
- 3) **PROGRAM REQUIREMENT:** Specific configuration.
- 4) **ACOUSTICS:** This determined the geometry as well as choice of materials.
- 5) **TEMPORARINESS:** It was designed to be dismantled.

BASIC PLANNING AND ZONING:



Figure 36 Schematic Plan of Lounge and Lecture Room

Figure 37 Plan

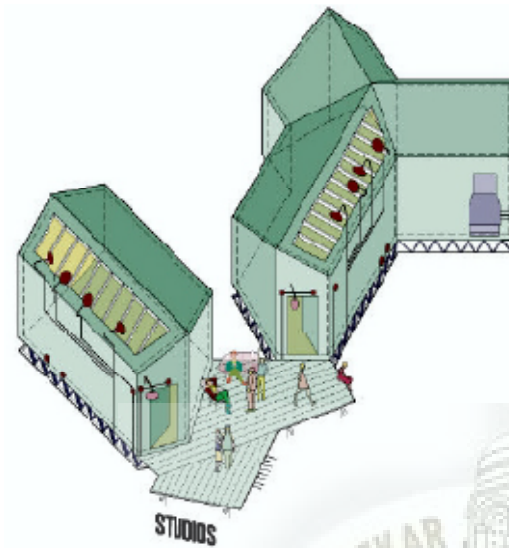


Figure 38 View Studio

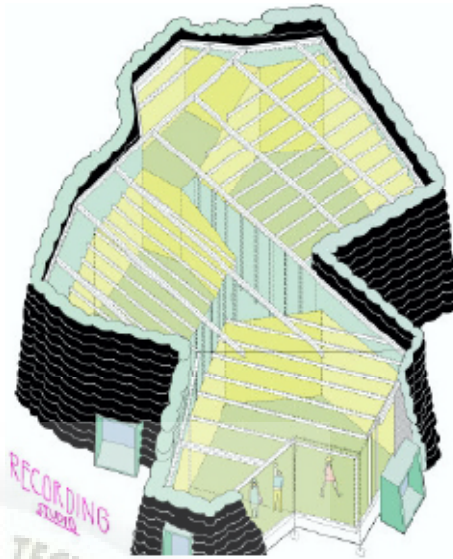


Figure 39 View of Recording Studio

SWOT ANALYSIS

STRENGTH

The temporariness of the structure makes it reusable and recyclable.

WEAKNESS

The space program is very specific and limited.

OPPORTUNITY

Always there will be a room for future expansion and flexibility in terms of material selection

THREAT

There is a restriction in the expansion of spaces.

INFERENCE:

The temporariness of structure.

Use of acoustical materials: for e.g., sand bags, planter pots, etc.

TOHOGAKUEN SCHOOL OF MUSIC, TOKYO, JAPAN

This project of a music college is set in a typical suburban setting of Tokyo, Japan. The music college does not consist of one side corridor compartment style lesson rooms but consists of new arrangements which are not like typical campus style.

YEAR OF CONSTRUCTION : 2014

PROJECT ARCHITECT : Nikken Sekkei

NO. OF FLOORS: Basement, G+1

BUILT UP AREA: 1943 SQ.M.

PURPOSE OF STUDY: To understand how the isolation or the connectivity is broken between the surroundings and the structure.

OBJECTIVE: To understand the use of spaces like corridors, staircases etc, which are utilised in sync with the musical trainings

THEME OF THE PROJECT: Through exploration of creating an appropriate place for learning music apart from the old one side corridor compartment style lesson rooms. A new arrangement of lesson rooms has been developed in which it's not a typical campus style or dispersive location of schools.

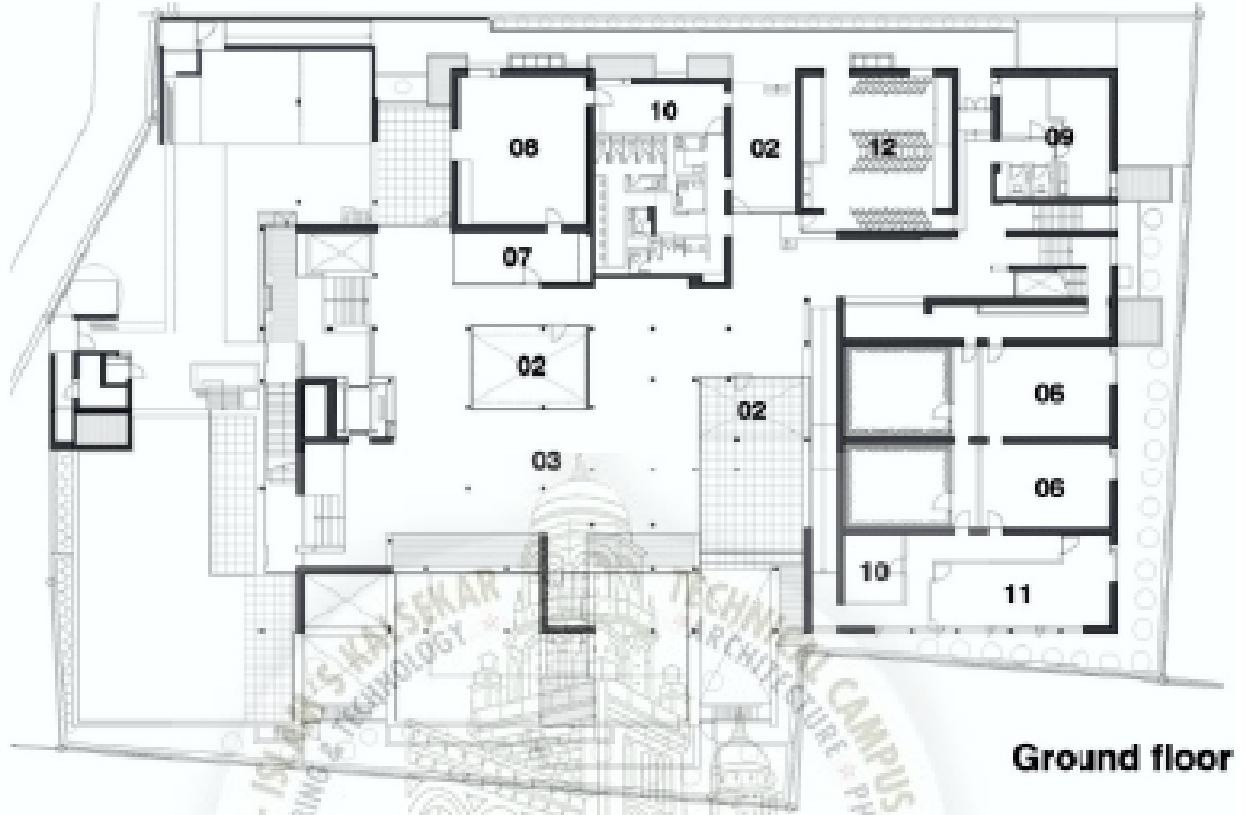
BASIC PLANNING AND ZONING:



Figure 40 Google Image



Figure 41 Basement Floor



Ground floor

Figure 42 Ground Floor



First floor

Figure 43 First Floor



Figure 44 North - South Section

SWOT ANALYSIS:**STRENGTH**

Experimentation by the students between different spaces like corridors, staircases to experience the behaviour of sound with and without acoustical treatment.

WEAKNESS

No visual connections with the surroundings.

OPPORTUNITY

The experimentation will lead to the invention of new musical experiences which would further keep the process continuing, thus keeping it alive.

THREAT

Curiosity amongst the people surrounding that area may get lost.

INFERENCE:

The flexibility inside the structure.

User oriented space design.

SCIENCE AND MUSICAL EDUCATION CENTER , SYMPHONY, KATOWICE, POLAND

Science and Musical Education Centre, Symphony, Katowice, Poland, is an extension project carried out on 2005-2007 where it creates a new fragment in the city's dense urban environment.

YEAR OF CONSTRUCTION: 2007

PROJECT ARCHITECT: Tomasz M. Konior

THEME OF THE PROJECT: This music academy, after extension, carried out in 2005 - 2007 creates a new fragment of the city's dense urban structure. Implementation of this urban concept results in creation of two spaces:

- 1) **AN OPEN ONE** : Which forms a courtyard near the rector's office.
- 2) **A CLOSED ONE** : The glazed atrium housing foyer and garden.

BASIC PLANNING AND ZONING :

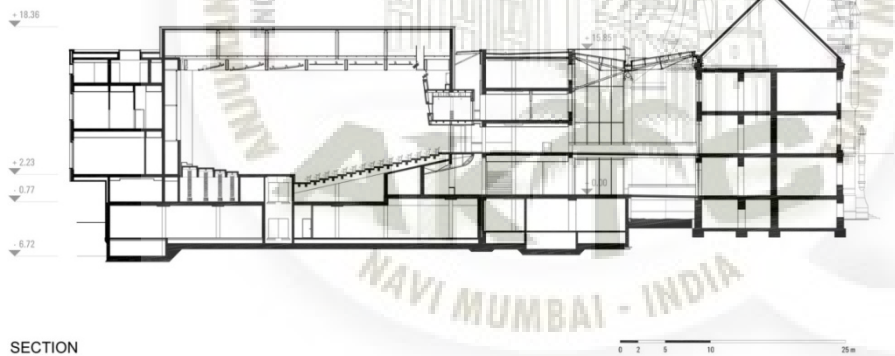


Figure 46 Schematic Section

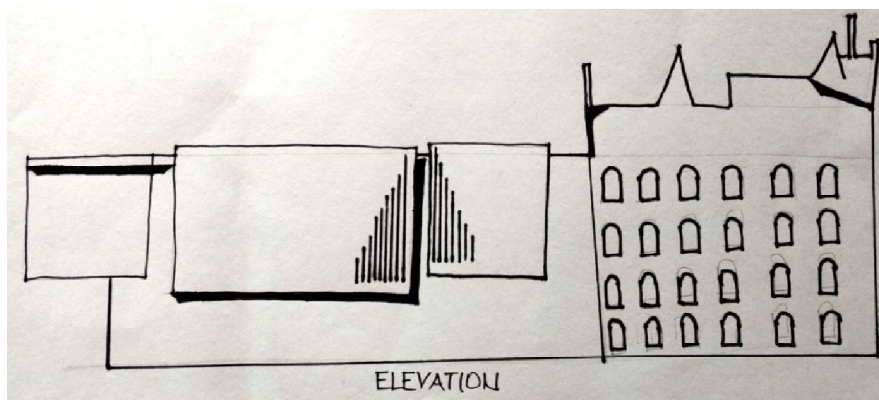
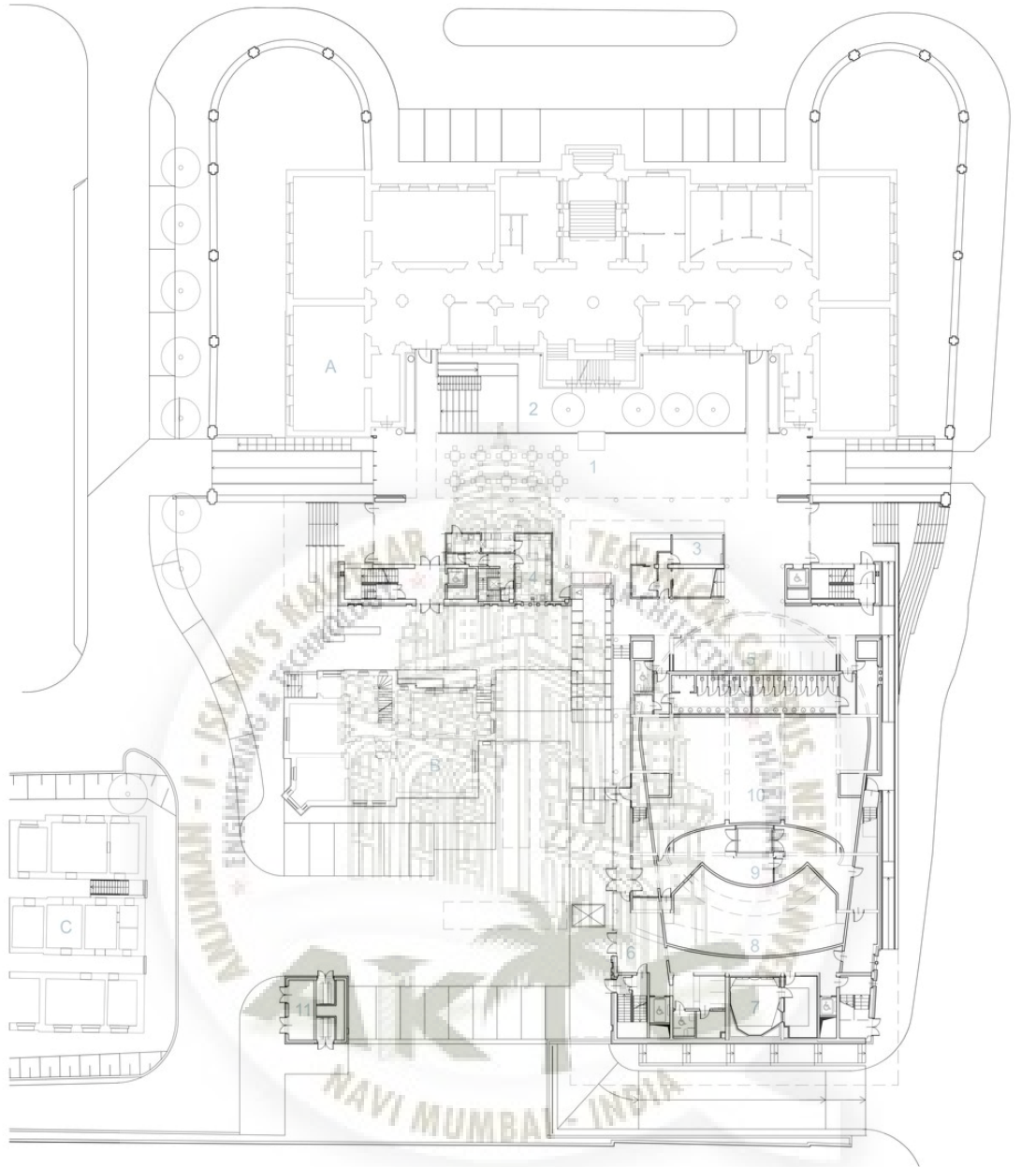


