



Music in the Landscape:
An amphitheater and outdoor exhibit space for the Rock and Roll Hall of Fame

Undergraduate Thesis:
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Table of Contents

Overview

Project Scope
Manifesto
Operational Objectives
Users
Activities
Context

Programming
Activity Areas

Case Studies
Site Studies
Installation Studies
Technological Studies

Site
Introduction
Analysis
Pictures

Cleveland's Harborfront Plan
Map References

Concepts
Analysis

Schematic Master Plan
Analysis

Final Master Plan
Detail perspectives

Annotated Bibliography



Overview

Information is flowing around us constantly passing through the air; transmitting information, phone calls and Emails. Our interaction with digital media is becoming increasingly prevalent in our day-to-day lives and continues to permeate our offices, homes and play spaces. Yet few designs begin to interface with media and the processing or transmittal of information between the user and the surfaces, which define our world.

This study proposes to create an outdoor digital landscape, which is part of a larger performance area. This space utilizes digital media to allow speakers, musical groups, and other performers another dimension to express their material. The performance space and digital presentation area should be viewed as an entire experience away from that of reality. The goal of the project is to continue to blur the lines between information and form, and to play with what we conceive of as reality. The project will provide an outlet for digital artists as well as a chance to experiment with form, space and information and our ability as humans to influence process and transmit information between surfaces.

Music will be the ignition for this process; extracting bits of data and information from musical pieces and applying that to the design of this space. Music is a part of our daily lives and provides another dimension that can be implemented in the design process. Information will be extracted from musical pieces and implemented as abstracts within the final design. In addition to the experimental design and artistic expression, an educational component may be realized. In an educational environment, patron's opinions and views of what music is and can be, would be expanded, and an additional respect for the music that drives design and serves as a soundtrack for our world.

Case Studies

EMP Gehry Assoc. | 1997

Location: Seattle Center, next to the Space Needle and Monorail

140,000 total square feet; footprint, 35,000 square feet; highest point, 85 feet at Sky Church; widest point, 210 feet at West Harrison Street; length, 360 feet at Fifth Avenue North

Design Inspiration

When Frank O. Gehry met with co-founders Paul Allen and Jody Patton, he was introduced to their drive and passion to share the creative inspiration of music with others. To design the building, Gehry looked to music for his inspiration. A classical music fan, Gehry wanted to understand rock and roll so he traded in his Bach for Hendrix and took a trip to the neighborhood guitar store. Gehry bought several electric guitars, took them back to his office and cut them into pieces. The guitar pieces were the building blocks for an early model design. Influenced by the colors in the early model, Gehry's final design brightly displays the red and blue hues of electric guitars.



Photo courtesy of Tim Hursley



http://www.emplive.com/visit/about_emp/building.asp



http://davem.ncsa.uiuc.edu/pictures/Pacific_NW_2002/images/seattle/Seattle-EMP4.JPG



http://www.adioskansas.net/archives/2003_10.html



http://www.emplive.com/visit/about_emp/building.asp

Jay Pritzker Pavillion + Millennium Park

Location: Chicago, IL

2004

Size: Jay Pritzker Pavilion—includes 95,000 square foot lawn area; 4,000 fixed seats and approximately 7,000 lawn seats

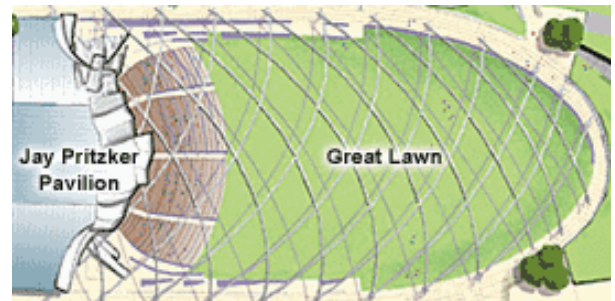
BP Bridge—925 feet

-designed Jay Pritzker Pavilion, the most sophisticated outdoor concert venue of its kind in the United States visible from Michigan Avenue and beyond. The pavilion stands 120-feet high, with a billowing "headdress" of stainless steel ribbons that frame the proscenium opening, connecting to an overhead trellis of crisscrossing steel pipes that define the lawn seating area. The Pavilion has 4,000 fixed seats and capacity for an additional 7,000 people on the lawn. With its open-air "acoustical canopy", the Jay Pritzker Pavilion is among the most technologically advanced outdoor concert venues in the world, with digital innovations and enhanced sound, designed to create an acoustical environment that provides an unforgettable listening experience.

The pavilion is an outdoor amphitheater. The brief was to design an open bandshell that will serve 15,000 people seated on the lawn and about 5,000 in fixed seating up in the front end. It would be for all kinds of classical and pop music. We have a proper stage with a quality that would attract fine orchestras, as well as upgrade the Grant Park Orchestra— give them more prominence and give them a better venue. We said, what if you make a trellis of some sort that covers the grass area where you can hang the speakers and you can also hang lights and do things with it. By putting in the trellis, you kind of create the sense of space where people go and sit on the lawn and bring their blankets and have their picnics. As for the quality of sound, because it's distributed electronically, everybody in the furthest reaches of the grass seating will have the same quality of sound as people up front. And that makes it all of a sudden a unique venue."



<http://www.millenniumpark.org/pritzker.htm>



Riverbend Music Center

Location: Cincinnati, OH

Another example of an outdoor amphitheater, Riverbend might prove to be extremely useful site information depending on my final site choice. The Rock and Roll hall of fame sits directly on the water, so looking at how Riverbend dealt with that would be very useful.

Seats several thousand with lawn seating. VIP restaurant and concessions ring the entrance gate. There are VIP and "Gold" entrances. Seems to function in reverse of Verizon wireless, because you enter from the back and not near the stage. I think entering from the back gives you a better perspective of the amphitheater and allows for a better presence.



<http://www.riverbend-music.com/gallery.asp>

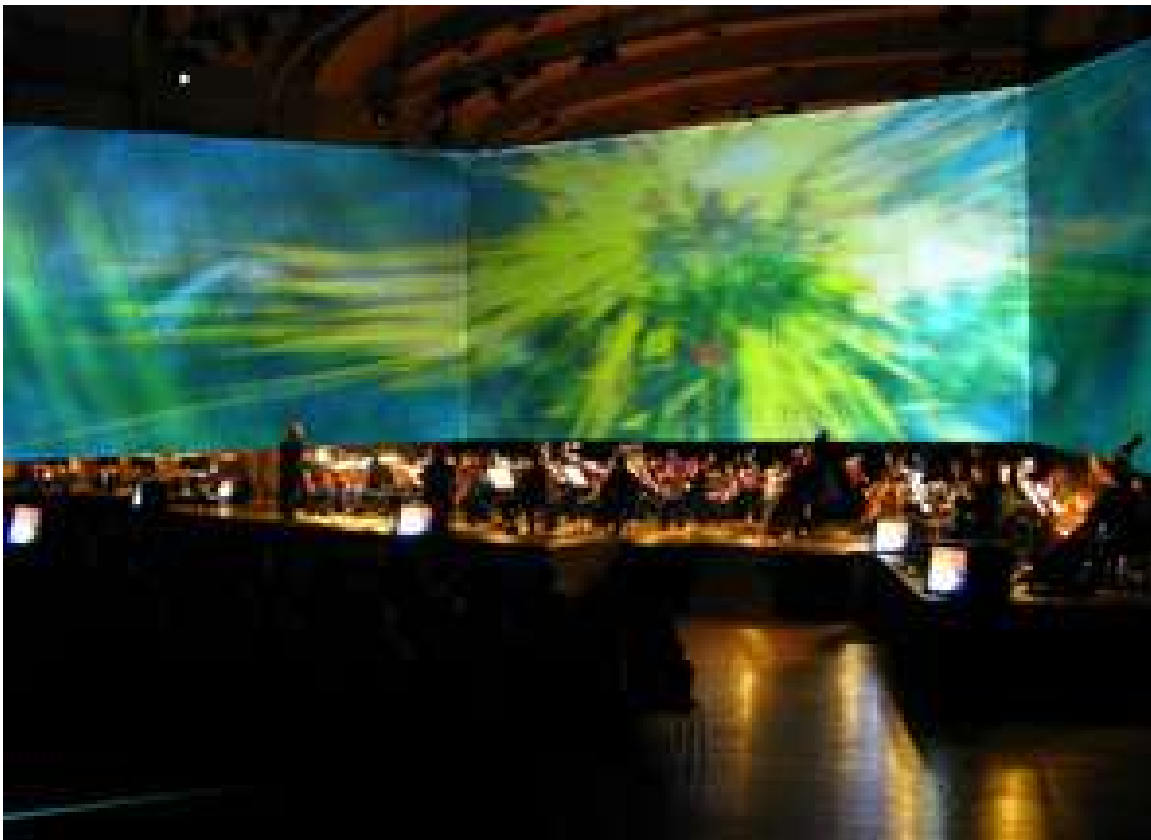
Installation Case Study

Linz, Austria
Futuristic Opera

The Linz Brucknerhaus Orchestra, made a huge step in operatic music. Playing pieces from Richard Wagner's "Das Rheingold", they were surrounded by 20 large format projectors, occupying 850 sq. ft. of wall space.

Intended to represent what opera might be like in the future, the music being performed live by the orchestra was processed in real time, by a computer system in a separate room and then produced 3-D visualizations of the music as it was being heard.

The computer system was "taught" to listen to Wagner for over a month, and eventually learned how to react and visualize the music it was "hearing."



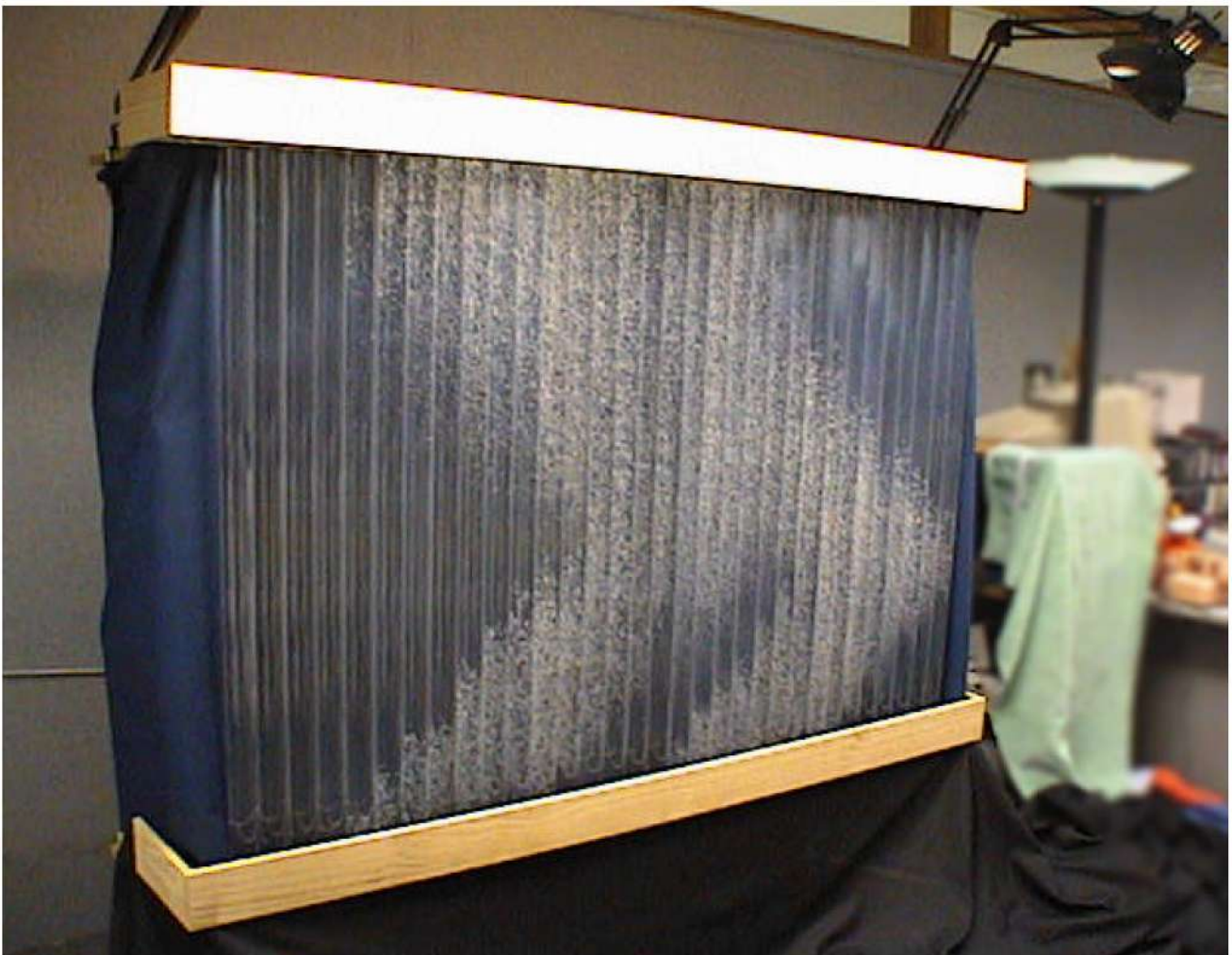
<http://www.aec.at/en/global/news.asp?iNewsID=639>

Installation Case Study

The Information Percolator

Music or pictures, such as jpg's can be fed through this analyzer which interprets the information in a very unique way. A 6 ft. tall 'bubbler' can produce 1-bit of information at a time, letting that 'bit' rise slowly through the bubbler. By attaching 8, 16, or 32 bubblers together, allows 32 bits of information to be reproduced through the bubblers. With enough bubblers involved, a picture begins to form and information can be transmitted.

Music analysis for example, can analyze the spectrum of any given song. This information can be transmitted into bubbles, and flow through the bubblers creating an analysis of a song being played in real time.



