dusable tricademy for artistic expression

an application of *kinetic* architectural design for a performing arts community

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DUSABLE TRICADEMY FOR ARTISTIC EXPRESSION

AN APPLICATION OF KINETIC ARCHITECTURAL DESIGN FOR A PERFORMING ARTS COMMUNITY

A Design Thesis Submitted to the
Department of Architecture and Landscape Architecture
of North Dakota State University

By

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for the Degree of
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contents

Page	
4	Abstract
5	Statement of Intent
6	Proposal
12	Research Results
20	Kinetic Architecture
22	Case Studies
43	Historical Context
51	Site Analysis
64	Opportunities & Restraints
65	Project Goals
66	Space Allocation
82	Design Process
88	Project Solution
107	Final Presentation
108	Reference List
110	Personal Identification

thesis abstract

The building typology for the thesis will be a campus for education in the performing arts. The site is located at the mouth of the Chicago River in Chicago, Illinois. The thesis will examine kinetic architecture as it corresponds to a performing arts community. It will challenge the principles of theater design and observe performance spaces and other functions as they change form, function, and overall appearance.

Project Typology
A campus for education in the performing arts.

Theoretical Premise
The thesis will examine kinetic architecture as it corresponds to a performing arts community. Design metaphors will be drawn from the examination.

Project Justification
Today's society is one of constant change and innovation. With such accelerating trends in technology and culture, there is a need to satisfy our dynamically changing society. Kinetic architecture is architecture capable of movement, whether it be displaceable, deformable, expandable, or disposable. The thesis will explore a campus for living, learning, and performing, but in a way that spaces change and move for the sake of function, form, and/or visual pleasure.

Fig. 1.0

Narrative Imagine a college campus soaring into the sky overlooking the beautiful Lake Michigan outside the heart of downtown Chicago. "Today's 15.6 million college students are not roller blading, beer-worshipping slackers. They are avid consumers with a taste for the good life and the ability to afford it (Chicago Tribune, 2004)." This may not be the case for rural North Dakotans, but campus life within the urban realm of Chicago is jam-packed with wonderful cultural experiences and grand amenities.

The campus life in downtown Chicago is vibrant and growing. There are several urban campuses with buildings sprawled all across Chicago's loop. However, the college's student populations only keep getting larger and more diverse. With these growing populations arise issues of providing sufficient student housing and education spaces. In a survey of 33 of the largest postsecondary institutions in the city, the Scion Group found that 29 cited the lack of adequate housing (Sharoff, 2002. p. 2). I will examine density issues and propose a joint-use building which will serve three of the city's most renowned urban colleges. The building(s) will not only provide the three colleges the space to adequately serve their students, but will create wonderful opportunities of interaction among the different institutions.

Since Chicago is said to be one of the greatest theatre cities in the world, I want to design a campus for the performing arts. This typology lends itself to studies of theatre, motion pictures, drama, comedy, music, dance, opera and much more. Because of the many disciplines and the need for educational spaces, I expect the school to have dorms, a student center, classrooms, and various performance spaces. The three urban colleges all have performing arts as part of their programs. Together, they will be provided the best education with state-of-the-art facilities for learning and performing.

Traditionally, campuses are laid out across a vast area of land. My main intent, however, is to challenge the principles of campus design. In a city built prominently vertical and a site within reach of the world's first skyscrapers, I want to challenge the notion of designing a campus that, like a ballet dancer, leaps towards the sky. With this theoretical approach to the "vertical campus" arise opportunities for future development in cities dense with buildings but a need for education.

Fig.1.1

Fig.1.2

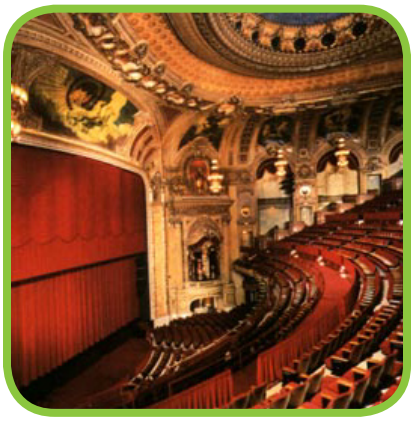


Fig.1.3

User/Client Description

The users of the joint-use campus of performing arts will be students wishing to become actors, comedians, singers, dancers and musicians; faculty and staff; and visitors from outside the school including visiting artists and the general public. My aim is to attract patrons from all over the world to come and join in the celebration of performance.

There will be three clients for this performing arts school. Recently, DePaul University, Roosevelt University, and Columbia College joined in on building a large super dorm in Chicago called the University Center. This is a joint-use facility and houses students from each of the three campuses. The student population of these quality educational schools is increasing immensely. There was another college involved in the project but dropped out because meeting and academic space was eliminated from the building plans. There is still a need for education and performance spaces as will be needs in the future for additional student housing. Since the majority of the performance venues used for these schools are older, I want to further connect these three colleges by providing them state-of-the-art performance spaces and classrooms. Not only will students from the different colleges have the ability to live among one another, but they can embark upon the opportunity to learn and perform with one another.

Major Project Elements

Dorms:
There is a major need for additional student housing for Chicago colleges and the dorms will house Chicago's aspiring performers.

Condos:
Since the site chosen is a 'hot-spot' for Chicago, condos will be a good investment and will be marketed towards local performers and those who appreciate the arts.

Hotel:
A boutique hotel will accommodate visiting artists who either perform at the center or are invited to teach at the college. Visiting patrons will also be welcome to stay.

Classrooms:
Classrooms will be used for lectures and interactive activities of education.

Performance Spaces:
Students will apply their knowledge gained in the classroom and display their accomplishments in performing spaces for both rehearsal and public shows.

Library:
A library will provide information that primarily consists of material for the performing arts.

Public Plazas & Green Spaces:
Since this project is located at a prime location and the thesis will examine the vertical campus, green spaces and public plazas will need to be incorporated into the design for the well-being of its occupants and for the public.

Student Union/Lounges:
A Student Center will give students a place to hang out, play some pool and grab a snack. It will also serve as a public commercial store catering to people walking by along the waterfront.:

Figure 1.4 Chicago City Map

Figure 1.5. Jean Baptiste Pointe DuSable was the first settler of Chicago in 1779

Figure 1.6. Site after Chicago Fire of 1871

Figure. 1.7. Wiiliam Le Baron Jenney's First Skyscraper

SITE DESCRIPTION

City Overview The city of Chicago covers 228 square miles of the US's Midwest and contains nearly 3 million people. The city is located at the southwest edge of Lake Michigan, the world's fifth largest body of freshwater. 29 miles of this lake front is claimed by Chicago. Two airports operate international and internal flights while interstate highways (see Figure 1.4) and rail links connect both the East and West Coasts, other parts of the country, and Canada.

City History Chicago's historic beginnings go way back to 1673 when the French missionary Jacques Marquette and French-Canadian explorer Louis Jolliet first recorded their visit at the foot of Lake Michigan. It wasn't until more than 100 years that the first settlement was placed on the swampy area named "Checaugou" which meant "wild onion" or "skunk cabbage." In 1779 the African-American trader Jean Baptiste Pointe DuSable built a house on the north bank near the mouth of the Chicago River, near the site where I will be placing my project. (see Figure 1.5 along with 'Site History' on the following page for a closer look at the history of the specific site).

A treaty in 1795 provided US citizens access to a 6-sq-mile area of land where the Chicago River emptied into Lake Michigan - now Chicago's downtown core. The river gained great importance as development increased. Chicago's population reached over 4,000 in 1837 due to major transportation through the Illinois and Michigan Canal and the arrival of railroads.

The Chicago River played an enormous role for the growth of Chicago. It connected the Great Lakes and became the main thoroughfare for shipping. Unfortunately, the growth of the city led to unsanitary conditions for the city because the river served as the city's sewer system.

Since the water level of the river was near the surface of the land, it was impossible to build an underground sewer system. So the engineer Ellis Chesbrough developed the first sewer system above ground. The streets and buildings were in turn raised above the new system, but that didn't fix the problem entirely. In 1885, sewage flowed from the Chicago River into Lake Michigan which was the city's source for drinking water. Consequently, thousands of people died from typhoid and cholera. This disaster initiated the construction of the 28 mile long Sanitary and Ship Canal which actually reversed the flow of the river to prevent it from flowing back into the water supply in Lake Michigan. There are now locks at the mouth of the Chicago River and adjacent to my site which assists in keeping the river flowing away from Lake Michigan and preventing it from polluting the drinking water.

The river was once so highly polluted that the Great Chicago Fire of 1871 spread into the north side of Chicago by burning its way across the garbage in the river (see Figure 1.6). It is said that a cow belonging to Mrs. O'Leary started the fire by kicking over a lantern. The great fire significantly influenced architecture afterwards. No longer were wooden buildings allowed to be built downtown. As a result, architect William Le Baron Jenney designed a nine-story steel structure said to be the world's first skyscraper (see Figure 1.7).

Figure 1.8. Chicago Aerial

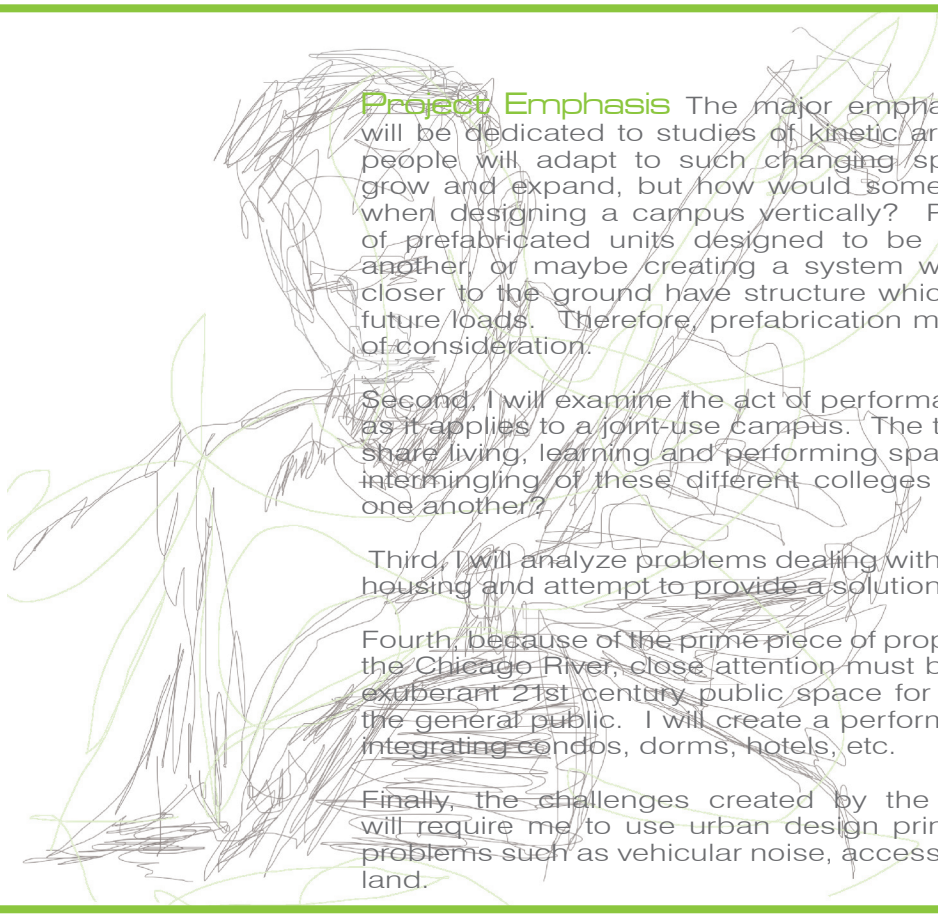
Figure 1.10. North-West View of Site

Figure 1.9. Aerial of Specific Site

Specific Building Site The site on which I have chosen to place my building(s) will drive my intents. Located at the mouth of the Chicago River and adjoining Lake Michigan and Ogden slip, the site is a prime spot for the city of Chicago and the three colleges to occupy it. It is located at 346 East North Water Street and connects to DuSable Park. The largest challenge is the fact that Lake Shore Drive, a four-lane highway, runs right above it therefore requiring some sort of sound isolation technology to deter traffic noise within the performing spaces. In addition, access to the site is limited to East North Water Street.

Problematic to my design will be creating a linkage underneath the elevated highway between the two portions of the site. To the west of the highway as outlined in red in Figure. 1.9 will be the majority of the building(s), and to the east as outlined in green I will define and create a 21st century public realm. Since the land to the east of Lake Shore Drive is zoned for park use, I will designate this land for the performance spaces which will also serve public events. Bound on three sides with water by Ogden slip and the Chicago River, I imagine the performance space to be an expressive creation of fine architecture taking advantage of the fantastic views of Lake Michigan and the Chicago skyline.

Site History The parcel of land which is zoned for park use toward the east of Lake Shore Drive is named DuSable Park, named after Jean Baptiste Pointe DuSable who built the very first Chicago house in 1779 near this site. With that being said, I think it would be necessary to somehow honor this man for such a historical event. DuSable Park has remained an undeveloped eyesore for years because of a 1972 Lake front Protection Act which prevented commercial development east of Lake Shore Drive. Plans have been proposed to develop the site since 1987 but have been recurrently delayed.



Project Emphasis The major emphasis for this project will be dedicated to studies of kinetic architecture and how people will adapt to such changing spaces. Campuses grow and expand, but how would someone approach that when designing a campus vertically? Perhaps by the use of prefabricated units designed to be stacked upon one another, or maybe creating a system where building units closer to the ground have structure which compensates for future loads. Therefore, prefabrication may be an emphasis of consideration.

Second, I will examine the act of performance and education as it applies to a joint-use campus. The three campuses will share living, learning and performing space, but how will the intermingling of these different colleges reinforce or hinder one another?

Third, I will analyze problems dealing with insufficient student housing and attempt to provide a solution to the need.

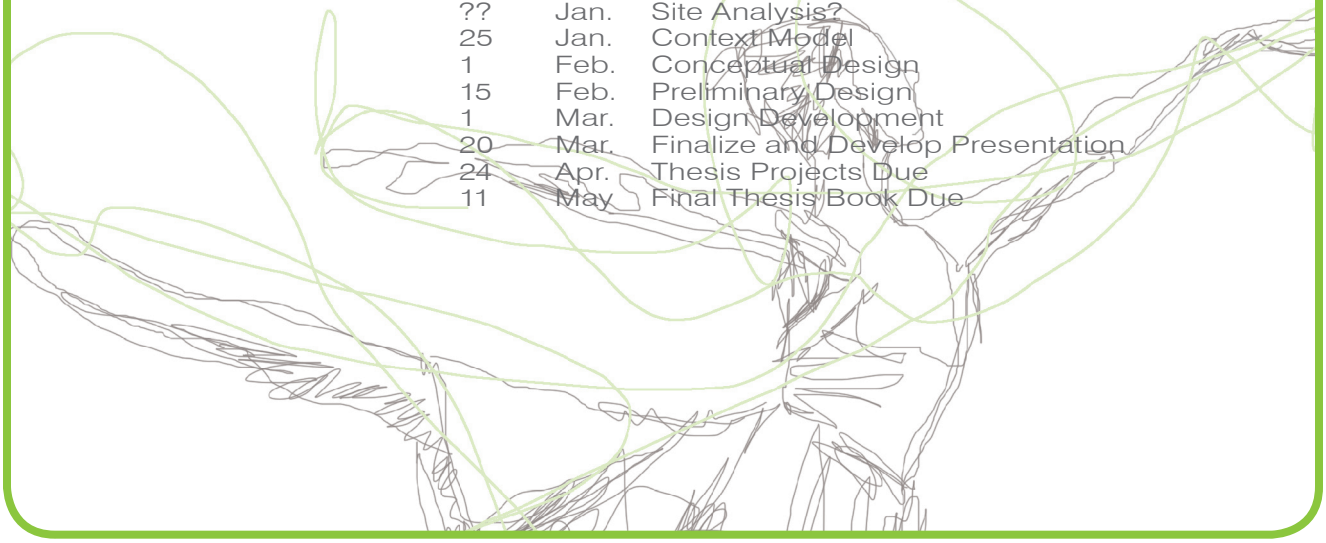
Fourth, because of the prime piece of property protruding into the Chicago River, close attention must be paid to create an exuberant 21st century public space for students, staff and the general public. I will create a performing arts society by integrating condos, dorms, hotels, etc.

Finally, the challenges created by the nature of the site will require me to use urban design principles to deal with problems such as vehicular noise, access, and contaminated land.

Plan for Proceeding Intense research will be performed in order to answer questions dealing with the above problems. The analysis, interpretation, and reporting of the results will occur throughout the research process. Along with gathering statistical and scientific data, interviews and consultation with professionals and students is necessary. Documentation of this project will be done by sketches, models and digital drawings.

Schedule of Work

13	Oct.	Thesis Proposals Due
14	Nov.	Last Day of Arch 571
23	Nov.	Program Draft Due
08	Dec.	Program Final Due
??	Jan.	Site Analysis?
25	Jan.	Context Model
1	Feb.	Conceptual Design
15	Feb.	Preliminary Design
1	Mar.	Design Development
20	Mar.	Finalize and Develop Presentation
24	Apr.	Thesis Projects Due
11	May	Final Thesis Book Due



Previous Studio Experience

2nd year:

Milt Yergens	S,M,L Space Studies
	Pavilion
	Island Park Bistro, Fargo
Ron Ramsay	Hiawathan Rowing Society, Minneapolis
	Packing the Suitcase Chicago Archive
	Finn Creek Cultural Center, New York Mills

3rd year:

Mohamed Elnahas	Memorial Park Bridge, Fargo
	Duluth Museum of Contemporary Art
	Centro Cultural, Moorhead
Harold Jenkinson	Stonebridge Art & Athenaeum, Fargo
	Fargo Moorhead Humane Society

4th year:

Tim Kennedy	Minneapolis Riverfront Redevelopment
Mark Barnhouse	The Venturi High Rise, San Francisco
	NDSU DT2 Marvin Windows Competition, Fargo

5th year:

Vince Hatlen	Fargo Public Library

Introduction The following studies are investigations into the hard sciences, social sciences, philosophy, and architectural theory. Research was conducted in order to supplement my theoretical premise and to provide myself with a better understanding of the world around me. Ten different topics were researched to find correlation between the DuSable Tricademy of Artistic Expression and the various research findings. The ten topics are discussed as follows:

Education "Education is a social science that encompasses teaching and learning specific skills. The goal of education is the growth of students so that they become productive citizens of a dynamic, ever changing, society. Fundamentally, the imparting of culture from generation to generation promotes a greater awareness and responsiveness through social maturity to the needs of an increasingly diversified society" (Education).

The DuSable Tricademy for Artistic Expression will be a living, learning, and performing campus community. Much like NDSU Downtown, I want the classrooms to facilitate learning by creating a unique environment and by incorporating new technologies. With the addition of living units incorporated into the design, I feel there will be a stronger connection to performance as students may want to rehearse in the performance spaces or relax and study in lounges during the late hours of the night.

DePaul University, Roosevelt University, and Columbia College are going to be the users of the DuSable Tricademy for Artistic Expression. Since the majority of their current performance venues are older, I want to connect these three colleges by providing them state-of-the-art performance spaces and classrooms. Not only will students from the different colleges have the ability to live among one another, but will have the opportunity to learn and perform with one another. This will also create greater diversity and aid in the growth of the students.

Peter Davey in Architectural Review states, "Education is a social activity. Though technology gives us individuals the ability to learn and acquire knowledge in previously impossible and particular ways, every educational institution is in some sense a society, and everyone should be socialized through the experience of education" (Davey, 2002). Performance is also a social undertaking. Peter Blundell of Architecture Review states, "Taking the stage is part of the development of self-confidence and finding a place in society, while gathering to share a performance is an archetypal social act." Now, the three colleges will be able to perform together and socialize.

Along with being social places, schools must also consider psychological needs. Just like it is essential to provide kindergarten children with an environment which gives them physical and psychological protection, it is important to provide college students a comfortable space to live and learn when they are away from home. This can be done by using colors and materials that are easy-going and mellow. Form can also be applied to a building or furniture. Expressive forms such as a graceful curve of a wall may benefit students studying for a stressful exam. Student comfort is also determined by the scale of a space. Small crowded spaces may cause anxiety and so can large open spaces. It is important to find the happy medium in which students can learn most effectively.

Psychology and the Arts The arts are said to have therapeutic qualities. For example, arts programs have been implemented in various prisons to help offenders get back on track. Numerous studies show the positive effect of the arts with offenders. About 30% of male prisoners and 40% of female prisoners attend arts classes. "Violent incidents in jails which have arts programs are 60 to 90 per cent lower than in those without such programs" (Milner, 2000). Although my project will not contain a correctional facility, it can be said that the arts aid in the well-being of the people. Music replaces anti-social behaviors with positive ones. It increases self-esteem and self-awareness. So can the arts aid in benefiting society and creating a hopeful future? It may to those who attend performing or visual arts events. It is the role of the architect to create a space where people, of all different cultures and backgrounds, will want to attend.

Along with creating spaces that encourage patrons to attend, the architect should also consider the emotions of the performers themselves. Performing can cause a great amount of anxiety among performers. Performers can get both stage fright and performance anxiety at a show. Stage fright is the heightened nervous state during a performance while performance anxiety is the vulnerable state in anticipation of the performance (Lee, 2002). Anticipatory anxiety produces a chain of physiological, behavioral and cognitive reactions. An awareness of some danger causes fearful thoughts that trigger sweaty palms, dry mouth or trembling hands that, in turn, cause behavioral responses such as missing notes and forgetting words (Lee, 2002). For

schools that produce many performances, it is imperative that they have comfortable spaces behind the scenes such as in practice rooms, dressing rooms, costume shops and green rooms.

Distractions can also cause performers to miss notes, forget words, and perform less adequately. A recent scientific study shows that a lump of brain tissue at the back and base of the skull called the cerebellum switches on in the head of a dancer during a performance. This small part of the brain crackles with electrical activity when lessons learned during a training session shine through in performance (Cohen, 2002). To measure brain activity, neuroscientists used a technique called magnetic resonance imaging (MRI), which requires volunteers to keep their heads still while being scanned by the imaging machine (Cohen, 2002). Subjects were asked to watch a set of four lights displayed in a sequence and then match the pattern with the fingers on their right hand. The subjects were also distracted by being asked to count a set of colored lights. When there were distractions, the subject's cerebellum stayed cold and their performance didn't improve. Once the distraction was removed, however, their cerebellums lit up and their speed increased. This study shows how important it may be to clear the mind before a performance. Perhaps a theater could have a back-stage meditation room to clear the mind and focus on the performance. Lighting could play a role also by blackening out the audience so there is little distraction.

Morphology Morphology refers to the material and structure in which a material is molded (Popov). Morphology can be exemplified best by building structures, skin and mechanical systems, including bearing elements, partitions, screens, membranes, ducts, pipes, etc. From the point of view of human perception and architectural theory, morphology can be described in terms such as shape, form, solids and voids, mass and space, and layout of space and building structures (Popov).

Environment is the medium in which morphology is functioning. This environment is a system of surrounding objects, interactions, and relations. The environment also shapes the structure of morphology (Popov).

Culture is transforming itself from the simple certainties of Modernism to a much more complex interpretation of reality based on biology, mathematics and cosmology (Jencks, 2003). Architecture is beginning to see changes due to science, religion and politics. Complexities in nature consisting of fractals, nonlinear dynamics, cosmology, and self-organizing systems have brought about change in the form of buildings. They are becoming awkward blobs like Cook's Kunsthaus Graz, elegant waveforms like Renzo Piano's Paul Klee Centre, or jagged fractals like Libeskind's Jewish Museum, challenging Classicism and Modernism and becoming more aware of the patterns of nature.

Architects are producing metaphors that creatively display the organic nature of structure. Santiago Calatrava's designs, for example, are suggestive of the skeletal makeup of a fish or other animal of nature. Nicholas Grimshaw also sought out a structural metaphor with his Eden Project. This project consists of stacked geodesic domes. The overall form looks like the bubbles you blow when you stick a straw in milk, or, inspired more by nature, fish eggs. The computer has led to the evolution of such 'blobmeisters.' The 'meisters' were determined to capture the field, and do so with 'blob grammars' and abstruse theories based on computer analogies – cyberspace, hybrid space, and digital hypersurface (Jencks, 2003).

Ever since Gehry's Guggenheim opened in Bilbao, architects realized a new kind of building type had emerged, and that there was a standard to surpass. The Guggenheim's forms are suggestive and enigmatic in ways that relate both to the natural context and the central role of the museum in a global culture (Jencks, 2003). From what is now called the Bilbao Effect, the method of designing large civic buildings, especially museums, has become a branch of surrealist sculpture. Starting in the 1950s with Ronchamp and the Sydney Opera House, museums, performing arts centers, and important civic buildings have morphed into cultural icons.

Biology & Neuroscience I have discussed above the various trends in architecture and how architects today are looking into science for morphologies. Here, I'll go more in depth on biology and its relevance to architecture. This discussion has less to do with the general biological structures as discussed above and more to do with our internal structure and neuroscience.

According to John Eberhard (2003) of the Academy of Neuroscience for Architecture, neuroscience is the study of the mind (a process) and the brain (the physical organ supporting these processes). Neuroscientists undertake studies of the brain at the level of molecular biology, perceptual systems, formed experiences, and consciousness (Eberhard, 2003). The field of neuroscience has taken off in the last ten years as there is an increase in the understandings of how our brains work.

So how does neuroscience relate to architecture? Every day, every minute, and every second, our surroundings are shaping our brains. When you go to school, work, or to the grocery store, everything you see and feel is input into your brain and recorded into what are called "dispositions" (Eberhard, 2003). Dispositions are records in the brain which contain a combination of sensory inputs, memories, emotions, and any related muscle memories. The built environment, along with many other things, affects the structural organization of the brain. Scientists are working with architects to discover how the brain reacts to design. Neuroscience can help improve the way people's minds work, and nicely designed environments can do the same. For example, green spaces in offices increase productivity, and in hospitals plants can speed the healing process. Studies have shown that natural light allows students to achieve higher test scores (Jarmusch, 2003).

Neuroscientists have found a part of the brain that gets excited when people are shown photographs of buildings. A related study at the University of Madison-Wisconsin will test people's responses to photographs of attractive well-designed buildings vs. ugly sterile buildings (Jarmusch, 2003). I personally believe that a well-designed building increases the well-being of humans, especially if it creates a sense of wonder and awe like a sculpture of art. When I traveled to Europe, I was exposed to many buildings I hadn't seen in my residing area. Those experiences and images of fine architecture are stored in my brain, and every time I recall those moments, I feel a hint of joy.

Not only does the space around us shape our brain, but so does the music we hear and perform. Music develops the intellect. According to Catherine McTamaney (2005), music education has long been anecdotally linked to increased intellectual ability. Controlled studies have supported the long-held belief that music can affect the development of the brain and enhance cognitive functioning.

The musician is continuously tweaking decisions on tempo, tone, style, rhythm, phrasing, and training the brain which allows the musician to become exceptionally good at organizing and conducting numerous activities at once. Practicing day in and day out can have a great payoff for lifelong attentional skills, intelligence, and an ability for self-knowledge and expression (McTamaney, 2005).

A 1997 report published in Neurological Research indicates that students receiving piano lessons demonstrated significantly higher spatial temporal IQ scores than students who had only casual singing or no music instruction, and a 2001 report on college-bound seniors by the National College Entrance Examination Board found that students who received music performance education scored higher on the SATs in both verbal and math categories. Music education provides students with the capabilities to learn new skills. Music enhances auditory discrimination and is therefore beneficial to the development of language. Sequencing, right-to-left progression, and hand-eye coordination are needed skills for both music and written language. Mathematical concepts, including spatial and fractional relationships, assist melodies and harmonies, and reappear in geometry, algebra, and architecture (McTamaney, 2005).

The spaces surrounding students at the DuSable Tricademy of Artistic Expression shape their brains, and so does the music they perform and listen to. Creating public spaces full of light and greenery would be essential in the living spaces, but in the performance spaces there needs to be other factors playing a positive role in shaping the brain. Perhaps a large mechanical sunlight will allow light in prior to a performance and close during it, or mechanical side-walls that allow views towards the beautiful Lake Michigan during special shows that require no light isolation. Spaces in which performers will be in prior to going on stage should consist of cool relaxing colors like blues and greens rather than the intense hot colors like red and orange. Maybe some

performing spaces will be held outside in an amphitheater where light and greenery are readily available. All in all, the DuSable Tricademy for Artistic Expression will be a positive environment rich with cultural experience.

Anthropology & The Arts For hundreds of thousands of years, humans have expressed themselves creatively in dance, music, song, storytelling, verse, prose, drama, and comedy, all of which are part of what is called expressive culture. Typically, the arts are exhibited, evaluated, performed, and appreciated in society. People everywhere today associate an aesthetic experience with events having a sense of beauty, appreciation, harmony, and pleasure.

Ethnomusicology is the comparative study of the music of the world and of music as an aspect of culture and society (Kottack et al, 2001). Music, which is often performed in groups, would seem to be among the most social of the arts. Some believe music may be an evolutionary adaptation, whereas some assume music as something humans invented to make their lives easier and more pleasant. Music is also a powerful identifier. Many marginalized groups have used music for purposes of self-identification, bringing groups together, or voicing social and political commentary (Haviland et al, 2000).

There are three distinguishing features of music according to the Basongye people of the Kasai province of Congo:
1. Music always involves human participation. Birds chirping or dogs barking is not music but merely sounds.
2. Music and musical sounds are organized. Whereas a drummer striking a drum in pattern is considered music, a single tap on a drum is not.
3. Music must continue. If two drummers strike the drum once, it isn't music. They must keep playing to create a sound pattern.

If my building ends up housing spaces for the performance of music, and it draws metaphors from it, then it should be designed in such a way that the pieces are organized and arranged in melody, rhythm, and form.

Art is impressive in its ability to cause catharsis, also known as intense emotional release. Art can move emotions and make people laugh, cry, feel good or feel bad. People in different cultures will be affected in different ways by music, comedy, and drama. Architecture, if designed appropriately, can cause catharsis. You wouldn't want a building to make one cry or feel bad unless it was a memorial for a treacherous time in history, but architecture has the ability to create wonder and ecstasy. Buildings have been doing this for years from the Great Pyramids at Giza to Taj Mahal to Santiago Calatrava's Tenerife Opera House.

Because art is part of culture, appreciation of it is dependent of cultural background. Music with certain tonalities and rhythm patterns will please some people and alienate others. However, different kinds of music can be learned to be appreciated. Prior to taking a college course on electronic music, I had absolutely no care for listening to it. I saw it as being a bunch of noise emanating from computer-processed instruments. Now, as it is integrated into other music, I find myself enjoying it.

The arts will change throughout time but certain art forms have survived for thousands of years. Greek theater is among the most enduring of the arts (Kottack et al, 2001). It survives throughout the world and is seen in the movies, read in college courses, and performed live on stages. The dramatic arts are a part of the huge arts and leisure industry today, which links arts from both Western and non-Western traditions.

Phenomenology Phenomenology is the interpretive study of human experience. In the built environment, phenomenology can relate to the nature of environmental behavior and experience. It attempts to discuss why places are important to society. According to Heideggerian, architecture is to provide an "existential foothold," one which provides "orientation" in space and "identification" with the specific character of a place. Architecture makes the world visible and spatial, gathering its presence in a thing (Norberg-Shultz, p. 429-438). "The thingness of a building is hence determined by its being between earth and sky as a sculptural form" (Norberg-Shultz, p. 429-438).

Phenomenology can involve Kevin Lynch's five elements of making a city. Chicago is full of these elements as is any other city. They consist of node, landmark, path, edge, and district. All are important to my thesis as a way of defining and creating space. The DuSable Tricademy for Artistic Expression will ultimately have its own sense of place.

Access to my site is limited and unnoticed. Therefore, a node will need to call out entry into the campus realm. This is where one would first perceive the space by being within that space.

The project settles on a prime location for the city of Chicago. Since it is a cultural waterfront project, it will serve as an icon and landmark for the city – a sculpture between the earth and the sky. Just like Jorn Utzons' Sydney Opera House created an icon for both Sydney and Australia, the DuSable Tricademy for Artistic Expression will do the same for Chicago.

The edge is quite evident for this project. The site is bound on three sides by water, thus creating a strong edge and an opportunity for interaction with land and sea. A bridge connects the peninsula to the other sides of Ogden slip and the Chicago River. The bridge itself is a strong edge if not considered a wall.

Paths will provide access and circulation to and around the site. The paths are to be a continuation of the high-traffic Lake Shore bike and pedestrian trail as well as the Chicago River public walkway. This will foster life within the site and promote activity on the currently unused site.

The above deal with how one may experience space externally, in other words, outside the buildings themselves. Internally, however, there are more interpersonal spaces. It is the role of the architect to recreate space internally to cater to the perception of its users.

Economics Today's student housing at universities across the country are rivaling the best market-rate apartments. Colleges and universities are starting to appreciate students as they have the option to live in high-end dorms and living-learning units.
Plus, universities are seeing a significant growth in enrollment due to the coming of age of the "echo boomers," the children of the baby boomer generation. This influx of students allows universities to charge more for apartments or dorms and having the money to create quality living spaces.

The Living and Learning Center at Northland College, for example, allows students to choose three different floor plan options. But what's most appealing is that the building itself was named one of the 2001 Top Ten Green Buildings by the American Institute of Architects. The apartment Wing is home to a couple of greenhouses where students grow vegetables and flowers. The center includes a 120-foot wind turbine, photo voltaic panels, a solar hot-water heater, geothermal pumps, high-efficiency gas boiler, operating windows and more. Some rooms use composting toilets which use no water. Northland College is an environmental liberal arts college. Not only is Northland College concerned with saving money in the long run, but also uses technology in their living units to educate students even when they are not in class. This could be taken into consideration for my student housing at the DuSable Tricademy for Artistic Expression, using both sustainability and education as a metaphor.

Other quality housing units are at the West Village on Northeastern University in Boston. Building quality housing units on campus has a positive impact on the public. Clifford Gayley of the Boston firm William Rawn Associates states, "The city and community have realized building more on-campus housing will reduce the number of students competing for neighborhood housing, thus leading to more affordable rental housing costs" (Weber, 2002). Northeastern wanted to become more of a residential campus that would attract students from outside the Boston area. In turn, it developed the western edge of the campus into a new residential village with strong ties to the city. The largest building of the three is seen as a landmark throughout the city and features a curved, 16-story tower.

The Radford Court housing for married students needed to meet a school budget. To do so, the architect specified natural materials and repetitive building forms, which held construction costs to $85 per square foot. The architect, Ron van der Veen states, "Universities are competing more fiercely for students, especially for those who'll live on campus" (Weber, 2002). Student housing units are a stable source of profit for school coffers, and quality design helps keep them at full capacity.

If my campus uses the quality design mentioned above, then students will want to enroll and live on campus thus creating a major economic impact on stores and restaurants in the area.

Deconstruction Deconstruction is where designers attempt to view architecture in bits and pieces. The basic elements of architecture are dismantled and visually, buildings seem to have little or no logic. To some, deconstructed buildings appear to be made up of unrelated, disharmonious abstract forms. It is a contemporary style that contradicts the ordered rationality of Modern Architecture. The underpinnings of this movement include ideas of fragmentation, non-linear processes of design, non-Euclidean geometry, and negating polarities such as structure and envelope. The final visual appearances of buildings in this style are characterized by a stimulating unpredictability and a controlled chaos (Deconstruction). Architects such as Coop Himmelblau, Daniel Libeskind, Frank Gehry, Zaha Hadid, Peter Eisenman, and Morphosis are some of the leaders in deconstructive design.

Coop Himmelblau is a firm interested primarily in deconstruction. In "On the Edge" Wolf Prix (1990) from the firm Coop Himmelblau responds to architecture like this:

> "The most apt question of our time is: how can we think, plan and build in a world that becomes more fucked up every day? Should we be afraid of these problems and suppress them? As we, Coop Himmelblau, are Viennese, we have a close connection to Freud who taught us that suppression requires a tremendous amount of energy. We would like to spend this energy on projects."

There are few enclosed spaces in the buildings done by Coop Himmelblau. Instead, they interlace and open up. "Complexity is our goal. Architecture, as it was proposed in the 19th century, is over. We have to go for a complexity that mirrors the diversity of world society." (Prix, 1990). Once you break the function of a piece of architecture, exciting spatial effects are created. Prix continues:

> "In order to get complexity in architecture you have to get rid of several things: first, you have to get rid of architectural, historical laws; second, you have to stop thinking about clients; third, you have to stop thinking too much about the money you're making; and finally, you have to stop thinking about cost" (Prix, 1990).

It may sound like Wolf Prix from Coop Himmelblau is a rebel in architecture, but revolutionaries like these keep the profession alive and buildings unique.

