RETHINKING ABANDONED QUARRY, RANCHI.

A THESIS REPORT

Submitted in partial fulfillment of the
Requirements for the award of the degree
Of

BACHELORS OF ARCHITECTURE

By

SAGAR TOPPO

SCHOOL OF ARCHITECTURE
GALGOTIAS UNIVERSITY
GREATER NOIDA
UTTAR PRADESH

CANDIDATE DECLARATION

I hereby certify that the work that is being presented in this dissertation, entitled "RETHIKING ABANDONED QUARRY-CULTURAL CENTRE" in partial fulfillment of the requirements for the award of the Bachelors of Architecture submitted to the School of Architecture of the Galgotias University Greater Noida, India, is an authentic record of my work carried out during the period December 2018 to July 2019, under the guidance of prof. Ar. **RUCHI ARORA**, Associate Professor of School of Architecture, Galgotias University, Greater Noida.

The matter embodied in this has not been submitted for the award of any other degree.

Place: Greater Noida
Date:

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CERTIFICATE

This is to certify that the above mentioned statement made by the candidate is correct to the best of my knowledge.

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I place on record my honest thanks to the teachers, **Dr. ATUL SETYA, Prof. KAMINI SINGH, Prof. ANANT PRATAP SINGH, Prof. RUCHI ARORA** who helped and shaped me as an aspiring architect and a social contributor from the starting of my college years.

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SYNOPSIS:

INTRODUCTION:

Historically, the extraction of mineral reserves has always resulted in varying degrees of environmental resource degradation and social impacts, including displacement, all across the globe. Whilst acknowledging that no mining can be entirely free of all negative impacts, there is sufficient ground to suggest that all-round performance on this subject in the mining sector needs to be urgently and substantially improved in the country.

REUSE:

Vacant, abandoned, and contaminated properties in can be both an eyesore and an opportunity. In an urban residential neighborhood, vacant land decreases property values and scares off development for both the actual site and the surrounding neighborhood. But vacant land can also provide opportunities for neighborhood transformation.

Across the globe, mining has witnessed unknown growth as an industry, generating wealth, employment, and opportunities for growth. What remains a concern however, is how the mining sites are abandoned and left to degrade after mineral extraction is terminated. In India, abandoned mines number in the thousands, causing habitat and vegetation loss. Societies are oblivious to the great potential these sites offer in terms of boosting tourism, recreation and hospitality.

Such redevelopment may transform only a single lot, and the transformation may be short Lived. However, under the best circumstances, it may bring jobs, tax, improved infrastructure, and even more development to the neighborhood – while reducing health and environmental risks. Hence effective in restoring the ecology of the place.

AIM:

Exploring endless possibilities that can metamorphose a mining site into something interactive, profitable and appealing to peoples and societies.

ISSUES:

-Due to the long term extraction process the site as well as the surrounding have been gone through the Habitat as well as Biodiversity Loss.

-After Long term extraction the abandoned site and surrounding also have loss the economic and cultural values- which led to the massive lack of awareness among the people residing there.

-The disturbance created in the land profile led to destruction of natural drainage and also caused water pollution.

OBJECTIVES:

To explore the potential of the left over site in sense of re-generating land value and revenue.

To study the economic and environmental impact over the site leftover abandoned after extraction of resources.

To study about the challenge of the site, exploring designing ideas and construction techniques in such a diverse condition.

To deal with the unbalanced ecology of the site due to the mining process, hence exploring different effective measures in order to balance ecology in the surroundings.

HYPOTHESIS:

"**Adaptive reuse and designing built spaces may rejuvenate the Economic, Social and Cultural value of the Abandoned Quarry**"

SCOPE:

The scope of the project can be described as new upbringing of design concept and challenges beyond the boundaries of regular sites and can quoted as the fine example for understanding the Ecology and land resources for reusing it.

IDENTIFICATION OF PROJECT SITE:

Location: Government Owned Stone Quarry, Ring Road, Hulhundu, Ranchi.
Plot area: - 16Acres.

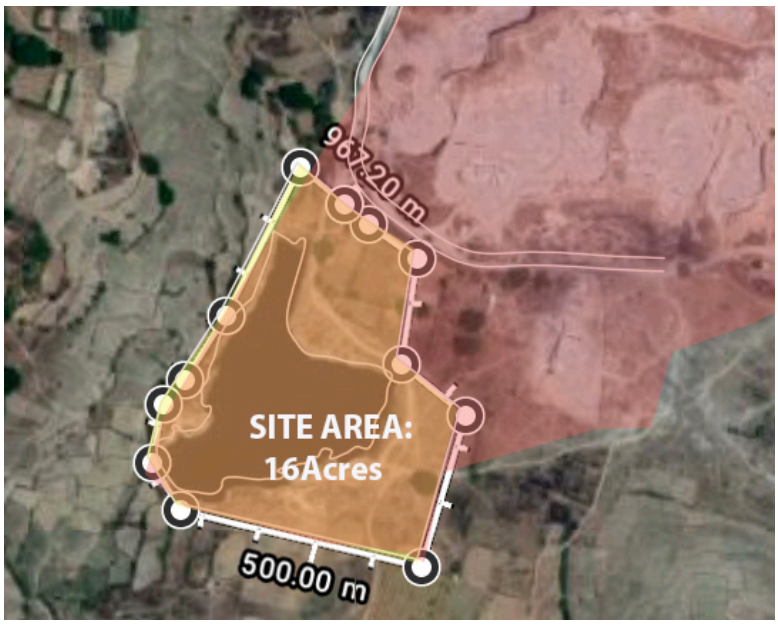


Figure 1 Site Boundary

CONCLUSION:

Adaptive Reuse of the space will heal the land profile, create awareness among the people, restore the site potential and also balance the ecological aspects of the surroundings.

GOVERNMENT DECLARATION

Jharkhand to develop defunct mines as tourist spots

By: IANS | Published: June 9, 2016 5:20 PM

According to officials, Jharkhand has seen a rising graph of visitors from outside the state, from 23,991 tourists in the year 2000 when the state was formed to 33,179,530 (including 1,67,855 foreigners) in 2015.

Figure 2 Soil condition after mining

The move comes after the department studied mining tourism in Australia, Chile, Canada, Norway and other countries. (Reuters)

Jharkhand's tourism department said on Thursday it is working to develop the closed and abandoned mines in the state into active tourist destinations.

"Mining tourism is to be developed following best practices from other parts of the world," said a statement from the department, citing Director (tourism) Prasad Krishna Waghmare.

"The state government intends to develop closed mines and transform the abandoned mines as a tourist destination."

The move comes after the department studied mining tourism in Australia, Chile, Canada, Norway and other countries.

"This could be a different experience for the visitors and tourists who visit the state. The government is already in talks with several mine operators for the same," Waghmare said.

Jharkhand to develop mining tourism

Figure 3 Mining industry in India

Jharkhand has a wealth of mineral resources

The government of Jharkhand, in eastern India, is planning to develop mines into tourist spots, the *Times of India* reports.

Under a new plan to attract more visitors, the state intends to redevelop closed and abandoned mines and promote them as tourist attractions. Jharkhand has considerable mineral resources and is a major centre for iron ore, coal and copper mining, as well as gold and silver.

“That could be a different experience for the visitors and tourists who visit Jharkhand. The government is already in talks with several mine operators for the same,” Prasad Krishna Waghmare, director of Jharkhand Tourism, was reported saying.

INTRODUCTION:

Historically, the extraction of mineral reserves has always resulted in varying degrees of environmental resource degradation and social impacts, including displacement, all across the globe. Whilst acknowledging that no mining can be entirely free of all negative impacts, there is sufficient ground to suggest that all-round performance on this subject in the mining sector needs to be urgently and substantially improved in the country.
India is a country full of resources, minerals, manpower, nature, beauty, bounty, culture, heritage, a rich past, a bright future and revolutionary thinkers. The motherland has provided its children with all they need and even more. The beauty of the heavenly nature-scape can be seen felt and appreciated in cities from Kashmir till Kanyakumari.

These magnificent spaces like hill tops, cliffs, mountains, sea sides, beaches are very much appreciated and brought closer to the people. But still our motherland has a lot hidden in its womb that is even more breath taking and diverse in nature.

WHAT IS QUARRYING?

Quarrying is the extraction of valuable minerals or other geological materials from the earth, usually from an ore body, lode, vein, seam, reef or placer deposit.

A quarry is a type of open-pit mine in which dimension stone, rock, construction aggregate, riprap, sand, gravel, or slate is excavated from the ground. Stone quarrying or open-mining is a process of abstraction of stone from earth where the drilling and blasting is done from the upper most layer till a structurally and geographically viable depth and resources are collected and exploited for the benefit of the people. Stone mining is less complicated in nature than coal or any other resource.

Hence these sites can be visited by the general people with no harm of chemical reactions and any harm to anyone. The land after mining is left either in steps or like a crater case of stone mining.

Figure 4 Damaged vegetation condition due to mining

WHAT HAPPENS AFTER QUARRYING?

The process of quarrying a site may take from 6months up to 5years on contractual basis from the government following which the site is left on to the government for any further treatment or land use.

Once depleted of their desired resources, quarries are frequently abandoned. The resulting gaping holes can fill with water and form dangerous quarry lakes while others are turned into unsightly landfills. When quarries are in close proximity to urban environments, inhabitants are subjected to pollution and noise, and the undeniable eyesore of an abandoned quarry remains long after excavation is completed.

WHAT ABOUT ABANDONED QUARRIES?

Abandoned quarries are a huge landscape in itself. It is a huge man made void inside the nature which has fulfilled the requirement of the man. So, the earth now is vacant and free. There are various beautiful sites of such abandoned quarries in India and abroad.

Figure 5 Water collected in Abandoned Quarry

Figure 6 Water collected in Abandoned Quarry

THREATS FOR ABANDONDED QUARRIES

NATION, CURRENT AFFAIRS

After rain, water bodies at quarries in Hyderabad turn death traps

DECCAN CHRONICLE. | PINTO DEEPAK

Published Nov 2, 2016, 1:29 am IST **Updated** Nov 2, 2016, 7:33 am IST

Youngsters come to these water-filled quarries to swim, and women to wash clothes as the area suffers from a shortage of water.

Hyderabad: The stone quarries in Jagathgirigutta have become death traps for residents of the surrounding areas. There are nearly 15 abandoned quarries in the area and more than 20 people have drowned in them in the past one year. Youngsters come to these water-filled quarries to swim, and women to wash clothes as the area suffers from a shortage of water. Residents say that despite many representations to civic officials and political leaders, nothing has been done to eliminate the threat posed by the quarries.

There are nearly 15 abandoned quarries in the area and more than 20 people have drowned in them in the past one year. (Representational image)

Figure 7 Cutout from: Deccan Chronicles

IDEA BEHIND:

The majority of quarries are located fairly close to urban environments due to the expense of transporting raw materials into the city for industrial use in buildings and roads. As a result, inhabitants of neighborhoods near quarries are subjected to air pollution from dust, noise pollution from trucks and machinery, and the destruction of what may have once been a beautiful landscape. Not only do quarries often negatively impact those who live nearby, but they often leave residual negative impacts on the environment.

Runoff of chemical pollutants into bodies of water, loss of natural habitats, farmland, and vegetation, and natural resource exhaustion are among the most harmful environmental impacts.

While quarrying can be a negative industry for society and for the environment, the necessity of quarrying is undeniable. In order for human civilization to continue as it has since the industrial revolution, we need the retrieval of resources from quarries in order to create our homes' foundations, transportation structures with cement, concrete, asphalt, and crushed stone, and other industrial uses such as abrasives, binders, additives, and roofing. Millions of people worldwide are employed by quarrying practices, and therefore a removal of the quarrying industry would result in the loss of jobs for countless families. Therefore, in order to remedy the negative effects of quarrying, we must use the resource depleted spaces for other practices once the quarries cease being operational. The potential transformation of quarry sites into a variety of sustainable uses would not only remedy the negative effects of quarrying, but could create sites of greater social, environmental.

Figure 8 Be'er Sheva Quarry Park, BE'ER SHEVA, ISRAEL.

A quarry can be simply defined as the expanse where different types of rocks including limestone, marble and granite are obtained to be used in various fields of industry and manufacturing. As soon as the needed resources

in the quarry are drained and consumed, they usually become deserted and neglected. The excavation resultant holes and openings are either filled with water creating hazardous and unsafe quarry lakes, or they can become an unattractive and repulsive dumping ground. Having quarries within a close distance to urban districts and regions can cause residents to be exposed to various types of pollution, in addition to the inconvenience of being near a deserted quarry, which can be beyond doubt an incontestable and obvious deformity that last for a long time even if the quarrying processes are finished.

The most convenient approach to deal with these neglected and deserted quarries is through sustainable redevelopment. Accommodative and flexible plans were initiated across the US and many other countries that aimed to change quarries to a variation of locations; privately owned and public. The prospective utilization of such areas incorporate locations that can be used for training and exploration purposes, entertaining exercises and activities, aquaculture, enterprises, accommodation in addition to warehousing.

The objective of the paper is mainly to incite and support the processes of restoration and reconstruction of the areas affected by quarrying and excavation by changing them into expanses appropriate for new supportable and sustainable land utilization.

Literature Review Although quarrying is considered to be an unfavorable industry that can affect the environment and the community, its importance is unquestionable. To be able to preserve the human culture and civilization the way it was during the industrial revolution, it is necessary to recover the resources obtained from quarrying processes so that houses' groundwork can be created, the substructure of transportation using cement, asphalt, crushed stone and concrete in addition to various manufacturing utilizations including roofing, binders, additives and abrasives. Globally a huge number of individuals make their living by working in the quarrying industry; hence attempting to eliminate this particular industry can cost innumerable households their livelihoods.

Consequently, to rectify the unfavorable outcomes accompanying quarrying, it is essential to make use of the drained expanses in different conducts when the quarries are no longer functional. The possible alterations of quarrying locations to different supportable and sustainable utilizations can contribute in rectifying the unfavorable outcomes of quarrying as well as producing locations with better societal and ecological conditions.

The abstract issued in 2002 from the Land Research Center pointed out that quarries have a negative influence on the environment, which includes air, water, soil and noise pollution in addition to their impact on land use, biodiversity and the shape of the land. Study regarding the environmental impact assessment and its importance to quarries indicated the significance of adopting policies that attempt to better and develop the economic and the environmental situation, in order to spare the environment more deterioration to protect it and ensure the environmental quality, which necessitates an effective and influential public participation in addition to the government's collaboration with the public, venture capitalists, investors, local authorities and environmental defense organizations.

Figure 9 Restored Vegetation in Abandoned Quarry

The study also referred to a sustainable development policy that accentuate on the favorable connections and relationships between development and the environment. Sustainable development can be defined as the development that matches the present's demands and requirements without impairing the future generations' ability to meet their needs. As for the effectual policies that ensure a sustainable development, certain requirements must be met:

1. Settlements and compromises between the economic development and the environmental quality must be cautiously and carefully evaluated.

2. The standards and the policies must be practical and compatible with the capability of surveillance and implementation.

3. Local and public participation in establishing and implementing environmental investment policies.

Figure 10 Performances centre in Open Quarry

REASON FOR PROJECT SELECTION:

The thought behind taking up a site like an abandoned quarry is my shear curious mind about such wasted and neglected spaces in earth whose beauty can be appreciated further by the people and can be made into a unique landmark like never before. A space like this is very artistic in nature and does not need any justification for its mesmerizing beauty. Combing these thoughts with architecture may lead to an interesting composition of art, nature built void, peace and celebration all at the same time.

My sole effort behind this project is to bring out the hidden fusion of man and nature and bring it closer to the general public by infusing activities of the required nature. To experiment, to experience, to learn and to do something new.

Sustainable redevelopment has become a shining solution for these abandoned, resource-depleted quarries. Dozens of cities in America and abroad have undertaken adaptive re-use projects to transform quarries into a variety of public and private spaces. The potential new uses for these expanses of land include sites for research and education, aquaculture, recreational activities, storage, industry and housing.

GOAL:

The goal of my research is to encourage the rehabilitation of land disturbed by quarrying by making the areas suitable for new sustainable land uses.

Figure 11"Earth-scraper" hotel to open in Shanghai's unused quarry

SITE SELECTION:

The process of selection of a quarry has been an experience and an eye-opener. It has brought me closer to studying such beautiful sites. There are various sites in India where the quarrying is either finished or would be finished soon. Some are near civilizations and some in faraway lands. Some would be landfilled and some would be taken up for any other required land use. My criteria of choosing a site has been of very practical nature but lengthy in the practical process.

1. Type of stone quarry:
Weather the stone which is being quarried holds the strength for its stability or not? Will it be able to take and kind of built form or structures around it or not?

2. Depth and size of the quarry:
The depth of the quarry plays an important role in determining whether movement of people and vehicles is lengthy or practically possibly. The size whereas determines whether an activity can be proposed or not. These 2 parameters decide the proportion of the quarry and hence determine the created inclusion or space.

3. Location:
The location and surroundings play a vital role in determining its use and the proposed requirements. The location of my site should be close to public settlement as well as The road network.

4. Services:
The site should be well connected to the roads, electricity and water. The visual connection of the site is also a very important aspect

5. Public infusion:
The site should be place such that it is easy for public to reach the site and not be secluded form the city.

6. Requirement of project:
The area should have a requirement of a project which can appreciate the beauty of the site and can be justified in all its contexts.

7. Surroundings:
The surrounding land use should respond to the site and should not create a negative impact on my site.

Figure 12 Site Panorama View

SITE ANALYSIS

DEMOGRAPHY

LOCATION

The mine was privately on lease period and situated in Jojosiring, Hulhundu, Ranchi. The quarry depth varies from 18m to 24m from side to center and exhibits thin layers of rocky composition. The walls of the quarry are almost perpendicular to the ground. Depressions located on either end of the quarry are filled with pristine bluish green water, lending an interesting natural charm and dynamism to the otherwise rigid terrain. The site contours create visual interest and curiosity, beckoning an explorer to delve further. The site thus has the potential to generate unique experiences for visitors. The walls of the quarry are almost perpendicular to the ground.

