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“HERE TO STAY IN POWER”

Adaptive Reuse of Seaholm Power Plant at Austin, Texas as Austin Museum of Art

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Adaptive Reuse of Seaholm Power Plant at Austin, Texas as Austin Museum of Art

by

Deepthi Murali, B.Arch

Report

Presented to the Faculty of the Graduate School

of the University of Texas at Austin

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For Meaow and Biju - thank you for being you.

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Deepthi Murali, MSHP

The University of Texas at Austin, 2010

SUPERVISOR: Carl Matthews

The relevance of adaptive-reuse of structures, historic or otherwise is unquestionable in today’s world. Not only is it a sustainable design intervention, it also has a proven record as a working economic model. In simple terms, adaptive-reuse is in.

When a historic building is being considered for a new/improved function it is essential to update the facility for present day use and at the same time relay the building’s pristine past. This design problem aims at bridging the gap between these two complimentary ideas that at times raises conflicted approach. As a means to this end, the project is treated more like a design studio problem than a report.

The building chosen for this project is Seaholm Power Plant at Austin, Texas which is to be adaptively reused to house the Austin Museum of Art. The report begins with a detailed history of the building and its surroundings and museums in Texas. It is followed by a pre-design site analysis, building documentation and study of other projects that are similar to this report. The final part of the report includes preliminary design ideas, adaptive-reuse design of the building and inference.

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REPORT PROPOSAL

THE RESEARCH QUESTION:

What is the design solution for the adaptive reuse of a historic power plant that is potentially eligible for listing in the National Register for Historic Places as an art museum with state-of-the-art facilities and design while staying true to the culture/context of its location?

APPROACH:

Adaptive reuse in the 21st century is a tried, tested and most often successful design tool. The relevance of adaptive reuse of structures, historic or otherwise is unquestionable in today's world. Not only is it a sustainable design intervention, it has also been proven as a working economic model. In simple terms, adaptive reuse is in.

But more often than not, adaptive reuse of a historic building is carried out as an architectural or interior design problem. The potential use of the structure overshadows its past. Historic integrity is often compromised. Most of the present projects that one comes across are adaptive reuse from a designer's perspective as opposed to a preservationist's perspective. This design problem aims at bridging the gap between these two complimentary views that is sometimes conflicting in approach.

In order to achieve this, the project is treated like a design studio problem than a report. Periodic design review meetings will be scheduled apart from regular reviews and meetings with advisor and readers. The design problem will be divided into three broad categories:

1. Research & analysis – history, context and purpose of the building, location, original construction & materials, relevant preservation and architecture theories etc.

2. Preservation oriented design – use of Secretary of Interior's Standards for Rehabilitation as guidelines, address potential preservation versus design conflicts etc.

3. End Use oriented design – art museum.

The building chosen for the design problem is the Seaholm Power Plant at Austin, Texas. It is a 110 000 square feet in area, an art deco building that represents the municipal architecture of that era in the United States.

1.1 ISSUES AND CHALLENGES IN ADAPTIVE REUSE

Adaptive reuse in its fundamental form has been around for centuries. It made and still makes sound economic sense to continue the use of a structure that is already standing. Here, the truism of 'form follows function' often reverses itself. Over a period of time, continual use of old buildings for functions that they were not built for evolved from being a purely functional approach to an aesthetic appreciation. It was no more just a matter of balancing aesthetics and economics but creating "new form out of old fabric". Kenneth Powell (Powell, 1999) and David Kincaid (Kincaid, 2002) writes a great deal about this through the history of adaptive reuse and its technical and architectural aspects.

It is natural that older buildings come with baggage. There are many issues and challenges with reusing buildings including but not limited to areas of conservation, design, structure, context etc. Richard Austin (Austin, 1988) explores some of these factors in his book by using case studies as examples. Adaptive reuse issues vary from building to building, from one architectural period to another. Therefore, it would be safe to conclude that while causes and implications may be similar, the approach has to be customized for individual buildings.

1.2 ADAPTIVE REUSE OF INDUSTRIAL BUILDINGS

The versatile nature of industrial buildings makes them most favored candidates for adaptive reuse. They fit almost any modern day use. Marcus Binney explains this aspect of industrial buildings by means of a number of practical design schemes (Binney, 1990). While its usable nature is undisputed, a number of different arguments over associated conservation policies can be observed (Stratton, 2000).

Many critics often remark that reusing an industrial building as a museum is an insufficient and “safe” design decision. But, museums require expansive spaces, minimal design and stable structure which are prime features of any industrial building. There has been a spate of industrial building to museum conversions in the last couple of decades. The most famous one is probably the Bankside Power Plant in London that is now Tate Modern.

Tate Modern therefore provides a perfect case study. Visitors are mesmerized by its sheer grandeur in terms of volume and spatial use. The next best option to visiting Tate first hand is to experience it through the words of Karl Sabbagh in his book Power into Art: Creating the Tate Modern, Bankside (Sabbagh, 2001). Sabbagh explored the history, design and construction of the museum through personal observations and numerous interviews. This book in combination with Tate’s own more illustrated publication (Moore, 2000) is a detailed descriptive study of the thought and process behind Tate Modern.

1.3 DESIGN OF ART MUSEUMS

Museums in general are some of the most creative spaces today. It is almost a given that any successful architect will have a museum in his portfolio. Due to their highly interactive nature and their constant transformation of spaces, museum design projects demand a high degree of expertise.

For the purpose of this project a design manual is crucial (Darragh, 1993). The complexity of museum design and recent developments is best explored by Suzanne Macleod (MacLeod, 2005) and Sharaon McDonald and Paul Basu (McDonald, 2007). Designing a museum is also about creating a sense of place. The four Tates (Searing, 2004), the Nelson Atkins Museum (Scala, 2007) etc. are great examples.

1.4 PRESERVATION THEORY

20th century industrial buildings are different in many ways from their predecessors. The period was one that saw an explosion of architectural styles, materials and construction methods. In many cases preservation of these buildings face a new range of problems like hazardous building materials, spaces designed for specific purposes, conflicting philosophies etc. These factors are explored through a series of papers by various professionals in the book Structure and Style: Conserving 20th Century Buildings (Stratton, 1997) and The Factories: Conversions in Urban Culture (Transeuropehalles, 2002).

Additionally the use of adaptive reuse as a preservation tool finds mention in the works of a number of preservation theorists from different schools of thought. The Secretary of Interior’s Standards of Rehabilitation is yet another important document to consider while working with historic buildings especially if they are potentially eligible for National Register for Historic Places listing (National Park Service). The guidelines provided in the 1964 Venice Charter are also important guidance tools (ICOMOS).

METHODOLOGY:

The design problem would begin with research on the building and its history as well as exploring various preservation and design theories. The material for the research will be obtained from drawings & construction documents, books, journals, theses, interviews, news media and internet. The next stage is the analysis of the information gathered as mentioned above. With the analysis, the first phase of the design problem is completed.

The second phase of design involves looking closely at the Secretary of Interior’s Standards of

Rehabilitation and other preservation guidelines with regard to the building and potential design requirements. A brief study on how spaces within or the building itself may have to change to accommodate its new functions will be conducted. If potential conflicts arise from this study, then these will be considered as design challenges in the final phase. At least a part of the second phase would continue to evolve with the final phase as they are interlinked. A tentative conservation documentation project for Prof. Fran Gale's Material Conservation: Field Methods class where Seaholm Power Plant would be the topic of study and documentation may become a part of the second and final phases of the project.

The final phase consists of developing a design solution to the problem using the information gathered and derived from the first and second phases. This will be in a visual format and may consist of sketches, drawings, design renderings, photo montages, 3D models etc. Design software such as AutoCAD, Revit, 3D Studio Max/Rhino, and Adobe Graphics Creative Suite etc. will be will be used for this purpose.

ANTICIPATED FINDINGS:

The project will be submitted in the form of a report and a set of design drawings. Additionally, there may be material submitted in a soft copy format and physical models. This design problem does not have a hypothesis. It will be a design solution that can be used as a model for preservation of historic buildings through adaptive reuse.

The findings from the design study are included in the following pages.

CHAPTER 1
HISTORY - SEAHOLM POWER PLANT, AUSTIN AND MUSEUMS IN TEXAS

A BRIEF HISTORY OF AUSTIN[1]

For centuries before Westerners came to Texas, the area that is now Austin was the land of multiple nomadic Indian tribes. The first settlers were Stephen F. Austin who came with his father to the spot along the bend of the Colorado River, and called it the city of Waterloo. When the Republic of Texas gained its independence from Mexico this small town became its capital. And it was renamed as Austin. Between 1839 and 1840, the population of the town multiplied. By the end of the year Austin had a population of 856 inhabitants. Soon the plans for the Capitol were laid out. Congress Avenue and Pecan Street (now Sixth Street) became the business center of the city.

In the 1880s, Austin really began its journey to become what it is today. The government became the biggest industry in Austin, new schools and colleges opened, as did many other businesses. In the 1890s the first was constructed on Colorado River which provided the city with water, electricity and entertainment. The technological hub that Austin is today owes its origins to the pioneering minds of the 1950s that started major research laboratories and think tanks right after the Great Depression. That decade also witnessed the arrival of various entertainment ventures like movie theaters, public swimming pools and a public library system. By 1970s Austin had become a thriving city. This period also saw the city's rise as one of the musical destinations in the country.

From farmland to town to city and now a metro, Austin has steadily progressed and continues to do so at a fast pace. Today, the city is still known for its natural beauty, its high technology industries and music. Austin while ever-changing has successfully preserved each layer of its coming into being.

INFRASTRUCTURAL DEVELOPMENT IN AUSTIN[2]

Though the proposal for a dam across the Colorado River started as early as the 1860s, approval for the plan came only by the end of 1890s. The first utility company in Austin was the Austin Water, Light and Power Co. set up in 1887. Later that decade, Mayor John McDonald brought in an engineer from Boston to build this dam. It was built in the place of present day Tom Miller dam. The 60-foot-high dam came to be known as the Granite dam and included a reservoir, a powerhouse and system that could distribute water and electricity all over Austin. Completed in 1893, the dam started generating electricity only in 1895. Austin's first power plant was at the site of the current electricity sub-station next to Seaholm Power Plant. It used to produce 24 megawatt of electricity with four generators. It was demolished in the 1960s.

1895 also saw the introduction of Austin's street lighting system with the 165 foot tall moonlight towers. There were 31 such towers in the city. The power generated from the dam was used to light up these towers as well as for running the electric streetcars.

The Granite Dam became a tourist attraction of sorts until the end of the decade when people realized that the dam had become inadequate for the size of the city's population. In fact, there were instances of water shortage as well as two widespread power outages in 1897 and 1899. In 1900, after a torrential downpour the already silted dam broke apart and flooded many parts of the city. As a result of this shallow groundwater infiltration galleries were built along the banks of the Colorado

1 Information gathered from various sources – Austin History Center, City of Austin website, Texas Handbook etc. All sources have been recorded in the list of references.

2 Ibid.

in 1907. Two of them still exist as gazebos along the hike and bike trail along Cesar Chavez Street, opposite to Seaholm Power Plant.

Today the Tom Miller dam stands in its place along with the reservoir of Lake Austin behind it. These were built in 1939. Due to the extent of damage from the Granite Dam calamity, the city constructed a series of dams along the river to keep water in check.

While there was a bid by Texas Power and Light Co. to buy the power plant from the city, Walter E. Seaholm, Superintendent of Water and Light curbed the bid by operating the utility at a cheaper rate. The Depression Era saw tough times in Austin. According to a 1931 City Manager report, the Water and Light department employed almost all men who could work, who had lived in Austin for more than a year and paid them $3/day.

In 1935, the river flooded again. Seaholm again saved the day by setting up an emergency water pump and patching up electricity through Texas Power & Light Co.'s system. The advent of World War II saw the end of Austin's streetcars. In 1940 Austin's fleet of buses hit the roads while the last of streetcar tracks were bundled off as steel for use in the WWII.

BUILDING HISTORY

Because the city kept growing after the war, a new

1. The breaking of the Granite Dam.

2. The first phase of Seaholm construction.

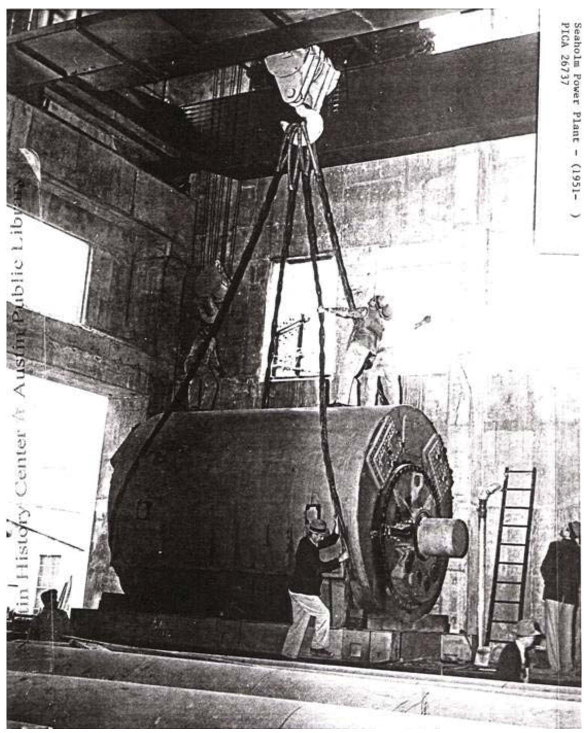
J.M. Odom of Austin was the contractor.[3] A new power plant was crucial for two reasons: due to war shortages the city had not upgraded its facilities for almost a decade while the population had increased many folds and, with the advent of televisions, air conditioners, dishwashers and washing machines, the demand for electricity was greater than ever before. In 1950, the first phase of Power Plant No. 2 began. The second phase was finished in 1958. Five generators produced 120,000 KW of electricity.[4]

The architecture of Seaholm is in many ways unique. It is widely regarded as one of the only classic examples of municipal architecture of that period in Austin. Designed in civic Art Deco style, it is a majestic building roughly enclosing 110,000 square feet area divided between one floor (with a mezzanine level) at ground level and two floors below. It is symmetrical in design and austere in appearance.

Seaholm is also different from its counterparts in other parts of the country built around the same time. In the 1950s, most power plants were constructed with steel and brick. But Seaholm is constructed with cast-in-place concrete. Speculations on the choice of construction materials abound.[5] The common belief is that steel was not as readily available in post-war Austin in the late

3 City of Austin, Seaholm Power Plant – History, http://www.ci.austin.tx.us/seaholm/powerplant.htm (accessed on August 15, 2010).
4 Ibid
5 From an interview with Ar. David Lynch (STG Design, Austin).

1940s and therefore concrete was used. The entire façade is of cast-in-place concrete with unique patterns on the surface left by plywood formwork used in construction. By 1989, the technology of Seaholm Power Plant had become obsolete and too costly to operate. It stopped operating as a power plant that year. Over the decades it has been used to house city of Austin's while there have been many recommendations to use it for commercial establishments such as Whole Foods etc. Soon after a fight to keep Seahom Power Plant began.



3. Interior - crane used for turbine installation.

"Friends of Seaholm", an organization dedicated to saving the building along with support from the citizens and later the city officials started the Seaholm Reuse and Planning Committee in 1997. In 1999, the decommissioning of Seaholm was completed and Texas Historical determined Seaholm Power Plant eligible to be listed in the National Register of Historic Places.

HISTORY OF MUSEUMS IN TEXAS[6]

When compared to the eastern states museums in Texas are a far more recent development. Small displays of personal collections often date back to the 1830s. But the first museum in Texas was formed to preserve the materials relating to Sam Houston by the Sam Houston Normal Institute in 1979. Soon after universities like Baylor in Waco started art associations. The real impetus for museums in Texas came after 1936 when Fair Park in Dallas was constructed as a part of the Texas independence centennial celebrations.

As always, museums were pioneered in small houses with exhibits that were mainly historic in nature. Numerous historic societies also established museums in rail depots, courthouses etc. providing early example of mixed-use and adaptive reuse. After the national bicentennial in 1976, more museums were founded in historic forts and in houses of famous people like O. Henry in Austin and sculptor Elizabeth Nay. The mid-century also saw a lot of patron donations that led to the creation of many world-class museums in Texas such as the Kimbell Art Museum and Amon Carter Museum in Fort Worth and later, in the 1980s, the Menil Collection in Houston. University museums also found a large number of donors. Notable among these are the Huntington Gallery collection that is now Blanton Museum of Art and the collections at Harry Ransom Center at the University of Texas at Austin.

The serious commitment of Texan museums as aspiring world museums began with the acquisition of a major Picasso painting by Fort Worth Art Museum in 1965. Each of these museums have their own specialties. While Kimbell acquisitions contemporary masterpieces of art from around the worls, the Amon Carter museum specializes in works of 19th and 20th century American artists. Along with art and history museums, Texas also saw a surge in science museums. The architects involved in museum projects in Texas have also been some of the masters in the field. Starting with Mies van der Rohe who designed the Houston Museum of Fine Arts, followed by Phillip Johnson who designed the Amon Carter Museum (1961), the Art Museum of South Texas (1972) in Corpus Christi. The trend continued with Louis Kahn who was commissioned for Kimbell Art Museum and more recently Renzo Piano for the Menil Collection.
These architects and their buildings create a storyline of modernism as an architectural typology for museums in Texas.

6 Texas State Historical Association, Museums, The Handbook of Texas Online, TSHA, http://tshaonline.org/handbook/online/articles/MM/lbm3_print.html (accessed on August 15, 2010).

CHAPTER 2
SEAHOLM TODAY - CHARACTER, SURROUNDINGS, PLANS

SEAHOLM POWER PLANT TODAY

In 1989, Seaholm Power Plant stopped producing power. Since then the use or re-use of this building has been a hot topic of debate. Over the years it has been used to house City of Austin's offices while there have been many recommendations to use it for commercial establishments such as Whole Foods etc. There has also been a great amount of discussion on using Seaholm as a cultural venue – a new center that can attract the culture conscious people back to downtown Austin. Its close proximity to Town Lake and Zilker Park proves to be an added attraction.

After the decommissioning of the plant, environmental remediation was also completed. In the 1990s, a public process that involved the City of Austin, Friends of Seaholm Organization and the people of Austin took place with the intent of determining the future of Seaholm. More than 400 Austinites attended these events. Through the various hearings, discussions and related events around the city, an understanding of what the city of Austin imagined Seaholm to be was formulated.

The following points were inferred directly from the public process:[7]

7 Friends of Seaholm Reuse Committee, Report, City of Austin, 2000, (accessed through Prof. Sinclair Black on September 5, 2010).

•Reuse it as a center for art, exhibits, and performances or a science and technology or natural history museum.
•Provide for multiple and simultaneous events and activities.
•Include children.
•Use Seaholm's spaces to teach why things are and how things work.
•Honor Seaholm's past and preserve its history through retaining its character pieces (dials, gauges, flue stacks, boilers, exposed steel boiler structure, condensers)

While a vast majority agreed that Seaholm has to be a public facility, its function seems to have been a point of lively debates. An equal number of people agreed on using it as an art facility or as a science and technology learning/exhibition center.

An open house to discuss Seaholm also brought in comments from Austinites about what they like about the building.[8] 22 of them said that they liked the power generation equipment, including controls, gauges, clocks and dials. 20 people liked the quality of space ("unfettered," "incredible space…lovely windows"). 19 people liked the appearance of the building ((art deco; 1950s style architecture; "I like the shape of the building…I hope they never tear it down"). 15 people commented on the size, lots of space, the scale of the building, 11 about the location ("Keep the crane & turbine so people can see how power was generated"), and 10 people about signs and lettering. There were also numerous comments on building configuration, its multiple levels, Light quality inside (clerestory windows), Turbine room, history of the building & the area, flue stacks, 'it's city owned', view of downtown, Italian cypress trees, industrial/urban feel.

8 Ibid.

4. Location Map with Notations

5. [1] North: Residential Mixed Use Properties

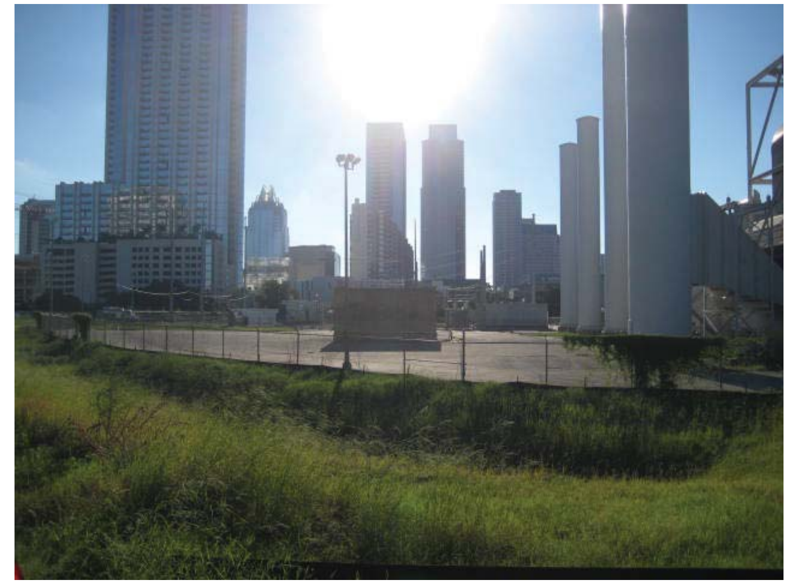
6. [2] North-west: Mid-Rise Residences

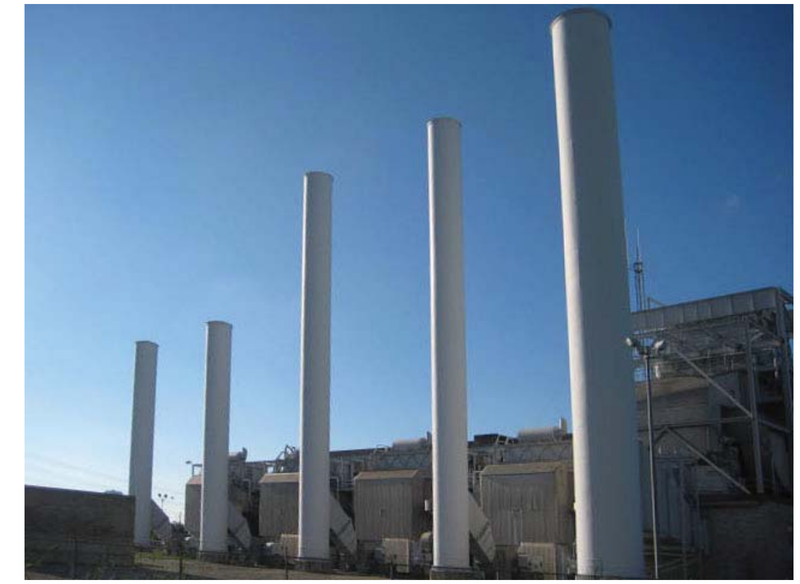
7. [3] View of Seaholm from North-east

8. [4] West: Railway Over-bridge

Location Map with Photographs of Surroundings


9. [5] Seaholm Drive: View from South


10. [6] View of Seaholm Property from West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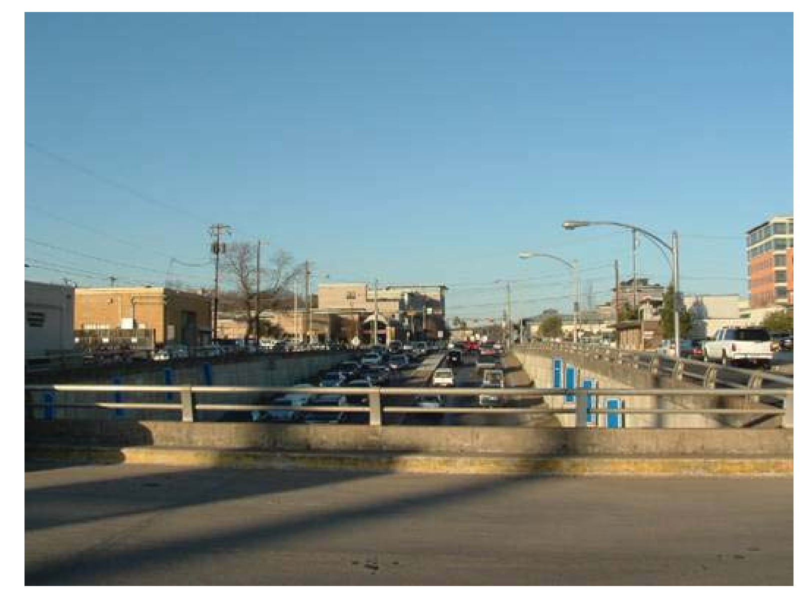
Photographs of Surroundings

15. Location Map with Notations

16. [11] South: Seaholm South Elevation

17. [12] Further South: Ladybird Bike Trail

18. [13] View from West: Cesar Chavez Street



19. [14] View from South: Lamar Boulevard

Location Map with Photographs of Surroundings

CHARACTER DEFINING FEATURES

The three step process of identifying a building's visual characteristics have been detailed in Preservation Brief 17 (Nelson 1988). This involves observing and creating an architectural checklist of features that make the historic building stand apart. Following are the inferences drawn from a detailed observation of Seaholm Power Plant as specified in the brief.