Some of the deconstructive architects have been inspired by the uncanny in their efforts to provoke discomfort and unease. For example, Daniel Libeskind created a deconstructed Cross of David for the Jewish Museum in Berlin. To create a compelling memory, the building tries to transfer feelings of disorientation and displacement to its public. Some corridors get increasingly narrow while others lead to a dead end. Libeskind wanted to render the persecution and emigration of the Jews with walls that are torn and slashed and cause the viewer to feel uneasy. Empty spaces puncture the walls and ceilings, and concrete voids serve as silent reminders of the Jews that were annihilated.

Other architects like Bernard Tschumi find pleasure in dismantling tradition. At Parc de la Villette in Paris, Tschumi destroyed the nineteenth-century notion of a park as a place where one forgets the city. He produced an urban park instead. Tschumi's axes and pathways do not possess the same controlling, authoritarian function they possessed in traditional parks. They no longer link to a series of significant sights, but are simply random tracks throughout the park. Those looking for monuments, historical significance, or narrative coherence will leave the park unsatisfied. The "unbalancing of expectations" has become reality. The passer-by is forced to abandon his search for meaning and to surrender to the game of arbitrariness and chance in which the architect puts him (Van der Straeten, 2003).

Physics & Sound Sound is produced by a vibrating object or surface. In order for sound to be transmitted or propagated, it requires an elastic medium. The most common medium for transmission is the air. Such sound is called air-borne sound (Bassler et al, 2000). Much of the sound that is experienced daily travels to your ears through the bones and other tissues in your head. This explains why a recording of your voice doesn't sound the same as in person. Sound, as it pertains to theater, travels primarily through air, so I'll narrow my discussion to sound traveling through air.

At room temperature, sound travels through air at a speed of 344 m/s or 770 mph. In order to produce a sound, something must be vibrating and causing air molecules next to the vibration to vibrate. This vibration causes a wave that can be thought of as fluctuation in air pressure. Our eardrum responds to this pressure change and converts it into sensation of sound by the brain (Ostdiek et al, 2000).

Sounds are classified by their waveforms. A pure tone is a sound with a sinusoidal waveform. This can be achieved by ringing a tuning fork or whistling a note steadily. Secondly, a complex tone has a waveform that repeats itself. Most steady musical notes are complex tones. The third type of sound is called noise. This occurs when a waveform is not repeated and is therefore random. The sound of rushing air can be considered noise (Ostdiek et al, 2000).

For the propagation of sound, reflection, diffraction, and the reduction of amplitude with distance from the sound source are most important in influencing the sound that reaches our ears. Diffraction and reflection of sound allow you to hear sound from sources unseen because it comes from around a corner. And when the source is in sight inside a space, most of the sound is reflected one or more times off of the surfaces in that space, affecting the actual sound one hears. When there are multiple reflections of sound in a space it is called reverberation. The amount of time it takes for reverberant sound to fade out depends on the size of the room and the materials used. Softer materials like acoustical ceiling tile are more absorbable of sound compared to hard materials like concrete. Moderate reverberation is acceptable especially when listening to music. Excessive reverberation, however, affects the clarity of both speech and music. A general recommendation for concert hall reverberation time is from 1 to 2 seconds. That is, a sound should fade away in less than 2 seconds from when first produced (Ostdek et al, 2000).

According to the Architectural Acoustics book by David Egen, sound can be understood by ray-diagrams. The angle of incidence of an impinging sound wave equals the angle of the reflection with angles measured from the perpendicular to the surface (Egen et al, 1988). This concept is similar to a pool ball bouncing off the rail. Computers have the abilities to calculate the effectiveness of acoustics and will be investigated later.

Urbanism According to Wikipedia.com, urbanism is the study and practice of creating humane conditions for living, work, and play. It is also said to be the study of cities and involving their economic, political, social and cultural dimensions.

New Urbanism, on the other hand, is to promote a return to the traditional town planning and feature Main Street shopping districts, downtown parks, and grid streets. New Urbanists veer away from the suburban developments of the last 50 years and gear towards historic downtown areas.

The principles of new urbanism promote community. Walkability is one of them; all services and goods should be located within a five-minute walk. Sidewalks, narrow streets, and proximity of commercial and residential areas facilitate walking (Lehrer). In new urbanism, the car is de-emphasized. Garages are hidden in alleys, out of sight. Parallel street parking replaces the parking lot (Lehrer). There is also a mix of building types. Traditional suburbs put homes in one area, schools in another and shopping in yet a third. New Urbanists mix building types, sizes and prices. A modest townhouse or duplex cozies up to large single family home, which may have a rental apartment over its garage. Apartments are built over street level stores (Lehrer).

The aim for urbanism is to prevent sprawl. Sprawl is when people of a population grow to become a larger metropolitan area like the suburbs. There are basically five components to sprawl, each one strictly segregated from the other:

Housing subdivisions include mostly newly built homes in residential neighborhoods. This is where you get the cookie-cutter homes all sitting on cul-de-sacs with eradicated trees and vegetation.

Shopping centers are another component of urban sprawl. Shopping malls and Wal-Marts dominate these areas. These developments are typically designed only to be reached by car. There is little life outside the big-box or automobile.

Office parks are set aside for companies to build work locations. Derived from the modernist vision to preserve green space, office parks contain little green space and are also limited to automobile access.

Civic institutions are reserved to town halls, libraries, schools, churches, and theaters. However, these buildings tend to be scattered haphazardly in the community rather than integrated and strategically placed. Like the other components, the automobile dominates. Therefore, parking lots dominate the civic buildings and make access less available to pedestrians.

Roadways provide the automobile access to all four of the above components. Since each piece of suburbia serves only one type of activity, and since daily life involves a wide variety of activities, the residents of suburbia spend an unprecedented amount of time and money moving from one place to the next (Andres).
The concept of urbanism is relevant to my thesis because it is located in urban Chicago. Because the DuSable Tricademy for Artistic Expression is an urban campus, it can adopt some of the principles of urbanism such as promoting community on campus, walkability, and sense of place.

Summary The research findings above will guide my thesis project and assist in the design of the DuSable Tricademy for Artistic Expression. The conclusions all boil down into one main factor: providing a comfortable space for learning, living, and performing using state-of-the-art technologies. Some beneficial research findings are as follows:

Research of the psychological factors in performance made me aware of the situations performers deal with and how the architect can help comfort them.

Morphology provided me with some concepts for the shape of my building, leading me to discover more about biomimicry.

The findings in phenomenology made me realize the importance of ‘sense of place’ and creating a cultural icon for the public.

Research in economics made me realize the need for student housing and the effort put into it to provide students a quality space to live and learn.

The research I was most interested in was that of neuroscience. I find it amazing how a building or space can shape the brain of an individual. Also amusing is the fact that music education increases intellect and decreases negative behaviors.

The main component of my thesis will be on the study of kinetic architecture. The topic of kinetic architecture was a discovery that I found later in the thesis process after looking more into theater design. Theaters already possess many aspects of kineticism, better known as the theory or practice of moving art and objects. Several inventions in the past have revolutionized theater design from rotating turntables used to switch scenery, lifting platforms for allowing seating and orchestra pits to be interchangeable and multifunctional, movable seats which operate by hydraulics, and adjustable ceiling panels for the optimum acoustical balance. Theaters are becoming complex building typologies, and insight makes them more and more multifunctional. Based on these typical theater innovations, I wanted to expand on such technology by taking the concepts to the next level. Kinetics will possibly be explored outside of the theater context and integrated into the public park and residential towers in vicinity of the theater. The site for this thesis poses many challenges, in particular those having to do with access. My initial intent was to create a continuous lake front park linking current bike and pedestrian paths, but the site currently breaks a link in the chain. Use of kinetic structures such as pedestrian bridges will help provide the proper access pedestrians need to continue their way safely. Otherwise, they are within inches of the fast-moving automobiles on Lake Shore Drive.

Later research into kinetic architecture led me to the awareness of accelerating trends in technology and how it is dynamically changing to meet specific demands. We are living in a culture of constant change, and our architecture should reflect this. Cellular phones function as cameras, couches morph into beds, everything is becoming mobile and products such as music players, phones, and televisions are becoming multifunctional in so many ways. With this in thought, I thought it would be appropriate to design a performing arts community with “movable” parts as a metaphor for movement in dance, music, and theater and to fulfill the ever-changing needs of performers.

Kinetic means movement and so kinetic architecture need not only morph into something other than its current structure. Kinetic architecture in the past includes rotating restaurants, moveable roofs on sports stadiums, operable louvers and other lighting systems. Even elevators, umbrellas, and mobile homes are kinetic. According to William Zuk (1970) in Kinetic Architecture, there are eight architectural applications from which to draw.

The first is kinetically controlled static structures. All structures move, to some extent, in the wind or from vibration. Although the movement is not typically created by machines, it is still an example of kinetic movement. Kinetically controlled static structures can use methods in order to prevent movement of structures or encourage them to move to a certain extent to prevent snapping of the structure.

The second type of kinetic architecture is dynamically self-erecting structures. Similar in concept to a folding chair, self-erecting structures unfold and create spaces in and of themselves. Camper-trailers are a simple self-erecting structure. Contained in a package, the trailers unfold to reveal extra spaces for sleeping and standing. There may also be pneumatic structures which change space by adding air.

A third type of kinetic architecture is simply kinetic components. These are basically moving components and can easily be reduced to items such as doors, windows, elevators, escalators, and folding partitions. However, larger scale components can be considered, and concepts can be formulated to adapt to current needs. A movable door or partition, for example, has been used in larger scaled projects such as the movable roofs on sports stadiums. Multiple kinetic components best relate to those in theater design. Lifting platforms, movable seats, movable acoustical ceilings, and scenery turntables can all be considered as kinetic components that can move simultaneously to help make a particular function easier to do.

The fourth type is reversible architecture. Reversible architecture is a form of architecture that can be dismantled non destructively or collapsed in a manner reverse to that in which it was erected (Zuk p.74). In other words, buildings could be constructed in many ways and easily taken apart and disassembled. The components for assembly would likely be prefabricated units stacked upon one another or connected to a central core. The future of reversible architecture can have a large impact on sustainability. The concept provides us the ability to construct a building, use it for whatever purpose it was designed for, disassemble it after it no longer functions in the current market, and moved to a less populated and less developed city or country for reconstruction and reuse.

The fifth type of kinetic architecture involves a kineticism of addition, subtraction, and substitution used to meet future changes. It is termed incremental architecture. An analogy of this type

of kinetic architecture may be an electric outlet. While having a standard receptacle, any object with the same plug can be inserted into the outlet, allowing appliances to be used as need be. The same could apply to buildings. There could be several prefabricated components intended for plugging into a central service core. Different sized components which feature different functions can be selectively "plugged" into the service core for whatever demand there may be. Spaces can be added to other spaces to make them larger. Likewise, if there were no longer needs for extra space, they could be subtracted or taken away. Both additive and subtractive techniques will require some sort of fastening technology to easily attach and detach parts. For my thesis project, I want to challenge the notion of campus design by creating vertical elements within the landscape. Instead of building several low-rise buildings on a typical campus setting, there will be the option of combing all functions in one tower. Residential units can be removed from the service core and expand towards the sky while classrooms and other functions can be added to the base of the tower. This provides the ability to expand vertically while still giving residential units the best views of Lake Michigan and the Chicago skyline.

The sixth type of kinetic architecture is deformable architecture. Deformable architecture refers to a space that has the ability to change form. Nothing is added nor subtracted. Deformable architecture merely changes form for either aesthetic or functional reasons. An analogy may be the blowfish. When deflated a blowfish looks like a normal fish, but when inflated, it looks like a round spiky ball. Deformability is the result of shoving, twisting, pushing, pulling and remodeling a form in order to create another form (Zuk, p102).

The seventh type of kinetic architecture is mobile architecture. As it name implies, architecture is mobile and able to be moved to other locations. While mobile architecture can be integrated with reversible and incremental kinetic architecture, its concept does not necessarily mean that a structure needs to be disassembled prior to moving. The structure can be of a smaller scale and can move themselves to different locations by means of truck, plane, train, or boat.

Lastly, there is disposable architecture. When you are done with a building, throw it away. Disposable architecture is also similar in concept to reversible architecture as explained above. When there is no longer a need for a space, it can be removed. In this case, the space might be salvaged or recycled. A college student may buy a living unit and occupy that space over the course of four to five years while in school. He or she could choose whatever character of space they want and when the next occupant comes along, they too can choose a new unit, for the older one will be disposed.

The above concepts see the building as a movable, constantly changing entity and we must adapt to continuous and accelerating changes in today's age. The concepts, if applied, will require a greater knowledge in machine design and industrial production. The systems used to create movement in the parts will be complex, but for dynamic buildings which consider function of the spaces to be of utmost importance, the building may very well serve its purpose.

Fig.2.0 Exterior

Fig.2.1. Interior Lobby

Fig.2.2. Entry to Rehearsal

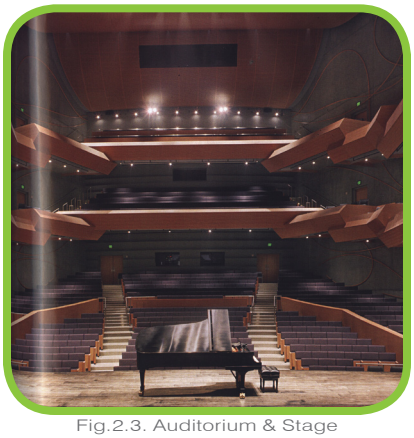


Fig.2.3. Auditorium & Stage

Richard B. Fisher Center for the Performing Arts By Frank Gehry

1. Project Type: Center for the Performing Arts
2. Location: Bard College in Hudson, New York
3. Size: 107,612 sq.ft.
4. Distinguishing Features:

As applies to many Frank Gehry buildings, the Richard B. Fisher Center for the Performing Arts is monumental and highly sculptural. Clad in stainless-steel and wrapped over a poured-in-place concrete base, the building is located on a site different than Gehry's typical urban settings. The center is nestled in a rustic setting on the edge of the Bard College campus. Tall trees and open lawns are home to what critics call a crouching rabbit. Where the Fisher Center lifts its veil of metal to reveal the main entrance, a glowing light emanates from within.

Frank Gehry's center of steel suits the campus well since it specializes in the visual and performing arts. Others did not think so, however, especially the preservationists. They opposed Gehry's plan because they argued that it would intrude on the campus's historic panorama. Being that the college has an emphasis on the visual and performing arts, the design of its buildings should be of the present. Similarly, the three colleges to share performance spaces and classrooms for my thesis have strong emphasis on the visual and performing arts. I hope to create spaces which reflect this.

5. Existing Program Elements:

The Richard B. Fisher Center for the Performing Arts contains two theaters combined in one building for an arrangement of functions. The main auditorium seats 900 people and is used to accommodate symphony orchestra and chamber music concerts in addition to dance and opera performances. The second theater, which seats 300 people, is a black box theater used for dramatic productions.
Each theater has its own entrance, lobby, storage, and office space. However, the two theaters are joined backstage. This allows them to share scenery and costume shops. Because this center will stage a variety of performances, the 40'x80' stage has a fly space for scenery and a forestage with hydraulic lift. The forestage lift can be lowered for such performances as opera productions, where an orchestra pit can sit below, or raised to create an extension of the main stage. Other programmatic spaces within the center are stage right, practice room, dressing room, green room, concession, box office, dance and drama rehearsal, and bleacher storage.

6. Observations:

By looking at the floor plans, one can notice that most of the spaces are modular and rectangular, with the exception of the performance hall itself. Gehry uses his steel skin, however, to create a more unique form externally. I like that there is a lobby and lobby balcony filled adequately with natural light. The dance rehearsal space is also filled with lots of natural light and would be a wonderful space to practice in.

Fig.2.4. Rehearsal Space

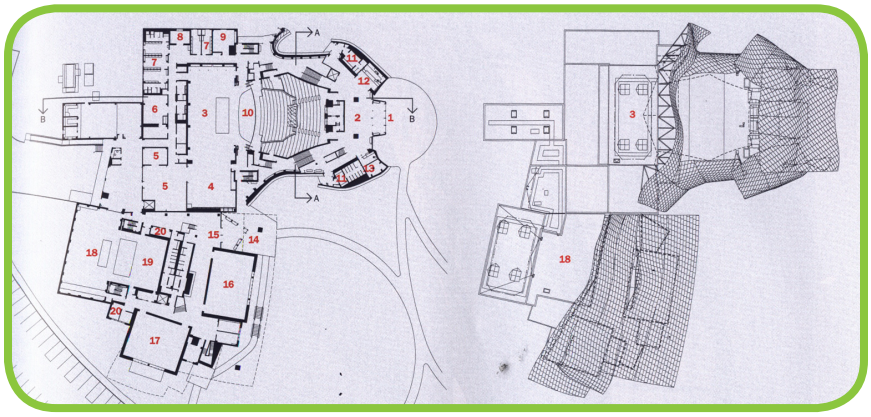


Fig.2.8 Floor Plans

Fig.2.5 Auditorium & Stage

1. Main Entrance
2. Lobby
3. Theater 1
4. Stage Right
5. Storage
6. Costume Shop
7. Dressing Rooms
8. Practice Rooms
9. Green Room
10. Orchestral Lift
11. Rest Room
12. Concession
13. Box Office
14. Theater 2 Entrance
15. Lobby, Theater 2
16. Dance Rehearsal
17. Drama Rehearsal
18. Black Box Theater
19. Bleacher Storage
20. Offices
21. Lobby Balcony/ Bar
22. House Balcony
23. Catwalk

Fig.2.6. Multi-level Lobby

Fig.2.7 Overlooking Lobby

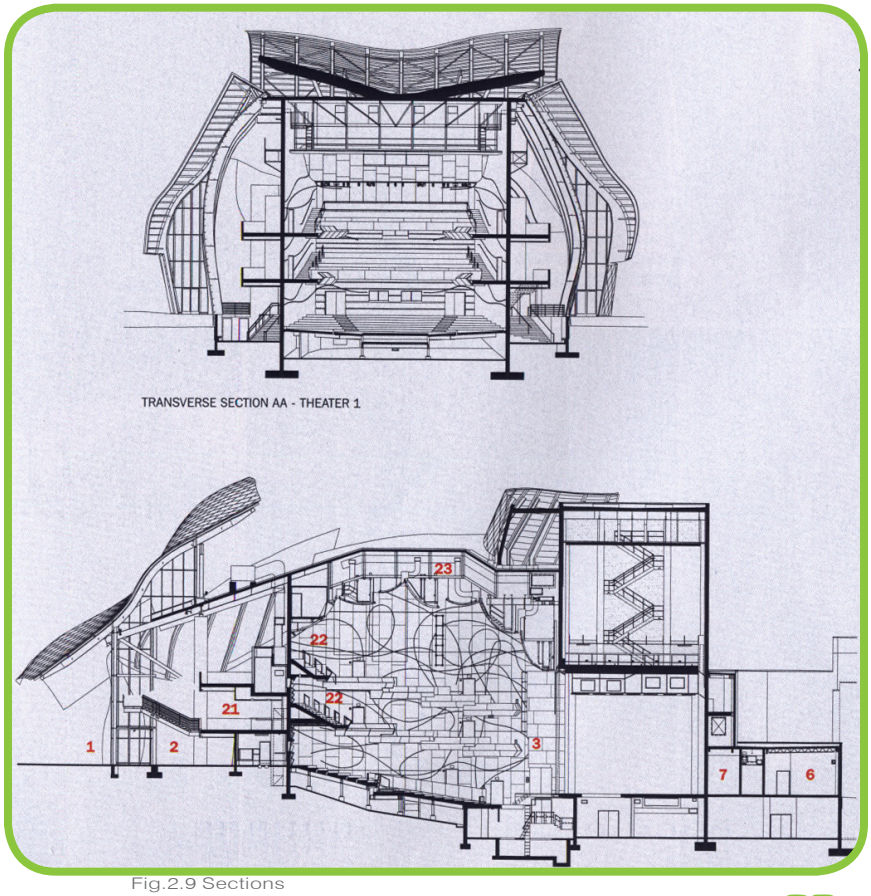


Fig.2.9 Sections

Fig.2.10. Night View

Fig.2.11. Costume Shop

Wyly Theater
By OMA

1. Project Type: Theater (Unbuilt)
2. Location: Arts District Dallas, Texas
3. Size: 74,915 square feet
4. Distinguishing Features:

The Wyly Theater is a remarkable example of architectural innovation especially as it deals with theater design. This is a relevant case study because of the fact that the building is planned vertically, like I wished to do with my vertical campus. The building eliminates the traditional distinction between stage and auditorium by replacing the front-of-house and back-of-house functions above and below the auditorium. By doing this, Rem Koolhaas created the opportunity for engagement with the surrounding city. The performance chamber components are totally flexible with movable seating, lighting control, acoustic separation, and surface. Seating and balconies have the ability to be adjusted to create proscenium, thrust and flat floor configurations. Depending on the stage configuration, the theater could seat up to 600 people.

The Wyly Theater is located in the Arts District on a site of buildings designed by award-winning architects. The complex as a whole will offer performances of opera, musical theater, classic and experimental theater, ballet, other forms of dance, and first-run Broadway productions.

Fig.2.12 Site Overview

Fig.2.13. Conceptual Diagram

Fig.2.14. Multi-purpose Hall

5. Program Elements:

The Wyly Theater is to have a café, gift shop, cocktail bar, rehearsal space, offices, costume shop, lobby, auditorium, stage support areas, mechanical rooms, production spaces and rooftop multipurpose space. It will stage classical and experimental drama, dance and musical productions, world-renowned vocalists, and dance troupes. Several scenarios can be made by the arrangement of balconies and seating systems which have a fly tower themselves.

6. Observations:

I like the concept Rem Koolhaas has with opening up the performance space with the city, and allowing the theater to be the ultimate flexible space with drop-down seating. It would be innovative to use the theater as an exhibition space as shown in figure 2.15. However, I'm not so sure lighting would work too great for performances during the day. You would have to limit dramatic performances to night if you want to open up the walls to the city, and glass doesn't have very good acoustical properties. Another issue I have is that the backstage areas are below the main stage, causing performers to run up and down stairs to change outfits during a play for example. Functionality becomes an issue when the lobby is a level lower than the auditorium seating. Patrons either have to take an elevator or stairs after passing through recession. By looking at the different plan scenarios in figures 2.23-2.38, it appears as though the elevators open right onto the large hall rather than onto lobby balconies or more intimate spaces.

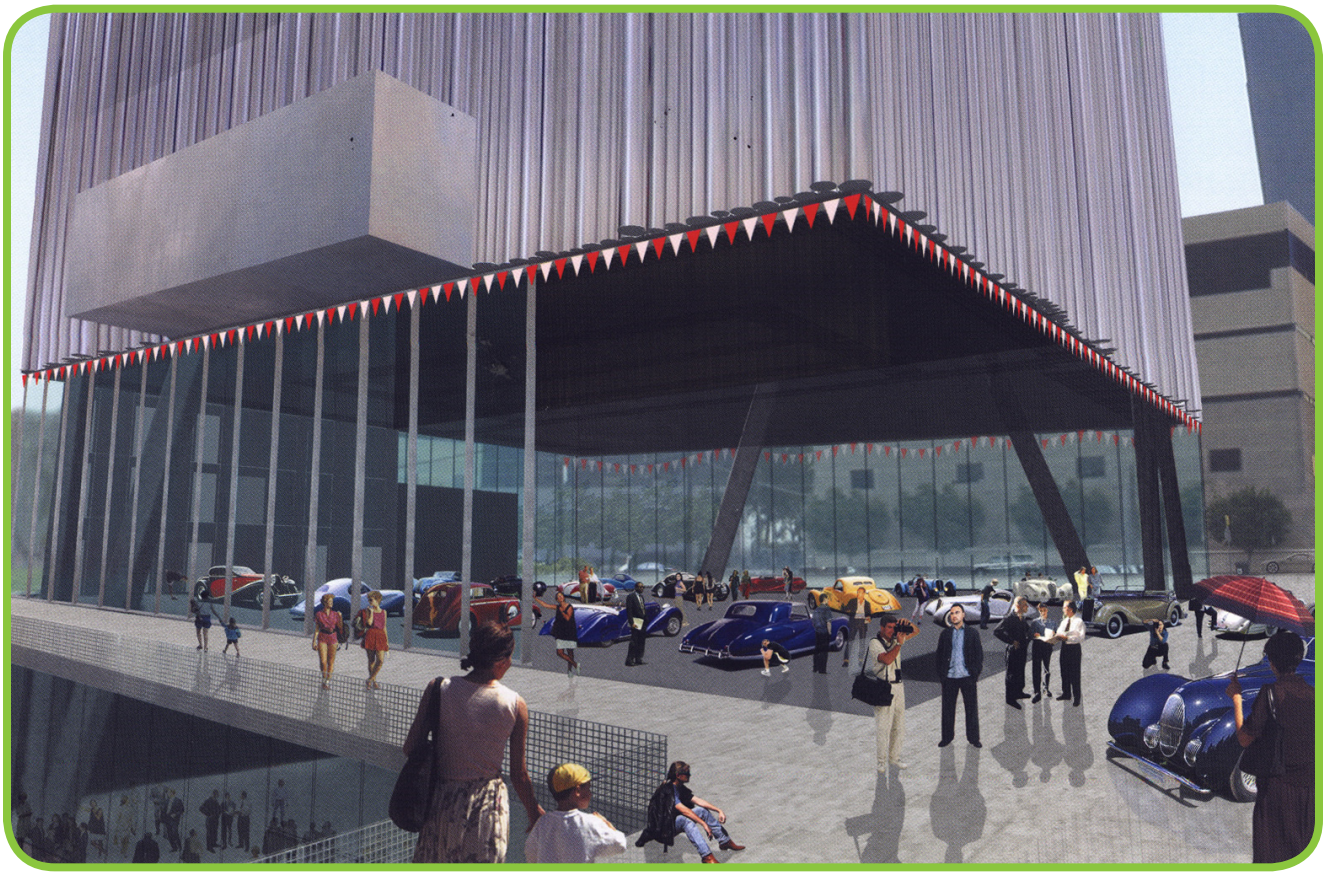


Fig.2.15. Theater during Exhibition

Fig.2.16. Rehearsal Room

Rem Koolhaas seems to have put little or no consideration into the site on which the theater sits. Although the theater is expected to be used for exhibitions, the entire block is a massive slab of concrete. It would be nice if he incorporated plants and greenery into the design to create a friendlier environment. Even a large lawn might cater to some events.

While the Wyly Theater is very innovative for its ability to create a flexible space with adjustable seating and walls, some components of the overall design may not work for my thesis, especially when great quality acoustics are expected. Incorporated into the drop-down seating should be adjustable acoustic panels for the various performances and various lighting schemes.

Fig.2.17. Scenerio 1

Fig.2.20. Scenario 1

Fig.2.18. Scenario 2

Fig.2.21. Scenario 2

Fig.2.19. Scenario 3

Fig.2.22. Scenario 3

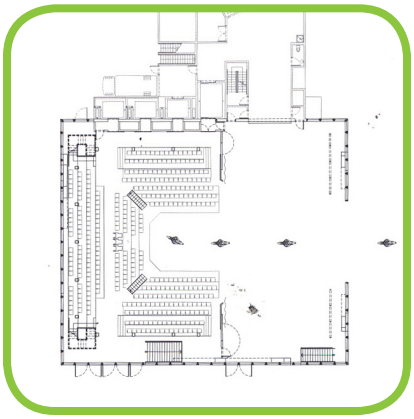


Fig.2.23. Show Entry Scenario

Fig.2.24 Wedding Reception Scenario

Fig.2.25 Parade Scenario

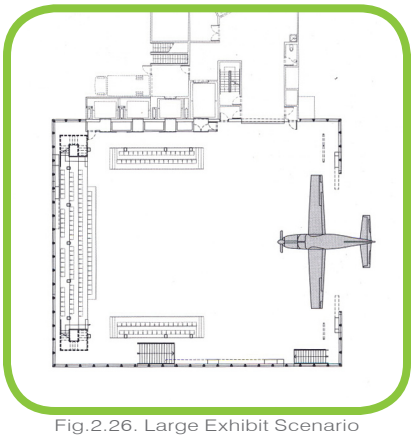


Fig.2.26. Large Exhibit Scenario

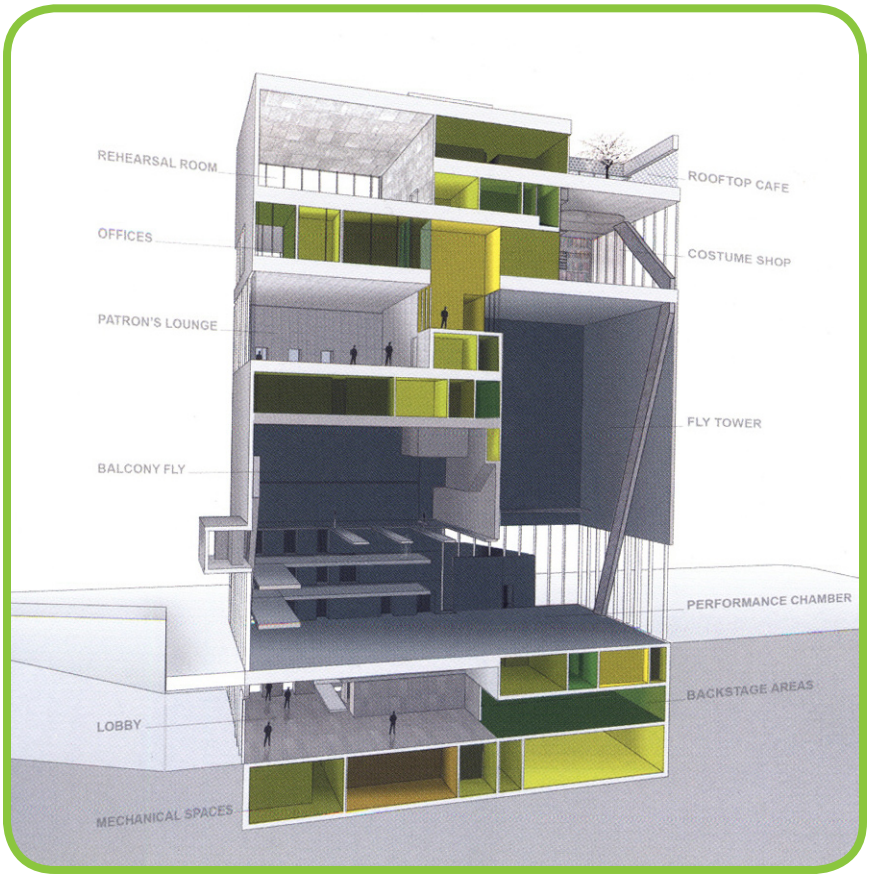


Fig.2.27 Building Section

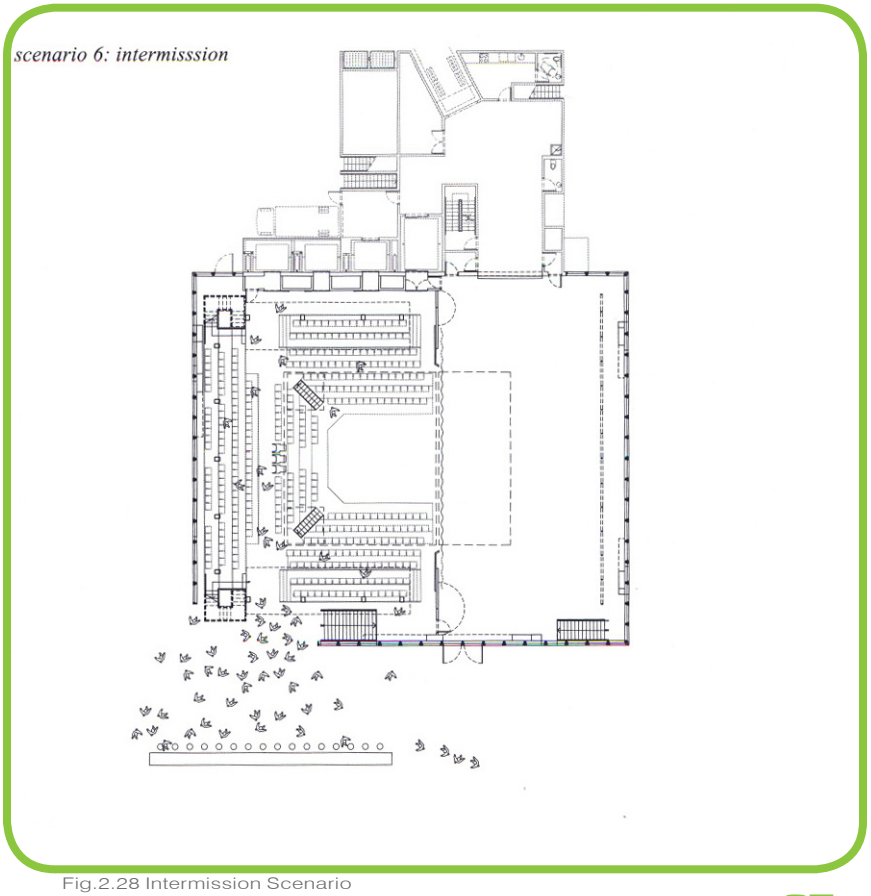


Fig.2.28 Intermission Scenario

Fig.2.29. Simmons Hall

Fig.2.30. Student Lounge

Fig.2.31 Student Lounge from above

Fig.2.32. Lounge Skylight

Simmons Hall
By Steven Holl

1. Project Type: Undergraduate Dorm
2. Location: Cambridge, Massachussetts
3. Size: 350 Beds; 195,000 square feet (382 ft long)
4. Distinguishing Features:

Steven Holl's concept for MIT's undergraduate residence was to create a porous building morphology, similar to a sponge. The sponge concept transforms the building into a series of programmatic and bio-technical functions. To respect the existing view corridors of a nearby residential district, Holl created five large voids corresponding also to main entrances and outdoor activity terraces. Inside, Holl used inky sponge prints to determine the form for the dorm lounges [Fig Scan0b]. These dynamic spaces connect multiple residential houses vertically within the dorm and attempt to promote student interaction [Fig. Scan Section].

5. Program Elements:

The 350-bed dorm is a vertical slice of city, 10 stories tall and 382 feet long, providing a 125 seat theater, a night café, and street level dining. Large, dynamic openings bring natural light down and move air up. Each of the dormitory's single rooms has nine operable windows. An 18" wall depth shades out the summer sun while allowing the low angled winter sun to help heat the building (www.stevenholl.com).

Specific functions include mail room, auditorium, dining hall, outdoor dining, prep kitchen, servery, student kitchen, study, group lounge, house master, laundry, typical single room, graduate residence, photo lab, associate house master, visiting scholar, house master reception, typical double room, computer lab, game room, and music room.

6. Observations:

While Helmut Jahn's State Street Village has 367 beds, Simmons Hall has 350 beds but looks nearly three times as large as State Street Village. A reason for this may be that Steven Holl played with scale by giving dorms each nine windows with three vertically stacked for each floor. What is only ten stories seems like thirty stories. Holl makes a grand gesture with Simmons Hall, both externally and internally. He creates some unique study areas which are the pores to Holl's sponge concept. Above some of these cave-like formations are skylights which allow in daylight from either the roof or terraces. I like the idea of having the corridors open out onto terraces for students to enjoy. While the study rooms are interesting, it is nice to have extra options for places to study and play. The terraces face the large grassy Briggs Field and beyond that is the Charles River. Unfortunately, the terraces contain no greenery or planting materials and neither does the site around the building itself. The terraces seem to be large pads of concrete with no reason for activity. Active and lively though are the colored window jambs on the dorm. Head on the dorm looks dull and gray, but from an angle, it bursts out into color with its window jambs painted in several colors.