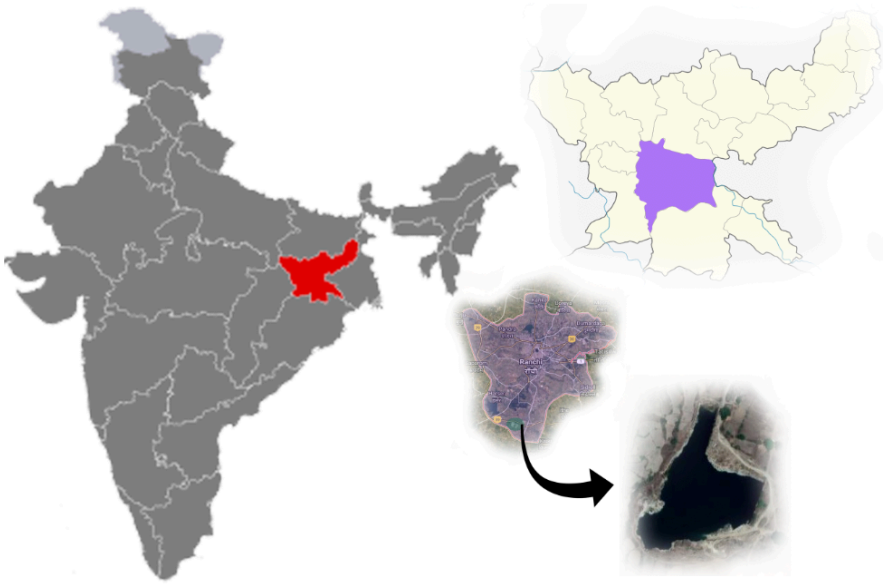


Figure 13 Site Boundary

MASTER PLAN

Master plan According to the masterplan 2015 developed by the JHARKHAND Development Authority, the site exists under Residential Zone.

LAND USE

The land use defined in the site area is Residential zone according to the Master Plan 2036.

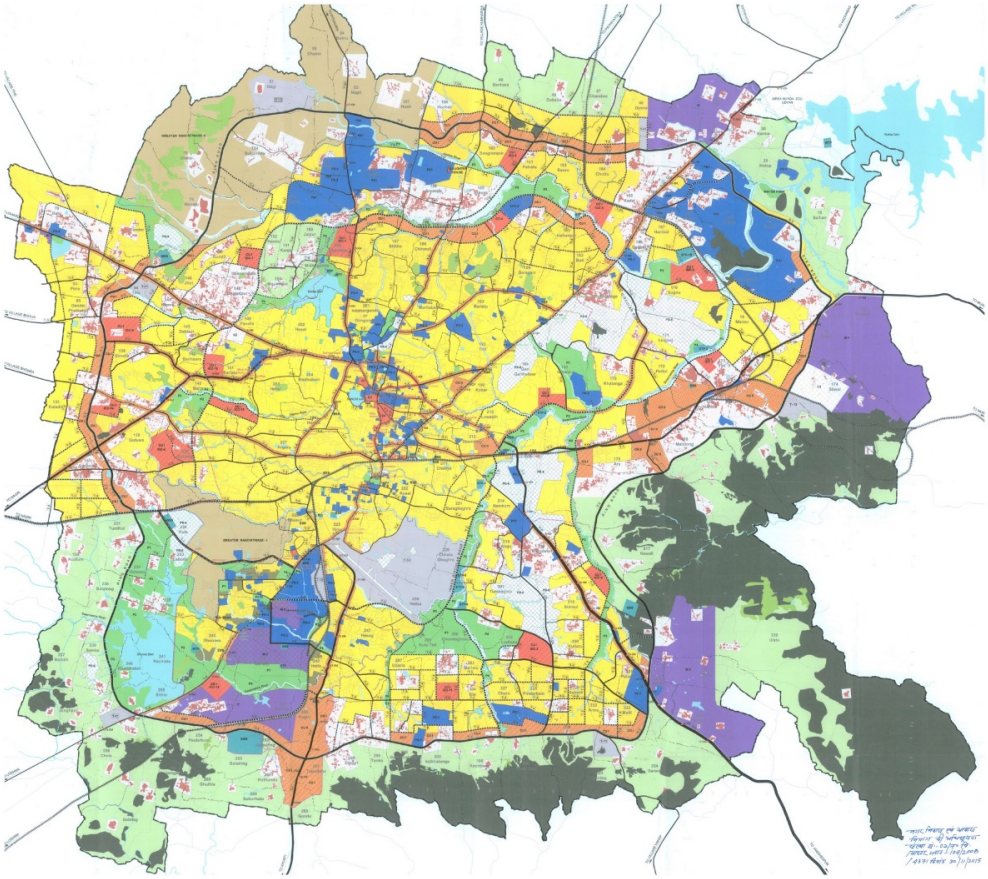


Figure 14 Master Plan 2036,Ranchi

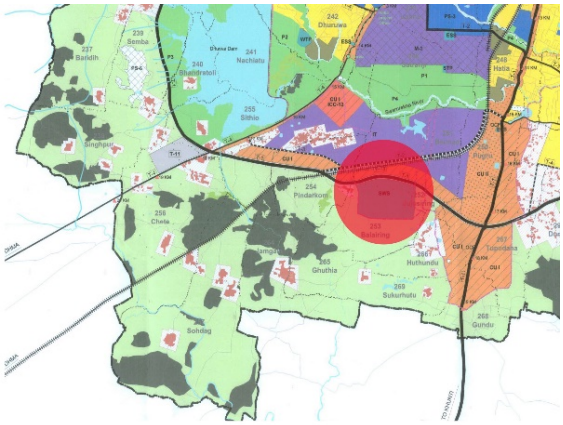


Figure 15 Site on Master Plan

CLIMATIC ANALYSIS

Although Ranchi has a humid subtropical climate, its location and the forests surrounding it combine to produce the unusually pleasant climate for which it's known. Summer temperatures range from 20 °C to 42 degrees, winter temperatures from 0 °C to 25 degrees. December and January are the coolest months, with temperatures dipping to the freezing point in some areas. The annual rainfall is about 1430 mm (56.34 inches). From June to September the rainfall is about 1,100 mm.

Climate data for Ranchi [hide]													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average high °C (°F)	23.6 (74.5)	26.3 (79.3)	31.5 (88.7)	35.6 (96.1)	36.8 (98.2)	33.4 (92.1)	29.8 (85.6)	29.2 (84.6)	29.4 (84.9)	28.9 (84.0)	26.5 (79.7)	24.0 (75.2)	29.3 (84.7)
Daily mean °C (°F)	16.7 (62.1)	19.5 (67.1)	24.2 (75.6)	28.4 (83.1)	30.1 (86.2)	28.5 (83.3)	26.3 (79.3)	25.8 (78.4)	25.6 (78.1)	23.4 (74.1)	20.1 (68.2)	17.0 (62.6)	23.8 (74.8)
Average low °C (°F)	9.8 (49.6)	12.6 (54.7)	16.8 (62.2)	21.2 (70.2)	23.3 (73.9)	23.5 (74.3)	22.7 (72.9)	22.4 (72.3)	21.8 (71.2)	18.6 (65.5)	13.6 (56.5)	9.9 (49.8)	18.0 (64.4)
Average precipitation mm (inches)	16.7 (0.66)	21.2 (0.83)	25.0 (0.98)	21.8 (0.86)	61.7 (2.43)	249.4 (9.82)	336.6 (13.25)	319.1 (12.56)	247.3 (9.74)	76.6 (3.02)	10.8 (0.43)	11.6 (0.46)	1,397.7 (55.03)
Source: IMD													

Figure 16 Green Lush during Rainy Season

TOPOLOGY

The Ranchi Plateau is the largest part of the Chhota Nagpur Plateau. The elevation of the plateau surface in this part is about 700 m (2,300 ft.) and gradually slopes down towards south-east into the hilly and undulating region of Singhbhum (earlier the Singhbhum district or what is now the Kolhan division). The plateau is highly dissected. The Damodar River originates here and flows through a rift valley. To the north it is separated from the Hazaribagh plateau by the Damodar trough. To the west is a group of plateau called *pat*.

There are many waterfalls at the edges of the Ranchi plateau where rivers coming from over the plateau surface form waterfalls when they descend through the precipitous escarpments of the plateau and enter the area of significantly lower elevation. The North Karo River has formed the 17 m (56 ft.) high Pheruaghaugh Falls at the southern margin of the Ranchi plateau. Such falls are called scarp falls. Hundru Fall (75 m) on the Subarnarekha River near Ranchi, Dassam Fall (39.62 m) on the Kanchi River, east of Ranchi, Sadni fall (60 m) on the Sankh River (Ranchi plateau) are examples of scarp falls. Sometimes waterfalls of various dimensions are formed when tributary streams join the master stream from great heights forming hanging valleys. At Rajrappa (10 m), the Bhera River coming over from the Ranchi Plateau hangs above the Damodar River at its point of confluence with the latter. The Jonha Fall (25.9 m) is another example of this category of falls. The Gunga River hangs over its master stream, the Raru River (to the east of Ranchi city) and forms the said falls.

Figure 17 View of Patratu Valley

Figure 18 Forestation Movement in Ranchi

CULTURE

The Indian state of Jharkhand is located in the eastern part of the country and is known for its distinct paintings, traditions, and festivals. The regional languages that belong to the Indo-Aryan branch; in Jharkhand, they are Khortha, Nagpuri, and Kurmali spoken by the Sadan. Other Indo-Aryan languages include Bhojpuri, Magahi, Maithili, Bengali, and Odia. The languages that belong to the Austroasiatic branch are Mundari, Santali, and Ho. The languages that belong to the Dravidian language family are Kurukh and Malto. Jharkhand culture is rich and diverse and as a result unique in its very own way. Jharkhand culture treats guests as God and serves them and takes care of them as if they are a part and parcel of the family itself.

Figure 19 Cultural Map of Jharkhand

Figure 20 Jharkhand: Land of Tribals

RADIAL STUDY

Radial study explains the demography around the site within the radius of 6 and 10 km/s. The data represented are developed on the bases of Studies conducted by author.

ROAD NETWORK TRANSPORTATION

The site falls on the Ring Road highway connecting Madhya Pradesh, Uttar Pradesh and Jharkhand. The width of the highway is 35 meters, with two service roads on each Side of width 10 meter each. The nearest railway station is at Hatia railway station, which is at a distance of 8.9 kms, whereas nearest airport is Birsa Munda International Airport which is at 13.6 kms. The Site is well connected to the roads and by transportation routes and is hence easily accessible.

SOCIAL INFRASTRUCTURE

The site falls on the edge of greater Ranchi, towards the rural Hulhundu area. The area around the site is mostly developing. There are various urban villages in the surroundings with residences and markets. On the other side of the highway there is a proposed upcoming IT Park, housings and hotels. Several universities and colleges fall within 5 and 10km area of the site. There are few Hospitals within 5 km. Several hotels are present due to the presence of international airport, and several other hotels are coming up in the vicinity.

SITE CONTEXT

The mine was privately on lease period and situated in Jojosiring, Hulhundu, Ranchi. The quarry depth varies from 18m to 24m from side to center and exhibits thin layers of rocky composition. The walls of the quarry are almost perpendicular to the ground. Depressions located on either end of the quarry are filled with pristine bluish green water, lending an interesting natural charm and dynamism to the otherwise rigid terrain. The site contours create visual interest and curiosity, beckoning an explorer to delve further. The site thus has the potential to generate unique experiences for visitors. The walls of the quarry are almost perpendicular to the ground.

SITE PARAMETRES

SITE BOUNDARY

Site area: 16 ACRES APPROX/ 42800MSQ SHAPE: The quarry is almost circular in shape and the parts of site on the level above are flat and of regular shape. Some part of the site is on the foothills which is almost flat.

SITE ACCESS

The site is accessible from 3 kachcha roads, connected directly through the National highway. The width of the kachcha raasta is about 6m to 7m. A ramp of landfilling is left inside the quarry to access the quarry by foot or even by vehicles. This ramp leads to a crescent shape land between the lake which is being formed at the lowest point of the quarry.

VEGETATION

The site consisted of mostly eucalyptus trees and gulmohar trees. Trees are present at the entry road 1 and on the flat lands besides the quarry. Wild bushes are grown on the periphery of the quarry and on the sites around the quarry.

SOIL TYPE

The soil type varies in different part of the site. 1. Mostly Gravel and sand. Moist due to presence of water. 2. Laterite soil. 3.Gravel and sandy but levelled with concrete. 4. Rocky and partially sandy. 5. Granite rock.

Figure 21 Site Context

SITE RELIEF

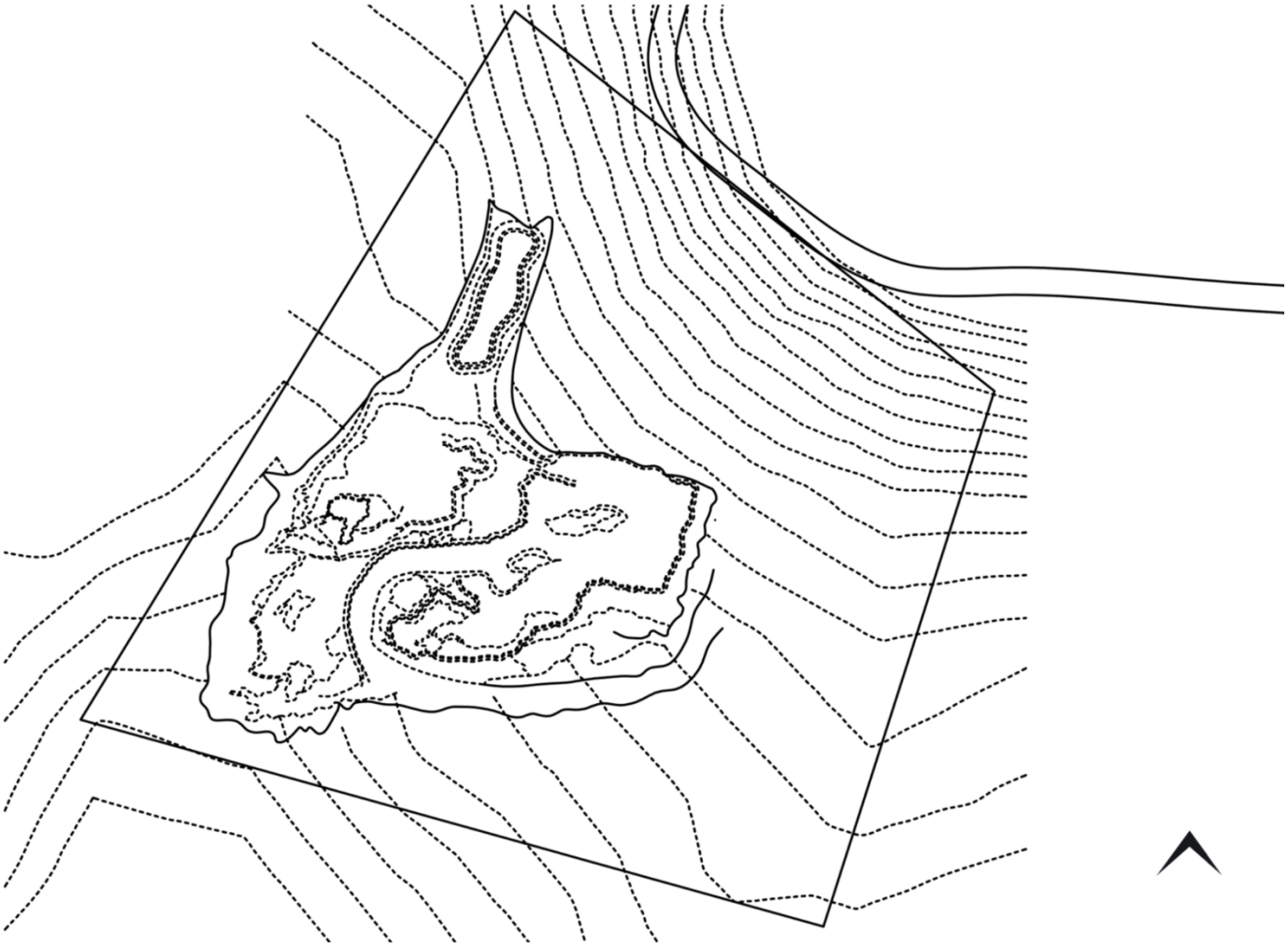


Figure 22 Site Relief

SITE SECTION

SUN PATH DIAGRAM

SUMMER TEMPERATURE: Min: 21 Max: 33*c
Hottest month: APRIL
RAINFALL: Avg: 77 mm
Rainiest months: May to October with a maximum precipitation of 183.7 mm
Pleasant predominant winds hit the foothills and enters the quarry. The sunrays fall towards the north side of the quarry for the longest hour.