The Seaholm Power Plant sits in a plot that is separated from its surroundings by a series of streets, trails, and creek and railway tracks. The long rectangular building with its five tall, cylindrical flue stacks is visible from a great distance away. One can see the flue stacks from the Congress Bridge, from the southern side of Town Lake and Lamar Boulevard. The west elevation is plain with Art Deco lettering along the elevation that says "CITY OF AUSTIN POWER PLANT". The southern side that has historically been the front elevation of the building has two main entrances offset to either side from the middle and equidistant from each other. The entrances are flanked by concrete urns and a flight of steps leads up to small porches. Above these are art deco signage that comprises of a lightning bolt made of metal set against the backdrop of glass blocks with art deco lettering that says "City of Austin" and "Power". The length of the building is broken by awning-type steel windows that are placed equidistant from each other.

The east elevation of the Seaholm Power Plant has a small building tacked on to the larger building. This elevation, like the south elevation is broken into a neat grid by windows. Towards the north, a floor to ceiling fixed window dictates the character of this elevation. This window is made up of a grid of glass blocks set against a concrete framework. The north elevation displays the industrial nature of the building. Only the entrance doors and the windows above it are visible on the northern façade as the boilers covered in sheet metal stand right in front of it. Therefore, northern elevation is defined by the five flue stacks and the sheet metal covered boilers and their associated machinery.

The whole structure is built with cast-in-place concrete. The external concrete façade is scored into 4 foot x 4 foot panels that sometimes have corrugated or flat rubbed surfaces. The texture of the plywood formwork applied during its construction gives the panels their unique character. The panels in between upper and lower windows have a fluted pattern on the concrete façade. The windows and doors are steel with transparent glass panes used in most of them. Glass blocks are also used in southern and eastern elevations. The boilers and other machinery are made of steel and the newly added covering is of sheet metal.

The interior of the building is as special as its exterior even though the machinery has all been removed. The turbine hall is interesting in terms of its height, the quality of light, the floor slab cut-outs and its large expanse of space. Similarly the two floors below have varied quality to them. At least more than half of these floors have no natural light access. The floor cut-outs bring in diffused light from the turbine room windows down to the lower levels. At the lowest most level, the most interesting features apart from the quality of light are the water catchment areas and the view of the upper floors. The floor level in between the lowest floor and the ground floor is divided into two levels. The southern part of the floor is 3 feet lower than the northern half. They are connected to each other through a series of steps and metal grate walkways. Another important feature at this level are the circular holes in the wall that runs laterally though the middle of the floor which previously housed large pipes that carried natural gas. There are also a number of steel stairs and railings that enhances the industrial feel of the building.

20. Art Deco Lettering on West Elevation

21.. Art Deco Signage and Lettering Above Entrances in
South Elevation

22.. South Elevation
Fluted Treatment of Concrete Panels Between Upper and Lower Level Windows
Corrugated Treatment of Trim on Top of the Entrance Surround
Concrete Urns on Either Side of the Steps
2x6 and 2x7 Awning-Type Windows
4 Foot x 4 Foot Scoured Concerete Facade

23. Floor -to- Ceiling Glass Blocks Fixed Window on East Elevation

24. Flue Stacks in North Elevation

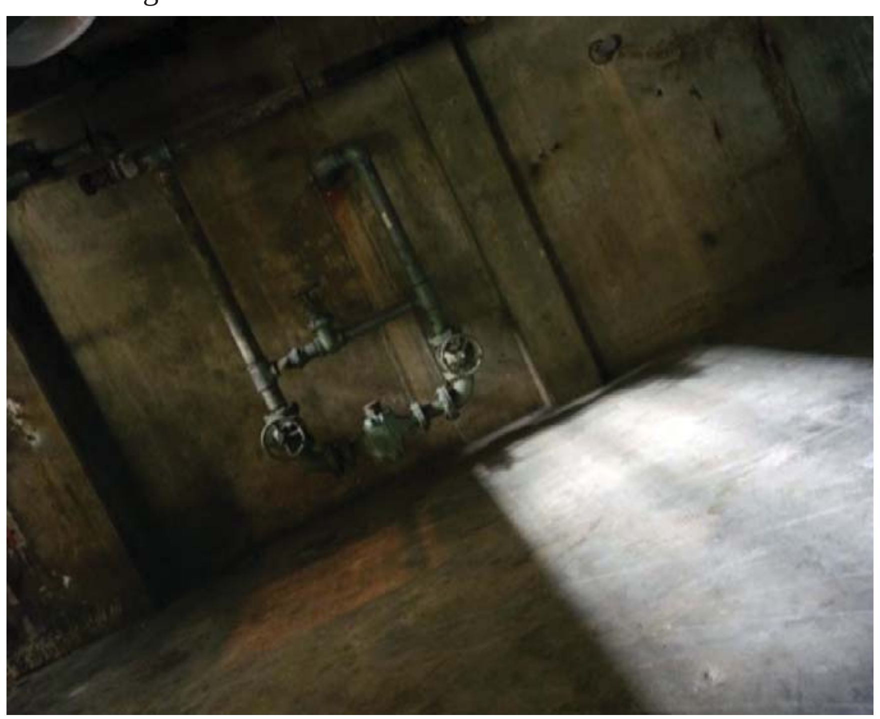
25. View from North
Boilers and Other Machinery Covered with Sheet Metal
Main Entrance Doors and Windows Above in North Elevation
Steel Overhead Walkway

26. In-house Crane Used During Construction & Production Periods
at Seaholm Power Plant - Fully Functional

27. Double-Height Space on the Northern Side of Main Floor

28. Main lobby area
Turbine Hall: Double-Height Main Floor Space
Multiple Floor Cut-Outs
Quality of Light
Coulumn and Beam Design


29. Lower floor view
Metal Grate walkway
Splash of Red Paint
Filtered Light


30. Various Mechanical Equipment Dispersed Throughout the Building


31. View through a Pipe Hole in the Wall
The Pipe Hole Original to the Building; Carried Boiler Pipes
Quality of Filtered Light

SEAHOLM DISTRICT PLAN

In 2000, urban design consultants ROMA was hired to develop a multitude of redevelopment plans for various pockets of Austin. Among these, was the redevelopment of Seaholm District. In collaboration with other entities both public and private a master plan was proposed and developed. Following are the recommendations made for Seaholm District in the master plan:[9]

- Preserve Seaholm Power Plant as a prominent civic historic landmark with viable and complementary public-oriented uses. Reinforce the natural, visual and open space character of Town Lake and Shoal Creek.

- Ensure that adequate parking is provided for Seaholm.

- Extend roadways to improve local access to Seaholm and to create better linkages to the downtown and adjacent activity centers, and provide for improved bicycle and pedestrian circulation through the Seaholm district.

- Provide the development of an intermodal transit facility at the heart of the Seaholm district, accommodating city and inter-city buses, Amtrak and future light rail and commuter rail service.

- Promote the development and redevelopment of surrounding properties and the preservation of key resources to create a unique and vibrant mixed-use district that complements Seaholm as a public attraction.

Further, Seaholm LLC commissioned architects to form a proposed design plan for the district. This plan included Seaholm Power Plant as well as 3 additional buildings. All the buildings would have a wide range of mixed-use functions that are public-oriented commercial or retail spaces.

32. Seaholm District Plan

9 ROMA Design Group, Seaholm District Master Plan, Seaholm LLC, 2000, www.seaholm.info (accessed on August 15, 2010).

CHAPTER 3
ART MUSEUMS - OBSERVATION AND RETROSPECTION

THE WORLD OF MUSEUMS

French theorist JNL Durand in 1805 published his concept of an ideal museum as long galleries surrounding four courtyards and a central rotunda. This perhaps marked the era of museums as a cultural and public phenomenon. A museum can be described in myriad ways. It is called a repository of public treasures, a civic meeting place, a venue for cultural stimulation etc. They are often found occupying some of the trendiest locations in a city, more often than not designed by a famous architect. In reality a museum is not a single-function entity as it is often believed to be but rather diverse in its patrons, functions and subject-matter.

In the 21st century museums have seen a tremendous rise in popularity thanks to the massive success of projects like Frank Gehry's Guggenheim Museum. It has not only become an attraction for the "classes" but also the "masses". Today, it is even possible to visit some of the world's best museums from the comfort of one's home with virtual museum tours that are available in many museum websites across the world. Nevertheless the experience of physically being in museums has become the centerfold of cultural events in any "urbanian's" agenda.

Museums are therefore viewed as transformers, like the great churches of the Gothic period. They are also seen as resuscitators. Indeed, museums reinvigorate areas where they are present. Museums are also increasingly called entertainment venues and as an object by itself to be viewed and enjoyed by the public. Thus, all these has led the museum to be an unique architectural entity that requires to not only be a "strongbox of cultural artifacts" but also be an artifact by itself, provide for new audiences with new demands that require state-of-the-art technology as well as educate its future audiences.

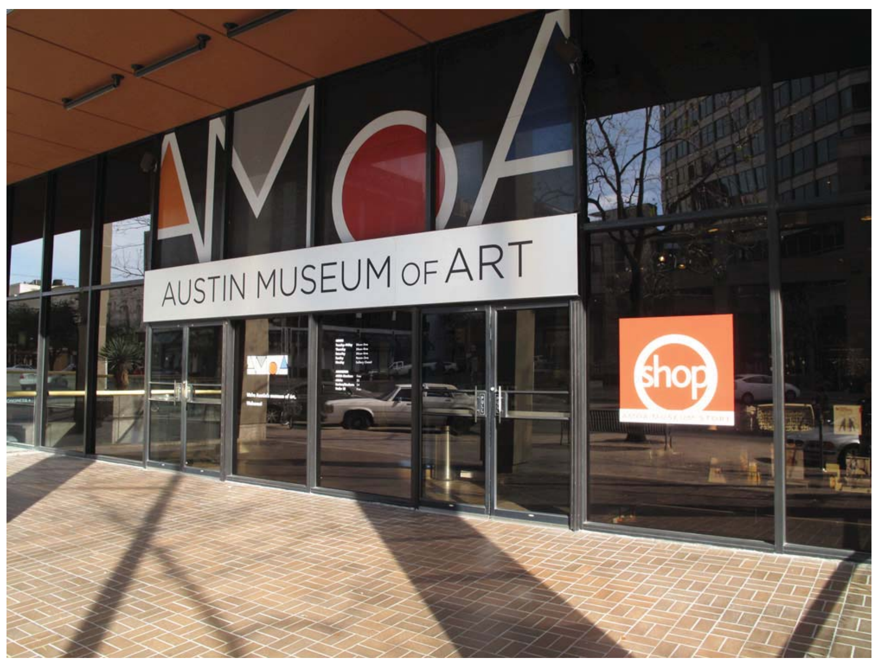
33. Guggenheim Museum by Frank Gehry, Bilbao, Spain.

THE AUSTIN MUSEUM OF ART

The Austin Museum of Art was first established in 1961 at Clara Driscoll's estate and it was called the Laguna Gloria Museum. From the very beginning the museum focused on 20th century and contemporary art covering painting, sculpture, video and photography. The AMOA-Downtown was formed in 2004 when the board of trustees realized the need for a downtown art association. It is located on Congress Avenue, a few blocks away from the Capitol.

Typically AMOA-Downtown exhibits 4-6 travelling collections each year. The goal of AMOA is to emphasize the connection between visual arts and other forms of art and contemporary life. There are a variety of programs including activities like family lab that promotes art education among children and young adults. There are also guided tours, performances, film series and hands-on activities that make AMOA-Downtown a vibrant art destination.

Currently at a rental facility in an office building, AMOA is looking to move. As a modest contemporary museum, it would ideally like to relocate to an area within downtown but at a site/building that agrees more with its dynamic nature.[10] Most of the museum's patrons are families with young children and young professionals. On an average weekend, the museum gets about 200 visitors. Weekday visitors are mostly children from nearby schools.



34. Austin Museum of Art, Downtown Austin.

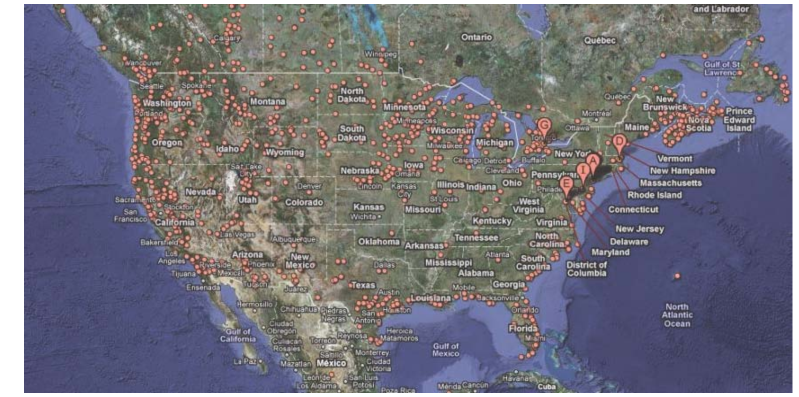
10 From an interview with Mr. Dana Friis-Hansen, Director of AMOA, September 2010.

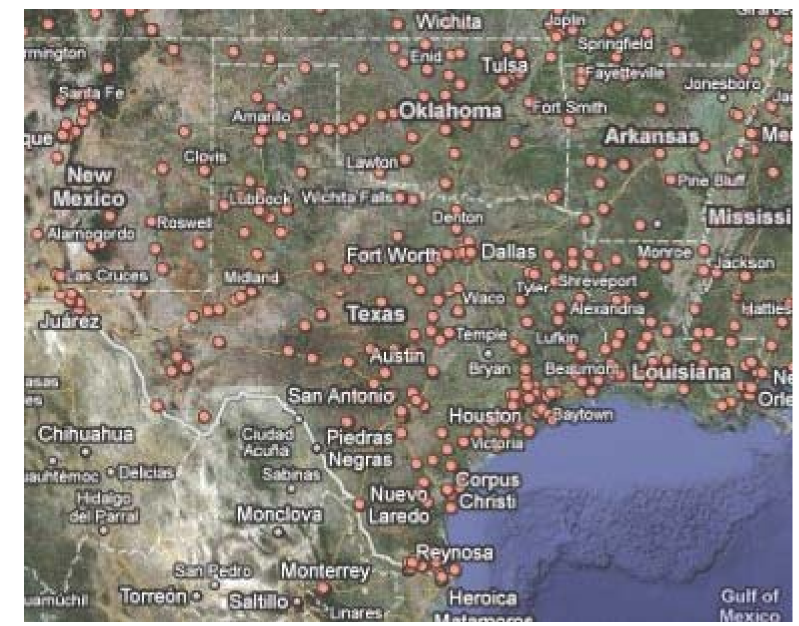
Seaholm Power Plant as the Austin Museum of Art

In Austin, the need for museums is palpable. Apart from a few galleries and exhibition spaces found downtown, Austin has surprisingly few professional fine-art collection/exhibition facilities for a city of its size. AMOA indeed does an excellent job in addressing this need. But at present, it experiences severe physical restrictions due to very little area availability. The museum in order to grow and to encourage new talent requires an imaginative, inspiring space for itself.

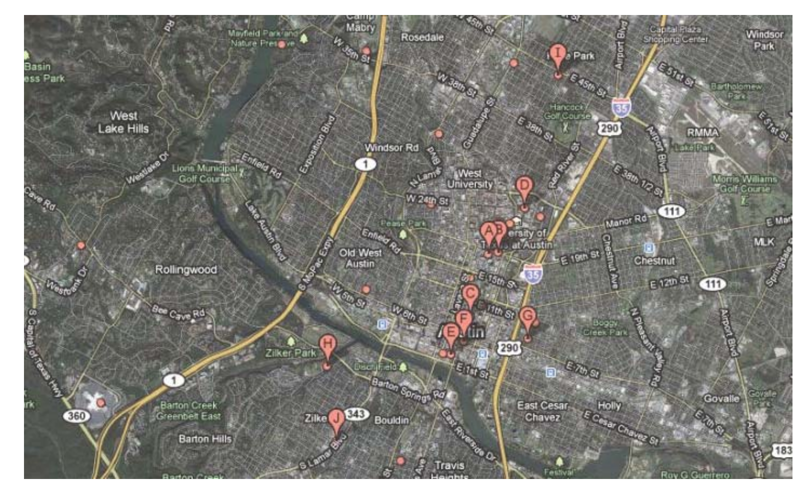
Over the years, projects like Tate Modern and MASS MoCA have proved again and again the viability of re-using large industrial spaces as exhibition areas and museums. The large volumes that are characteristic of industrial buildings are especially suited for contemporary exhibition facilities as they tend to allow maximum flexibility to the use of space. This holds good for Seaholm. Additionally, the location of Seaholm at the edge of downtown and Town Lake works perfectly for the reuse of this space as the Austin Museum of Art.

To understand the key design elements and approach to reusing a hisotric building, it is imperative to closely study similar works. Here, a detailed analysis of the Tate Modern is provided as a case study example.


35. Museums in USA



36. Museums in Texas


37. Museums in the City of Austin

STUDYING TATE
Name: Tate Modern
Function: Contemporary Art Museum
Architects: Herzog and de Meuron Architects

38. Tate Modern, London.

In 2000, an avant-garde museum style was born. Tate Modern rewrote the age-old ideas of adaptive reuse and created a world-class facility that has awed millions since. Within the walls of the Bankside Power Station on the banks of River Thames in London, Herzog and de Meuron's gargantuan project took birth from a design competition. The Swiss architects were chosen out a dozen of the world's finest including Renzo Piano and David Chipperfield to provide a new cultural vision in the 21st century. Following are the observations gleaned from a detailed analysis of Tate Modern.

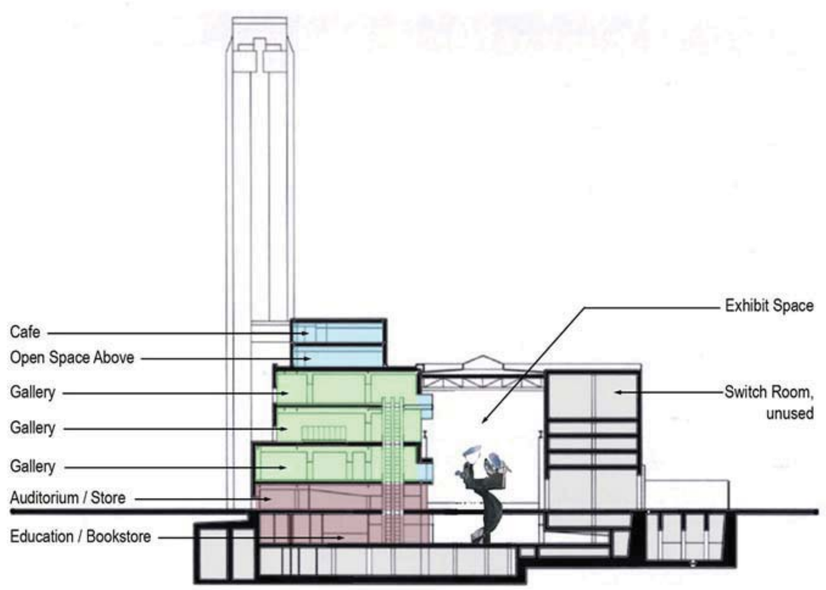
Tate Modern – the good, the bad and the ugly.[11]

The turbine hall is the most characteristic space in Tate. The reuse focused on re-creating the volumetric experience of the hall while at the same time using it for principal installations that gave it an atmosphere of change. This fluidity of design within permanence delightfully yet simply explains the concept of Tate Modern. On the other hand, is the significant new feature-addition, the "light beam" atop the building. This very visible deviation in design questions the historic integrity of the building to the extent that Tate Modern may not have the "recognition" as the Bankside Power Plant. Also, the building itself was partially gutted and reconstructed in order achieve the architects' vision. Tate also uses natural light to bath its interiors beautifully. It uses installations as elements to create spatial continuity while severely depending on rigid functional organization of these spaces to keep the design "tight". Some of the noticeable features of Tate are explained below.

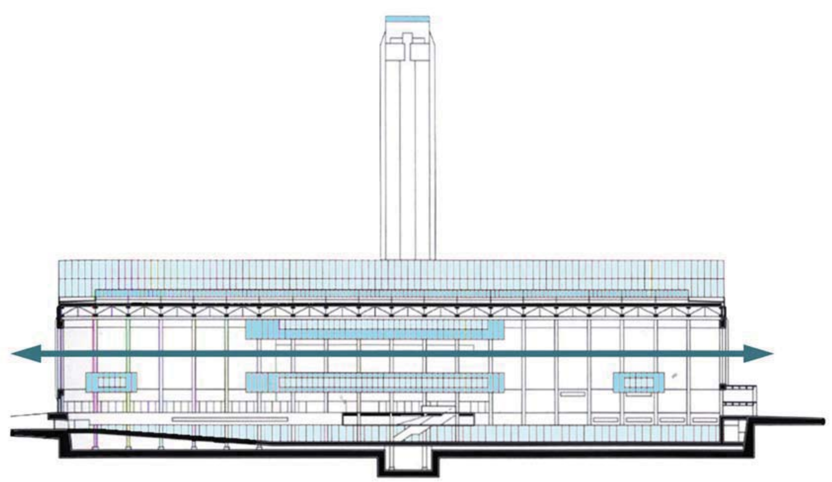
11 Davis, Matthew, Memory of the future, University of Maryland, 2006.

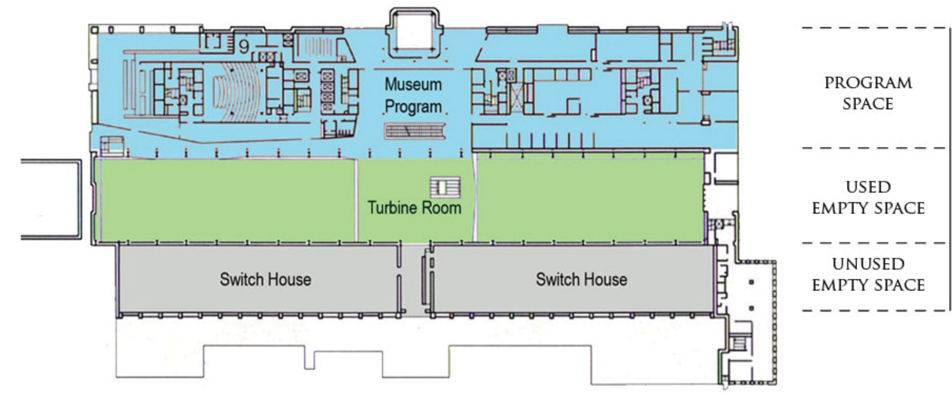
39. Turbine Hall during construction.