1. Lobby
2. Glazed Passage
3. D. Graham Structure
4. Mail Room
5. Multiuse Auditorium
6. Meditation
7. Dining Hall
8. Outdoor Dining
9. Prep Kitchen
10. Servery
11. Student Kitchen
12. Study
13. Group Lounge
14. Open to Below
15. Housemaster
16. Laundry
17. Typical Single Room
18. Graduate Residence
19. Terrace
20. Photo Lab
21. Assoc. Housemaster
22. Skylight
23. Exercise
24. Visiting Scholar
25. Housemstr Recept.
26. Typical Double Room
27. Bleachers
28. Computer Lab
29. Game Room
30. Music Room

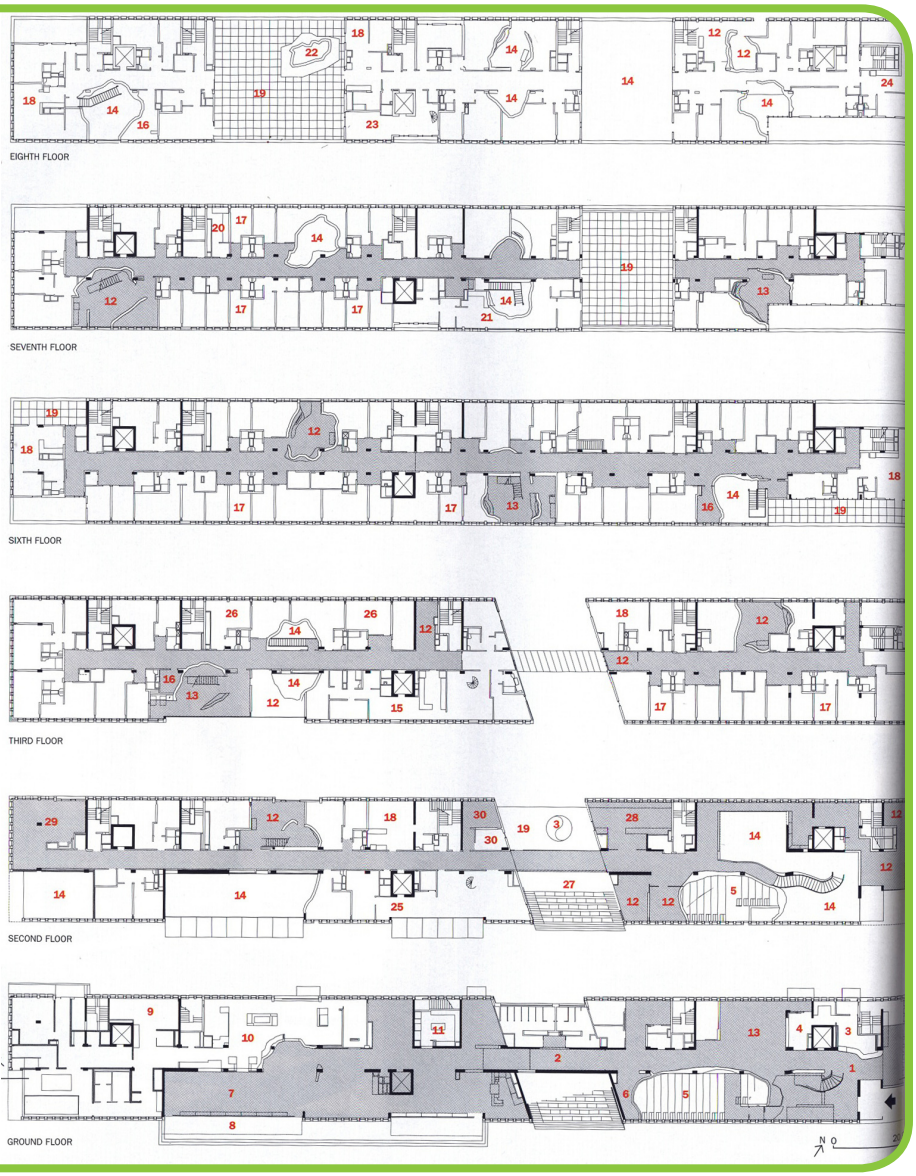


Fig.2.33. Floor Plans

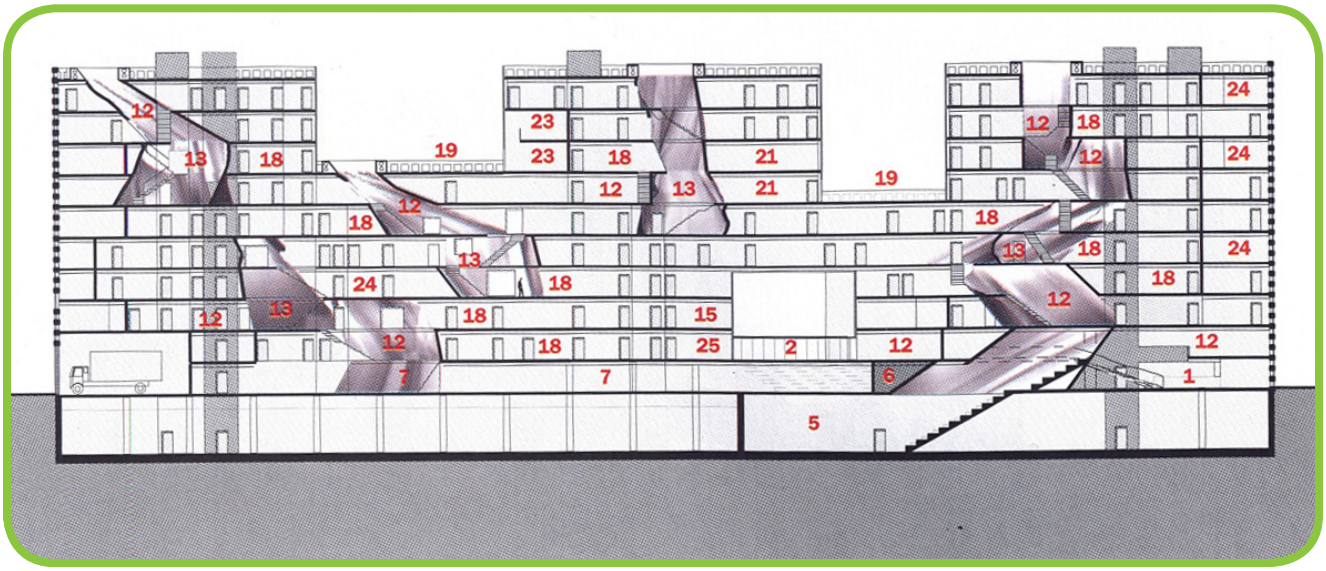


Fig.2.34. Building Section

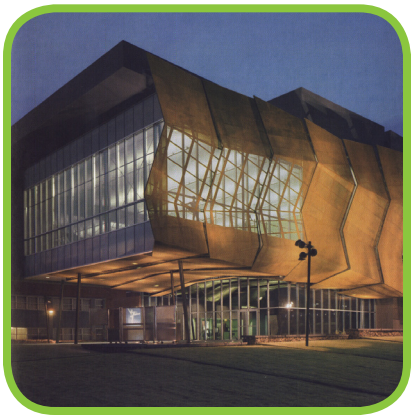


Fig.2.35 Stevie Eller Dance Theater

Fig.2.36 Auditorium

Stevie Eller Dance Theater
By Gould Evans

1. Project Type: University Dance Theater
2. Location: University of Arizona Tucson, Arizona
3. Size: 300-seat; 28,600 square feet
4. Distinguishing Features:

The Stevie Eller Dance Theater was envisioned by a father and daughter's quest to find a notable dance program. The father found that the University of Arizona had the best dance program with the worst facility. To give his daughter the education she wanted, he donated money to the university to have a new theater built. This new theater serves as a landmark and gateway for U of A at the eastern end of the campus.

The two principal volumes of dance studio and auditorium are separated by a narrow corridor, lit by a glazed slot incised into the east facade. At night, the studio is transformed into a softly lit box as light penetrates through an external skin of rusted woven wire panels. The irregular form of the outer envelope is carried through into the interior of the theater.

This project is an exploration of dance and uses metaphors of performance art in built form. The architect investigated Labanotation, a system of written symbols, to derive these metaphors for "Serenade." This was the first piece that the founder of the School of American Ballet created. The movement of Serenade was used to create a matrix which the architect used for the grid of tilted columns that supported the dance studio.

Fig.2.37 Night View of Rehearsal Hall

Fig.2.38. Dance Rehearsal

Fig.2.39. Foyer Seating

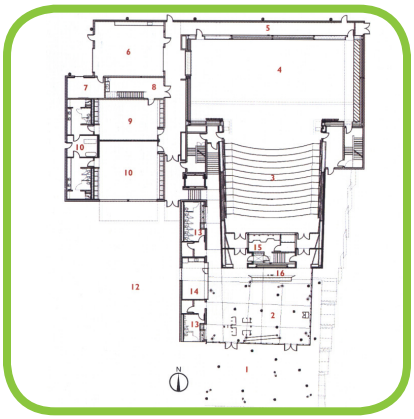


Fig.2.40. Ground Floor Plan

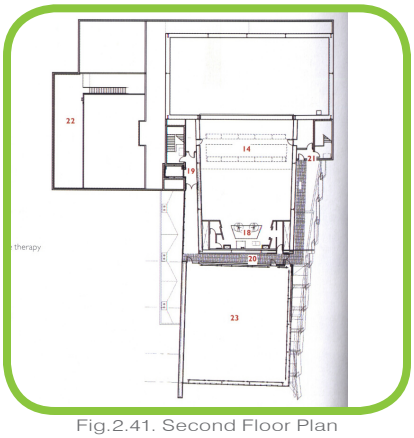


Fig.2.41. Second Floor Plan

5. Program:

The building contains a 300 seat theater with a full fly tower, orchestra pit, scene and costume shops, lobby and outdoor stage. These performance spaces are augmented by a rehearsal studio. The studio is supported on angled pilotis that rise up from the theater lobby below.

Support functions such as dressing rooms, costume store and scene dock are arranged on the east edge of the auditorium, forming a link between the new building and the existing faculty. Male and female dressing rooms are separated by a roll-up divider on performance nights. The two rooms can also be connected to form a single studio space for Pilates classes. A pair of garage doors allows the studio to extend outside into an adjoining courtyard garden.

6. Observations:

While a very small theater, the Stevie Eller Dance Theatre is highly expressive in metaphor to dance. I like that the west elevation is highly minimalist with a simple large black box protruding over a few columns [Fig.2.37]. The east elevation, however, is the least bit minimalist with panels that suggest movement and dance. Although the building behind the Corten panels is simply a large glass box, the panels are added to create a new form like in Frank Gehry's Richard B. Fisher Center for the Performing Arts. They help shade the hot Arizona sun. Because the weather in Arizona is typically warm, there is a walkway directly behind the panels and in front of the glass of the dance studio.

The Stevie Eller Dance Theatre makes nice use of the site around them. Architect Gould Evans provided the students with stone flower boxes which serve also as benches. Patches of green lawn to the east and west of the theater's exterior foyer mimic the shapes used for the panels and tie in the overall design nicely.

1. Exterior Foyer
2. Interior Foyer
3. 300-seat theater
4. Stage
5. Crossover Corridor
6. Scene Shop
7. Technical Office
8. Costume Repair
9. Men's Dressing
10. Women's Dressing
11. Movement/Massage Therapy
12. Courtyard Garden
13. WCS
14. Green Room
15. Control Suite
16. Lobby 'Crack'
17. Catwalks
18. Follow Spot Location
19. Dance Corridor
20. Upper Lobby 'Crack'
21. External Catwalk
22. Storage
23. Dance Studio

Fig.2.42. McCormick Tribune Center

Fig.2.43. Recreation Area

McCormick Tribune Campus Center
By Rem Koolhaas

1. Project Type: Student Union
2. Location: Illinois Institute of Technology Chicago, IL
3. Size: 115,000 square feet
4. Distinguishing Features:

The McCormick Tribune Campus Center is located on the Illinois Institute of Technology Campus, which was planned by architecture legend Mies van der Rohe. For decades after Mies retired, there was little development on the campus until 2003 when Rem Koolhaas completed this center. Rem Koolhaas with OMA has a unique perspective towards urban density. To allow building under the elevated train, Koolhaas designed a huge reinforced concrete-supported acoustical tube to mute the sound of the rumbling train and allow it to pass right through the building. The tube is encased in corrugated stainless steel and spans a length of 525 feet. It reduces train noise and vibration to about 70 decibels when a train passes through.

The floor plan of the Campus Center has circulation paths jutting in several directions. Koolhaas derived this concept from existing footpaths created by students walking back and forth between residence halls and classrooms prior to the construction of the building.

5. Program Elements:

The one-story Campus Center houses the IIT welcome center, dining facilities, campus radio station, auditorium and meeting rooms, university bookstore, coffee bar, convenience store, post office and student activities offices.

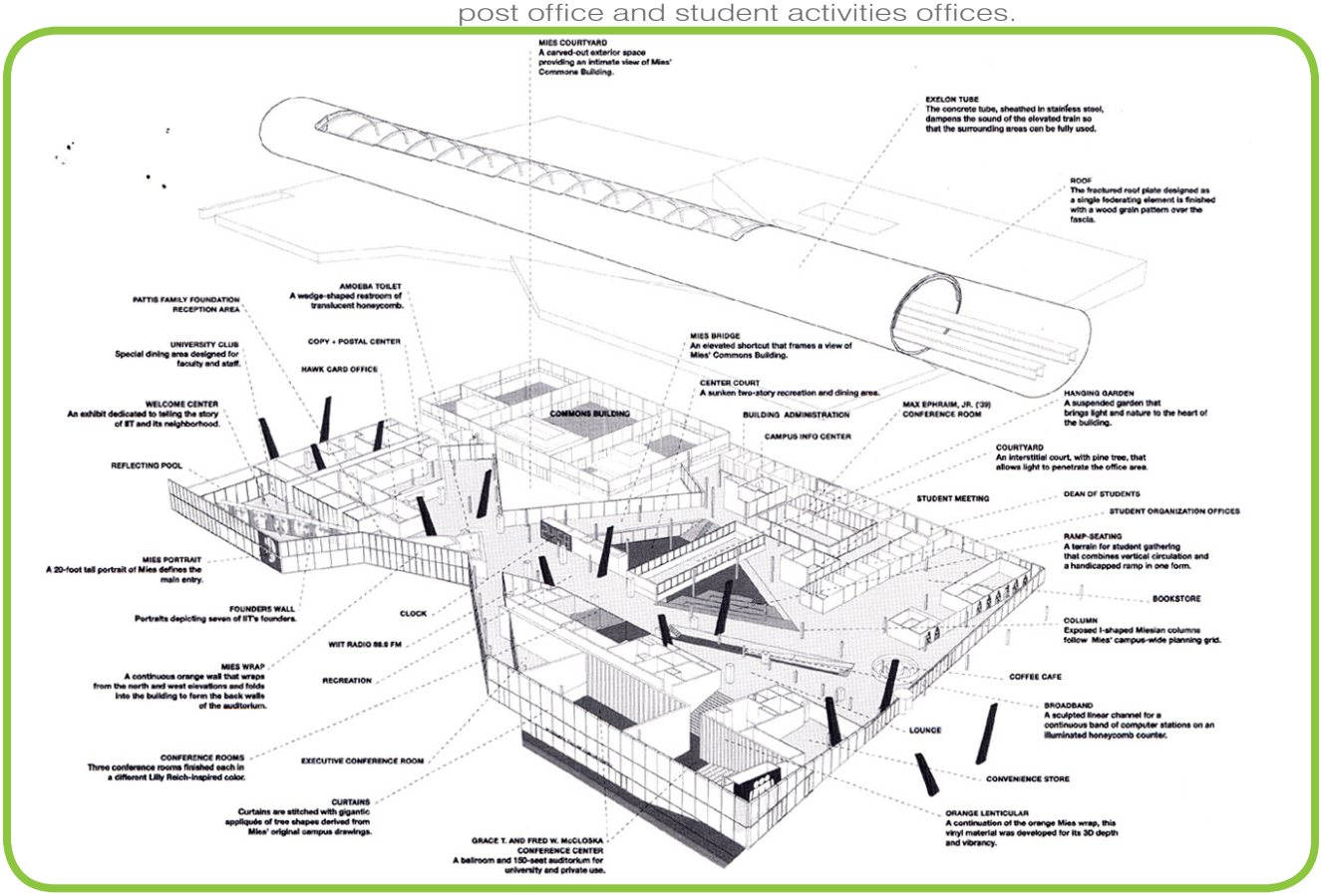


Fig.2.44. Exploded Axonometric Plan

Fig.2.45. Lecture Hall


Fig.2.46. Restrooms

6. Observations:

The reason this building interests me is because my thesis will deal with a similar issue. Lake Shore Drive passes through my site, similar to the elevated train at ITT. I will need to come up with some sort of solution (if it applies) to muffle the sound of traffic on the highway so it doesn't disturb the performances. Another reason the McCormick Tribune Campus Center is a good model is because it provides a trendy atmosphere for college students. The student center or student union should be of the utmost quality since it is typically the building students spend most time traveling through other than the dorms. It is also a marketing haven for visitors and prospective students. Koolhaas did many things to make students feel like they're at an artsy location, from designer furniture to mural personifications on the walls (figure 2.49 & 2.50). Even the amoeba restrooms are trendy and unique (figure 2.46).

The overall form of the building isn't particularly pleasing, other than the ellipsoid tube running the length of the building. The building is, however, functional on the inside, and Rem Koolhaas made good use of conserving land on the campus by building right under the railway. Also site-considerate is that Koolhaas paid tribute to Mies van der Rohe by creating a courtyard that provides an intimate view of Mies' Commons Building. In addition, there is a hanging garden that brings nature and light to the heart of the building.


Fig.2.47. Cafeteria


Fig.2.49. Dining Center


Fig.2.48. Lounge


Fig.2.50. Lounge

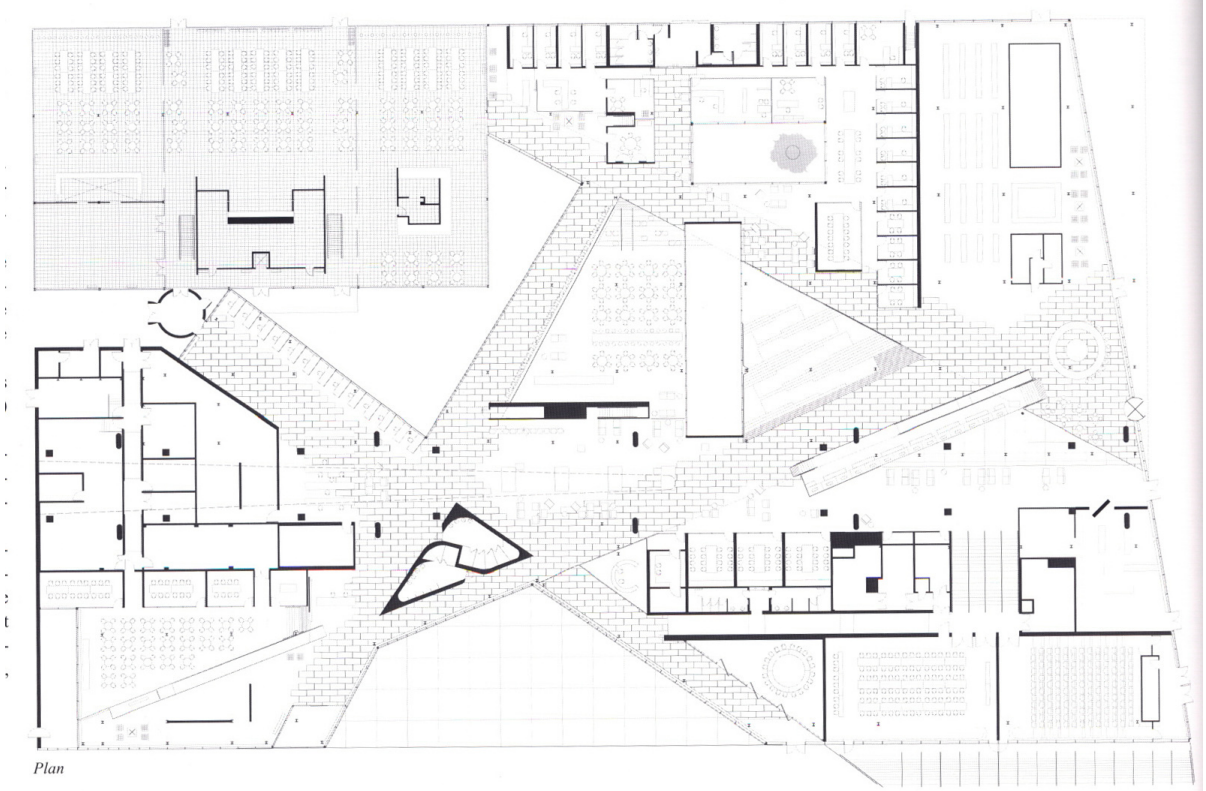


Fig.2.51. Floor Plan

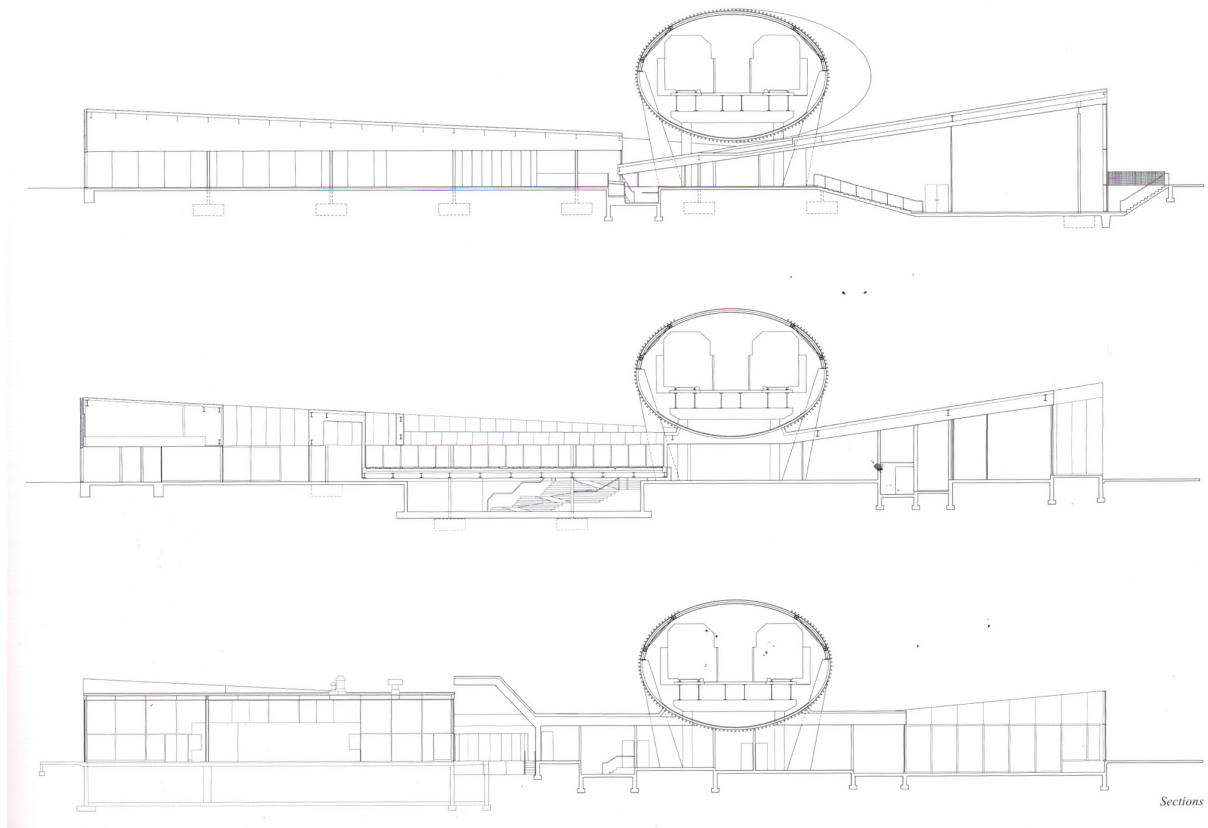


Fig.2.52. Sections


Fig.2.53 Los Angeles High School #9


Fig.2.54. Model of Flytower


Fig.2.55. Model showing Grand Entry


Fig.2.56. Model of second entry

Los Angeles High School #9
By Coop Himmelblau

1. Project Type: School for the Performing Arts (Unbuilt)
2. Location: Los Angeles, California
3. Size: 228,237 square feet
4. Distinguishing Features:

The Los Angeles High School #9 is located in the Los Angeles cultural corridor near the recently finished Disney Concert Hall, Museum of Contemporary Art, and the cathedral Our Lady of Angels. The LA school district wants this school to be its "flagship high school project" (coophimmelblau.com). The school will have an emphasis in the performing arts and include a theater that seats approximately 1000. Architect Coop Himmelblau proposes a heightened stage fly loft in the form of a tower. At the top, there will be an event and exhibition space with a view across Los Angeles. Serving as a symbol for the arts in the city, the tower is completed with a spiral ramp and two billboards that serve as advertisement for the school and its events.

The high school is marked by two facades. The public façade consists of a crystalline public lobby which faces towards downtown, and the opposite community façade which is expressed through an entrance via a grand open staircase (coophimmelblau.com). Inside the campus is the library which serves as the focal point of the central courtyard. Circular windows give the otherwise very utilitarian school buildings a distinct expression and in strategic positions reveal its inner life to the passer-by.

The School of Performing Arts tries to have an ecologically friendly design. Classrooms are designed to capture the maximum amount of daylight, minimizing electricity needs, while double-paned windows and special shading are used to reduce the impact of the sun's heat. Drought-resistant vegetation is being planted and the architect has been encouraged to use recycled building materials, from carpet to concrete, whenever possible (Fixmer).

5. Program Elements:

Known functions include a theater for 1000 people, event and exhibition space, library, and classrooms. Other functions are disclosed at this time.

6. Observations:

I like the idea that Coop Himmelblau has a lookout tower for viewing the surrounding city at the top of the stage fly. It brings circulation from street level upwards and will attract visitors other than those attending performances. There are currently no floor plans for the unbuilt center so investigations into spatial relationships are limited.

Fig.2.57. Delft University Library

Fig.2.58 Aerial showing Green Roof

Fig.2.59. Winter Recreation of Roof

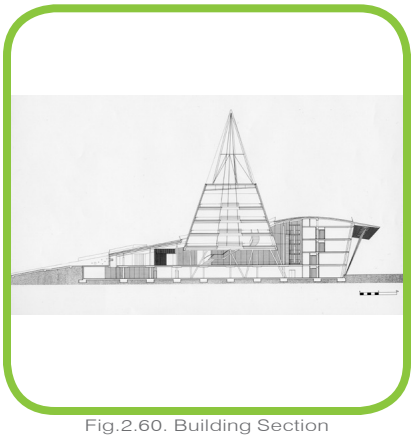


Fig.2.60. Building Section

Library for the Delft University of Technology
By Mecanoo

1. Project Type: Library
2. Location: Delft, Netherlands
3. Size: 161,500 square feet
4. Distinguishing Features:

The Delft Library is located on the Delft University of Technology, and it's main attraction is a grass roof which is freely accessible for walking and lounging. It is supported by slender steel columns in a huge hall enclosed with canted, fully glazed walls. The base of the slope to the west is marked by a broad flight of steps leading up to a recessed entrance. A huge cone pierces the green expanse, supported on splayed steel columns. Within the cone, a central void provides daylight from a glazed roof to the internal reading spaces. The apex of the cone is formed by an open frame. Extending 130 feet above grade and floodlit at night, the cone acts as a beacon on the campus (mecanoo.com).

The density of the mass on the planted roof has significant insulating properties, both thermally and acoustically. The interior of the building is less susceptible to changes in temperature and the mass provides exceptional soundproofing. The evaporation of rainwater held by the vegetation provides natural cooling in the summer. To avoid disfiguring the roof landscape with mechanical cooling units, and also for ecological reasons, cold storage - the capacity to store cold or heat in ground water - is used (mecanoo.com). For this building, the storage is in a layer of sand at a depth of 150 to 230 feet below grade. The sand is sealed off above and below by an impenetrable layer of clay. Two tubes stand vertically in the sand 200 feet apart. In winter, relatively warm ground water is pumped up through one tube, used to temper the building until it cools, and then pumped back into the other tube. In summer the water takes the opposite route, with the relatively cold ground water being used to cool the building (mecanoo.com).

5. Program Elements: The library has functions which have little relevance to schools of performing arts.

6. Observations:

Although this building is a library, I found it appealing because of the large expanse of green roof. Because the site on which I will be placing my performing arts center is polluted by hazardous waste and zoned for green space, I could wipe clean or cover the site with a built structure and create a green space above it like the library at the Delft University of Technology. Bringing the land up a level will also create a stronger linkage with the pedestrian activity already on the Lake Shore Drive Bridge. I can also see the advantage of using a green roof for my thesis because of its exceptional soundproofing qualities.

Fig.2.61. Matsumoto Perf. Arts Centre

Fig.2.62, Glass Inlaid Windows

Matsumoto Performing Arts Centre
By Toyo Ito

1. Project Type: Performing Arts Center
2. Location: Matsumoto, Japan
3. Size: 76,208 square feet
4. Distinguishing Features:

Visitors to the Matsumoto Performing Arts Centre enter the building from the main entrance on the north side of the site and are immediately welcomed by soft light that filters through sections of glass embedded in glassfibre reinforced concrete panels of the entranceway's west wall. A wide stairway leads upstairs from the entrance to the third floor lobby where the foyers of both the Main Hall and the Small Hall allow spacious dimensions that makes it possible to forget the narrow shape of the land on which the Centre was constructed.

The most appealing elements in the design of MPAC are the glass inlays that occur along the curvilinear wall of the lobby. These pores allow in light from outside during the day and create an organic effect inside. During the night, the opposite occurs and the Centre is lit up like a clear summer night.

The main hall has four balcony tiers and is horseshoe-shaped in plan. It is a multipurpose hall and the stage can be configured to match the needs of dramatic performances, opera, and music concerts. The ceiling can be lowered and raised to change the spatial volume of the hall. The hall stores stepped, removable seating that can be stored away at the rear of the stage to create an experimental theater space.

Fig.2.63. Night View

Fig.2.62. Green Roof Terrace

Fig.2.63. Grand Stairway

The Small Hall is a box-shaped room designed primarily for theater performances. Acoustical curtains can be deployed at the side walls of the stage and from the upper portions of the hall's side walls to adjust the hall's reverberation characteristic. The Small Hall has a skylight installed in the roof above the stage, providing an extra light source that is useful during stage set-up activities. To insulate the hall from exterior noise that might enter the hall through the skylight, the acoustic engineers added a soundproofing panel that can be slid into place over the skylight to shut out noise from outside the building (Hakozaki, 2004).

5. Program Elements:

The Matsumoto Performing Arts Centre has a main hall which seats up to 1800 people, a medium hall for up to 1367, and a small hall which seats 288. There is a spacious main lobby and rooftop garden for various venues. Numerous studio and rehearsal rooms double as meeting rooms and seat between 30 to 200 people. Other functions include entrance hall, information, rear stage, rear side stage, side stage, dressing rooms, atelier, restaurant, theatre park, and a buffet.

Fig.2.64. Auditorium

Fig.2.66. Lobby

Fig.2.65. Stage

Fig.2.67. Lobby Grand Stairway

Fig.2.68. Lobby with Biological Seating

6. Observations:

The materials used in this Performing Arts Center have such an eloquent quality to them. I like the membrane surrounding the theater with its pierced glass perforations. It sparks imagination as one circulates through the space. This is one of the few theaters I have seen where the entry is located behind the main stage. Upon entry, one would walk up a grand staircase, circulate down the long lobby lit with ambient light, and come across the various performance spaces. On the roof of the Centre is a roof garden. The rehearsal studios contain large glass doors that can open onto the green roof (figure 2.62). I can just image dancers running out and frolicking on the grass barefoot.

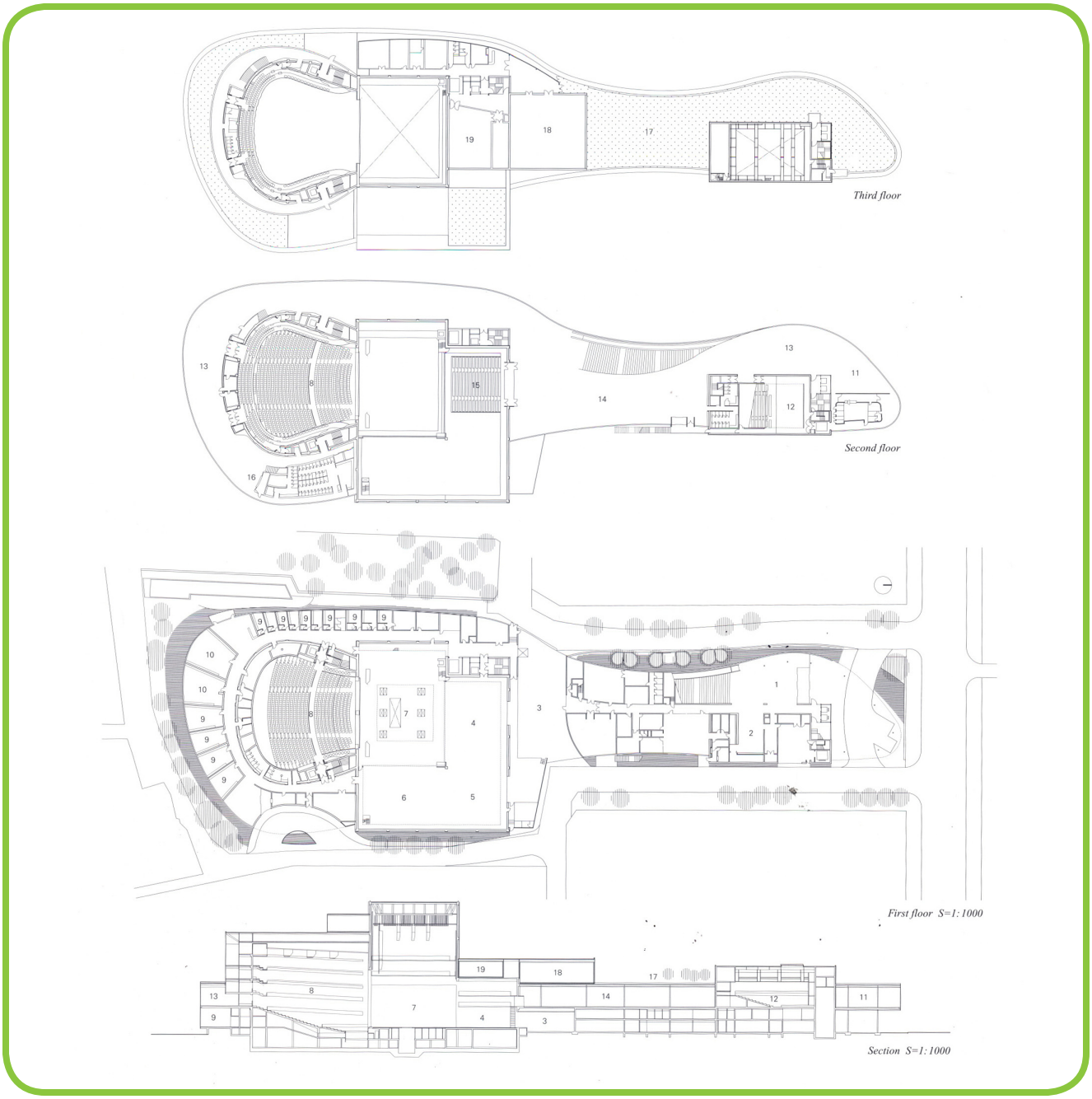


Fig.2.69. Floor Plans and Section

Fig.2.70. State Street Village

Fig.2.71. Corridor between elevated train

State Street Village
By Helmut Jahn

1. Project Type: Student Residence Hall
2. Location: Illinois Institute of Technology Campus Chicago
3. Size: 367 Beds; 110,000 square feet; 525 ft long
4. Distinguishing Features:

The Illinois Institute of Technology had an aim to increase on-campus population by 60%. As a result, Helmut Jahn designed a sleek, contemporary student residence hall that would appeal to prospective students. The antiquated dorms built by Mies van der Rohe just didn't do the job. Like Koolhaas' student center just a few feet north of State Street Village, the new residence hall was a built reality after 40 years of no new construction on campus. The newer dorms will be more convenient to students and have bathrooms per every two dorms unlike Mies' that were down the hall. The rooms at State Street Village are nearly double in size to the old dorms. However, students are asked to pay 45% more for the newer dorms.

Jahn's 525 foot long building seems like it is one continuous building with six bays, but is actually three buildings connected by perforated stainless steel shading devices. The entire building is clad in stainless steel and glass. Jahn wanted the building to imitate the streamlined objects of the 1930s art modern. Between the three buildings are courtyards which are open to both sides of the building for students to walk through going to class. They are nicely landscaped with large trees and plants.

Fig.2.72. State Street Village Overview

Fig.2.73. Planted Courtyard

Like Rem Koolhaas' McCormick Tribune Student Center, State Street Village sits parallel to the elevated train running through campus. But instead of wrapping a tube around the train and trying to hide it, Jahn takes a more positive approach to celebrate the "L." Apartments and suites at State Street Village are insulated from the sound of the train by a corridor of stairways, utility rooms, and student lounges. The wall facing the tracks is made of concrete and specially designed glass.

State Street Village started out on a tight budget and durability was a necessity. As a result, the ceilings are left exposed, floors are concrete covered in simple epoxy, fixtures are stainless steel, and the elevators and their mechanical workings are exposed in clear glass shafts.

5. Program Elements:

The first four floors are all residences and the fifth floor is devoted to additional lounges. Every unit in State Street Village was designed for student comfort and efficiency. All bedrooms are furnished with seating and tables for a computer, and a separate phone line and communications cable for network and television access. Suite residents share their bedroom with one other person, and both bedrooms share a semi-private bathroom. Students living in apartments have a private bedroom. Additionally, apartments offer a kitchen with a microwave and furnished living room. Students living in suites have access to a kitchen and lounge which is shared by the residents of their building. Both apartments and suites contain bathrooms which are shared with no more than three other students.