Figure 47 Schematic Elevation



Figure 45 Context Plan



LEVEL 0 

0 2 5 10 25m

- ATRIUM / MAIN FOYER 1
- GARDEN AND AMPHITHEATRE 2
- TICKET OFFICE AND SHOP 3
- BAR 4
- CLOAKROOM 5
- ARTISTS' ENTRANCE 6
- RECORDING STUDIO 7
- SCENE MACHINERY ROOM 8
- PIANO TUNING 9
- SERVICE SPACE 10
- TECHNICAL BUILDING 11

Figure 48 Ground Floor Plan

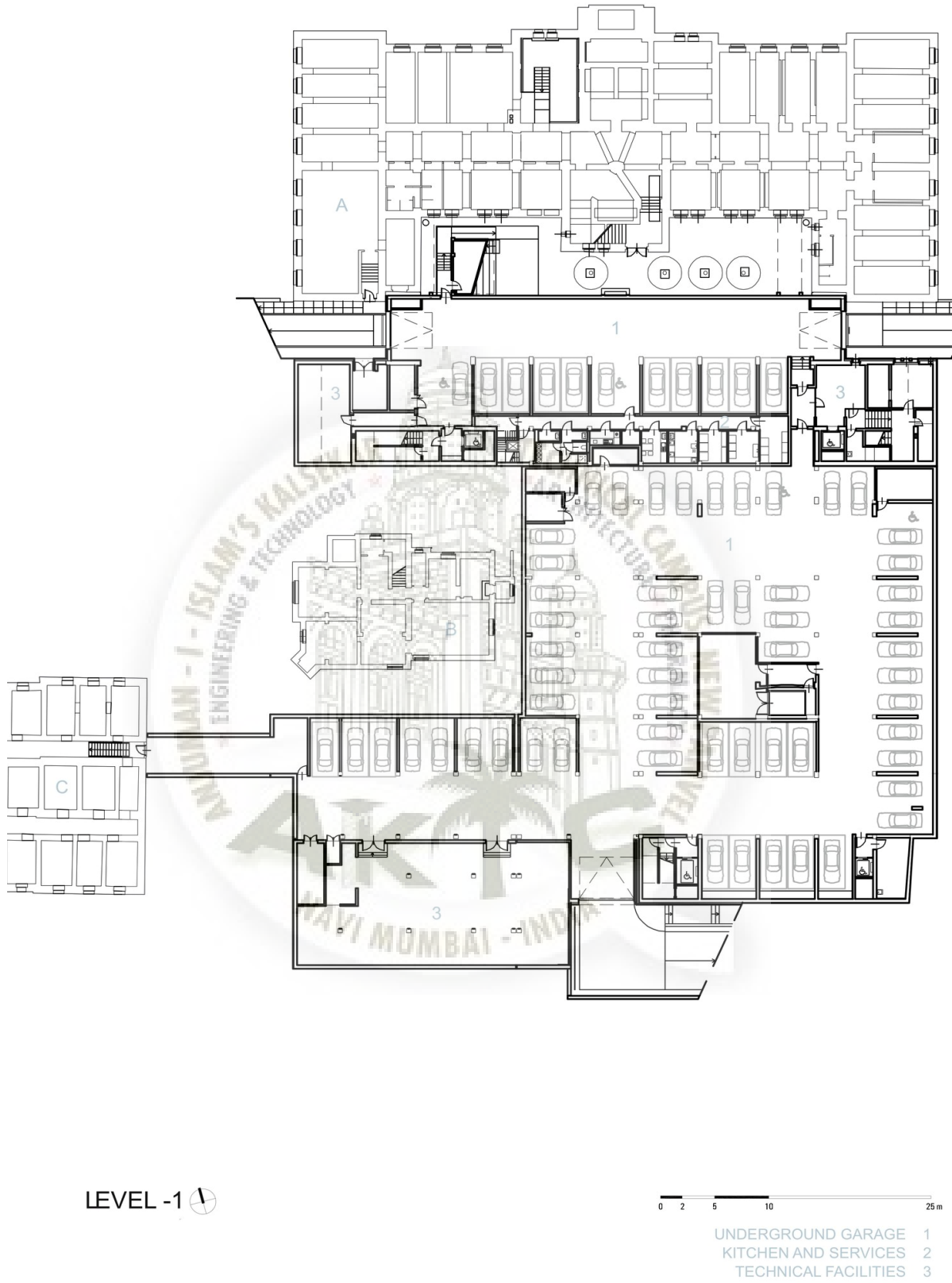
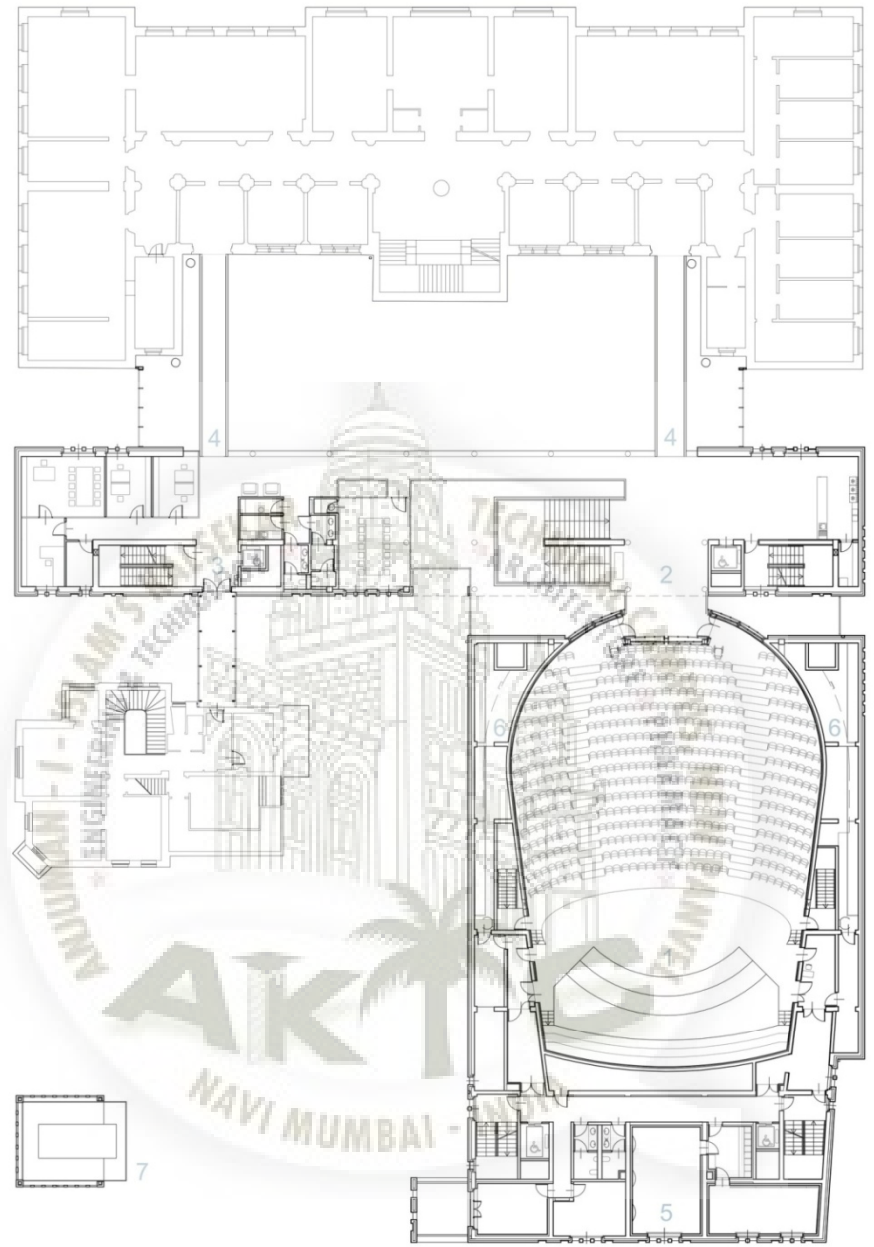


Figure 49 Basement Plan



LEVEL 1 



- AUDITORIUM HALL 1
- LEVEL 1 FOYER 2
- ADMINISTRATION 3
- BRIDGE 4
- REHEARSAL AND THERAPY ROOMS 5
- REVEBERATION SPACE 6
- TECHNICAL BUILDING 7

Figure 50 Part Plan showing Auditorium

SWOT ANALYSIS:**STRENGTH**

The extension has not changed the language, but has captured a new structure continuing its spatial language of the historical main building.

WEAKNESS

The use of material in exterior.

OPPORTUNITY

The versatility of the auditorium which is adjustable for various kinds of concepts and performance.

THREAT

The structure is unidentical because of the exterior.

INFERENCE:

Facade treatment

Adjustable auditorium

Spatial language



MUSIC SCHOOL PROJECT CONCEPT, "TALLER DE MUSICS", CAN FABRA, BARCELONA

YEAR OF CONSTRUCTION : 2011

PROJECT ARCHITECT : Pablo Serrano Elorduy

BUILT UP AREA : 1273 SQ. M

THEME OF THE PROJECT: The project consists to enable a music school, in the Can Fabra Cultural Centre, third floor.

The defined program has led to the distribution based on maximum use of available space.

BASIC PLANNING AND ZONING:

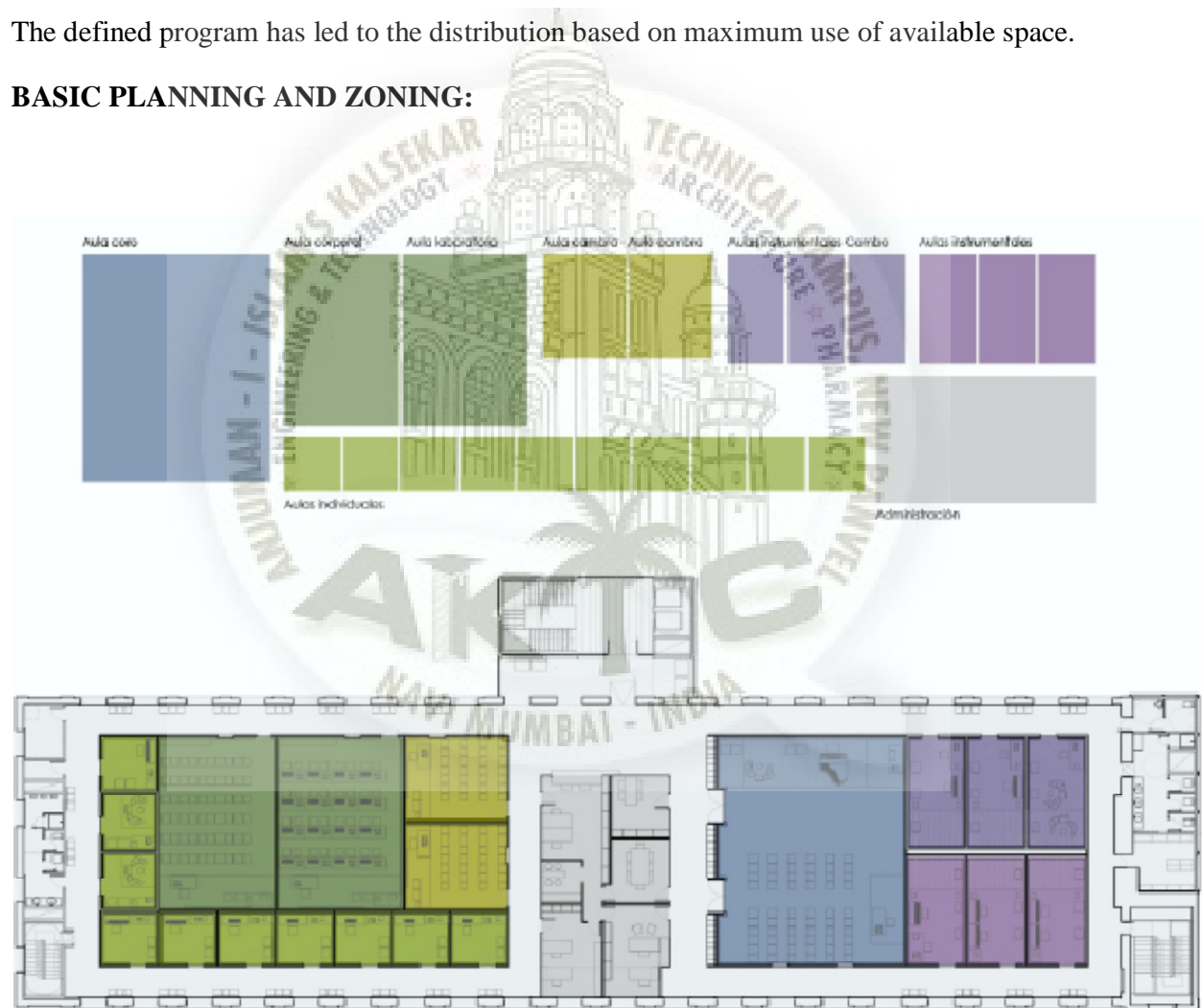


Figure 51 Schematic Plan with Zoning

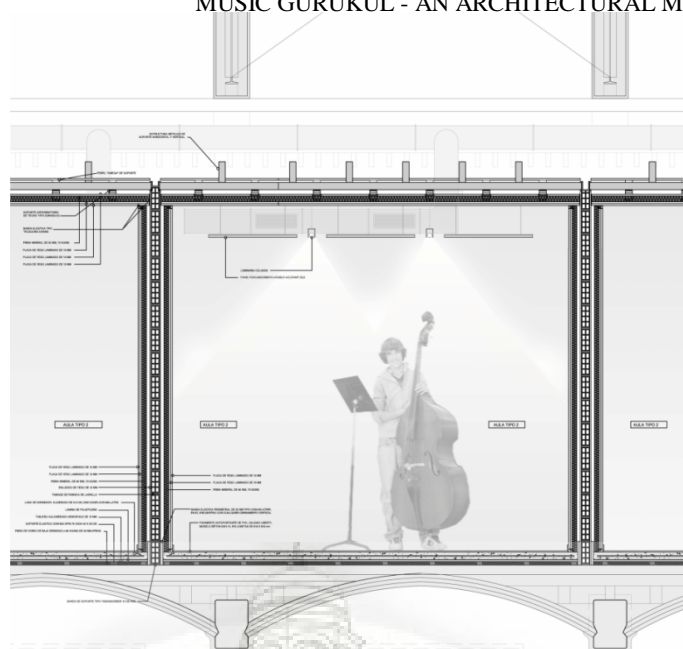


Figure 52 Section showing Acoustical Treatment

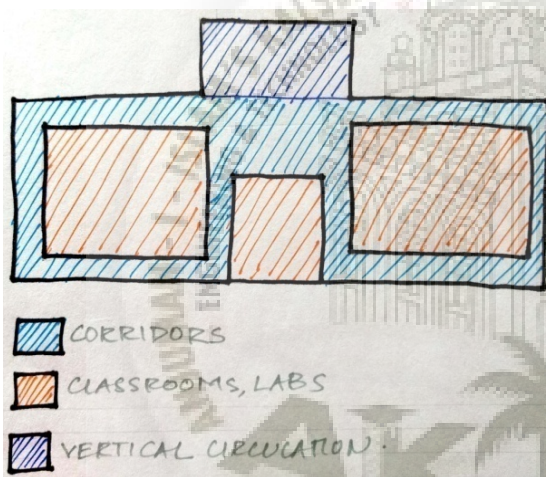


Figure 53 Circulation

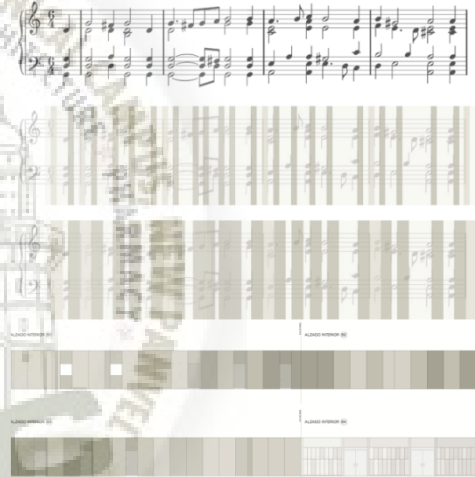


Figure 54 Concept for Elevation

SWOT ANALYSIS:

STRENGTH:

The acoustical treatment and techniques used make the structure work with the program having two different activities - a library and a music school.