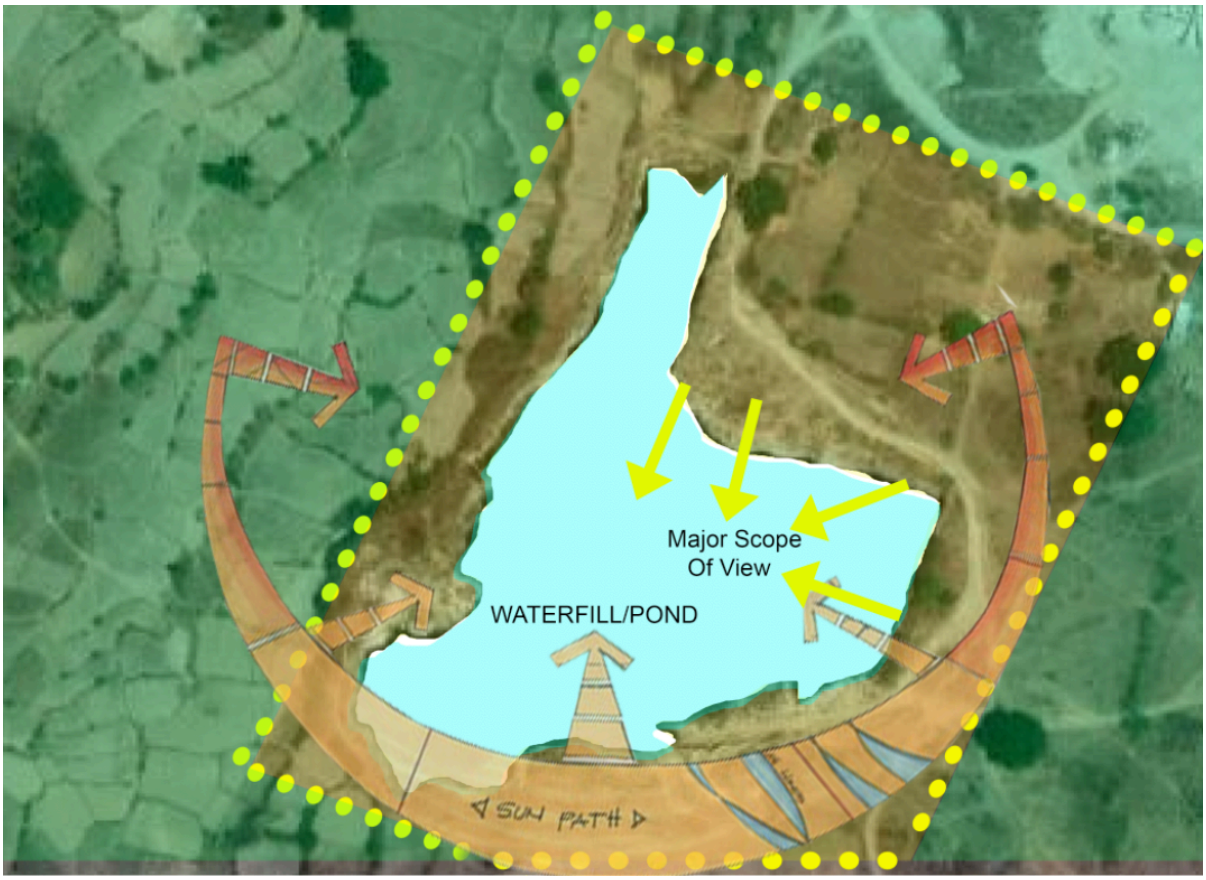


Figure 23 Sun Path Diagram

WIND BEHAVIOUR

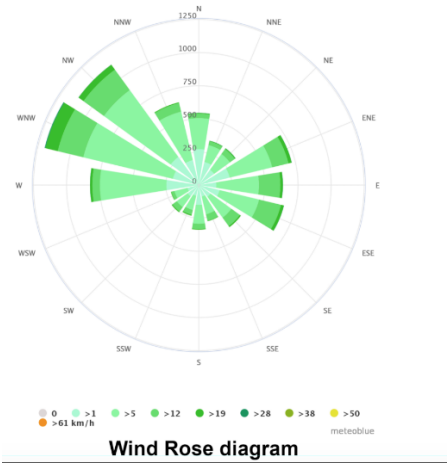


Figure 24 Wind Rose Diagram

SITE POTENTIAL

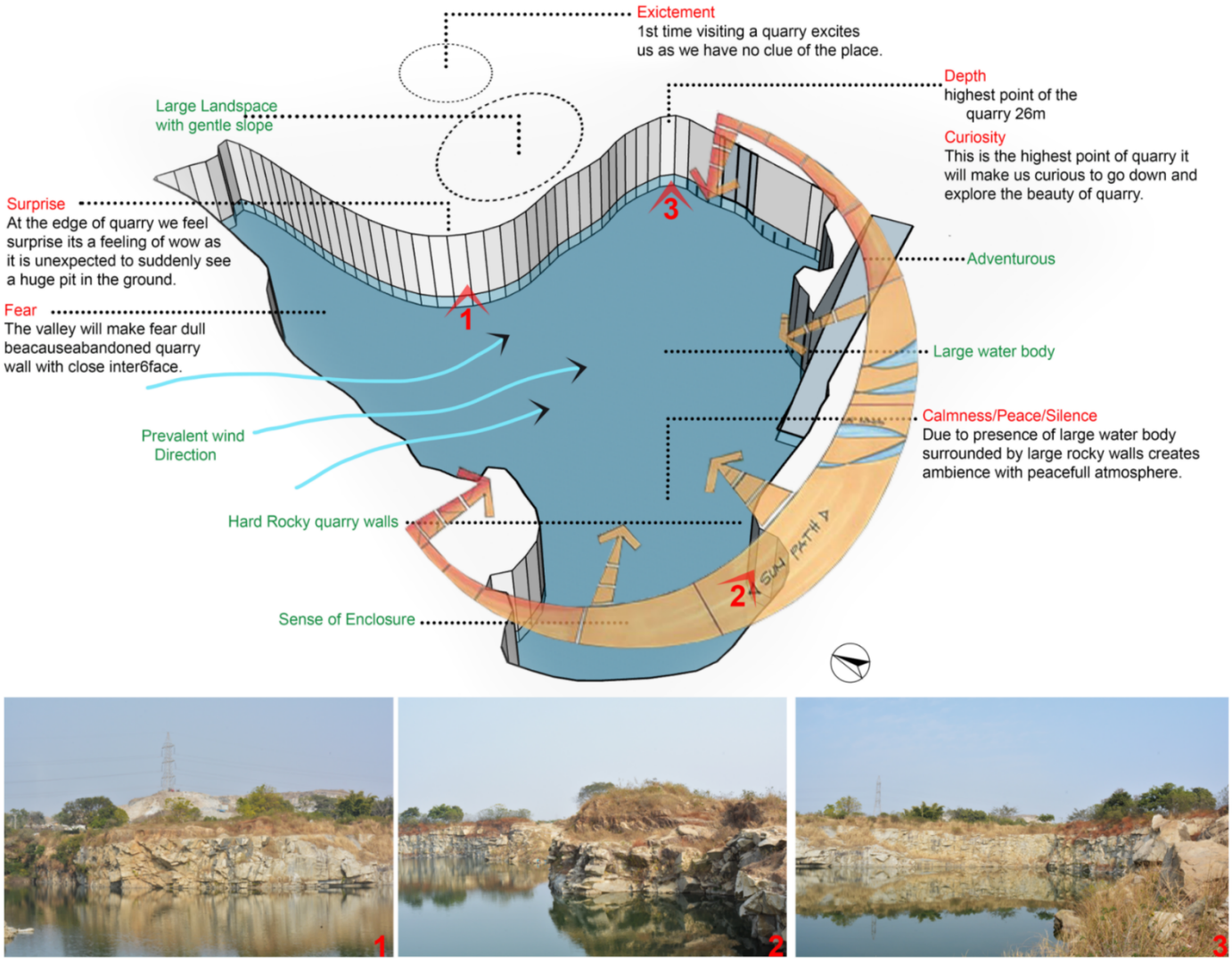


Figure 25 Site Potential

PROJECT PROPOSAL

JHARKHAND has a large diversity within its populations and the socio-- cultural equipment available in the hands of planner and decision makers could help in building the bridges between various religious group, economic classes, social and ethnic groups and could help in generating cohesiveness in this multicultural society. The long standing demand for a World- Class Expo Centre and a Convention facility is all set to see the light of the day. The 16-acre Cultural center will house several house for tribal communities. The new Cultural Centre will ensure hassle-free commuting for the residents of Ranchi who faced major inconvenience when large events were organized at Morabadi Stadium. The benefits that center will generate, in terms of short and long term gains, higher yields, economic development, foreign exchange reserves, income-multiplier effect on various business and employment generation.

To develop socio- cultural center in Ranchi that identifies the spatial requirements and needs of the community which are translated into types and quality of spaces. To create a space of gathering and interaction that would enhance greater awareness of our heritage. To design spaces within the hub that are easily accessible to public and provide a platform to express themselves. To relate the vast building to the very different scales of the intimate neighborhood of the site. To make the center sensitive to the city and humane in scale without impeding the efficiency of it's function. To create spaces for the younger generation so that "more vibrancy could be brought to the center".

SCOPE OF THE PROJECT

Ranchi is fast developing as a sub city in itself. Hence the upcoming city needs a center for arts and entertainment for its residents and the outsiders. Its proximity to the international airport will ensure its economic boom since it will also cater to the international clients and also increasing its accessibility. Given its vibrant community, made up of people belonging to various cultures, Ranchi requires more cultural centers. This center will be the answer to the same. Being opposite to the IT Sector will be advantageous since it can also cater to the crowd coming to the complex. Proximity to the metro station will increase the accessibility to the site. Essentially they are architectural machines designed to generate business for the city.

PROJECT OBJECTIVES AND LONG- TERM IMPACT

Ranchi has a large diversity within its populations and the socio-cultural equipment available in the hands of planner and decision makers could help in building the bridges between various religious group, economic classes, social and ethnic groups and could help in generating cohesiveness in this multicultural society. The long standing demand for a World-Class Expo Centre and a Convention facility is all set to see the light of the day. The 16 Acre Cultural hub will be linked to Ranchi’s ring road and will house several global hotel brands, Convention Centre and a cargo hub. The new Exhibition — cum — Convention Centre will ensure hassle-free commuting both for the residents of Delhi who faced major inconvenience when large events were organized at Morabadi Maidan etc.

Cultural centers can be neighborhood community arts organizations, private facilities, government-sponsored, or activist- run. A location where people from all parts of the world gather to express elements of their heritage through the arts. Social centers are community spaces.

WHY RANCHI

RANCHI is an up-market and one of the most sought-after residential areas or the sub city located in Ranchi in India. It will soon become a financial and residential hub with even smarter infrastructure. Hence the upcoming city needs a center for arts and entertainment for its residents and the outsiders. Its proximity to the international ail port will ensure its economic boom since it will also cater to the international clients and also increasing its accessibility. Inhabitants of the cities are its real foundation of strong heritage and culture and are the assets and resources for seeking development objectives and can strengthen the spirit of place to improve community living.

Figure 26 Aerial View of Ranchi

SWOT ANALYSIS

+ STRENGTH

Location: The site lies in Hulhundu, Ranchi which is almost the center of Ranchi and accessible from 2 primary roads.

The biggest strength of this project is that it is live project and will be realized soon by the Jharkhand Government program has dominant components and the supporting functions which makes the hierarchy of spaces easier.

The site has a regular shape and neat boundaries. Close proximity to bus station makes it conveniently accessible. Proximity to airport.

It is developing sub city at this point of time thus provide scope for advancement. The program allows cultural center to cater to a variety of people in the community, lack of socio-cultural gathering space in the precinct.

The increase in the cohesion in community which goes together with the struggle against exclusion of groups and individual.

— WEAKNESS

Absence of tourism attractions in sub-city. Currently no developments to attract domestic footfall from Ranchi. Untreated sewage drain in close proximity which can give rise to water borne diseases and currently used as dumping zone. Residential apartments, buildings right across the main road major components require multiple entries for accessibility but site offers only two main access road.

— OPPORTUNITIES

Job opportunities for the unemployed. To be able to enhance the social and cultural lives of the neighborhood and sub-city at large. Increased international tourist traffic Absence of any major cultural facilities in vicinity. The district center coming up in the future can also be integrated to cultural center. The water Body can be revitalized and green belt along it can be used as open recreational spaces thus, people and creating more social spaces. These social spaces could be ungated and common.

— THREAT

The advancement in construction according to the JUDICO is likely to get heavy Large tracts of land owned by Ranchi authority of India near the water body could be developed in road 2020 in complete facility.

PROJECT REQUIREMENTS

The proposed cultural center will boast of –
1. Centre for visual art
2. Centre for performing art and recreational area
3. Administration and library block
4. Convention center
5. Residential area

The center will have dedicated sections for visual arts with provision for galleries on contemporary art and tribal art. Dance events, puppetry shows and theatre performances will take place at the center of performing arts section, which will also include a recreational area with a specialty restaurant, bar and spas. Adequate parking space will be provided at the center.

BROAD CONSTRUCTION REQUIREMENTS

Entrance Lobby with reception Counter
Waiting Lounge/Visitors' Room
Cafeteria and Dining Hall
Two Auditorium Halls (for 180 & 180 participants) for holding Workshops/Conferences;
3 Training Halls for about 50 to 75 participants each;
5 facilities for small group discussions (15 participants each);
Library & Resource Centre with space for exhibition
Record Room
Computer Centre with 20 terminals
Video Conferencing Facility
Recreation (Swimming pool and spa etc.)
Guest Rooms (2 or 3) for Guest Faculty.
Offices for Chairperson, Director General, Five Directors, Five Joint/Deputy Directors and approx. 30 personal staff.
Office space/rooms for coordinators, managers, researchers, personal staff and work stations f Assistant Directors and Technical Staff, with ancillary facilities (approx. 65 persons).
Common facility Centre for staff and for stationing Personal Computers, Printers, Photo-copier Fax Machines etc.
An outdoor amphitheater.

LITERATURE STUDY

NEUFERTS
TIME SAVERS STANDARD
MASTERPLAN RANCHI 2037
BUILDING BYELAWS JHARKHAND

The essence of sound waves

Most people remember the school experiment with an electric bell suspended in a vacuum jar. The experiment demonstrates that sound depends on air for its propagation; as the jar is evacuated the bell can no longer be heard. Sound propagation depends on a source of sound and a receiver, but the propagating medium is all around us. This, coupled with the fact that sound bends round corners and that the ear is only barely directional, makes our hearing such an invaluable sense to notify us of danger, to inform us of our surroundings and to communicate. And if there is a mystery associated with this sense then it resides in the complexities of the ear. This remarkable organ is still far from fully understood. At its center it contains a converter to transform the vibrations conducted from the eardrum into digital nerve pulses. Nerve pulses travel between the ear and brain in both directions, allowing the listener to suppress his/her sensitivity to a continuous noise for instance. The ears' response to music is no less intriguing. The subject of this chapter is the nature of sound and the manner in which it propagates in rooms. Of necessity the treatment of the subject here is rather selective. Many standard texts cover the standard issues in more detail. For those that like a well-illustrated coverage, the book by Egan (1988) has much to recommend it. Sound is generated in most cases by a vibrating object. Human vocal chords or the vibrating reed of a clarinet are obvious examples, but any wall which transmits sound from a neighboring room is also vibrating, even though the amplitude is minuscule. A sound wave consists of a pressure fluctuation alternatively positive and negative relative to atmospheric pressure. As shown in Figure 2.1, passage of a sound waves causes air particles to move backwards and forwards parallel to the direction of motion of the wave. Sound waves are therefore longitudinal, rather than transverse like waves travelling along a string, in which string elements move at right angles to the direction of the wave. (Water waves look like transverse waves but are more complicated because the water particles move both vertically and horizontally in roughly circular paths.) For a sound wave, movement of air particles causes localized areas of compression or rarefaction; compression implies a higher pressure, rarefaction a lower one. As long as the amplitudes are not unreasonable, all regions of compression (and rarefaction) travel at a fixed speed, the speed of sound, which at 20°C is 343 m/s, or 1125 ft/sec.

Sound wave is characterized by amplitude, frequency and direction. The amplitude of a sound wave is determined by the magnitude of the pressure fluctuation. But the range of pressures to which our ears can respond exceeds a ratio of one to a million and the response is not linear. A change from one to two units may be audible; a change from 100 to 101 will not be. Hence the ubiquitous decibel, named after Alexander Bell (1847–1922), inventor of the telephone. There are two key aspects of the decibel: it is a ratio measurement of energies or powers and it is logarithmic. The decibel can be used in two ways: to measure differences or to measure sound (or other) amplitudes. In both cases, the choice of a logarithmic scale overcomes the problem of large numbers. The magnitude of the decibel for differences can be illustrated by some examples. A perceived doubling of loudness corresponds roughly to a change of 10 decibels, or 10 dB. Under controlled conditions, the smallest perceptible change of level is about 1 dB. Improvements in noise situations are generally only considered worthwhile if a 5 db reduction can be achieved. In physical terms the effect of doubling the size of an orchestra is to produce a 3 db sound level increase. At the other extreme, the sound level difference across a masonry wall, such as a party wall, is typically around 50 dB. The decibel is based on a ratio. For an absolute measurement of sound level, the ratio is taken between the measured sound pressure or intensity (sound intensity is a measure of energy) and a reference value. For sound pressure level, the reference value is 2.10–7 mbar (compared with atmospheric

pressure of around 1000 mbar). In fact in acoustics the more usual unit for pressure is newton's per square meter, in which case 2.10–5 N/m2 is the reference pressure. The reference value is chosen to be close to the quietest sound we can hear, so 0 dB sound level is roughly the threshold of hearing. Conversational speech has a level of around 50 dB A very loud sound of 120 dB causes pain in the ears and would cause deafness if experienced regularly. An extreme orchestral climax can reach 100 dB for a member of the audience in a concert hall. The quietest sound in an auditorium is likely to be no lower than 20 dB, but it can be higher due to ventilation noise. A logarithmic scale for sound level approximately matches the loudness characteristic of the ear. Frequency intrudes into all aspects of acoustics. A pure tone has a single frequency associated with it. All musical instruments however produce complex sounds made up of several frequencies, though the lowest of these normally determines the pitch, the name given to the perceived frequency. If a surface is vibrating, the frequency of vibration is the number of cycles per second, though this is now expressed in hertz (Hz). (Hertz and cycles per second are identical.) The surface generates a sound wave at the same frequency and in a room this will be judged by the ear as the same pitch as that frequency, in spite of the superposition of many acoustic reflections by the room. The ear can perceive frequencies between 20 Hz and 20 000 Hz, though the upper limit decreases with age. The ear also perceives frequency logarithmically; however, in this case no new logarithmic measure is used. The fundamental musical interval is the octave, which corresponds to a doubling of frequency. Acoustic measurements are also conventionally made over octave intervals, with center frequencies of 125, 250, 500, 1000 Hz etc. The third fundamental quantity is wavelength. In Figure 2.1, the wavelength is the distance between adjacent pressure maxima (or minima). There is a simple relationship between frequency, wavelength and the speed of sound, which can be derived from Figure 2.1: speed of sound = frequency × wavelength The wavelength for a sound in the middle of the frequency range of 1000 Hz is thus 0.343 m (roughly 1 ft). The range of wavelength of audible sounds is between 17 m at 20 Hz and 17 mm at 20 kHz. This implies that these wavelengths are comparable to dimensions of room surfaces and common objects. At low frequencies with large wavelengths sound waves commonly bend round objects. But at high frequencies, objects are generally larger in dimension than wavelength and sound behaves much like light, travelling in straight lines and forming shadow zones. Most sound sources radiate more energy in some directions than others; the human voice is typical in being directional. Violins and other stringed instruments tend to radiate most strongly at right angles to the sounding board. Yet once the sound has left the source, it behaves in the same way as it does from an Omni-directional source. For every doubling of distance from the source, the area occupied by the energy increases by a factor of four (Figure 2.2). Intensity thus drops by a quarter and we get the 6 dB decrease per doubling of distance characteristic, also known as spherical spreading. In rooms, not only the direct sound but also reflected sound rays behave in this way.