40. Reconstructing Bankside - Construction of "Light Beam"

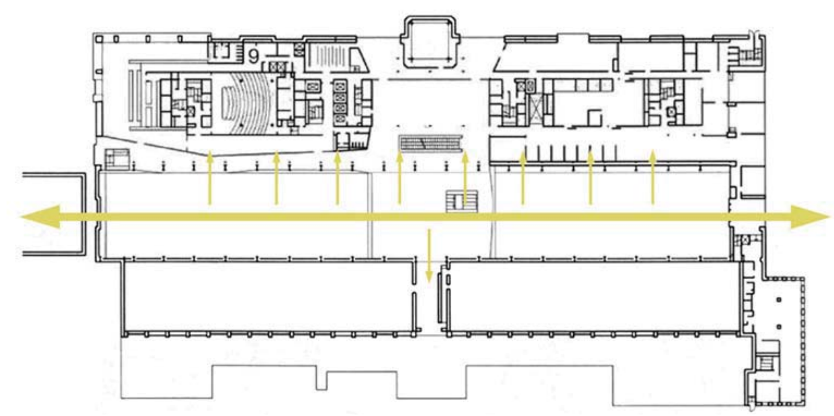


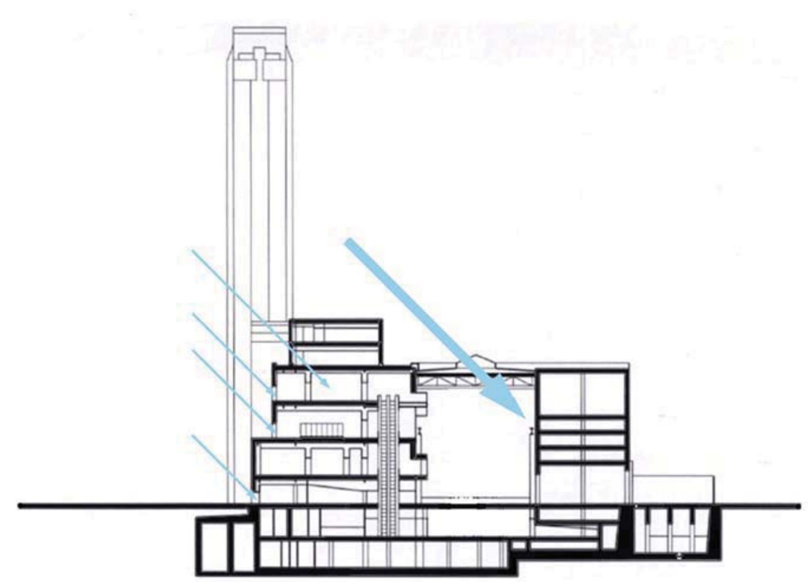
41. Sectional Organization Diagram

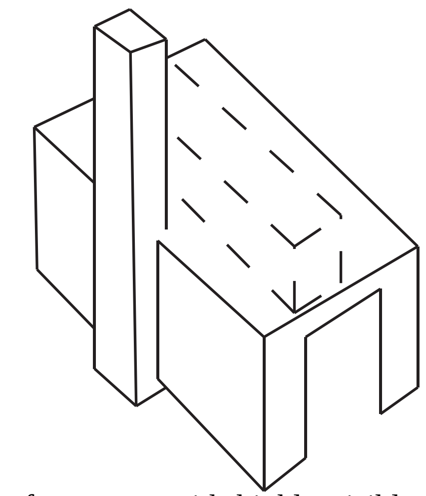

42. Horizontal Mapping Diagram

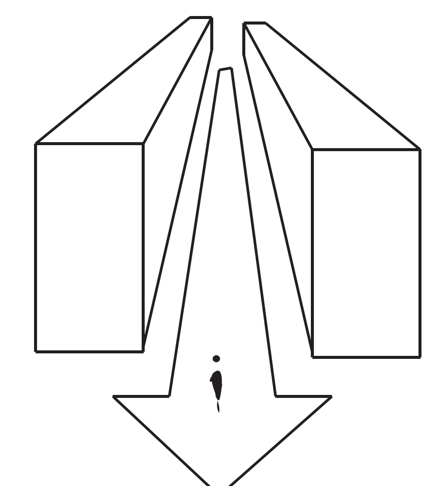


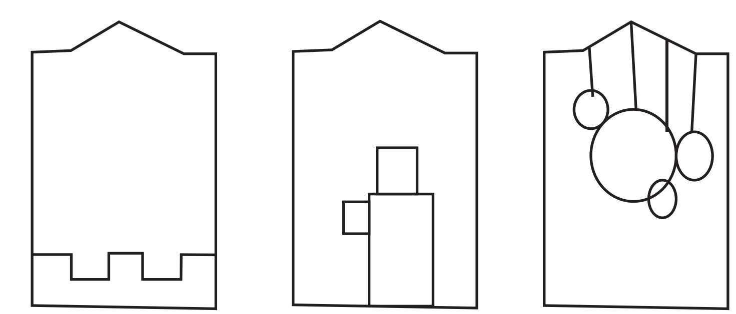
43. Planar Organization Diagram


44. Circulation Axis Diagram


45. Lighting/Ventilation Diagram


46. Retention of structure with highly visible modern structural-aesthetic addition.


47. Linear, directional progression through the building both in spatial arrangement & circulation.


48. Preservation of the spatial characteristics of Turbine Hall while using it as a space that undergoes constant change.

CHAPTER 4
PRESERVATION AND DESIGN - SENSIBILITIES AND GUIDELINES

This report begins with the title “Here to Stay in Power”. This statement simply addresses the philosophy behind this adaptive reuse design project. Looking back at the relatively short history of preservation, one comes across a number of contrasting and sometimes conflicting factors. For John Ruskin preservation meant to complete the cycle, let the building gather a patina of age and then eventually disappear back into the earth where it came from. For Eugene Viollet-le-Duc, preservation lay to a certain extent in creative liberty and portraying a sense of “what would have been”. Historian Alois Reigl took a more practical approach to preservation. He opined that the value of a historic site is four-fold – age value and historic value deals with the past of the site while art value and use value deals with the present and the future.

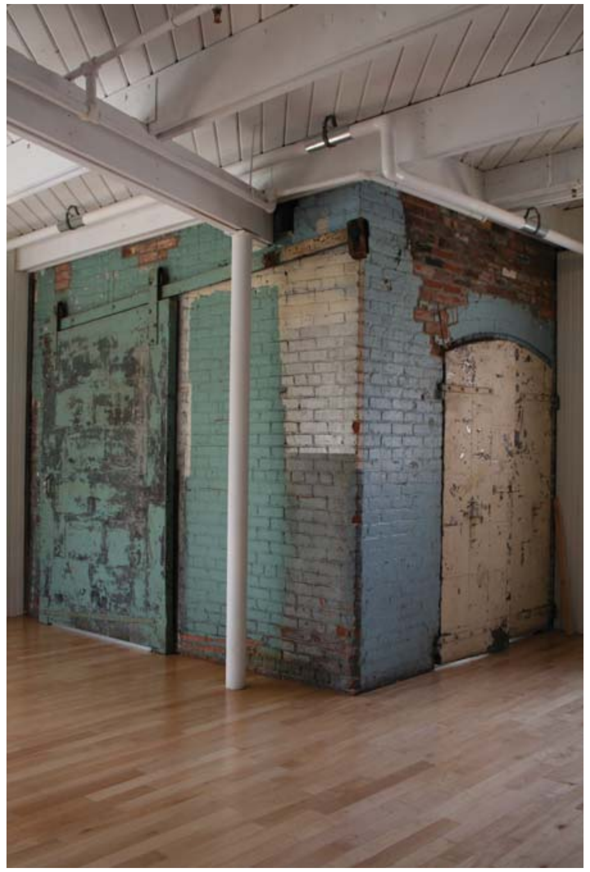
Among contemporary preservationists, James Marston Fitch held a view that has been controversial yet profound. He viewed a preservationist as a curator of the built world and therefore historic buildings and sites were to be treated as exhibits rather than as useful entities of a growing society. On the other hand, Tony Hiss in his book “Experience of a Place” writes about historic preservation as a feeling more than a science. In the case of Seaholm Power Plant’s adaptive reuse project, a philosophy is simple to discern yet difficult to achieve. For the idea of preserving Seaholm Power Plant is bi-fold – one is to maintain and resuscitate the existing building. The Ruskinian idea that a building is built not for a family but for generations together is applicable in this regard. Apart from preserving the structure it also becomes important to differentiate the new from the old. While this can be achieved and has been achieved in the past in many different ways, the design approach selected facilitates an engaging interface between the new and the old while at the same time keeping their distinctions intact.

The second part of the Seaholm Power Plant adaptive reuse philosophy is that of a contradicting factor, that of change. Seaholm was built during a period when tremendous changes were taking place. The building was built to “adapt” to its situations. As such when steel was in short supply due to World War II, the designers of Seaholm used concrete as its sole construction material with very little steel. Similarly, like most power plants of its generation Seaholm was capable of generating electricity using coal, water and steam. This profound nature of adaptability of the building where form often followed function is addressed through this rehabilitation.

Museum design sensilbilities have changed over time. Brown Goode in his address at the Museums Association Conference (in 1895) said that a museum building should be fireproof, architecturally simple and dignified with appropriate, well-proportioned halls and lighting, with no decorative patterns that take attention away from the exhibits. He said, “No architectural effect which lessens the usefulness of the building can be pleasing to the general public.” This is a far cry from Richard Tomkins who in Financial Policy magazine wrote an article titled “Museums Make a Sorry Exhibit of Themselves but Helps Culture Tourism.”[12]

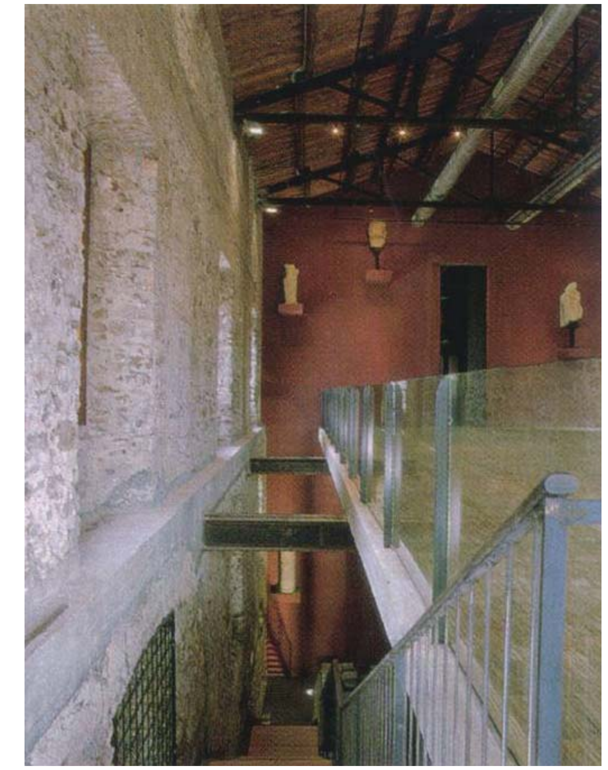
There is a continuing truism in both these statements. In the case of Seaholm, the building lends itself into Goode’s idea through its austerity and sturdiness. But today, a museum is not only a place for exhibiting valuable cultural resources, it is a meeting place, a venue for events, a learning tool. Thus, a crucial aspect to this design project is to address the new cultural sensibilities of today’s world while respecting age-old parameters of measuring the “goodness” of a building.

12 Fleming, Stephen, (ed) Macleod, Susan, *Creative Space*, Reshaping Museum Space, Routledge, 2005.



49. MASS MoCA - Using existing character of the building to enhance the museum experience.

50. Mill City Museum - Justaposition of new on the old; the old and new materials and styles are complimentary but easily differentiated.



51. Scuderie Aldobrandini - Physical manipulation of old and new by creating spaces between them.[13]

52. Scuderie Aldobrandini - Using vertical circulation elements as a tool to weave areas together.

Treatment of existing buildings as extant rather than extinct is crucial to a successful adaptive-reuse design project. While it may not always be feasible to use a building as is for a new or different function, it is possible to create an interesting museum experience while respecting and "using" what is already there. Whether the new addition is in contrast with or complimentary to the old fabric of the building, it is important for the new addition to be non-intrusive. Rehabilitation work can only be as successful as its designer's creative isntincts to maintain and preserve the historic integrity and enhance the existing "feel" of a place.

13 Davis, Matthew, Memory of the future, University of Maryland, 2006.

ZONING GUIDELINES ANALYSIS

Seaholm Power Plant is situated on the southern periphery of downtown Austin. Bounded by Cesar Chavez Street and Town Lake beyond on the South, Shoal Creek to the East, West Avenue to the North and the Mopac Railway Line to the west, this tract of land lies within the CURE Zoning limits.

While the Capitol View Corridor does not directly fall on Seaholm Power Plant site it passes through east and west sides right outside the site which work to the advantage of the building as there are height restrictions places along these corridors. Similarly Seaholm District is zoned as an Emerging Project District which also lends credibility to the adaptive reuse of the building.

The land around Seaholm is predominantly mixed-use with a majority being residential in nature. Shoal Creek and the nearby hike and bike trails collectively form a green belt as does the area around Town Lake to the south of the site.

The area around Seaholm has also been zoned as a Park Overlay District which brings Seaholm into prominence as the center of a green space. The only drawback which is not directly related to zoning but the topography of the area is that Seaholm narrowly misses the 100 year floodplain marked areas. (The south side of the property falls under FEMA 500 year flood plains.)

The final analysis inference is that the zoning in and around Seaholm works to its favor though the south side entrance and activities may have to be reconsidered due to its relative proximity to floodplains.

OTHER GUIDELINES

Following are the guidelines laid out by the Secretary of Interior Standards of Rehabilitation:

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.

4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.

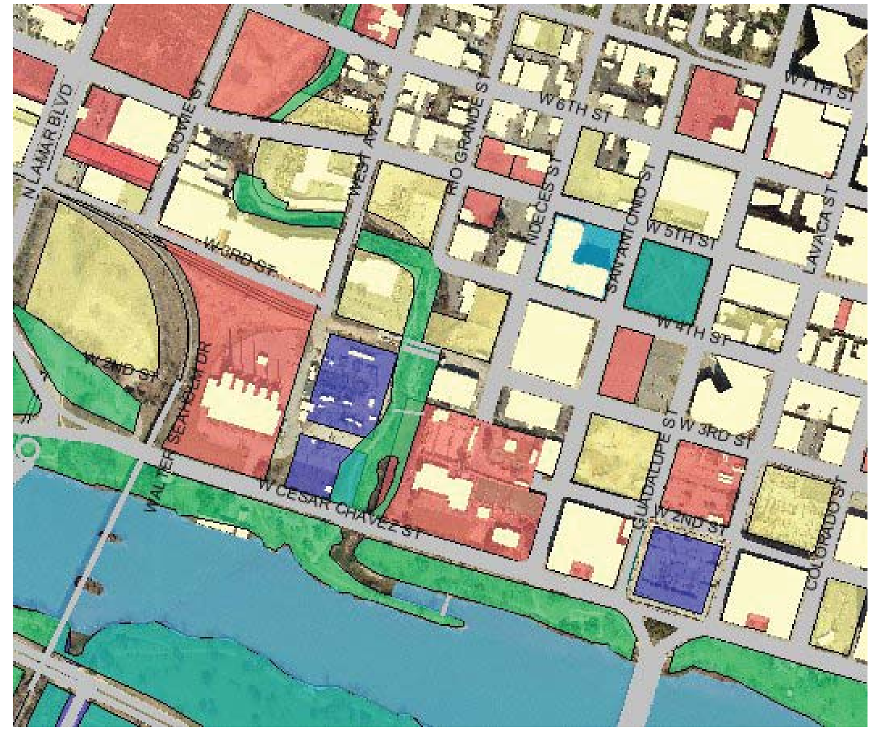
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

8. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

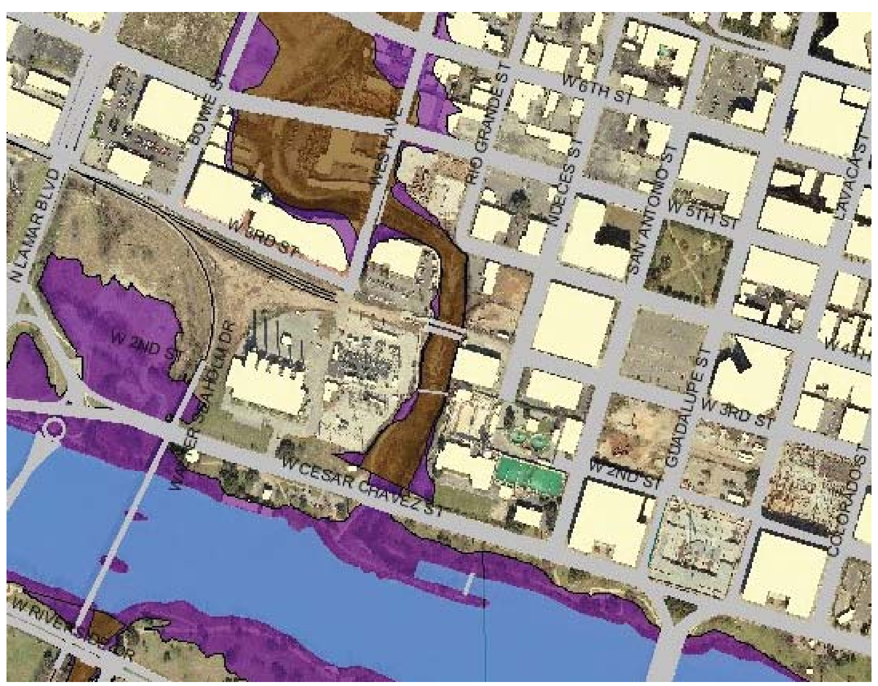
9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

53. Basic Zoning Diagram



54. Emerging Projects Diagram - emerging projects are marked in red.

55. Capitol View Corridor Diagram



56. 100 Year Studied Floodplains Diagram

57. Parks Overlay Diagram

** Base image files are the property of the City of Austin. (Accessed through City of Austin's GIS Map Viewer Portal.)

CHAPTER 5
SITE ANALYSIS

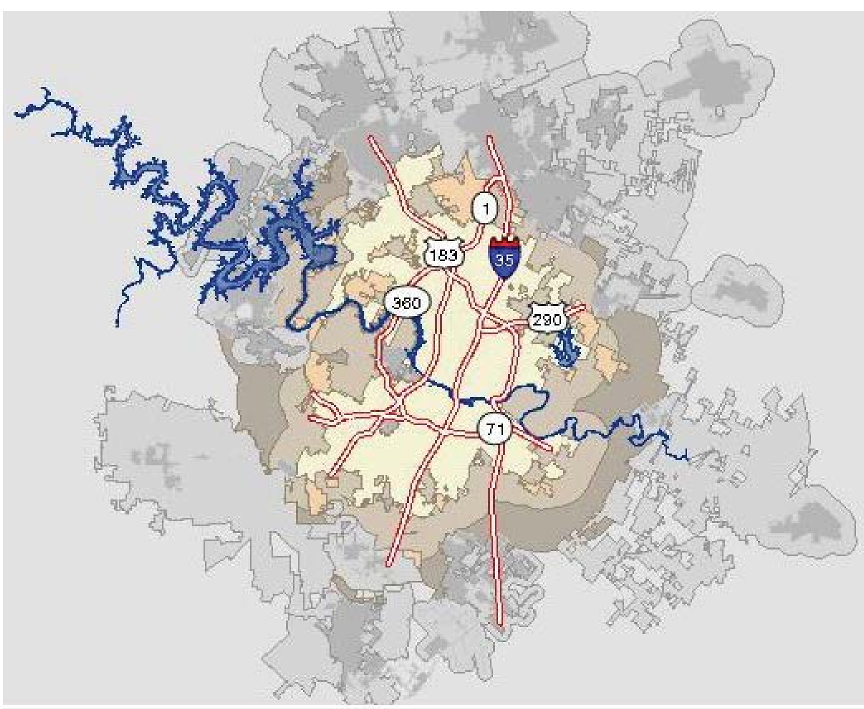
Located at the edge of downtown Austin, Seaholm is bounded bounded by Lamar boulevard and its tributary roads to the west, 3rd and West avenue to the north, Shoal Creek to the east and Cesar Chavez street (and Town Lake beyond) on the south. The Seaholm Power Plant (henceforth also referred to as Seaholm) is one of the three buildings that together served Austin's power requirements. The other two buildings are the Water Intake Structure to the south of Seaholm across Cesar Chaves Street and right by Town Lake, and the Fuel Oil Building immediately to the north of Seaholm.

Seaholm Power Plant enjoys the natural benefits of a site location that is perfectly suited for the needs of a cultural space. Within downtown limits and right next door to a large entertainment arena like the Town Lake and Zilker Park, a museum housed in Seaholm Power Plant would be mutually beneficial to other facilities nearby.

The site's proximity to two major arterial roads and its emerging projects zoning designation gives it easy visibility. It also makes for easy accessibility by foot, private and public vehicles. Accessibility of site from at least three sides makes interesting site entry discussions possible. To this end, the viability of entrance to Seaholm and the nature of these entrances are crucial points that is addressed later in this report.

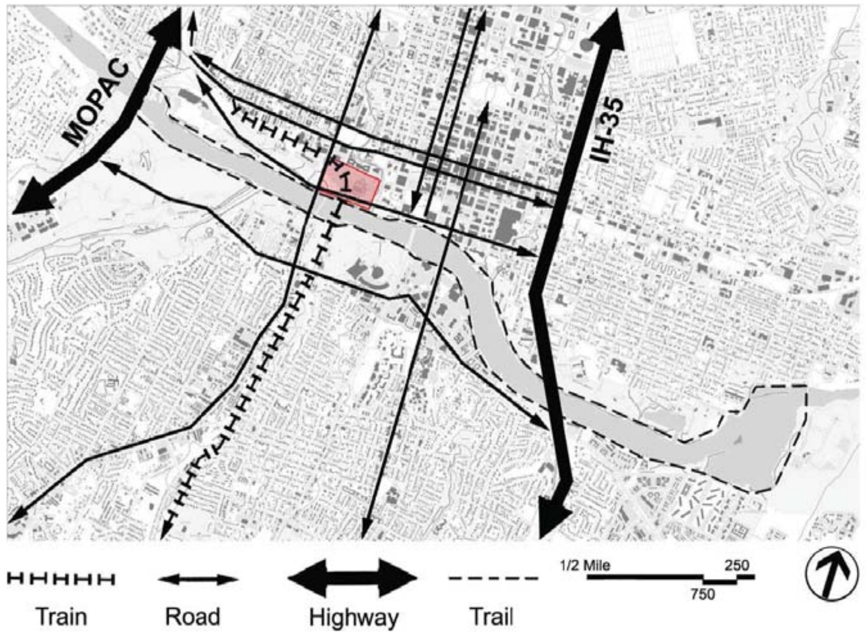
Ease of parking due to designated parking spaces to the west of Seaholm, its close proximity to downtown residential areas and bus routes, moderate year-round climatic conditions, proximity to other art facilities makes the site an ideal candidate for this project.