WEAKNESS:

The internal spaces are not abstracted, rather they are symbolic in terms of the musical instrument used for symbolising.

OPPORTUNITY:

Since the space consists of two varied programs the structure will always be inviting and interactive space with wide range of people coming over there

THREAT:

The internal spaces are very monotonous in terms of spatial quality

INFERENCE:

Acoustical detailing

Interactive space

- 1) VISHWASHANTI SANGEET KALA ACADEMY
- 2) DR. GANGUBAI HANGAL GURUKUL
- 3) CHINMAYA NAAD BINDU GURUKUL
- 4) SWARNABHOOMI ACADEMY OF MUSIC
- 5) RED BULL MUSIC ACADEMY
- 6) HOUSE OF MUSIC
- 7) TOHOGAKUHEN SCHOOL OF MUSIC
- 8) SCIENCE AND MUSICAL EDUCATION CENTER SYMPHONY
- 9) MUSIC SCHOOL PROJECT CONCEPT " TALLER DE MUSICS"

SPACES	1	2	3	4	5	6	7	8	9
ENTRY / EXIT	✓	✓	✓	✓	✓	✓	✓	✓	✓
PEDESTRIAN CIRCULATION	✓	✓	✓	✓	X	✓	X	✓	X
VEHICULAR CIRCULATION	X	✓	X	X	X	X	X	✓	X
PARKING	X	✓	X	X	X	X	✓	✓	X
BASEMENT	X	X	✓	X	X	X	✓	✓	X
ADMIN	✓	✓	✓	✓	✓	X	✓	✓	✓
STAFF ROOMS	✓	✓	✓	✓	X	X	✓	✓	✓
SECURITY CABIN	✓	✓	X	✓	X	X	✓	✓	✓
STORE ROOMS	✓	✓	✓	X	X	X	X	✓	✓
CLASS ROOMS	✓	✓	✓	✓	X	✓	✓	✓	✓
INSTRUMENT ROOMS	✓	✓	✓	✓	✓	✓	X	✓	✓
OPEN / CLOSED	X	✓	✓	✓	X	X	X	✓	X

AMPHITEATRE									
LIBRARY	x	x	x	x	x	x	x	x	x
STUDENT ACCOMODATION	✓	✓	✓	x	x	x	x	x	x
FACULTY ACCOMODATION	x	✓	✓	x	x	x	x	x	x
CANTEEN	✓	✓	✓	✓	✓	x	x	✓	x
RECORDING ROOMS	x	x	x	x	✓	x	x	x	x
PRACTICE ROOMS	x	x	x	✓	✓	x	x	✓	x
CONFERENCE ROOMS	x	x	✓	x	✓	x	✓	✓	✓
PUBLISHING HOUSE	x	x	x	x	x	x	x	x	x
TOTAL	10/20	14/20	13/20	10/20	07/20	04/20	08/20	15/20	08/20

Table 1 Comparative Analysis

INFERENCE:

From all the spaces it is observed that recording rooms and publishing houses are majorly avoided which are the most important spaces in the program.

4.3 RESEARCH DESIGN

4.3.1 PARALLELS BETWEEN MUSIC AND ARCHITECTURE

4.3.2 ACOUSTICS AND ROOM DESIGN

4.3.3 STANDARDS AND DATA COLLECTION



4.3.1 PARALLELS BETWEEN MUSIC AND ARCHITECTURE

MONASTERY OF LA TOURETTE, FRANCE

INTRODUCTION

Music and architecture is one of the fields, which have certain parallels between them in terms of rhythm, repetition, form, variety, etc.

The fields of art are all interconnected in one chain and gets affected from each other and one such interconnection which has parallels between each other are music and architecture.

This mutual relationship between music and architecture can be clearly seen in the works of Iannis Xenakis and Le Corbusier. In the interpretation work of them, the parallels between music and architecture has less to do with the common features but used the third element, that is, mathematics, which is an intermediate element between both the fields. The aspect which has been used in their work is the concept of space. Thus, the mutual relationship between music and architecture can be formulized from the obstruction of the conceptual relation between both the fields to an end product which justifies the process.

The first experiment done was the orchestral piece *Le Sacrifice* (1953), which on the auditory level, he thought was not really successful because it was too simple to keep the ear's attention.

Then, another research or experiment was done which proved to be very useful in designing the famous undulating glass planes which can be seen in the facade of the 'Monastery of La Tourette'. This research was based on the rhythmic patterns. In the thought process of designing this structure Le Corbusier decided to keep this concept of large glass openings on the West facade to get the magnificent view of the valley. But providing such large glass panes was not economical due to budget restriction. The solution for this problem came from Chandigarh, where the Indian masons realised that instead of using large glass panes, piling up the glass partitions into smaller glass panes differing in height one on top of other between regularly spaced casing which are vertical. Realising that the repetition of the glass panes would result into a dull facade, Le Corbusier asked Xenakis to experiment with the distances between the casings, so that the facade would be given an asymmetrical appearance. Xenakis again reworked on the earlier experiment, *Le Sacrifice*, and tried to obtain certain rhythmic motifs. However, he again felt the drawbacks of the permutation techniques wherein he thought that too much of limited number of elements would make it difficult to control the aesthetics of the configurations which will be the result of the experiment.

Therefore, he considered this problem on a general level and rather than keeping the distance of individual distances upright, he marked the zones into the facade where he considered the number of casings per unit length which would be required and further conceptualised the transition which would occur in the state namely: fluently or abruptly. For this, he started drawing rectangles, with increasing and decreasing widths and juxtaposes these patches containing dense and rarefied ones in the facade so that the result would lead to the desired undulating or asymmetric effect. Thus, Xenakis created a triple layered arrangement of polyphony and also did a detailed study of light and shade.

Thus, the resulting structure seems to have a great visual complexity. Therefore, the principle of stacking the independent layers whose proportional relations varied throughout the piece resulted in the rhythmic polyphony in many works of Xenakis.



Figure 55 Concept and Final Execution

PHILIPS PAVILION, BELGIUM

INTRODUCTION

In the second major project of Xenakis, named *Metastasis* (1954), he articulated between pitch and time. Xenakis used graphical methods where he used graph paper and for him drawing was a primary tool to finalise his ideas, where the coordination of hands and ears kept giving him a constant feedback. His use of graph paper became a trade mark. He felt drawing of music on graph paper along the vertical axis represents pitch and horizontal axis represents the time.

Xenakis musical work shows no interconnection between his compositions because, instead of making organic models, he adopted the style of collages and juxtapositions.

The drawing of *Metastasis* has the projection in a plane of hyperbolic parabolic. The importance of such mathematical form gives rise to the concept of fluid development from a two-dimensional drawing to a three dimensional volume thereby implying flow over time. In this experiment, the idea of sound volumes is created on the basis of straight line

This musical experimental work of Xenakis was used as a concept for the Philips Pavilion, Belgium. In this project, the walls and the ceilings are merged fluently with other that results into an endless character internally.

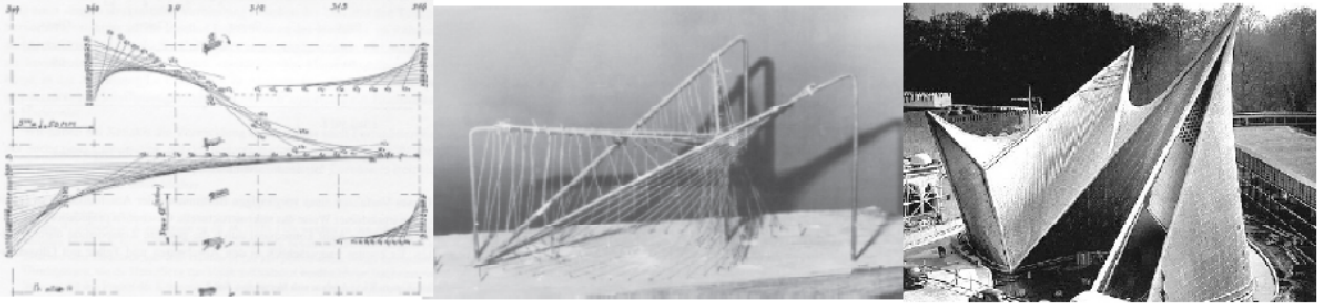


Figure 56 Derivation of Forms From Experimentation with Abstraction and Mathematics

CONCLUSION

As a conclusion we can say that the idea of a structural bond between architecture and music can be determined on a general level by applying mathematical models amongst the two arts. Xenakis's aim was not to translate music or architecture but to represent the expressive potential of these two fields.

The introduction or the intervention of the mathematical concepts with music served as a generator of creativity and discovering new forms of architecture.

Therefore, it can be seen that music as the most abstract of the arts, when dealt with an approach with architecture but not in connection rather than isolation leads to a spatial experience.

4.3.2 ACOUSTICS AND ROOM DESIGN

Reflection of Sound

When a free sound wave is travelling through air strikes a uniform solid plane surface, it is reflected in a same manner as that of light ray.

The angle of incident to the normal of sound wave is equal to the angle of reflection with the normal.

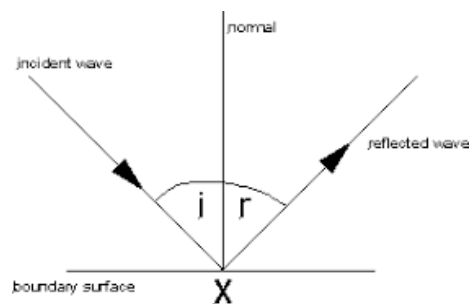


Figure 57 Ray Diagram

Reflection of Sound on a Concave Surface

A concave surface leads to the concentration of reflected sound waves at certain points and they are considerably smaller in magnitude.

They are condensed and hence, they are amplified in nature. Hence, the concave surfaces may be provided to work as the reflectors.

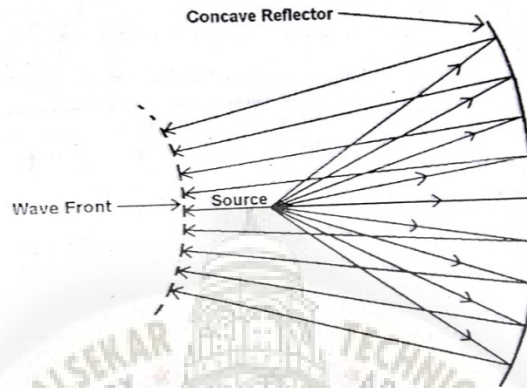


Figure 58 Sound waves on concave surface

Reflection of sound on a Convex Surface

A convex surface tends to spread the reflected sound waves which are magnified and are considerably bigger in magnitude.

Hence, the convex surfaces may be used with advantage to spread the sound waves throughout the room.

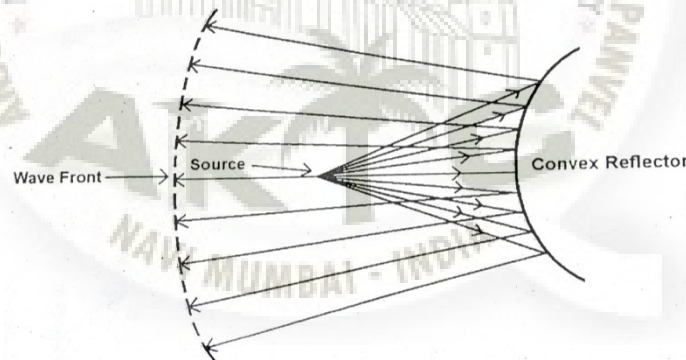


Figure 59 Sound waves on convex surface

Defects due to Reflected Sound

The acoustical design of an enclosed space is primarily governed by the behaviour of the reflected sound.

Following are the two main defects developed due to the reflection of sound:

1. Echoes
2. Reverberation

Echoes:

When the reflected sound reaches the ear just when the original sound from the same source has been already reached, an Echo is produced.

Reverberation:

The following table gives the relation between the reverberation time and acoustics of the room.

Reverberation time in Seconds	Acoustics Effect
0.50 to 1.50	Excellent
1.50 to 2	Good
2 to 3	Fairly Good
3 to 5	Bad
Above 5	Very Bad

Table 2 Relation between reverberation time and Acoustics Effect

If the reverberation time is too long, results in overlapping of sound and on other hand, if it is too short, it produces the effect of deadness.

ACOUSTICAL PHENOMENON IN AN ENCLOSURE**1. Sound Reflection:**

Hard, rigid and flat surfaces, such as concrete, brick, stone, plaster or glass, reflect almost all incident sound energy striking them. Convex reflecting surfaces tend to disperse and concave surfaces tend to concentrate the reflected sound waves in the room.

2. Sound Absorption:

Sound absorption is the change of sound energy into some other form; usually heat, in passing through a material or striking a surface. How efficient the sound absorption of a material is of a surface is rated by the sound absorption coefficient.

3. Sound Diffusion:

Adequate sound diffusion is necessary acoustical characteristic of certain types of room, because it promotes a uniform distribution of sound and eliminates undesirable effects.