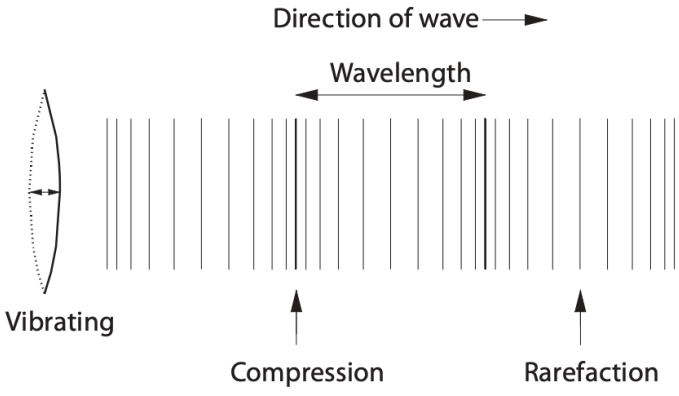


Figure 2.1 Basic sound wave showing alternate areas of compression and rarefaction

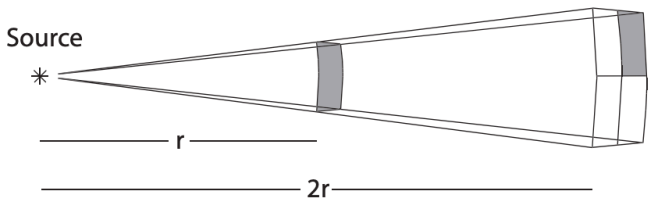


Figure 2.2 Sound spreading from a point occupies four times the area for each doubling of distance, leading to the inverse square law or 6 db decrease in level per doubling of distance

The nature of music and speech sounds

Both music and speech consist of brief sound events separated by silence. They both cover most of the audible frequency range, though anything above 10000 Hz need not concern us, and for speech there is very little energy below 100 Hz. The individual sound events with speech are syllables and a typical speaking rate is five syllables per second. Music is obviously much more flexible. Nearly all musical sounds with pitch depend on resonance for their generation. In a resonating musical instrument, a small amount of energy is supplied by the player which maintains oscillations at a particular frequency. The fundamental resonant frequency is determined by the length of string, tube etc. A room can also be treated as a complex resonant system. To appreciate this, it is perhaps easiest to consider first the one-dimensional situation of a tube. If sound is produced within a tube, certain frequencies are enhanced at resonant frequencies determined by the length of the tube. If sound is produced in a room, certain frequencies are enhanced, which depend on the dimensions of the room. A room can thus be seen as a three-dimensional counterpart of a tube. However for rooms of the size of auditoria, this does not prove to be a particularly productive approach. The number of resonant frequencies in a room is so high (with many per hertz at frequencies above 100 Hz) that the phenomena which we normally associate with resonance are not observed. The word ‘resonant’ is also often used for rooms which are highly reverberant, in which sound decays only slowly. Though this use of the word is logical, it can be confusing and will therefore be avoided here. Resonance itself does not intrude much in room acoustics, except for certain frequency-specific absorbers (section 2.6.3). The sound character or timbre of different musical instruments is related to their frequency spectrum. For a continuous sound the spectrum consists of a series of discrete frequencies (Figure 2.3). The lowest frequency, 415 Hz in the figure, is known as the fundamental or first harmonic. The higher frequencies are simple multiples of the fundamental frequency and are known as the second, third harmonic etc. Our ears interpret the mixture of frequencies in terms of its pitch, given by the fundamental frequency, while the relative strength of the harmonics characterizes the sound quality or timbre of the instrument. In the clarinet spectrum, the odd-numbered harmonics tend to be stronger than the even-numbered ones. In the case of some instruments, such as the French horn, the relative strength of the harmonics varies in such a way that the frequency region of the loudest harmonic is roughly constant. This implies for instance that, when the horn is played in its lower register, the fundamental is weaker than higher harmonics (Figure 2.4). Maxima in the spectrum which do not change with fundamental frequency are known as formants, around 310 Hz in the case of Figure 2.4. The formant nature of an instrument further characterizes its sound. The human voice is unique in its scope for varying the formant frequency and uses this to produce the different vowel sounds. Much more can be said about musical instrument sound, such as attack characteristics, the change of quality with dynamics etc. The interested reader is referred to Meyer (1978) and Olson (1967).

In fact as long as the appropriate frequency range is preserved in an auditorium, the detail of the sound character in frequency terms generally has little influence on room acoustic design. The harmonic structure of musical notes does explain however why the frequency range of interest extends much higher than the pitch range of musical instruments (Figure 2.5). The highest fundamental of the piccolo is 4186 Hz, yet a sound reproduction system which stopped at 5 kHz would be very low fidelity. Sound sources are also characterized by their power. Sound generation is usually a very inefficient process; loudspeakers for instance are normally less than 2 per cent efficient. A symphony orchestra when playing fortissimo only generates about 2.5 watts of acoustic power, while the human voice is typically 25 μW. Both speech and music rely on contrasts of soft and loud, with the dynamic range in classical music of over 70 dB. The ability to hear a pianissimo can be as vital to the excitement of a live performance as a fortissimo climax. The aspect of speech and music which substantially influences room acoustics is the temporal one. Speech sounds and musical notes can be represented diagrammatically as in Figure 2.6, which uses the example of a word. Individual speech sounds (or musical notes) have particular amplitudes and durations. Vowels, for instance, tend to be longer and louder than consonants. The relative strengths and durations of concurrent speech sounds or notes are of crucial importance for room acoustics. They determine for instance the degree to which sound reflections can be tolerated without intelligibility or clarity being undermined. Such questions will be further considered below.

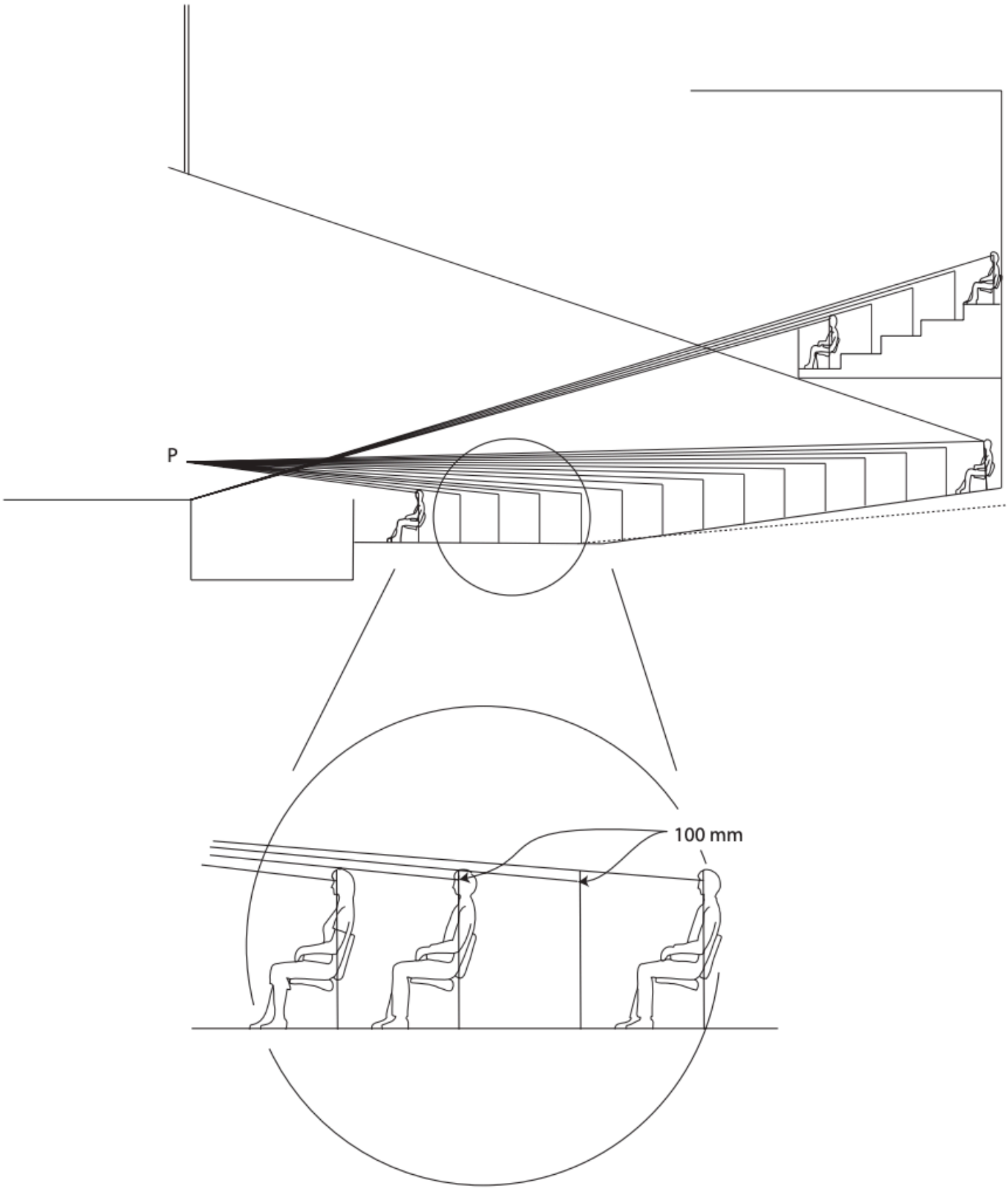
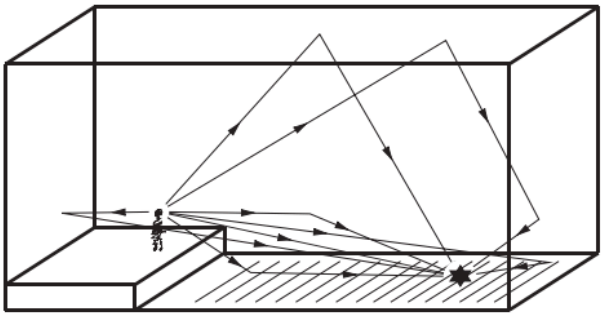


Figure 2.7 Sightline design. P is the setting-out point for the Stalls seating.

Sound in rooms

Much that is known to be important in auditorium acoustics can be discussed in terms of the acoustic response at a listener's position to a short sound produced on stage. The response to a longer musical note can be calculated from the response to a short impulse. As a listener, the first thing one hears is the direct sound, which travels in a straight line from the source (Figure 2.11). This is followed by a series of early reflections from the side walls, ceiling etc. Reflected sound has to travel further, so will arrive later; it will not be as loud as the direct component (unless some focusing of the reflection occurs). This response can be represented as a diagram of sound level against time (Figure 2.11). Such a figure is known as an impulse response or 'echogram', though this latter name is somewhat anomalous. The word echo is used for a reflection which is heard as a discrete event, such as can be heard outside when shouting some way from a large wall. An echo is an intelligible repetition and is not to be confused with reverberation, which is unintelligible. Most reflections in rooms are not heard as echoes



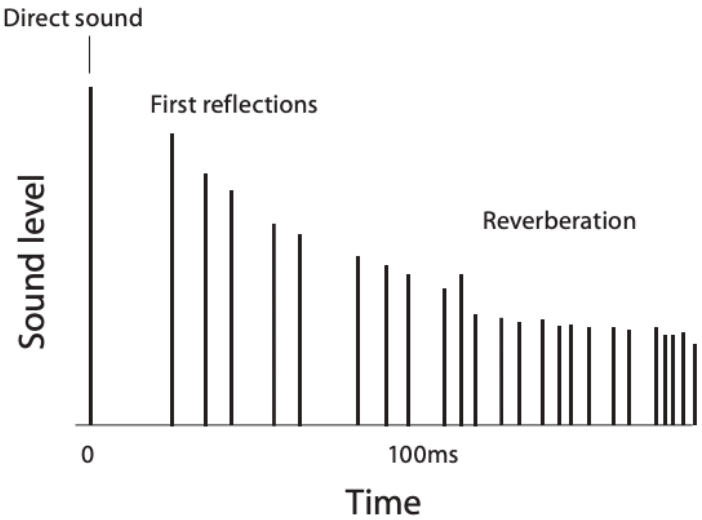


Figure 2.11 Sound rays in rooms. (a) The direct and first reflection paths; (b) sound level against time for a short sound as received by the listener

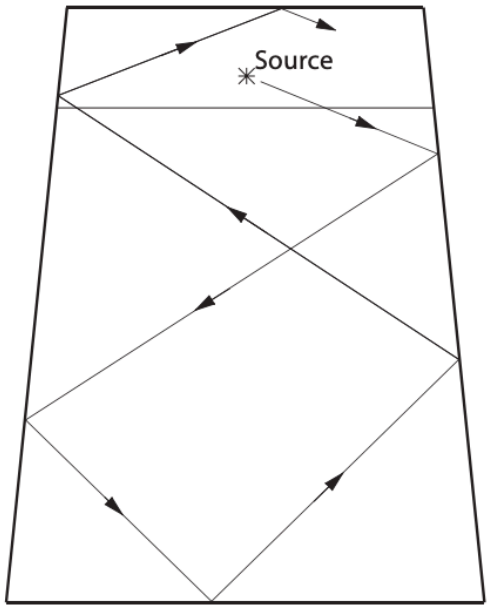


Figure 2.12 Multiple reflection within a room

CASE STUDIES

TRIVENI KALA SANGAM

INTRODUCTION

Designed by Joseph A. Stein
-Founded in 1952 and the aim was to re-introduce traditional forms of expression of the Indian art forms.
-As the name says, the academy includes three 'tri' forms of art- dance, music and paintings

Triveni kala Sangam provides a creative environment for promotion and innovation in the fine arts, sculpture, theatre, music, dance, and exhibition galleries. It is a fine example of the type of institute on a small site in a tight urban context. This center is making impressive contribution to the artistic renaissance of the artistic and cultural heritage of India.

Reason for Selection to understand the types of function and working of an institute, study exhibition spaces, and ambience related to such spaces.

Location: It is situated on Tansen Marg near Mandi house. It is a part of cultural core of New Delhi. Shares its boundaries with Sangeet Bharti and Sri Ram Centre of Arts. Access to the institute is from Tansen Marg which is relatively free from Connaught place is in the close proximity as a result it is well connected with the various parts of the city and is easily and conveniently accessible.

Figure 27 View of Triveni Kala Sangam

BUILT FORM

Monotony of the building block is broken by different type of textures. The material treatment of these two blocks is quite different and they seem to have little in common. The image of the building is distinctly modern and has little to do with its surroundings and stands out as another building in an architectural assortment of structures built according to their own aesthetics and style.

PLANNING CONCEPT

The complex consists of two blocks and is built up in two phases. Phase 1 houses studios for music and dance, O.A.T, library, cafe, exhibition gallery and administration. Whereas, phase 2 houses the auditorium, painting and sculpture workshops, audio visual rooms and residences.

DESIGN APPROACH

Ar. Joseph Allen Stein has made 3-d drawings, architectural drawings, and plans etc. to visualize the idea. The center was designed to be executed in two phases. The first was academic block and the auditorium was assessed later. Large number of functions to be handles on the small site in a tight urban context.