** Map of the city of Austin is a derivative from the City of Austin's GIS Viewer.

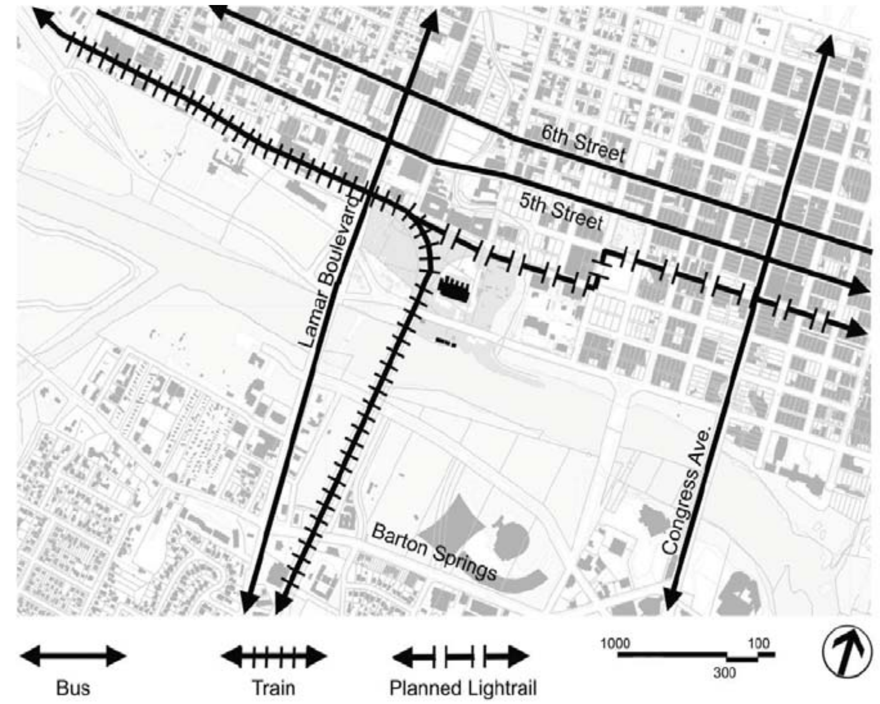


58. City of Austin.

59. Site Location - VIew from South

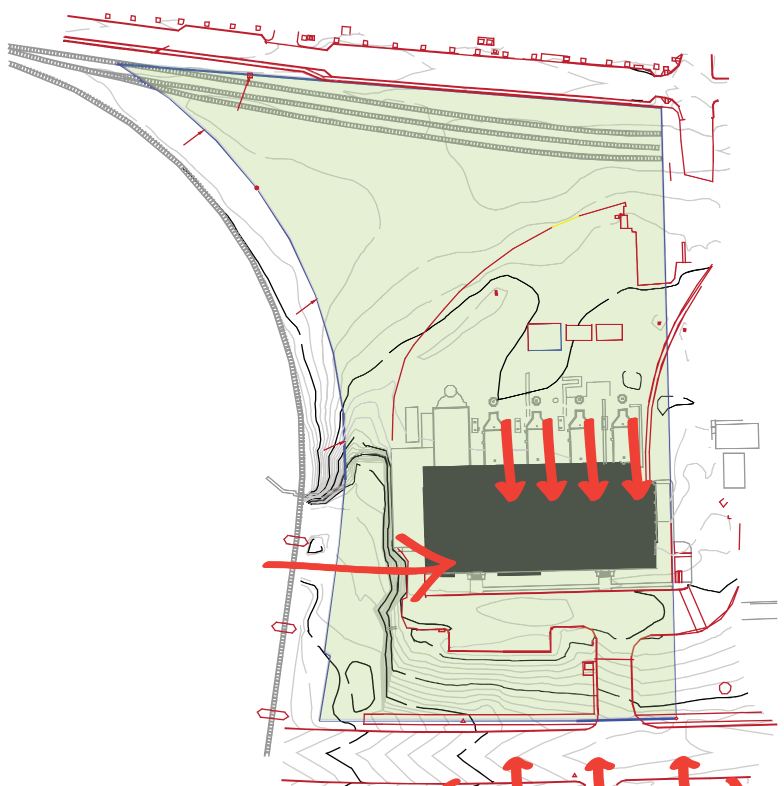


60. Key City Transit Corridors

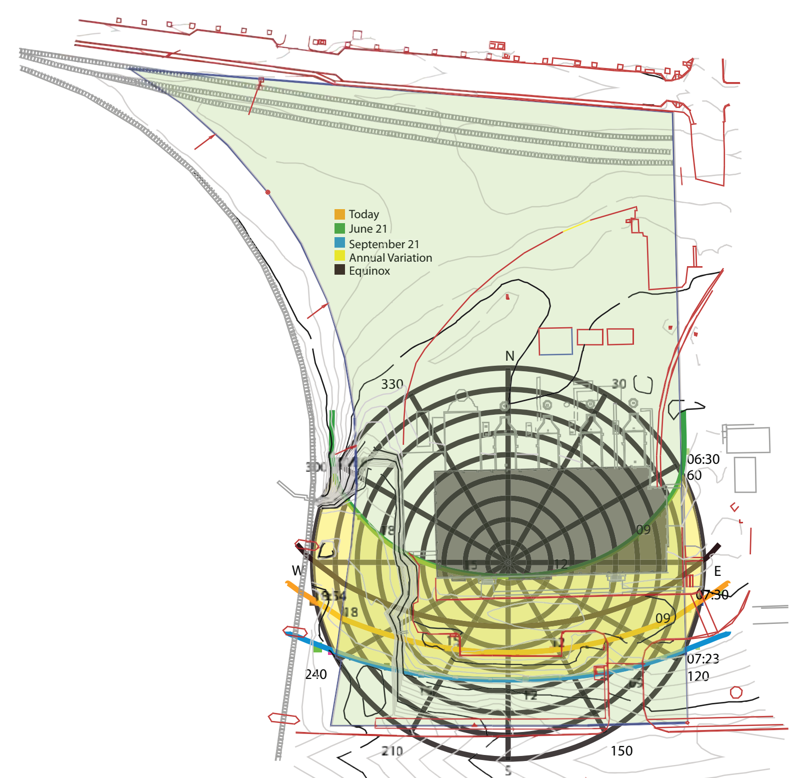


61.Near-by Transit

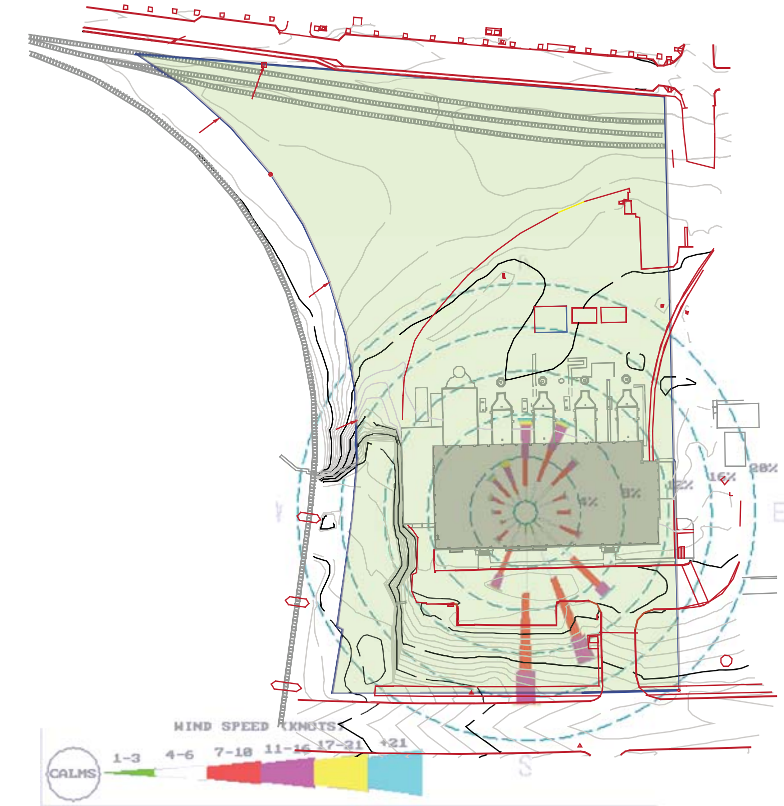
62. Existing Downtown Major Museum Facilities



63. Emphasis Diagram



64. Sun Path Diagram



65.Yearly Wind Pattern Diagram

BUILDING MATERIALS

Cast-in-Place Concrete

The building is constructed out of cast-in-place concrete. The concrete façade is scored into 4'x4' panels. The formwork for the concrete used was plywood the patterns of which adorn the panels. The concrete has been designed in corrugated pattern in areas between upper and lower level windows. The main entrances on the south side have concrete pilasters surrounding them. These are separated from the signage with flue lining.[14] The concrete pilasters have a "rubbed concrete" façade appearance. The door lintels are of precast concrete.

The fine aggregate used to make this concrete came from the Colorado River bed, quarried not far from the city.[15] Discussion with Mr. Tom Patty (WJE) and Dr. David Fowler (University of Texas at Austin) has led to the probable conclusion that the all the materials for concrete were locally sourced. Travis Materials, a cement production company at the intersection of Lamar Boulevard and Cesar Chavez St. just a few blocks away from Seaholm produced cement as early as the 1950s.[16] The cement used at Seaholm probably came from this facility. Most of the steel reinforcement used in Austin during 1950s was manufactured by Structural Metals Inc (SMI) at Seguin.[17]

Cast Stone (possibly "Cream" Limestone)[18]

Cast stone is used in the sills of upper floor windows and coping at roof level. Cast stone in a corrugated pattern is also used as coping on top of the south entrance(s) concrete pilasters.[19]

Aluminum

The doors are made of aluminum. The thresholds of the doors are made of cast aluminum. The Art Deco signage on west and south elevations are made of welded sheet aluminum with porcelain finish on the lettering's façade.[20] The concrete inserts as specified in the construction drawings are Unistrut P-3000 series.

Glass

The door and window panes are made of glass. Glass blocks that have a pattern are used to cover upper level openings above south entrance doors and in the fixed-floor-to-ceiling window in the east elevation. These glass blocks are 12" x 12" in size.

Steel

Steel is used in lower, upper floors and clerestory windows. The rolling shutter door on the north-side of the building is also steel.

Copper

The scuppers on the west, east and north elevations are made of copper.

Concrete Masonry Unit

The add-on boiler room is made of CMU units. This is the only place CMU is used as a principal construction material.

Miscellaneous

Red neon tube lighting – the historical red lighting of the Art Deco signage is brought about by the use of red neon tube lighting. The lighting fixtures are believed to be original.

Cement asbestos – was used in the north elevation as siding and as roofing. The siding has been removed as

14 From reproduction of 1957 construction drawings (PDF file – page 61); courtesy: Mr. John Rosato, Seaholm LLC.

15 From interview with petrographer Mr. Tom Patty who has in the past examined concrete samples from Seaholm.

16 Ibid.

17 Ibid.

18 The original construction drawings call out to the use of stone as "stone" without specifying any particular type. The stone used is smooth in texture and appears mildly porous with very fine pores. The appearance of the stone and associated grey staining from biological growth and proximity of Seaholm's location to limestone quarries leads the author to infer that the type of stone used is the "cream"-variety of limestone such as Cordova Cream.

19 From reproduction of 1957 construction drawings (PDF file – page 61); courtesy: Mr. John Rosato, Seaholm LLC.

20 Ibid.

DETERIORATION AND RESULTING CONDITIONS

Biological Growth

The most rampant condition visible on the building is black and green staining on the surface that can be attributed to biological growth. The staining is visible on concrete as well as the stone sills and coping. The black staining is predominant all over the structure but is more concentrated at the parapet level, sills and just below the sills on the south elevation. Black staining that may or may not be biological growth can also be spotted on the add-on boiler room on its west elevation. The green staining is concentrated on the north elevation of the building from ground level to up to 4 feet above.

Concrete Metallic Staining (Brown)

Another common condition seen on the building is metallic staining, brown in color. The stain appears to "ooze" out of the building. It can probably be attributed to corroded reinforcement within the structure. Since these staining occur at points where the reinforcement is exposed or very near the surface or through larger blow holes, it is possible that only the exposed reinforcement has undergone oxidation and thereby rust formation.

Concrete Brown Discoloration

Brown discoloration of concrete can be observed on the entrance pilasters, on the smaller building to the east from ground level to 6 feet above ground level. Sporadic occurrences can also be spotted on the south and north elevations. These appear to have similarities with a condition called Alkali-Silica Reaction found in concrete. ASR is the reaction between alkalies (sodium and potassium) in Portland cement and certain siliceous rocks or minerals present in some aggregates. The products of the reaction may cause abnormal expansion and cracking of concrete.[21]

Blow Holes in Concrete

Presence of small regular or irregular cavities can be observed on concrete. These holes result from entrapment of air bubbles in the surface of formed concrete during placement and consolidation.[22]

Concrete Green Staining

Green staining can be observed on concrete around the copper scuppers. It seems likely that these stains are a direct result of oxidation of the copper and subsequent staining.

Surface Cracking

Horizontal and vertical surface cracks can be observed over the concrete mostly on the south and east elevations. Surface cracks also appear on the stone sills and coping.

21 American Concrete Institute, Concrete Knowledge Center – Troubleshooting, What is Alkali-Silica Reaction (ASR)?, http://www.concrete.org/technical/ckc/troubleshooting/articles/059.htm (accessed on November 1, 2010).

22 American Concrete Institute, Concrete Knowledge Center – Troubleshooting, What are Bug Holes (Blow Holes)?, http://www.concrete.org/technical/ckc/troubleshooting/articles/050.htm (accessed on November 1, 2010).

Structural Cracking

A couple of instances of cracks that go deeper into the structure appear on the concrete surfaces. Two on the smaller east side building one at the parapet level and another on the southern sill appears to go through the entire volume of material. The crack at the parapet level adjacent to the scupper may have been due to mechanical damage as there are wires that wrap around it.

Concrete Crazing

There are multiple patch occurrences of crazing patterns across the south, west and east elevations. The crazing patterns do not appear as prolific on the visible parts of north elevation.

Exposed Reinforcement

There is evidence of exposed reinforcement that may have been a result of weathering on some of the panels in the south elevation. These are high up in the elevation and not readily accessible. Therefore the nature of this condition have not been completely ascertained.

Loss of Material

Loss of material related to either natural weathering or mechanical damage can be observed on concrete, stone and CMU.

Concrete Spalling

There is one noticeable instance of spalling of concrete on the smaller part of building on the east side.

This is usually the result of a combination of poor installation and environmental factors which stress the concrete, causing damage.

Peeling Paint

Peeling can be noticed on white paint on the mechanical equipment and on the whitewash on top of the CMU.

Corrosion

The steel used in the machinery is corroded especially at ground level and at joints.

Graffiti

Sprayed on graffiti is visible on the mechanical equipment but none is visible on the building itself.

Glass - cracking

There are cracked glass panes on windows on all sides and the north elevation doors.

CMU Staining

There is black staining on the CMU that can be attributed to biological growth. The black staining is predominantly seen at the coping level. There is also orange-brown staining that appears from ground level to 4 feet above ground level on the north elevation of the add-on boiler room. This staining may be due to occurrence of oxidizing elements in the paint covering CMU.

Missing Material

A piece of stone coping is missing from the roof level on the south-west corner of the building.

CONCLUSION

Overall Seaholm appears to be in good condition. The appearance of brown discoloration if positively identified as ASR would require immediate attention and repair. Other primary concerns are staining possibly due to corrosion of reinforcement and biological growth. The appearance of multiple cracks, spalling, staining and discoloration in the smaller part of the building on the east side has led the author to conclude that this part of the building may have used left over materials or materials that were lower in standard than ones used in the other parts of the building. The clerestory window areas in elevation and roof were not accessible for this project. A more detailed assessment including these areas is advised.

Seaholm Power Plant retains almost all of its historic integrity. If repair work is conducted to address the existing conditions and proper maintenance is afforded in future, Seaholm’s future appears bright and longstanding.

66. Concrete Metallic Staining - Staining of concrete due to corrosion of metals within the concrete or attached to it.
Note: In Seaholm these stains are either brown (from possible corrosion of reinforcement) or green (from oxidation of copper scuppers)

67. Biological Growth -Micro organisms of various colors and forms, living or dead, including fungi, algae, lichens or bacteria, that colonize on the surface or penetrate into cavities. Their growth is compounded by the presence of moisture and sunlight. Some organisms may penetrate several centimeters into the substrate. Biofilms are often dark-colored and, depending on the environmental conditions & substrate type, may form solid layers or films. In addition to aesthetic issues, micro organisms accelerate deterioration of many materials. Most biofilms hold in moisture, & some organisms produce acidic products of metabolism that are damaging to acid-sensitive materials.

68. Brown Discoloration (May be Alkali-Silica Reaction) - Small to mid-size patches of brown and orange discoloration that appear almost like a crust.
Note: It is probable that this discoloration may be Alkali-Silica Reaction (ASR) which is the reaction between alkalies (sodium and potassium) in Portland cement and certain siliceous rocks or minerals present in some aggregates. The products of the reaction may cause abnormal expansion and cracking of concrete in service.

69. Structural Cracking - Structural cracking is cracking that not just appears on the surface but is spread through the whole volume of the material.

70. Surface Cracking - Cracking that occurs in the surface of fresh concrete soon after it is placed and while it is still plastic.

71. Crazing - Crazing is the development of craze cracks, a system of fine random cracks in a concrete surface.

72. Blow Holes - Bug holes (blow holes) are small regular or irregular cavities, usually not exceeding 15 mm (0.6 in.) in diameter, resulting from entrapment of air bubbles in the surface of formed concrete during placement and consolidation.

73. Corrosion of Metals - A condition resulting from the exposure of some metals to oxygen and water. With iron-containing metals, the result of this oxidation is called rust. The formation of corrosion products often involves a substantial increase in volume, which can lead to breakage, failure or inoperability.
Note: In the case of Seaholm, corrosion of equipment parts can be attributed to the peeling away of paint layer that exposed the metal substrate to atmosepheric conditions and resulting in corrosion.

74. Cracked Glass - Glass that has receives a severe blow and disintegrated from its original appearance is called cracked glass. This may be due to mechanical, human-induced damage or due to excessive temperature change and/or weathering.

75. Loss of Material - Material loss occurs most commonly due to human-induced damage or natural disasters such as earthquakes, hurricanes etc.

76. Graffiti - Graffiti is an anthropogenic condition which is the deposition of paint, ink, or similar matter on the surface of a material.

77. Peeling Paint - Loss of paint adhesion often resulting in deterioration or damage to the underlying substrate.

78. Green Staining - Copper when exposed to air gets oxidized, the result of which is green-colored stains on the substrate or on the material attached or closest to it.

79. Orange-Brown Discoloration - The orange-brown discoloration of the whitewash paint is possibly due to presence of elements in the paint that when exposed to air gets oxidized. It may be a ferrous element that oxidizes to form rust or other elements like lead that undergoes oxidation.

80. Exposed Reinforcement - When reinforcement are laid too close to the surface without enough concrete covering, it leads to easy exposure due to factors like natural weathering and mechanical damage. Once exposed it may result in the corrosion of the reinforcement.

Materials List

Cast-in-place Concrete: exterior walls, plinth
Concrete: door lintel
Stone: coping, sills
Steel: concrete reinforcement
Aluminum: lettering, sign, door frames, window frames, sash, mullions & muntins
Glass: window panes, doors panes, glass blocks
White paint: Boiler room CMU, mechanical equipment

* Present over a larger area
W Appears to have water retention
S May be exposed reinforcement
** Present only in this elevation

Existing Conditions

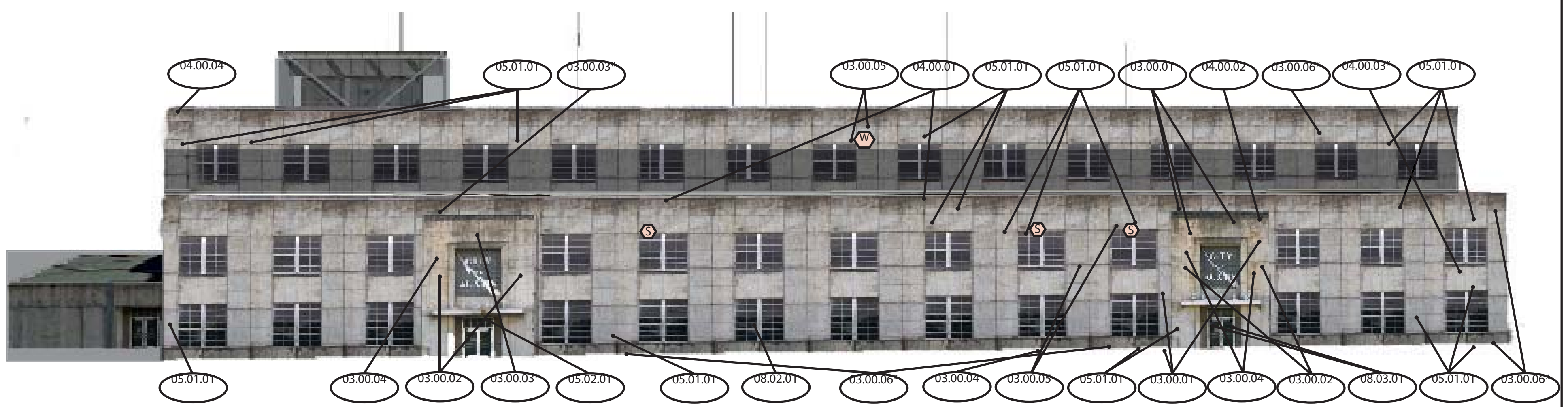
Division 3 Concrete
03.00.01 Concrete vertical crack
03.00.02 Conc. horizontal crack
03.00.03 Concrete brown, green discoloration/staining
03.00.04 Crazing with orange-brown discoloration (may be concrete alkali-silica reaction)
03.00.05 Concrete blow holes
03.00.06 Concrete biological growth (black staining)
03.00.07 Loss of material
03.00.08 Graffiti
03.00.09 Crazing**

Division 4 Masonry
04.00.00 Stone
04.00.01 Stone crack
04.00.02 Stone structural crack
04.00.03 Stone biological growth (?) [black staining]
04.00.04 Stone segments missing
04.01.00 CMU
04.01.01 Loss of material
04.01.02 Biological growth

Division 5 Metals
05.01.00 Steel (includes reinforcement)
05.01.01 Steel Corrosion (brown staining)
05.01.02 Peeling
05.02.00 Aluminum
05.02.01 Aluminum brown staining

Division 8 Openings
08.01.00 Aluminum
08.02.00 Glass
08.02.01 Broken glass
08.03.00 Metal (unidentified)
08.03.01 Metal door stopper corrosion

Division 9 Finishes
09.01.90 Paint
09.01.91 Paint peeling
09.01.92 Orange-brown staining



South Elevation

Drawing not to scale

FALL 2010

Name: Deepthi Murali
Course: ARC 385T Materials Conservation: Field Methods
Instructor: Frances Gale

SEAHOLM POWER PLANT
CESAR CHAVEZ ST. AUSTIN TX

Original architect: Burns & McDonnell
Construction date: 1950-1958

Drawing by Google Sketch Up Network [Repositioned by author]

FALL 2010

Name: Deepthi Murali
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Materials List

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S May be exposed reinforcement
** Present only in this elevation

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04.01.01 Loss of material
04.01.02 Biological growth

Division 5 Metals
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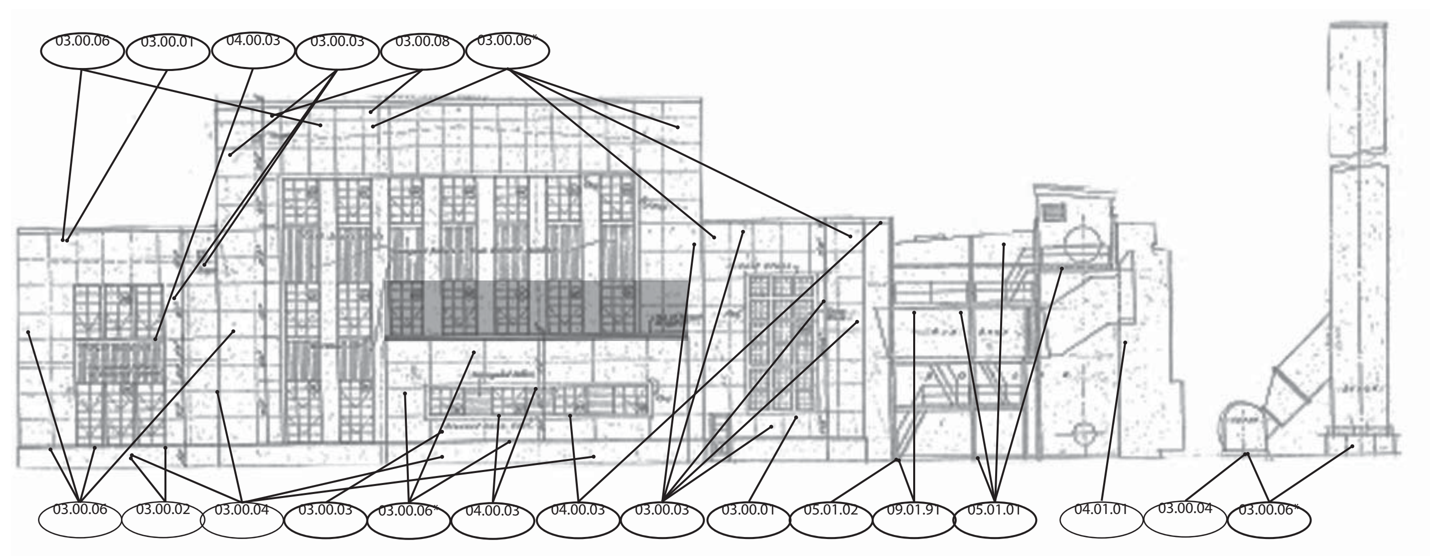
05.01.01 Steel Corrosion (brown staining)
05.01.02 Peeling
05.02.00 Aluminum
05.02.01 Aluminum brown staining

Division 8 Openings
08.01.00 Aluminum
08.02.00 Glass
08.02.01 Broken glass
08.03.00 Metal (unidentified)
08.03.01 Metal door stopper corrosion

Division 9 Finishes
09.01.90 Paint
09.01.91 Paint peeling
09.01.92 Orange-brown staining



East Elevation

Drawing not to scale

FALL 2010

Name: Deepthi Murali
Course: ARC 385T Materials Conservation: Field Methods
Instructor: Frances Gale

SEAHOLM POWER PLANT
CESAR CHAVEZ ST. AUSTIN TX

Original architect: Burns & McDonnell
Construction date: 1950-1958

Drawing by Google Sketch Up Network [Repositioned by author]

Materials List

Cast-in-place Concrete: exterior walls, plinth
Concrete: door lintel
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Aluminum: lettering, sign, door frames, window frames, sash, mullions & muntins
Glass: window panes, doors panes, glass blocks
White paint: Boiler room CMU, mechanical equipment

* Present over a larger area
W Appears to have water retention
S May be exposed reinforcement
** Present only in this elevation

Existing Conditions

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03.00.01 Concrete vertical crack
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04.00.04 Stone segments missing
04.01.00 CMU
04.01.01 Loss of material
04.01.02 Biological growth

Division 5 Metals
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05.01.01 Steel Corrosion (brown staining)
05.01.02 Peeling
05.02.00 Aluminum
05.02.01 Aluminum brown staining