<http://www-2.cs.cmu.edu/~hudson/bubbles/>

Technological Case Study

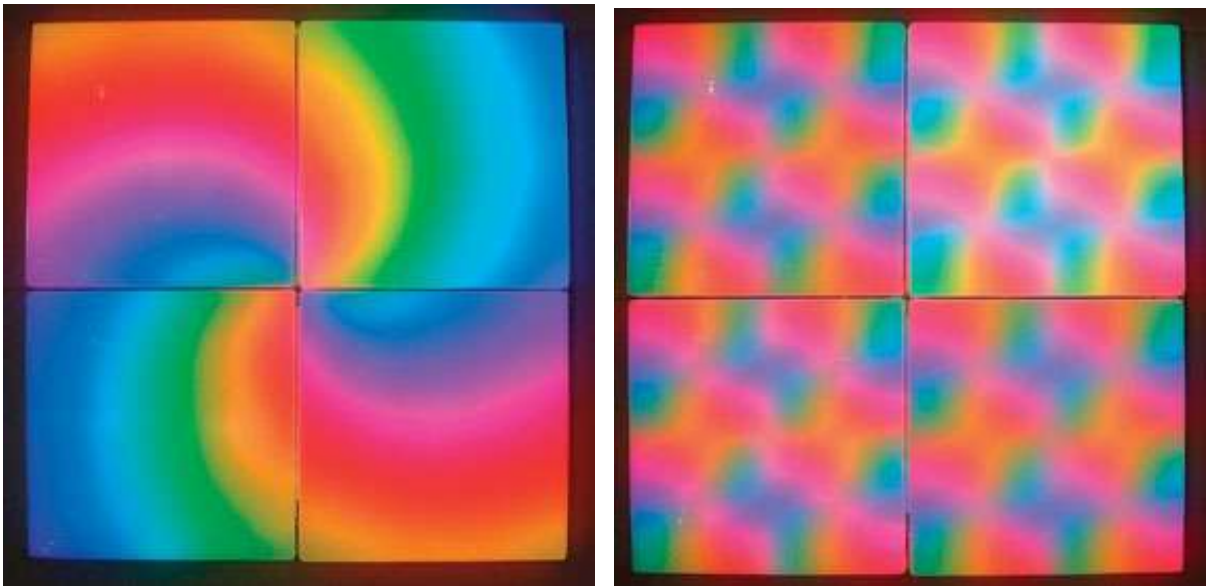
LED-lighting

LED-lighting is becoming a recognized alternative to traditional lighting practices in the architectural world. Although cost needs to come down significantly to be practical, in 5-10 years we should see LED's beginning to enfringe on the current market.

With a lifetime of 100,000-200,000 operating hours, LED's begin to last as long as typical building materials, and the way we light buildings begins to change.

LED's also carry another advantage, in the way they can be controlled digitally. With a small microchip, a 2'x2' panel of LED's containing 144 'nodes' of light can be controlled and produce an unlimited number of affects, up to 64 billion color combinations.

Lighting can begin to be controlled by time of day, temperature outside, number of people in a space or where those people are in a specific space. This new technology allows us endless possibilities in an increasingly digital and interactive world.



http://archrecord.construction.com/innovation/1_TechBriefs/0310LED.asp

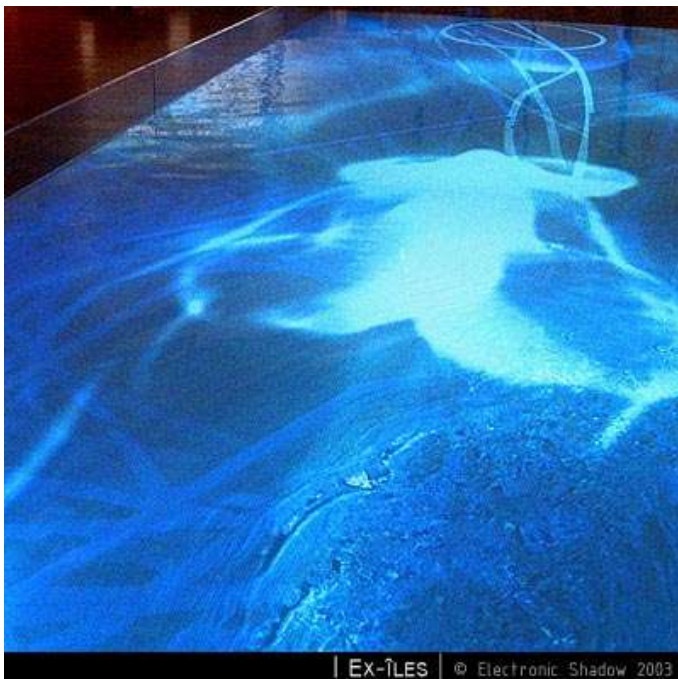
Installation Case Study

“Ex-Iles”

The Ex-iles project allows users to interface with a physical installation as well as digital media, and users around the world logged on to a website.

When a user steps onto the ‘reality circle’ (a circle drawn on the floor in light, with a motion sensor) a white glowing image ‘swims’ across the pool to the other side and leaves a strand of light behind in the pool. Likewise, when internet users logon, a circle is created at the opposite end of the pool. Web users can then send the swimming object back to the real user at the other end of the pool.

This installation allows for the interaction between a physical user, a physical pool of water, digital images, and digital users, to create a beautiful piece of interactive art.



<http://www.electronicshadow.com/>

Context

The Rock and Roll Hall of Fame in Cleveland Ohio is an obvious choice for a music inspired design. Cleveland has been working diligently on reenergizing it's harborfront and the Rock and Roll Hall of Fame could be an integral part of that revitalization. Currently the museum enjoys an international patronage, with millions of people visiting this Rock and Roll mecca.

There are plenty of other venues in the area as well that draw large crowds. The Cleveland convention center is less than a 1/4 mile away. Adjacent to the Rock and Roll hall of fame is Browns stadium, as well as the science museum. The harborfront greenway, which runs the full length of Cleveland's contact with lake Erie, is included in the museum site. Future attractions include, new multifamily housing, museum shops, an 18 hole golf course, and other outdoor amenities.



<http://terraserver.microsoft.com/>

Manifesto

Provide an educational look into music

One of the major goals for this project is to incorporate educational elements into the world of Rock and Roll. Exhibits can include boards about the technology behind installations or history about the music that is being used in the exhibit.

Provide space for 4,000 concert-goers and the needed support facilities

The major component for this project is the outdoor amphitheatre designed to seat 4,000 patrons and the facilities that must accompany that type of stage production, including vendors, restrooms, storage, and proper amplification.

Enhance the existing Rock and Roll Hall of Fame site and its surroundings

The existing site that surrounds the Rock and Roll Hall of fame, accomplishes very little in the way of amenities or patron comforts. There are no wayfinding devices nor does the experience of the museum extend beyond its front doors.

Full integrate the amphitheatre space with surrounding exhibits

The 4,000 seat amphitheatre should mesh seamlessly with the exhibit spaces and the existing Rock and Roll hall of Fame. New additions should fit within the context of the existing site and surrounding facilities.

Create fun, exciting, educational exhibits

The interactive exhibits should create a sense of wonder and develop an interest in the topic. Exhibits should offer something for all age groups and not be targeted for one particular user type.

Provide a comfortable engaging space for all users

New spaces should take into account users needs and the comfort of patrons within a space. Care should be taken to provide amenities that make the space more inviting and functional, allowing people with different needs to access the site equally.

Provide a safe, secure concert environment

Security within the site should always be a concern, but in a concert environment security and the safety of concert-goers is of the utmost concern for the staff. Care should be taken to provide a safe, secure concert experience for all participants.

Utilize new technologies in innovative ways

Technology should be used in new ways, providing new directions for music and technology to unfold. New technologies should be sought to be incorporated within the new design.

Provide an immersive landscape that translates music into physical space

The entire outdoors space associated with the Rock and Roll Hall of fame should be an immersive experience, aside from that of reality. The landscape should be a dynamic, changing, adapting, creative entity, that is interacting with users constantly.

Project Scope

Operational Objectives

The amphitheater, stage and support facilities will be used primarily for night concerts or weekend events. In contrast the exhibit spaces will be used during museum hours, 9-5 open every day except Christmas and Thanksgiving. Security will be needed before, during and after concert events. Information and museum staff will be needed for wayfinding and exhibit information, for the exhibit spaces. The Rock 'and' Roll hall of fame's maintenance staff will need to be expanded

Users/Patrons

Users will range in age from young children, to retirement age patrons. Families with children may not attend concerts, but it is anticipated that all age brackets will experience the exhibit spaces.

In 2003 the Rock and Roll hall of fame saw approximately 476,000 visitors, on a nice day in the summer, over 4,000 visitors may pass through the doors. Winter attendance may drop to just over 100 visitors per day.

The amphitheater will draw typical concert crowds, ranging from teenage children to middle-age concert goers. This age group will obviously vary depending on the type of artist performing on that particular night. During a biweekly summer concert series in 2003 the Rock and Roll hall of fame brought in on average 1,000 participants to enjoy a concert in the plaza at the museum

Activities

Amphitheater

- Outdoor seating
- Stage
- Staging areas
- Ticket Sales
- Security offices
- Security entrance
- Vendors
- Sound booth
- Restrooms
- VIP lounge area
- Server Room
- Loading areas for 2-3 Trucks/Tour Busses
- 2-3 education exhibits
- 1-2 interactive spaces
- Lecture space for 20-30 people

Program

Activity areas

Outdoor performance amphitheater

- Approximately 4,000 people at capacity or 40,000 SF for seating area; this is based on 10 sf per person
- Remaining 7,000-9,000 SF for stage and preparatory areas
- Seating will be entirely lawn seating @ an ideal 10% grade
- Events will normally take place at night or on the weekends
- The structure will be made of steel (or other type of metal) and glass

Concession/Vendor Support

- Adjacent location to the amphitheater to serve event patrons
- Restrooms to support capacity seating
- Refrigeration and necessary support for 3-4 concession stands
- 1-2 setup areas for special events/radio stations

Media Visualization Area

- 4-5 visualization exhibits
- Exhibits ranging from visualization bubbler to video screens
- Public art pieces visualizing pieces of music from inductees
- Education center/small lecture area
- Large projection screens can be used as part of the media area or as visualization for live performances

Parking

- Existing parking facilities are sufficient for a capacity performance of 4,000 patrons
- A performance coinciding with a game at the nearby Browns stadium, may cause traffic and parking issues

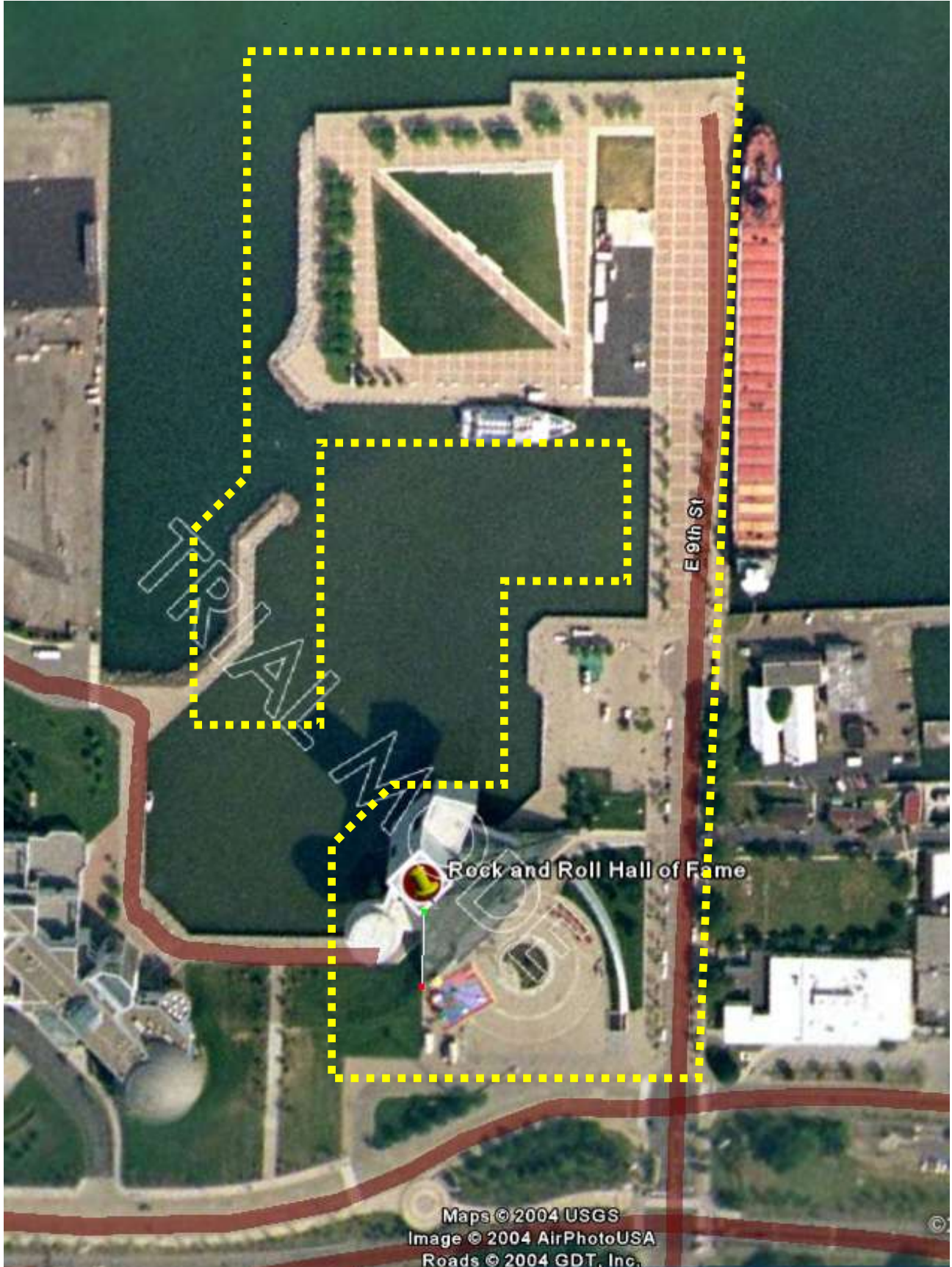
Patrons

- Patrons will consist of users already visiting the existing Rock and Roll hall of fame museum
- Patrons for night performances or weekend events will fluctuate depending on the artist
- Most users will come by personal automobile and park using the existing facilities
- There is a greenery along Erieside ave, which may draw a small percentage of patrons
- Another small percentage of users may access the proposed sky cab from the convention center