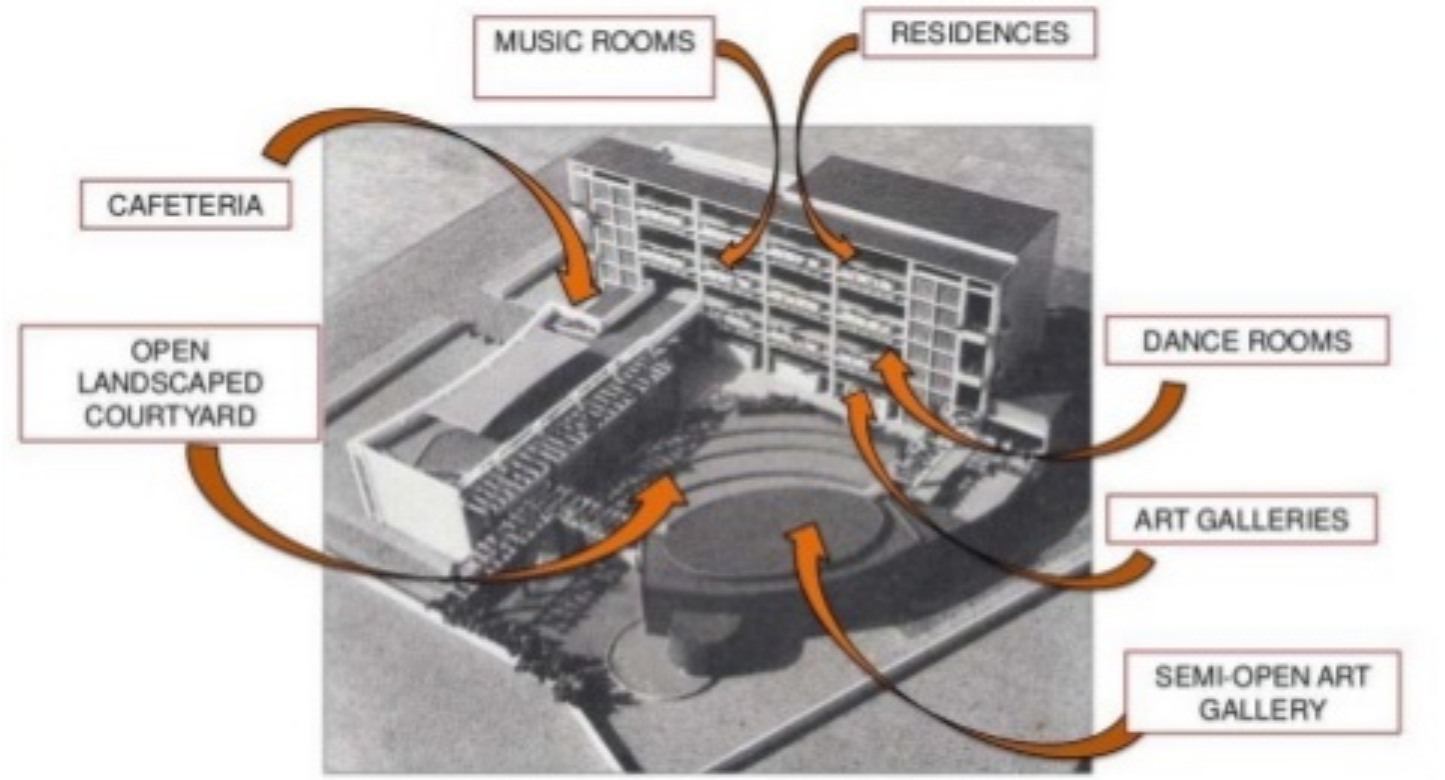


Figure 28 Zoning of Triveni Kala Sangam

ZONING

Ground floor has the public areas like lounge, exhibition halls, library, and conference halls. On first and the second floors are work studios where students are taught. On the third floor are the living areas. The OAT acts as the heart of the complex. Auditorium block was added later on.

Figure 29 Front View of Triveni Kala Sangam

PLANNING

Centre organized into a four storey classroom block with a canteen and shaded dining/tea terrace to the north.
- Ground floor gallery with shaded roof terrace above to the west - Opposite to the gallery is a covered stage opening to an outdoor garden theatre
- Three storey extensions to the north (additional classrooms, indoor auditorium and instructor's apartment) and creates shaded outdoor spaces for painting and sculpture classes.

The complex has 2 blocks:
- Academic Block (Phase-I)
- Auditorium Block (Phase-2)

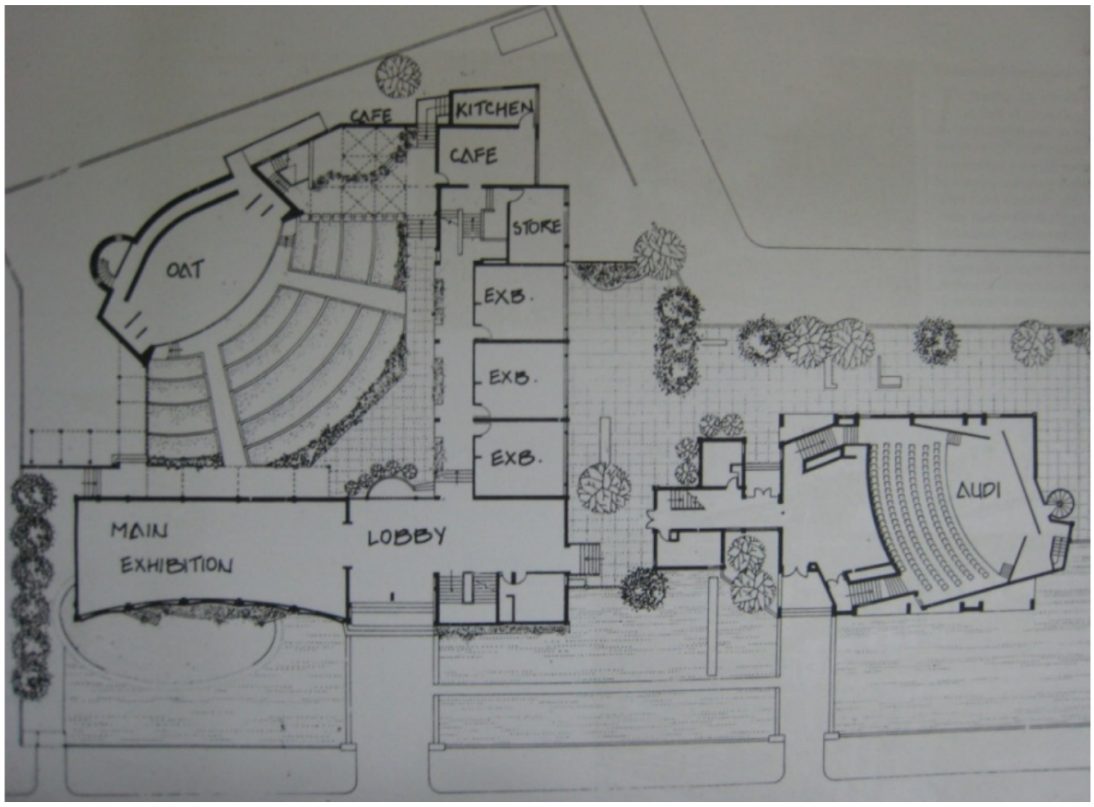


Figure 30 Sketch of Site Plan :Triveni Kala Sangam

Figure 31 Cafe View

CIRCULATION

Site Circulation

- Parking steps at the entrance.
- Circulation passages are along the functional spine.
- Service cores are located at the back.
- Two main axes of movement lead to different kind of spaces.

Horizontal circulation

- Through 2m wide singly loaded corridor from lobby in d emic block and double loaded corridor in auditorium block

Vertical circulation

- Through a 2m wide staircase on two ends of corridor in academic block and through one staircase at one end of the auditorium block with a circular fire escape on other end.

ART GALLERIES

Shridharmi Art Gallery

- It has an area of 12*6 sqm and a height of 5mt.
- It forms one of the arms of the I-shaped building that opens straight into the entrance lounge.
- Houses various exhibitions ranging from painting, sculpture, photography etc. To control vibrations and the noise wall treatment is done.
- Other two galleries are linked with the corridors and they are carpeted to reduce some sound effect.
- There is only one entrance cum exit. Diffused daylight is allowed through two vertical slits in the northern & southern corners.
- Halogen lamps suspended from the ceilings by a wooden frame to spotlight on the paintings hung on wall by hooks & thread.

Figure 32 View of Gallery

OPEN AIR THEATRE

- It forms the focus of the whole complex.
- Two radiating aisles of 1:8 It measures 11.5m*7.5m Located on the eastern side of the site between gallery and canteen.
- Due to its orientation, serves as a sunlit lawn during winters.
- Total capacity of the Amphitheatre is 300 persons.
- Seating is semicircular in shape with 2 aisles and 3 bays. Width of aisles = 1.8mt.
- Width of bays= 600 mm Due to excessive fanning, has let to faulty sight lines and acoustical problems.

Figure 33 Aerial View of Amphitheatre

Figure 34 Aerial View of Amphitheatre

Open Exhibition Pavilion

- Different hexagonal units are made at different levels at which variety of objects are placed.
- Variety of pots and sculptures guide from the entrance gate to the open area.
- Filtered light penetrating through roof creates interesting shades and shadows.
- Also called as the sculpture court.

Cafeteria

- Well placed giving a view of the open air theater and is in the close proximity of the lobby.
- Open air extension of the canteen has a pergola, which provides a sense of enclosure and at the same time it preserves the open character of the space.
- It merges very subtly with the theatre and becomes an extension of the same and this merging provides a dynamic space.

Indoor dining - 36 persons
Outdoor dining-30 persons

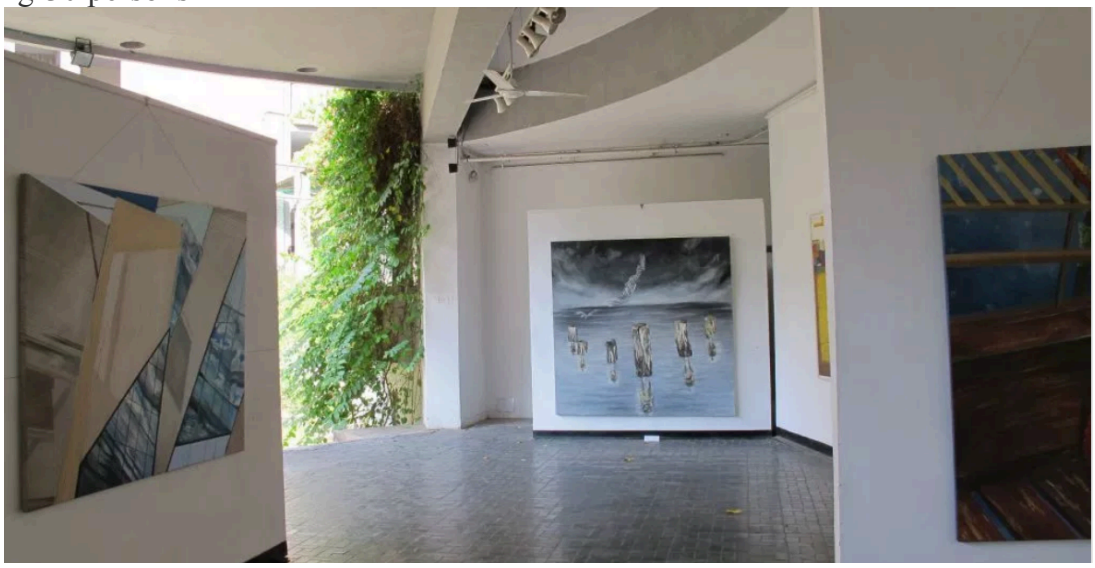


Figure 35 Gallery View

Figure 36 Cafe View

STUDIOS

Dance Studio

- Placed on the first floor and form a part of semi-private zone.
- Placed at the north side to accept natural light but not glare.
- Accesses to the classrooms are from a 2m wide singly loaded semi-open corridor which opens onto the open air theatre through jalis.
- Typical size of the room is 9m*6m with a capacity of 4-5 students.
- Flooring is of wood to prevent slipping.
- Big mirrors are placed on one wall so that the dancers can see their expressions.

Painting Studio

- 8 art rooms are placed on the first floor in the auditorium block.
- When natural light shut off by curtains then artificial light being used for work.
- Walls of the corridor are used for displaying the paintings.
- Window glasses have been painted with color to avoid sun glare.
- Storage space for colors and other purpose is provided.

Figure 37 Gallery View

Figure 38 Studio View

Music studios

- The space is used for teaching & practicing cal instrumental music.
- Placed on second floor and have sound proof
- Typical size of the room is 6m*6m Capacity depends on type of instrument being played.
- Three rooms provided out of which two are for instrument music and one for vocal music.
- Floor is carpeted to absorb the unwanted sound sufficient storage space provided.
- Cavity wall provided for sound insulation from adjacent rooms.
- Adequate light & ventilation from north side opening.
- Ceiling is coffered slab.
- Located in the new block, it has a direct entry from the road as well as connection from the lounge.
- Also called the Triveni chamber theatre.
- It has a capacity of 250 persons.
- Often rented out for various dance and music performance, lectures and audio visual performances.
- Entrance through dark corridor.
- Ceiling is bear with lighting system from roof slab.
- Wooden paving and carpeting on floor.
- Wooden cladding on wall so as to take care of acoustic
- Green rooms & store is in the basement.
- Located in the new block, it has a direct entry from the road as well as from the lounge.
- Also called the Triveni chamber theatre.
- It has a capacity of 250 persons.
- Often rented out for various dance and music performance, lectures and audio visual performances.
- Entrance through dark corridor.
- Ceiling is bare with lighting system from roof slab.
- Wooden paving and carpeting on floor.
- Wooden cladding on wall so as to take care of acoustic, green rooms & store in the basement.

MERITS AND DE-MERITS

MERITS

- ln spite of tight program a feeling of speciousness has been achieved by incorporating O.A.T. as a multipurpose space in design.
- Building function has been planned correlated efficiently.
- Louvers for proper air ventilation.
- Architect has played with lights and shadows nicely with extensive use of jali work.

DE-MERITS

- old block and new block is too week.
- Sculpture court acts as a very week transit space between the two.
- Doubly loaded corridor in new block seems to be very conquest.
- Building does not react to the surroundings.
- Building form by no means symbolizes the function it is serving.

INFERENCES

- Excellent example of good designing under tight conditions.
- Though there are three entrances, the main entry is clearly distinct because of the way it has been articulated with landscape, the water body and the proportionate built mass.
- All the spaces are well defined and they merge into each other so well that the indoor spaces seem to be flowing out into the exterior landscape.
- The public area like art gallery, offices and auditoriums are located close to the entrance and the classrooms and studios are located in the interior to maintain privacy.
- The circulation within the center is very clear.
- Levels have been used to demarcate one function from another.
- Has an introverted character with its own special environment that is highly desirable as a cultural complex?

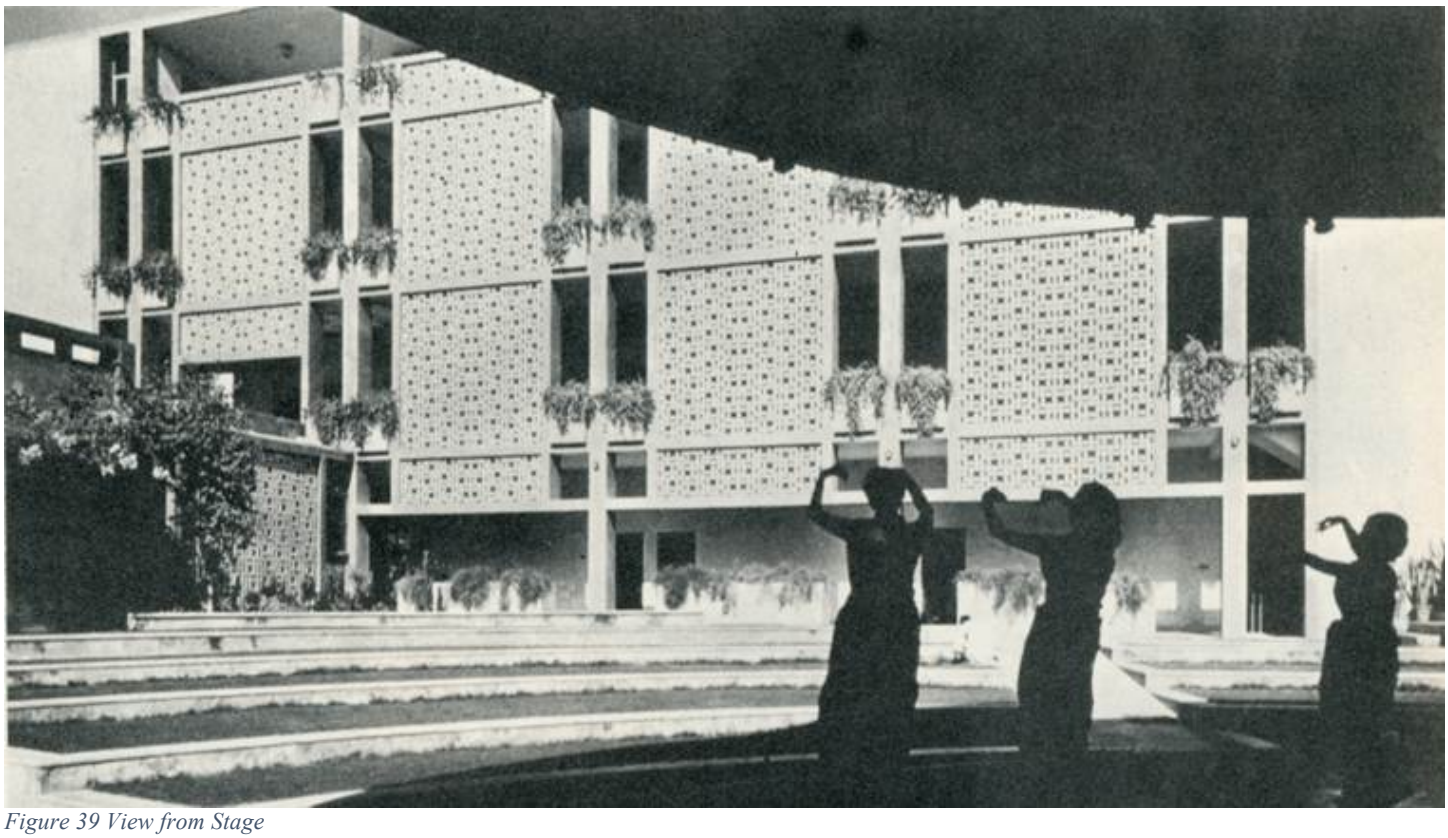


Figure 39 View from Stage

CHAPADAO QUARRY BRAZIL

INTRODUCTION

Architecture: Decio Tozzi Arquitetura e Urbanism o
Location: Chapadåo Quarry Park, Campinas -- São Paulo Brazil
Architect Team: Author: Arch. Decio Tozzi, Co-Authors: Arch. Joaquim Caetano de
Lima and Arch. José Luiz Tabith
Structural Engineer: Escritörio Técnico Figueiredo Ferraz
Complementary Installations: MHA Engineering
Landscape Architect: Rodolfo Geiser
Project Area: 35,000 sqm
Project Year: 2008

LOCATION

The city is located on a plateau located beyond the Serra do Mar (Portuguese for "Sea Range" or "Coastal Range"), itself a component of the vast region known as the Brazilian Highlands Average elevation -799 meters (2,621 ft) above sea level Mean low temperature: 17 oc (63 OF) Mean high temperatures is near 28 oc (82 OF). In winter, temperatures tend to range between 11 oc (52 OF) and 23 oc (73 OF). Rainfall is abundant, annually averaging 1 ,454 millimeters Population: 10,659,386 people.