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08.01.00 Aluminum
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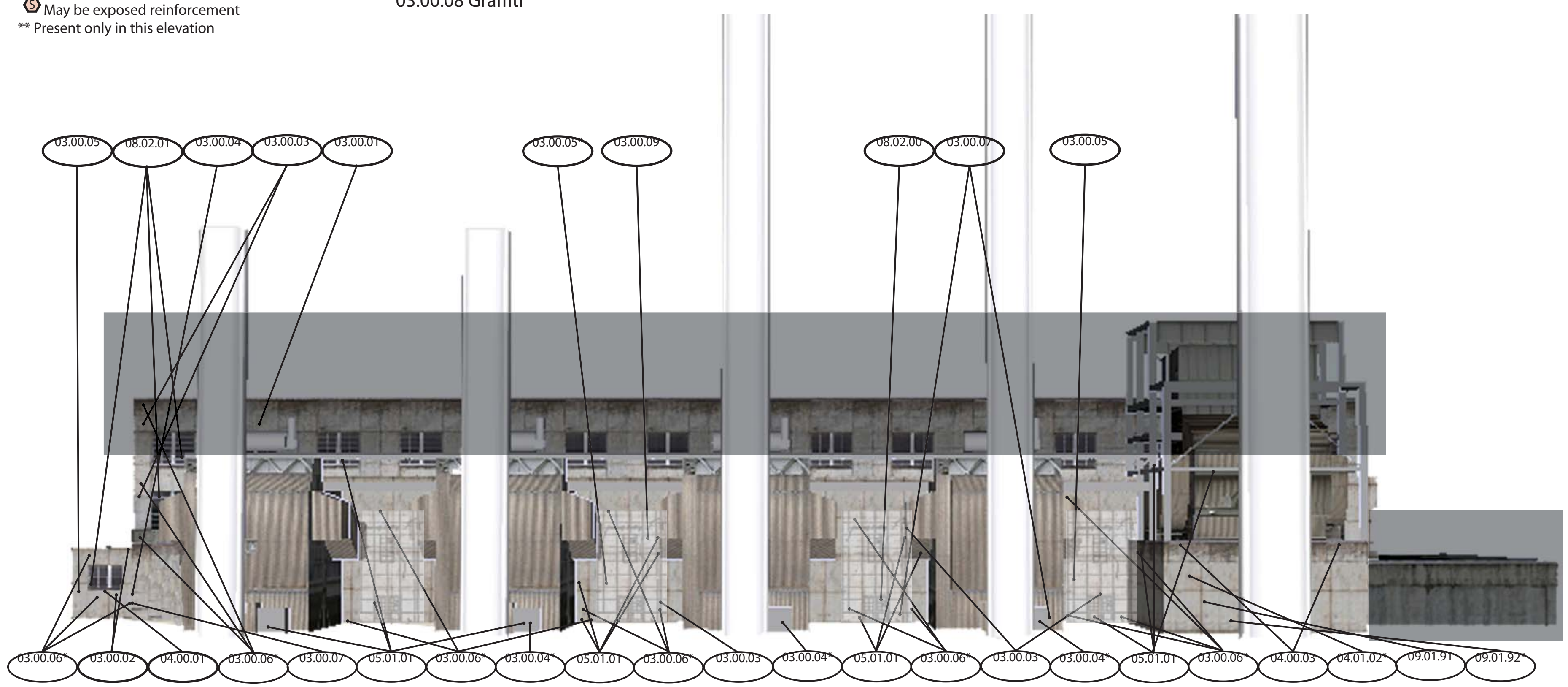
08.03.01 Metal door stopper corrosion

Division 9 Finishes
09.01.90 Paint
09.01.91 Paint peeling
09.01.92 Orange-brown staining



North Elevation

Drawing not to scale

CHAPTER 7
DESIGN OF SEAHOLM-AMOA

The design of Seaholm-AMOA began with a deep-felt belief in respecting the sensibilities of the existing building and atmosphere. Seaholm's historic spirit lives in its building envelope, quality of light and its industrial nature. In this project, the building acts as the guiding force in determining the nature of rehabilitation and design through its various elements; from weathered material textures to its sometimes foreboding, masculine linearity. The primary design principles developed from this objective are:

i.Existing building elements, sight lines and spatial experience will be used as guidelines for the design intervention.

ii. The "new additions" to the building will be as non-intrusive as possible.

iii. The "feeling" of the existing structure will not be compromised. Rather, the intervention will work with the existing space in enhancing this feeling.

One of the main features of Seaholm's interior is the "vastness" that one experiences immediately upon entrance at ground level and the continuity of spaces through all floor levels. Keeping this in mind, visual barriers on all floors are provided sparsely and almost always as a public-private zoning tool. In areas where the character of space remained unaffected, existing barriers that are historically non-contributing have been taken out. Original ceiling-floor relationships are religiously maintained by exposing new mechanical, electrical and plumbing systems thus relieving the responsibility of a false ceiling. The layout of the museum works around existing ceiling heights by only using those areas that are taller than 10 feet as exhibition spaces and galleries. Other areas are allotted for non-exhibition purposes. Cut-outs in floor slabs that emphasize the quality of light and space through the building are maintained to the greatest extent possible unless change is mandated by code requirements or to ease extreme cases of circulation bottlenecks. When there has been a change in cut-outs in floor slabs, it's usually addressed in the form of a filler slab distinguished from the existing concrete floor slab by a pigmented, cement finish upon completion. This is derived from an existing differential in the floor slabs – slabs that are present solely as portals that once connected turbines to the control area are painted in red.

The spatial layout of the new administration, education and exhibition spaces are linear with the long axis in the east-west direction like the original structure.

While most of the stairs have had to be replaced due to code compliance issues, the design of new vertical circulation elements is treated as an opportunity to enhance spatial continuity through the building. Design of multiple stairways, ramps and existing walkways weaves floors of the building together both horizontally and vertically while still giving prominence to the verticality of the descent into the lower levels. The eastern extremes of each of the floors have been used as private-zone, semi-private-zone spaces as these are farthest from the main circulation areas. Apart from these commonalities, each floor has a specific functional character that goes beyond a mere description.

The ground floor is called the Congregation Floor. This floor brings together and provides a meeting point, an assembly area and observation deck for guests. It is the primary entrance for pedestrian traffic, administrative personnel and artwork. Guests who enter from the lower floor are also, by virtue of arrangement of circulation elements, naturally directed to this floor. It also brings together the museum and the administration areas. While they are separated by opaque visual mechanisms, these have been used as devices to enhance the industrial nature of the building and suggest its creative upturn.

The wall on the south side demarcates administrative space from the public spaces and is used as a wall dedicated to custom art installations. To the west, area is designated for movement of art in/out of the building and is separated from the public zone by using shipping containers as walls. These containers are separated by translucent polycarbonate sheets in metal frames through which some of the backend action is included as a first-hand public experience. Ticketing area which is a new addition is a free-standing structure that is purposely kept simple in design. The café-wine bar is an open plan that is readily accessible from outside and also blends in with the expanse of the floor. This area is designed close to the public entrances to make it a viable space for after-hour use. The Congregation Floor also contains a significant number of original power plant equipment complete with an add-on boiler room to the north. They remain intact for the purpose of educating masses on the history and functioning of Seaholm.

The floor immediately below the Congregation Floor is called the Activity Floor. A new entrance to the building from the west side to accommodate guests entering from the parking lot is a significant addition to this floor. The ground immediately to the west of the building has been excavated to match the street level from which a mildly-steep ramp directs one into the building. Since the wall on which the entrance opening is created has been below ground and thus never exposed, the question of losing historic integrity never arises. The Activity floor has two levels of floor plans 3 feet apart vertically and connected to each other through a new ramp and multiple original walkways. The wall in the middle of the floor retain 3 feet wide holes that once held pipes carrying steam, is a significant feature. Three sections of this wall are left intact. One is removed to ease the movement of traffic. These holes have been used as “peep holes” to get glimpses of what lies on the other side. The new double-height “expanse wall” to the east of the “pipe hole” wall separating private-public spaces is an interesting new addition. This wall which is crucial to the functioning of the different sectors of the museum acts as a mirror with its highly polished façade. In turn, it helps to enhance the expansive nature of the floor plan. Activities on this floor include the audio-visual facilities, family lab - an interactive facility and artists’ rooms. Artists’ rooms are 240 square foot rectangular exhibit spaces on the south side of the floor. These are meant for contemporary artists’ collection where each artist gets a chance to design his/her exhibition space within the prescribed areal parametric. The spaces to the east of the “peep-hole wall” are dedicated to the AMOA art school’s in-studio facilities.

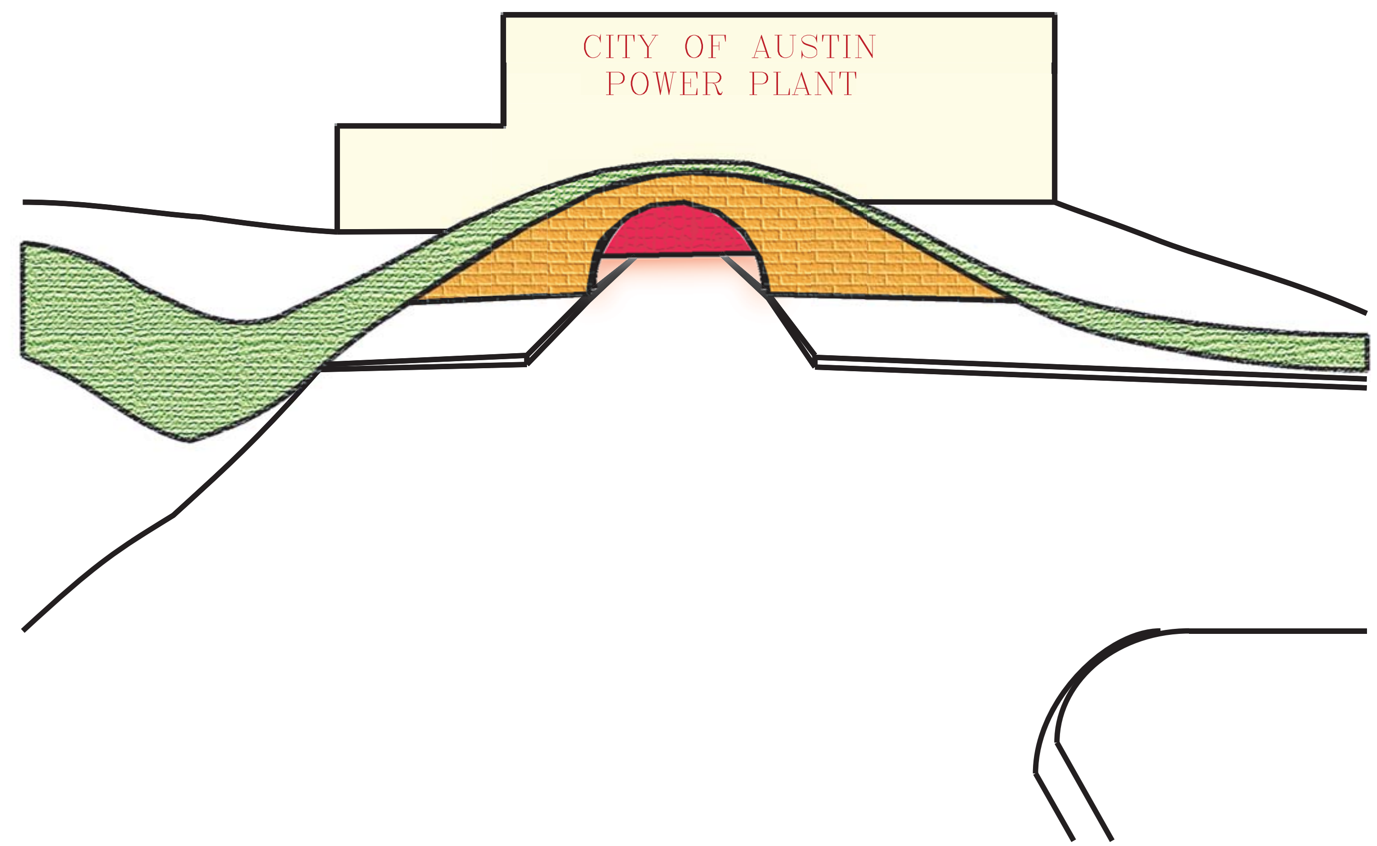
The lowest floor is called the Contemplation Floor. 70% of the floor area is used as exhibition space. The rest of the area is used for art storage and a few administrative activities. This floor houses the permanent collection, mid-large sized art work and sculpture, motion installations, photography and custom installations. The lowest floor is completely protected from direct sunlight making it the ideal location for art work and art storage. While the north and south sides of the floor are completely devoid of light and perfect for video and art, the central lobby space is flooded with diffused light from the Congregation Floor clerestory windows. So this space is used for sculptural works and installations that use natural light to their advantage.

Apart from these floors, there is a mezzanine level above the Congregation Floor which is named Administration Floor. As the name suggests the mezzanine is completely dedicated to administrative space requirements. Historically too, this level has been used to house the power plants office areas.

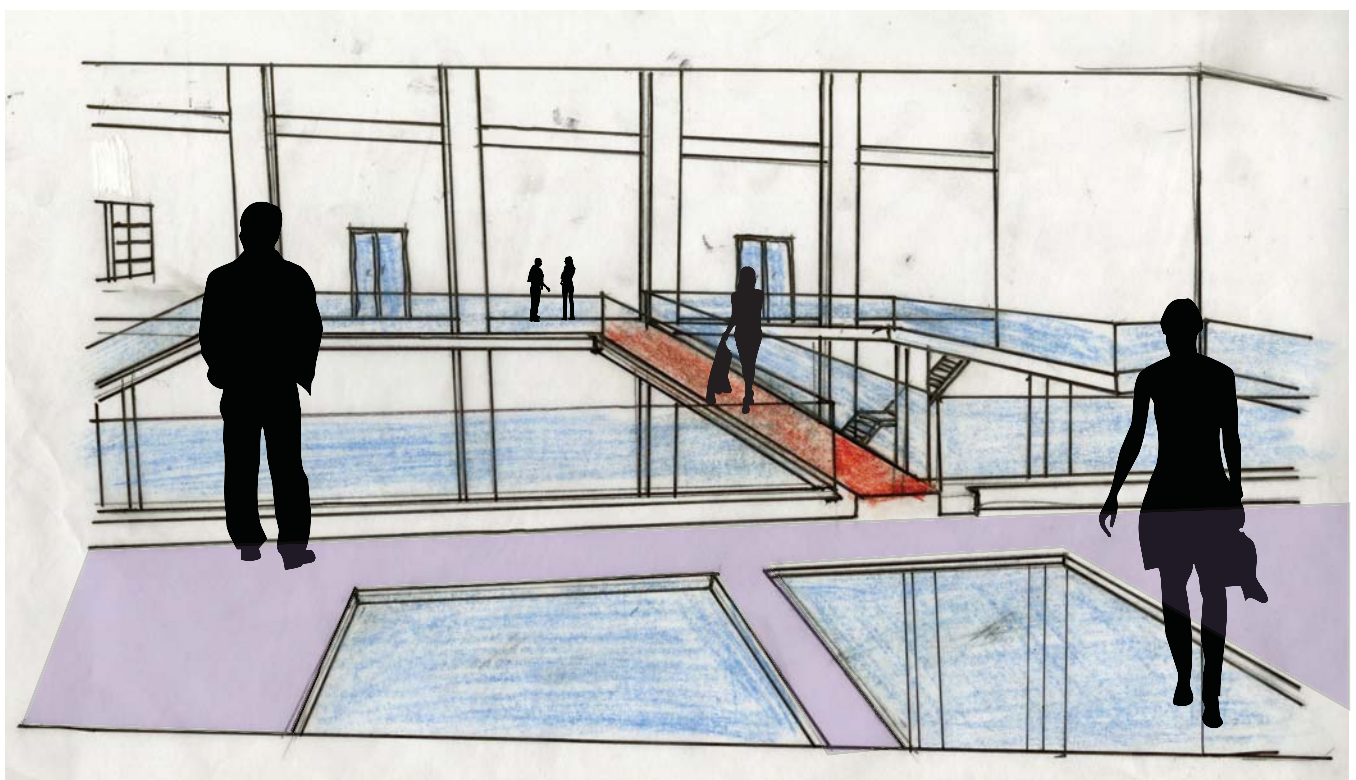
The design and spatial exchanges in this project have been used as a conversation mechanism. The nature of this conversation is deviant in such a manner that the spaces make their presence felt through the absence of the usual building elements instead of increasing volumetric levels.

PRELIMINARY DESIGN IDEAS - SKETCHES - MODEL

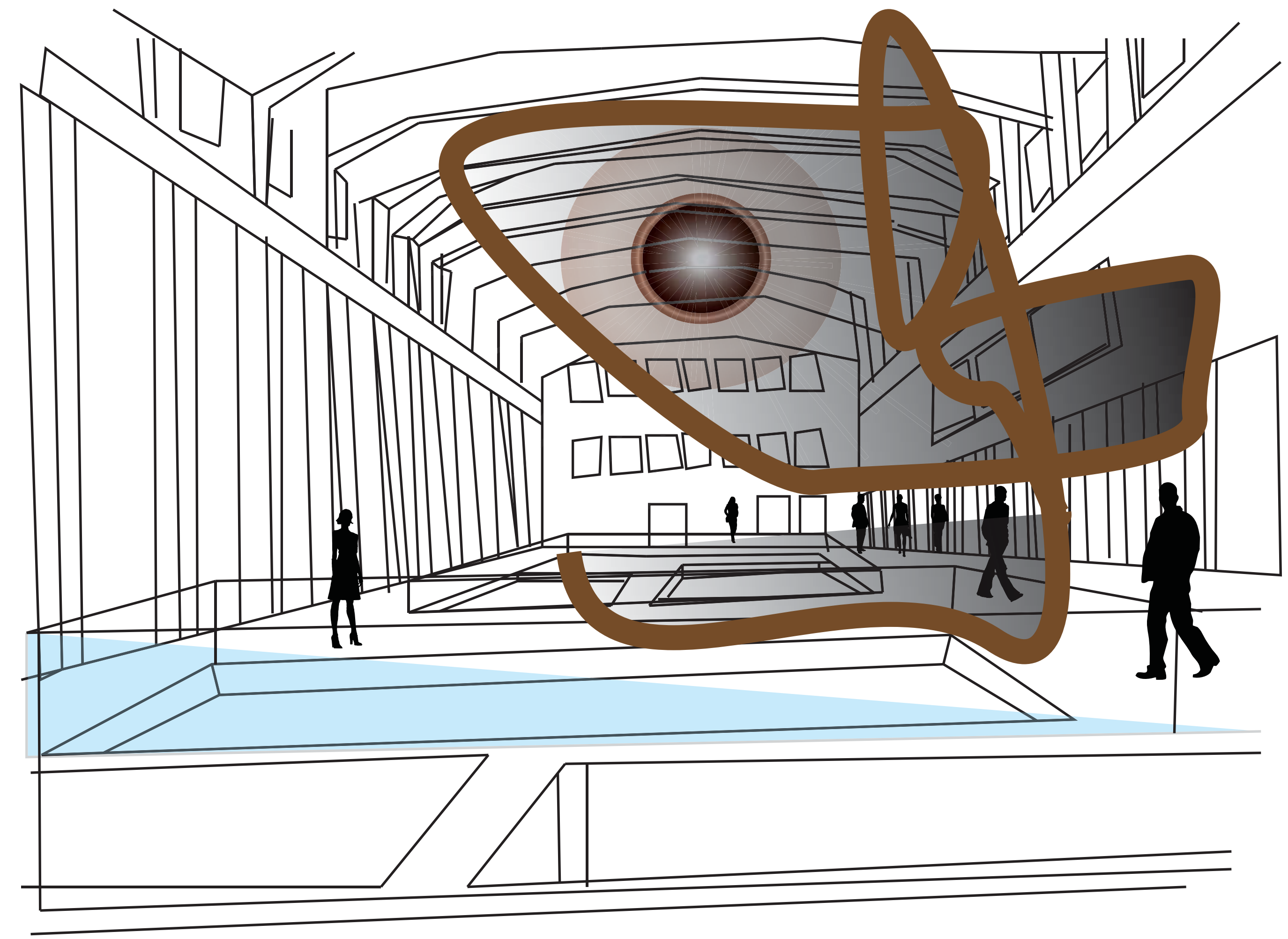
81. One of the Initial West Entry Options



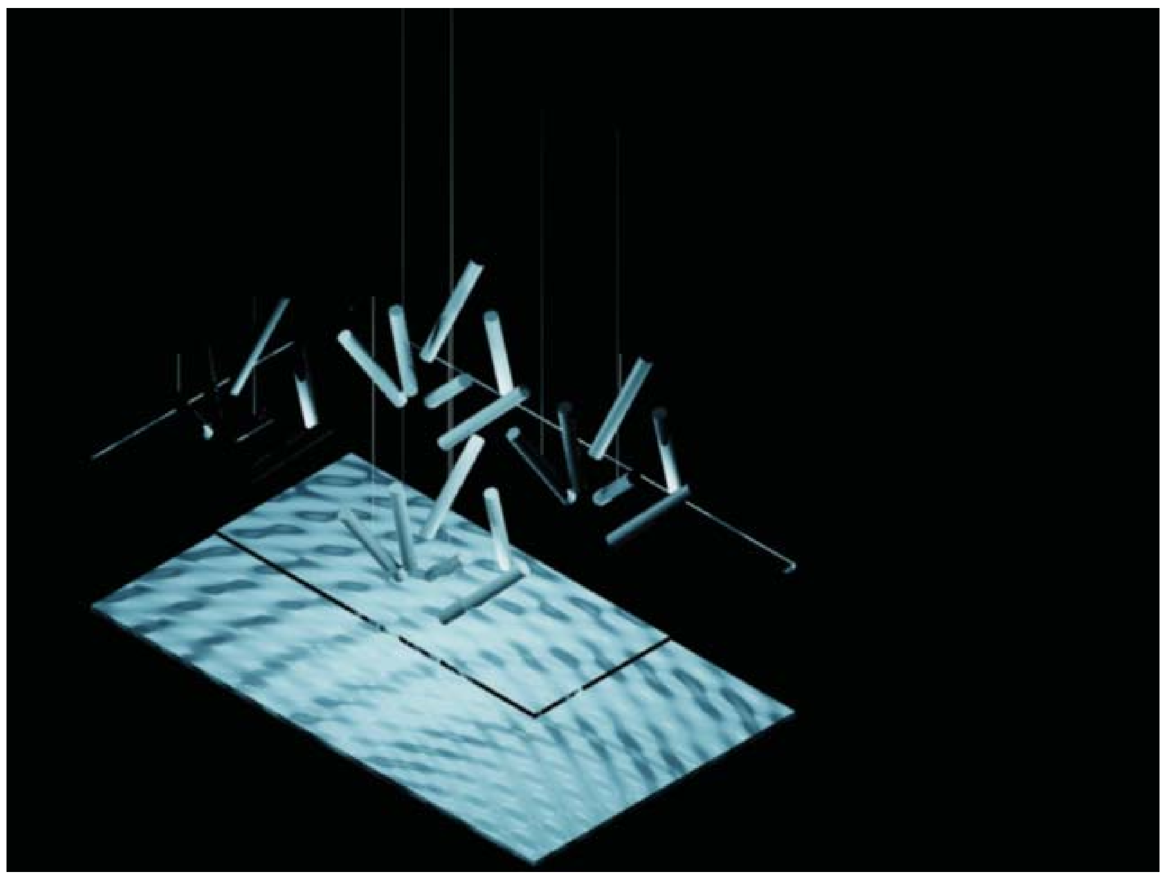
82. One of the Initial West Entry Options



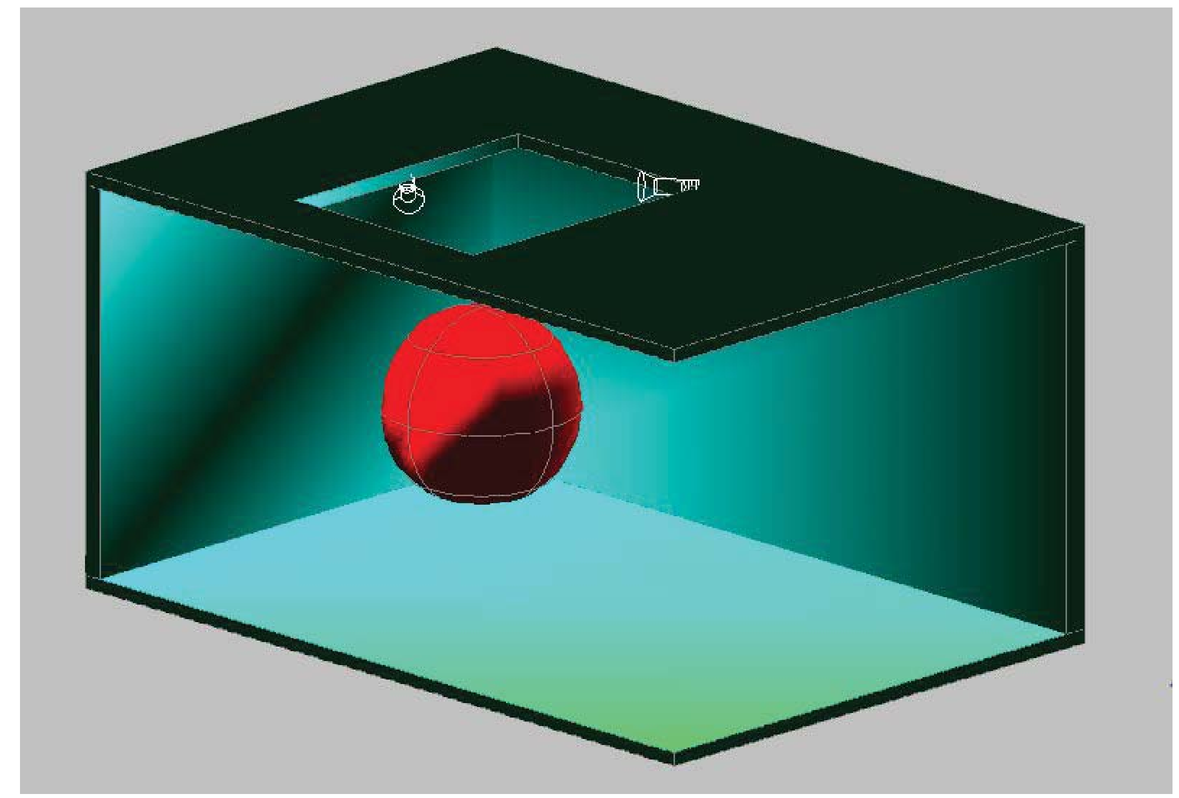
83. View from North-side pedestrian entrance.