4. Sound Diffraction:

Diffraction is the acoustical phenomenon, which causes sound waves to be bent or scattered around obstacles such as corners, columns, walls and beams.

Factors to be considered in the Acoustic Design of an Auditorium

Following factors play an important role in the acoustic design of an auditorium:

1. Volume:

The hall should have enough volume and should be decided while keeping in view the intensities of sounds likely to be developed in the hall.

For halls to be used only for music, the volume should be large so that there will be enough space for the music to spread in the hall.

2. Shape:

This is a very important consideration in the acoustic design of an auditorium and involves geometrical aspects of the hall. Concave walls are not good for acoustic purposes as they tend to concentrate sound waves. Plane walls are better, but convex walls are excellent and are used to reduce the possibilities of echoes to the maximum extent.

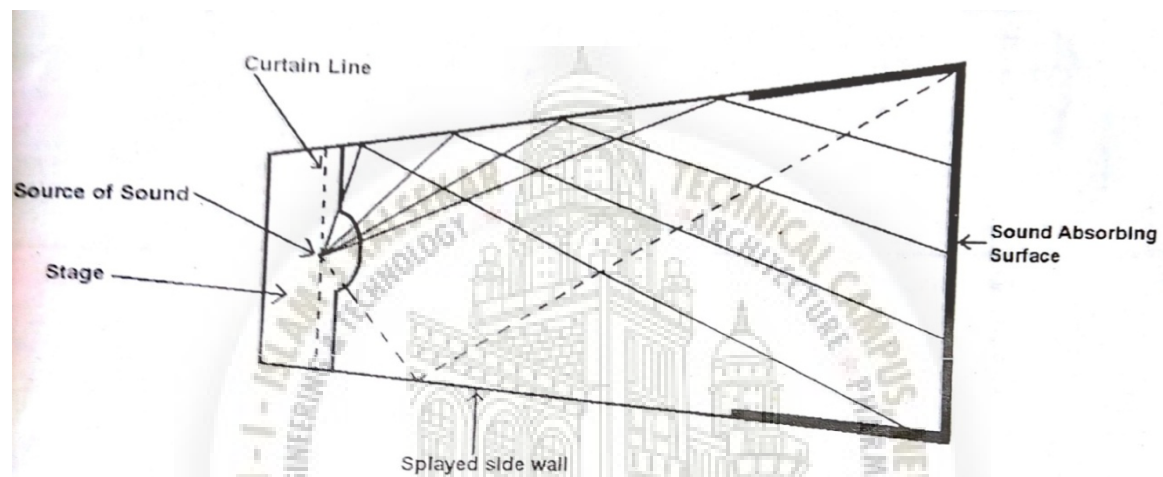


Figure 60 Plan of Fan Shaped Auditorium

ACOUSTICS IN AMPHITHEATRES

THEATRE AT EPIDAUROS

Country: Greece

City: Epidaurus

Originally it was 6210 seats and later extended by 21 rows (then ca. 14000 seats). It is famous for its unparalleled acoustics and is still used for theatre performances. The structure was utilized for the resonance and reverberation of sound and the perception of the receiver and not the iconic representation of the built environment. The Greeks used specific materials and the physics of sound to ensure that the perceivers in the amphitheatre, no matter where seated, could hear even a whisper from the lower level of the performing area.

The acoustic qualities that were incorporated into the Epidaurus theatre were not utilized into other Greek amphitheatres. The materials were changed and the layout as well. The Epidaurus was the only space built in this manner of using limestone for the seats and with the slope of the rows. Now, researchers at the Georgia Institute of Technology have discovered that the limestone material of the seats provide a filtering effect, suppressing low frequencies of voices, thus minimizing background crowd noise.

The Greeks used scups in the front of the seats to direct and channel sound and diffuse the frequencies that had undesirable results. The theatre was recessed in the ground to utilize the prevailing winds that helped transmit the sound waves. Limestone used in the seating area was the secret to the perfection of the ancient acoustics.

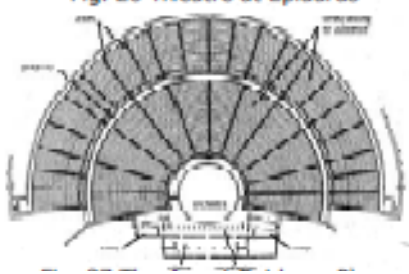


Figure 61 Schematic Plan



Figure 62 View of Epidauras Theater

ROOM SHAPES AND ACOUSTICS

VAULTED CEILINGS

In rooms with vaulted ceilings, the sound is concentrated in the constructive centre making the sound appear with a stronger intensity.

The sound movements also appear stronger along the curve.

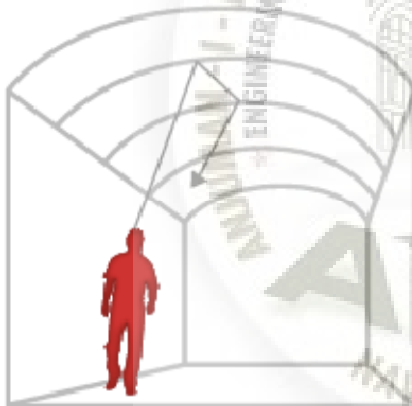


Figure 63 Behaviour of Sound

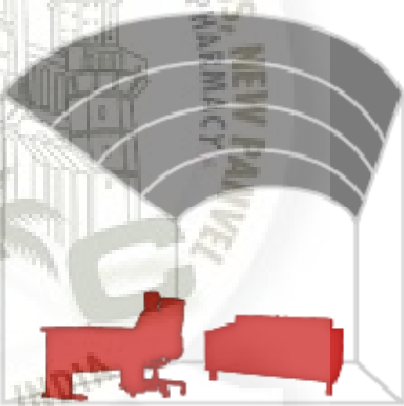


Figure 64 Arrangements of Instruments

The sound diffusing elements should be placed on the curved surfaces in order for the sound to be dispersed in many directions.

The working stations should not be placed in the centre of the construction. Instead, furniture with sound diffusing properties should be placed in the centre.

Barriers should be placed along the curved surface in order to prevent the spread of sound.

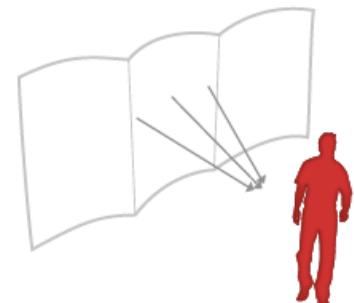


Figure 65 Vaulted Walls

CEILING DOMES

In rooms with vaulted walls, the sound is concentrated in the

constructive centre making the sound appear with a stronger intensity.

Vaulted walls should only be used in special cases where a special sound effect is wanted. The curved wall should be equipped with sound diffusing elements.

CONNECTED ROOMS

Rooms that are linked by a large opening in between, influence each other's sound environment. A room without acoustic regulation can act as an echo chamber reinforcing the sound, when connected to an acoustically regulated room.

Both rooms must be equipped with sound absorbers. If the distance between the opening and the opposite walls is short (5-6 m), the walls must be covered with sound absorbers or diffusers.

CONVEX CEILINGS

Convex ceilings spread the sound and act therefore as sound diffusers.

Being able to spread sound, the convex ceilings are well-suited in e.g. concert halls or conference rooms. If the sound diffusing effect is to be reinforced, the curves should be equipped with diffusing materials. Otherwise, the curves can also be equipped with sound absorbing materials.

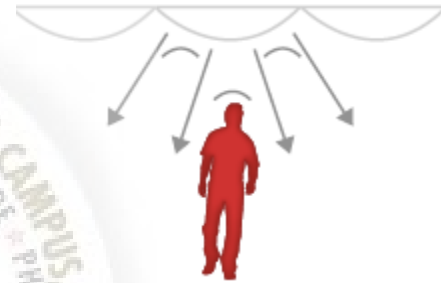


Figure 66 Reflection of Sound on Convex Ceiling

CONVEX WALLS

Convex walls spread the sound and act therefore as sound diffusers.

Convex wall constructions are highly suitable in rooms with parallel surfaces, thus making the absorbers more effective and preventing echoes.



Figure 67 Reflection of Sound on Convex Walls

MULTI-STOREY ROOMS

In multi-storey rooms, the large room volume makes it difficult to ensure a sufficient amount of absorbing materials and thus a sufficient level of sound absorption.

Sound absorbers and sound diffusers must be placed on all available surfaces. The absorption should be reinforced by the use of free-standing absorbing elements.

SOUND LOCK

The passage connecting two rooms with different reverberation times must act as a sound lock, ensuring a smooth transition from one reverberation time to another.

The reverberation times in the rooms must be adjusted using the amount of absorbing materials and the type of materials as the parameters.

ROOMS WITH MEZZANINE

In rooms with mezzanine, it is possible to create different sound environments in the same room. In the large, open room, an environment with long reverberation time is created.

The space above and below the mezzanine has a shorter reverberation time. The challenge posed in this type of rooms is the sound reflection and the harmonization of the different reverberation times. The wall opposite the mezzanine should be equipped with sound absorbers or diffusers.

In addition, sound absorbers should be placed on the underside and the banister of the mezzanine. In order to prevent large differences in the reverberation times between the large room and the space around the mezzanine, sound barriers can be applied.

4.3.3 STANDARDS AND DATA COLLECTION

DIMENSIONS OF MUSICAL INSTRUMENTS AND SITTING POSITIONS

1) *VICHITRA VEENA*

Length-1m to 1.2m long



Figure 68 Sitting Postures with respect to the Instrument

2) *SARANGI*

Length-0.64m-0.76m long

Width-0.15m-0.20m wide

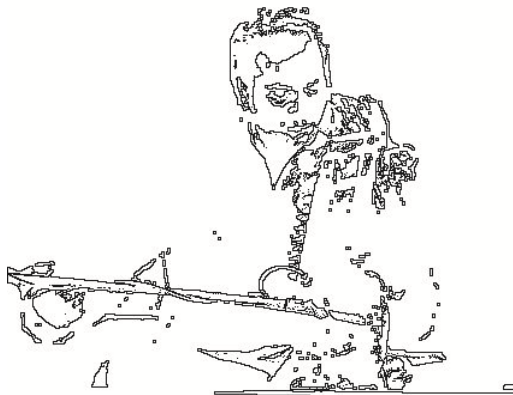


Figure 69 Sitting Postures with respect to the Instrument

3) TANPURA

Instrumental-0.95m-1.15m long
 Male Tanpura-1.4m-1.5m long
 Female Tanpura-1.2m-1.3m long

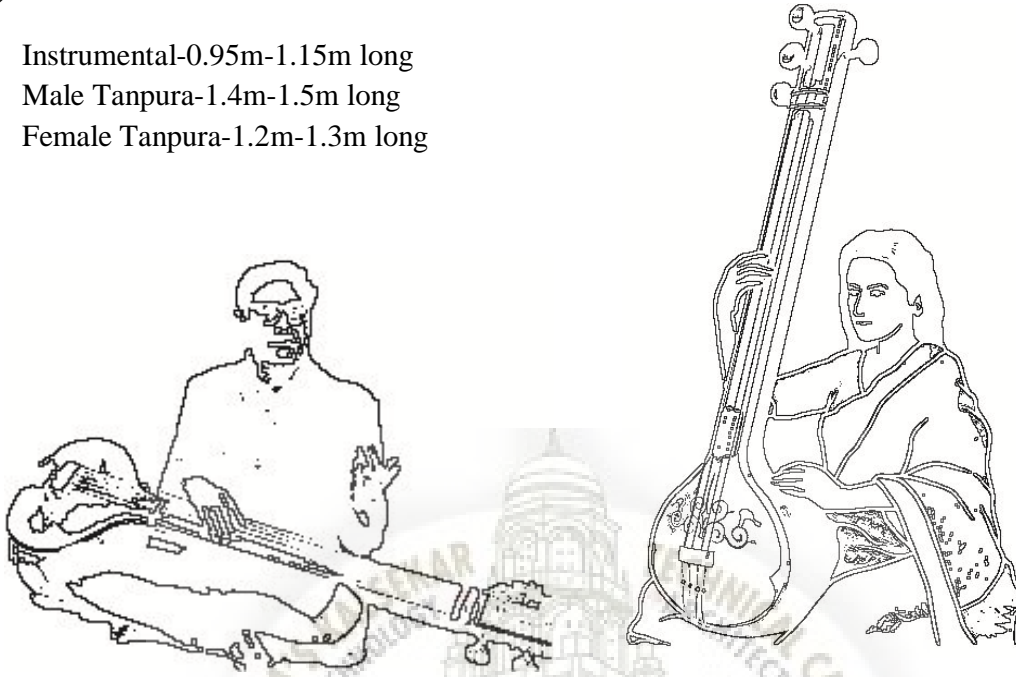


Figure 70 Sitting Postures with respect to the Instrument

4) HARMONIUM

Height-0.19m to 30m high
 Width-0.61m wide
 Depth-0.29m to 0.36m deep

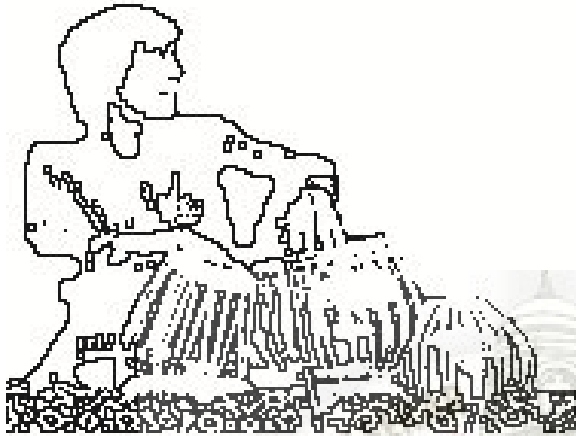


Figure 71 Sitting Postures with respect to the Instrument

5) TABLA

Height-0.265m

Dia-0.175m

**BAYA**

Height-0.26m

Dia-0.28m



Figure 72 Sitting Postures with respect to the Instrument

6) FLUTE

Overall length-0.20m to 0.91m



Figure 73 Sitting Postures with respect to the Instrument

5.4 SITE SELECTION AND ANALYSIS

5.4.1 INTRODUCTION

5.4.2 CHOICE OF TOPIC

5.4.3 ARCHITECTURAL INTERVENTION



5.4.1 INTRODUCTION

Our views towards the cities are always influenced on the basis of the art, history and culture it owns and most of the cities are defined and identified under these parameters.