Figure 40 Entrance View of Chapadao Quarry

CONCEPT

The original rocky mountain was the object. in the beginning of the last century, of commercial mineral extraction.
This predatory activity carved the hillside of the mountain, shattering, in an utilitarian way, the big rock and generating an impressive sinuous space of monumental character and scale.

PLANNING CONCEPT

The project that developed for the Chapadao quarry complies with a cultural program was for this singular area of the City of Campinas, The smaller excavated area. with three stone walls, configured a new concert hall for City through the simple intervention resulting from the construction of a transparent steel roof and concrete balconies and ramps,
The bigger excavated area Will give form to a multiple use space an open area for the development of cultural. recreational and sports activities.

Figure 41 Aerial View of Chapadao Quarry

The Site comprises of

A Concert Hall

A hall for 1200 people with a center stage layout.
The built form is placed in a corner of the site.
It's covered on three sides by the quarry wall itself.
The entrance of the auditorium is through a large plaza after the entrance.
The facade of the building is a structural steel lattice which takes up the support from the rock wall.
The 3 red cylinders are the main structural columns.

An Outdoor Stage

A circular stage is provided at the site.
The placement of the stage is such that audience from all directions can view the stage.
It's more like an informal space.
The stage is placed on a water body.

Lawn

A huge lawn is provided for public activities for kids and adults.

Figure 42 Front Lawn Of Chapadao Quarry

VIEWS

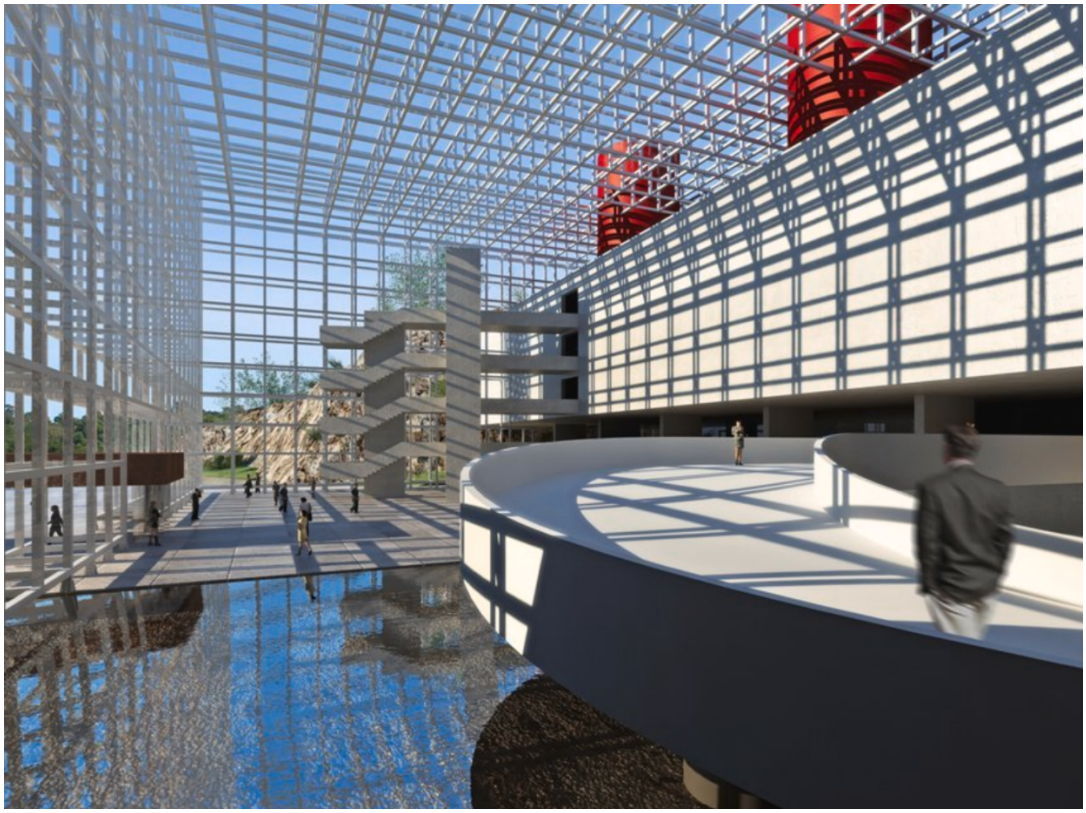


Figure 43 View of the water body inside the plazas of the concert hall. View from the Ramp.

Figure 44 View of entrance of concert hall creates a great ambience of fusion of nature and Architecture.

PLANS

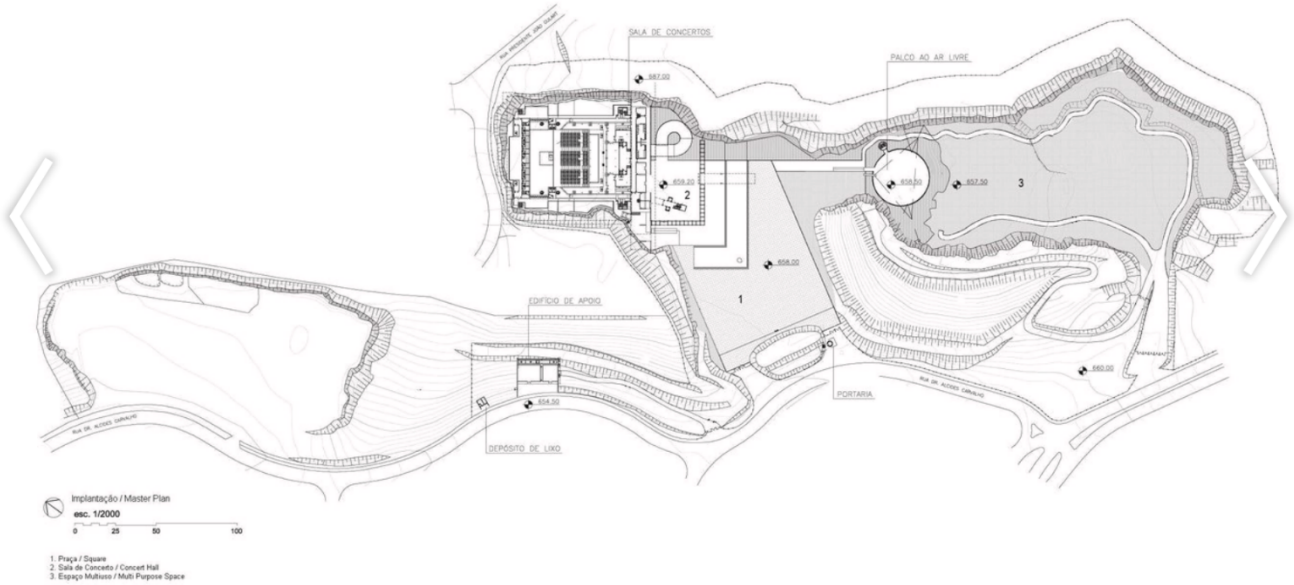


Figure 45 Site Plan: Chapadao Quarry

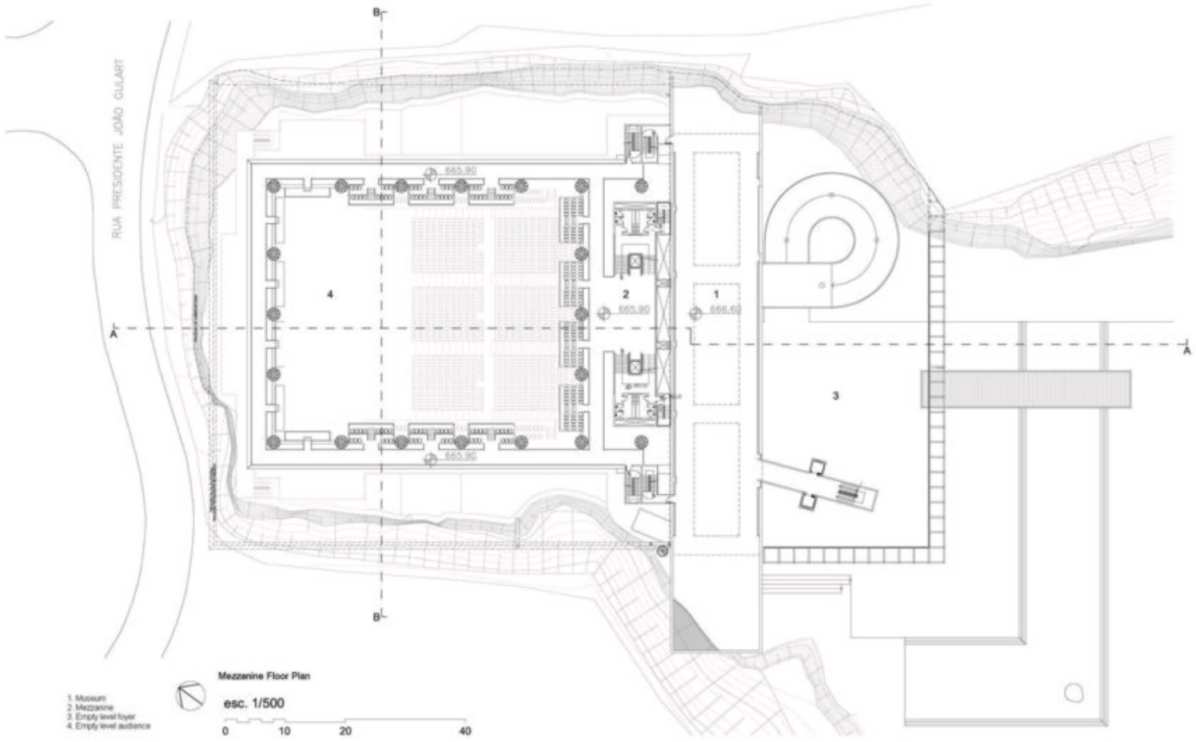


Figure 46 Plan: Chapadao Quarry

ELEVATIONS AND SECTIONS

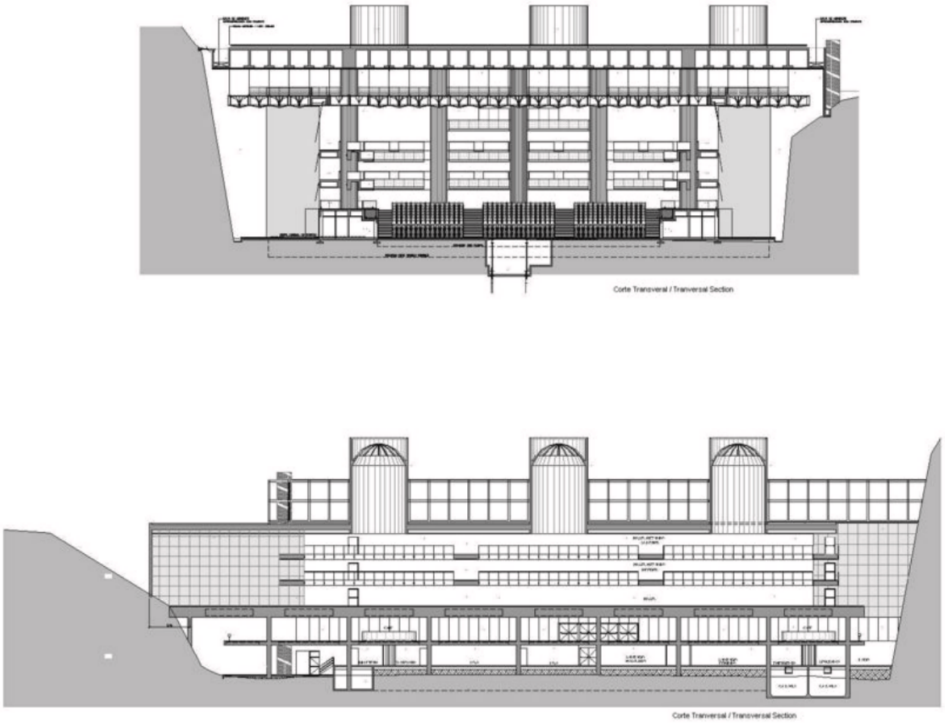


Figure 47 Elevation: Chapadao Quarry

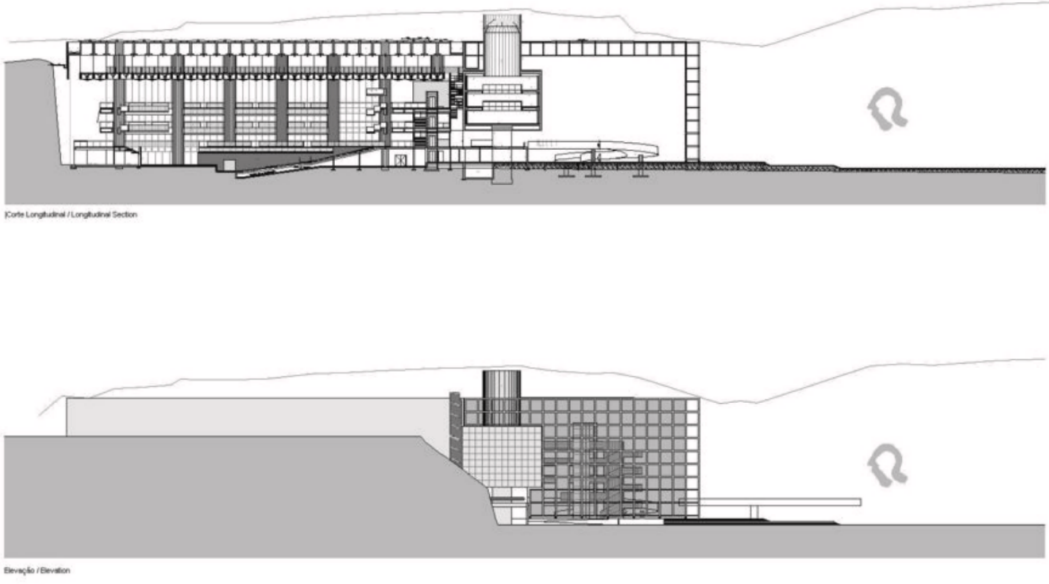


Figure 48 Elevation: Chapadao Quarry

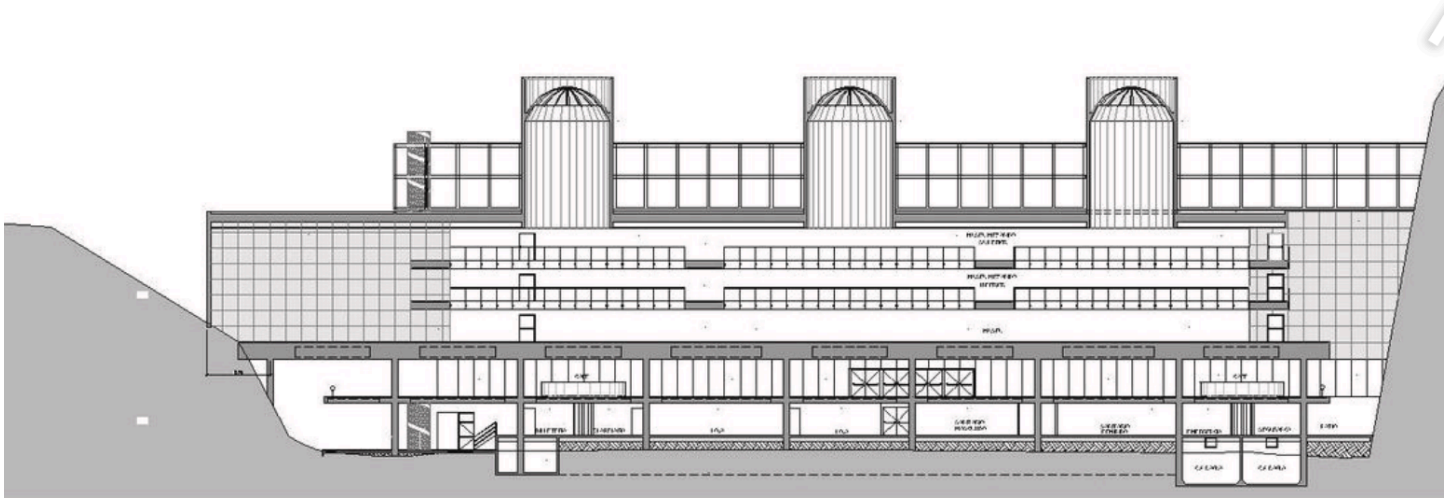


Figure 49 Elevation: Chapadao Quarry

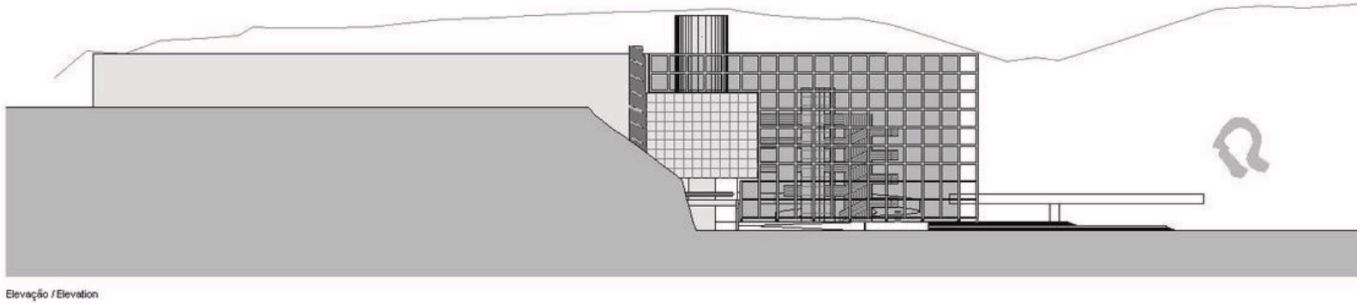


Figure 50 Elevation: Chapadao Quarry

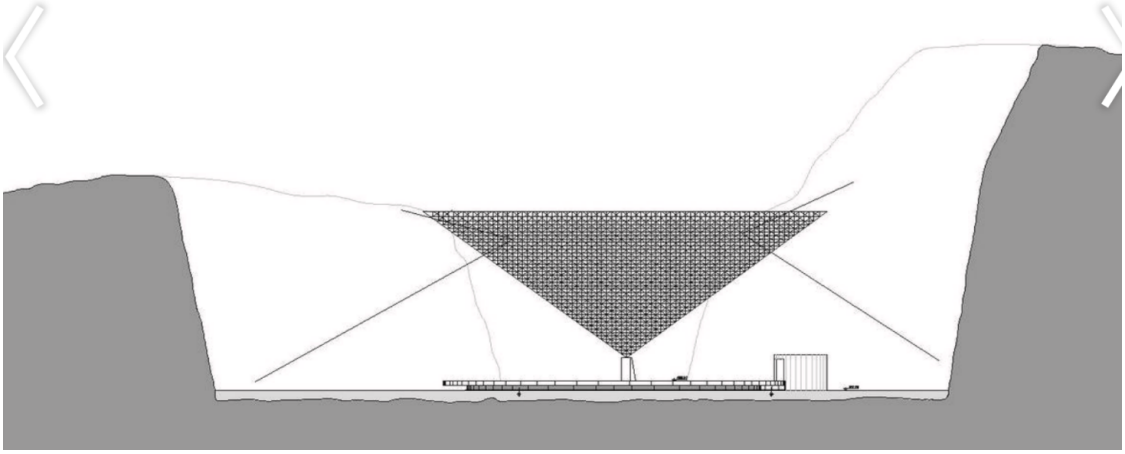


Figure 51 Elevation: Chapadao Quarry

AUDITORIUM

The auditorium is designed for 1200 spectators with a center stage layout. The seating is done on balconies.
No. of entries into auditorium. - 4 on each floor
No. of service entries- 2
No of seats in 1 module of balcony- 19
No. of aisles -4
Spacing of Aisles- 12 seats
Rock backdrop on three walls
Acoustical treatment only on ceilings.