Fig.2.74. Roof Terrace

Fig.2.75. Dorm Room

Fig.2.77. Apartment Unit Plans

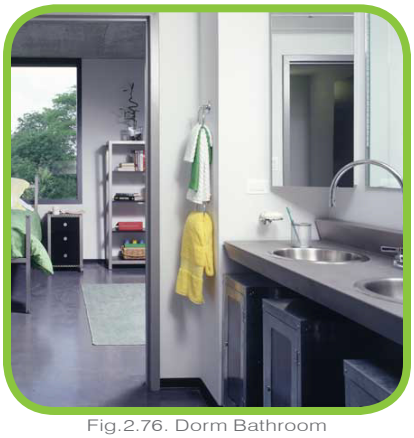


Fig.2.76. Dorm Bathroom

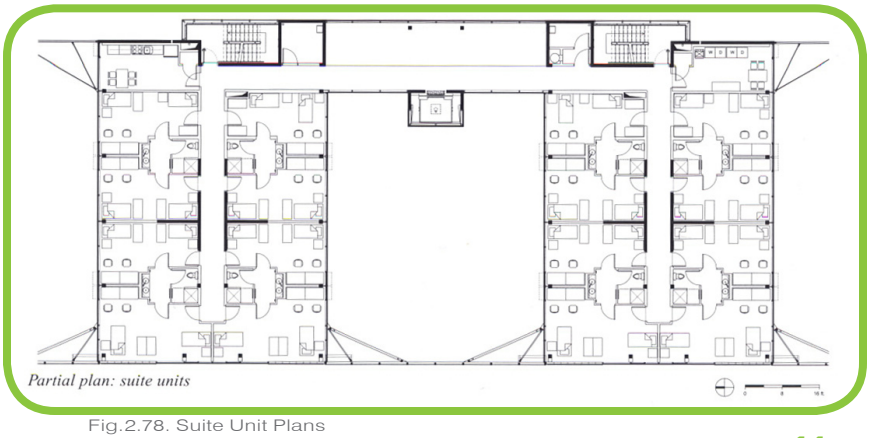


Fig.2.78. Suite Unit Plans

Fig.2.79. Lounge and Corridor

6. Observations:

Unlike Steven Holl's Simmons Hall student residence, Helmut Jahn incorporated green space in his dorms at State Street Village with courtyards. Having incorporated trees and greenery, Jahn's dorms are more likely to encourage student activity outside the dorm. Jahn's design is also better scaled compared to Holl's and fits well in the IIT landscape. The terraces at State Street Village seem much more intimate than those at Simmons Hall (figure 2.74).

State Street Village seems to be very functional. By looking at the plans, all rooms have good views and sufficient daylight. Study lounges are located by the elevators to create chance encounters. The bedrooms in the apartments line up on a structural grid so no columns are blocking views.

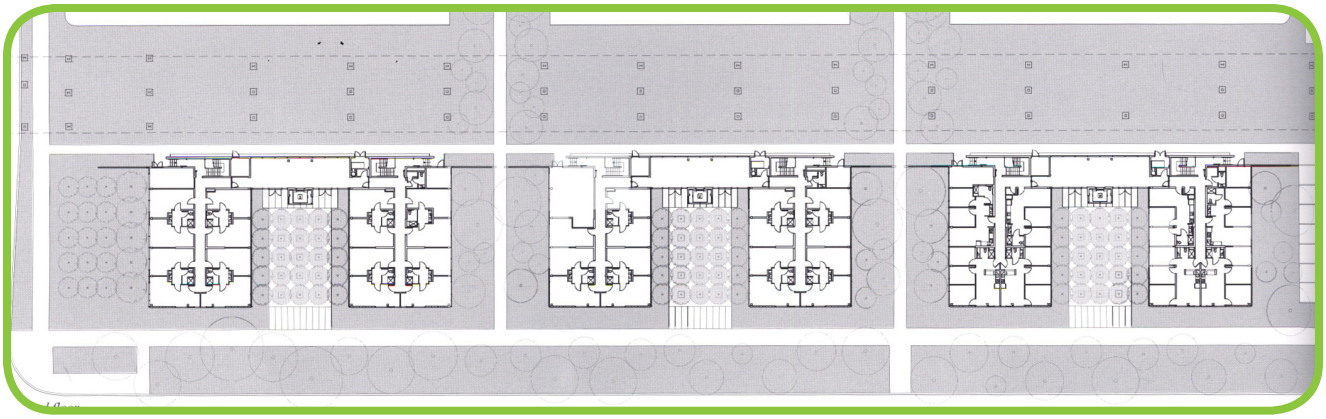


Fig.2.80. Site Plan with Floor Plans

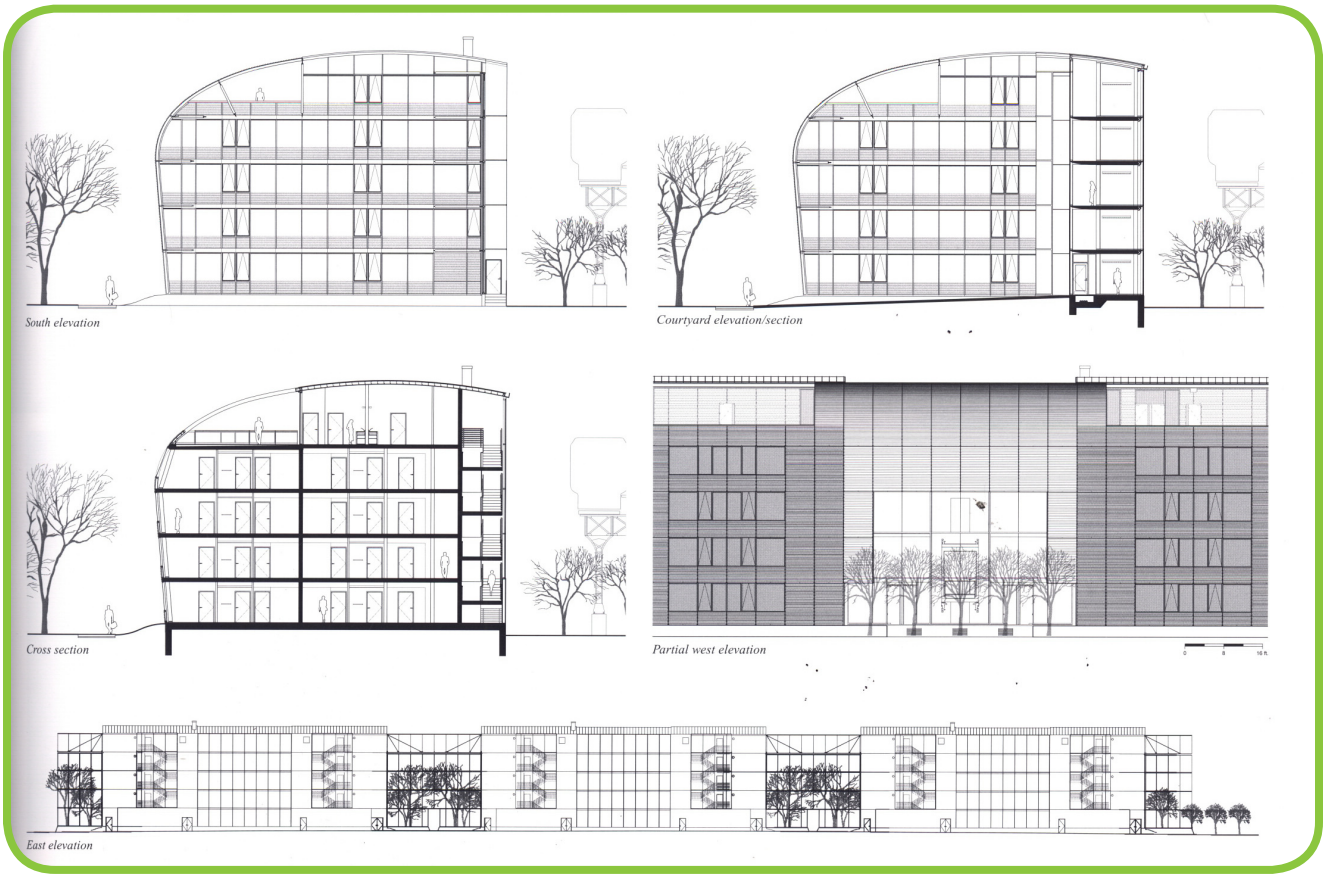


Fig.2.81. Elevations

The art & science of Western theater design has persisted for 2,400 years. Theater had its beginnings in Greece around 400 B.C. and continued until the fall of Rome in 400 A.D. From that time, theater went into 1100 years of inactivity because it was believed that theater was of the flesh and the devil. The theater later picked up again in 1600 and has been active ever since (Izenour et al 1996).

The design of the theater has changed over the decades. The shape and position of the auditorium, orchestra, and stage have shifted in plan (see figure 3.0).

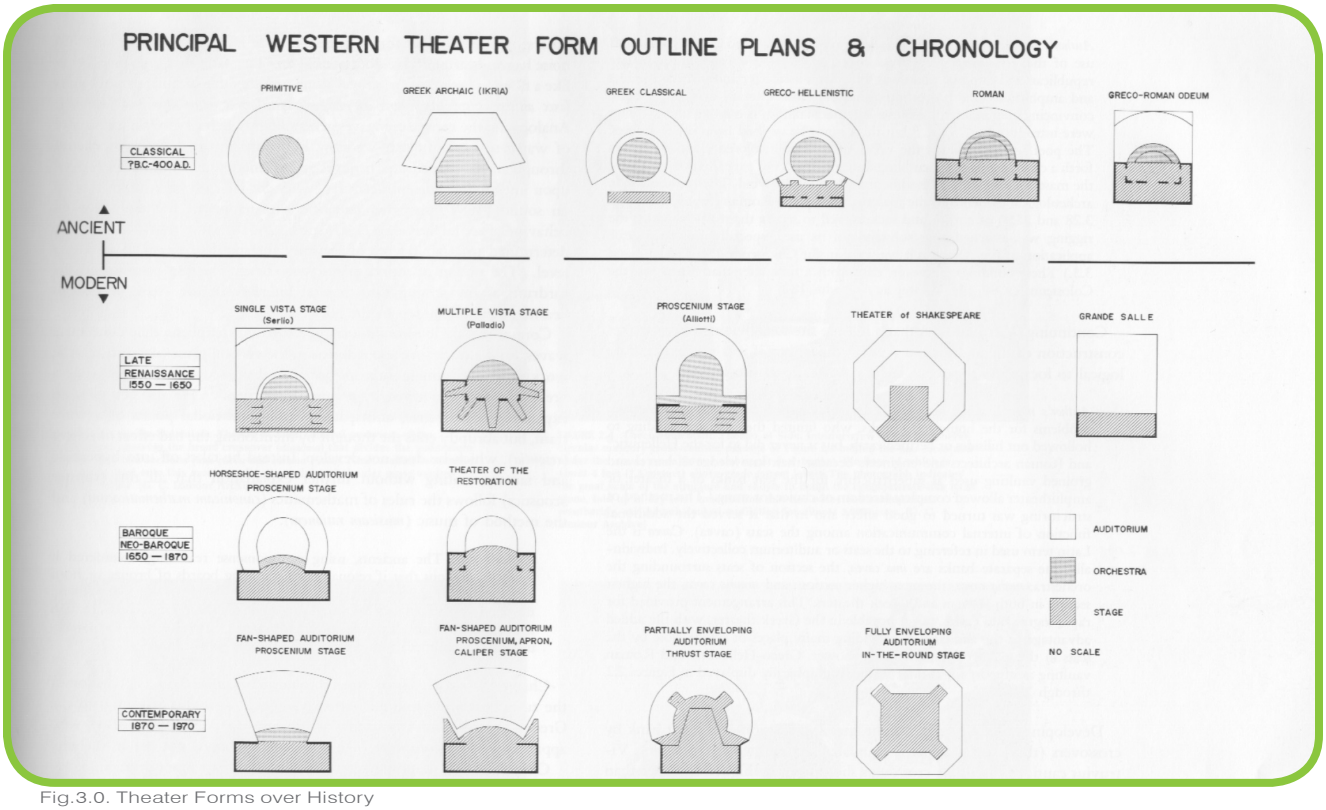


Fig.3.0. Theater Forms over History

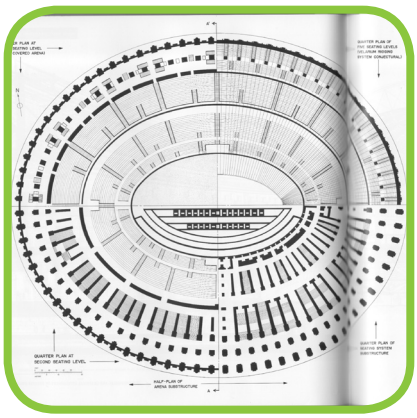


Fig.3.1. Colosseum in Rome

Both the type of auditorium and type of stage for theaters have changed. There are five traditional layouts of theater design that has occurred throughout history:
1. Fully Enveloping Auditorium with Open Stage
2. Partially Enveloping Auditorium with Open Stage
3. Non-enveloping Auditorium with Open Stage
4. Horseshoe-Shaped Auditorium with Proscenium Stage
5. Wedge-Shaped Auditorium with Proscenium Stage

The first type of theater is a fully enveloping auditorium with open stage. Fully enveloping means that the stage is in the center of the auditorium with seating surrounding it. The most notable fully enveloping theater with an open stage is the Colosseum in Rome of 80 A.D. Here, the theater takes the form of an ellipse. Spectators view the events seated 360 degrees around the stage (see figure 3.1).

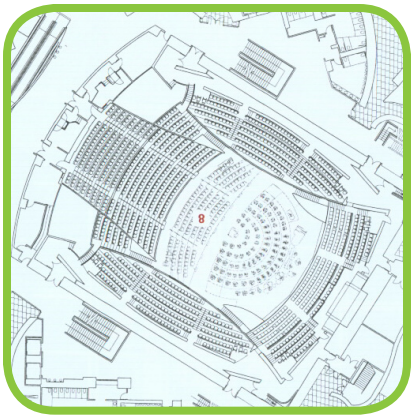


Fig.3.2. Walt Disney Concert Hall

The fully enveloping auditorium arrangement was one of the first theater forms, but is still in use today. Frank Gehry's Walt Disney Concert Hall has a fully enveloping auditorium. Finished in 2003, Gehry's concert hall does not have a stage that is perfectly centered, nor has a circular or oval arrangement of seating. It does, however, have seating on all sides of an open stage, with the stage facing the majority of the audience (see figure 3.2).

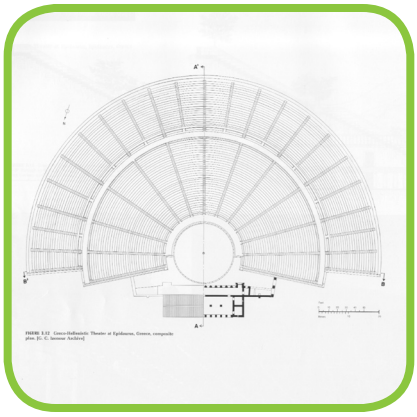


Fig.3.3. Greco-Hellenistic Theater

The second arrangement for theaters is the partially enveloping auditorium, also with an open stage. The earliest example of this type of theater is the Greco-Hellenistic Theater at Epidaurus, Greece. The stage is still centered at the middle of the seating, and the seating still wraps around the stage, but there is no seating at the back of the stage (see figure 3.3).

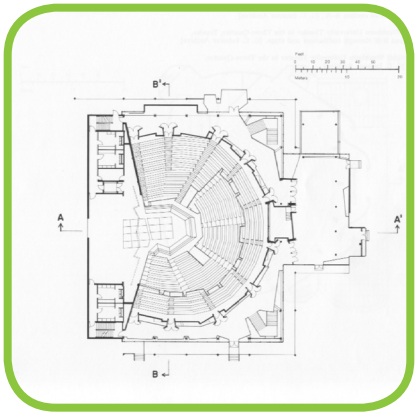


Fig.3.4 Guthrie Theater

The original Guthrie Theater of 1963 in Minneapolis, MN uses a partially enveloping auditorium. The stage protrudes out into the audience while there is seating around it but not towards the back. The back of the stage is reserved for behind-the-scenes activity (see figure 3.4).

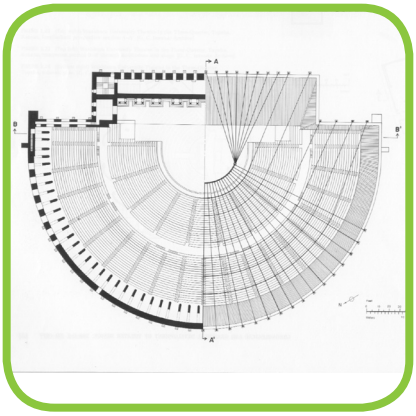


Fig.3.5. Roman Theater

The third type of theater has a non-enveloping auditorium with an open stage. One of the earlier examples of this type is the Roman Theater at Aspendus in Turkey. This theater dates back to 180 A.D. and has a semicircular arrangement of seating around a stage (see figure 3.5).

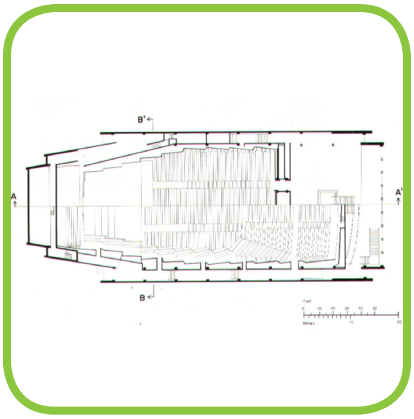


Fig.3.6. Great Hall, Krannert Center

Later theaters start having the auditorium seating directly in front of them rather than on the sides. They do, however, still have an open stage with no visual plane separating them from the audience. A recent example is the Great Hall at the Krannert Center for the Performing Arts on the University of Illinois campus. Here, the audience is in front of the stage but the stage is incorporated into the plan of the theater (see figure 3.6).

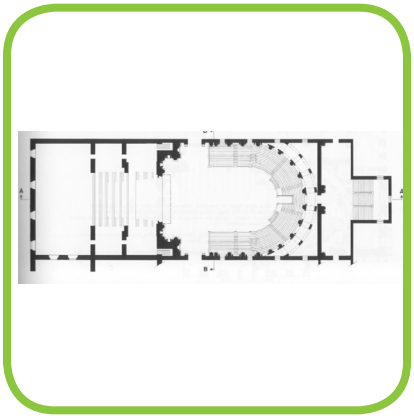


Fig.3.7. Teatro Farnese

The fourth type of theater has a horseshoe-shaped auditorium, and instead of an open stage, it has a proscenium stage. A proscenium is like a large picture frame or arch through which the audience views plays or concerts. It separates the audience from the performers and allows the theater to have curtains behind. The large archway called the proscenium arch was typically ornamented. In proscenium theaters, the audience generally faced the stage directly. One of the earliest known proscenium staged theaters is the Teatro Farnese in Parma, Italy. This was built in the Late Renaissance when the proscenium stage and movable scenery was first invented. While the theater still had a proscenium stage with space for moveable scenery and curtains, there was also space in front of the stage for other activities. The seating was wrapped in the shape of a horseshoe around the secondary stage (see figure 3.7).

Fig.3.8. House of Blues

More recent theaters use the horseshoe arrangement for balcony seating rather than for the main floor seating. The House of Blues in Chicago has balcony seating in the shape of a horseshoe. Like the Teatro Farnese, there is a secondary stage below. The seats above sit perpendicular to the secondary stage (see figure 3.8).

Fig.3.9. Matsumoto Performing Arts Centre

The Matsumoto Performing Arts center in Japan, on the other hand, uses a horseshoe-shaped balcony with slightly curved seating facing the main stage. Unlike the theater at Teatro Farnese, the seats at the Matsumoto auditorium face perpendicular to the stage because there is not a secondary stage in front of the main stage (see figure 3.9).

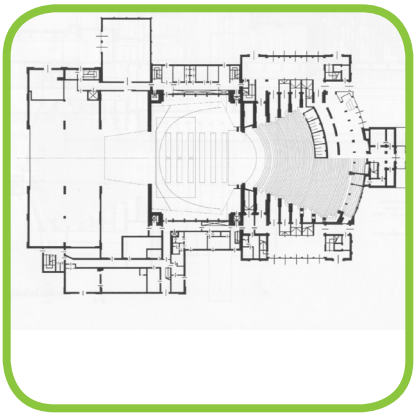


Fig.3.10. Bayreuth Festspielhaus

The fifth type of theater is that which has a wedge-shaped auditorium with a proscenium stage. The Bayreuth Festspielhaus in Germany of 1876 had an auditorium shaped most evidently like a fan. In this case, the seating is focused in directly on the stage. This theater was designed when the foundations of scientific sight line studies, room acoustics, and theater engineering were established (see figure 3.10).

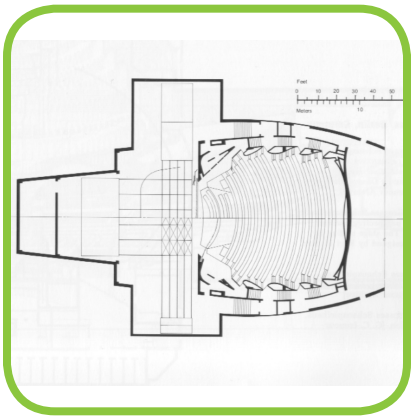


Fig.3.11. Drama Center Krannert Center

Although not shaped exactly like a fan, more recent theaters use auditorium arrangements similar in concept to the fan-shaped ones. The Drama Theater at the Krannert Center for performing arts looks like it has three sets of fan-shaped seating (see figure 3.11).

Some of the theaters mentioned above have a convertible auditorium and multiform stage which arranges from a thrust stage to a proscenium stage. An early example of this can be seen in the sections of Grosses Schauspielhaus in Berlin (see figure 3.12). Notice that the top image has a stage protruding out into the audience. The image below shows that the stage can be leveled to allow for extra seating.

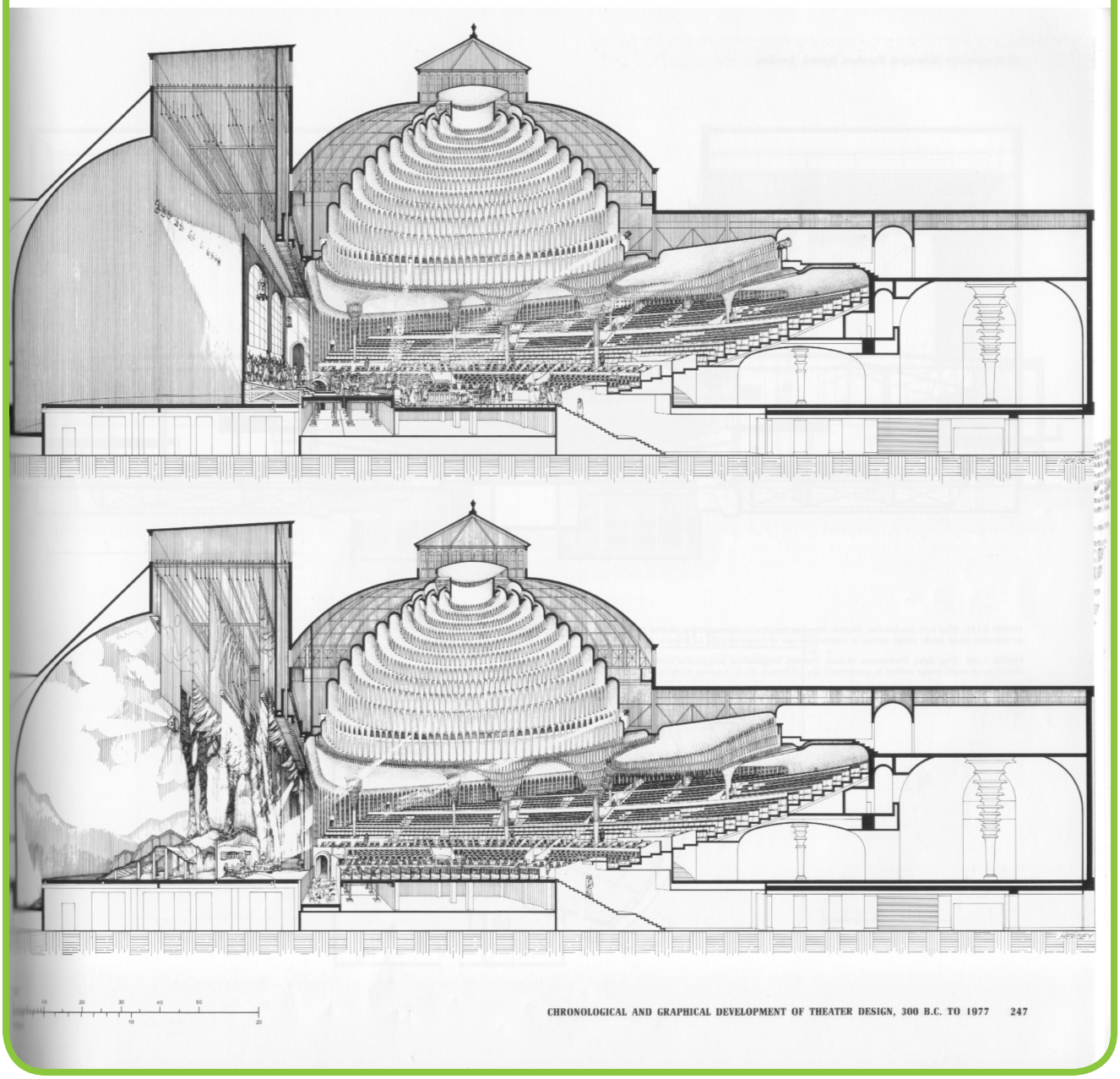


Fig.3.12. Grosses Schauspielhaus Sections

Not only has the seating and stage become flexible, but so has partitions, acoustical panels, and balconies. A look at the Edwin Thomas Performing Arts Hall at the University of Akron will show the theater as it transforms from a concert hall to an opera house to a drama theater. Figure 3.13 shows the performing arts hall in concert hall mode. Notice that the seating is adjusted to occupy the maximum number of people right up to the stage itself. If we look at Figure 3.14, you can see that near the stage where there use to be seating, it is now lowered to accommodate an orchestra for the opera house mode. Notice also how the upper balcony seating is compensated for better acoustical sound and a more intimate hall. Lastly, Figure 3.14 shows the adjustable platform, which the orchestra sat on previously, elevated to the height of the stage. This allows drama performers to step out into the realm of the viewers and create a more realistic performance rather than watching it behind a large window or proscenium. In drama theater mode, even more seating is compensated for a smaller hall.

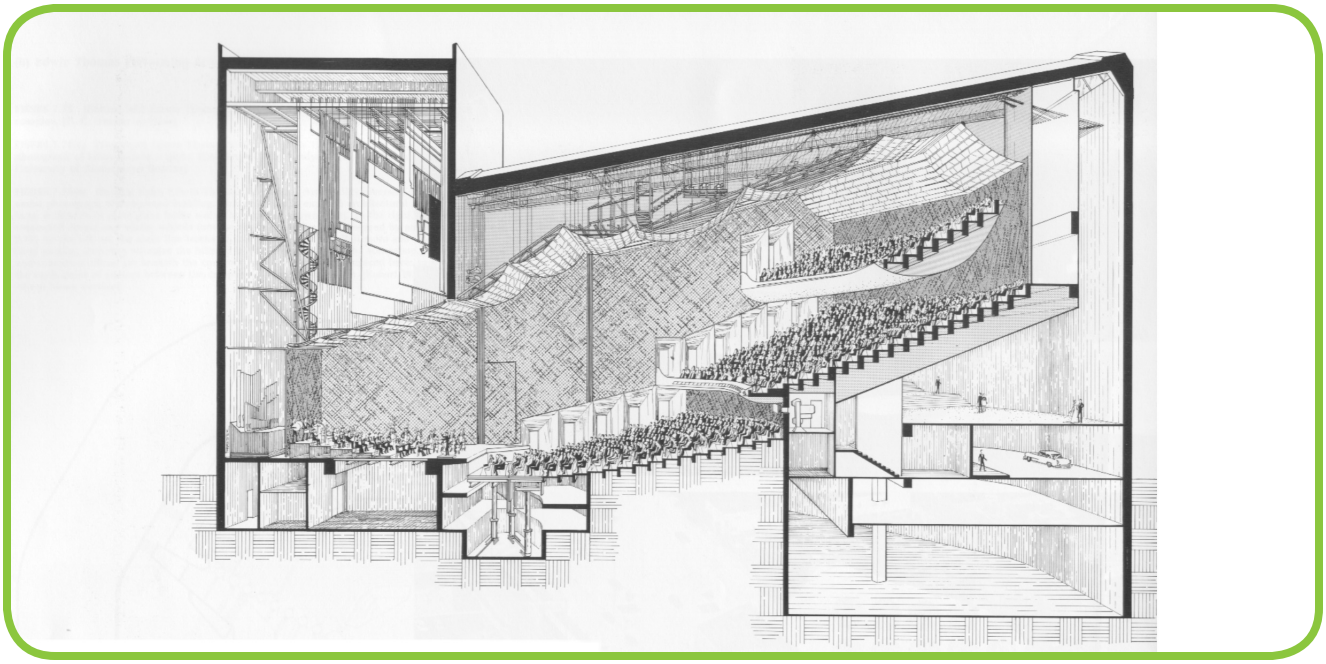


Fig.3.13. Edwin Thomas Performing Arts Hall. Concert Mode

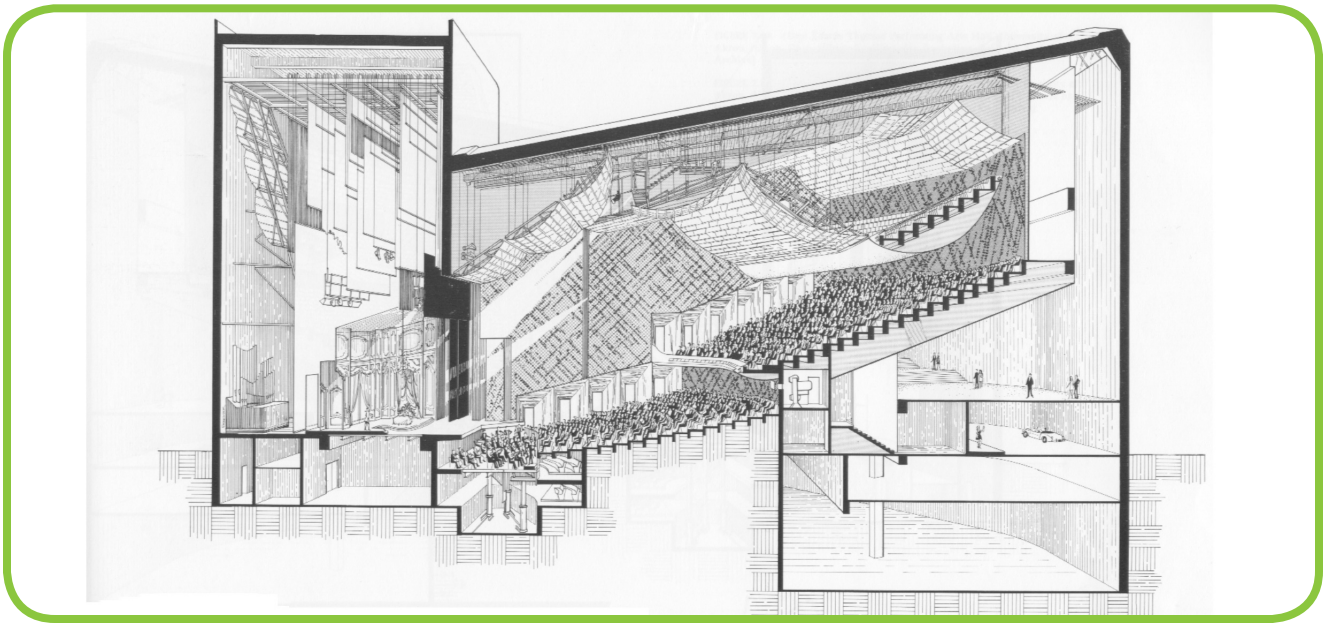


Fig.3.14. Edwin Thomas Performing Arts Hall. Opera Mode

Another example of multi-use space can been seen at the Veteran's Memorial Auditorium at the Marin County Center in San Rafael, California. The top section in figure 3.15 shows the auditorium in a typical concert arrangement. The lower section, however, shows how the back wall can be moved backwards or forwards to accommodate other functions such as a boat show shown here. The auditorium seating platforms in front of the wall folds up.

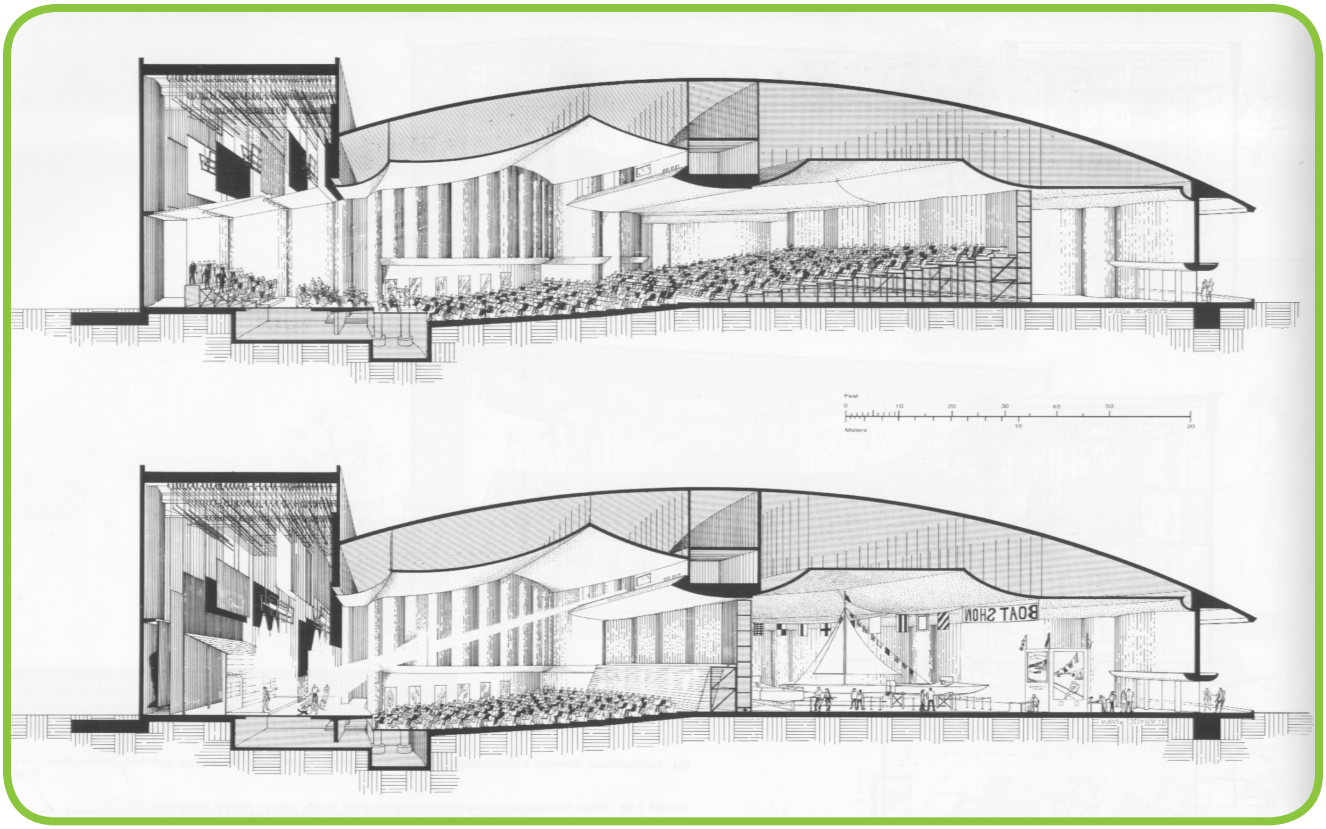


Fig.3.15. Veteran's Memorial Auditorium

More and more theaters today are creating functional multi-use auditoriums. The Wyly Theater by innovative architect Rem Koolhaas shows what a 21st century multi-use theater should look like. By looking at the several scenarios of the Wyly Theater in Figure 3.16, one can see that it has the ultimate in flexibility. To do this, Koolhaas places all the functions of the theater above and below the auditorium. Both the seating and stage sets have a fly tower which allows them to be interchangeable. One scenario shows the theater acting as an exhibition hall for classic cars, similar to the Veteran's Memorial Auditorium in figure 3.15.

The studies above describe how theater morphology has changed with time along with the functionality of theater design. Theater innovation will only get greater and performance venues will have the technology to create perfectly tuned acoustical spaces.