As the cities are growing into urban sprawls and agglomeration, there is a need for planned growth and attention towards the cultural and social places which are often ignored during the expansion plans.

Always, the commercial, residential and other forms of works are given preferences during the development stages because of which the cultural development is kept behind.

The reason being, commercial, residential and other works and their developments are a result of real estate driven projects because of which such developments are falling short in matching up with the pace of commercial and residential developments.

There are many cities which are under advancements and transitions and want to restore and revitalize their economic growth and to move up in terms of culture, tourism, career options etc.

Thus, one of the aspects, i.e., culture becomes an important bridge for a solution towards these advancements. The creative sectors like music, design, media, performances and literary expressions help in increasing and strengthening the economic and cultural developments. Not only these sectors help in jobs and economy but helps in the evolutionary process of enriching the society as a whole.

Thus, each creative sectors have visualisation, design, patterning, problem solving and moulding capabilities which help in the growth on individual basis at an individual level and as a society at the larger level.

Therefore, creativity, imagination, art, heritage etc are the values which help design the city's development and this is where the architectural intervention plays a very important role in shaping and defining the development.

5.4.2 CHOICE OF TOPIC

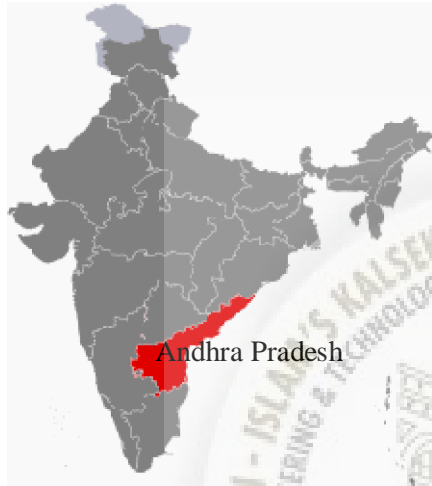
After exploring certain issues related to city level of development, this research provides an opportunity to look into these issues and from the observations tried to identify a subject which could be solved from an architectural intervention that suited my interest and would make an option of how such interventions may change such similar problems at a larger scale.

Amravati, the new capital city of Andhra Pradesh which settles at the banks of Krishna River has entered the execution phase with the focus now shifting towards the development of critical infrastructure and promises to be the world-class and a blue-green city. It is located close to two well developed cities 32km away from Guntur and 39km away from Vijayawada.

The proposed new capital does not just aim to acquire fame and glory but also would try to retain its historical and cultural background yet reflecting modernity

As the city will have a heavy toll of urbanisation, there would be a point where people would need a place to nurture themselves in terms of individuality, career, hobbies, opportunities, entertainment for which the requirement of public and semi public spaces comes into picture.

Secondly, since it is going to be a planned city, there is a great opportunity for the architectural interventions to take place.



Map 1 Map showing Andhra Pradesh



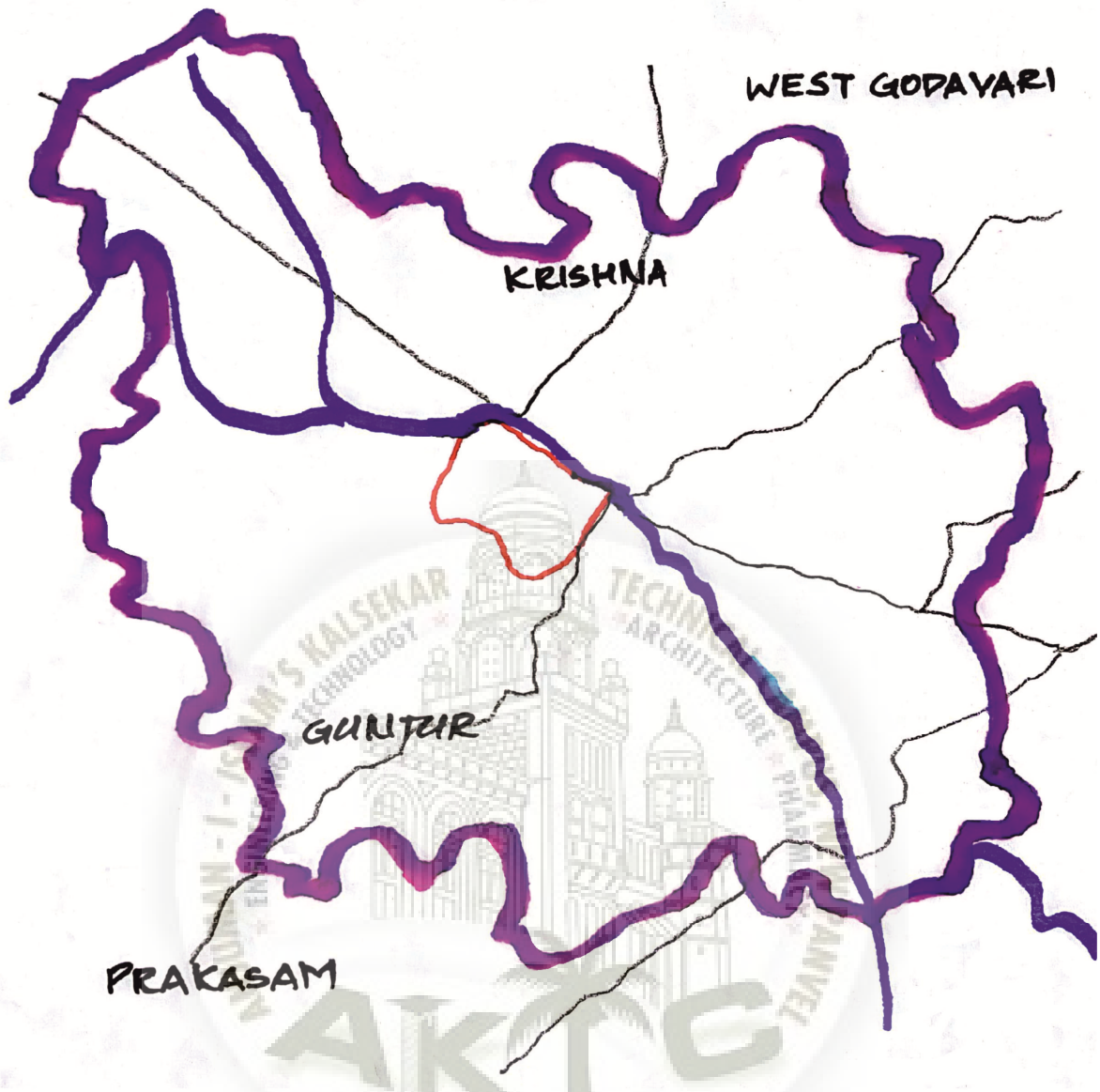
Map 2 Map showing Amravati

5.4.3 ARCHITECTURAL INTERVENTION

Through this project, establishment of an integrated music school with residential facilities will be the approach. It will also be an effort towards making a link or a bridge between the urban life and cultural importance through public spaces.




Also, apart from this an attempt will be made to amalgamate the *Gurukul* tradition and the modern technological advancements in teaching process in the same complex.

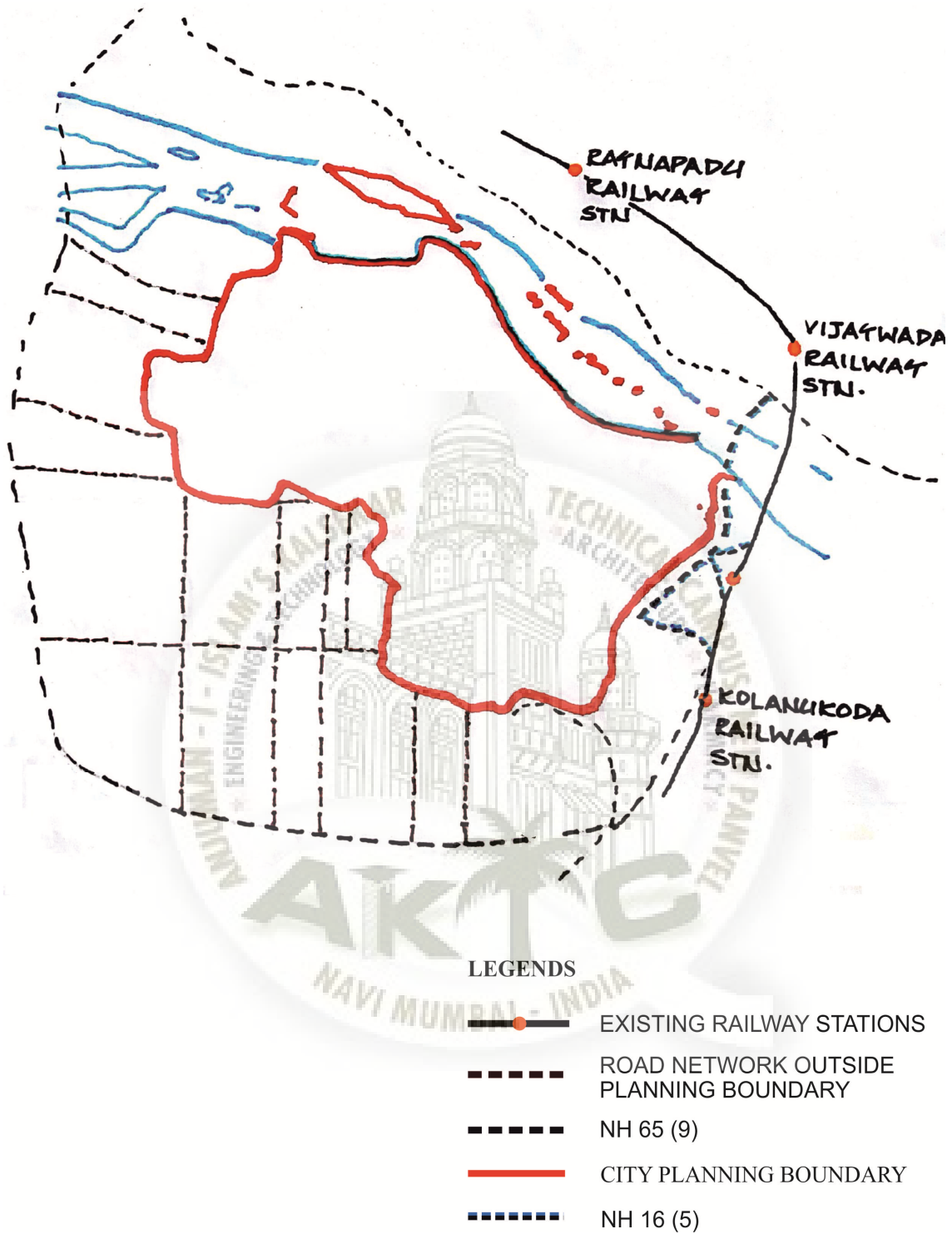
The vital part will be in making the complex having *Gurushishya Parampara* relevant and architecturally responsive amongst the urban context.