Interior view of the Auditorium

Figure 52 Auditorium: Interior View

Figure 53 Auditorium: Interior View

GALLERY

-The Gallery is provided on the foyer area of the auditorium.
-The gallery is well partitioned
-The gallery receives light from the skylight.
-The rock wall is included in the interiors as the backdrop.

Figure 54 Gallery Interior View

INFERENCES

The whole project takes care of inclusion of the quarry inside the building.
Creation of huge open spaces creates a great ambience in the quarry.
Huge open spaces give the freedom to people to appreciate and enjoy the quarry site and a different experience.
The detailing for collection of water is done at the plinth level.
The structural frame becomes a very important part of the site and the building and is very much appreciated by the visitors of the site.
The usage of red color in the pillars and the ornamental structure creates liveliness in the color scheme.

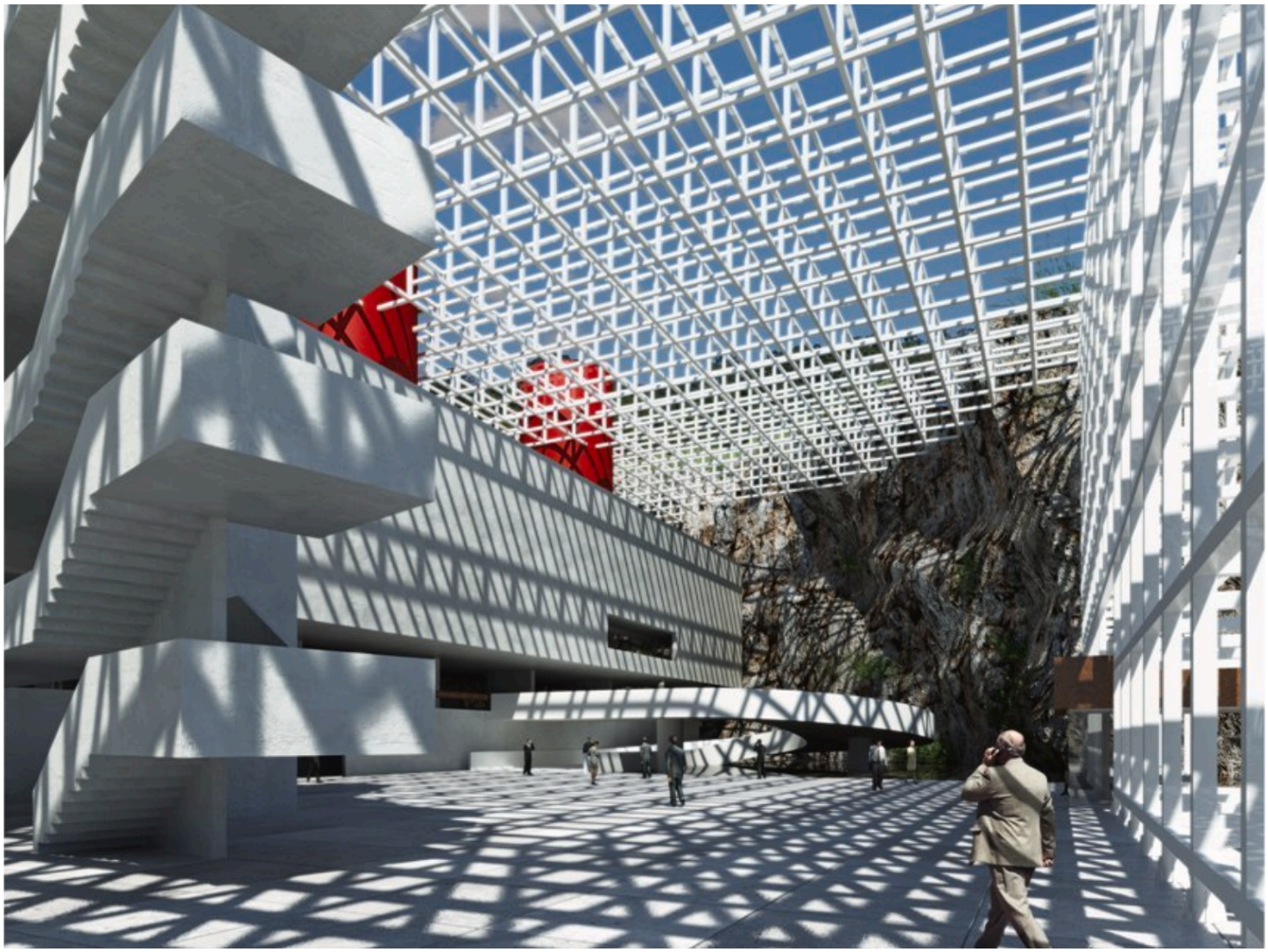


Figure 55 Entrance Lobby: Chapadao Quarry

ROMAN QUARRY: AUSTRIA

INTRODUCTION

Architects: AllesWirdGut Architektur
Location: St. Margarethenj Austria
Collaborators: Ecki Csallner, Elmir Smajic, Ferdinand Kersten, Maria Magina, Mareike Kuchenbecker, Martin Brandt, Michael Sohm
Client: Fürst Esterhåzy Familienprivatstiftung
Project Year: 2005-2006
Construction Year: 2006-2008
Photographs: Hertha Hurnaus

Austria is a federal republic and a landlocked country of roughly 8.47 million people in East Central Europe The territory of Austria covers 83,855 square kilometers (32,377 sq mi) and has a temperate and alpine climate. Austria's terrain is highly mountainous due to the presence of the Alps; only 32% of the country is below 500 meters (1 ,640 ft), and its highest point is 3,798 meters (12,461 ft) Population2011 estimate 8,414,638 Although Austria is cold in the winter (-10 — 0 oc), summer temperatures can be relatively high,[70] with average temperatures in the mid-20s and a highest temperature of 39.7 oc

Figure 56 Entrance View: Roman Quarry

CONCEPT

THESIS 2013-14 5.42 CONCEPT A show in the Roman quarry doubtless is a unique experience for every visitor, whether it is the classical-music lover enjoying a performance of the opera festival or a local watching the annual passion play with his friends as amateur actors. The playing and singing Under the open sky on a gentle summer night, far away from the noise Of the street is an experience that even the average visitor who is not too much into opera and passion plays will find overwhelming. Until now' though' it has Only been the stage itself that has benefited from the ambiance of the location, unique in Austria, whereas the path used by visitors to get from the parking lot to their seats in the auditorium and back always was an atmospheric, merely functional access way.

PLANNING CONCEPT

The basic idea of the design is to extend the ambiance of the magnificent rock-face scenery to all parts of the theatrical arena so as to make it a more palpable and visual enveloping experience.