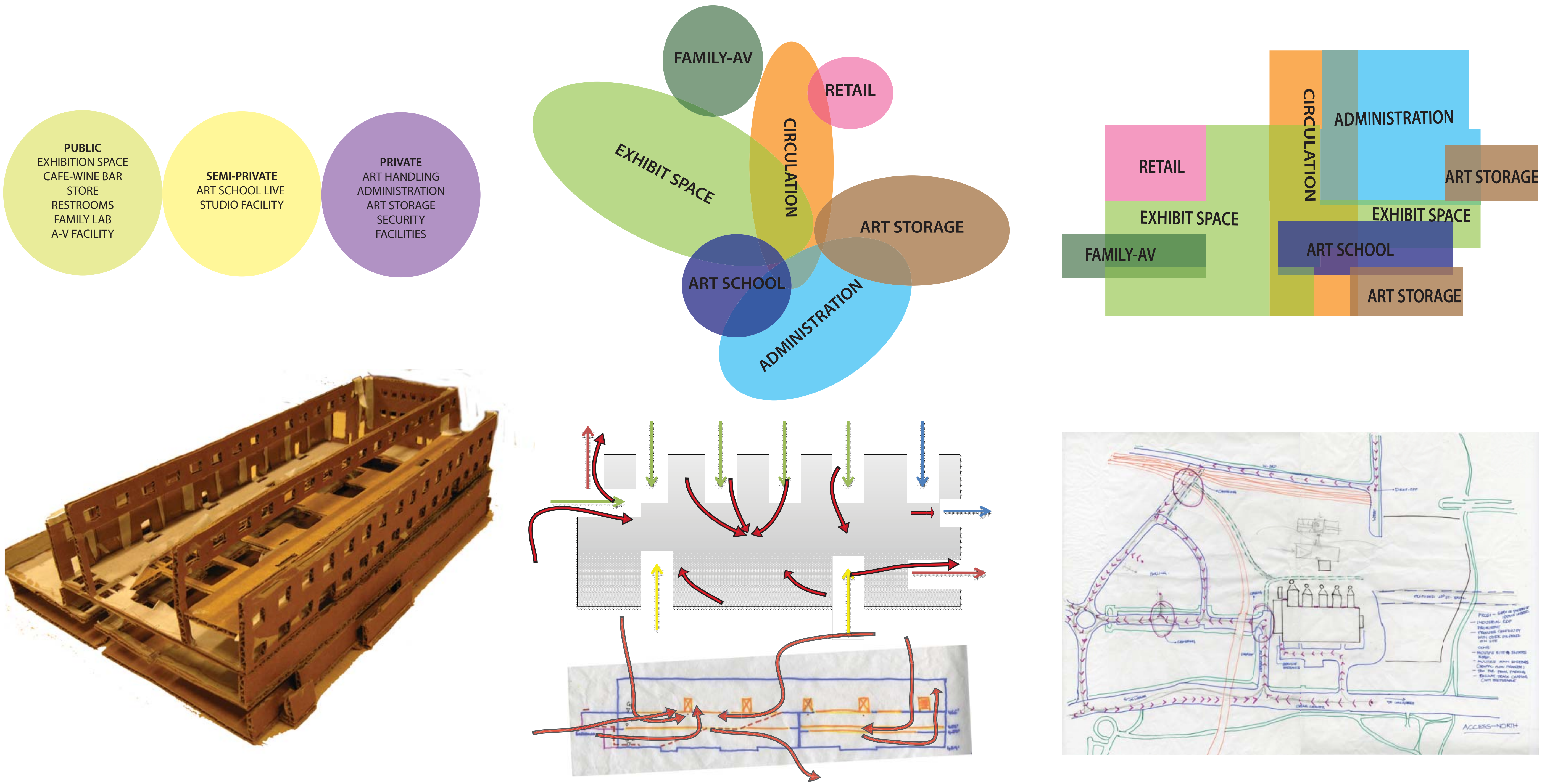
84. Main lobby area.



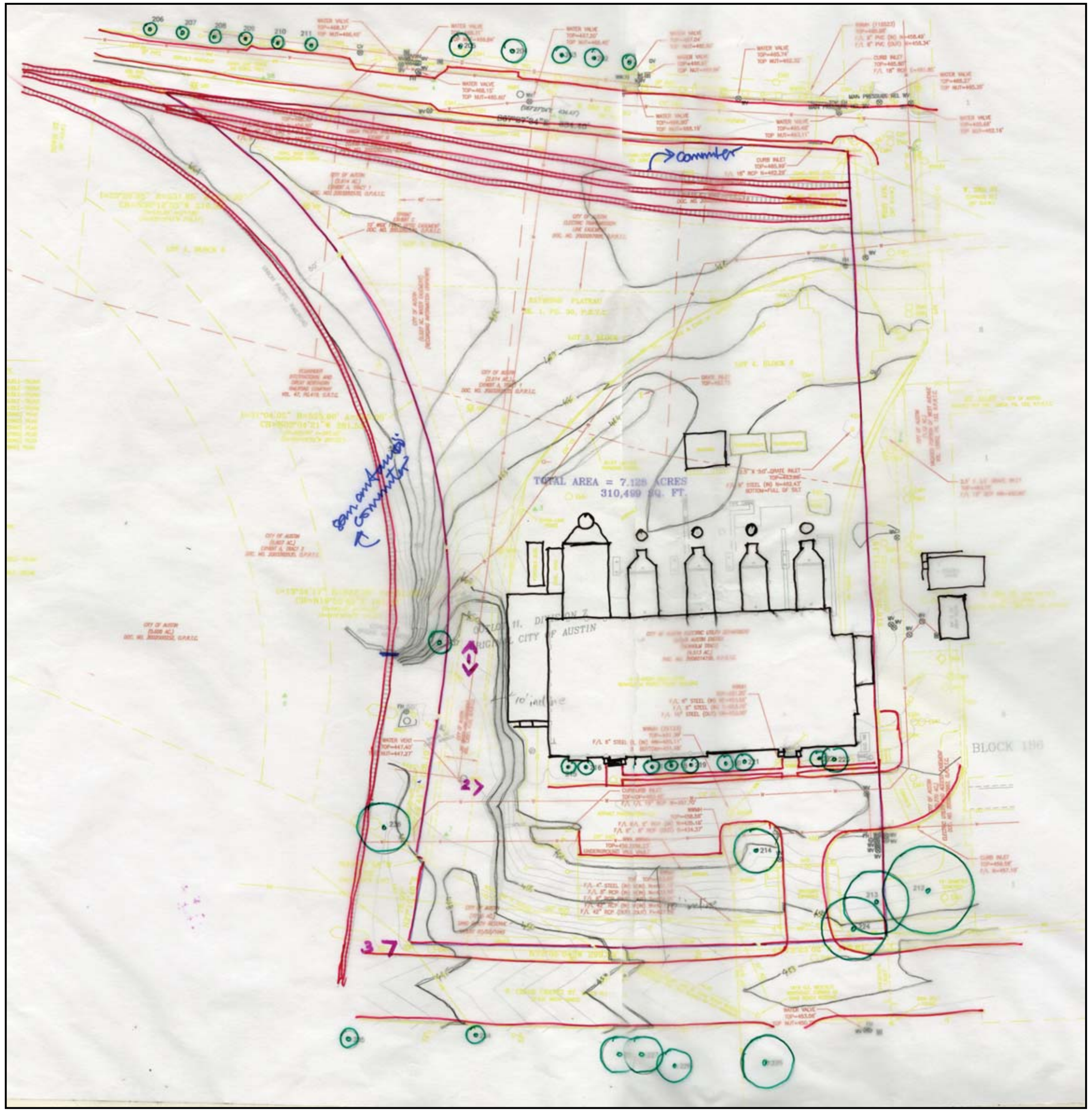
85. Light Installation on a body of water.



86. Lighting and color study sample.



87. Bubble diagrams, study model, initial diagrams.

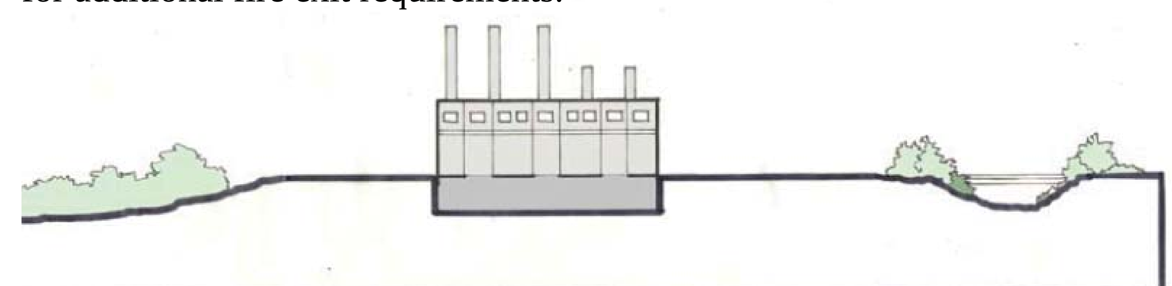


88. Site Plan (Scale 1' = 1/64")

SITE AND BUILDING ENTRY

Much thought has been provided to the entrance placement to the site and the building. The allotted parking spaces to the west of the building (close to Lamar Blvd.), future rail transit corridors to the east, nearby flood plains to the south and the need for a service-entrance/elevations were the major factors in consideration.

To this effect, it was concluded that multiple numbers and levels of entrances were required for easy site access and to maintain and ease of flow of traffic within the building. The south side entrances that were historically the main entrances have been transformed in character to work as administrative/retail storage entrances and as fire exits. The close proximity of the southern entrances to flood-plains was a decisive factor in this design decision. Due to ease of access by foot, bus and in future by rail, the northern entrances stood out as possible main entry into the building. As such the main orientation of the building has reversed. The parking spaces to the west required the building to have an easy access from the west elevation that is closest to the parking area. A new entrance that is connected to the street level by a nominally steep ramp is therefore designed. This entrance is placed on the lower level floor plan, whose wall were below ground level before the new entrance design. The traditional service entrance on the north side is retained as is. The entrance door on the extreme north of the building is re-designed as a fire exit and a new door on the east elevation (least visible) has been provided for additional fire exit requirements.



89. West-East Site Section (Scale 1' = 1/64")

ADJACENCY DIAGRAMS

circulation space - atrium - lobby

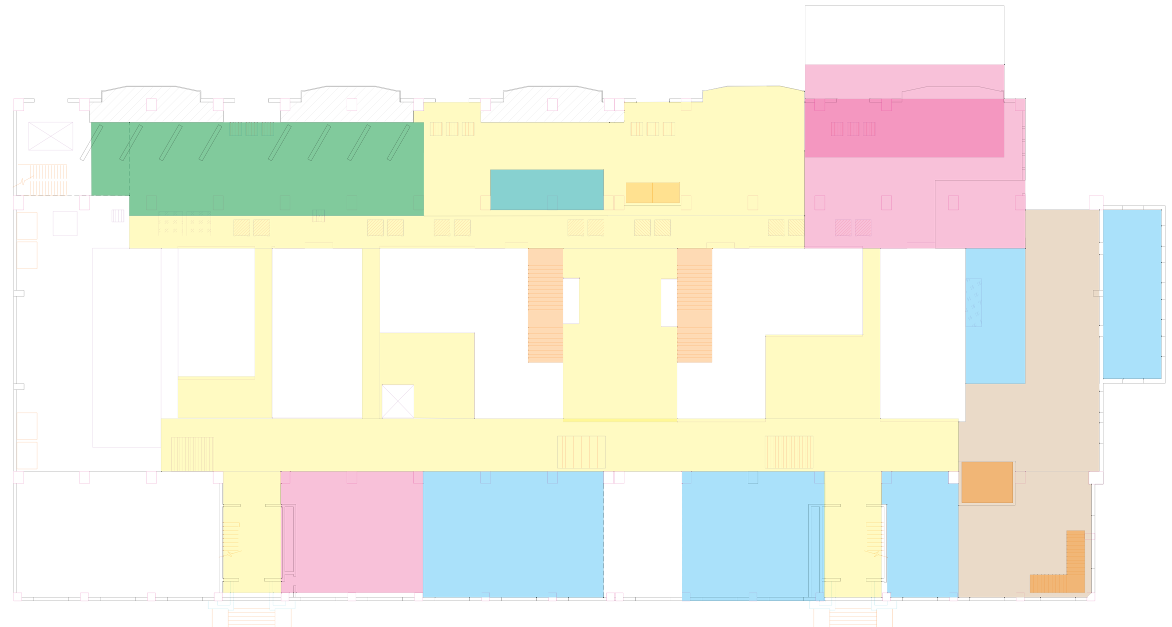
exhibition space

office (when grey - art handling/storage)

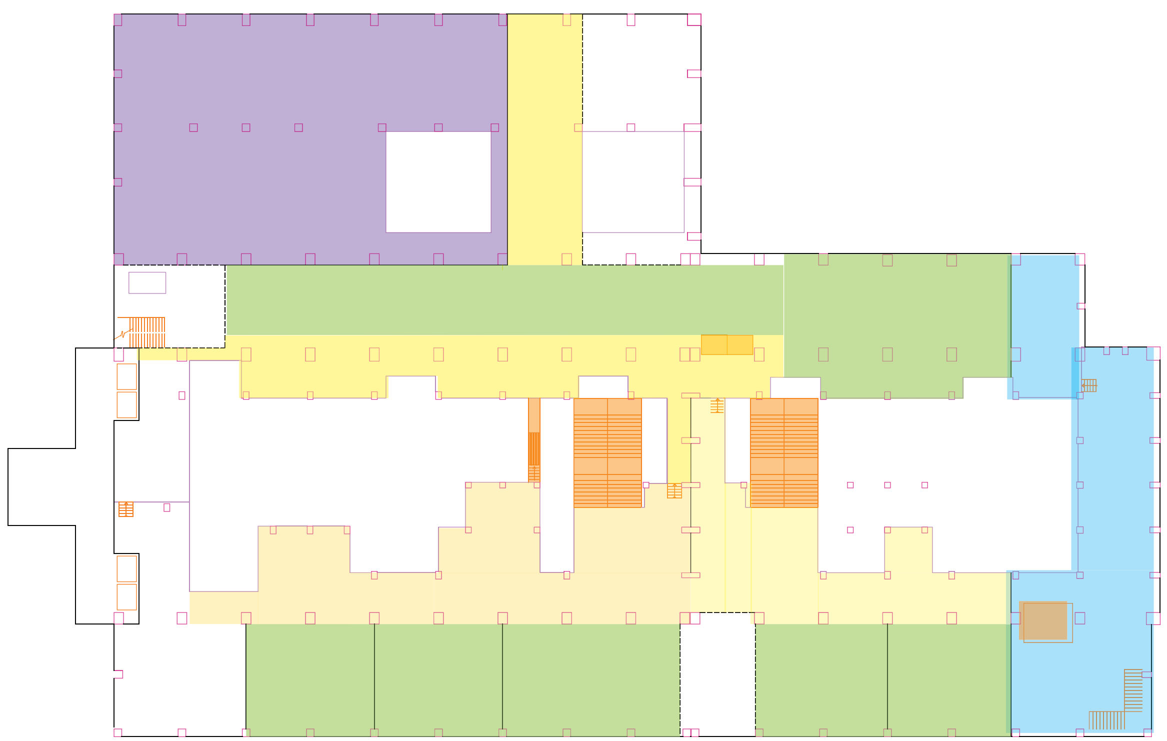
education lab - family

retail - cafe - wine bar

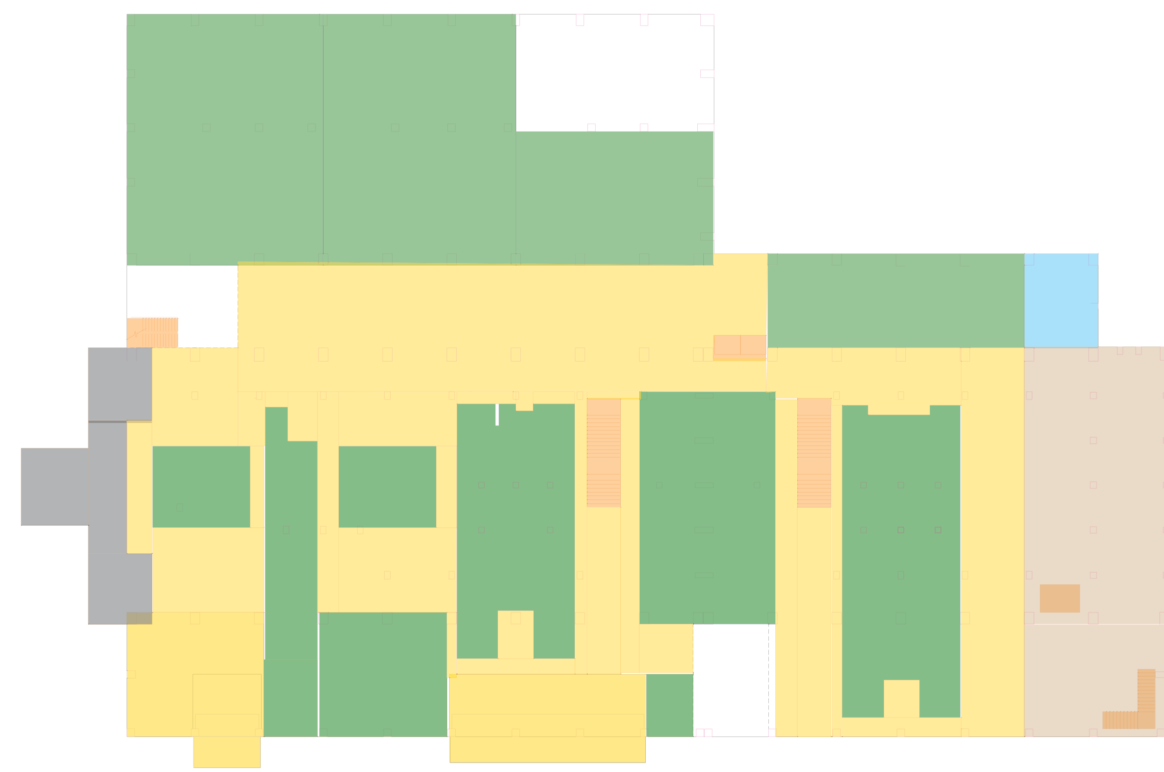
vertical circulation



90. G+0 Space planning

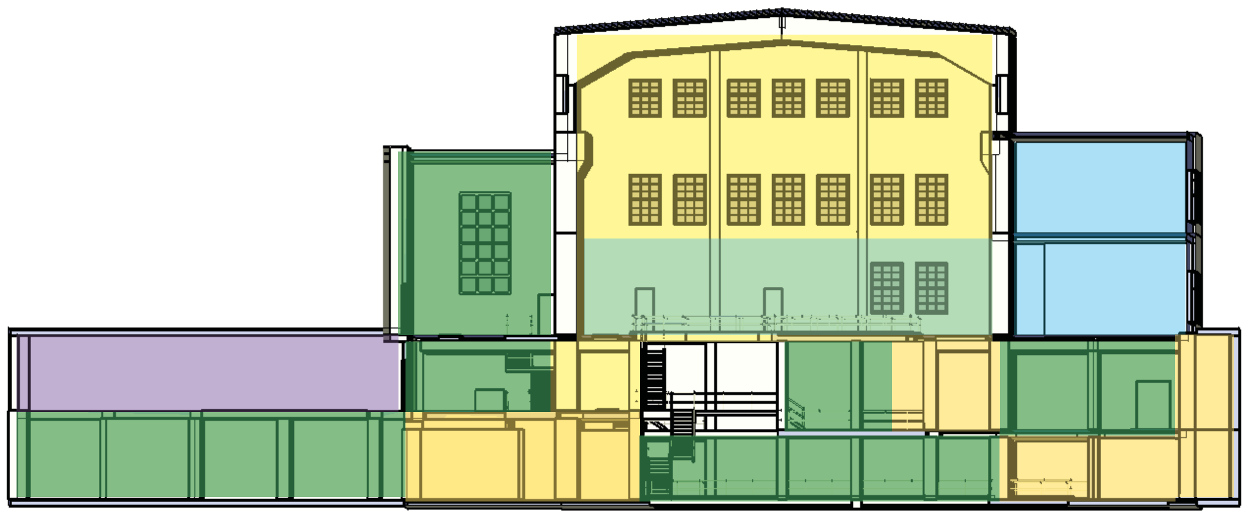


91. G-1 Space planning

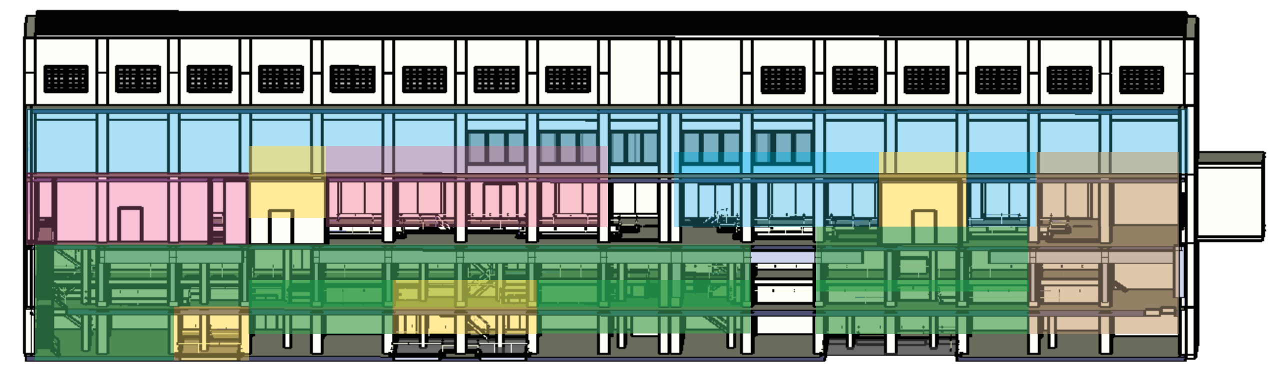


92. G-2 Space planning

ADJACENCY DIAGRAMS



93. N-S Section thru the middle



94. E-W Section thru south side office block

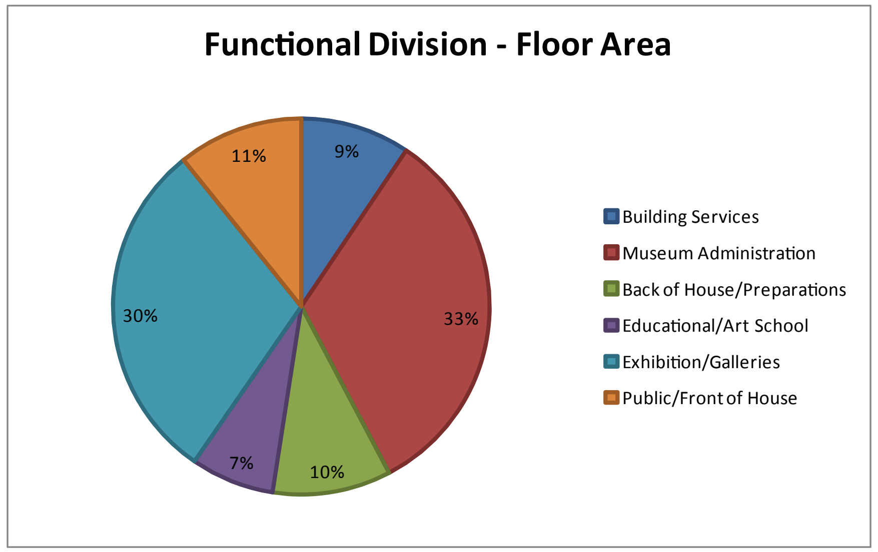
SPACE	AREA
Lobby + Circulation	25000 SF
Exhibit Space	30000 SF
Administration	20000 SF
Services	3000 SF
Art Storage	8000 SF
Art School Studios	7000 SF
Family Lab + A-V Room	7000 SF
Retail	9500 SF