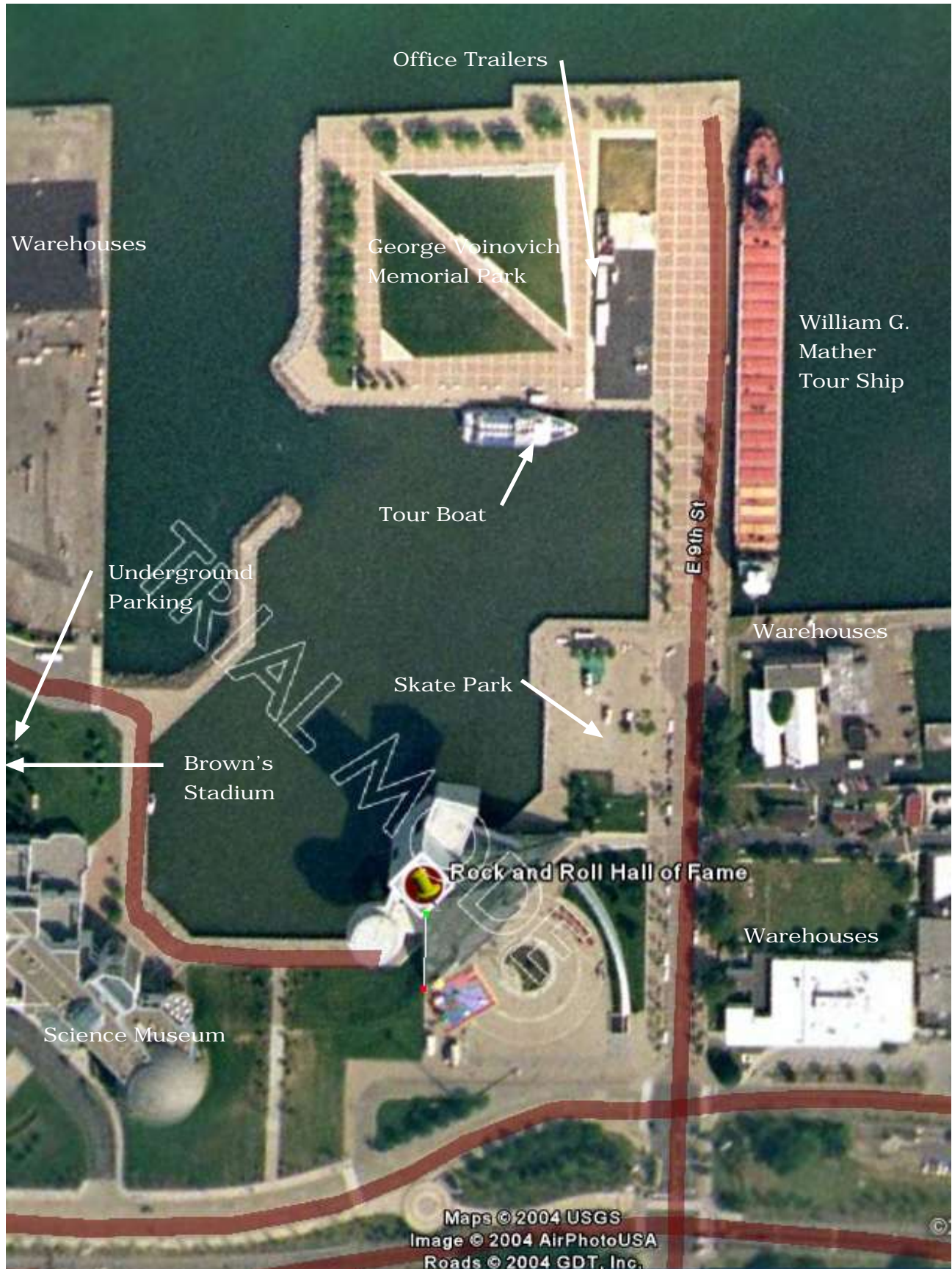
Technology

- Conventional amplification for outdoor concerts
- Large format projection screens
- 1 enclosed processing room for visualizers

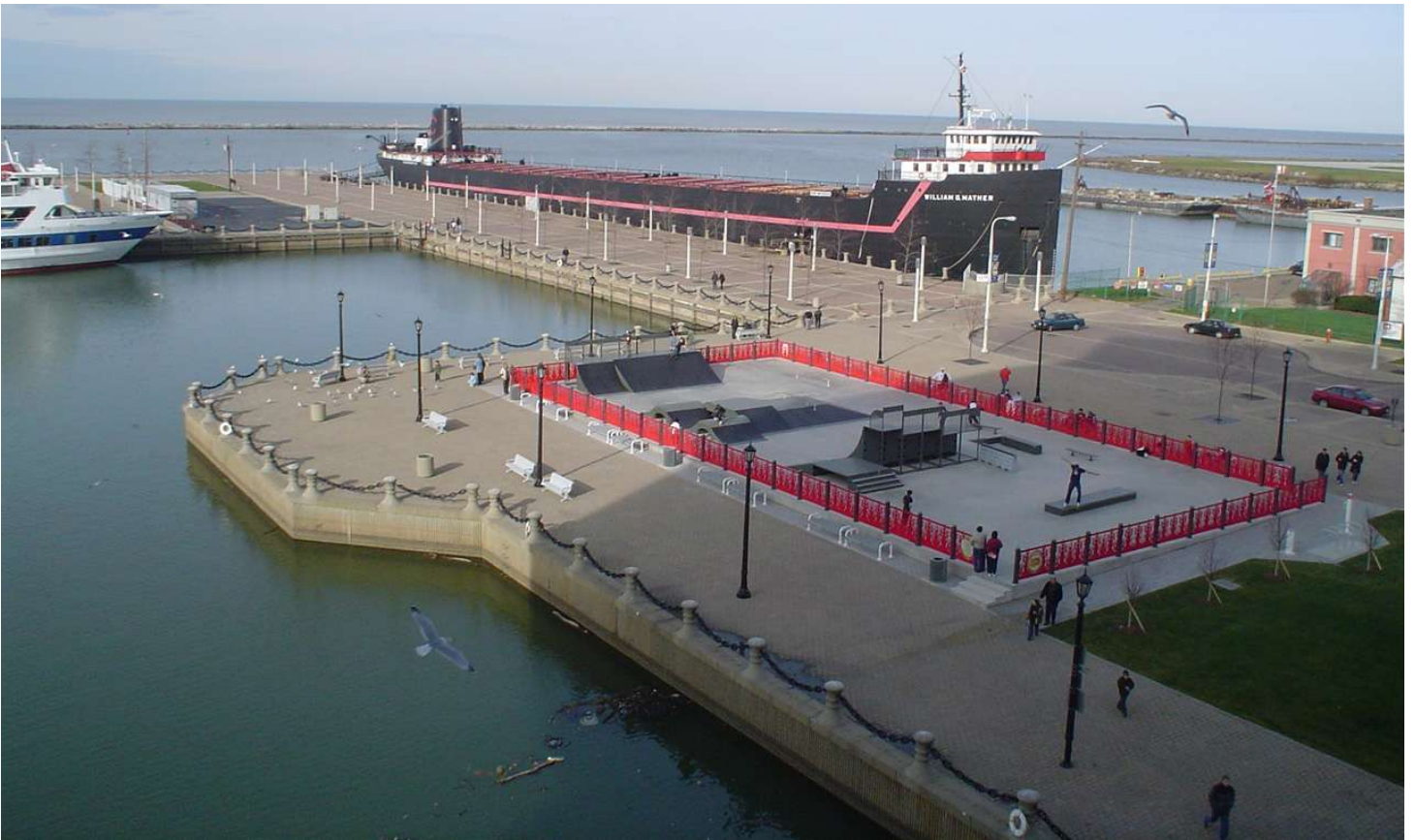
Site Boundary



Site Inventory



Site Pictures



9th Ave / Skatepark - Looking Northeast from Rock and Roll Hall of Fame



Voinovich Memorial Park - Looking North from Rock and Roll Hall of Fame

Site Pictures



9th Ave. - Looking North



Voinovich memorial park - Looking Northwest

City of Cleveland's Harborfront Master Plan
Adopted Spring 2005 by Cleveland Plan Commission

This new development of Cleveland's Downtown Harborfront and general lakefront is an extremely large project, coming together over the course of several decades. In the specific project area of the Rock and Roll Hall of Fame, the new development may include:

Great lakes Science Museum expansion

The Great Lakes Science Museum intends to expand their facilities to the north of the current building, while using the same parking structure.

William G. Mather Expansion and Relocation

The William G. Mather is a floating museum docked near the Rock and Roll Hall of Fame. This Museum is expected to have a new facility erected on the shore which serves as a ticket area, restaurant and gift shop. The Ship will be relocated west of its existing point.

Addition of a Movable Pedestrian Bridge

To correspond with the new greenway plan that will work in conjunction with the harborfront plan. A pedestrian bridge is to be installed connecting the current warehouse facility with the George Voinovich park area. This will help to make a much needed link in the bicycle plan for the Harborfront area.

Addition of Multi-Modal Transit Museum

The plan calls for the construction of a transit museum in conjunction with the North Coast light rail stop at the Harborfront location.

Rock Block Mixed-Use Retail Facility

The Rock Block retail center is located directly east of the Rock and Roll Hall of fame and will house numerous restaurants, shops and businesses and bring a much needed user group to the area. This should help keep the area up and function on weekdays as well as weekends, when most traffic is seen now.

Hotel and Multi-Family Housing

There are several hotels scheduled in this revitalization program for Cleveland. One of them is located directly across from the Rock Block facility. In addition is multifamily housing as well as townhouses further east of this site.

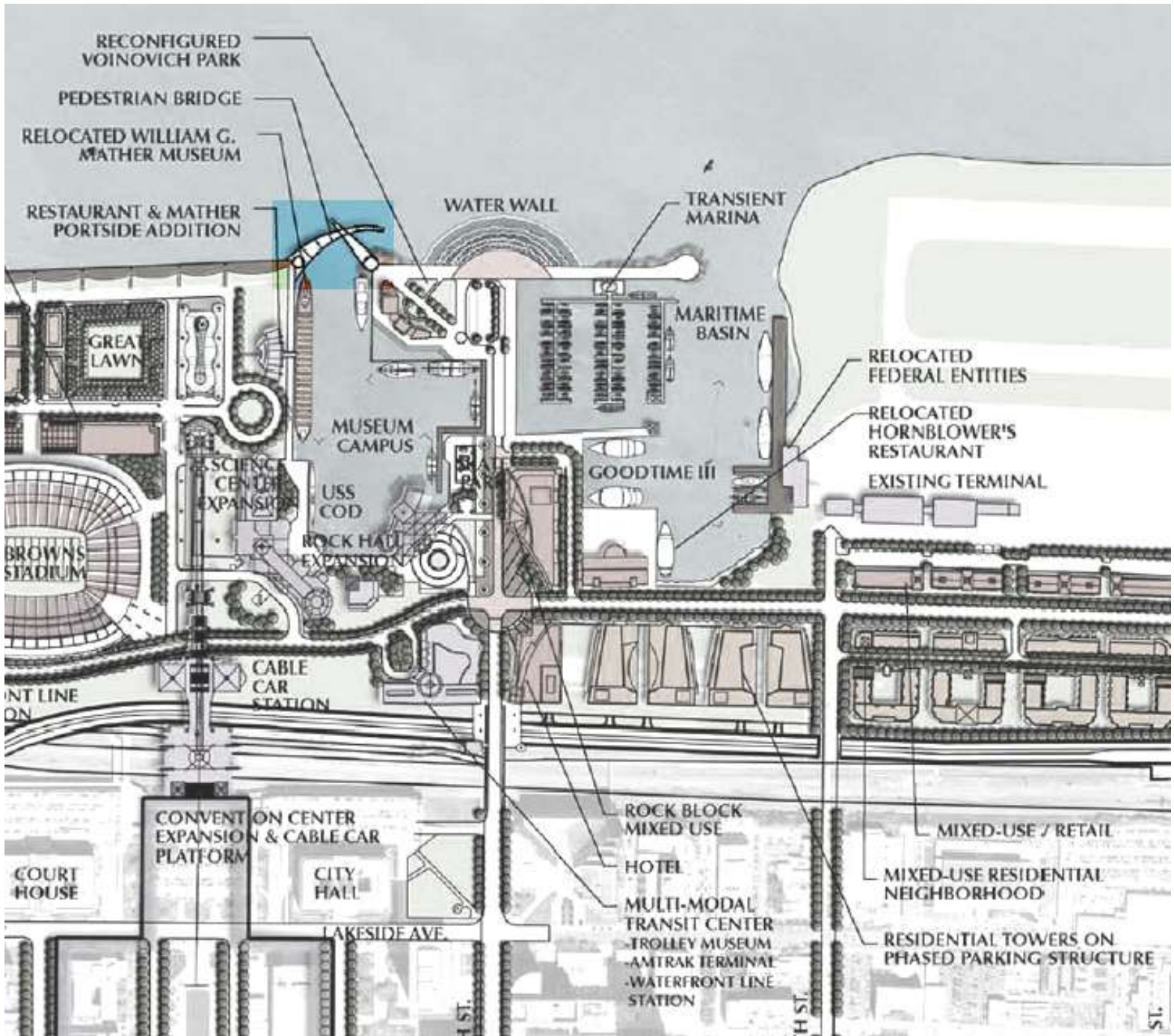
Rock and Roll Hall of Fame Archies Expansion

The Rock Hall wishes to expand its storage capabilities into a vacant lot between the current museum and the Science Museum.