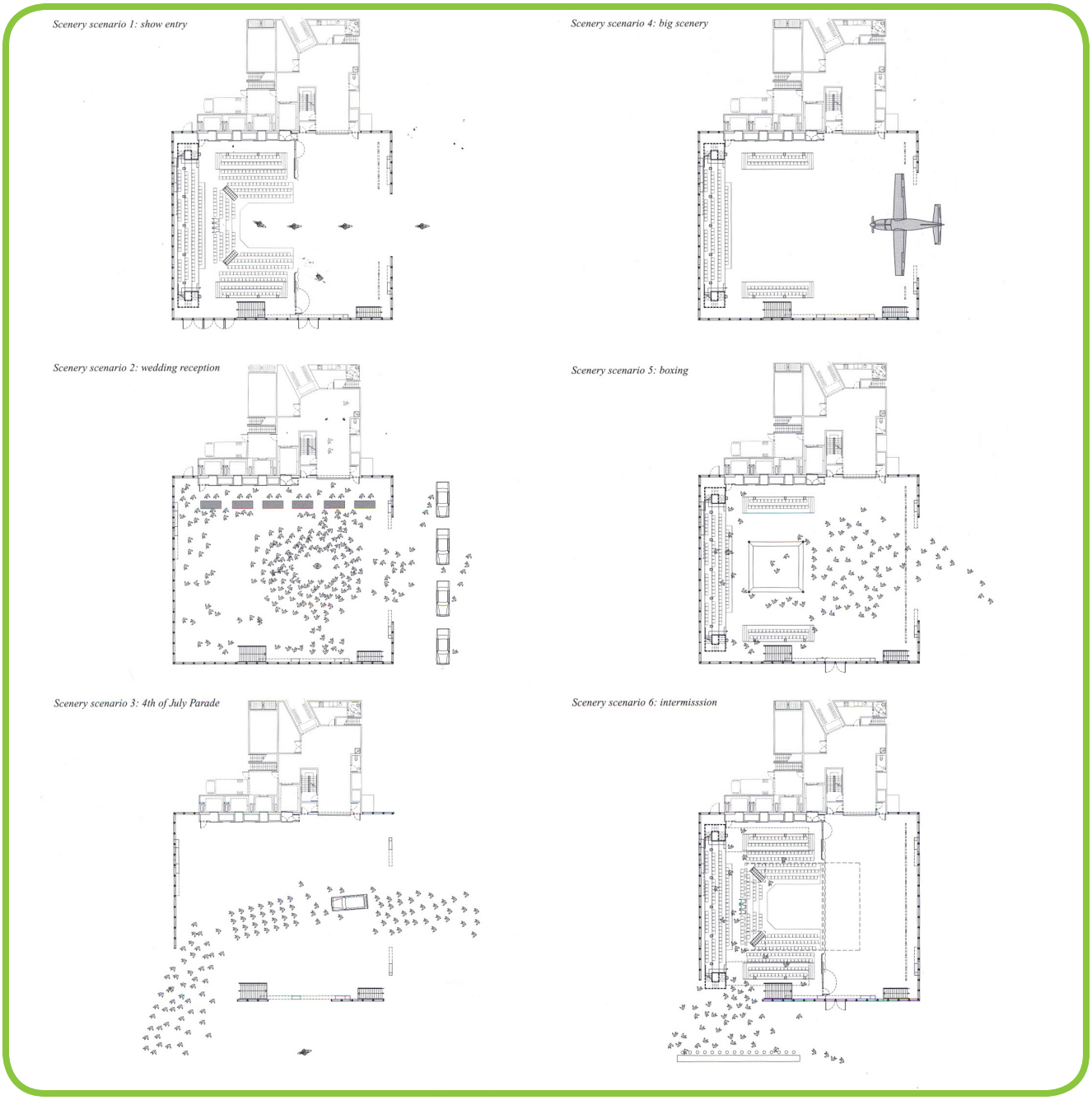


Fig.3.16. Wyly Theater Plans

Fig.4.0. Chicago Skyline

Fig.4.1. Skyline at Night

Fig.4.2. Pritzker Pavilion

Fig.4.3. Chicago River at Night

Narrative

The first day I arrived in Chicago, I stayed at a hostel which was about ten miles from downtown in a peaceful campus setting at Loyola University. I unpacked my bags, put them in my squalid suite, and left the room. In the back of my car was my bike, all tuned up and ready to go. I was in search of a site, so I hopped on and began my adventure.

As I was riding my bike south towards downtown, I enjoyed wonderful views from the bike path that ran between the green waters of Lake Michigan and the great walls created by towering high-rises. There were plenty of spectacles to look at: thousands of rollerbladers, bicyclists and joggers; people barbecuing in Lincoln Park; soccer players ranting over an unfair play; and people playing volleyball on the sandy Lake Michigan beach. All the activity occurring around me gave me an astonishing sense of warmth. I passed by swimmers, bathers and boaters and through sand, water, and trees. But the most ravishing sight was the skyline that ascended ahead.

Throughout my pleasant ten-mile bike to downtown, I felt the least bit uncomfortable. I didn't have to worry about being struck by cars, I had no intersections to cross, and the path was set for me and my bicycle. After eventually coming across a pedestrian-friendly intersection, I entered Milton Lee Olive Park where a charming little sculpture park fancied my interests. From there, I biked past the touristy Navy Pier, around the iconic Lake Point Tower designed originally by celebrated architect Mies van der Rohe, and past several touring yachts about to depart with dozens of eager sightseers.

But then, after ten miles of complete isolation from the fast-paced world of automobiles, I came upon the intersection of East Illinois Street and Lake Shore Drive. At this point, Lake Shore Drive morphs into a bridge to span Ogden slip, then runs above DuSable Park, and finally spans the mouth of the Chicago River, where it meets grade again on the south bank. The problem here is that there is no continuation of the bike path from the point north of Ogden slip to the southern bank of the Chicago River. As a result, pedestrians and bicyclists have to travel across the bridge on a narrow walkway with no protection from oncoming vehicles. The walkway often gets so congested that you can literally get pushed off the curb and into traffic. Because pedestrians are limited to crossing only by the bridge, DuSable Park becomes inaccessible and therefore left uninhabited and unkempt.

Amidst the fact that DuSable Park is now a neglected meadow, the site screams potential. With it being bound on three sides with water, DuSable Park can become a major waterfront amenity for Chicago. Strategies must be considered to incorporate and re-link the site into the continuous lake shore pedestrian walkway. Once this is achieved, along with creating a successful link to the plot of land west of lake shore drive, then the site will become better accessed and brought to life.

History

See city history and site history on page 8 and 9 of the thesis proposal.

Fig.4.4. Geometric Relationships

SURROUNDING AREAS

Geometric Relationships:

Many modern high-rise buildings surround the site. Most evident is the Lake Point Tower to the east of Lake Shore Drive. This tower takes the form of a 3-leaf clover in plan. Other nearby towers are mostly modern boxes extruded to great heights (see figure 4.4).

Fig.4.5. Existing Grids

Existing Grids:

The city of Chicago lies on a basic grid system except where the streets meet water. Wacker Drive and Lake Shore Drive do not follow the city grid, but are formed from the edges of the Chicago River and Lake Michigan. Unique to my site is the fact that it is where the culmination of all bodies of water occur. My site sits near the very middle of a four-quadrant system, which is formed by the east-west axis of the Chicago River and the north-south axis of Lake Shore Drive (see figure 4.5).

Fig.4.6. Existing Textures

Existing Textures in Plan:

To the west of Lake Shore Drive and north of the Chicago River (Northwest Quadrant) it is mainly hardscaped land occupied by buildings, parking lots, and hardscaped plazas. To the east of Lake Shore Drive (Northeast Quadrant) is a long stretch of lake front with public parks and beaches. South of the Chicago River and to the east of Lake Shore Drive is more waterfront with a huge harbor for boats. Finally, in the Southwest quadrant is a mixture of green parks, hardscaped plazas, and buildings(see figure 4.6).

Fig.4.7. Built Features & Landmarks

Built Features & Landmarks:

The most prominent built feature is the Lake Shore Drive bridge passing through the site. It is a two-story structure which brings traffic from one side of the Chicago River to the other on four lanes in each direction (see figure 4.7).

Fig.4.8. River View Condominiums

Fig.4.9. River East Plaza

Fig.4.10. Centennial Fountain

The closest buildings to my site are the River View condominium towers directly to the west. They feature luxury condos starting at $875,900. The first built tower, River View I, is 321 ft high with 27 floors. River View II is 399 ft in height with 32 floors (see figure 4.8).

On the north bank of Ogden Slip is River East Plaza. This building features 500,000 square feet of retail base with five floors of office space above (see figure 4.9).

Just west of River View I & II along the river is Cityfront Place. This is a 396 ft high-rise with 40 floors. In front of the main entrance is the Centennial Fountain, a semicircular cascade with a water arch that shoots across the river hourly during the summer (see figure 4.10).

Fig.4.11. North Pier Apartment Tower (Left) and Lake Point Tower (Right)

Directly north of the site across Ogden slip is North Pier Apartment tower which is 581 feet tall with 61 stories. The façade combines dark gray, maroon, and pink panels in an abstract pattern supposedly suggesting a human figure with a head, shoulders, ribs, and legs. The architects described this building as a masculine counterpart to the curvaceous Lake Point Tower nearby (see figure 4.11).

Lake Point Tower (Fig. 4.11 right) is just north of DuSable Park and east of Lake Shore Drive. This luxury residential high-rise was originally designed by Mies van der Rohe for a site in Berlin but was later modified by students of his style at the Illinois Institute of Technology. After it was built in the late 1960s, a Lakefront Protection Act was assembled to prevent any more commercial development east of Lake Shore Drive. Today, Lake Point Tower is the only high-rise building on the east side, making it stand out as a stately landmark. The tower has 68 stories equaling 645 feet in height (chicagoarchitecture.info).

Fig.4.12. Navy Pier

To the northeast of DuSable Park is the 3000 ft long touristy Navy Pier (see figure 4.12). The Chicago landmark first opened as the world's largest in 1916 but wasn't turned over to the Metropolitan Pier and Exposition Authority until 1989 when it was redesigned into one of the country's most unique recreation and exposition facilities (navypier.com). Navy Pier holds several restaurants, shops, a children's museum, 150 ft Ferris wheel, old fashioned carousel, outdoor amphitheater, ice skating, miniature golf, IMAX 3D theater, and the Smith Museum of stained glass.

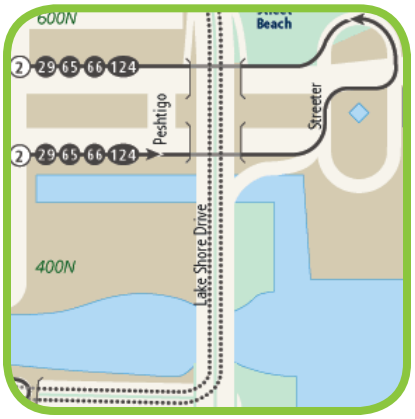


Fig.4.13. Transportation Close-up

Fig.4.14. Lake Shore Drive through Site

TRANSPORTATION:

Automobile:

Vehicular access is limited to East North Water Street which dead ends at the site on the west. This may be used strictly for a service entry while parking is elsewhere, or else I could create a turnaround and parking garage underneath the bulk of my building (see figure. 4.14).

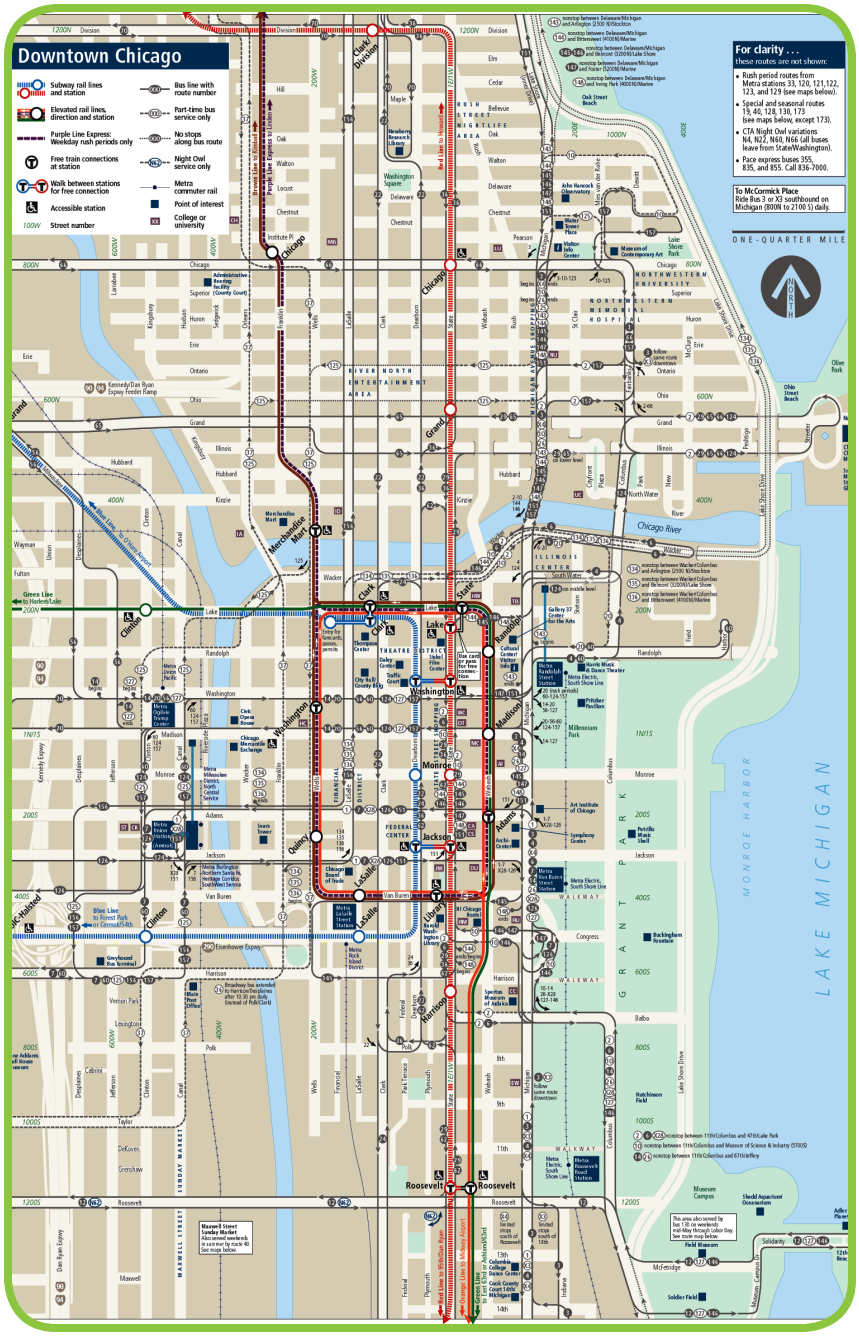


Fig.4.15. Bus, Subway, and Elevated Train Transportation Map for Chicago Area

Bus, Elevated Train, & Subway:

By looking at the transportation map in Figures 4.13 and 4.15, one can see that there are busses that pass by my site across Ogden Slip. Some of those busses go directly to the Loop where most of the urban campuses are. I'm thinking that the three colleges can work something out with the transportation facility to provide free service to students, much like it is at North Dakota State University. I would like to create a link or pedestrian bridge across Ogden Slip to provide better access to modes of transportation.

Fig.4.16. Trolley Map Close-up

Trolley:

Another reason for creating a link across Ogden Slip is to provide pedestrians with access to the Navy Pier Trolley. Chicago trolleys are free but take a limited path. I figure that students and other occupants of the site can cross Ogden Slip, hop on the free trolley and take it west to another means of transportation like the elevated train. When I rode on the trolley during my site visit, I found that they took scenic routes. A downside to using trolleys as a source of transportation is that it may be jam-packed with tourists during the warmer seasons.

Fig.4.17. Chicago Trolley Map

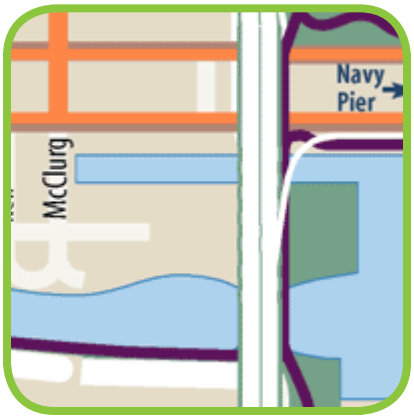


Fig.4.18. Ped. & Bike Path Close-up

Pedestrian Circulation:

During the warmer months, Chicago provides great opportunities for bicycling, rollerblading, or walking. All along the waterfront are parks and green space which also contain bike and pedestrian paths. The purple line in figures 4.18 and 4.19 show the independent bike path which is free from vehicles and other transportation. The orange lines represent dedicated bike paths along streets. Students would be best to bike south along the Lakefront Trail and through Millennium or Grant Park. Across Michigan Avenue are DePaul University, Roosevelt University, and Columbia College.

Fig.4.19. Pedestrian & Bicycle Path Map

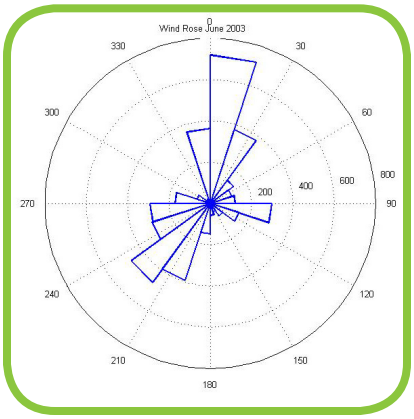


Fig.4.20. Summer Wind Rose

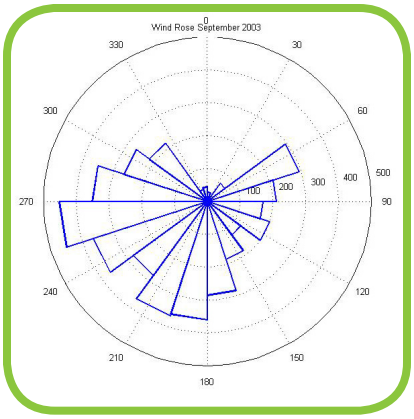


Fig.4.21. Fall Wind Rose

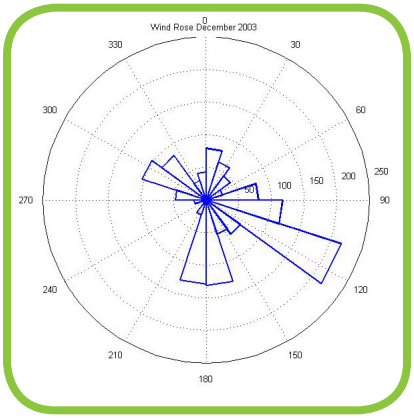


Fig.4.22. Winter Wind Rose

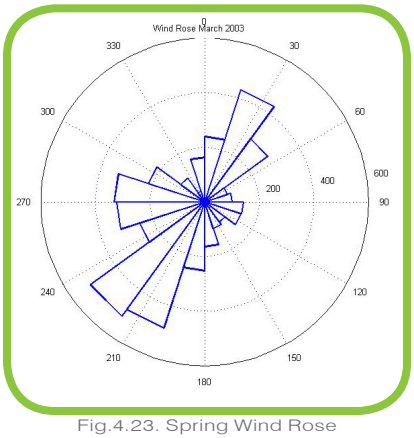


Fig.4.23. Spring Wind Rose

SUN & CLIMATE

Wind:

Chicago is nicknamed “The Windy City.” Wind in Chicago is pretty random and comes from many different directions. The sporadic wind may be caused by the massive skyscrapers that dominate the sky. See figures 4.20-4.24 for wind rose analysis.

Shade and Shadow Characteristics:

The site receives sun everyday of the year from dusk until noon because there are no tall buildings to the east, southeast, or directly south of the site. During the evenings, however, shadows cast by the tall skyscrapers toward the west will partially cover the site.

Light & Color Quality:

The light quality of the site is pretty good. It is open to the east and south with some high rises to the west. The color quality is diverse with the blue of the lake, green of the grass, and different colors and textures of the surrounding buildings. About 48% of the year Chicago is cloudy, 29% partly cloudy, and 23% clear.

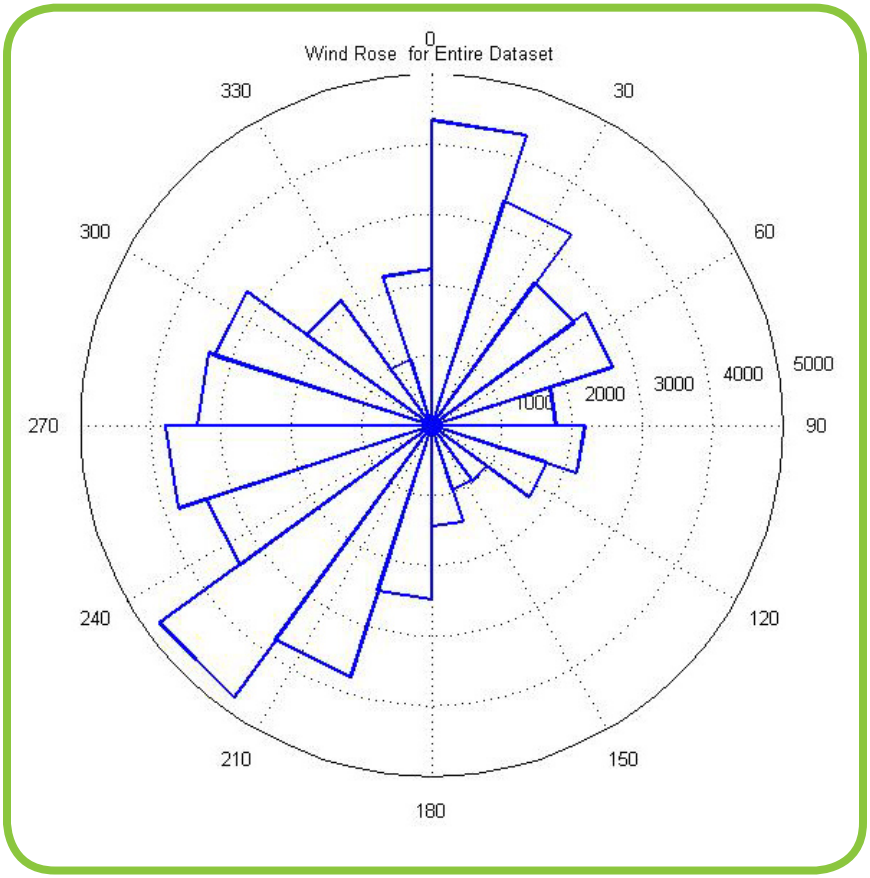


Fig.4.24. Wind Rose for entire year

Chicago Weather History

Summary

	Temp. (°F)	Relative Humidity (Percentage)		Extreme Temp. (Days Per Month)		Rain (Inches)	Cloudiness (Days Per Month)		
	Average	A.M.	P.M.	Below 32°	Above 90°	Average	Clear	Partly Cloudy	Cloudy
January	21.0	78%	69%	29	0	1.5	7	6	18
February	25.4	78%	67%	25	0	1.4	6	6	16
March	37.2	79%	63%	21	0	2.7	5	8	18
April	48.6	77%	57%	7	N/A	3.6	6	8	16
May	58.9	77%	56%	1	1	3.3	7	10	14
June	68.6	79%	57%	0	4	3.8	7	11	11
July	73.2	82%	59%	0	6	3.7	8	12	10
August	71.7	86%	60%	0	4	4.2	9	11	11
September	64.4	85%	59%	N/A	2	3.8	9	10	11
October	52.8	81%	58%	5	N/A	2.4	9	9	14
November	40.0	80%	65%	17	0	2.9	5	6	18
December	26.6	80%	71%	26	0	2.5	6	6	19
Annual	**49.0**	**80%**	**62%**	**130**	**17**	**35.8**	**84**	**105**	**176**

Average Temperature (°F)

Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
21.0	25.4	37.2	48.6	58.9	68.6	73.2	71.7	64.4	52.8	40.0	26.6

Relative Humidity (Percentage)

Morning

Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
78%	78%	79%	77%	77%	79%	82%	86%	85%	81%	80%	80%

Afternoon

Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
69%	67%	63%	57%	56%	57%	59%	60%	59%	58%	65%	71%

Rain (Inches)

Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1.5	1.4	2.7	3.6	3.3	3.8	3.7	4.2	3.8	2.4	2.9	2.5

Cloudiness (Days Per Month)

	January	February	March
Clear	7 Days	6 Days	5 Days
Partly Cloudy	6 Days	6 Days	8 Days
Cloudy	18 Days	18 Days	18 Days

	April	May	June
Clear	6 Days	7 Days	7 Days
Partly Cloudy	8 Days	10 Days	11 Days
Cloudy	16 Days	14 Days	11 Days

	July	August	September
Clear	8 Days	9 Days	9 Days
Partly Cloudy	12 Days	11 Days	10 Days
Cloudy	10 Days	11 Days	11 Days

	October	November	December
Clear	9 Days	5 Days	6 Days
Partly Cloudy	9 Days	6 Days	6 Days
Cloudy	14 Days	18 Days	19 Days

	Clear	Partly Cloudy	Cloudy
Days Per Year	84	105	176

Fig.4.25. Chicago Weather History

Weather History:

The weather history table in figure 4.25 shows the average temperature, relative humidity, extreme temperature days, rain amount, and cloudiness. It appears that July is the warmest month of the year and January is the coolest. August is when Chicago receives the most rainfall.

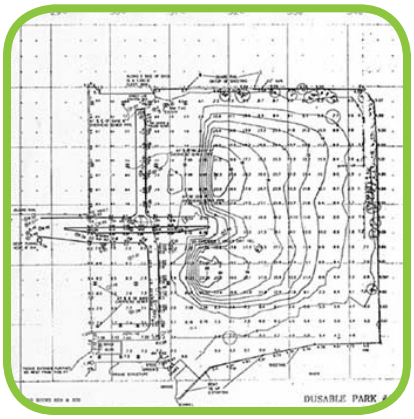


Fig.4.26. Topography


Fig.4.27. Vegetation

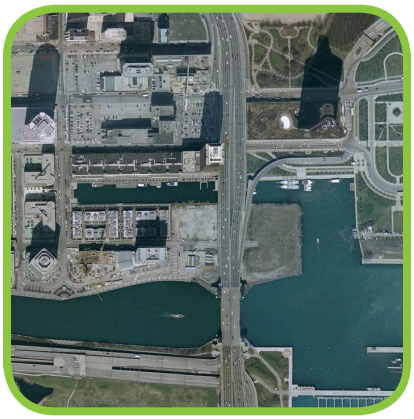


Fig.4.28. Surrounding Water

SITE SPECIFICS

Topography:
The plot of land to the west of Lake Shore Drive is nearly flat and has a 1-4% slope (see figure 4.26). DuSable Park, on the other hand, currently rises gradually from east to west to a height of roughly 20 feet and then drops suddenly before Lake Shore Drive. The reason for this slope is due to the excavation of a nearby construction project in which the excavators piled unused earth on the site.

Soils:
The soil in DuSable Park was sampled in December 2000. Results showed contamination by radioactive thorium which was caused by gas mantles from the Lindsay Light Company that operated near the site until the 1930s (artic.edu).
Most of Chicago lies on marshy soil only a few feet above the level of Lake Michigan (CPL.org).

Utilities:
There is currently one streetlight on the property. City electric, plumbing, gas and water are all easily accessible.

Vegetation:
There are a variety of flowers and grasses on DuSable Park. Queen Anne's Lace, Dogbane, Black-Eyed Susan, Goldenrod, Sumac and Bouncing Betty are a few of them (see figure 4.27)

Water:
My site is surrounded on three sides by permanent water (see figure 4.28). Because it is near the locks, water is constantly being flushed into the river from Lake Michigan. Lake Michigan is one of the largest freshwater lakes; however, Great Lakes fish were discovered with high concentrations of toxic flame retardant in their tissues. Other metals including mercury are dangerously high in Great Lakes fish also (artic.edu).

Zoning Boundaries & Easements:
There is a 25 foot easement along the north side of the Chicago River which is zoned for public use. This esplanade extends into my site before it reaches Lake Shore Bridge. To the east of Lake Shore Drive is DuSable Park which is also zoned for public use (see figure 4.29). To the west of Lake Shore Drive it is zoned for planned development. Since my college for performing arts will be a public space with green space surrounding it, I can argue that it could be used as park/public space.

Fig.4.29. Zoning Map

VIEWS

My site has 360 degrees of great city and lake views. The one obstruction is Lake Shore Drive which passes through the middle of the site. To the east of Lake Shore Drive in DuSable Park, Lake Michigan, Milton Lee Olive Park, Navy Pier, the Chicago Harbor, the Chicago River locks, and the Lake Shore Bridge itself all offer great viewing pleasure.

To the west of Lake Shore Drive there are fantastic views of the trendy area around Ogden Slip, the River View apartments, and the river esplanade along the Chicago River. Shown here are various images of the site and its surroundings.

Fig.4.30. Lake Shore Bridge

Fig.4.33. Esplanade west of site

Fig.4.31. West Side of Site

Fig.4.34. East North Water Street

Fig.4.32. East Side of Site

Fig.4.35. Under Lake Shore Bridge

Fig.4.36. Under Lake Shore Bridge looking east

Fig.4.37. Under Lake Shore Bridge looking west

Fig.4.38. Under Lake Shore Bridge looking North

Fig.4.39. Under Lake Shore Bridge looking North

Fig.4.40. DuSable Park

Fig.4.41. Site on the West Side of Highway

Fig.4.42. River Esplanade looking East

Fig.4.43. Site on the West Side of Lake Shore Drive

Fig.4.44. Chicago Locks Panorama

Fig.4.45. West Portion of Site

Site Overall

Restraints
-Access
-Break in Chain of Parks
-Undeveloped Contaminated Land
-Lake Shore Drive cuts through site
-Unsafe pedestrian crossing
-No continuation of bike & pedestrian paths

Opportunities
-Prime location for Chicago
-Wonderful Views
-Bound on three sides with water
-Opportunity to create major connections
-Opportunity to push Chicago into the 21st century

Lake Shore Drive

Restraints
-Disables pedestrian and bicycle access to proposed site
-Dangerous situations occur with traffic
-Noisy
-Bridge spanning site is unsightly
-Segregates two portions of the site

Opportunities
-The operable bridge spanning the Chicago River is historic and quite aesthetic
-High traffic allows plenty of visual exposure to the site

DuSable Park

Restraints
-Contaminated soil
-Has been useless for years
-Seawall needs replacement
-Access denied
-Isolated by Lake Shore Drive

Opportunities
-Screams potential
-Surrounded by water to make a prime lakefront amenity for Chicago
-High Energy Area: cars, boats, bikes, skaters, and pedestrians stream near and around the site
-Great views of the skyline and Lake Michigan

Intentions

-To connect the broken link between the park systems
-To provide access to all sorts of traffic
-To create a community for living, learning, and performing catered to local, travelling, and aspiring artists of all levels of talent
-To satisfy the needs of Columbia College, Roosevelt University, and DePaul University by supplying these urban colleges with more adequate student housing, classrooms, and state-of-the-art performing venues
-To create a 21st century public realm
-To provide a high-energy lakefront amenity for Chicago
-To commemorate Jean Baptiste Pointe DuSable
-To take advantage of Chicago's splendid views

Introduction There are to be six major components to the masterplan of this thesis, one of which is to be emphasized more than the others. The primary building of consideration is the theater which is the heart of the whole project. Other buildings considered secondary to the theater include an observation tower, a pavilion commemorating Jean Baptiste Pointe DuSable, a skywalk office link, a luxury condo high-rise, and student dorms & hotels with a student center incorporated within. The space allocation for the theater are as follows:

THEATER

Performance Spaces

Main Stage

Description This is where actors, actresses, musicians, and dancers perform. Above is a fly tower into which scenery and lighting equipment are raised beyond view of the audience.

Size 100'wx70'd with 60'w opening = 7000sf (stage should be > 45'wx40'd)

Users Performers; stagehands

Occupancy Varies

Spatial Relationships Must be visible to audience and have side stages on both sides

Furnishings/Equipment Theatrical lighting, acoustic panels, scenery, etc

Left and Right Side Stages with Rear Stage

Description Flanking the main stage, the side stages serve as transition zones between the performing area and offstage and allow performers to catch their breath, warm up, and enter and exit the main stage with ease.

Size Two qty. x 1600sf - Minimum 15' wing space on each side of the stage with the same depth of the main stage. 25'wx70'd will allow ample space for performers. Rear Stage = 2500sf

Users Performers; stagehands

Occupancy Varies

Spatial Relationships Flanks the main stage; Rear stage links stage left to stage right and allows circulation between the two without being seen by the audience; performers exit the side stages to access dressing rooms, etc.

Furnishings/Equipment Lighting equipment positioned on steel booms for side-lighting effects, props and equipment for the performance

Orchestra Pit

Description Holds an orchestra which plays during a theatrical performance or ballet

Size 15sf per musician x 60 musicians = 900sf
- Should be at least as wide as the proscenium opening which is to be 60'w. Depth = 15'

Users Musicians

Occupancy Min. 40 musicians Max. 90 musicians

Spatial Relationships Sits between the stage and auditorium seating, near instrument storage

Furnishings/Equipment Hydraulic lifts underneath; seats; director's podium

Other Considerations Size should be able to be adjusted according to production needs; the pit shall be capable of being lowered to hide the orchestra from the audience. It should be lowered enough that double-bass players can stand in the rear of the pit beneath the stage (min. 6'-8")

Rehearsal Hall

Description The space where performers rehearse their performances as if it were on stage; used as a classroom for dance

Size 6900sf

Users Performers, faculty, public (if used for a small venue)

Occupancy Up to 200; used during daytime and early evening

Spatial Relationships Should be located near dressing rooms, instrument storage, and loading areas

Furnishings/Equipment Movable seating, barres, storage lockers

Other Considerations Should have double width doors for allowing pianos and other large equipment through

Public Spaces

Lobby

Description The intermission space between the entrances and upon entering the auditorium

Size 11000sf

Users Public, performers, staff, faculty, etc.

Occupancy 800 occupants during daytime and evening

Spatial Relationships Runs throughout the performing arts center to connect public spaces

Furnishings/Equipment Benches, advertising displays, drinking fountains, public phones, stairs, elevators, etc.

Other Considerations Should be full of light and have wonderful views to Lake Michigan and the Chicago skyline

Main Auditorium

Description The area where people sit to view the performances

Size 6sf per person x 1500 seats = 9000sf + circ. = 13700sf

Users Patrons, public, guests

Occupancy 1500

Spatial Relationships Central to the performing arts center between the back stage areas and the front of house

Furnishings/Equipment Seats, acoustical wall and ceiling panels

Other Considerations Being the primary function of the theater, the auditorium should provide for flexible seating while allowing spectators to easily see and hear the performances occurring on stage. The space should encourage intimacy between patrons and performers. Aisles are to be about 44" wide or 23-25% of the total seating area. Acoustical considerations are to be worked out with an acoustical consultant and sound-systems consultant.

Box Office

Description The first space a patron approaches when attending a performance. It is where a patron purchases tickets for a show.

Size 300sf

Users Box office manager, staff

Occupancy 1-4 occupants; daytime and evening use

Spatial Relationships Located in separate lobby near entrance off of the main lobby

Furnishings/Equipment Ticket counter, office seats, glass divider, telephones

Other Considerations This space is critical to the theater's operations. The box office will be opened even when the theater is not. Inside should be a workroom with counters for processing telephone orders, mail orders, and subscriptions.

Coat Room

Description Stores patron's coats while attending a performance

Size 420sf

Users Coat attendents; patrons

Occupancy 2 occupants; used before and after performances

Spatial Relationships Located close to entry and next to box office

Furnishings/Equipment Coat rack and shelving

Other Considerations Should hold as many coats as there are seats in the house. Coin-operated lockers may also be an option for those who don't want to wait in line for the coat check if they are elegantly designed.

Gift Shop

Description Used for the sale of items including books, Chicago souvenirs, CDs, clothing, etc.

Size 1100sf

Users Cashiers, customers

Occupancy Varies

Spatial Relationships Located near Entry

Furnishings/Equipment Display shelfs, checkout counter

Concession

Description For the sale of snacks, liquor, and soft drinks not to be eaten in the auditorium

Size 800sf

Users Public, staff

Occupancy Varies

Spatial Relationships Located near the entrance or lobby

Furnishings/Equipment Beverage dispensers, coffee machines, small ovens, etc.

Other Considerations May need plumbing so placement against wall may be beneficial

Patron Lounge

Description Space used for relaxing and socializing

Size 950sf

Users Performers, public, staff, guests

Occupancy 12 occupants; used before and after performances

Spatial Relationships Located off of lobby near theater

Furnishings/Equipment Sofas, chairs, tables, audio speakers for lounge music

Other Considerations Should have good views to the skyline and the waterfront

Restaurant

Description Fine dining for theater patrons

Size 8500sf

Users Public, patrons, waiters and waitresses, cooks

Occupancy 200 occupants, varies

Spatial Relationships Located off of public areas

Furnishings/Equipment Booths, tables, chairs; typical kitchen equipment

Other Considerations Shall have good views to Lake Michigan and the Chicago skyline

Public Restrooms

Description Restrooms for both men and women

Size 1.5 women's toilets per 100 seats/1.0 women's lavatories per 100 seats
.33 men's toilets per 100 seats/.66 men's urinals per 100 seats/.5 lavatories per 100 seats
Total Restroom= 1700sf

Users Patrons

Occupancy 22+ women per bathroom prior to performance; 13+ men per bathroom @ 2 bathrooms

Spatial Relationships Located in main lobby and near auditorium

Furnishings/Equipment Toilets, urinals, lavatories, towel dispenser, etc.