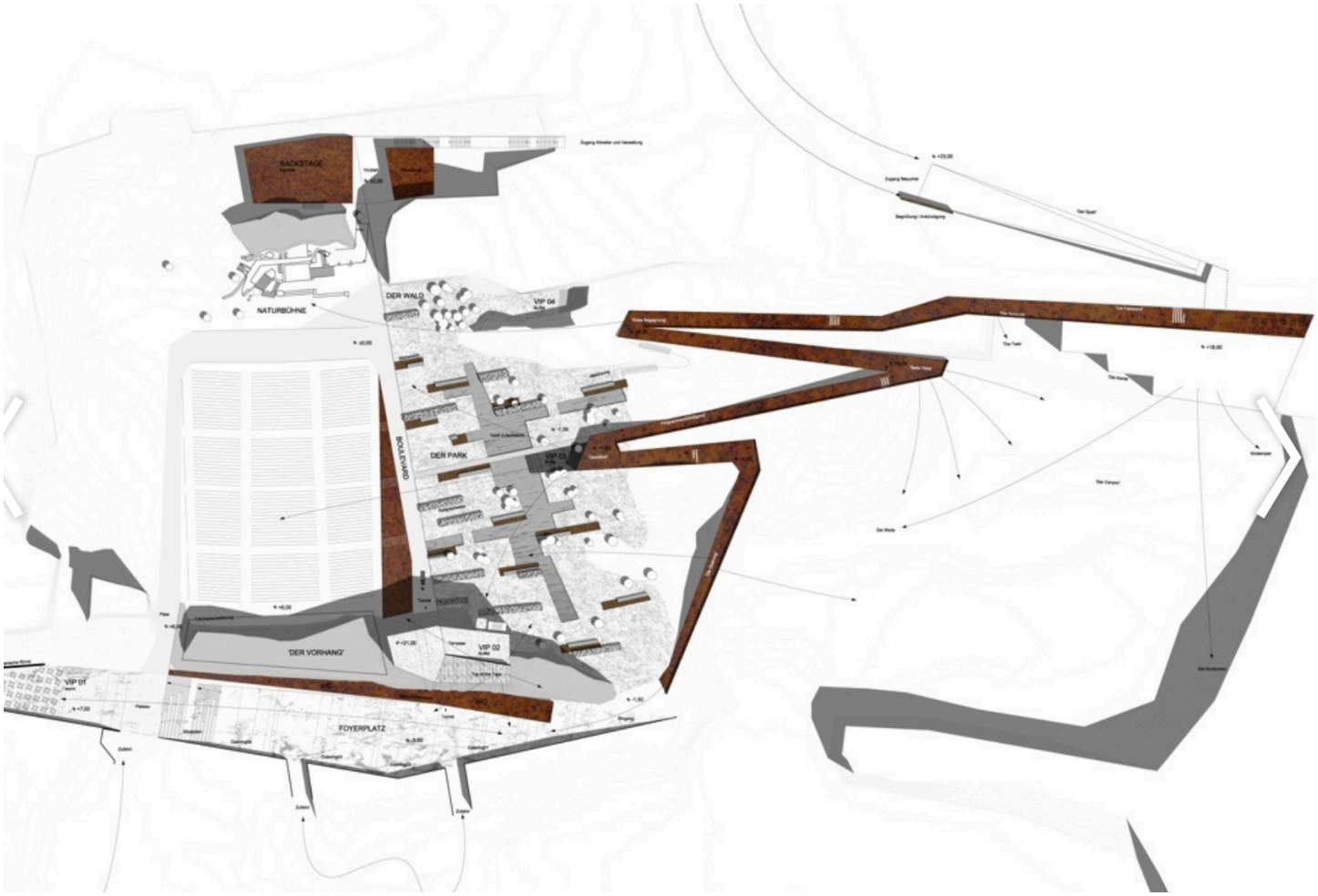


Figure 57 Site Plan : Roman Quarry

PLANS

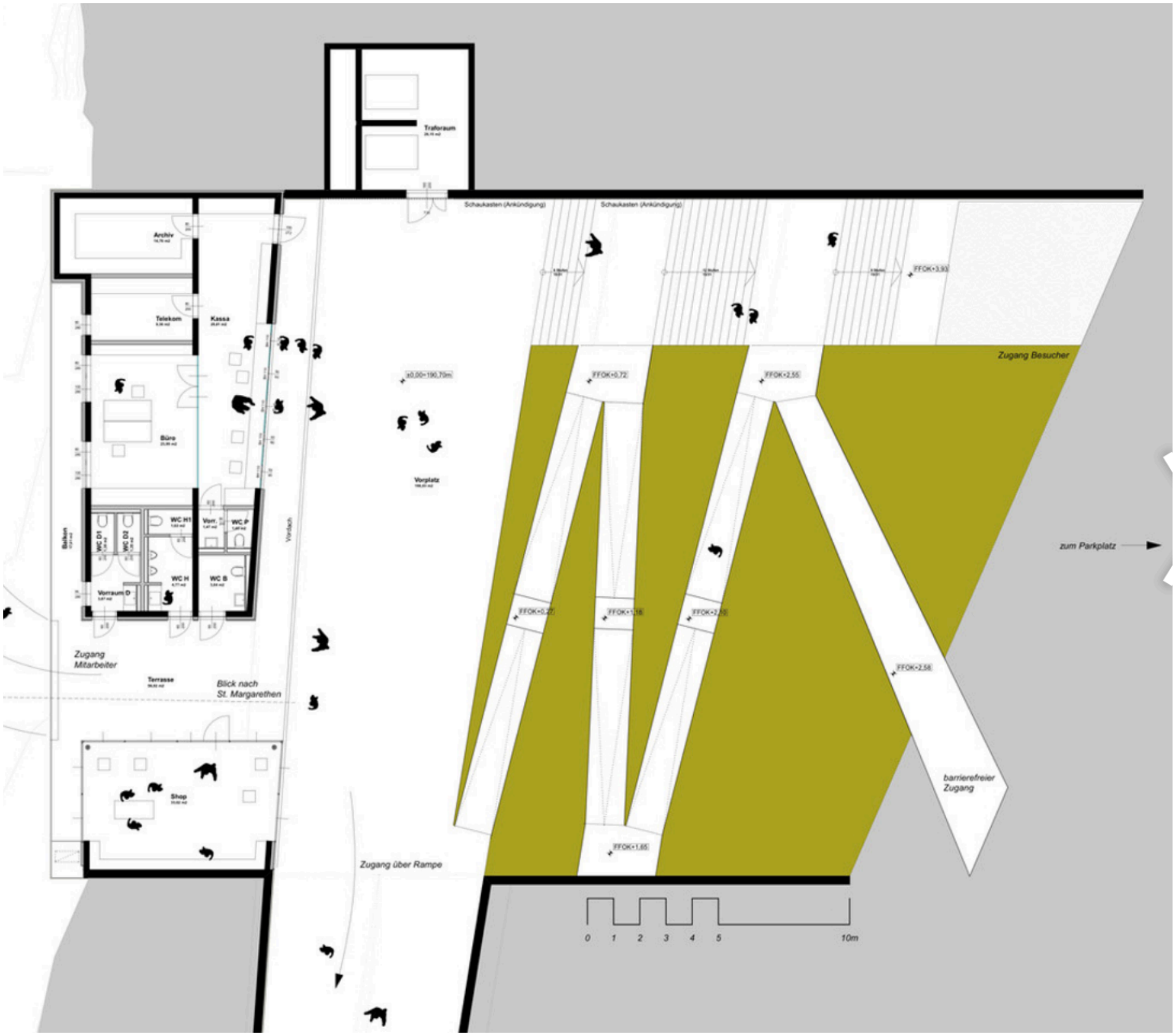


Figure 58 Plan: Roman Quarry

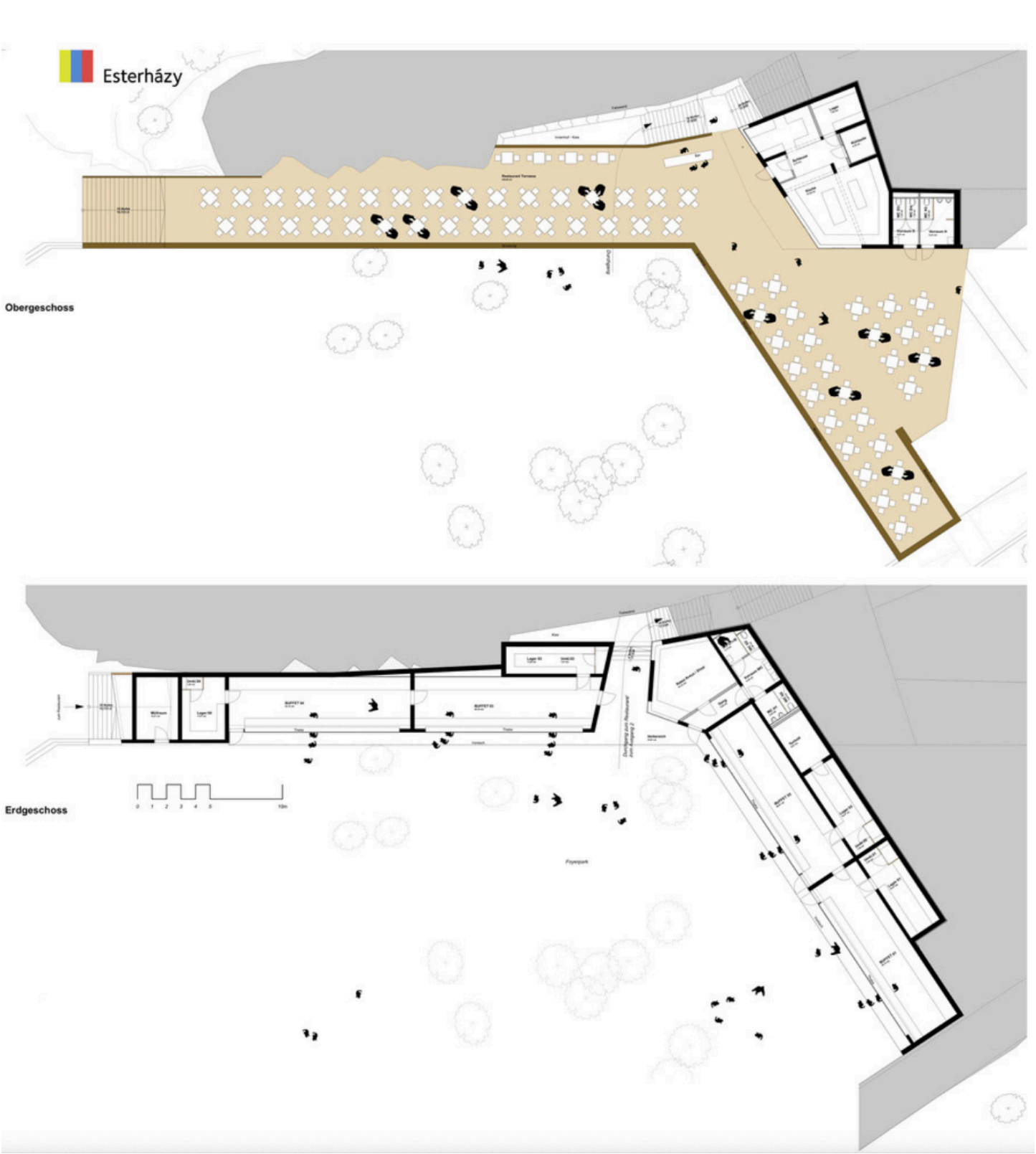


Figure 59 Plans : Roman Quarry

ELEVATIONS AND SECTIONS

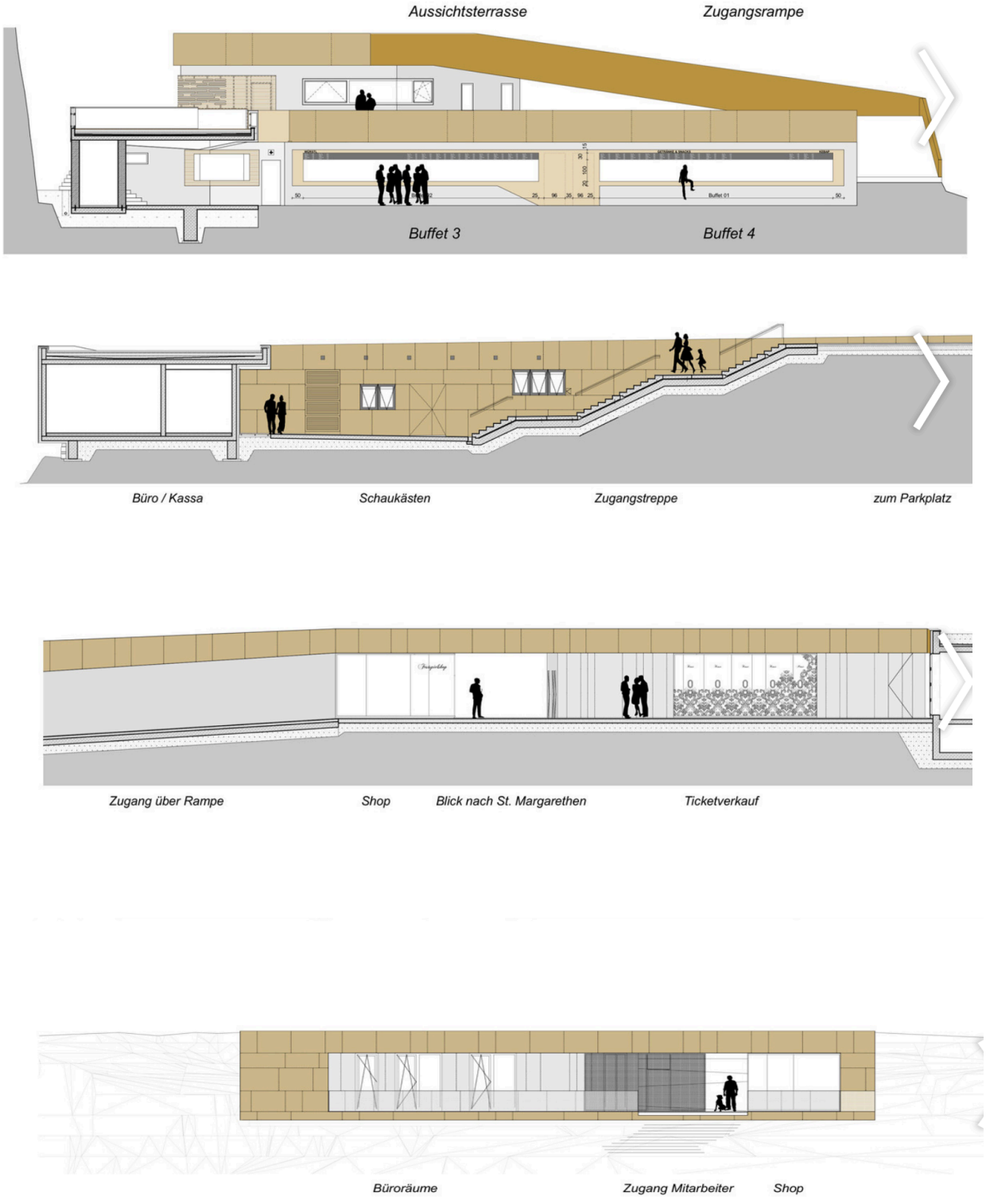


Figure 60 Elevation : Roman Quarry

INFERENCES

The openness of the site is very well appreciated.
The layout of ramp and playing with the levels makes the entrance very interesting and involving with the site.
The design is done in skew lines reflecting the line forms of the texture of rock.
Landscaping has been limited to grasses and not much trees are grown.
The materials and color schemes are in harmony to the site.

Figure 61 View: Roman Quarry

IDEAS

Vacant, abandoned, and contaminated properties in can be both an eyesore and an opportunity. In an urban residential neighborhood, vacant land decreases property values and scares off development for both the actual site and the surrounding neighborhood. But vacant land can also provide opportunities for neighborhood transformation.

Across the globe, mining has witnessed unknown growth as an industry, generating wealth, employment, and opportunities for growth. What remains a concern however, is how the mining sites are abandoned and left to degrade after mineral extraction is terminated. In India, abandoned mines number in the thousands, causing habitat and vegetation loss. Societies are oblivious to the great potential these sites offer in terms of boosting tourism, recreation and hospitality.

Such redevelopment may transform only a single lot, and the transformation may be short Lived. However, under the best circumstances, it may bring jobs, tax, improved infrastructure, and even more development to the neighborhood – while reducing health and environmental risks. Hence effective in restoring the ecology of the place.

INDUSTRILAZATION

In today's business or market centric world environment where cut throat competition is the mantra for survival, it is pleasantly surprising that along with land, labour, capital and enterprise – 'creativity' is becoming an increasingly important input into the production process of all goods and services. As such, it is a ubiquitous asset. However, unlike labour or capital, or even traditional technologies, it is a resource that is deeply embedded in a country's social and historical context. There is a group of activities in which it is used intensively and with a particularly high degree of professional specificity. These activities are the so-called creative industries.

The term "creative industries" is of relatively recent origin. This sector lies at the crossroads between the arts, business and technology. It includes upstream 'creative' activities, such as the traditional arts, performing arts, literature and visual arts, as also downstream 'cultural' activities such as advertising, design, publishing and media-related activities. There are obvious connections as well as a thin line of demarcation creative and cultural industries. In fact, cultural industries make up a subset of the creative industries.

Creative industries already contribute to employment generation and export expansion. In addition, there are positive benefits related to the quality of life, social inclusion and the environment. However at present their wider potential is unrealized.

Indeed, they are too often associated with a precarious form of job security, with low value addition and limited earnings. There is an urgent need to modernize this sector and strengthen local capacities in order to boost their contribution to income generation and hence contribute to poverty reduction.

Cultural products and services have both a tangible element and an intangible element. They convey ideas, symbols and a way of life. They also inform, entertain and contribute to building collective identity, national cohesion and social identity. This gives them a social and merit value that is not easily captured by market price.

Craft products were traditionally produced for use at work, for play or for use in the home, but throughout history they have served not only the local market but also regional and international markets.

The markets for craft products have been principally driven by quality and design, together with their historical, artistic, ethnic and regional significance and the unique characteristics of the artifacts. They can be classified into four distinct categories.
Traditional Fine Crafts - produce those unique pieces that demonstrate ethnic and traditional heritage. These are classified as works of art, address the high-end market, are exhibited in museums and art galleries and are purchased by collectors. Artisanal Crafts are handmade and preserve traditional elements. The difference between these and the Traditional Fine Crafts is that the crafters may adjust their work to market requirements whilst ensuring that the ethnic appearance and historical background is maintained. Large volumes can be produced for the medium-high market.

Commercial Crafts are also made in the traditional style but are adapted to the needs and tastes of the mass market. Large volumes may be produced for the low-medium end of the market. The number and types of outlets is larger; it includes specialized stores and exhibition centers - as for the previous categories, but will consist principally of tourist shops, design centers and mainstream buyers.

Performance of Indian cultural industries

India has a rich and varied heritage of handlooms and handicrafts. From time immemorial Indian handicrafts and handlooms have constituted a major chunk of the items exported to various countries worldwide . Facing a tough competition from its counterparts in other parts of the world who have benefited from advanced technology and a higher degree of research and development, Indian handicrafts and handlooms have still held their ground. The artisans of India are still prized for their perfection of craftsmanship, excellence of design and form and an unsurpassed sense of colour. Both the handloom and handicrafts sectors have witnessed steady growth in output, employment and revenue generation through exports over the years.

A special scheme called Baba Saheb Ambedkar Hastashilp Vikas Yojana (BAHVY) is in operation in India wherein the main thrust is on a projectised, need based approach for integrated development of potential cultural clusters with participation of the artisans at all stages of implementation of the scheme with the ultimate objective of their empowerment and hence sustainability.

The scheme envisages a package of support to the cluster of handicraft artisans, which includes basic inputs and infrastructure support in addition to capacity enhancement to cater to target markets. The package of support under AHVY can be clubbed under the following five parts which can be listed as social interventions, technological interventions, marketing interventions, financial interventions and cluster specific infrastructure related interventions.

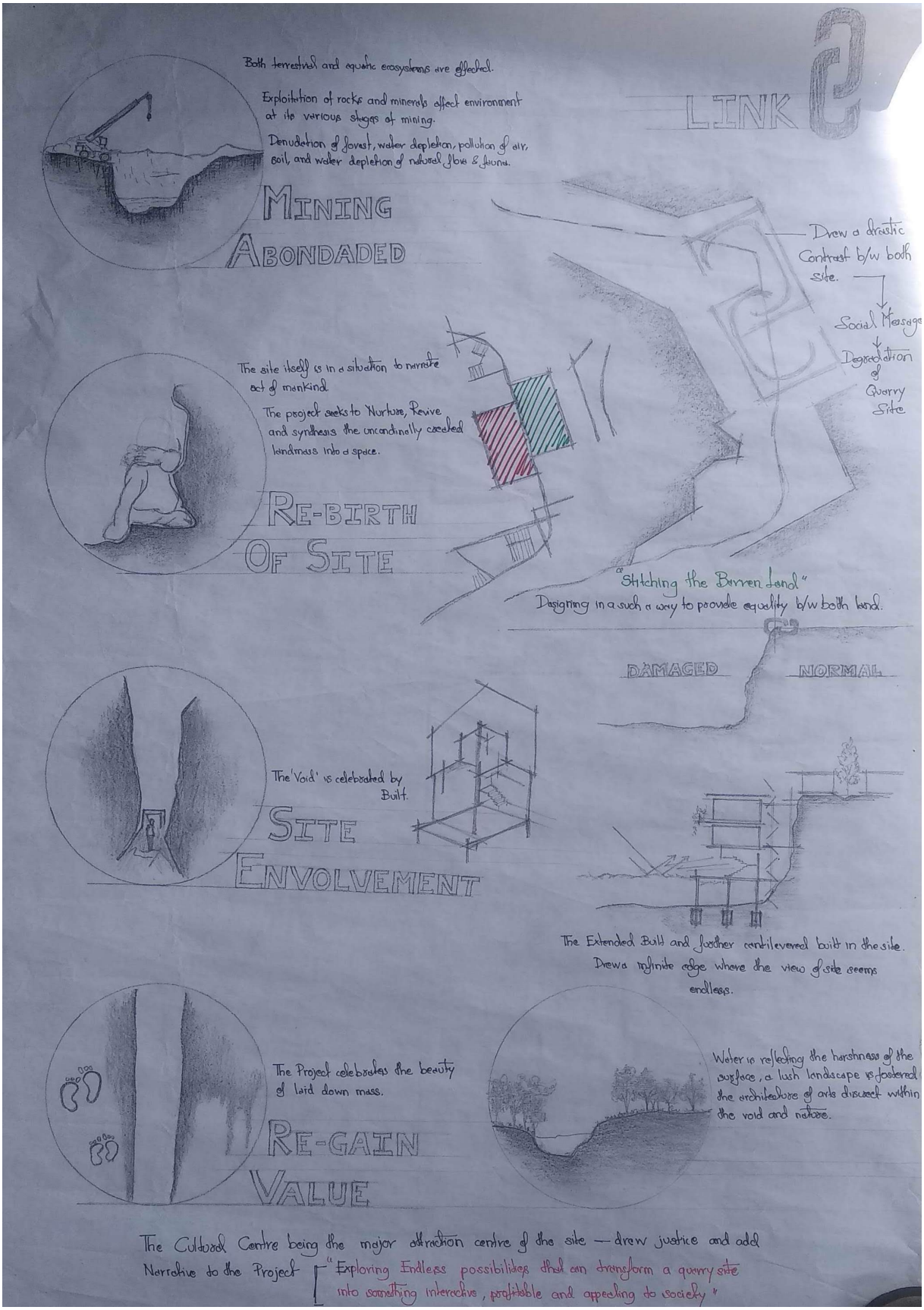


Figure 62 Concept Scribbles

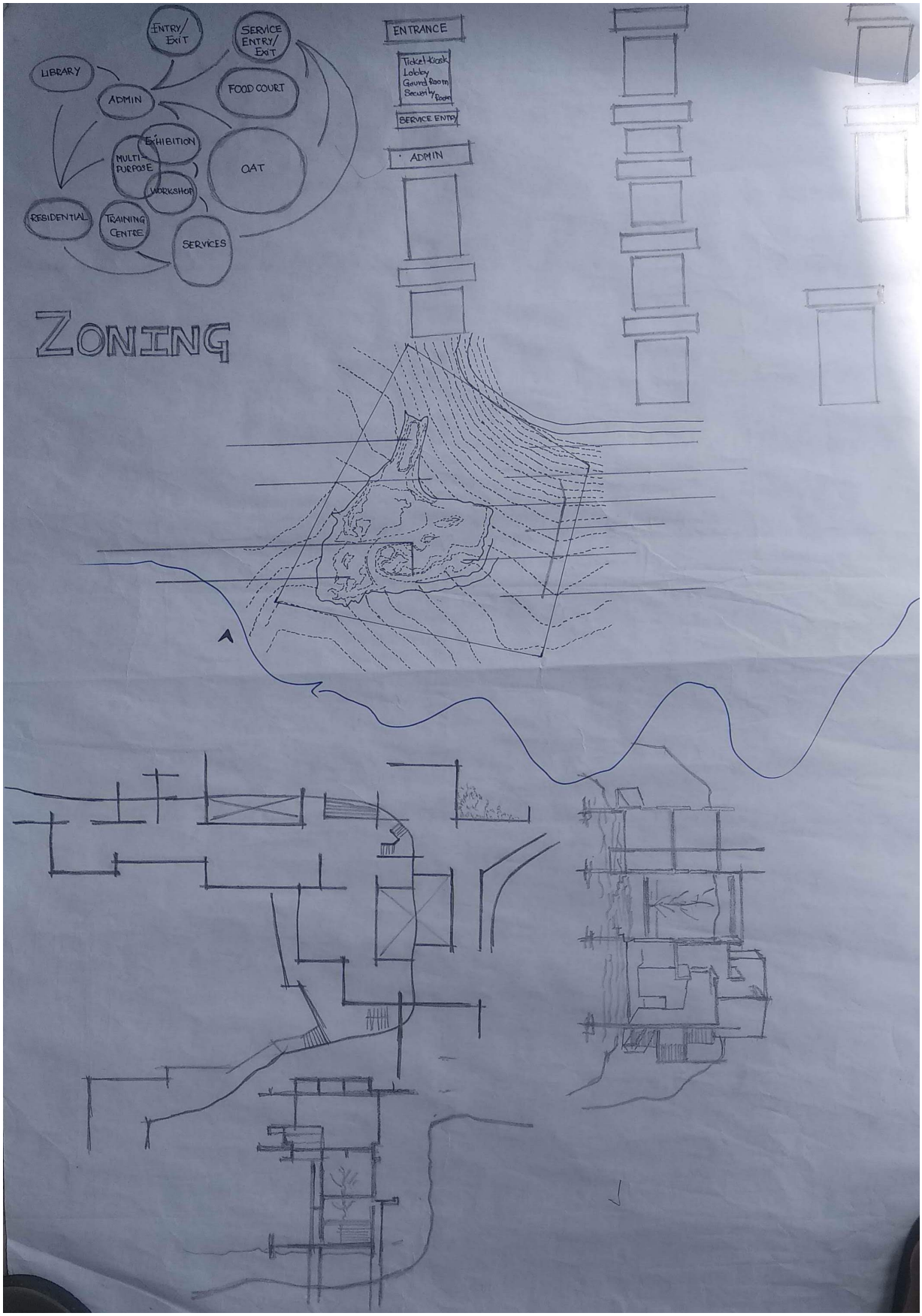


Figure 63 Concept Scribbles

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