Coast Guard Facility Relocation

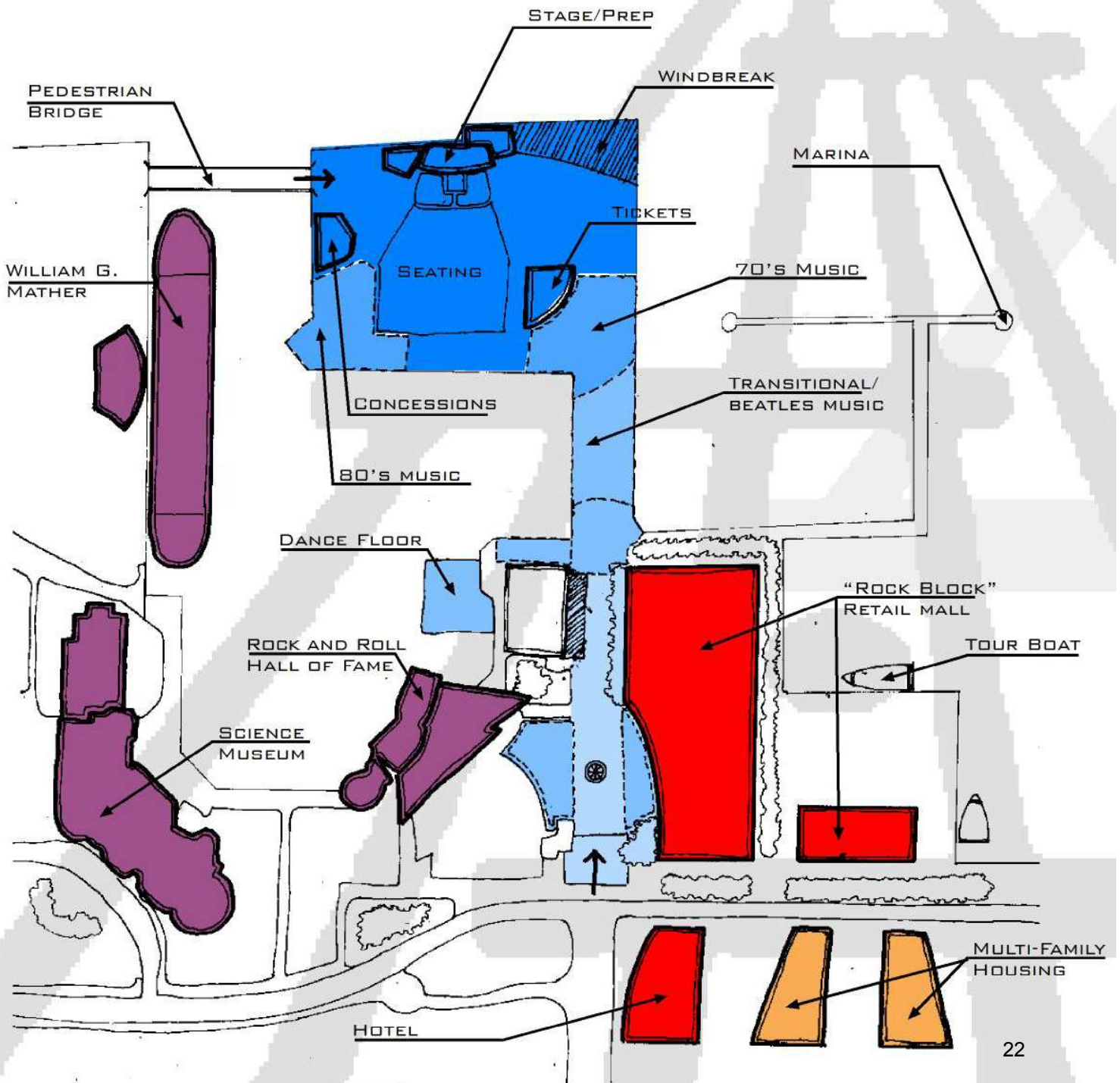
The Coast Guard Facility will be relocated east of its existing location, closer to Burke Airport.

City of Cleveland's Harborfront Master Plan
 Adopted Spring 2005 by Cleveland Plan Commission



Concept 1
"Time is on my Side"

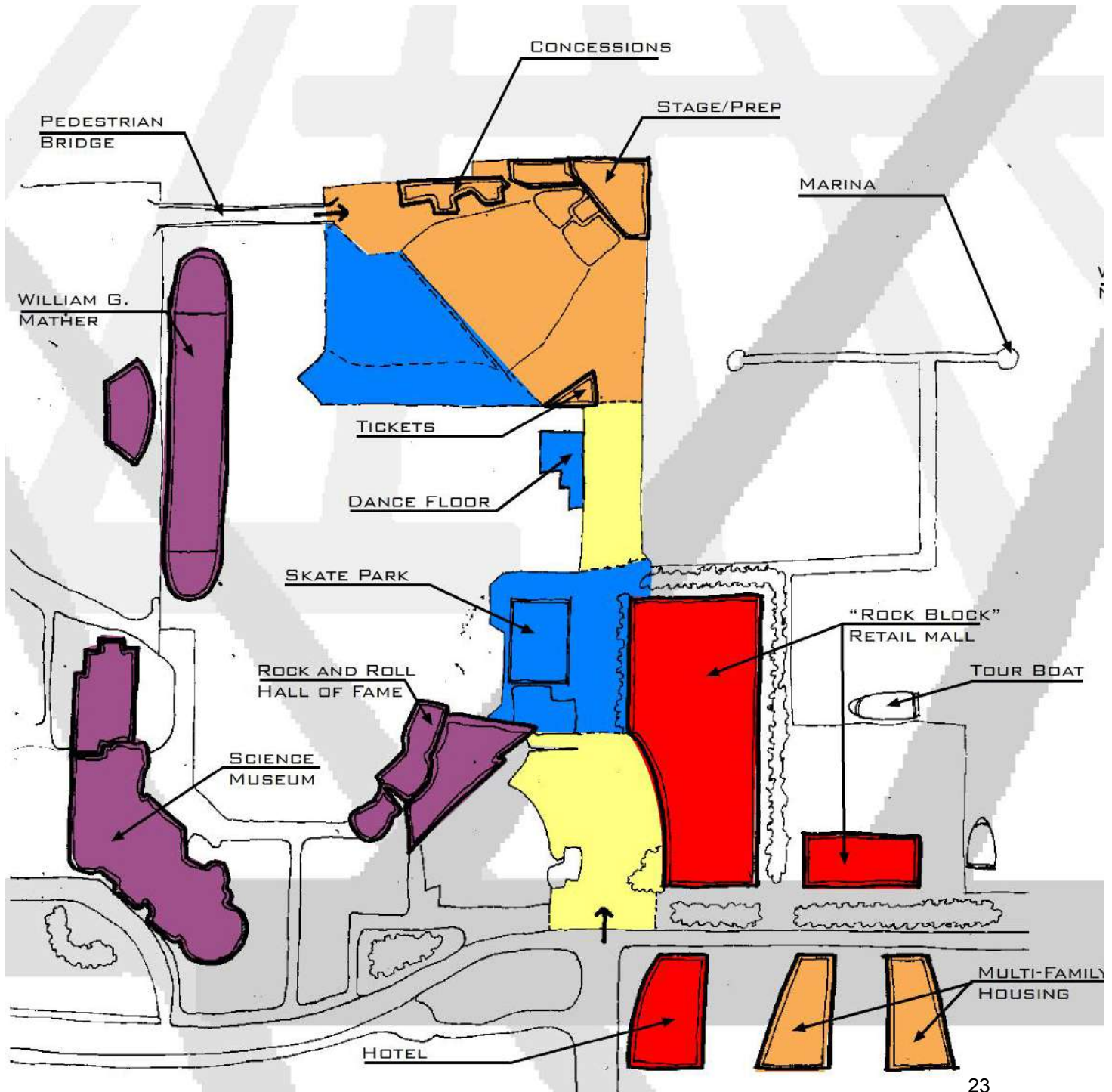
This concept is a straight-forward timeline, simple and easy to understand. The concern is that it might become boring or that patrons may be tempted to skip over an entire section of the timeline. It does portray the information clearly and accurately but does not allow the user to "experience" music, merely read a timeline about its progression.



Concept 2

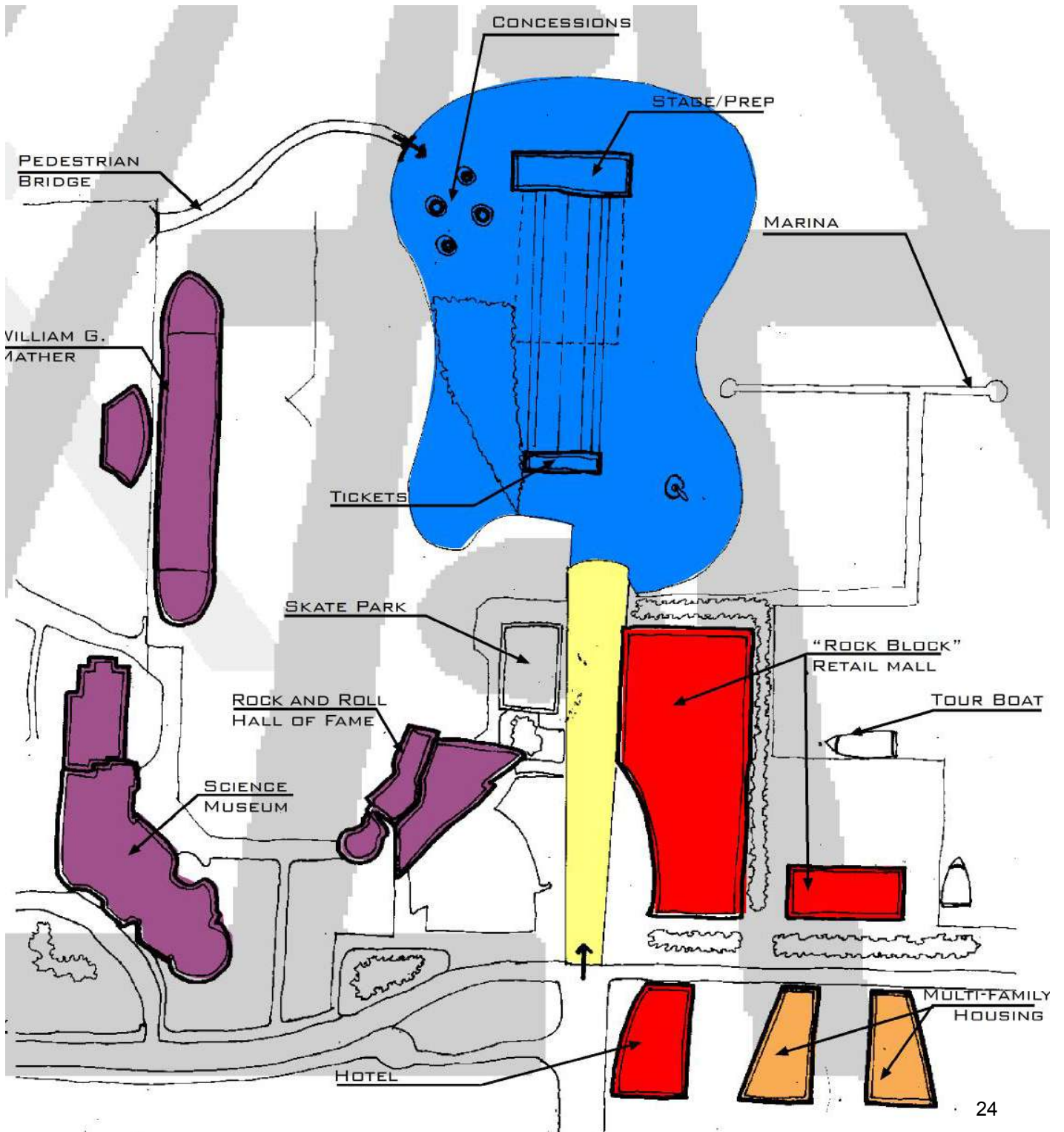
“Are You Experienced?”

This concept truly does allow the user to “experience” music because it is set up in the typical A-B-A-B format that most songs follow. This would allow for several spaces to be created that had the same feeling and patrons could pass through them following the musical “score” of the landscape. This idea has the potential to be more exciting and engaging, but may lose some people in the process. The typical user may not fully grasp or notice the changes and relate them to song writing.



Concept 3
"Les Paul Tribute"

This concept is a literal extension of the Rock and Roll Hall of Fame. The 1400 ft. Les Paul Gibson guitar serves as a format for the other two concepts and could be used to fit in concert spaces and buildings that could relate to the user as pieces of the overside guitar. This concept may come across as being corny or over done, but it does give an icon to the city of Cleveland and more importantly to the Rock and Roll Hall of Fame.