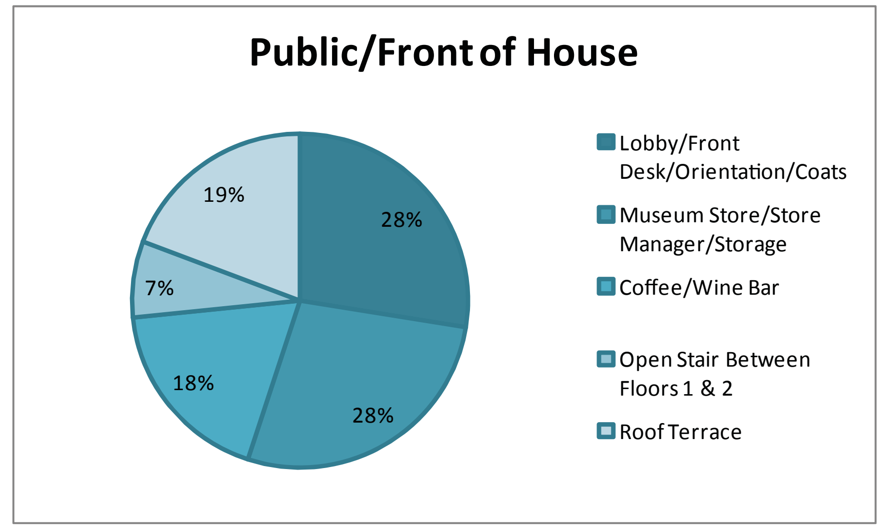
95. Space alloted in square foot for various museum facilities

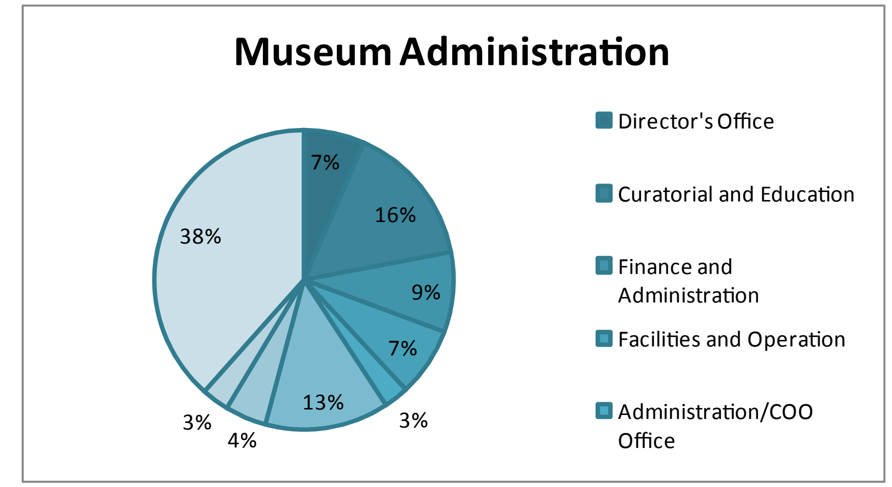
SPATIAL REQUIREMENT ANALYSIS

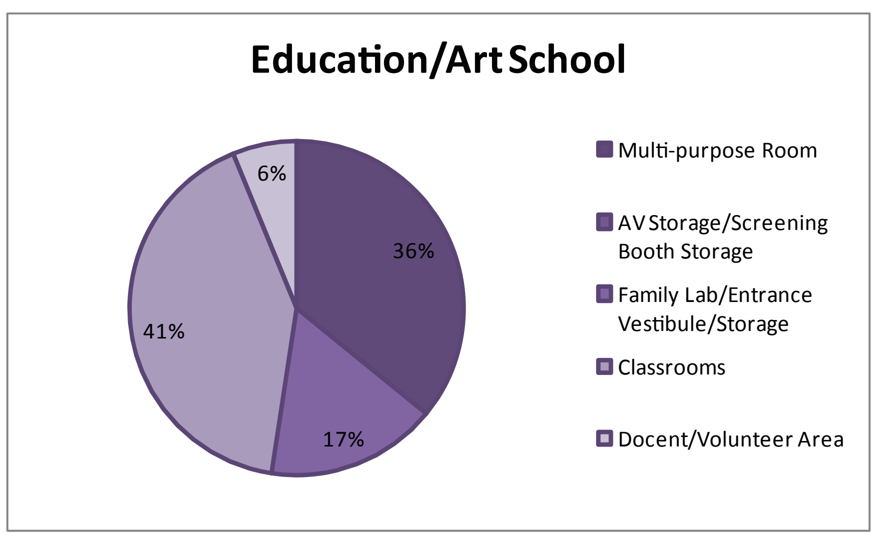
Almost an equal amount of space is shared between galleries and museum administration. The public/front of house areas and back of house/preparations areas also take equal amount of spaces which are one-third of exhibition/administration spaces. Educational wing and building services occupy the least amount of space.

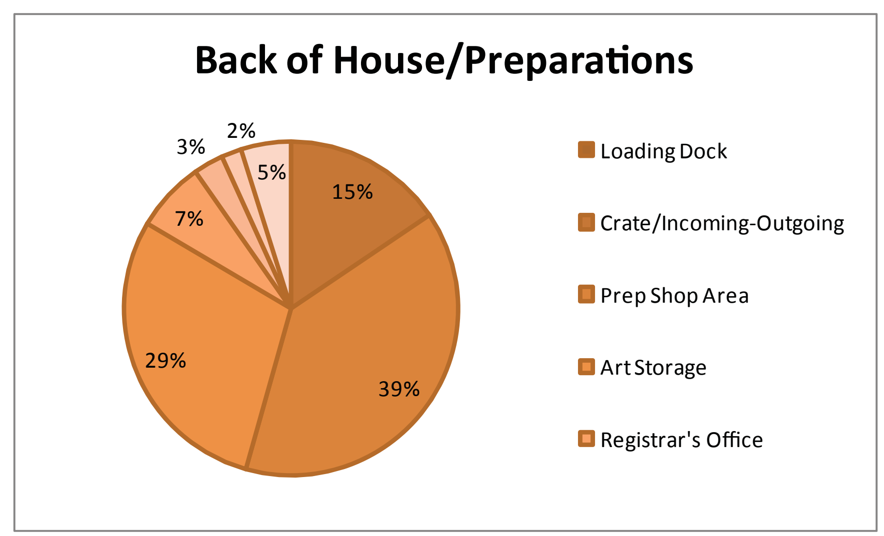
Within museum administration the Director's Office occupies majority of the area while others are more or less equally distributed. Other areas that occupy a significant amount of area are the multi-purpose room in the educational wing, the lobby/front desk and museum store areas, art storage and mechanical services. These take up almost equal amount of areas in the spatial distribution charts.

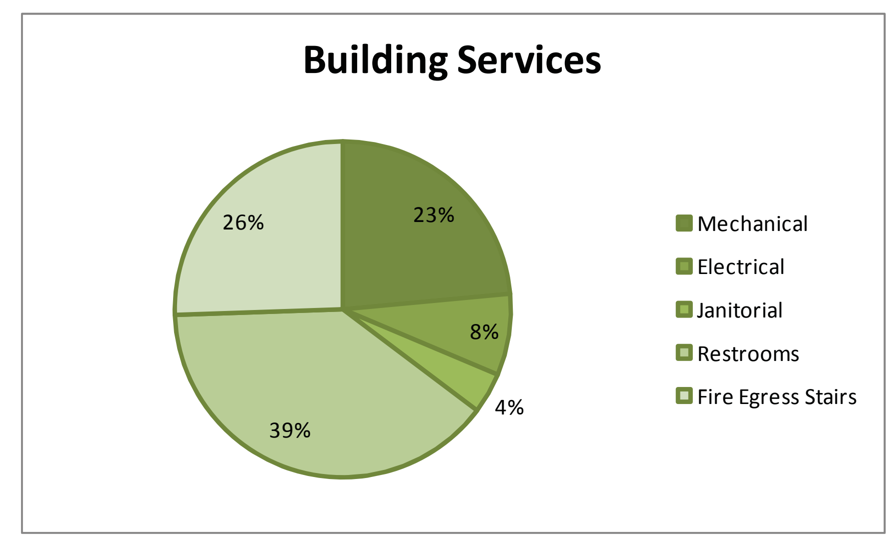




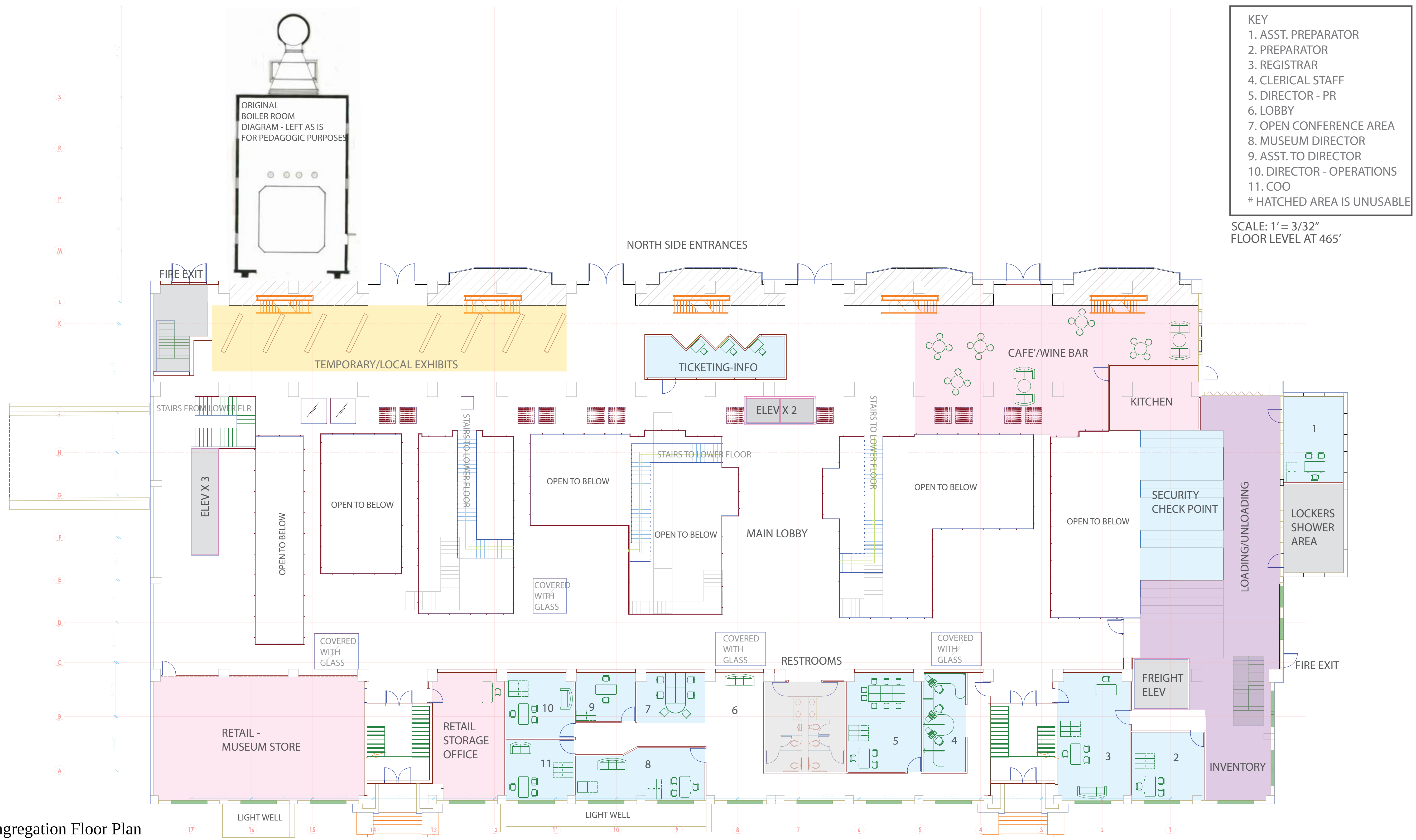






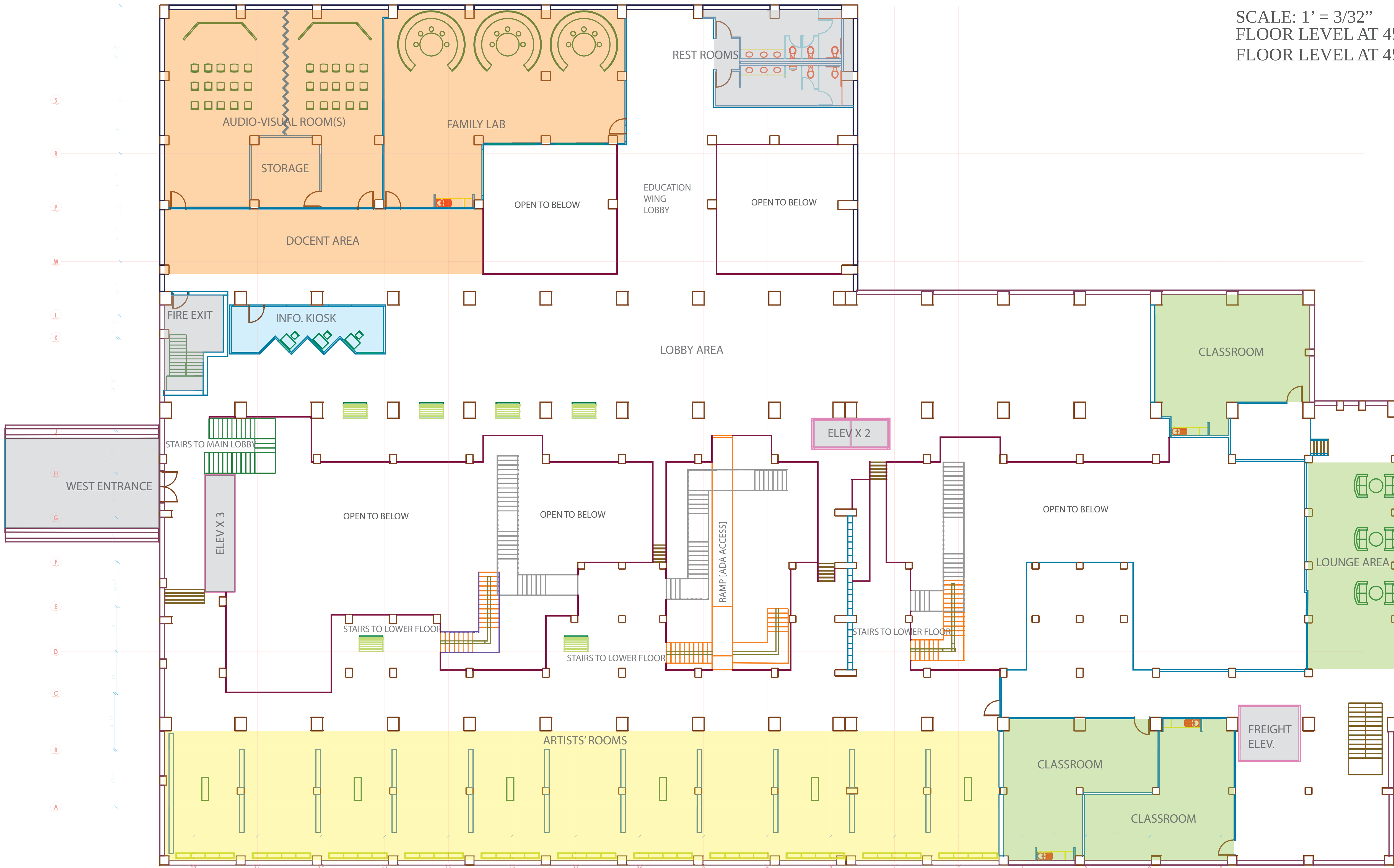


96. Pie-charts: spatial requirements



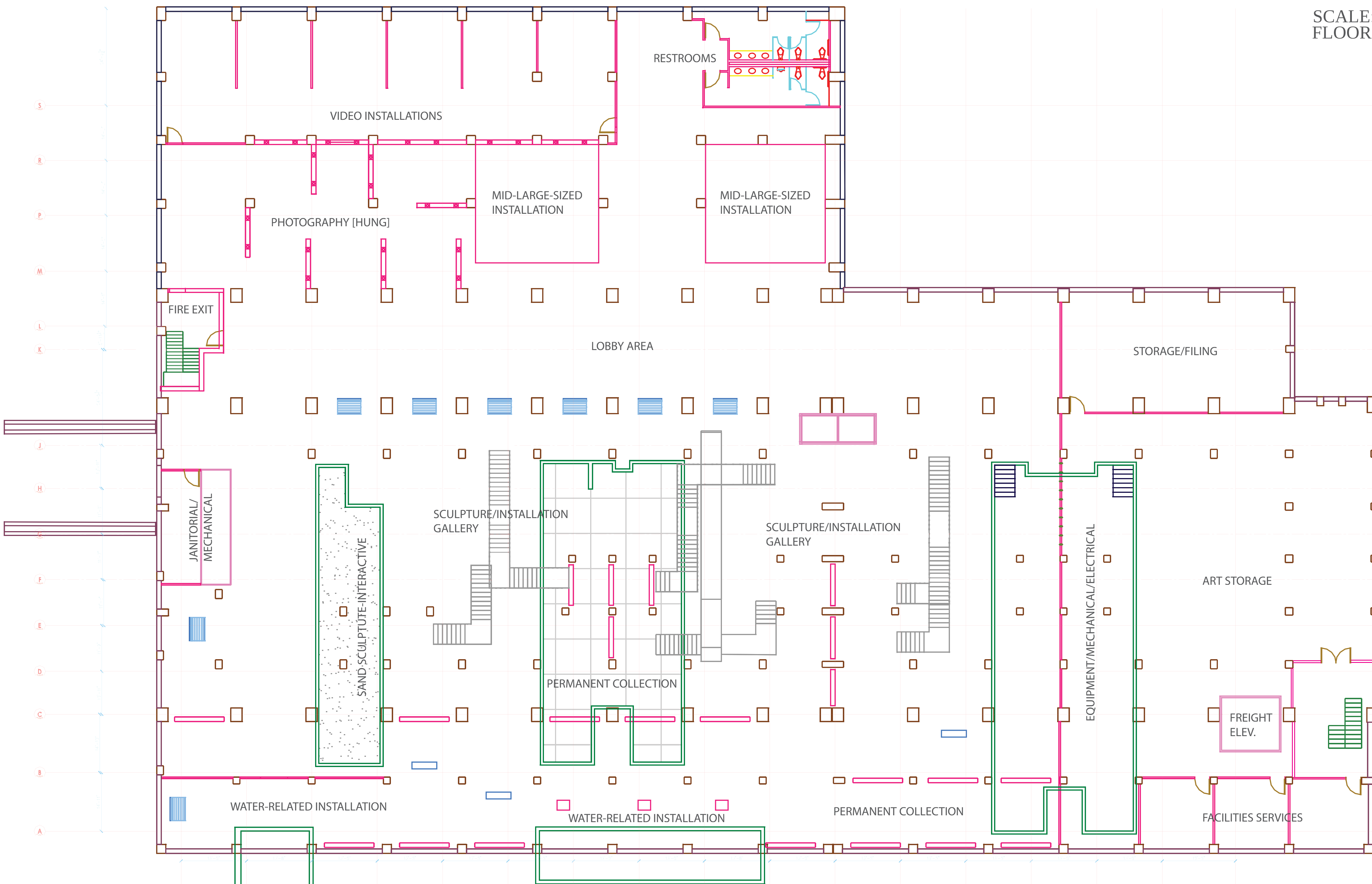
97. Congregation Floor Plan

SCALE: 1' = 3/32"
FLOOR LEVEL AT 453' (North)
FLOOR LEVEL AT 450' (South)



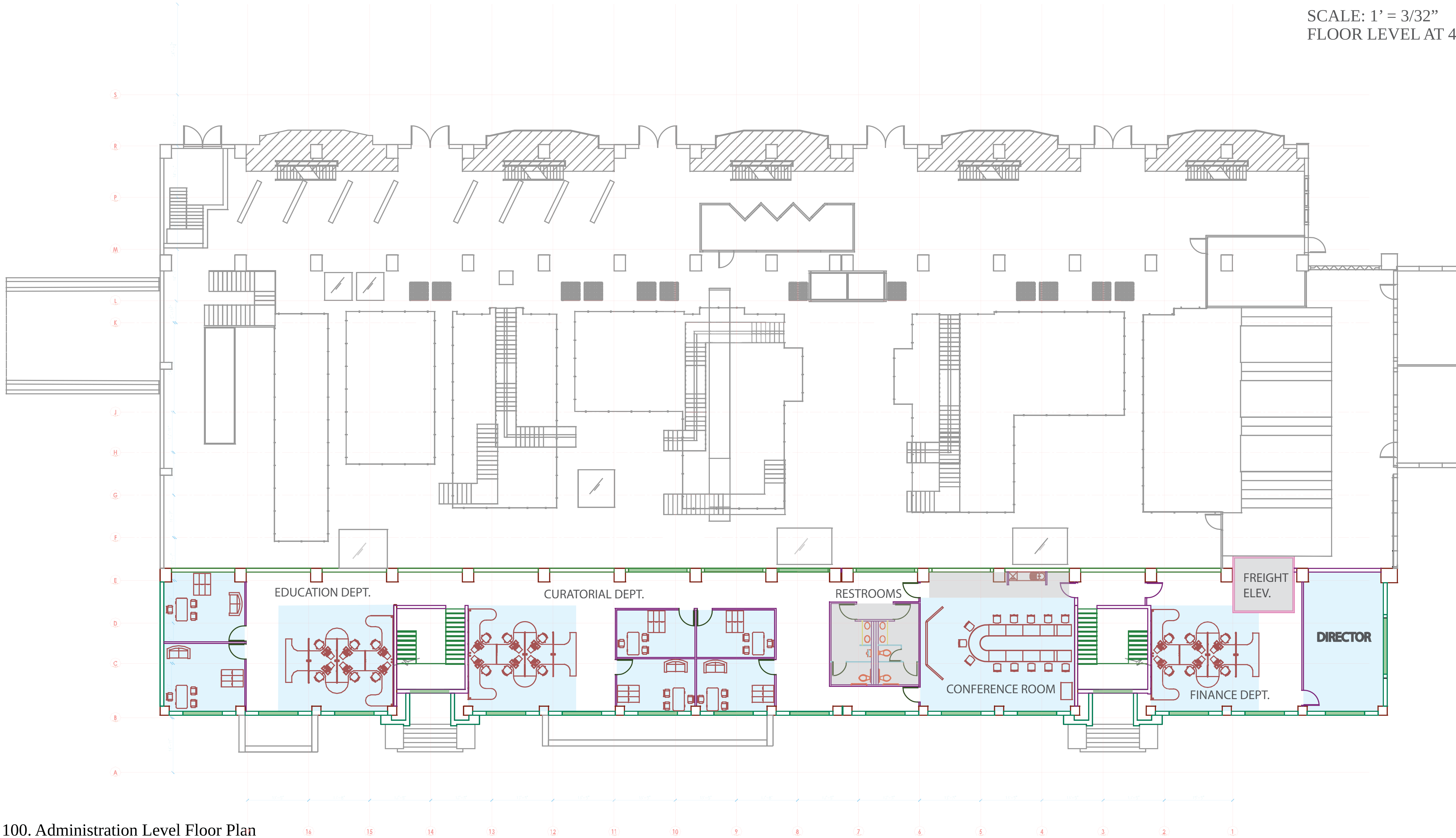
98. Acitivity Level Floor Plan

SCALE: 1’ = 3/32”
FLOOR LEVEL AT 439’