Back Stage Spaces

Dressing Rooms

Description The space where performers prepare for a show; considered a performer's second home.

Size 2 large dressing rooms @ 670sf each; 8 small "star" dressing rooms @ 120sf each

Users Performers

Occupancy Up to 160 occupants when full; used all times of the day by dancers, actors, and actresses much like studio spaces.

Spatial Relationships Is to be in close proximity to the stage and side stages

Furnishings/Equipment Dressing-table units, seating, lavatory and private toilets, lockers

Other Considerations There should be one dressing table per dancer at least three feet wide, fitted with a mirror, incandescent lights, and lockable drawers, one sink per every five performers, and a television for viewing performances live.

Instrument Storage

Description Holds the instruments used in the orchestra

Size 300sf

Users Musicians

Occupancy Used before and after performances or rehearsals

Spatial Relationships Adjacent to orchestra pit

Furnishings/Equipment Storage cubbies, instrument mounts

Other Considerations Temperature and humidity should be controlled to protect the instruments; make room for pianos and other large instruments

Green Room

Description A waiting room on the way to the stage

Size 1020sf

Users Performers

Occupancy 10-40

Spatial Relationships Near stage entry

Furnishings/Equipment Sofas, chairs

Support Spaces

Loading/Receiving

Description The space where trucks load and unload scenery to be used in performance

Size 2000sf including a workshop area for assembling the scenery

Users Performers, truck drivers

Occupancy Used late night or early evening

Spatial Relationships Should be located near scenery workshop, stage areas, wardrobe areas, storage, and freight elevator

Furnishings/Equipment Shelving, garage door systems

Scenery Workshop

Description The space where scenery is assembled for use in the performances

Size 2500sf

Users Performers, carpenters, stagehands, wardrobe personnel, etc.

Occupancy 1-4; used during the day

Spatial Relationships Should be located near the stage, scenery painting shop, and loading/receiving

Furnishings/Equipment Table saws, rotary saws, sanders, drafting table, etc.

Other Considerations Ceiling should be at least 30ft in height for assembly of scenes; good ventilation is a must for removing sawdust from the air; provide a lockable tool room for a carpenter; doors should be 20ft wide and 30' high.

Costume Shop

Description The space where costumes are created for the performers

Size 480sf

Users Costume maker, performers

Occupancy 1-6; used during the day

Spatial Relationships Located near dressing rooms and laundry

Furnishings/Equipment Cutting tables, sewing machines, ironing boards, steamers, dress forms, shelves, cabinets.

Wardrobe Room/Costume Storage

Description Space where costumes are stored, unpacked, aired out, and prepared for the first performance.

Size 860sf

Users Wardrobe seamstress, performers

Occupancy 6 occupants

Spatial Relationships Located near dressing rooms, laundry and costume shop

Furnishings/Equipment There should be racks for drying shoes, beautician's chairs, sinks, table, and shelves for wigs and wig stands

Other Considerations Needs proper ventilation and an isolated spraying room

Laundry

Description Space where costumes are cleaned before, during, or after a performance

Size 420sf

Users Support Staff

Occupancy 2-6; morning

Spatial Relationships To be located near costume shop, wardrobe room, and dressing rooms

Furnishings/Equipment Commercial washers and dryers

Movement/Massage Therapy

Description For the relief and prevention of muscular pain associated with dance

Size 300sf

Users Dancers, professors and other performers

Occupancy 3 occupants; used before and after performances or during the day

Spatial Relationships Located near dressing rooms

Furnishings/Equipment Exercise equipment

Other Considerations Should be properly ventilated with fresh air

Control Suite

Description Used for the control of lighting, acoustics, and recording

Size 360sf

Users Support crew, staff

Occupancy 6 occupants; used during performances and recording sessions

Spatial Relationships Located at rear of auditorium; sometimes above balcony seating

Furnishings/Equipment Lighting controls, audio soundboards, computer and recording equipment

Other Considerations Should have direct view to stage

Administrative Offices

Description Spaces for handling the theater's operations. This includes executive directors, artistic directors, managing directors, promotion directors, marketing managers, office coordinators, office coordinators, box office manager, house manager, technical director, designer, etc.

Size 9 offices x 175sf + 3700sf open office plan

Users Staff

Occupancy 29+ occupants

Spatial Relationships Privately accessed

Furnishings/Equipment Desks, chairs, file cabinets, computers, waiting areas, copiers, telephones, etc.

Conference Room

Description Meeting room for staff discussions

Size 750sf

Users Staff

Occupancy 15-25 occupants

Spatial Relationships Adjacent to offices

Furnishings/Equipment Conference table, chairs, video projection equipment

Lounge

Description Break room for staff

Size 500sf

Users Staff

Occupancy 10-25 occupants

Spatial Relationships Near restrooms

Furnishings/Equipment Sofas, chairs, sink, cabinets, refrigerator, vending machine.

Other Theater Spaces

Meditation Rooms

Description Dim-lit spaces (night) and sun-lit spaces (day) used for meditating to relieve anxiety prior to a performance

Size 4 qty. @ 100sf

Users Performers

Occupancy 1 occupant; used prior to performances

Spatial Relationships Located adjacent to the stage

Furnishings/Equipment Floor pillows, ambient lighting, skylight/windows

Other Considerations Should be minimalist and pure with little or no distractions; soft white materials

Extra Exhibition

Description Additional space for alternate venues such as car shows, markets, etc.

Size 16000sf

Users Public

Occupancy 2000-6000 occupants

Spatial Relationships A part of the main auditorium and connected to main lobby

Furnishings/Equipment Movable seating when needed

Other Considerations Should allow plenty of flexibility and change to suit the needs of the space.

Total Theater Space Allocation:

Total Theater Net Assigned Square Feet: 93000sf
Calculate 25% for Mechanical, Circulation, Stairs, and Structure:
93000sf x .25 = 23250sf
23250 + 93000 =
Total Theater Gross Square Feet: 116250sf

Dorms

Apartment Units

Description Living space which contains several private rooms with a shared kitchen, bathroom, and living area

Size Each single dorm unit is about 110sf. When grouped with 2 or 3 other dorm rooms, the apartment unit will contain one 45sf bathroom, and a 185sf kitchen/living room space.

Users Students

Occupancy 1-6; all times of the day and night

Spatial Relationships Laundry facilities should be near by

Furnishings/Equipment Beds, dressers, night stands, desks, toilets, lavatories, showers, chairs, sofa, refrigerator, oven, sink, coffee tables

Other Considerations There should be 16 beds per washer/dryer and a 440sf lounge for every 32 beds

Suite Units

Description Living space which contains two beds per dorm room with no shared kitchen and living area, but one shared bathroom

Size Each two-bed suite is 120sf and shares a 90sf bathroom with a second two-bed suite

Users Students

Occupancy 2; all times of the day and night

Spatial Relationships Laundry facilities, lounges, and kitchen

Furnishings/Equipment Beds, dressers, night stands, desks, toilets, lavatories, showers, chairs.

Other Considerations There should be 32 beds per kitchen, 16 beds per washer/dryer, and a 440sf lounge for every 32 beds.

Student Laundry

Description Space for students to wash and dry clothes

Size 50sf per washer/dryer combo

Users Students

Occupancy 1-4; 8am-10pm

Spatial Relationships Should be located near lounges

Furnishings/Equipment Washer, dryer, wash basin, hanger

Other Considerations Every 16 beds receives a washer and dryer

Lounges

Description Spaces where students can hang out, study, or wait for their laundry

Size 440sf

Users Students

Occupancy 1-12; all times of the day and night

Spatial Relationships Near student kitchen and laundry

Furnishings/Equipment Sofas, coffee tables, chairs

Other Considerations Should have good views or other aesthetic characteristic

Hotel

Guest Rooms 450 sf each room - Living Area: 15' x 20' ; Bathroom: 7'-6" x 9'; Total: 15' x 30'

Lobby 2500 sf

Food & Beverage 6000 sf

Meeting & Banquet 8400 sf

Administration 3375 sf

Food Prep 3517 sf

Receiving/Storage 1703 sf

Employee Areas 3217 sf

Laundry/Housekeeping 3331 sf

Engineering/Mechanical 4000 sf

Swimming Pool & Deck 1800 sf

Health Club 1200 sf

Condos

One bedroom Units 1100sf; 1 bath, living, dining, kitchen

Two Bedroom Units 1670sf; 2.5 baths, living, dining, kitchen

Three Bedroom Units 2000sf; 3 baths, living, dining, kitchen, walk-in closet

Computer Center 1500sf

Spa & Fitness Center 2000sf

Lobby 6500sf

Retail Base 113000sf

Student Center

Faculty Offices (25) @ 120sf
Faculty Lounge 800sf
Conference Room 400sf
Dining Center 25000sf
Loading/ Receiving 500sf
Library 3000sf
Café/Coffee Shop 2200sf
Lounge 1200sf
Bookstore 6000sf
Computer Lab 800sf
Lecture Hall 3000sf (150 occupants)
Large Classroom 1500sf (75 occupants)
Small Classroom 700sf (35 occupants)
Radio Station 400sf

Total 48500sf

DuSable Pavilion

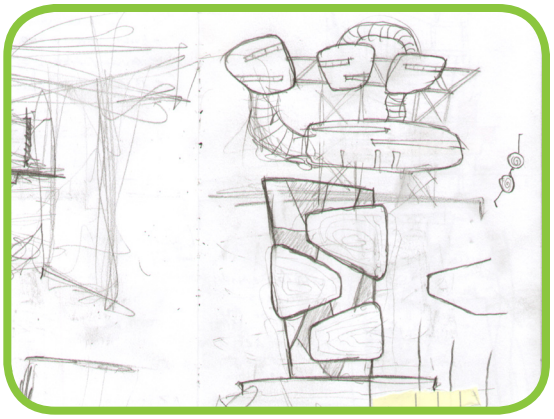
Gallery & Exhibition 20000sf
Public Restrooms 500sf

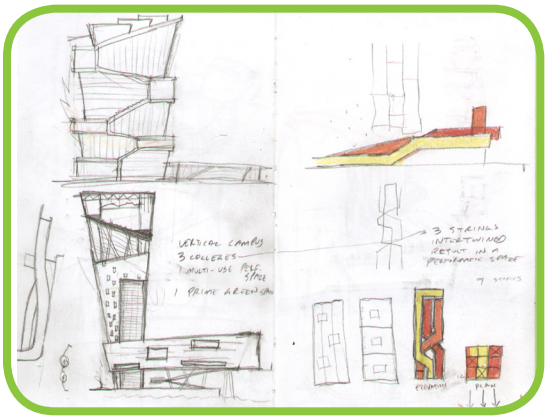
Observation Tower

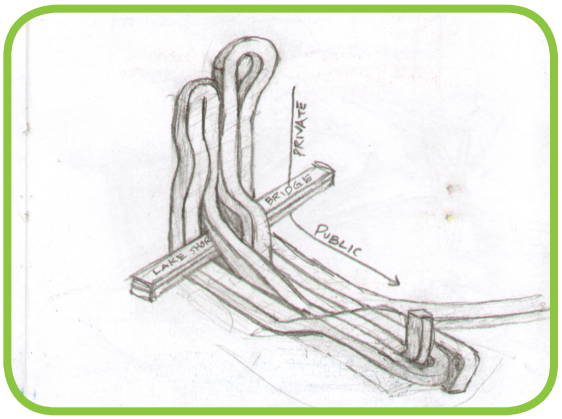
Multi-Level Open-Air Marketplace 38000sf
Public Restrooms Unisex; 150sf for every floor

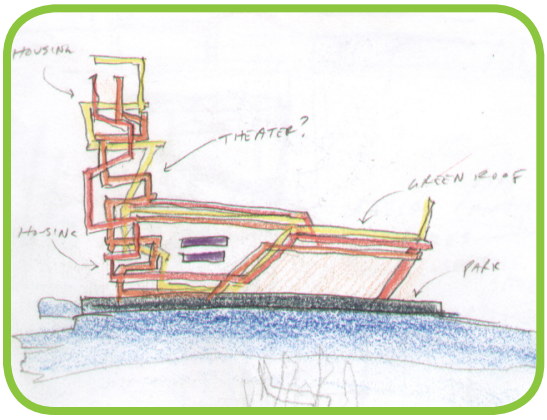
Introduction The following images are in order from the beginning of the design process to the end. This project has undergone many transformations in order to satisfy the requirements of the program and the aesthetic expected for this prime location in Chicago.

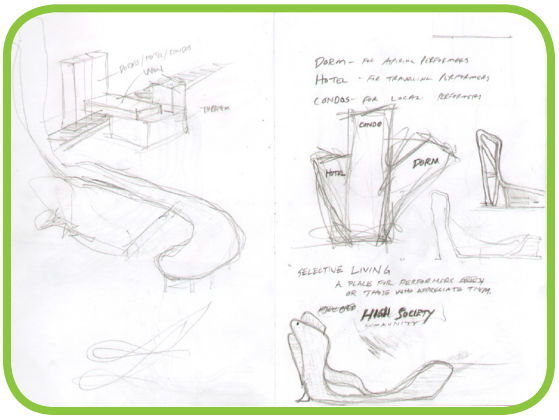
Sketches These sketches, to me, are a way of releasing my inner thoughts of what the project should consist of conceptually. I would like to consider them as unconscious vomit, not intended to accurately portray the design of the building, but to instead allow myself to derive forms from the bizarre scribbles emanating from my fingers.

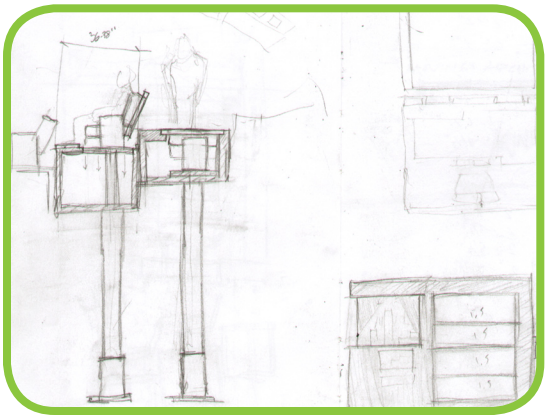


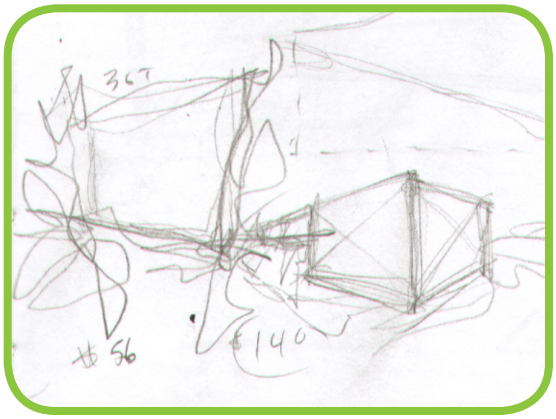


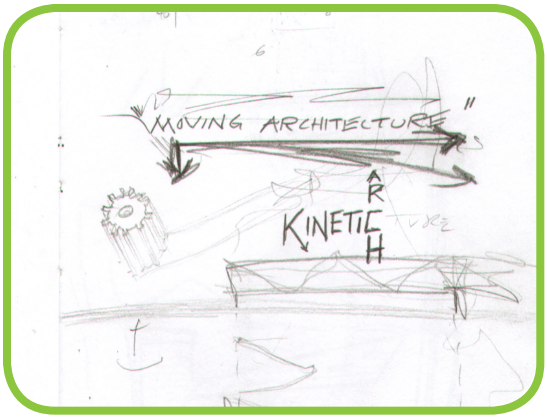


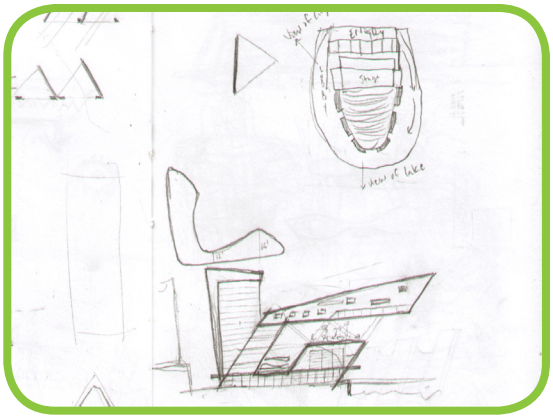


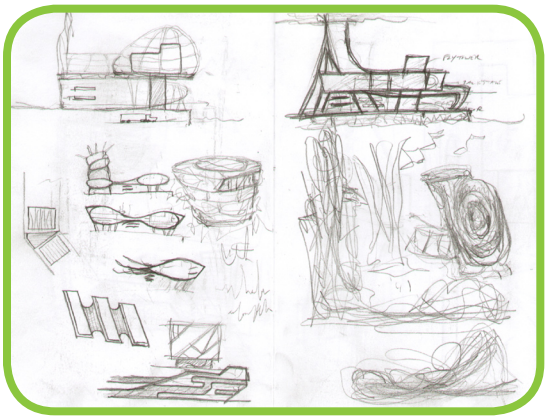


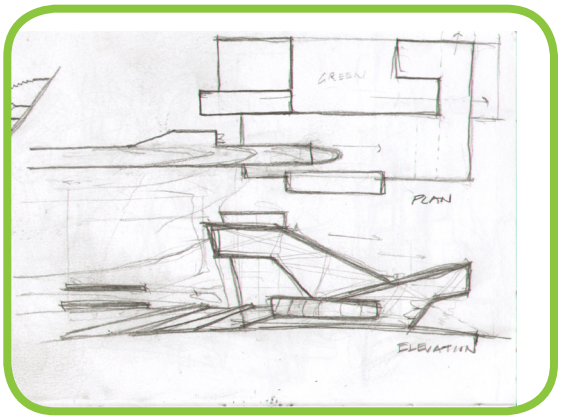


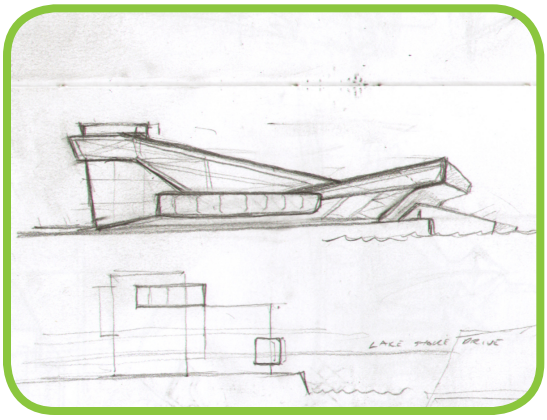


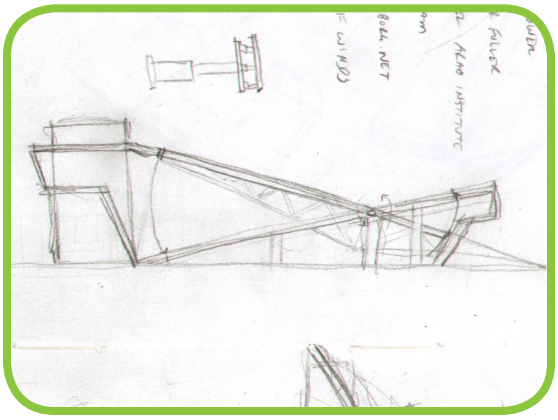

MOVING ARCHITECTURE
KINETIC

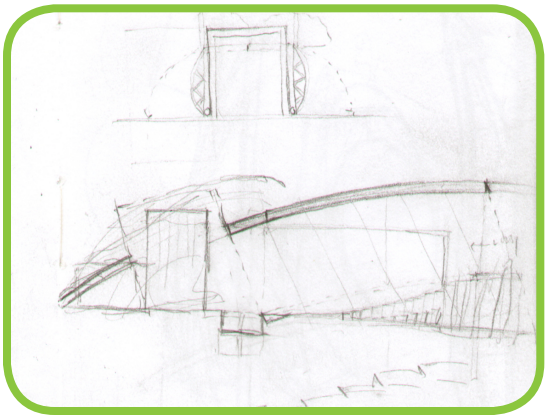


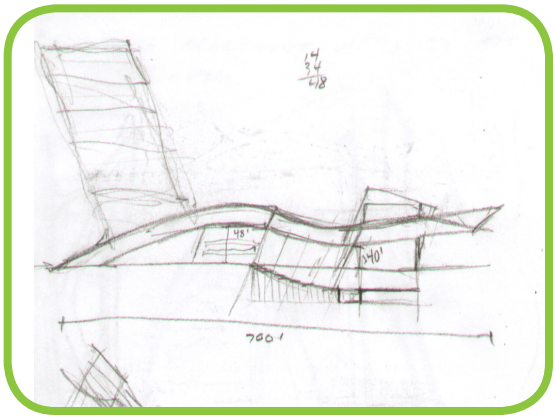


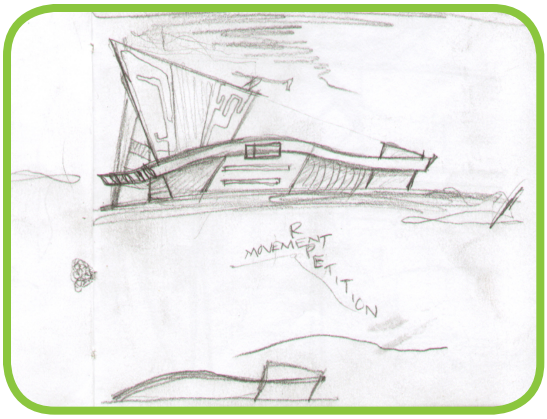

PLAN
ELEVATION

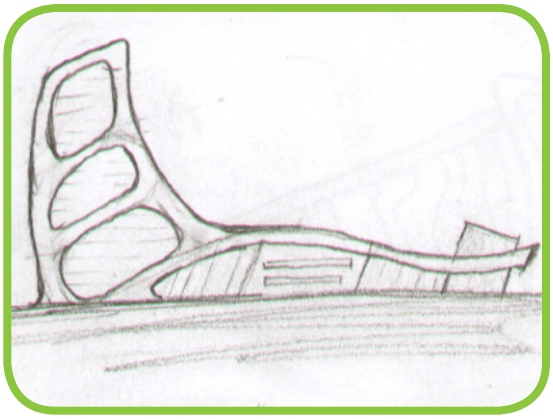


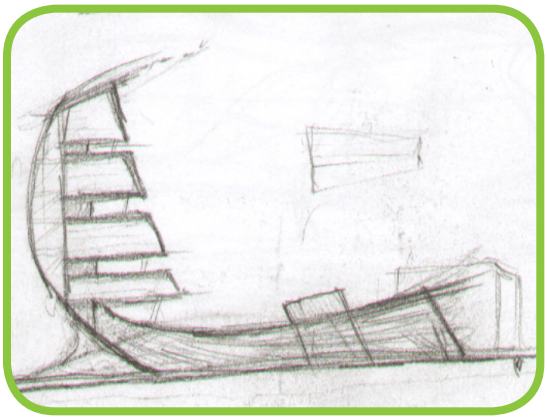


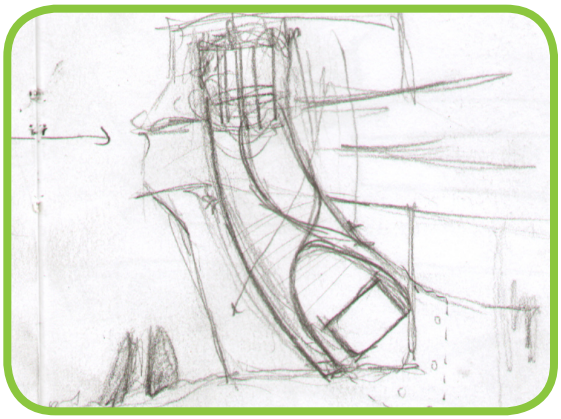


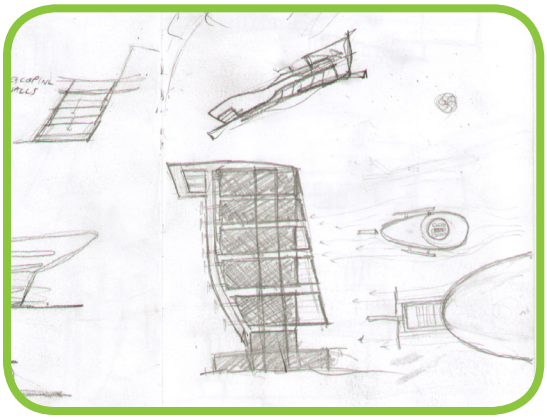


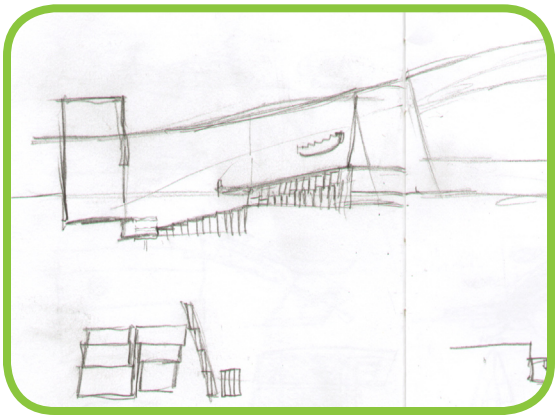

MOVEMENT

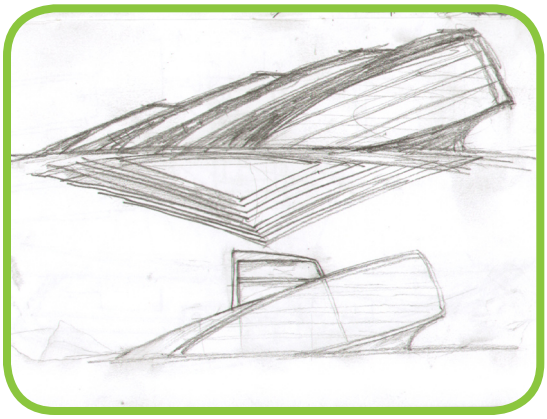


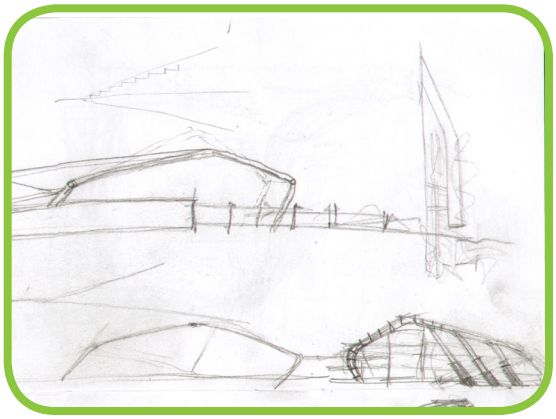


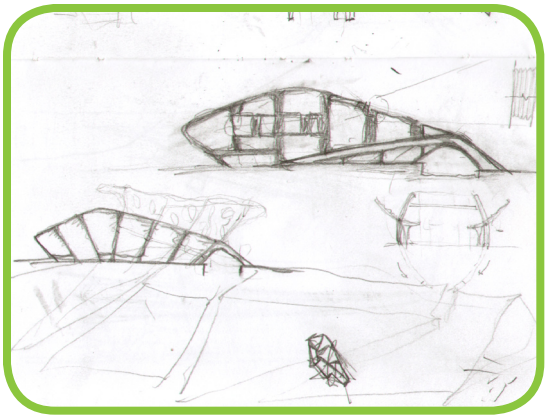


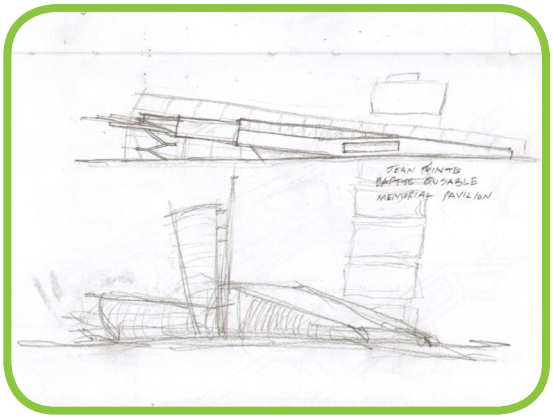


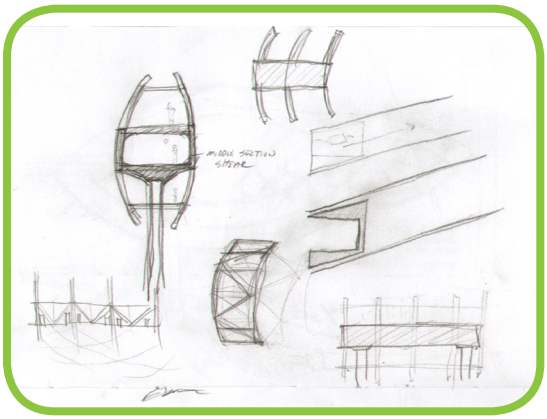


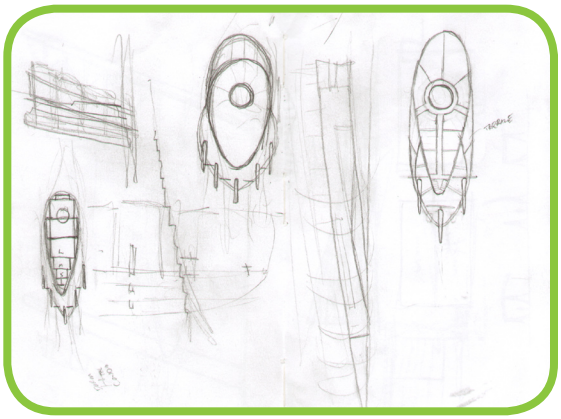


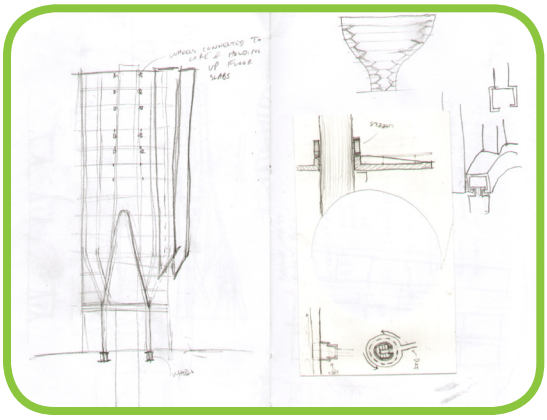


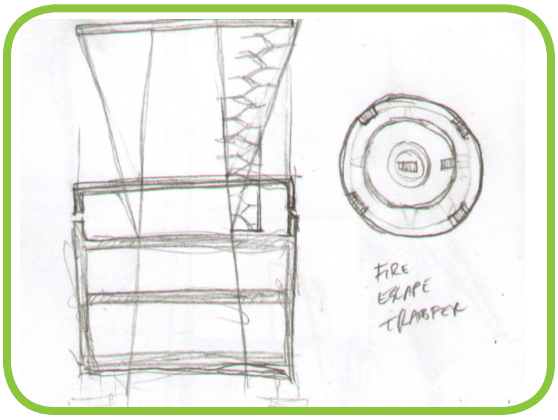



JEAN PAINTE
BAPTISTE DUSABLE
MEMORIAL PAVILION


MIDDLE SECTION
STAIR






FIRE
ESCAPE
TRAPPER

SketchUp After sketching to brainstorm some ideas, I jumped into SketchUp to further evolve my design. This program was a useful tool for creating boxes which were the same scale as spaces in my programmatic requirements. Unsure about many alternative designs, I jumped around until I found a solution that I could develop. I then further evolved the design into a detailed model ready to be refined in a more realistic rendering engine.