Conceptual Master Plan
NTS

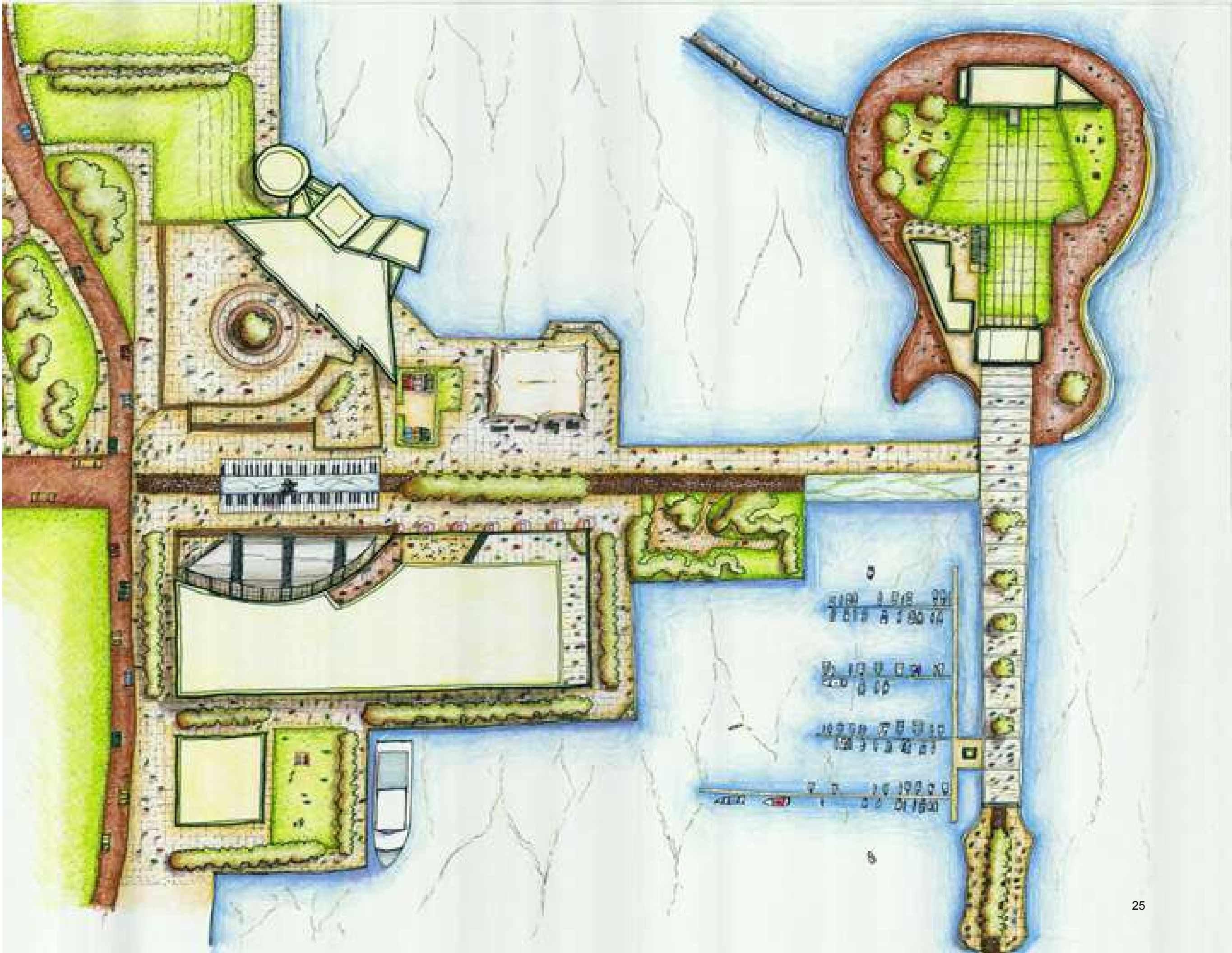
This conceptual master plan has many positive points as well as some negatives. It was decided that another direction should be taken to ensure that the city of Cleveland and its citizens had the iconic park that they wanted, but also the proper facility that they need.

Pros:

- Great icon for the city of Cleveland
- Creates an exciting environment
- Preserves the original plan set in place for the harborfront master plan

Cons:

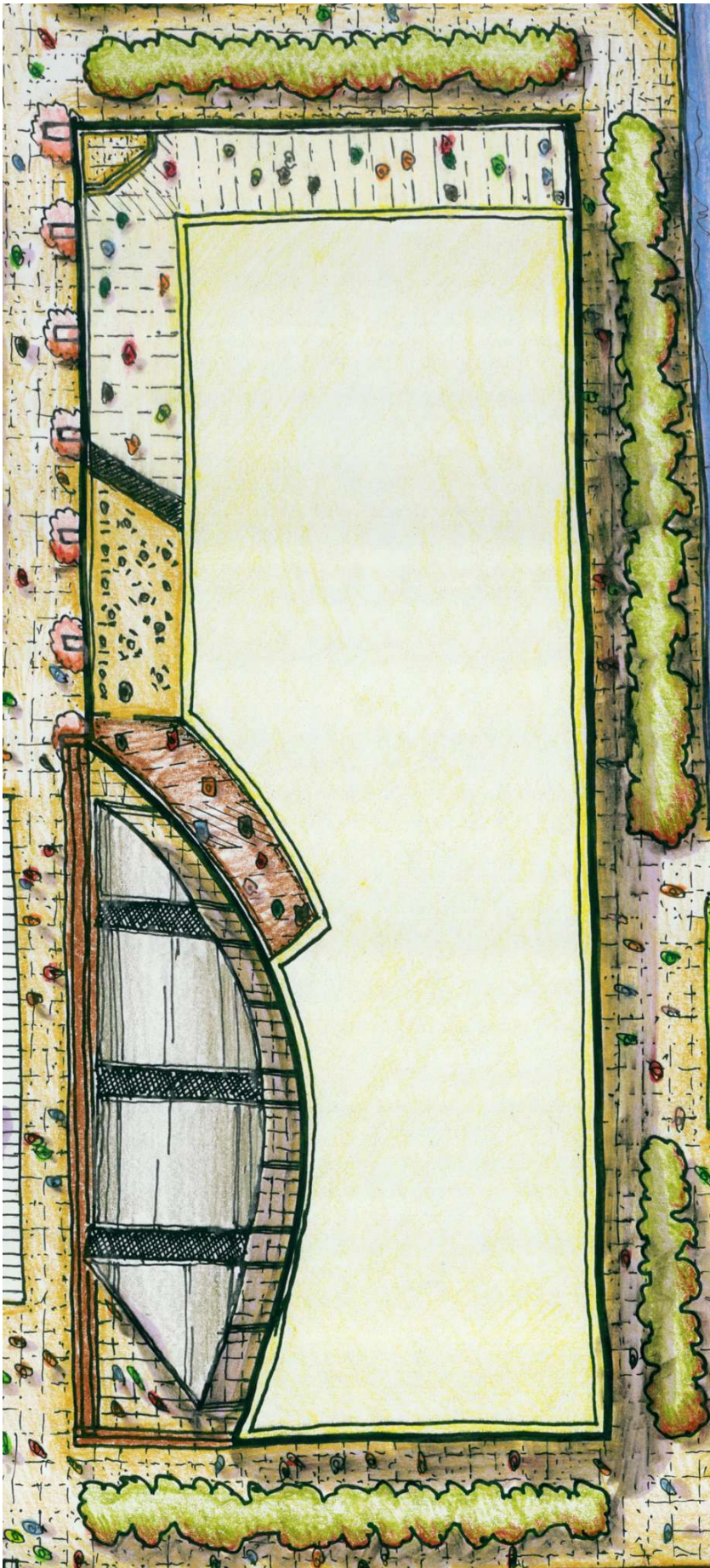
- Too literal, does not allow for the further expansion and evolution of the music community it seeks to portray.
- Several logistical problems including circulation, traffic control and the setup/tear down of a concert



Interactive Entry

This entry is a gateway into the Rock and Roll Hall of Fame Pier and Rock Block Mall. There are several features that immediately grab the patrons attention including the interactive fountain and pool. The video tower is a great place for people to sit and watch your favorite music videos to take a break from shopping or just to relax for the afternoon.





The Rock Block Mall was part of the original Harborfront Master Plan as adopted by the City of Cleveland's Plan Commission. There is a large overhang to help bridge the gap between indoors and the out of doors. Restaurants and a viewing deck will ring the second story level or this new Mall.



Dance Craze and Poets Walk

The dance craze exhibit allows the patron to experience what it would have been like to dance on an old highschool stage or in a dance hall to some of our favorite old songs about specific dances. Projectors and a speaker system allow for favorite performers from any time period to perform and also allows the audience to dance and interact with the performer as if they were already there.



Octopus' Garden

The Octopus' garden allows young and old alike the chance to experience the visual interest of lyrics created by the Beatles. This discovery park for children allows them the opportunity to search for specified objects found within the park a 'news paper taxi' for example from the song 'Lucy in the sky with Diamonds'. This also gives parents the opportunity to reminisce about the music they loved when they were younger and again, to be able to share that with their children today.



Concert Venue

This Concert Venue offers a wide range of seating options and levels as well as concessions, a VIP Lounge, a ticketing and security facility as well as open park space to be used while concerts are not in progress.

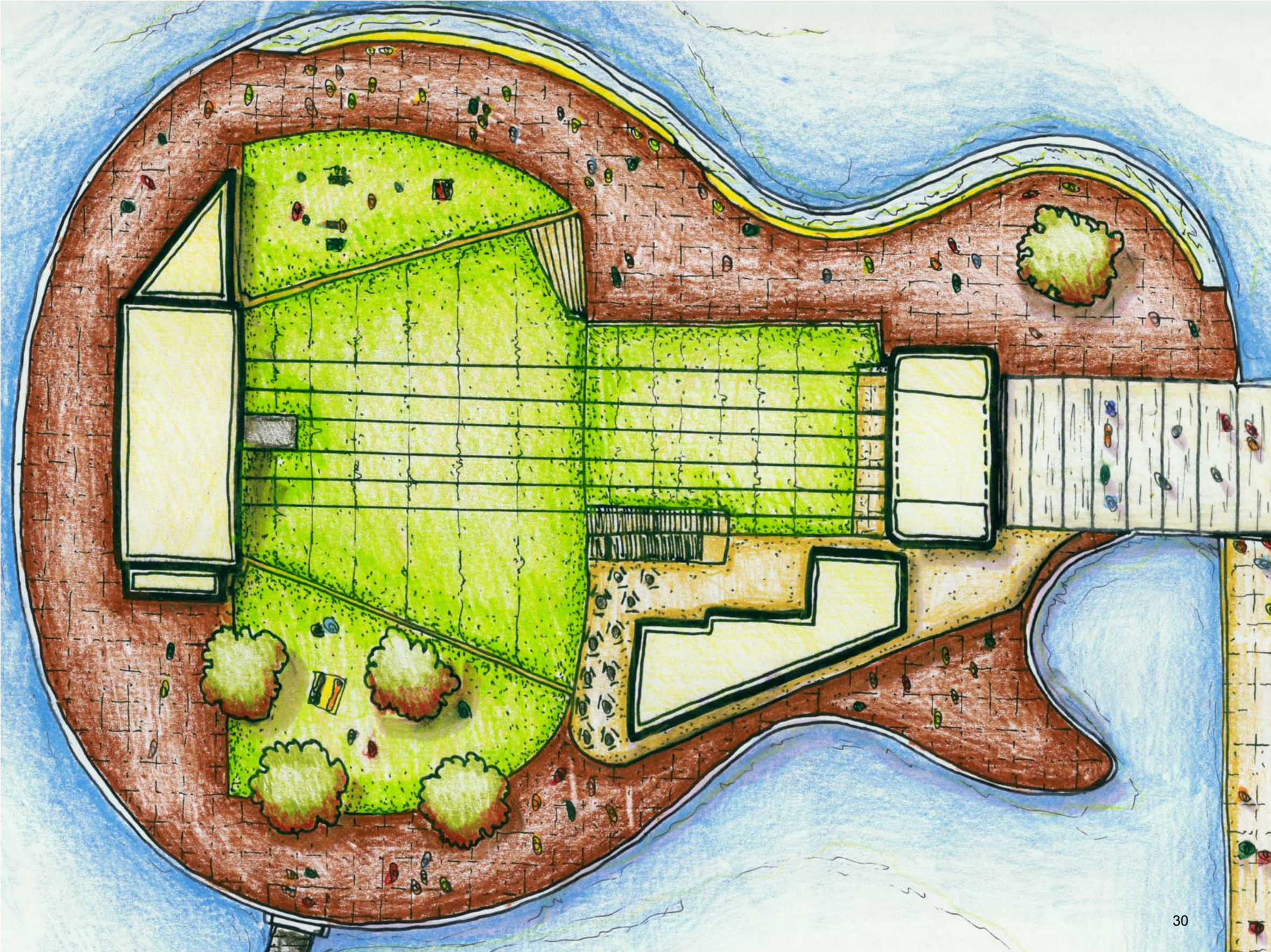
Seating - There are 4 seating level options with this plan. Two are where typical concert seating could be found; the lower level seating is the highest priced available and then upper seating is the lowest. On either side of the stage is publically accessible lawn space for seating from either side of the stage. Adjacent to the concessions is a VIP lounge which sits above all other levels and allows the patron to have a vantage point as well as food service and a seat.

Lighting - Typical concert lighting will remain while overhead LED tube lighting can be found. The "Guitar Strings" span from the stage back to the ticketing booth and provide another opportunity for artists to express their music visually as well as through sound.

Concessions - There is space for 3-4 concessions booths which may be accessed by a set of stairs from the upper level seating area. The VIP lounge sits in front of the other concession areas and allows for an outdoor space to view the concert as well as be served by the concessions staff. The VIP lounge overlooks the lawn seating.