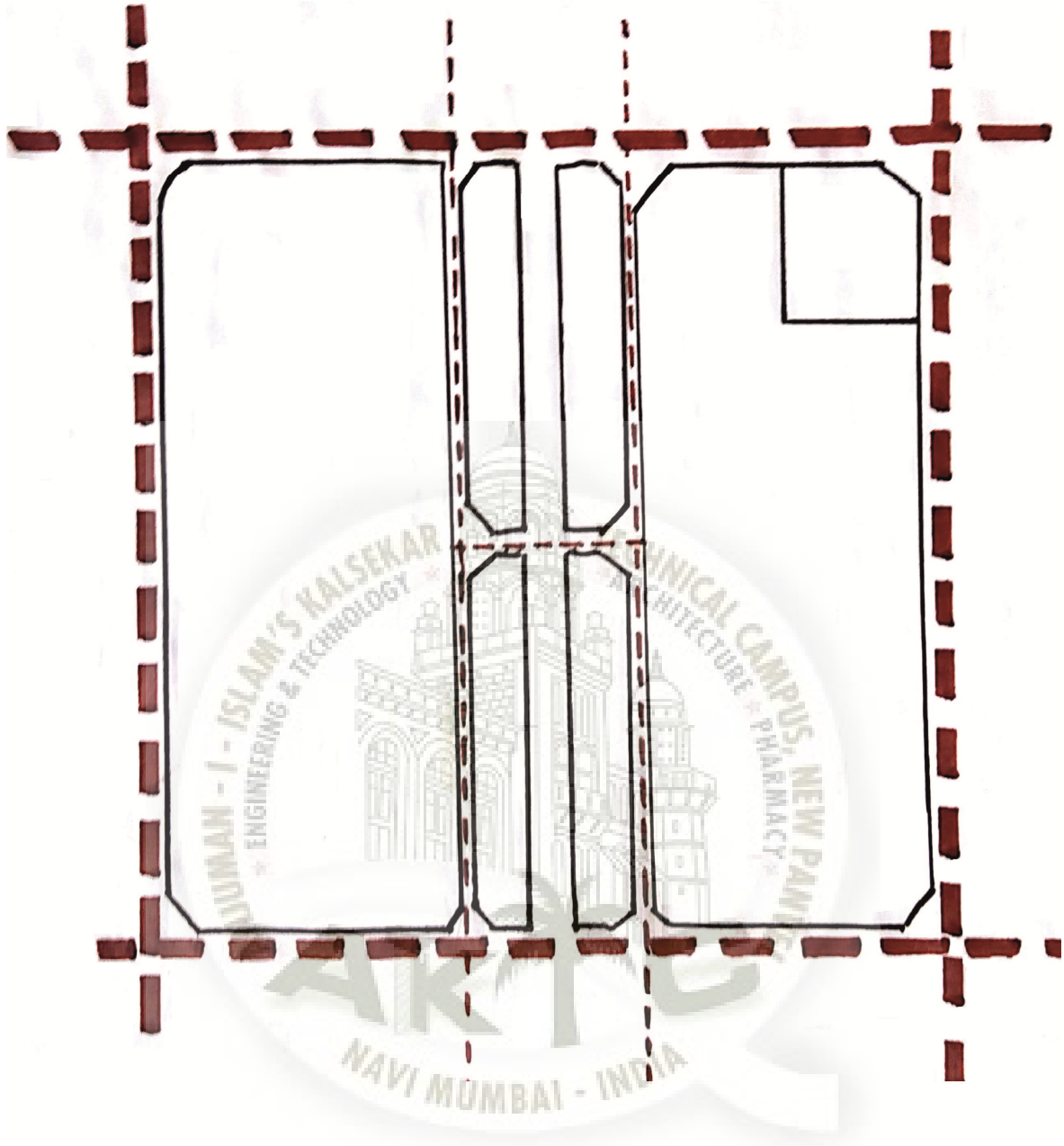
Map 3 Location Map

LEGENDS

-  RIVER
-  CITY PLANNING BOUNDARY
-  REGION



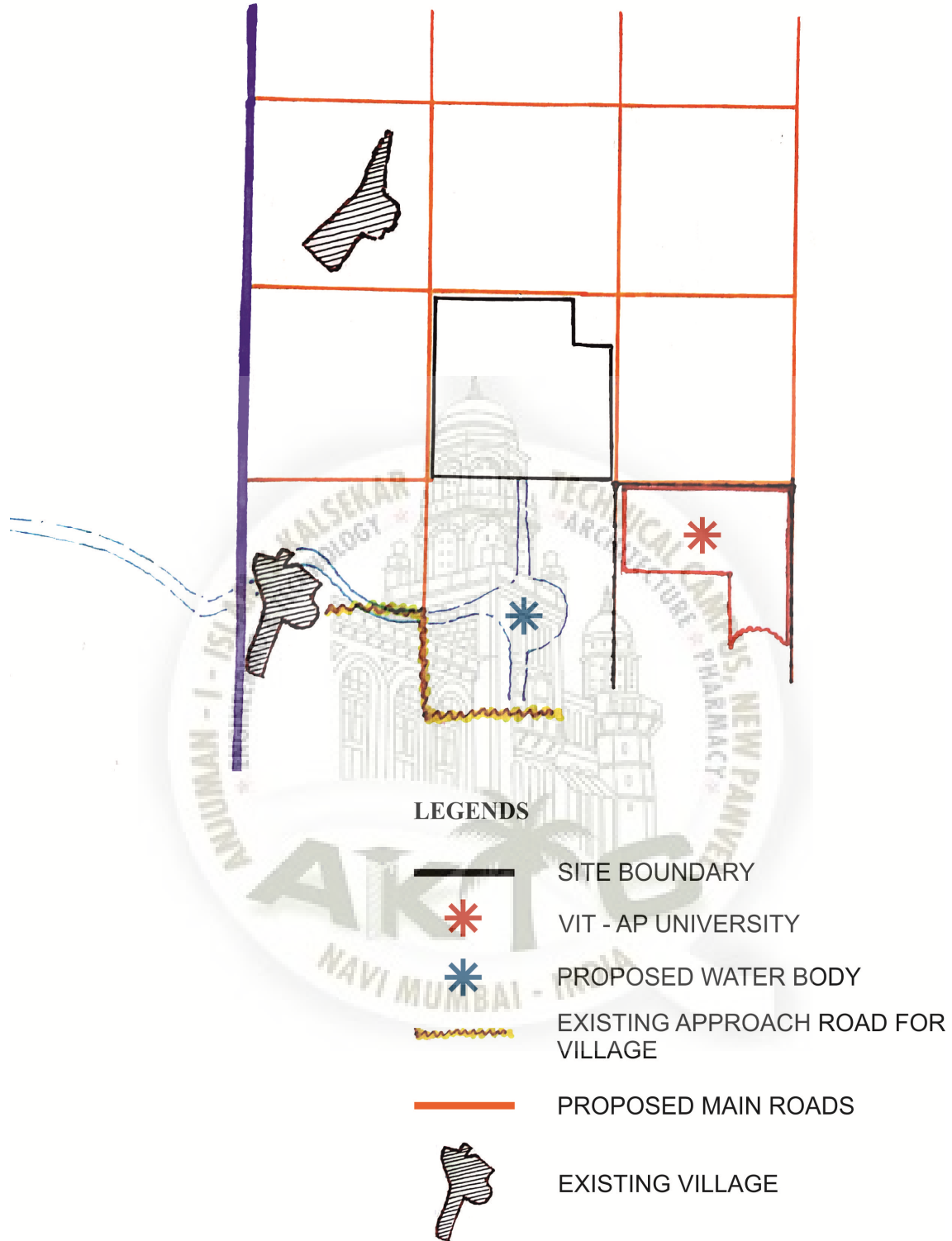
Map 4 Neighbourhood Map



LEGENDS

- SITE BOUNDARY
- ■ ■** MAJOR VEHICULAR CIRCULATION
- INTERNAL VEHICULAR CIRCULATION

Map 5 Vehicular Circulation



Map 6 Vehicular Circulation

Location : Amaravati, Andhra Pradesh**Climate : Warm and Humid**

Characteristics of warm and humid climate : The warm and humid climate covers the coastal parts of the country.

An important characteristics of this region is the relative humidity, which is generally very high, about 70-90% throughout the year.

Wind is desirable in this climate, as it can cause sensible cooling of the body.

Solar radiation is also quite high and can be intense on clear days.

In summer, temperature can reach as high as 30-35⁰C during the day and 25-30⁰C at night.

In winter, the maximum temperature is between 25-30⁰C during the day and 20-25⁰C at night.

The main design criteria in the warm and humid region are :

- 1) to reduce heat gain by providing shading
- 2) to promote heat loss by cross ventilation
- 3) dissipation of humidity to reduce discomfort.

Thus the building components and the surroundings will determine the amount of radiation that will enter into it which are :

- 1) Roof
- 2) Walls
- 3) Openings
- 4) Colour
- 5) Materials
- 6) Nature of roads, paved areas, etc

So, the human comfort gets affected due to climate are :

- 1) Temperature
- 2) Humidity
- 3) Solar Radiation
- 4) Air Movement

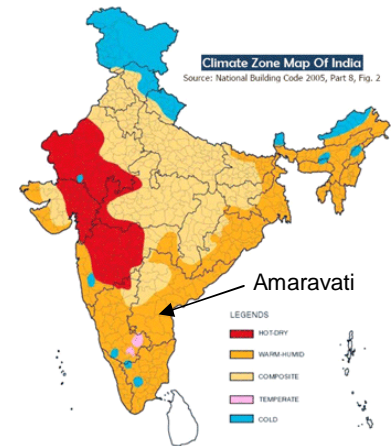


Figure 74 Climate Zones

Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Temperature	28°C	31°C	34°C	37°C	37°C	35°C	33°C	33°C	31°C	30°C	29°C	28°C

Table 3 Temperature of Amravati

The above chart shows the average air temperature which shows the temperature can rise up to 37°C during summer and can fall up to 28°C during winter.

Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Humidity	69%	66%	58%	54%	50%	55%	62%	62%	76%	70%	68%	67%

Table 4 Humidity

The above chart shows the average humidity which ranges from 55%-76%.

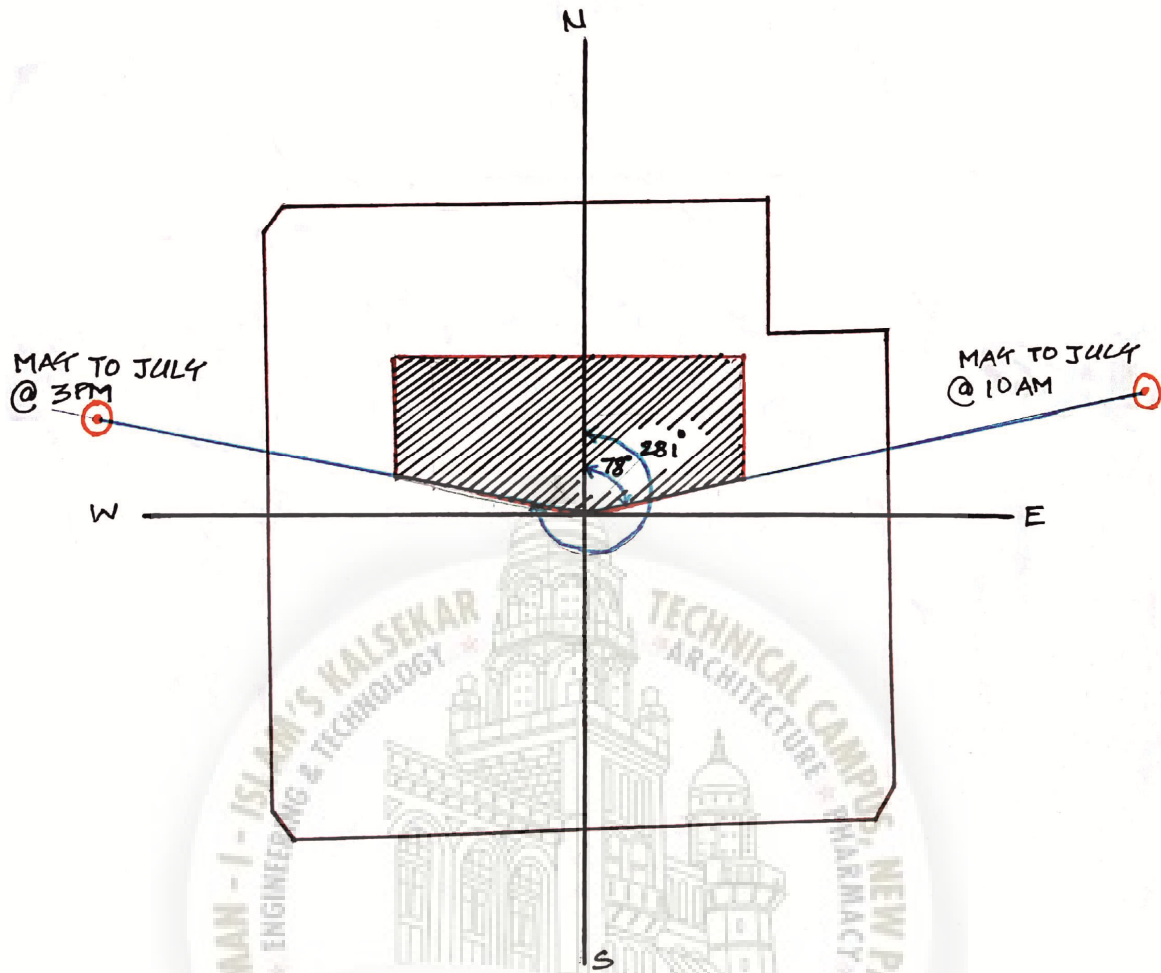
Critical months for Amaravati, Andhra Pradesh :

- April and May - Hottest
- Dec and Jan - Coldest
- Maximum Humidity - September



Figure 75 Wind Rose

The figure shows wind rose diagram which helps to know the prevailing wind direction. For Amravati, the prevailing wind direction is south east having speed of 5km/hr - 19km/h in an year.

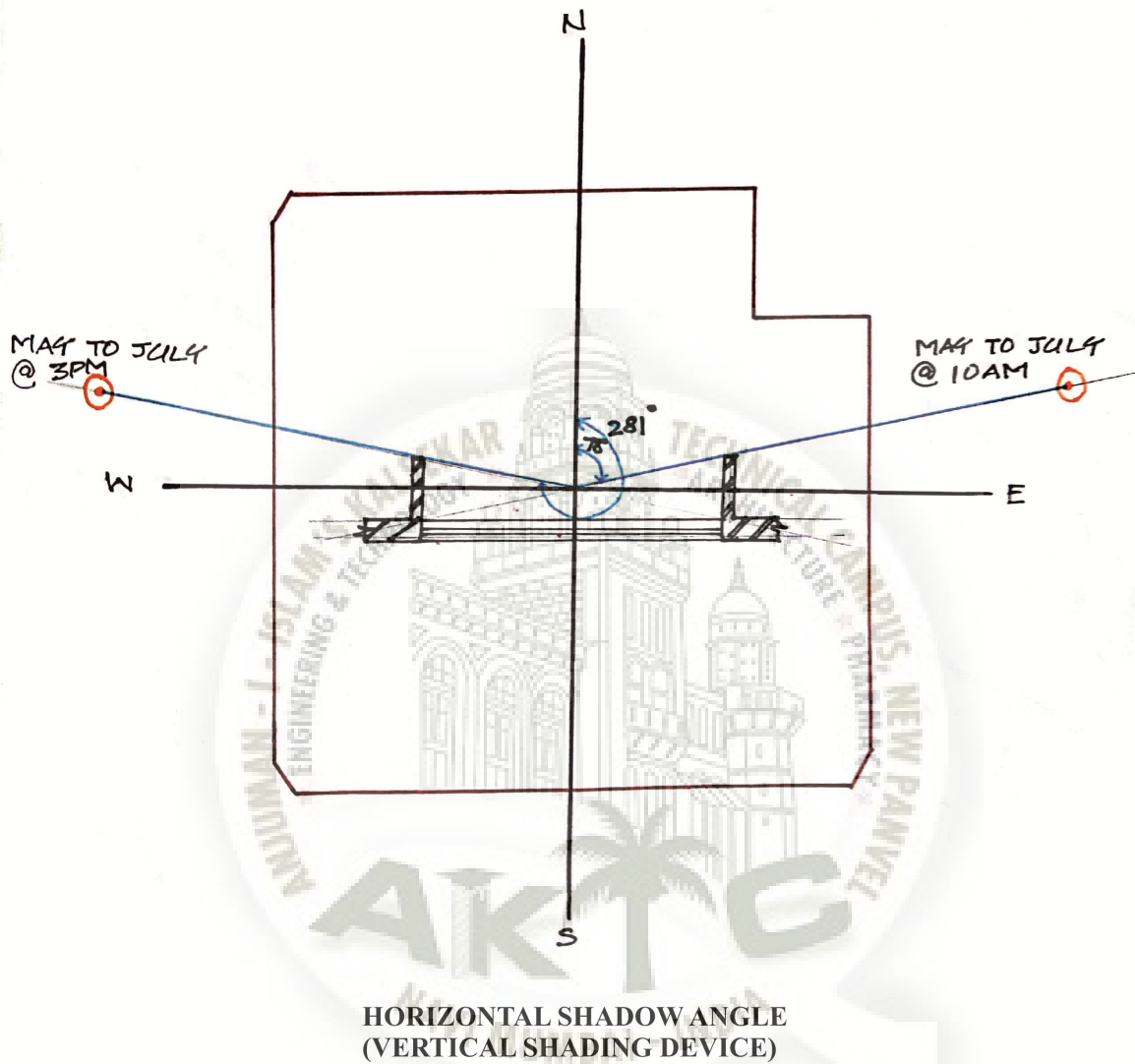


BUILDING ORIENTATION

ORIENTATION OF BUILDING IN SUCH A WAY THAT IT CAN CUT THE MAXIMUM IMPACT OF THE SUN.