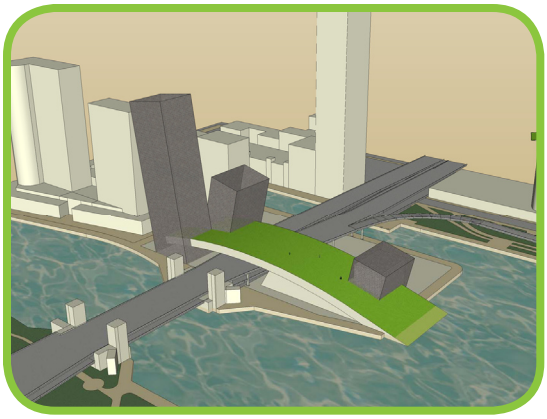


Fig.5.0. Initial Concept

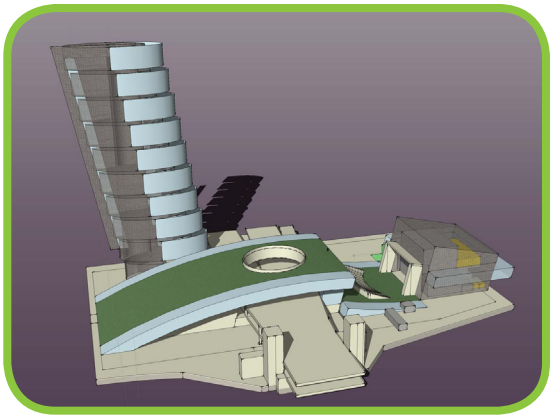


Fig.5.1. Concept Developed Further

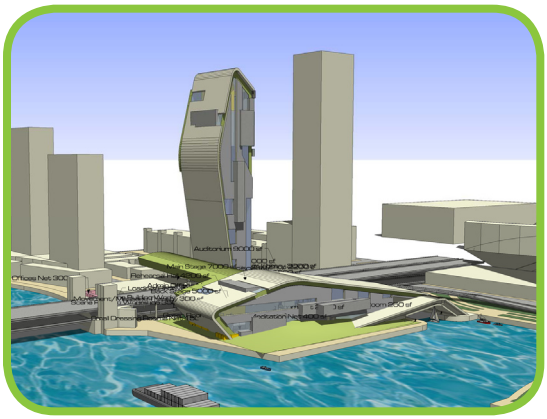


Fig.5.2. New Design

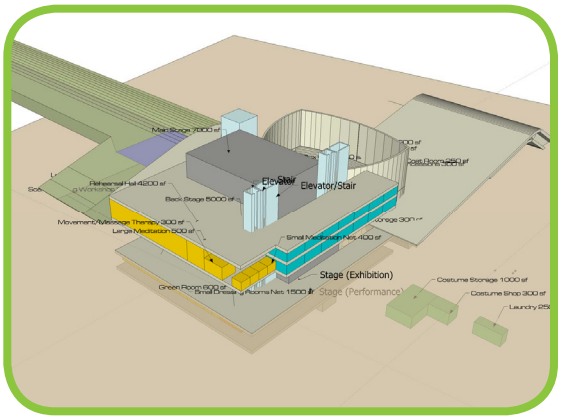


Fig.5.3. Puzzling together spaces

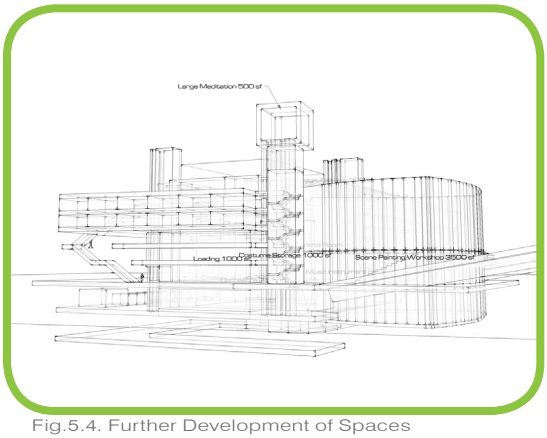


Fig.5.4. Further Development of Spaces

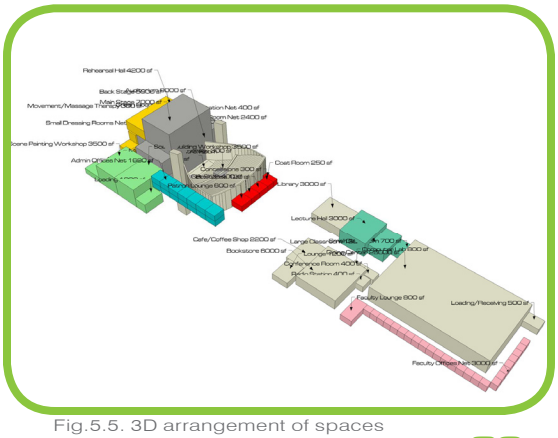


Fig.5.5. 3D arrangement of spaces

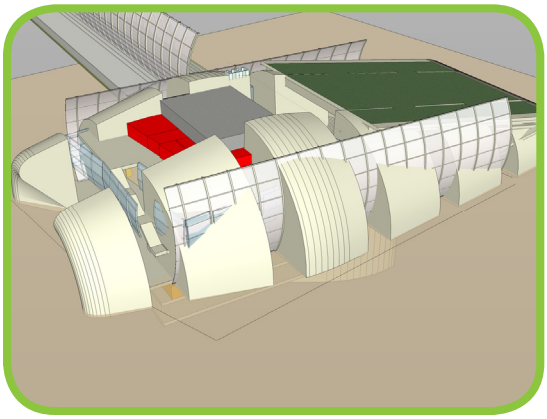


Fig.5.6. Experimenting with yet another new form

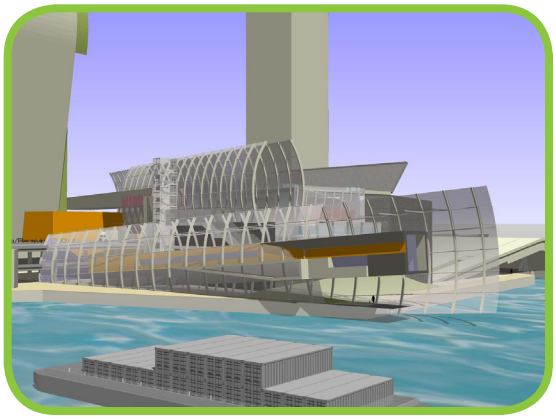


Fig.5.7. Developing Pavilion

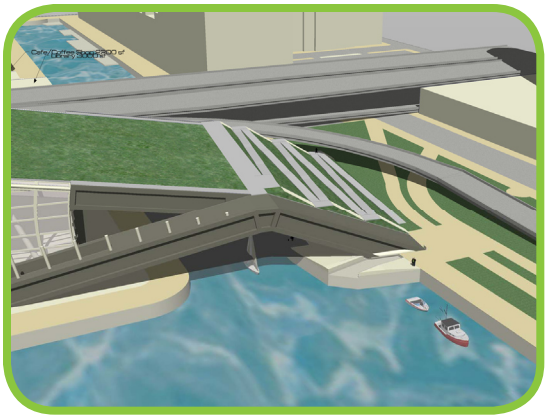


Fig.5.8. Creating linkage across Ogden Slip

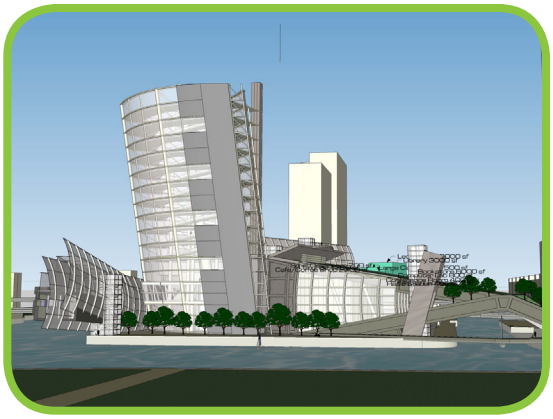


Fig.5.9. Elevation Alternatives

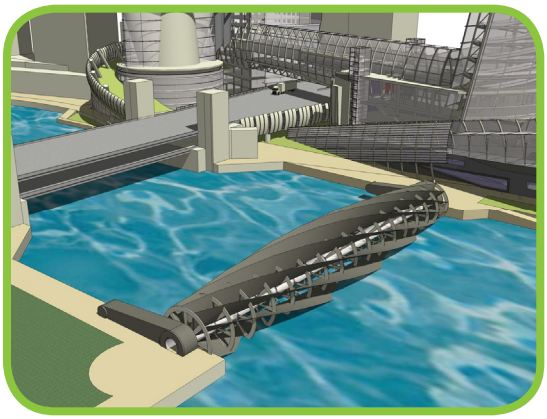


Fig.5.10. Bridge Turbine

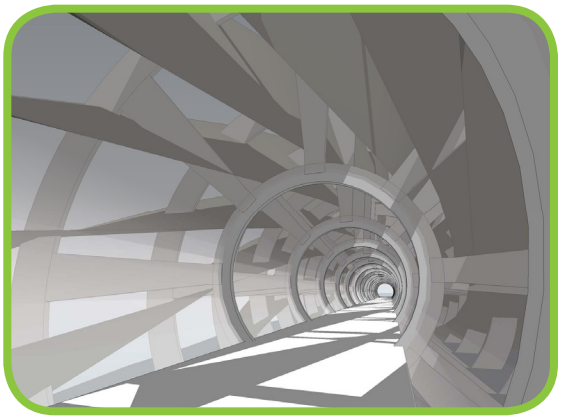


Fig.5.11. Inside Bridge Turbine

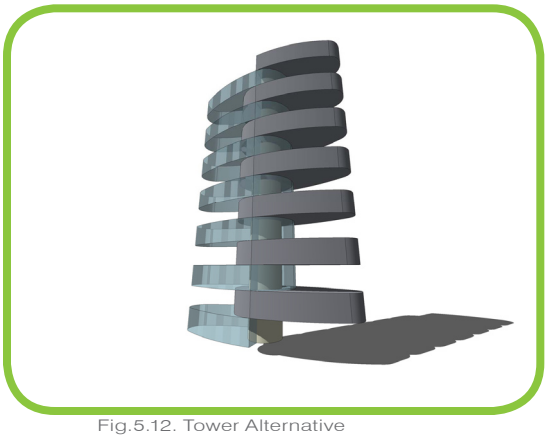


Fig.5.12. Tower Alternative

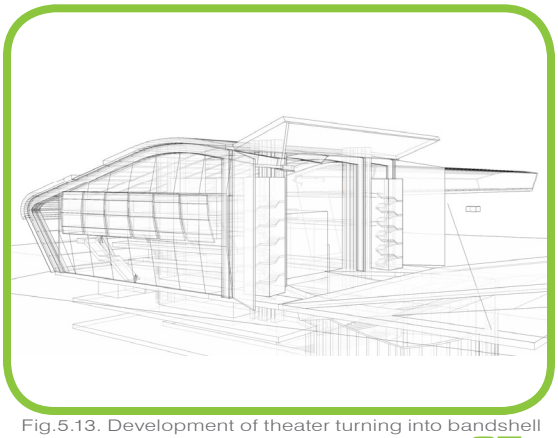


Fig.5.13. Development of theater turning into bandshell

Achieving the Stated Goals The intentions listed earlier in this document under project goals were to be the driving force of my thesis. Throughout the design process, I attempted to create connections between Chicago's park systems and access which the site lacked prior to the design of this project. The following is justification for the implementation of my goals.

GOAL IMPLEMENTATION

Connecting the Broken Link To connect the broken link between the north park system of Chicago to the south system, I designed the theater to be placed in DuSable park and contain an expansive roof-top park. This roof-top park's base starts north of Ogden slip where there is a lot of pedestrian traffic and access to larger means of transportation. The roof then spans and rises over Ogden slip to provide access to the observation tower or the skywalk link spanning Lake Shore Drive. Kinetic bridges are also implemented in the design to provide pedestrians and bicyclists a continuous stretch of lakefront park access.

Access into and around site The current situation with Lake Shore Drive and the abandonment of DuSable park is an inconvenient one. In order to travel from North Chicago to South Chicago by means of the lakefront bike and pedestrian trails, one has to cross the Lake Shore Drive bridge which bypasses DuSable Park. Lake Shore Drive is a major four lane highway and has no protection for pedestrians and bicyclists crossing the bridge. My design solution is to allow access into DuSable Park from surrounding areas using skywalk links, bridges, and designated pedestrian walks. The pedestrian bridges, in addition to providing pedestrian access to the site, rise to allow boats access as well. A skywalk link provides safe access to the theater above Lake Shore Drive and links the residential spaces to the public spaces. To allow delivery trucks to deliver to the theater, the site needed to be graded slightly lower so there is enough clearance underneath Lake Shore Drive.

A 21st century public realm & high-energy lakefront amenity One of my goals was to knock Chicago into the 21st century by giving them a high-energy lakefront amenity. To do this I first of all designed a theater which has the ability to transform into an outdoor bandshell. Above the theater is an observation tower which provides superb views of the Chicago skyline and Lake Michigan as well as views up shore and down shore. The tower can be used for open-air activities such as flea markets, produce markets, etc.

The DuSable Memorial Pavilion has been designed to commemorate the first settler in Chicago, Jean Baptiste Pointe DuSable. This space provides space for a multitude of functions, temporary or permanent.

Docking piers are expanded into the river to give users a stronger connection to the water and allow boaters and tourist yachts to board and unboard with ease. The current seawall needs replacement and is starting to look unsightly. This solution helps beautify the water's edge.

Kinetic architecture is used as a means of technology and a metaphor for movement.

A community for living, learning, & performing Luxury condos, dorms, and hotels provide accommodation for local artists, travelling artists, and aspiring artists respectively. I wanted to create a society for those who truly appreciate the performing arts, a place for living, learning and performing. The student center contains classrooms, a library, and other functions for students or aspiring performers to learn and a theater provides space for performances and rehearsals. This project satisfies the needs of the three urban colleges by giving them more student living, additional classrooms, and state-of-the-art performance spaces.

KINETIC ARCHITECTURE The main focus of this thesis is on the application of kinetic architecture. Today's society is one of constant change and innovation. With such accelerating trends in technology and culture, needs must be met to satisfy our dynamically changing society. Kinetic architecture is architecture capable of movement. Spaces change and move for the sake of function, form, and/or visual pleasure. To see this architecture in motion, please refer to the enclosed disc at the back of this manual.

Theater A theater has been designed to transform from an auditorium into an exhibition space into an outdoor bandshell. The inner walls of the theater and the theater seating are run on hydraulics and are able to collapse to make way for exhibition space. The roof of the theater is also supported by large hydraulics and allow the roof to fold down to open up the theater's stage to the outdoors. The theater can now be a band shell for public concerts, festivals, or movie nights. [see videos 01 and 02 on disc]

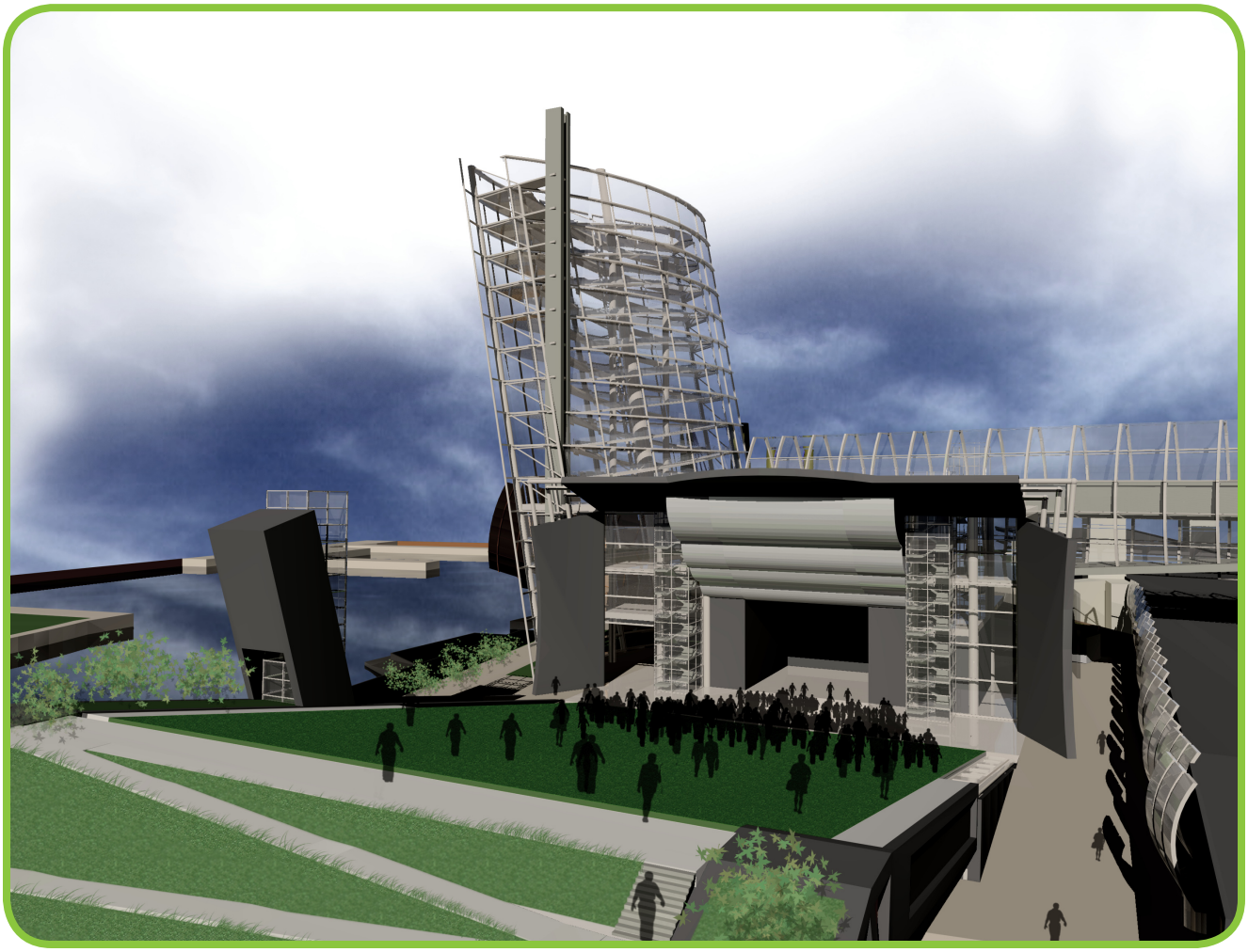


Fig.6.0. Theater in Bandshell Mode

Condo Tower This luxury condo is on a gold mine location in Chicago. Nearby conservatively-designed towers start at $875,900 per condo. It can easily be said that this tower should be unlike any other in the world. To create a unique icon for the lakefront of Chicago, I designed this tower to rotate in the wind. Not only are residents able to receive constantly changing views of Lake Michigan and the Chicago skyline, but the tower also aids in looking towards a sustainable future. There are wind turbines mounted at the back of the tower. Lightweight fins guide the tower into the wind and channel the air into the turbines. The tower will always be facing into the wind to ensure proper wind facilitation and to reduce the lateral wind loads. [see videos 03 & 04}

Fig.6.1. Luxury Condo Tower

Dorms & Hotels Student dorms located to the west of the theater have the ability to transform into hotel rooms. During the summer months, when it is prime tourist season, the units will convert into hotels to accommodate the influx of guests visiting the shows at the theater or other local events. In the winter, when classes are in effect, students will occupy the spaces as dorm units. Dorms at the DuSable Tricademy for Artistic Expression are unlike any others, however, because students each have the option of having a dorm unit with a sound-proof practice room for rehearsing music or skits, or one that transforms to provide an outdoor terrace. College students are avid consumers with a taste for luxury, and campus life within the urban realm of Chicago is jam-packed with wonderful amenities. [see video 05]

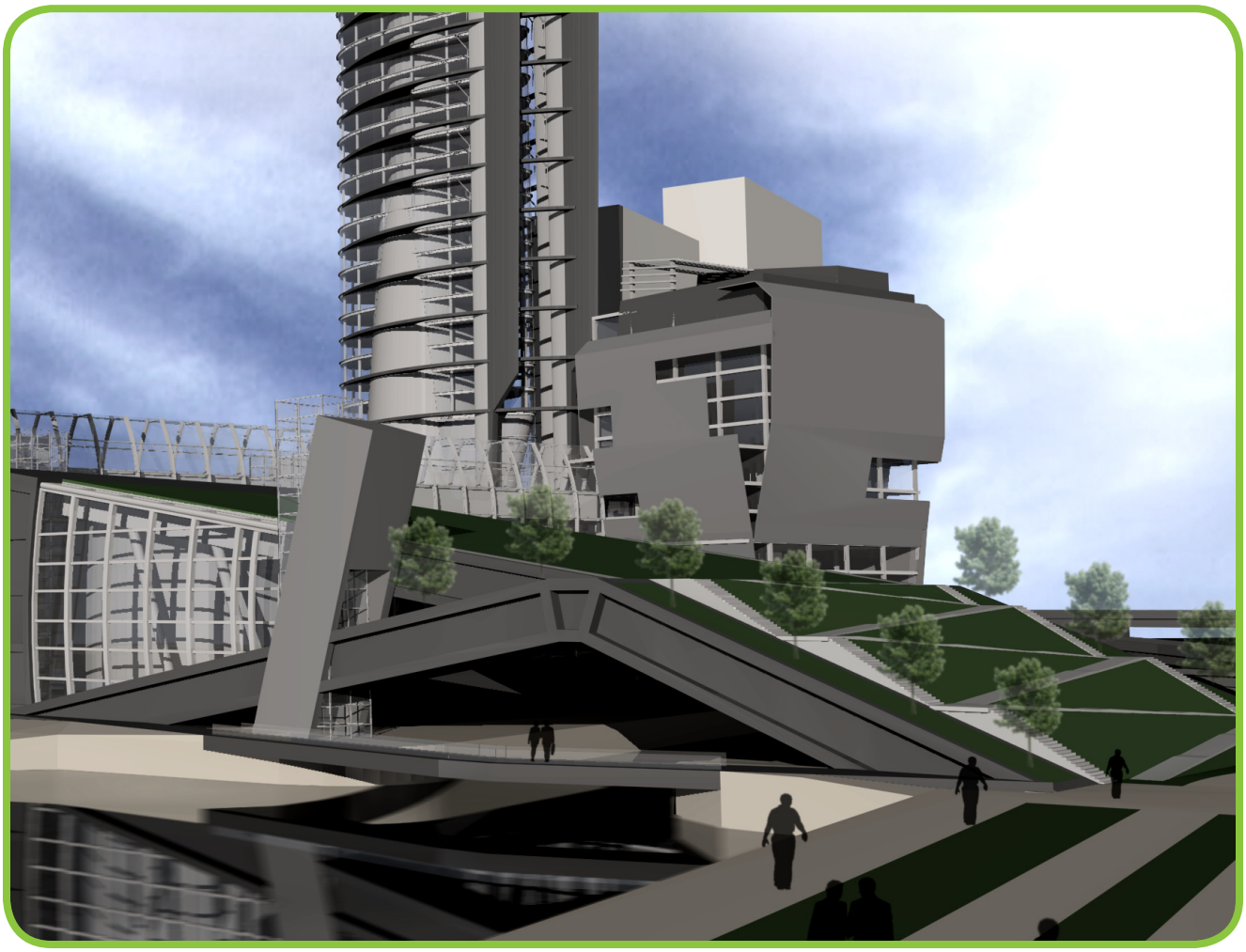


Fig.6.2. DuSable Tricademy for Artistic Expression looking southwest towards hotels & dorms

Fig.6.3. Auditorium when in full auditorium mode

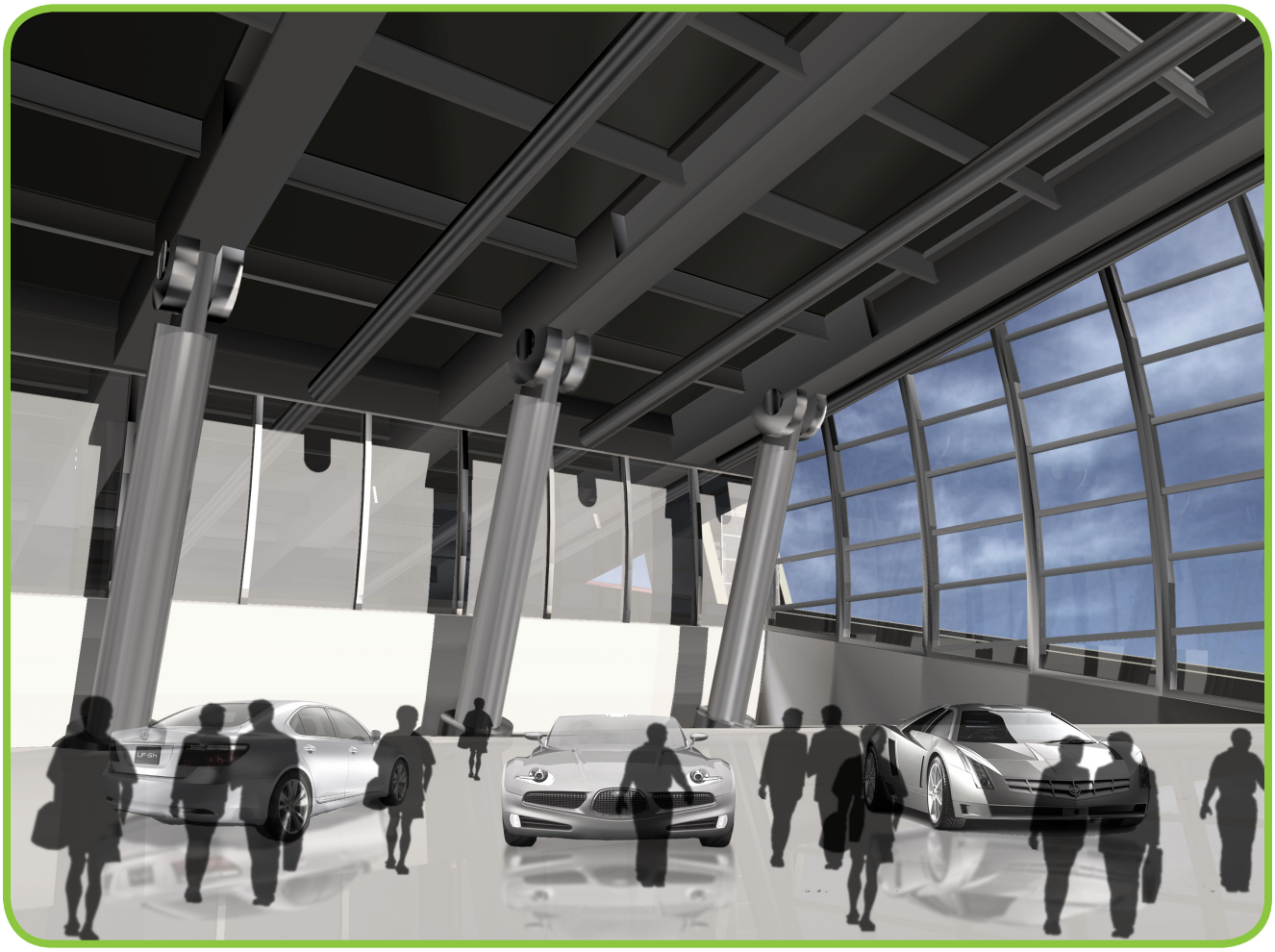


Fig.6.4. Exhibition Mode with the auditorium walls and seating collapsed and an auto show in progress