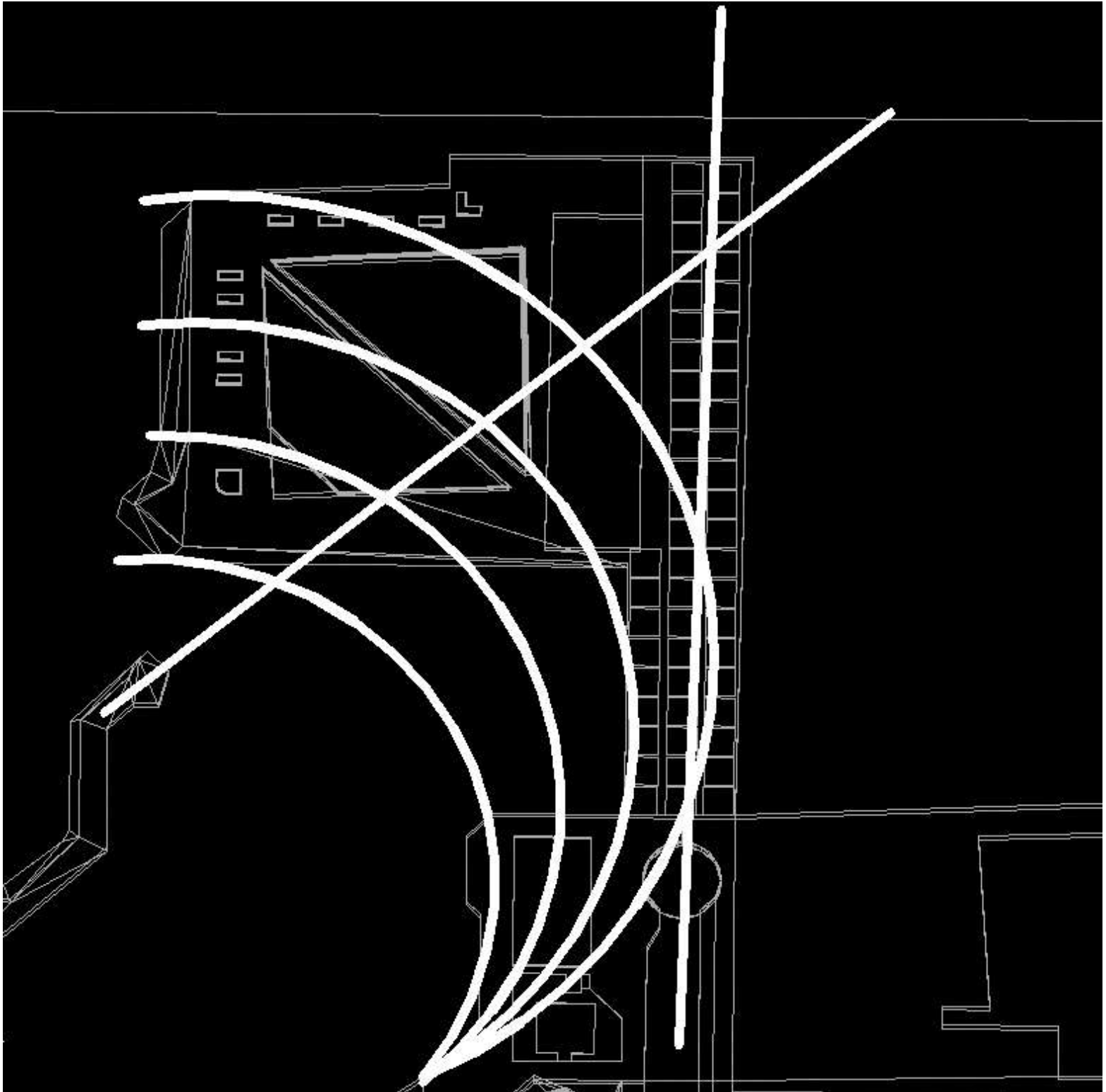
Bubbler Visualizations - The Bubbler Display runs along the north side of the "guitar" and works much like the "strings" in that it allows for musicians to access different means of portraying their music as part of their live stage show.

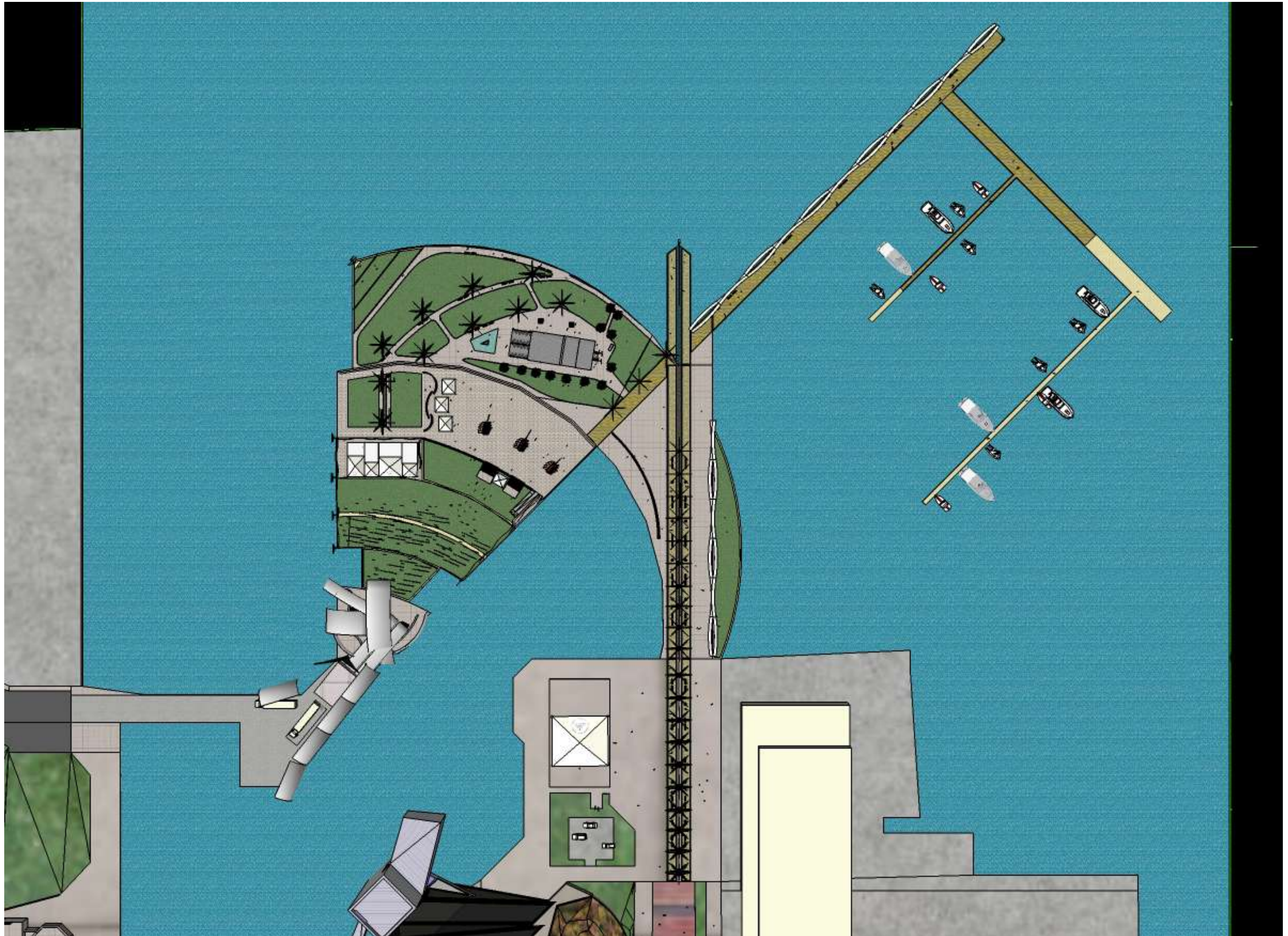
Park Space - There is plenty of room for families to access the lawn space provided as well as the paved areas which serve as pedestrian flow during a concert or for wandering around the Harborfront area.



Final Concept

The Final Concept spirals out from the center of the existing Rock and Roll Hall of Fame Building. These spiraling lines form the axes for the venue and park seating out on the pier. This concept allows for more diversity and a broader evolution of the Harborfront area with respect to the Rock and Roll Hall of fame, and musical community.





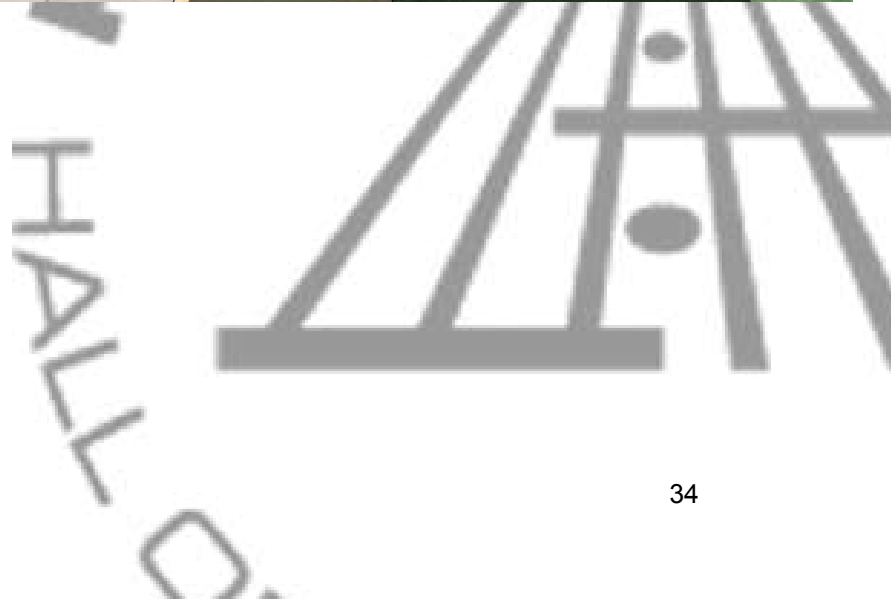
Overall Site Aerial

The overall site aerial shows an excellent view of the Boardwalk and Marina area. In the background the concert venue serves as a backdrop for the rest of the park while mimicking the Rock and Roll Hall of Fame building. The overall look should match that of the existing materials and help blend and tie the area together.



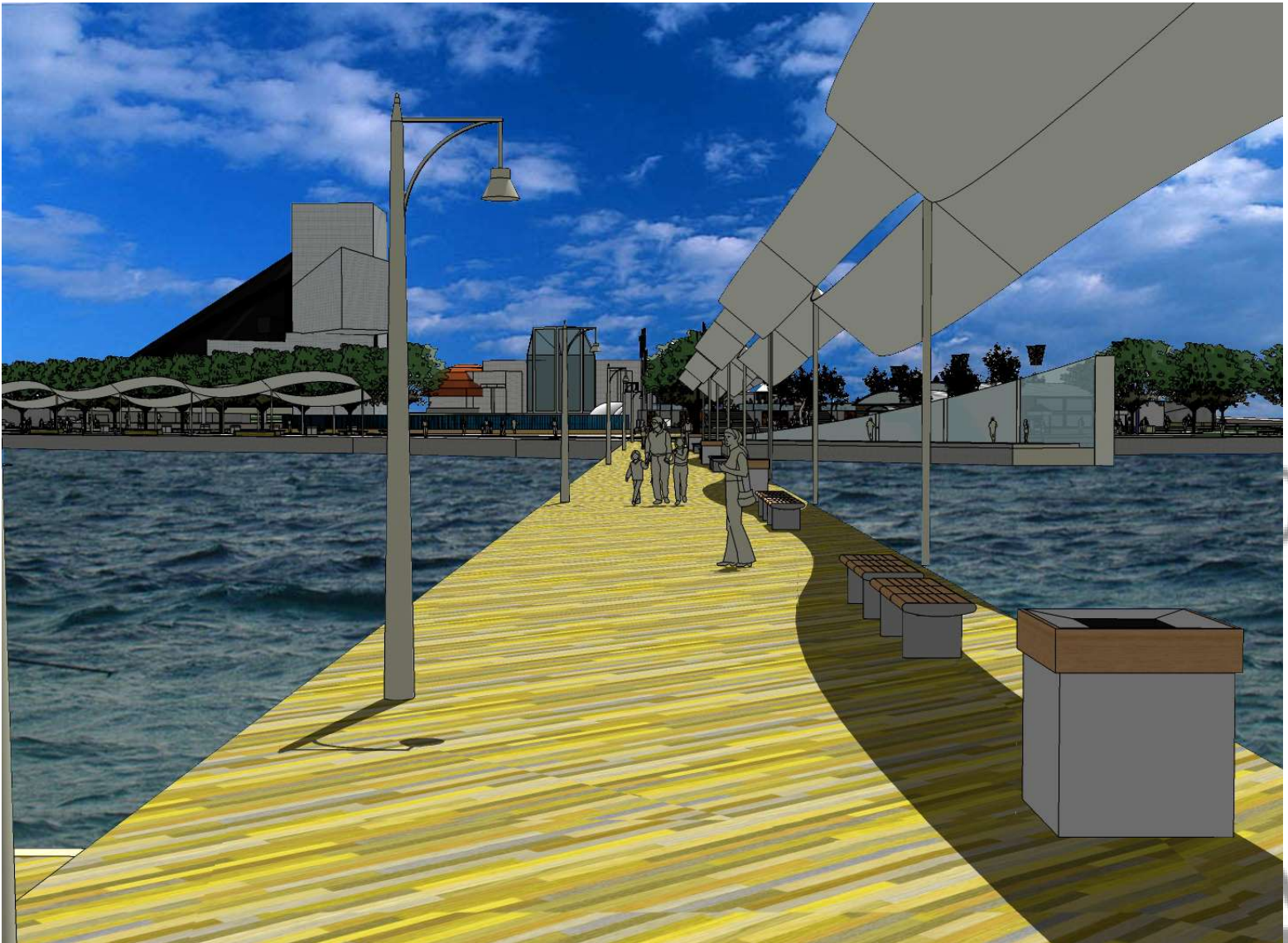
Poets Walk and Shade-Maker Park

The Poets walk is a tribute to the folk era of music and is set in a more English style park. This creates a great place for people to watch or to sit and relax to let the time pass. The shade maker area also creates a nice place to sit and eat your lunch as the canvas screens are angled to shade the benches from 11-2, the hottest part of the day.