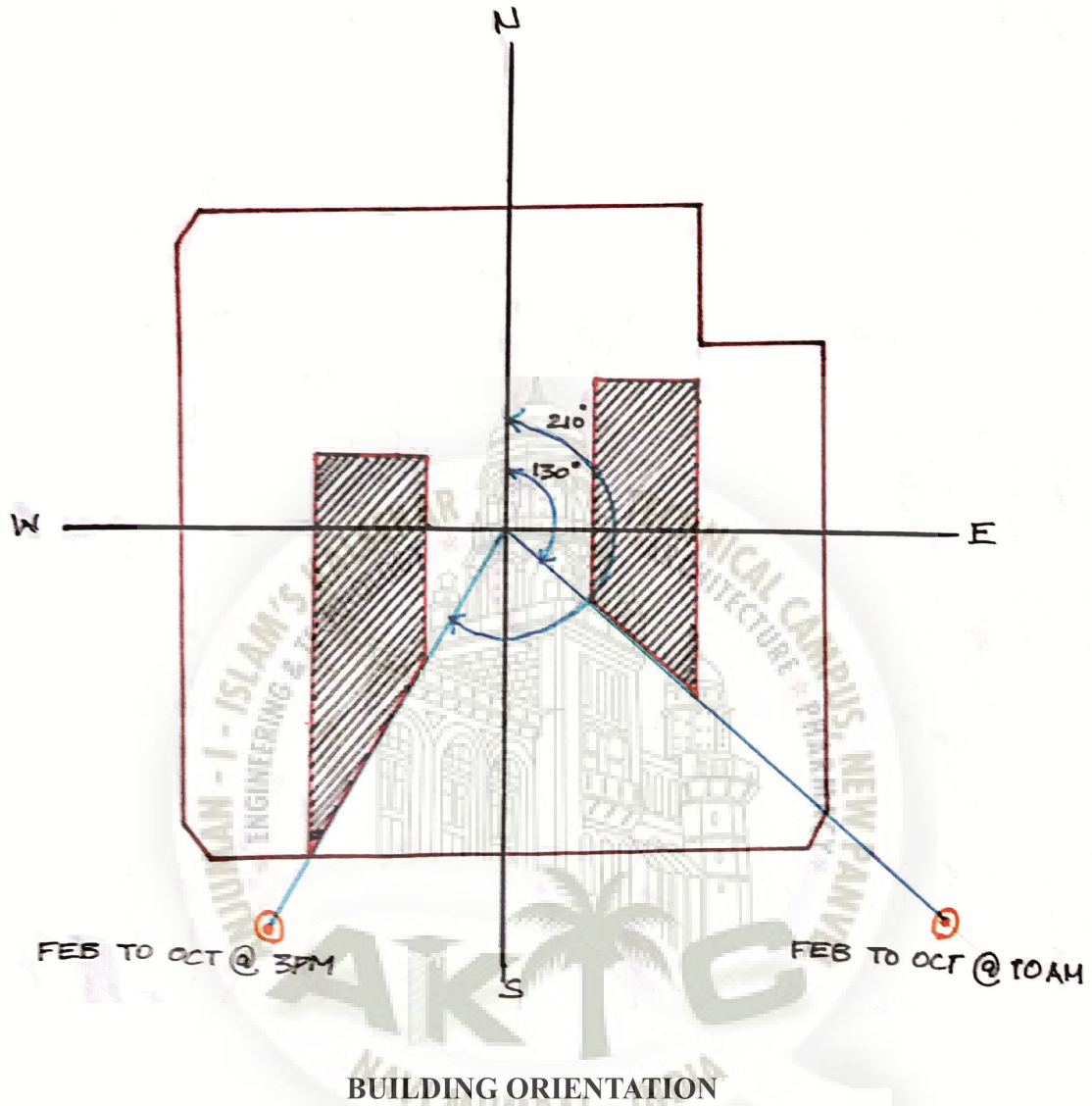
CENTRAL SPACES CAN HAVE OR CAN BE USED AS LANDSCAPED AREAS OR FOR CROSS VENTILATION.

Figure 76 Building Orientation



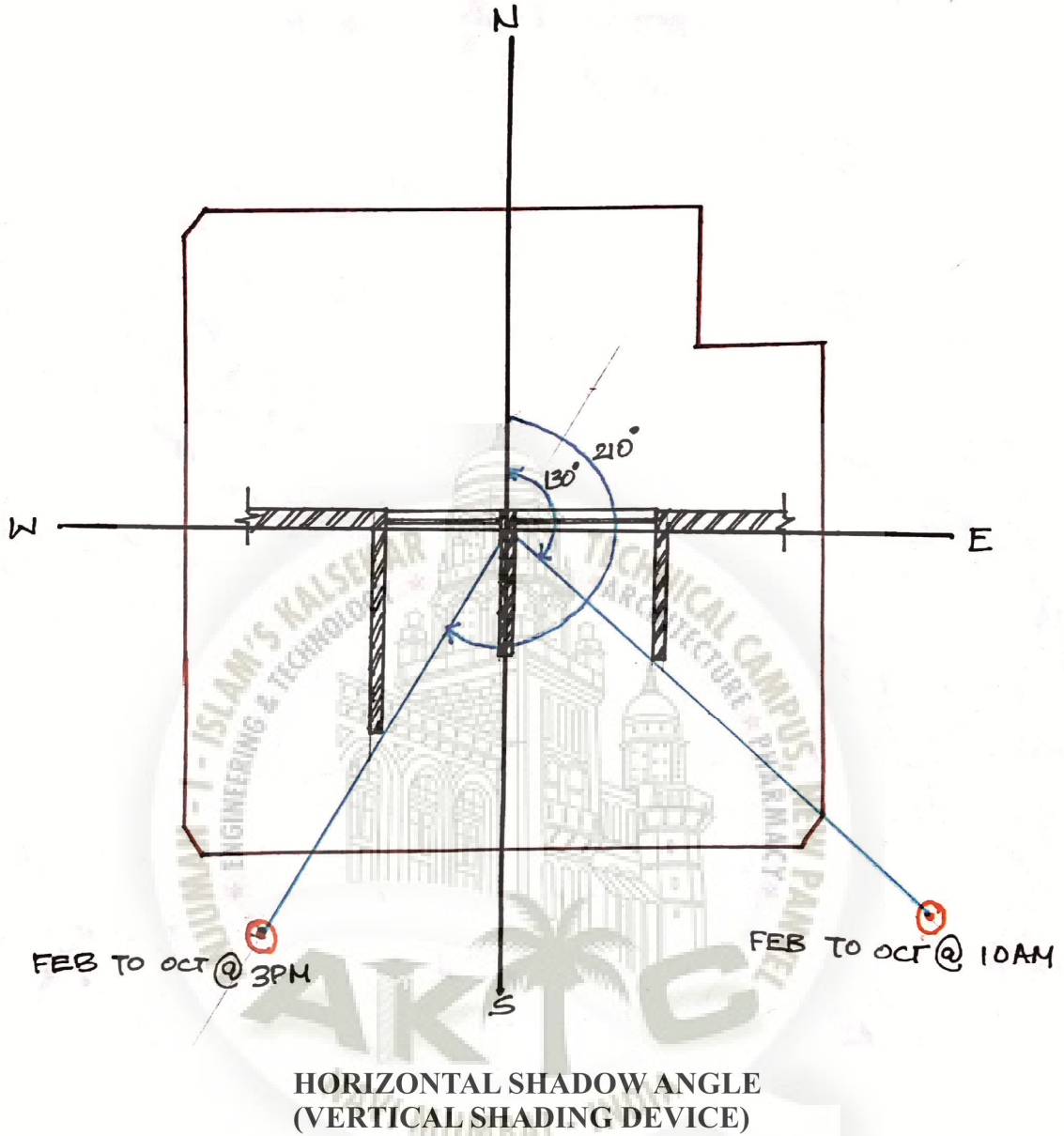
VERTICAL SHADING DEVICE WILL CUT THE HORIZONTAL IMPACT OF SUN RAYS DURING CRITICAL TIMINGS.

Figure 77 Horizontal Shadow Angle



REDUCING THE EXPOSURE OF FACADE WHICH WILL BE UNDER DIRECT IMPACT OF THE SUN RAYS

Figure 78 Building Orientation



FINS TO RESTRICT THE SUN RAYS.

Figure 79 Horizontal Shadow Angle

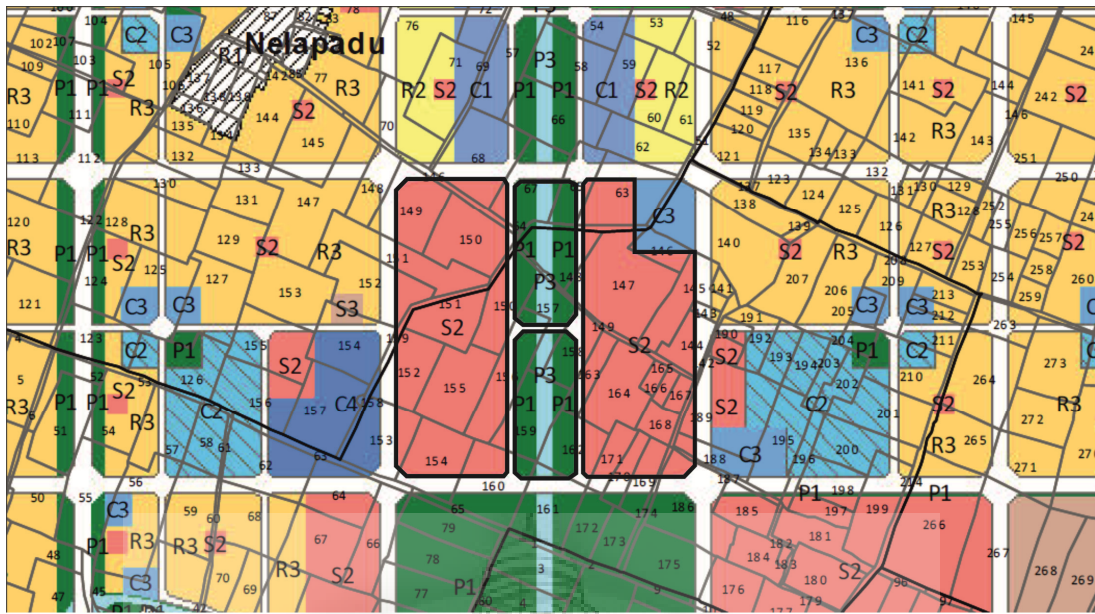


Figure 80 Land Use

LEGENDS

- S2 - EDUCATION ZONE
- C3 - NEIGHBOURHOOD CENTRE ZONE
- P3 - PROTECTED ZONE
- P1 - PASSIVE ZONE

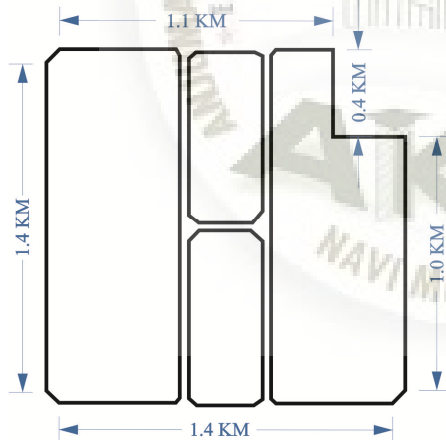


Figure 84 Site Dimensions



Figure 81 Under construction VIT - AP University adjacent to the site



Figure 82 View to Site



Figure 83 Approach road under construction



6 CONCLUSION

- FORMS AND SPACES
- MATERIALS AND FINISHES
- STRUCTURE AND MECHANICS



1. After all the case studies and data that have been collected, it is clear that the final output will be influenced from the parameters namely, the concepts that will be derived from the musical pieces of the Gharanas, the room shapes and the acoustics that will be the major part of the technical detailing.
2. Also, the design will be influenced from the materials that would be used in response to the climatic aspect.
3. Also, the process will not go only in single direction, rather it will be synced with both music and drawing music on paper. It will include a lot of experimentations, collages and compositions to arrive to the final stage of execution.

The above points are elaborated in the following:

FORMS AND SPACES

There are a number of works that demonstrate the imitation of musical instrument, which directly represents the instruments from which the inspiration has been taken.

The images thus show how the concept of music or musical instruments is directly replicated that just imitates the form without any kind of abstraction. Therefore, the structures turn to appear to be musical instruments planted on a piece of land at a larger scale with the interiors organized into different spaces with divisions. The problem with these methods is that the forms are not at all abstracted and concepts are also not drawn but are directly imitated which makes the structure unsuccessful as architecture but is appreciated from the appearance which ensembles something else.

Therefore, this is something which would not be done during the design process and rather abstraction and conceptualization of the musical pieces from gharanas or their structure, frequencies, pitch, etc. would be the main focus while designing the internal spaces as well as the external spaces.

MATERIALS AND FINISHES

The choice of materials and the finishes will also be looked upon and taken care while designing. The acoustic materials, the volume of the space would be designed in such a way that, that particular *gharana* will resemble the elements of gharanas architecturally which will impact the acoustical detailing of that space.

STRUCTURE AND MECHANICS

This concept can be explained by taking examples from the works



Figure 85 Guitar House



Figure 86 Piano House, Huanain, China

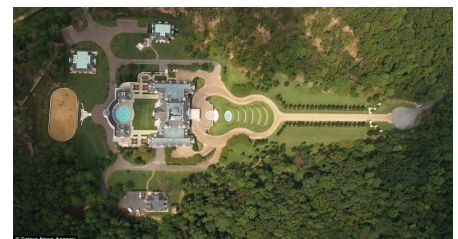


Figure 87 Alabama Guitar House, Birmingham

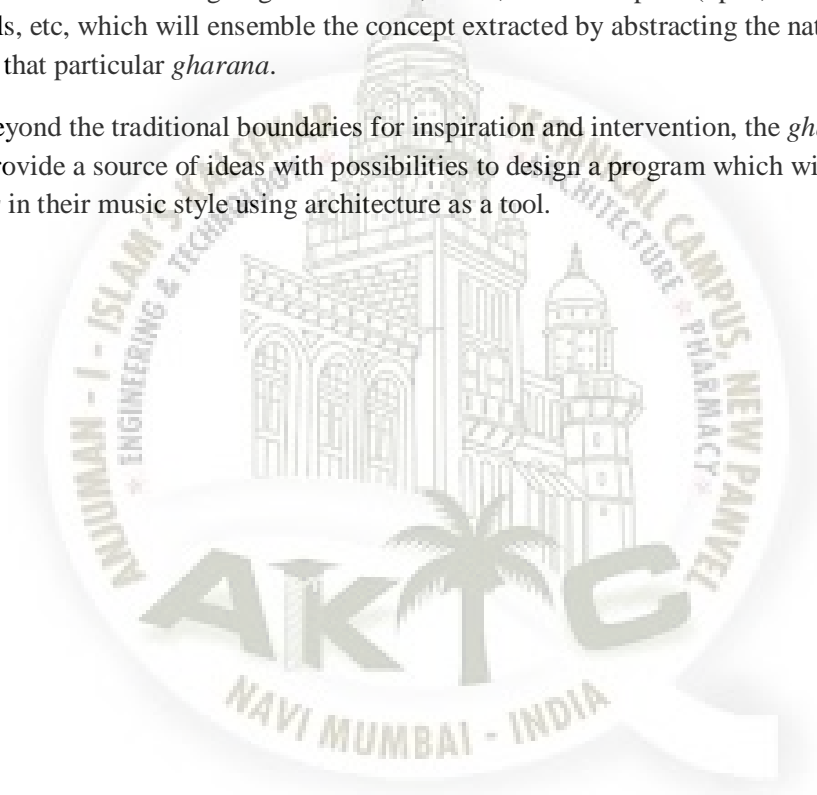
of Santiago Calatrava where he referred to certain musical instruments while designing the bridges namely, the Harp, the Cittern and the Lute which depends upon the balance of tensile and compressive forces. Of explained further the design process of the Harp bridge, the Harp uses total three groups of cables, two Gaussian ones and one planar. Thus, he has abstracted the musical instrument or rather dissected its concepts to final or derive an architectural concept from that instrument which further leads to a next level of detailing, that is, the nature of the structure in terms of their behaviour with forces.