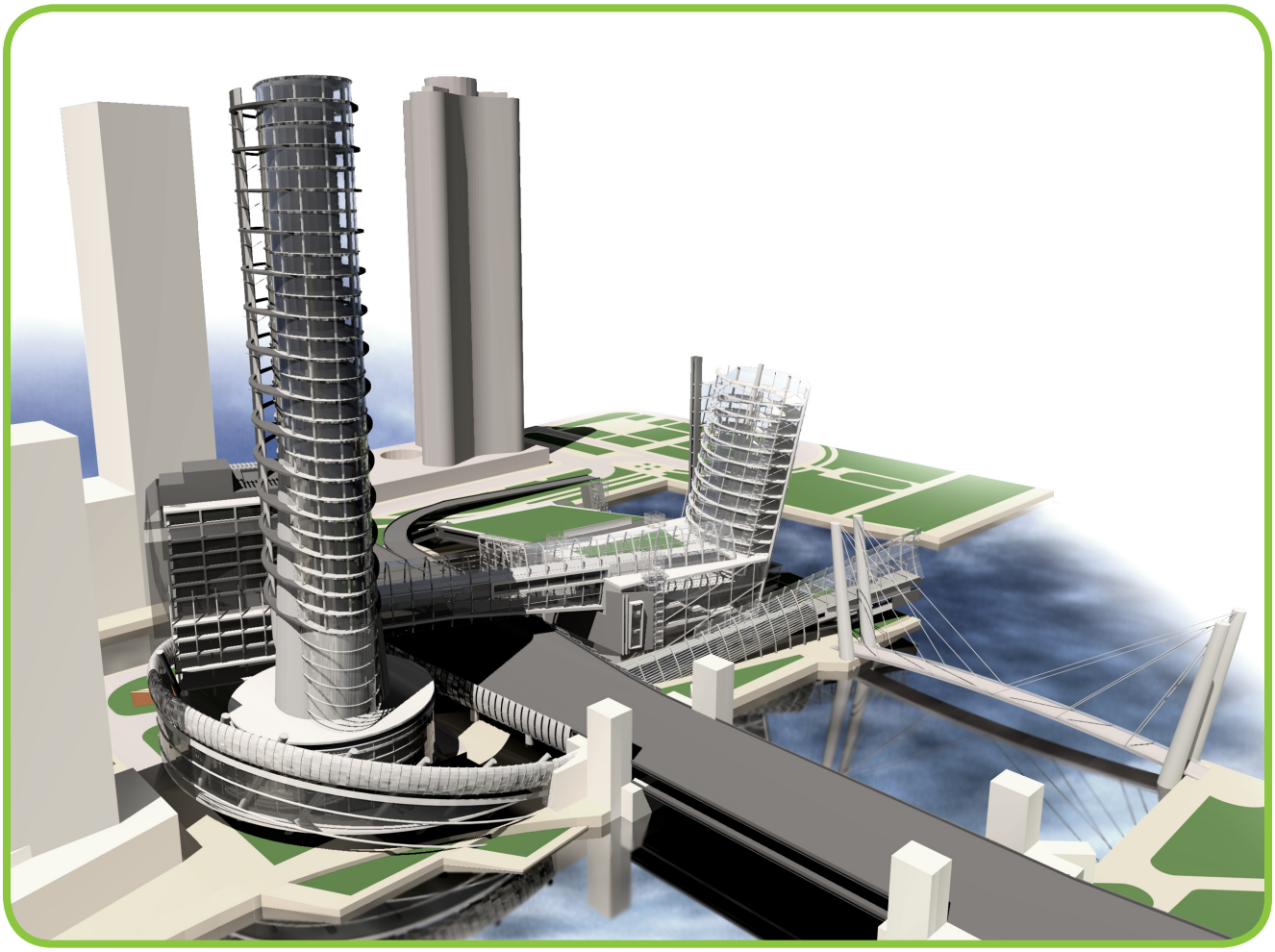


Fig.6.5. Overview of Entire Site

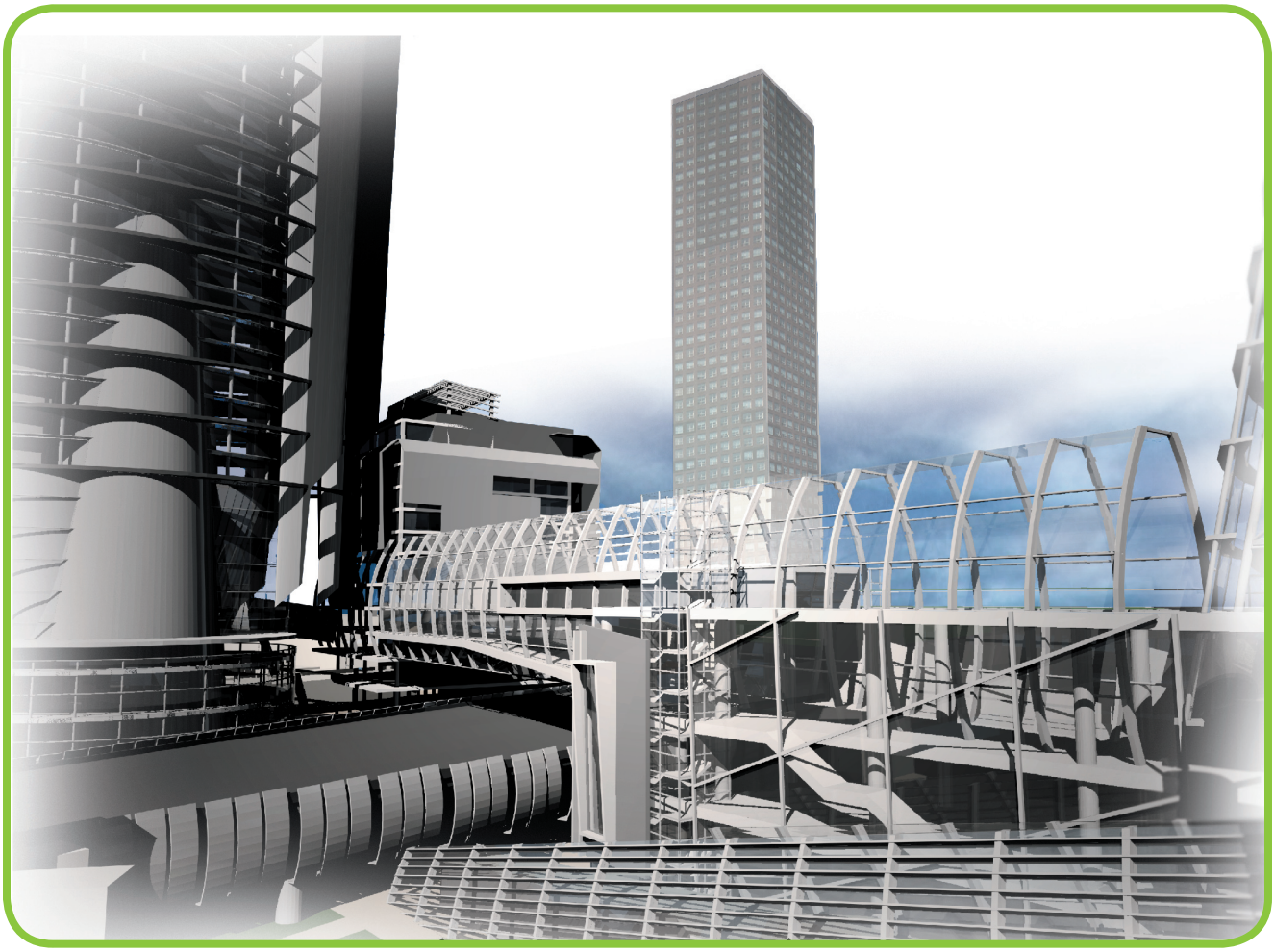


Fig.6.6. Intersection of project's main components

Fig.6.7. Skywalk and Office Link spanning Lake Shore Drive

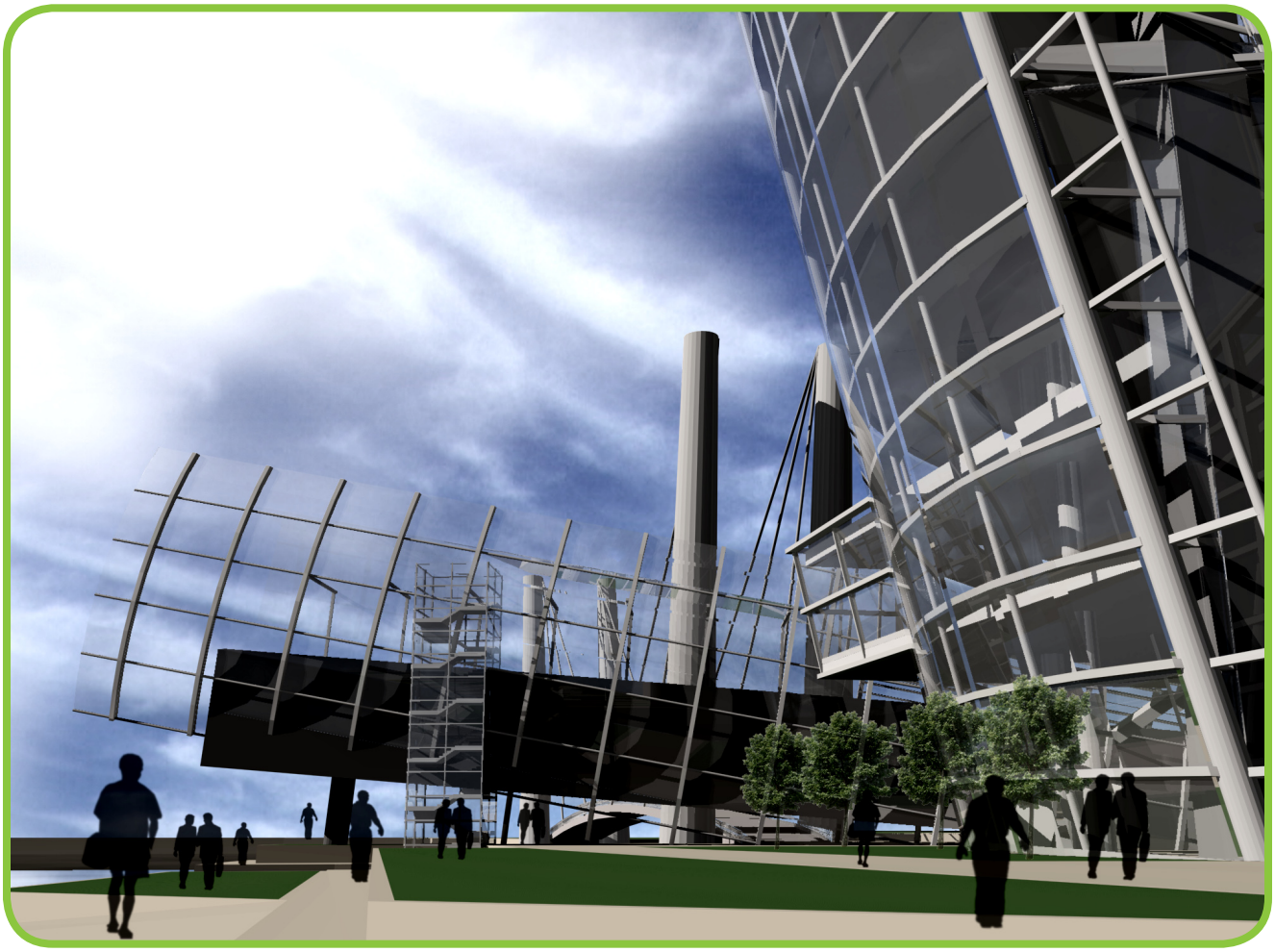


Fig.6.8. DuSable Pavilion and Observation Tower Base

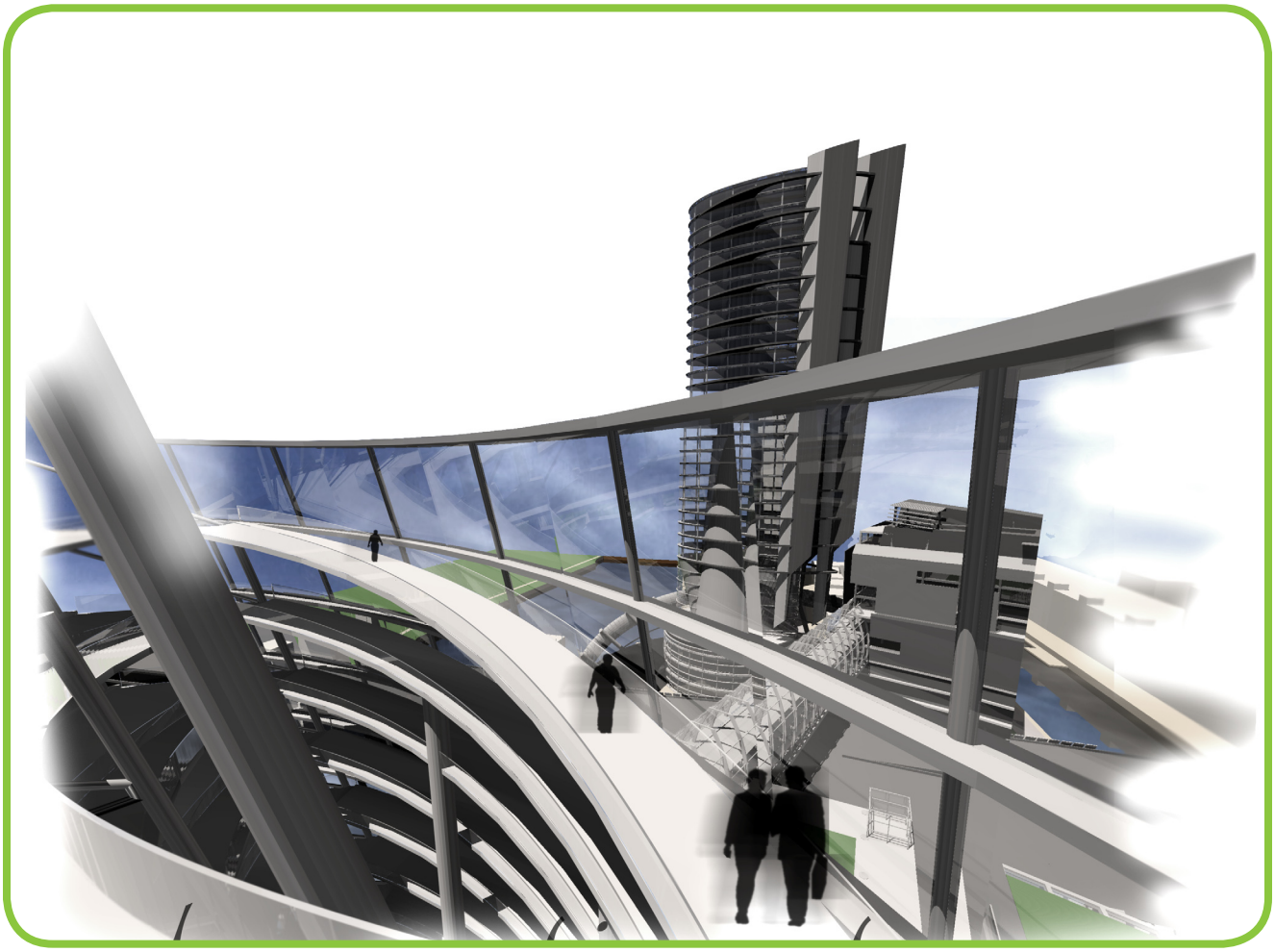


Fig.6.9. View looking over the site from Observation Tower

Fig.6.10. Full elevation of project looking southwest from Gateway Park

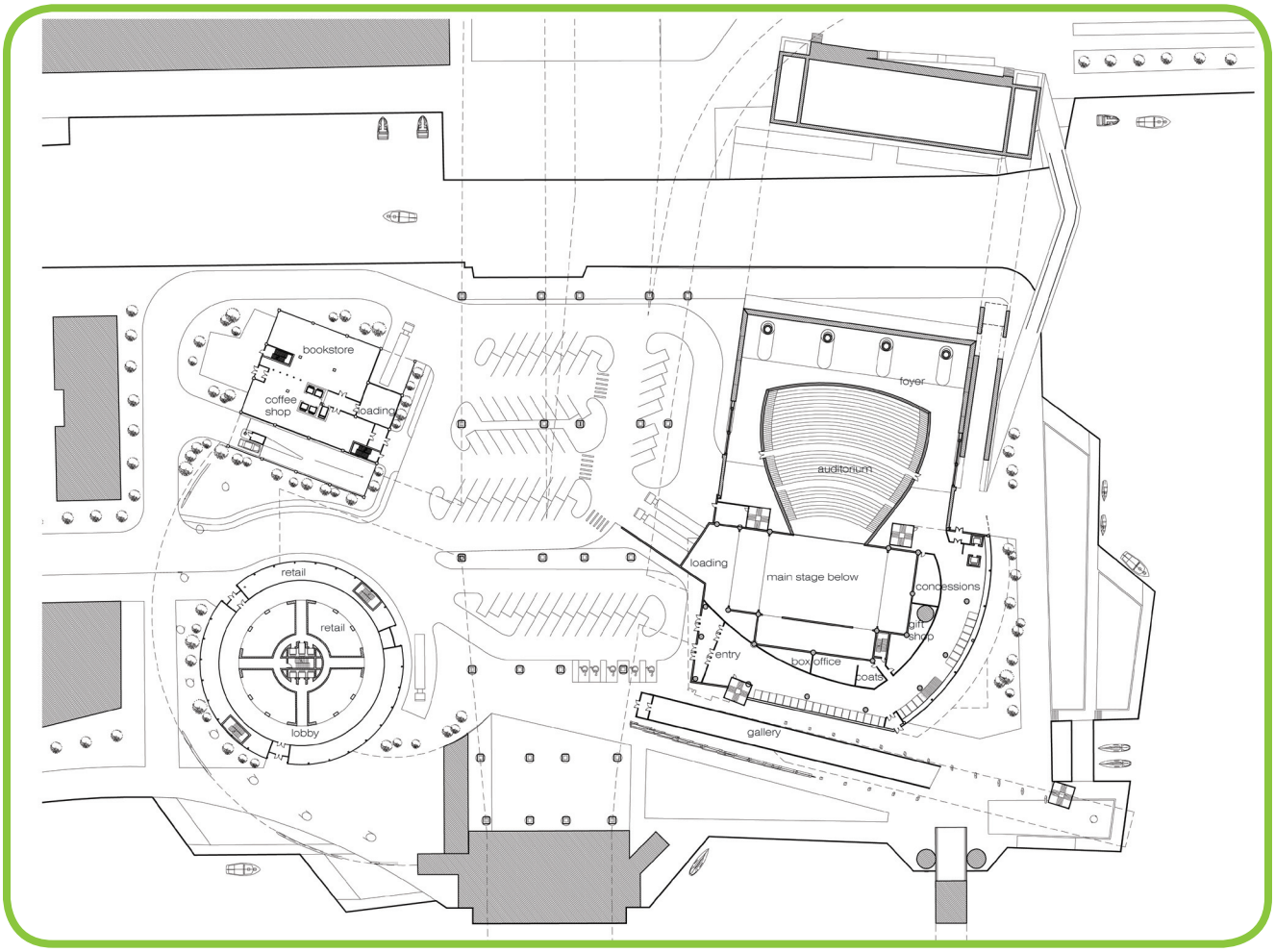


Fig.6.11. Master Ground Floor Plan

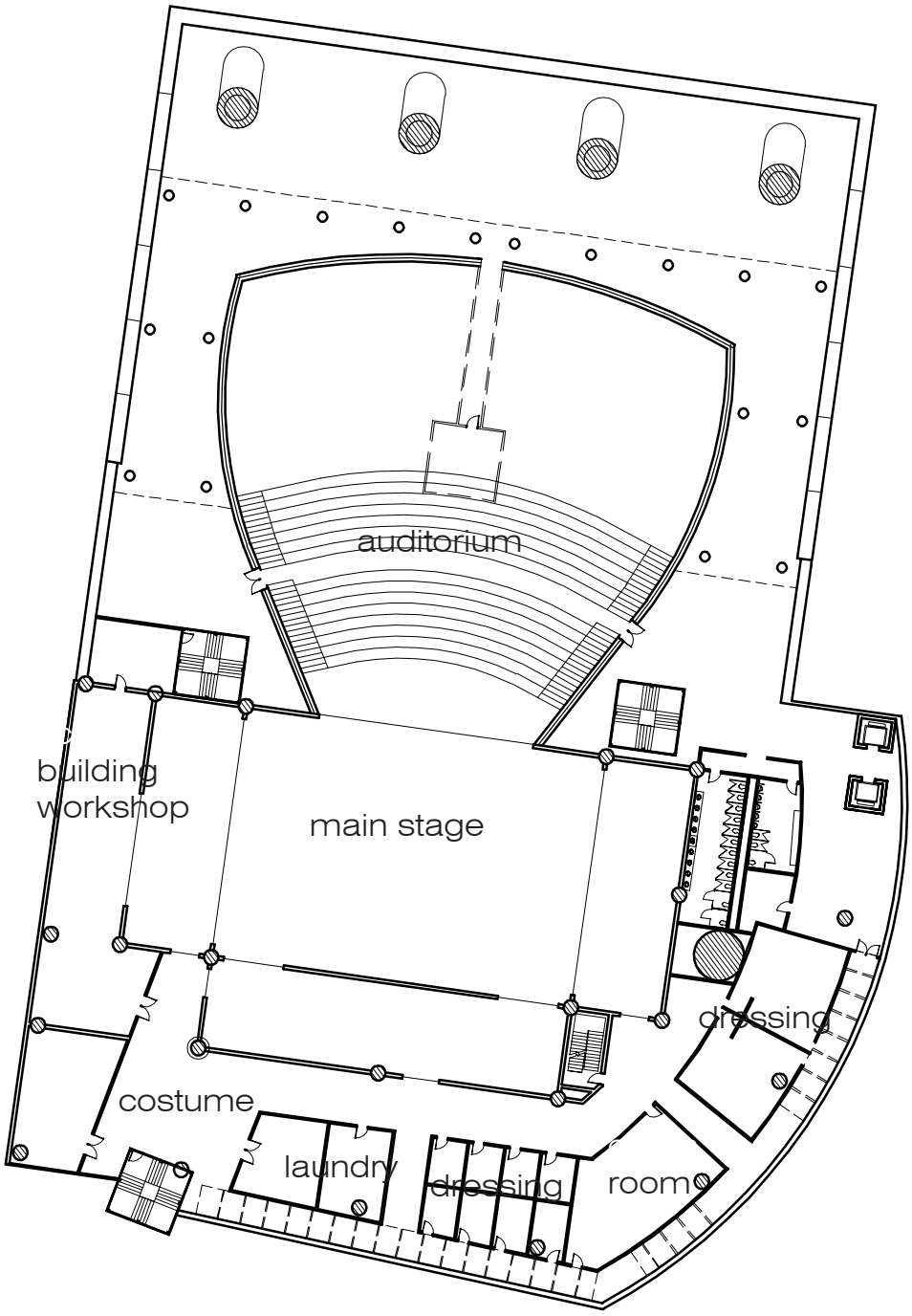


Fig.6.12. Lower Level Plan of Theater 1"=50'-0"

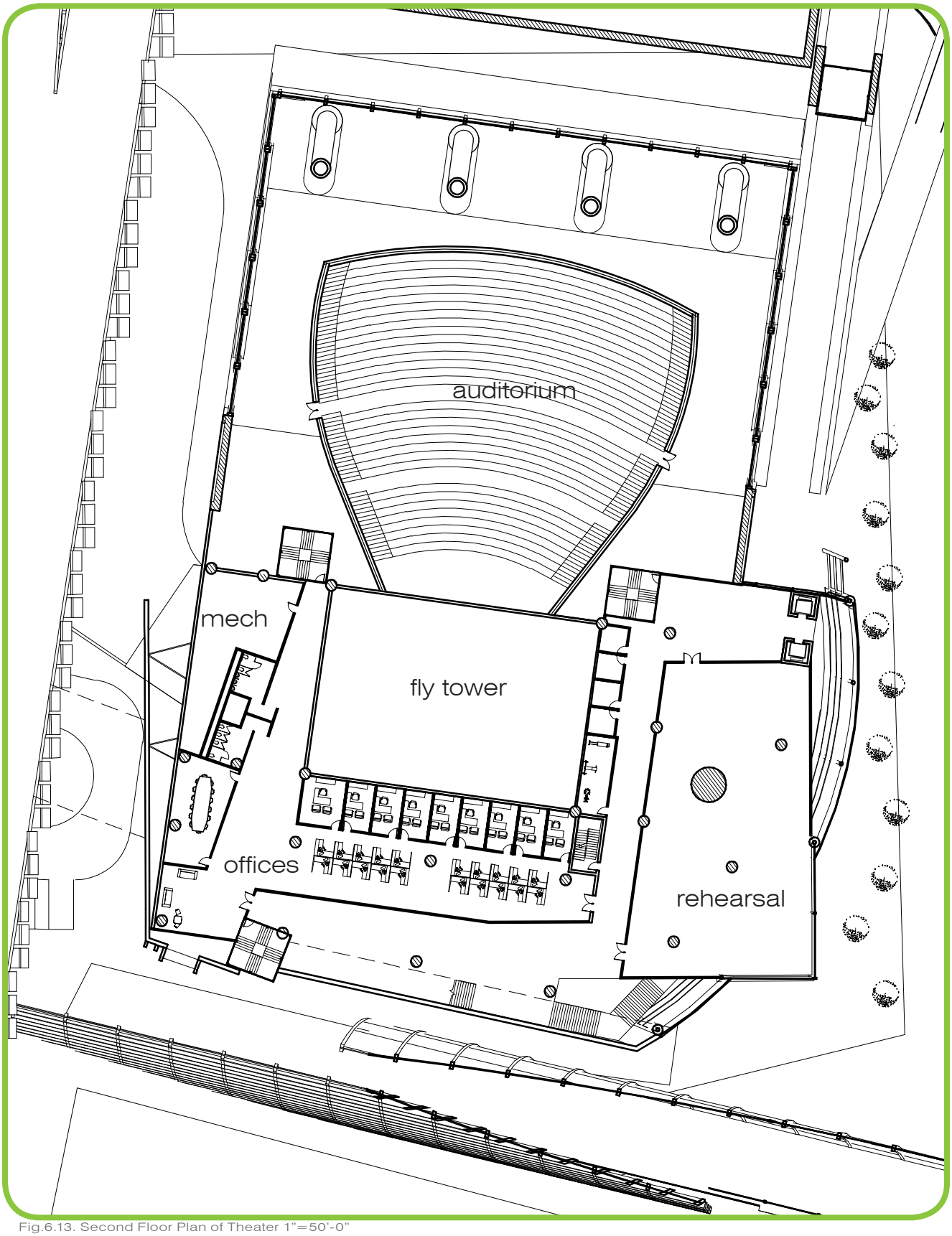


Fig.6.13. Second Floor Plan of Theater 1"=50'-0"

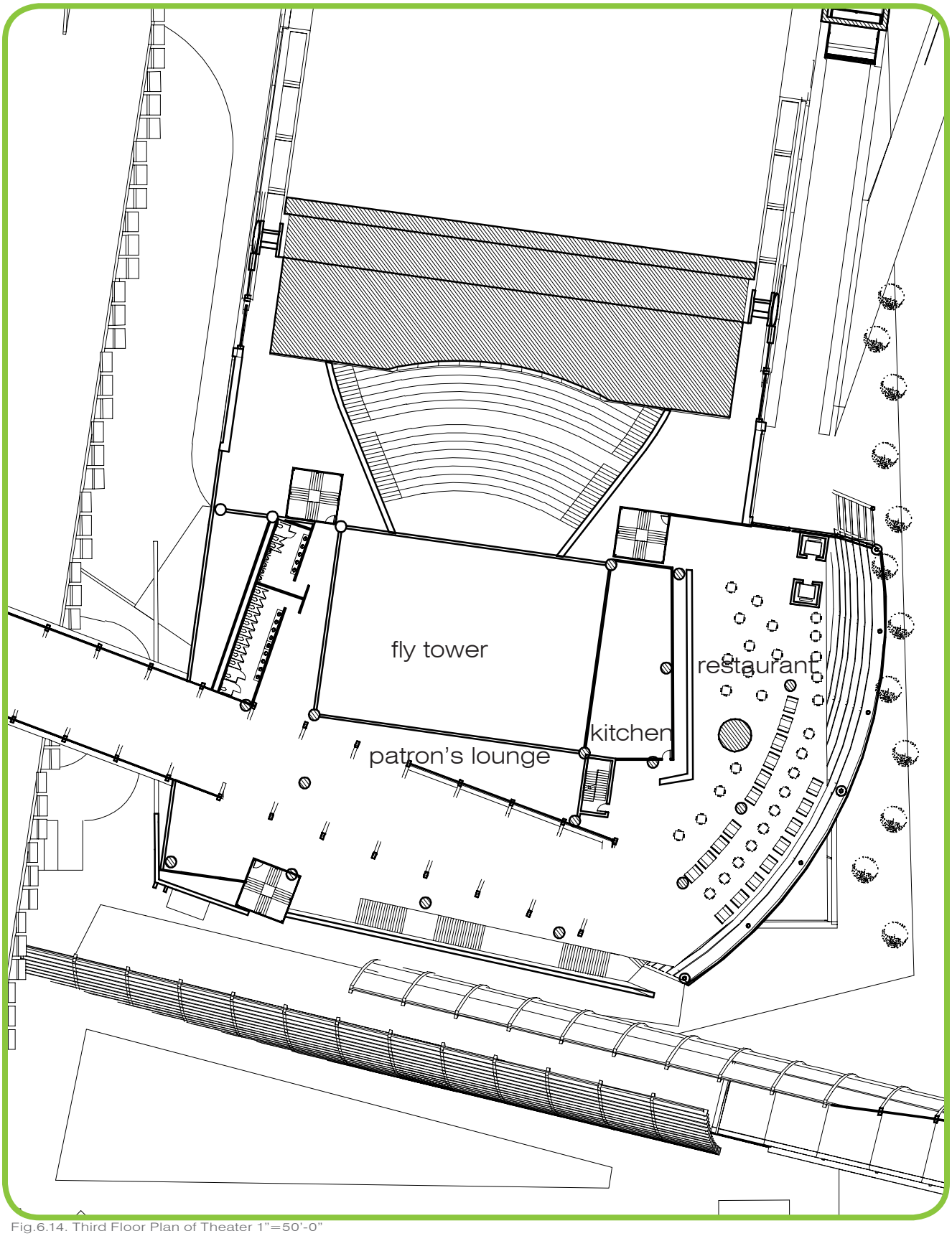


Fig.6.14. Third Floor Plan of Theater 1"=50'-0"

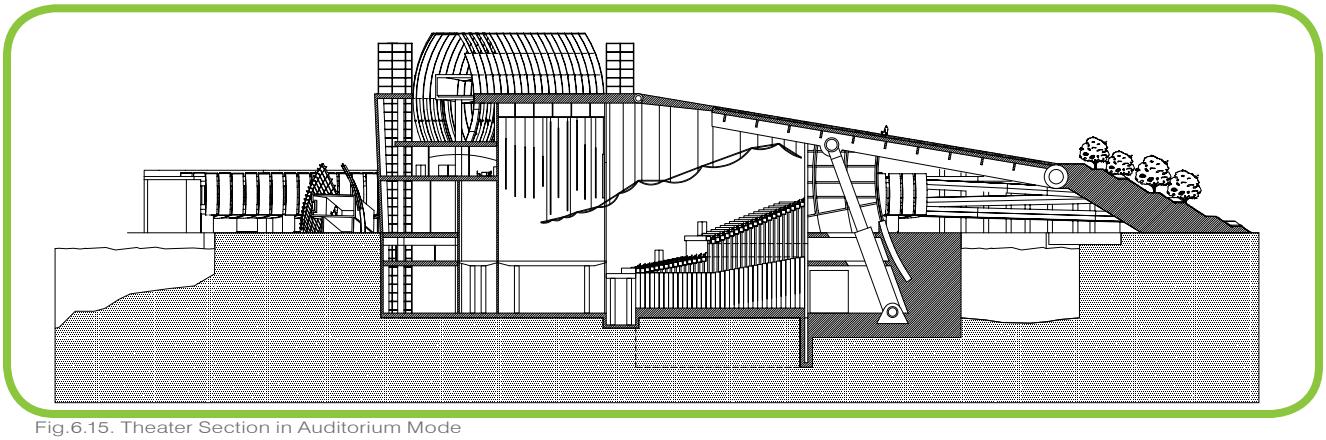


Fig.6.15. Theater Section in Auditorium Mode

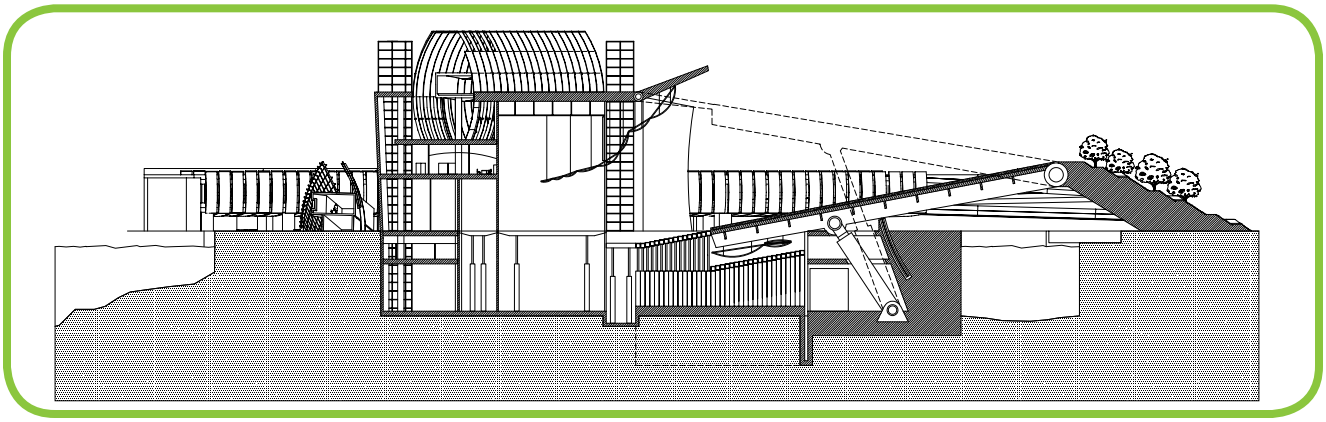


Fig.6.16. Theater Section in Bandshell Mode

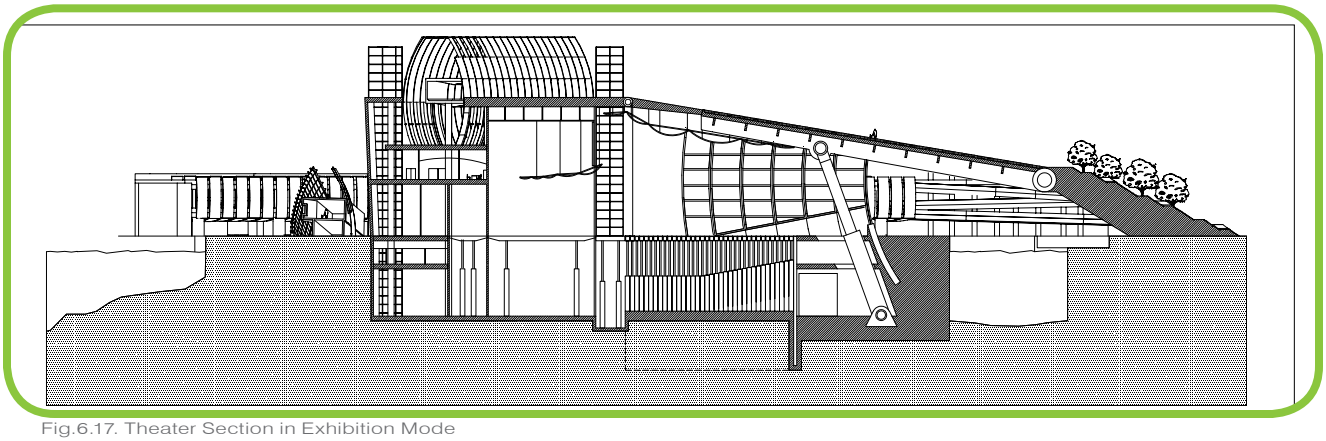


Fig.6.17. Theater Section in Exhibition Mode

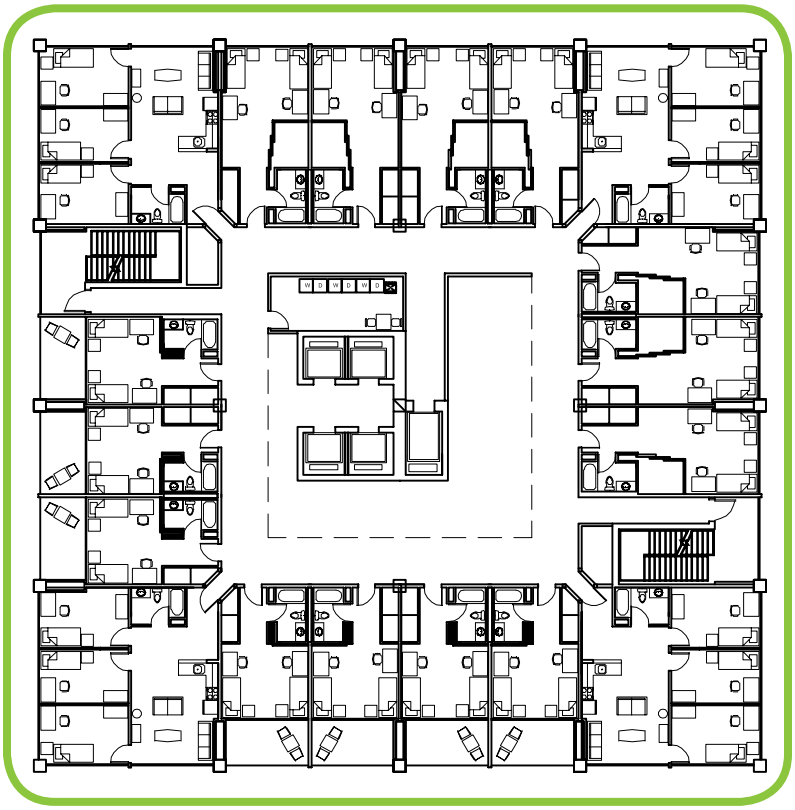


Fig.6.18. Hotels/Dorms in Dorm Mode 1/32"=1'-0"

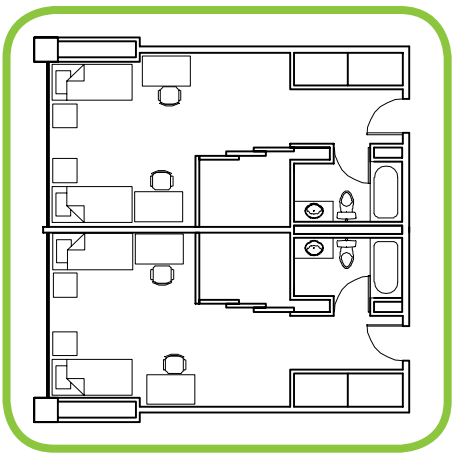


Fig.6.20. Dorm Scenerio with Sound Room

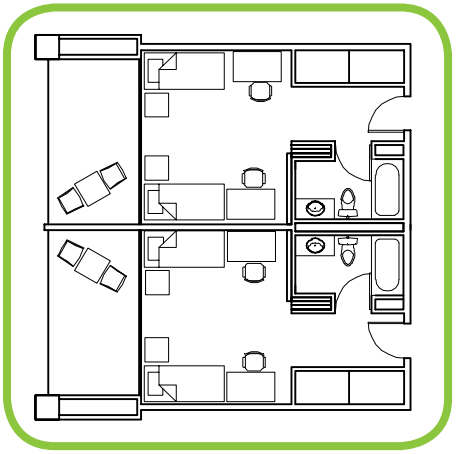


Fig.6.21. Dorm Scenerio with Terrace

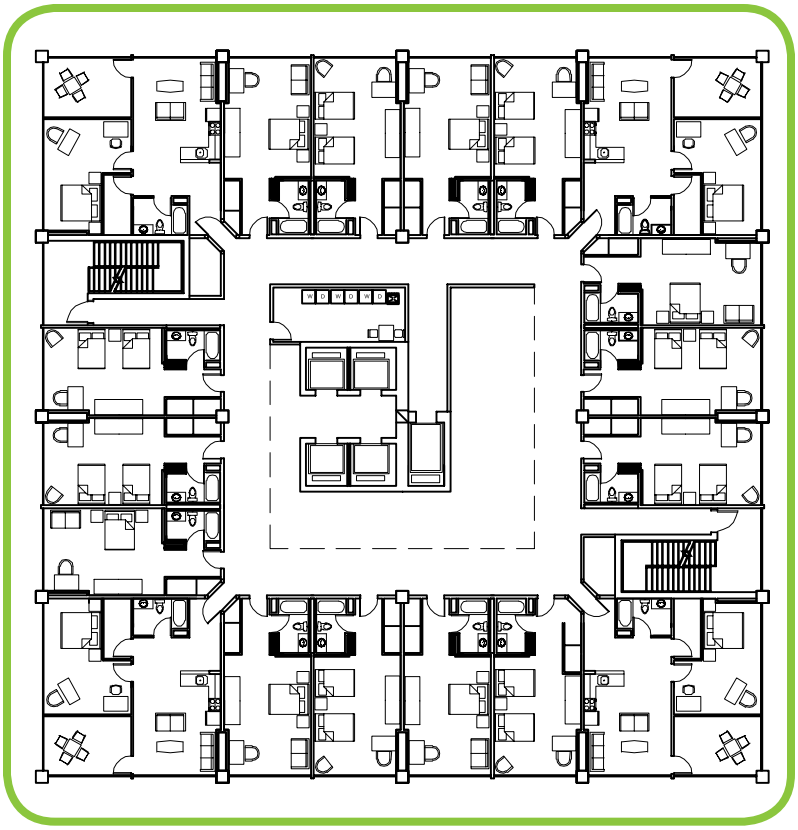


Fig.6.19. Hotels/Dorms in Hotel Mode 1/32"=1'-0"

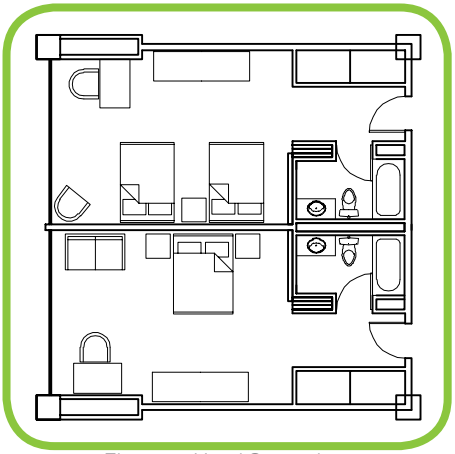


Fig.6.22. Hotel Scenerio

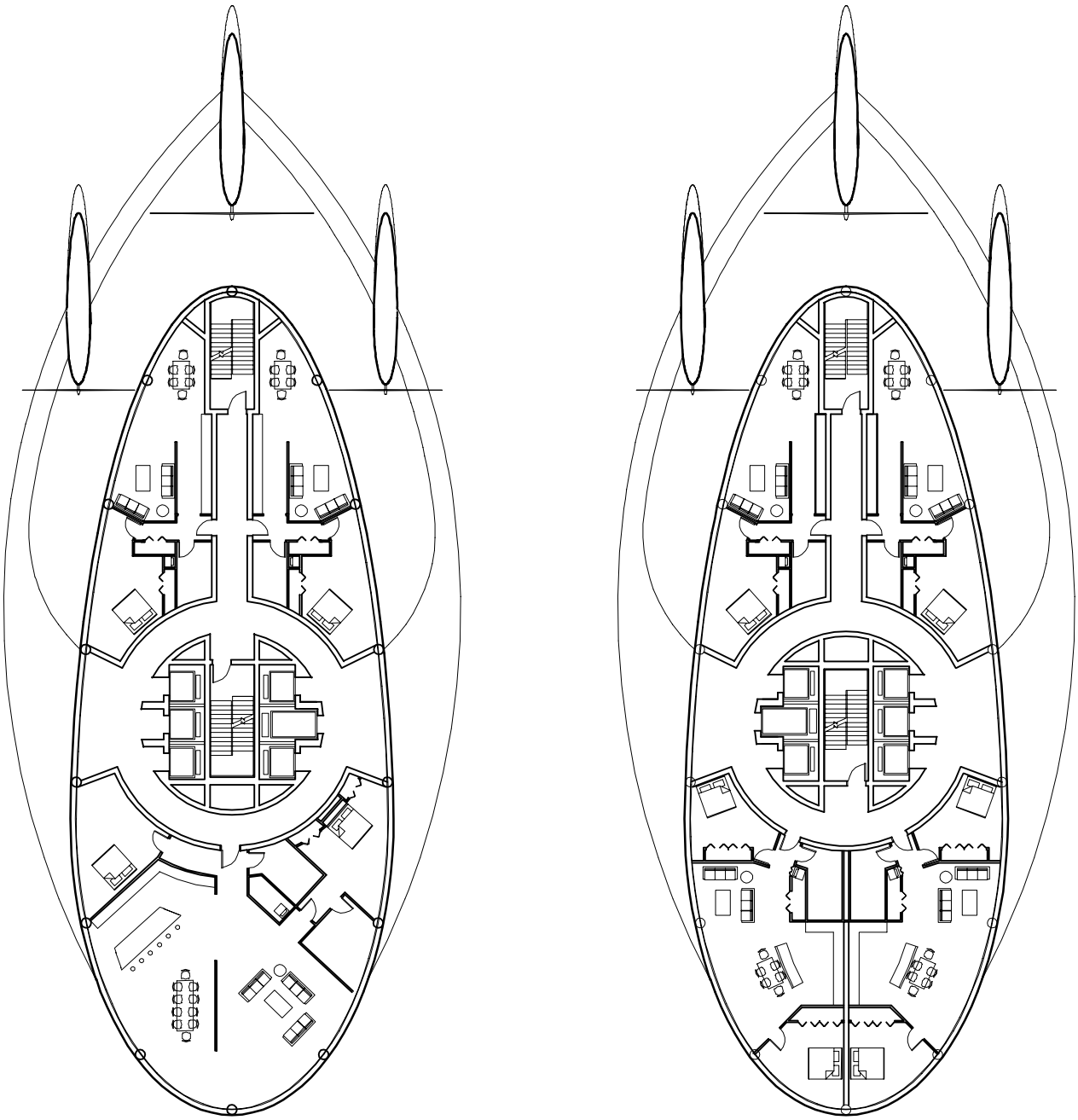
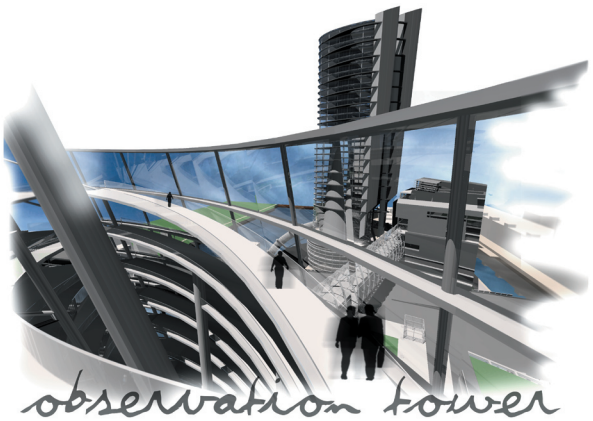
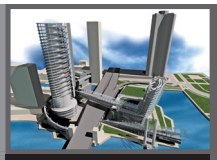


Fig.6.23. Condo Typical Floor Plans 1/32"=1'-0"



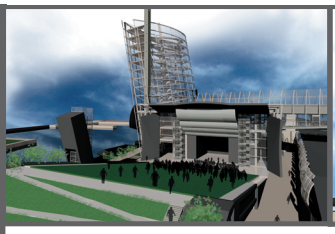
observation tower

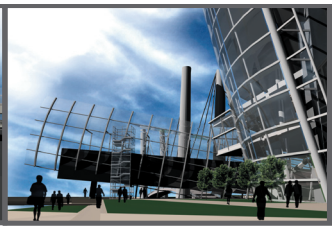


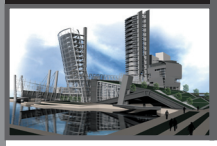
Imagine a performing arts community soaring into the sky overlooking the beautiful Lake Michigan outside the heart of downtown Chicago. The DuSable Tricademy for Artistic Expression is to be a contemporary public realm which connects the currently broken lakefront park system. The reason for the current disconnection among the parks is because of the condition of DuSable Park (proposed site) and its lack of access. The elevated Lake Shore Drive runs through the peninsula, allowing no access for pedestrians and bicyclists to cross the river from the site. The site has been run down for many years due to issues of soil contamination. Since it is zoned to be used as public green space, remediation of the soil has been a challenge. My solution argues that a public built environment can successfully reinforce the park system with sufficient public amenities and roof-top parks.

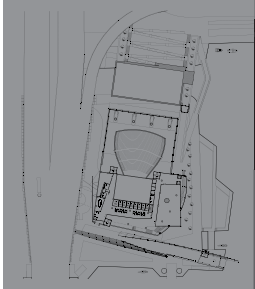
The site on which the DuSable Tricademy for Artistic Expression will be placed consists of two halves. The half towards the west of Lake Shore Drive will contain condos, retail, a student center, dorms and hotels. To the east of Lake Shore Drive will be the main public spaces including a theater, observation tower/open-air market, and a memorial pavilion commemorating Jean Baptiste Pointe DuSable, the first settler to Chicago in 1779.

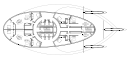
To continue the link between Olive Park to the north and Grant Park to the south, I have proposed a theater with an expansive green roof that spans Ogden Slip to meet the bike and pedestrian paths on the other side. Kinetic pedestrian bridges have also been incorporated into the design for a direct path along the lakefront, and to cater to bicyclists. Visitors to the site will use the roof to bathe in the sun and await entry into the observation tower which, like a ballet dancer, leaps toward the sky. If there is to be a summer festival or outdoor concert, the green roof folds down and transforms from an auditorium inside to an outdoor band shell complete with a grassy lawn for seating. The auditorium seating inside is able to fold flat by means of hydraulics. Therefore, the theater has the ability to transform from an auditorium into an exhibition space for a multitude of public or private events.

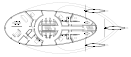




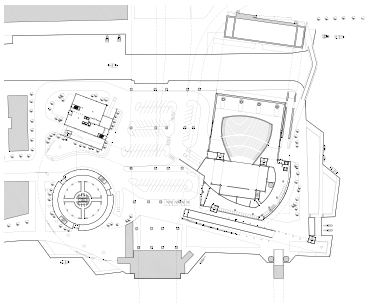






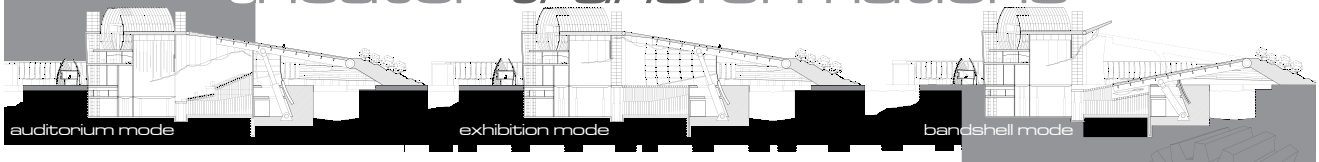


floorplans



third floor theater

theater *trans*formations



auditorium mode

exhibition mode

bandshell mode

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"Make no little plans, they have no magic to stir men's blood...make big plans remembering that a noble, logical diagram once recorded will never die." -Daniel Hudson Burnham