Boardwalk and Marina with Shade-Makers

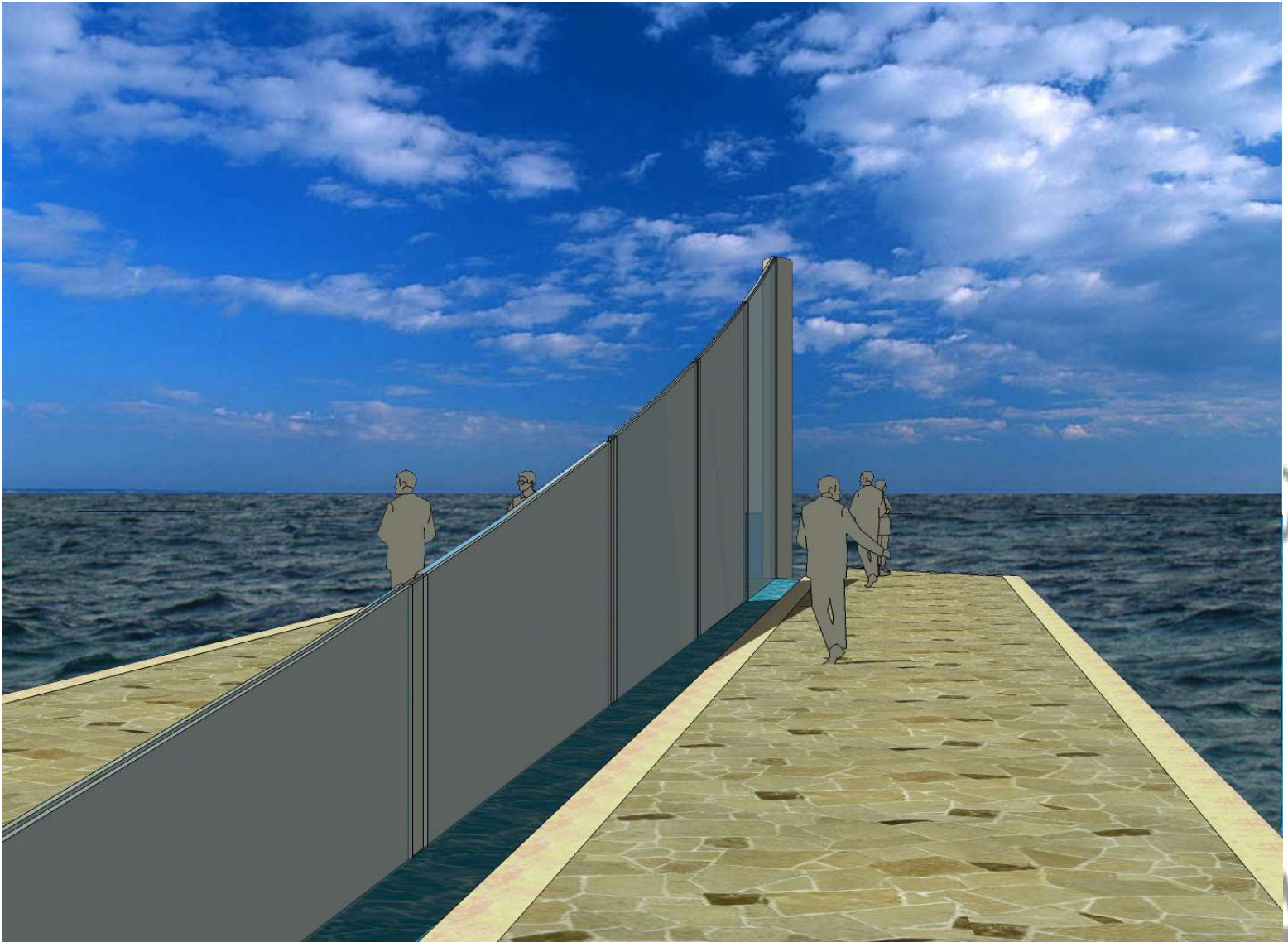
The Boardwalk area allows patrons to get close to the water and out on to Lake Erie. Using the shade-makers again allows shaded seating most of the day and easy access to the Marina.



HALLO

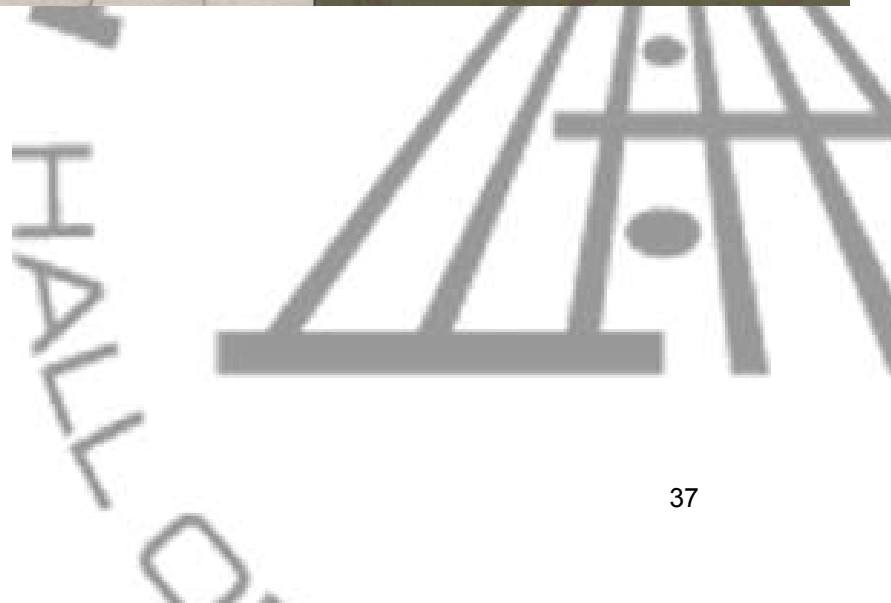
Quote Walk

The Quote Walk offers a chance for patrons to experience some of Lake Erie's beauty while they can read some inspirational or anecdotal quotes from inductees and the interesting things they have said over the years.



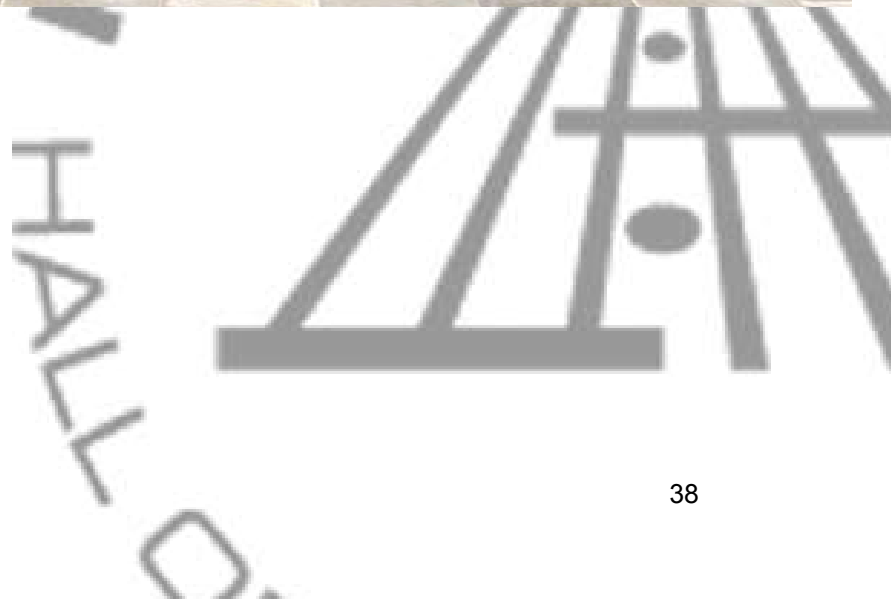
Restrooms and Dining Facility

The Dining shelter and Restrooms is a more traditional approach to the park experience than maybe the rest of the park has been. The Building serves as restrooms, meeting place, dining shelter, or a place to have special events. This building ties in materials being used elsewhere on the site as well as traditional park materials used in this region.



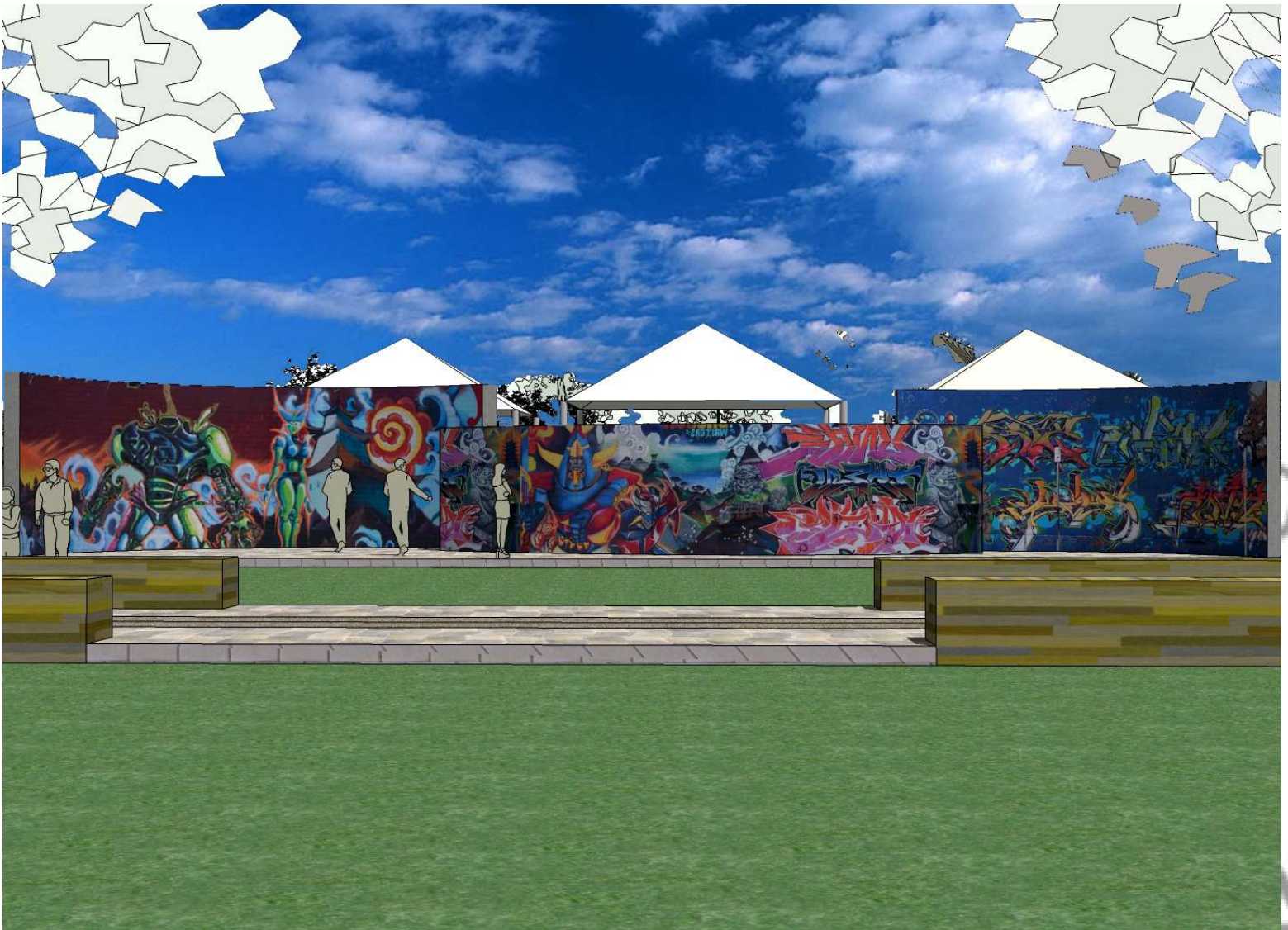
Bronze Plaque Display

This display is a walk of fame for the inductees. A large bronze plaque could be made for each inductee or group that was inducted into the Rock and Roll Hall of Fame each year. This gives concert goers a bit of entertainment in long lines and creates a great attraction for visitors to take pictures or read a small piece of history on the artists.

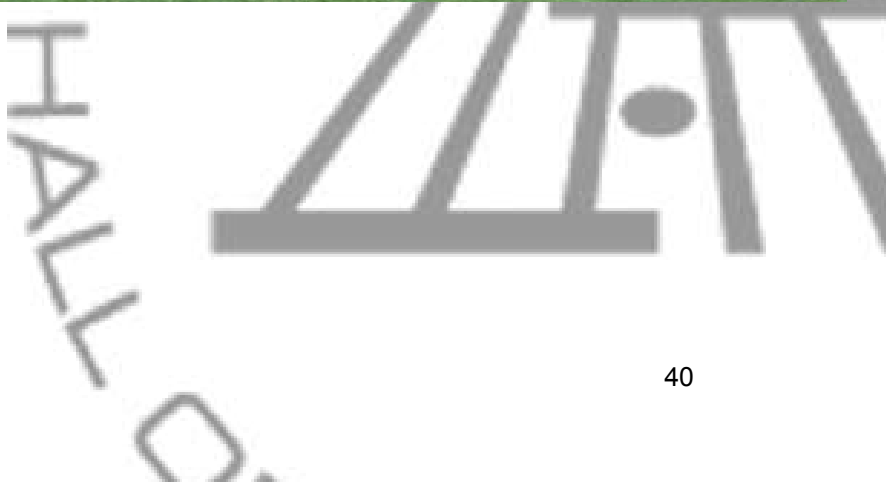


Graffiti Wall and Seating Park

Since Rock and Roll is about expression, there's no better way to allow for expression in a park than a specified graffiti wall. This allows graffiti artists to come express their art and allow them to share with the public this growing art form.



Graffiti Wall and Seating Park



Guitar Statue Entrance

This open entrance allows for the the flow of 40,000 concert-goers without losing the appeal and excitement of the show. Larger than life guitars flank the entrance and keep some of the iconic excitement that was introduced into the project in earlier stages.