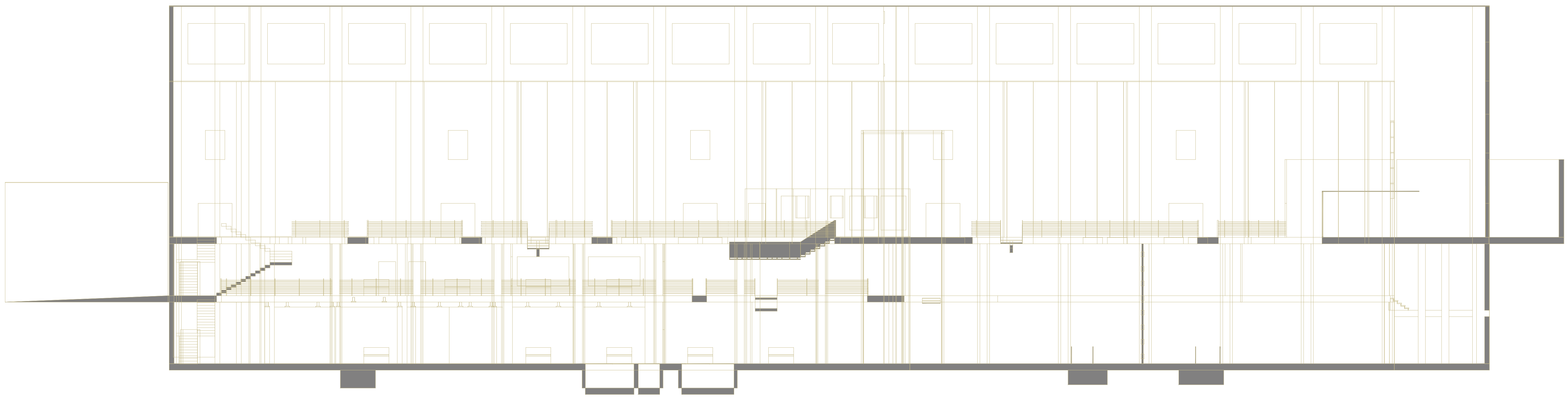


99. Contemplation Level Floor Plan

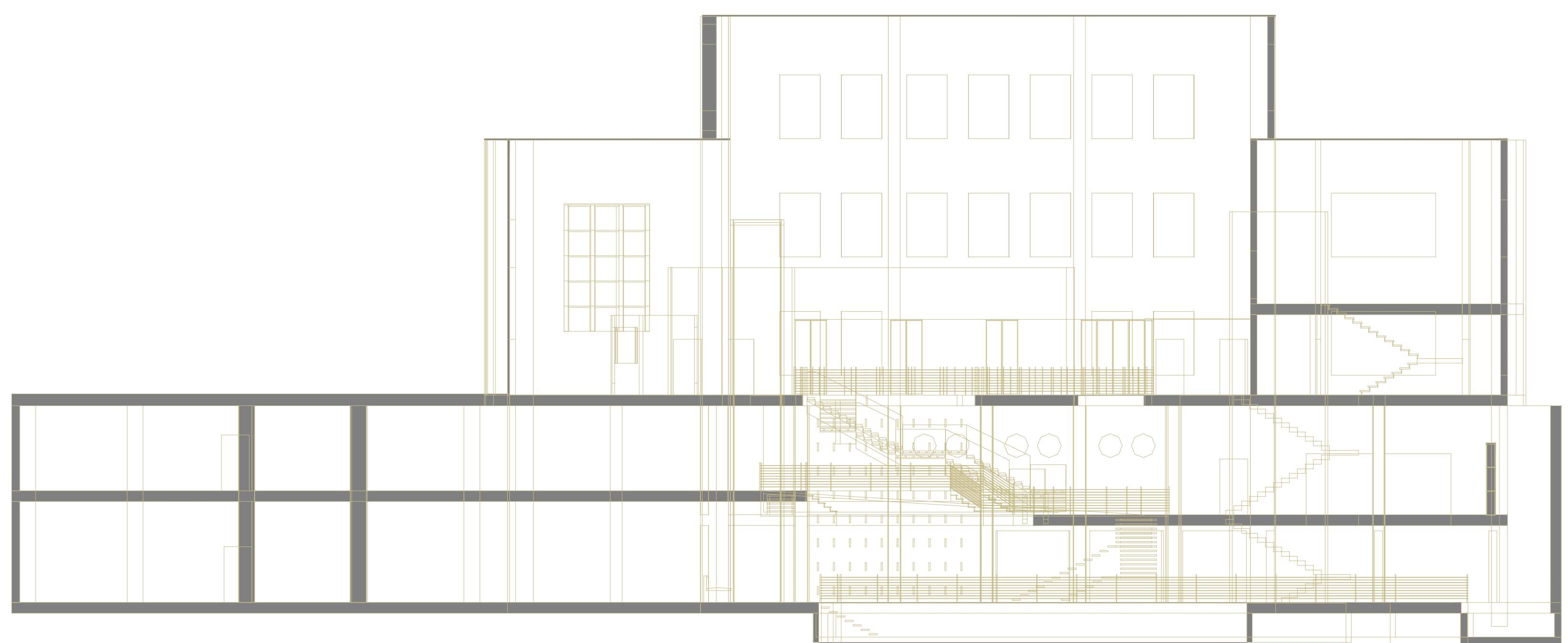
SCALE: 1' = 3/32"
FLOOR LEVEL AT 481'



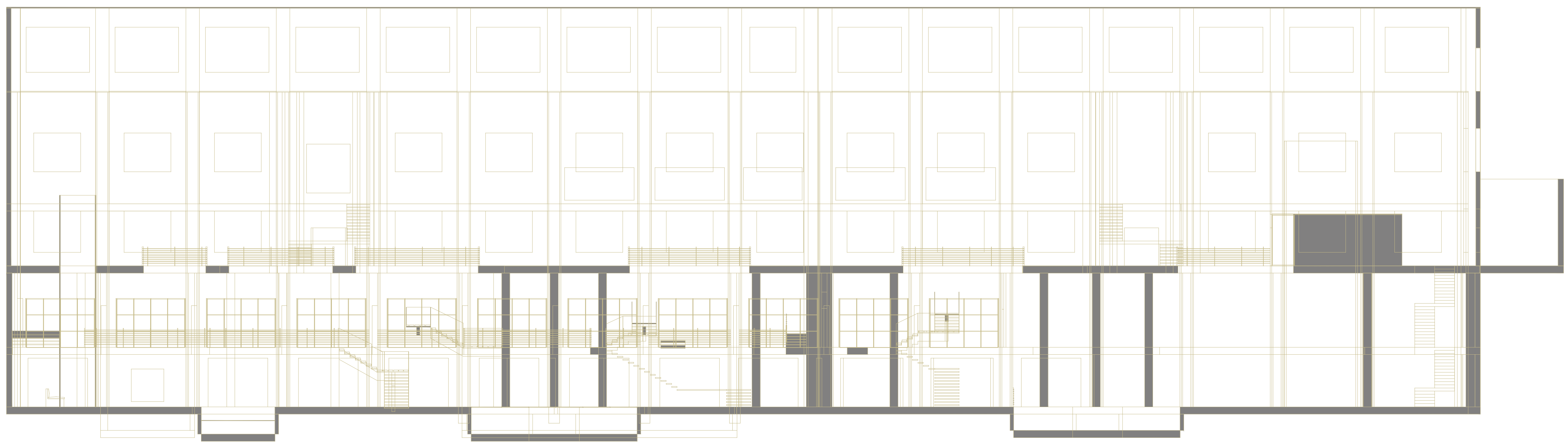
100. Administration Level Floor Plan



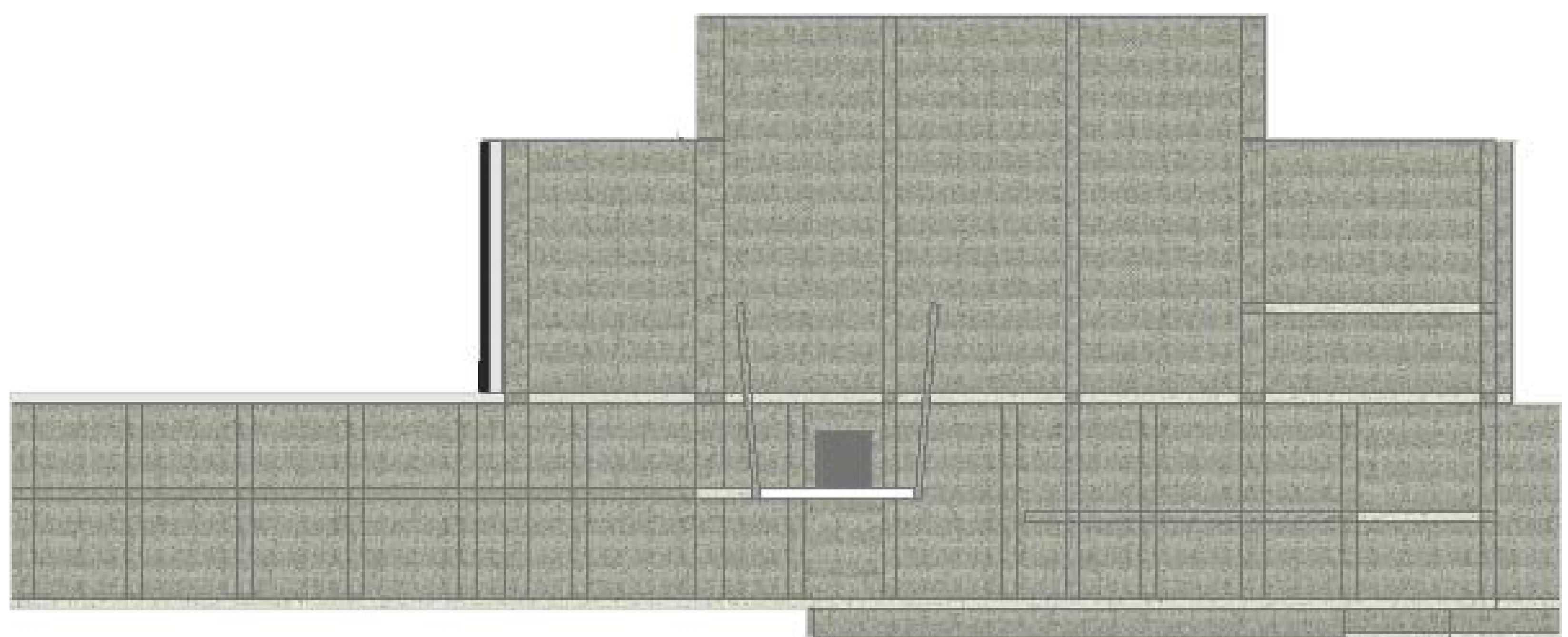
101. Section looking north through the new west-side entrance.



102. North-South section through the middle of the building looking east.



103. East-West section looking south through the middle of the building.



104. West elevation with the new entrance.

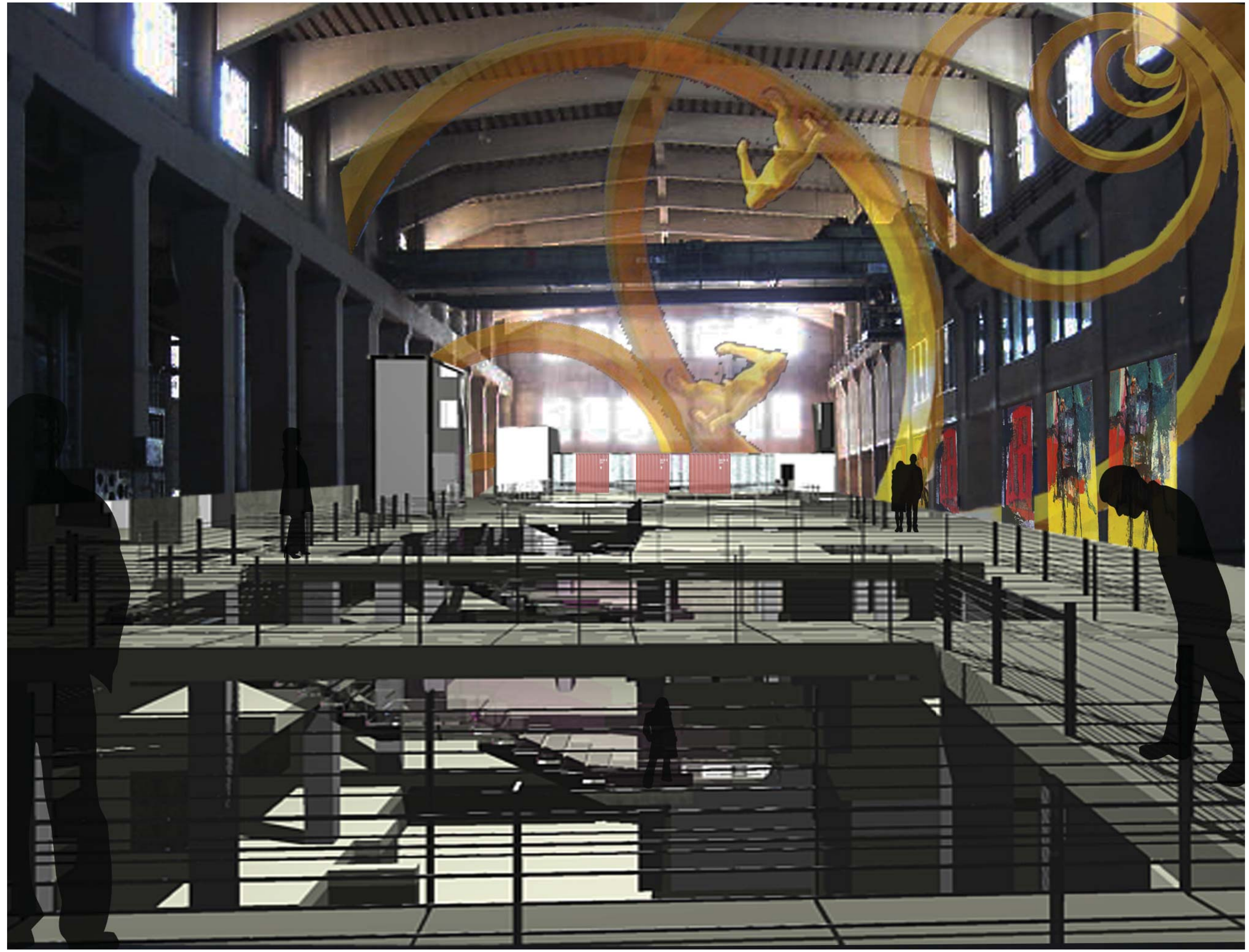
CHAPTER 8
CONCLUSION - THE SEAHOLM-AMOA EXPERIENCE

A building is an experience. It is the sum of the age-old wisdom passed down generations. Yet, many a time these are ignored, considered outdated or uncared for. In a time and age where resources are scarcer, communities are more and more segregated and truisms forgotten, buildings like Seaholm Power Plant act as beacons of knowledge, understanding and hope for the future. So what better functions can this building hold but a museum that is the modern-day equivalent of an ancient souk or a Roman piazza!

Seaholm Power Plant exemplifies and stands up for permanence, excellence and simplicity. This study alludes to these characteristics and the fact that the principles that Seaholm stands for can be emulated in an adaptive-reuse project designed for the building. A sensitive rehabilitation is that one which is inspired by the building itself, enhances user experience and remains non-intrusive. While creative liberty is crucial to any design's success, the balancing factor in this project is to also identify, respect and maintain the historic integrity of the building. The intent of this project has been to acheive this goal.

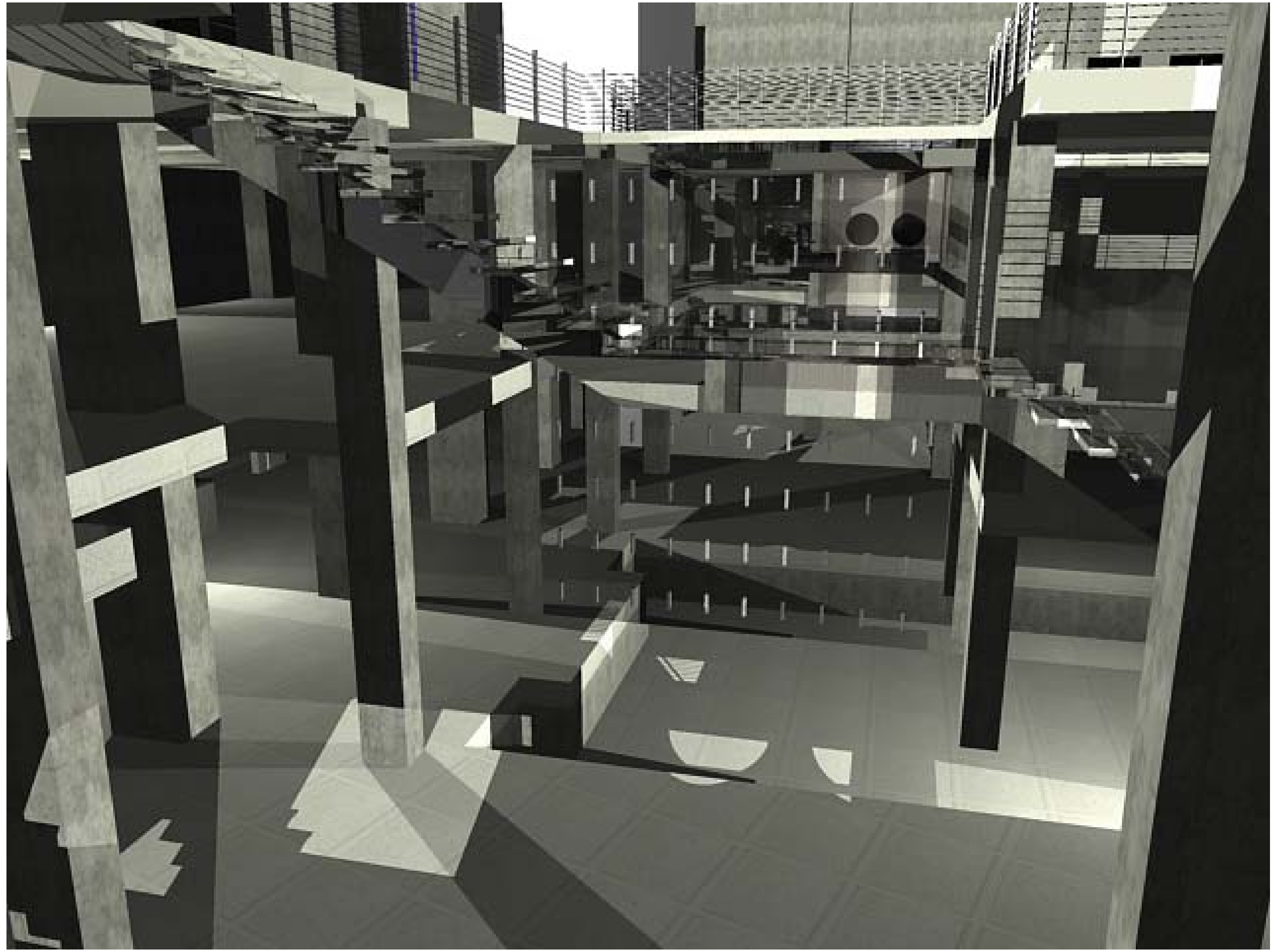
A museum need not be a temple that you worship at. It need not be a sculptural work that induces awe. To be called a world-class museum is to simply provide a facilty that truly inspires its patrons.

Seaholm-AMOA has the potential to do the above in its own understated, austere style. It may not generate power anymore but it is most definitely *here to stay in power.* The following perspectives are a small reminder to the reader about the power of this majestic building and the museum facilty that is hypothesized in it.


106. Perspective - Congregation level lobby space.

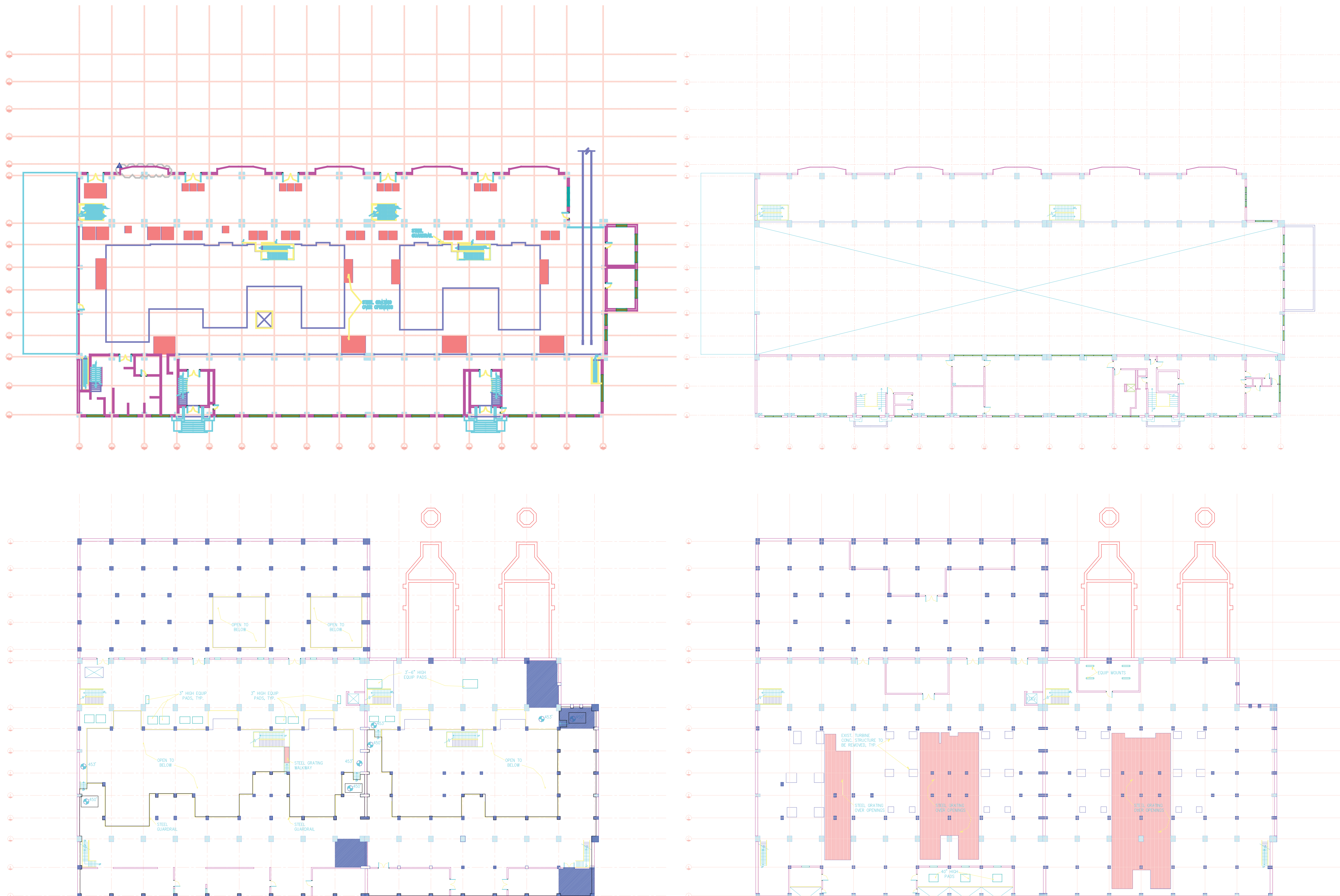
107 - Rendering of Congregation level lobby with glass railings.

108. View through pipe hole at the Activity Level.



109. Previous view without the pipe hole in the foreground.

110. Rendering of Sculpture Lobby at the Contemplation Level.



Appendix A: Existing Floor Plans - G+0, G+1, G-2, G-1 (Clockwise from top-left.)

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20. Ar. David Lynch (Architect, STG Design, Austin).
21. Mr. John Rosato (Partner, Southwest Strategies Group, Austin).
22. Prof. Sinclair Black (Principal, Black-Vernooy Associates, Austin).
23. Mr. Tom Patty (Petrographer, WJE, Austin).