Figure 88 The Harp Bridge by Santiago Calatrava

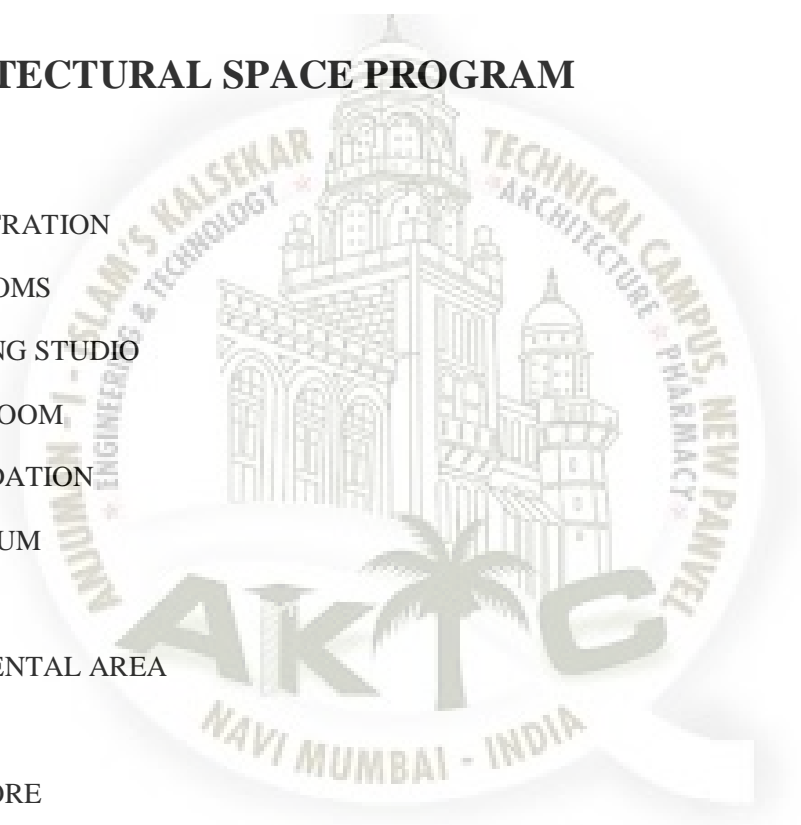
Thus, this will also lead to designing the volumes, ratios, nature of space (open, semi open), type of roofs, walls, etc, which will ensemble the concept extracted by abstracting the nature of style of singing of that particular *gharana*.

Therefore, beyond the traditional boundaries for inspiration and intervention, the *gharana* style of music will provide a source of ideas with possibilities to design a program which will represent the *gharanas* in their music style using architecture as a tool.



7 ARCHITECTURAL SPACE PROGRAM

- A. ADMINISTRATION
- B. CLASSROOMS
- C. RECORDING STUDIO
- D. RIYAAZ ROOM
- E. ACCOMODATION
- F. AUDITORIUM
- G. CANTEEN
- H. EXPERIMENTAL AREA
- I. LIBRARY
- J. MUSIC STORE



ARCHITECTURAL SPACE PROGRAM

A. ADMINISTRATION								
SR. NO.	SPACES	NoS.	SUB-SPACE	TYPE OF SPACE	QUALITY OF SPACE	CAPACITY (NO. OF PPL)	MIN. SIZES (IN MT.)	AREA (IN M ²)
1	Director's Office	1	Attached toilet, desk, sitting for guests	Private	Well ventilated, lit	5	60	60
			Includes personal assistant	Private	Well ventilated, lit			
2	Executive Director Office	1	Attached toilet, desk, sitting for guests	Private	Well ventilated, lit	5	60	60
3	Waiting Area	1	Sitting area for guests, students, visitors	Semi-Public	Well ventilated, lit	20	25	25
4	Accounts Department	1	Desks with storage space, other storage space, zerox and scanning space	Private	Well ventilated, lit	20	100	100
			Record Room	Private	Well ventilated, lit			
			Pantry	Semi-Public	Well ventilated, lit			
			Waiting Area	Semi-Public	Well ventilated, lit			
			Fee collection centre	Semi-Public	Well ventilated, lit			

5	Exam Department	1	Exam department head	Private	Well ventilated, lit	20	20	20
			Clerk, waiting area	Private	Well ventilated, lit			
			Paper collection, hall ticket and receipt generation area	Private	Well ventilated, lit			
6	Marketing and Advertisement		Committee room, record room, zerox and scanning area, pantry	Private	Well ventilated, lit	10	100	100
Total Area								365

B. CLASSROOMS								
SR. NO.	SPACES	NoS.	SUB-SPACE	TYPE OF SPACE	QUALITY OF SPACE	CAPACITY (NO. OF PPL)	MIN. SIZES (IN MT.)	AREA (IN M ²)
1	Vichitra Veena	1	Entry Classroom Teacher's sitting area Students sitting area Storage space	Private	Naturally ventilated, lit	7	300	300
2	Sarangi	1	Entry Classroom Teacher's sitting area Students sitting area Storage space	Private	Naturally ventilated, lit	7	300	300

3	Harmonium	1	Entry	Private	Naturally ventilated, lit	7	300	300
			Classroom					
			Teacher's sitting area					
			Students sitting area					
			Storage space					
4	Tabla	1	Entry	Private	Naturally ventilated, lit	7	300	300
			Classroom					
			Teacher's sitting area					
			Students sitting area					
			Storage space					
5	Flute	1	Entry	Private	Naturally ventilated, lit	7	250	250
			Classroom					
			Teacher's sitting area					
			Students sitting area					
			Storage space					
6	Vocal Classroom	2	Entry	Private	Naturally ventilated, lit	14	200	400
			Classroom					
			Teacher's sitting area					
			Students sitting area					
			Storage space					
7	Toilet		Male	Private	Well ventilated, lit	49	20	20
			Female					
			Changing Room					
			Drinking water facility					
Total Area								1870

C. RECORDING STUDIO								
SR. NO	SPACES	NoS.	SUB-SPACE	TYPE OF SPACE	QUALITY OF SPACE	CAPACITY (NO. OF PPL)	MIN. SIZES (IN MT.)	AREA (IN M ²)
1	Recording studio							
1.1	Live Room	1	1 mic, 1 stand	Private	Acoustics, well ventilated, lit		1500	1500
1.2	Control Room		Seating area, monitor speakers, mixing console, audio and digital workstations					
1.3	Isolation Booths		1 mic, 1 stand					
1.4	Machine Room		Noiser equipment, amplifiers					
1.5	Reception		Desk, waiting area					
1.6	Pantry		Gas top, washing area					
1.7	Lounge		Sitting area, restroom					
1.8	Toilet	Male	Well ventilated, lit		10	10		
		Female						
		Changing Room						
		Drinking water facility						
Total Area								1510

D. RIYAAZ ROOM								
SR. NO.	SPACES	NoS.	SUB-SPACE	TYPE OF SPACE	QUALITY OF SPACE	CAPACITY (NO. OF PPL)	MIN. SIZES (IN MT.)	AREA (IN M ²)
1	Riyaz room	21	Riyaz area with mattress	Private	Acoustics, well ventilated, lit	21	9	108
2	Toilet	1	2 WC, 1 wash basin		Well ventilated, lit	21		10
Total Area								118

E. ACCOMODATION								
SR. NO.	SPACES	NoS.	SUB-SPACE	TYPE OF SPACE	QUALITY OF SPACE	CAPACITY (NO. OF PPL)	MIN. SIZES (IN MT.)	AREA (IN M ²)
1	Students Accommodation	21	2 Beds, wardrobe, balcony, changing room, attached toilet	Private	Naturally ventilated, lit	42	10.5	250
1.1	Pantry	1	1 Cooking area, 1 washing area, storage				7.5	7.5
2	Teacher's Accommodation	7						
2.1	Living Area	1	1 Indian sitting		Naturally ventilated, lit	7	56	392
2.2	Dining Area		4-seater dining table					
2.3	Bedroom		Attached toilet, 1 wardrobe, 1 study table, 1 side table					
3	Guest Accommodation	20	2 Beds, 1 wardrobe, 2 chairs, 1 table, attached toilet	Public	Naturally ventilated, lit		250	250
Total Area								899.5

F. AUDITORIUM								
SR. NO.	SPACES	NoS.	SUB-SPACE	TYPE OF SPACE	QUALITY OF SPACE	CAPACITY (NO. OF PPL)	MIN. SIZES (IN MT.)	AREA (IN M ²)

1	Capacity	1	Entrance	Public	Acoustics, well ventilated, lit	500	1700	1700
			Foyer					
			Ticket counter					
			Seating					
			Stage					
			Green rooms with toilet					
			Cafeteria					
Total Area						1700		

G. CANTEEN								
SR. NO.	SPACES	NoS.	SUB-SPACE	TYPE OF SPACE	QUALITY OF SPACE	CAPACITY (NO. OF PPL)	MIN. SIZES (IN MT.)	AREA (IN M ²)
1	Loading and unloading	1	Platform	Semi-Public	Well ventilated, lit	100	700	700
2	Preparation area	2	Veg kitchen					
			Non-veg kitchen					
			Pantry					
3	Storage	2	Cold storage					
			Dry storage					
4	Dining area		Sitting area	Open, semi open				
5	Toilets		Wash basins, wc, urinals	Well ventilated, lit	30	30		
Total Area								730

H. EXPERIMENTAL AREA								
SR. NO.	SPACES	NoS.	SUB-SPACE	TYPE OF SPACE	QUALITY OF SPACE	CAPACITY (NO. OF PPL)	MIN. SIZES (IN MT.)	AREA (IN M ²)

1	Open theatre	1	Foyer, ticket office, toilet, loading and unloading, store, control room	Semi-Public	Open			380
2	Recreational area	6		Private	Open, semi-open	50		150
Total Area								530

I. LIBRARY								
SR. NO.	SPACES	NoS.	SUB-SPACE	TYPE OF SPACE	QUALITY OF SPACE	CAPACITY (NO. OF PPL)	MIN. SIZES (IN MT.)	AREA (IN M ²)
1	Library 1 (Books, magazines)	1	Baggage counter, desk, treatment room, photocopy, scanning, issue counter, furniture, reading space	Semi-Public	Naturally lit, well ventilated, required north light		340	340
2	Library 2 (Audio-visual)	1	Baggage counter, desk, issue counter, furniture, listening space	Semi-Public	Naturally lit, well ventilated,			
Total Area								340

J. MUSICAL STORE								
SR. NO	SPACES	NoS		TYPE OF SPACE	QUALITY OF SPACE	CAPACITY (NO. OF PPL)	MIN. SIZES (IN MT.)	AREA (IN M ²)

1	STORE	1	Shelves/ Display Area	Semi Public	Well Ventilated, lit		50	50
			counter					
			Store Room					
			Purchase and repair					
CIRCULATION		15%	BUILT UP		8924 M²	GRAND TOTAL		8112.5 M²



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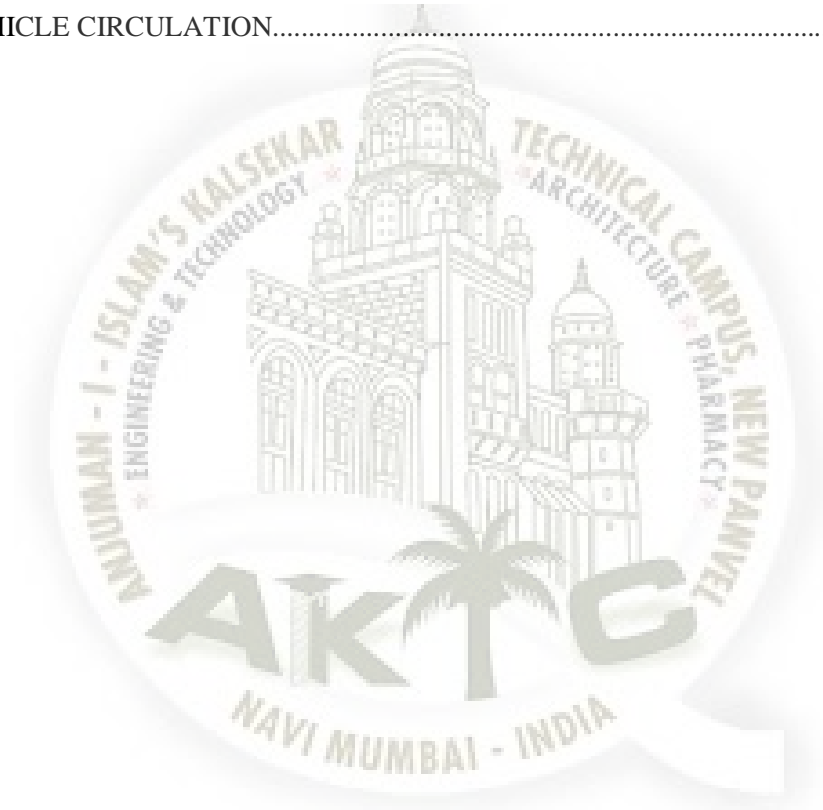
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