Bubbler Display

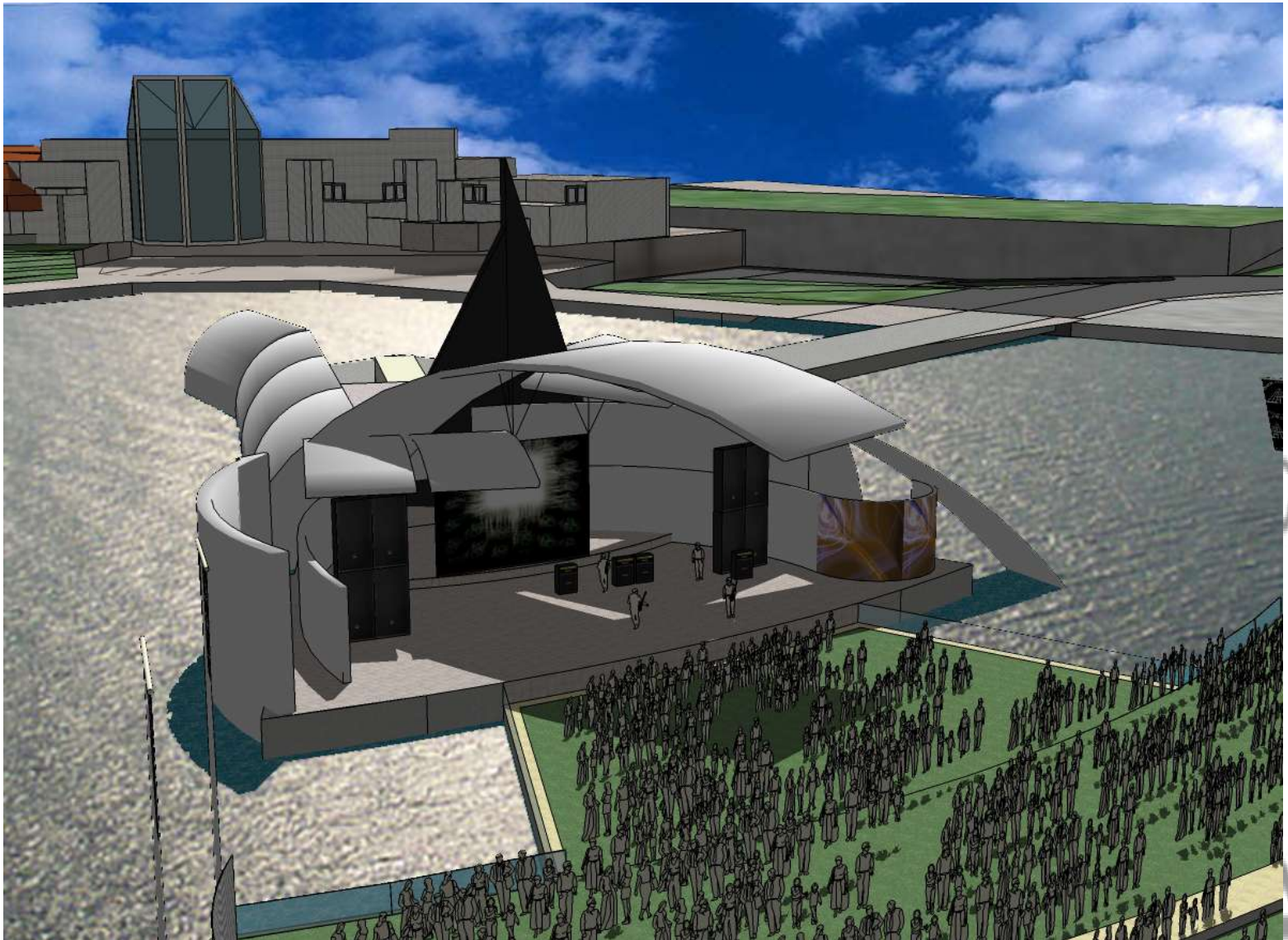
The Bubbler is a visualization that artists could use to make their performances more engaging and interactive. The Bubbler can “listen” to a song and produce waves in lighted bubble form that would resemble an oscilloscope and create a beautiful display especially at night when lit.



Venue overview

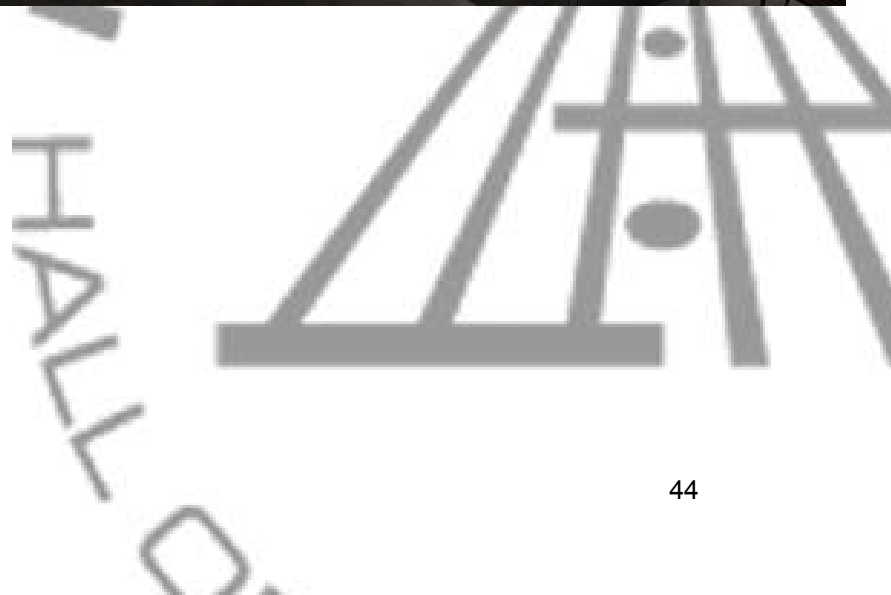
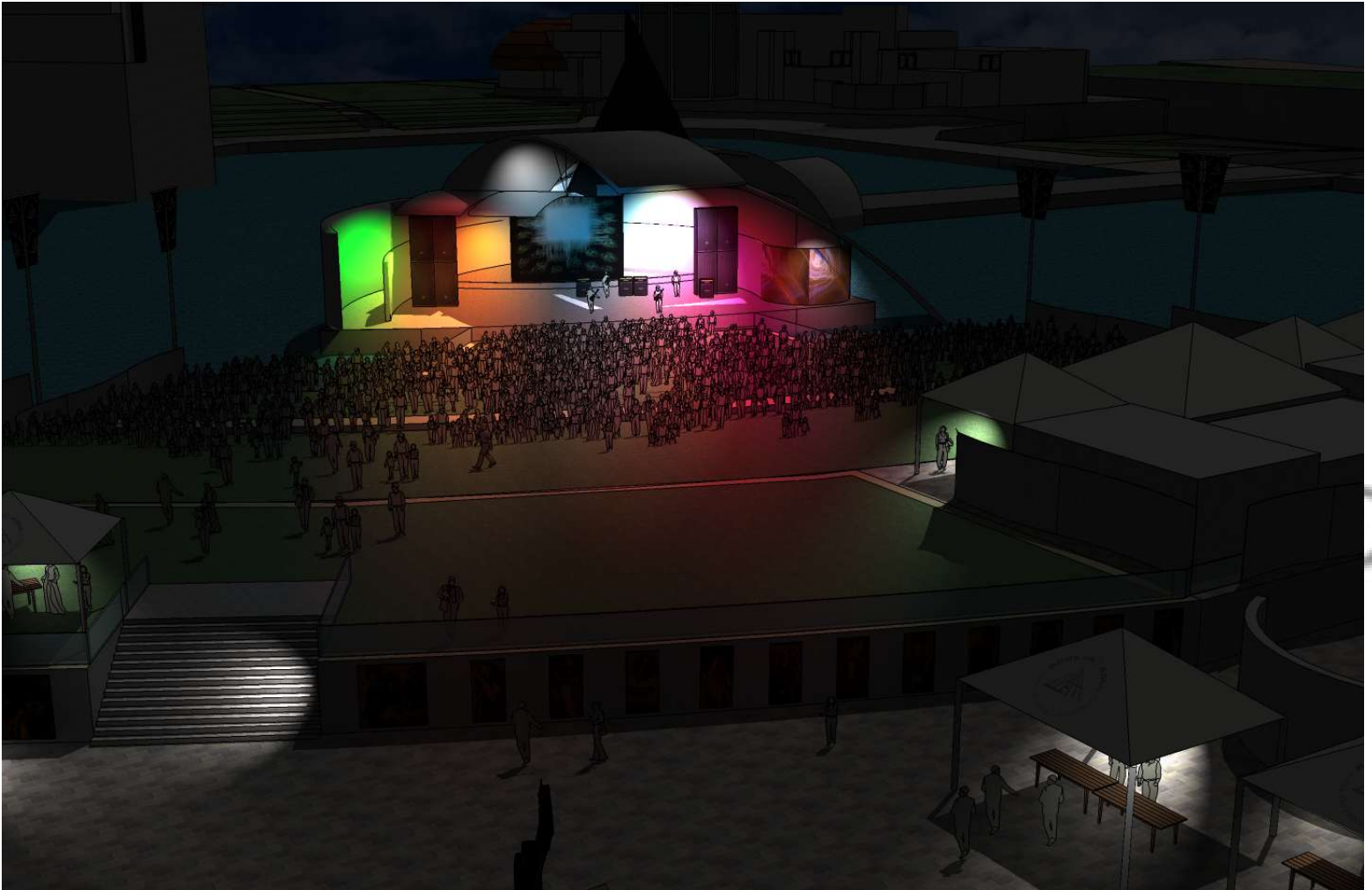
The venue itself is meant to both reflect and represent the spirit of Rock and Roll in its structure and finish. The large overhangs and swooping angles can inspire and work with lighting during concert venues to create some truly magnificent effects. There are screens in place as part of the structure to show visualizers and camera work.

The Concert Venue also mimicks the Rock and Roll Hall of Fame with its large black structure and the aluminum paneled arches and mounds.



Venue overview - During Concert

The night lighting of the venue working with the angles of the venues structure can be very exciting and create amazing effects. The visualizer screen is a built in piece of the stage and can be used during a concert to emphasize the music or give the musician another way to express their music. Radio event tent setups can be lit during at night as well, as can the bronze plaques.



Annotated Bibliography

Bolter, J.D., & Gromala, D. (2003). *Windows and Mirrors*
(Interaction Design, Digital Art, and the Myth of Transparency).
Cambridge, MA: MIT Press.

This book gives a long history of computer-user interface and the ever-fading line that divides the two. Supplies an interesting look at how people see/use computers and how they're ever becoming a larger and larger piece of our lives without (or with) our knowledge. Gives lots of examples of installations and exhibits that have been installed, especially at the annual SIGGRAPH conference. Should be a great source for installation and specific examples and ideas.

De Kerckhove, Derrick (2001). *The Architecture of*
Intelligence. Boston: Birkhauser.

Discusses how our minds process information and how that can translate to design and space. Relates the computer to the human mind and how we can use that information to our advantage.

Grueneisen, Peter (2003). *Soundspace*. Boston: Birkhauser

This book takes a look at a comparison between music and architecture. This is mostly a theory book, but does get into some of the technical aspects of equipment and square footages. I think this book will serve mainly as a theory book and give some examples of theatres, studios etc. That has been designed with music in mind.

Ham, Roderick (1972). *Theatre Planning*. London: Balding.

A great source for technical information. Discusses auditorium design, sight lines, seating layout, stage, and public spaces, etc. Gives comparison matrix of theatres both historic and contemporary. Should be a good source for seating and the psychology of viewing a presentation. Lots of detailed information about the ability of patrons to view onstage events as well as comfort issues and square footages for crowds. Lots of examples for designs and space requirements for technical services as well as public facilities.

Annotated Bibliography

Puglisi, Luigi Prestinenza (1999). *Hyper Architecture: Spaces in the Electronic Age*. Boston: Birkhauser.

This book discusses the potential for information to be transmitted to users on surfaces and within spaces. Information that might be useful to users could be projected and users choices could be influenced or alarms could be sent. This book is extremely useful for the transmittal of information across digital surfaces.

Robillard, David (1982). *Public Space Design in Museums*. ,

Masters Thesis concerning the design and practical application of museum gallery spaces and circulations. A very helpful source for the psychological affects on design and how people react to designed spaces. Discusses movement patterns for individuals as well as groups including circulation patterns in large areas. Touches on distractions from materials or designs and how they should be kept to a minimum, presenting the art instead.

Rock and Roll Hall of Fame. 2004. General information about the site. (Retrieved, <http://www.rockhall.com/>)

An extremely useful site with lots of information about current exhibits, visitor information and educational pieces.

Electronic Shadow. 2003. Information about various installations set up by two french graphic designers. (Retrieved October, 2004) <http://electronicshadow.com/>

This site relates lots of installation ideas and inspirations. Several installations relate extremely well to the blurring of digital projections and objects in reality. Includes web visitors interacting with users in realtime through a digital projection.

Information Percolator. 2002. A student installation project, involving the reproduction of information in a 'bubbler' machine. (Retrieved November, 2004) <http://www-2.cs.cmu.edu/~hudson/bubbles/>

The information percolator project, takes information fed to the machine and reproduces it within a specified number of 'bubblers' that slowly move the image up and off the 'screen'. This project is a great beginning for an exhibit and installation on the site.

Annotated Bibliography

ARS Electronica. 2004. Article about Futuristic Opera installation. Retrieved (September, 2004). <http://www.aec.at/>

The ARS Electronica Facility promotes and designs new technologies and experiences involving our world and how we operate within it. Installations are common in the Future lab, a facility in which innovations are a commonplace activity.

Architectural Record. 2004. Article about new construction technology. Retrieved (October, 2004) http://archrecord.construction.com/innovation/1_TechBriefs/0310LED.asp

A great article about new technologies. LED sensors and light panels that can be used in interactive installations and in conventional lighting applications.

Riverbend Music Center. 2004. Riverbend Music Center informational (Retrieved September, 2004) website. <http://www.riverbend-music.com/gallery.asp>

The Riverbend Music center is an example of an outdoor music venue that promotes a natural setting and works with the environment, instead of fighting it. Can be used to see how facilities and traffic flow work in a typical music venue.

Millennium Park. 2004. Information about Jay Pritzker Pavillion. (Retrieved August, 2004) <http://www.millenniumpark.org/pritzker.htm>

J.ay Pritzker Pavillion, in Chicago has quickly become a regional treasure. Frank Gehry's outdoor amphitheatre is a perfect example of music inspired design. This case study also serves as an example for the support facilities needed to run a modern day music venue.

Experience Music Project. 2004. Information about Frank Gehry's EMP Live Building. (Retrieved August, 2004) http://www.emplive.com/visit/about_emp/building.asp

The EMP has become a national monument to Rock and Roll. Another of Gehry's creations it was completely inspired by artists like jimi Hendrix. This Case study is a great example of places to find inspiration and how to apply it to design.