



ARCHILLUSION

A THESIS OF ILLUSIONS IN ARCHITECTURE.

BY
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NEWSCHOOL OF
ARCHITECTURE
AND DESIGN

ARCHILLUSION

A thesis of illusions in architecture.

A
Thesis
Presented to the
Undergraduate Faculty of

The NewSchool of Architecture & Design

In Partial Fulfillment
of the Requirements for the Degree of

Bachelor of Architecture

by
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ABSTRACT

The “Modern” style is called International for a reason. Everyone on earth has the same house. How boring? Urban property owners paint massive flat walls white and call them modern. A more accurate definition is “a missed opportunity”. Urban sites have the responsibility to create spaces that enhance the local moral and encourage social interaction. Generating a consistent effort to create unity among locals is essential. It is not a crime to have ornaments. It is how architects express their full talent. Architects are artists at heart, you do not give an artist a color book and ask him to fill in the blank. It is imperative to design with site and program in mind. There should never be a template. There needs to be a process of discovery, exploration, and output.

Basic elements of architecture like mass, surface, and program are exactly that, basic. Artistic elements are vitamins buildings use to keep young and vibrant. These elements give hints, glimpses into the architect’s style of design. 2D artistic techniques such as forced perspective, trompe l’oeil, chiaroscuro (light effect) and blending are to be utilized by architects to visually illuminate the structure. There exists a plethora of current modern buildings equivocal to blank canvasses that have nothing to contribute to the urban environment. Specifically, urban neighborhoods, where created spaces must encourage safe zones that generate socially active dialogues, friendships and ultimately a sense of community.

The purpose of this study is to introduce illusion methods with an effort to reignite social engagement and excitement in architec-

ture. Researching the history of illusions and the psychology of sight brings into focus how the human mind tends to process surrounding structures via the visual cortex.

When you strip artistic elements away from facades. They become minimal in aesthetic, they become dull, and bland. There is no representation of program. Walls are void of symbols, text, and colors. No indication of the interior volume. No visual introduction of the building. No identity or descriptive elements, no consideration for the local culture, tradition, or customs. The style seems borrowed, non-organic in its creation process. Structures seem repetitive mimicking cloned designs emphasizing profit over originality. Ultimately the aesthetic seems boring, with no visual stimulation or effort to sprout social gatherings. Architecture must reclaim its artistic roots by implementing design elements back into failing facades to enhance them.

Human senses in addition to sight may be used to create a conflict within reality. Senses like touch, hearing, smell, and sound can also be used to manipulate the mind. Illusion within architecture is in its infant stage. The promising architectural style has endless potential. It can be integrated into existing and future projects. Incorporating such elements is possible. Refined to better fit within a 3D context. The text herein will explore the various ways optical illusion is to be merged within architecture.

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Approved by:

Undergraduate Chair:

Date

Studio Instructor:

Date

DEDICATION

This thesis is dedicated to my mother, Giselle.
My hero.

ACKNOWLEDGEMENTS

I would like to thank Professor Daniel Manlongat for keeping me focused throughout the year as I navigated my way through this broad thesis topic and for always reminding me “what is your problem?”.

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INTRODUCTION

CHAPTER I

CRITICAL POSITION

A qualitative study into the sociological impact of optical illusions on urban neighborhoods. The study will use popular illusion techniques. Trompe l'oeil, a French term for “deceive the eye”. Defined as “an art technique that uses realistic imagery to create an optical illusion that depicts objects that exist in 3D”. Forced perspective is a comparable illusion in architecture. The intent of the study is to prove whether a vibrant, artistic, illusion based aesthetic of a building contributes to the enhancement of a neighborhood’s social dynamic? If this hypothesis proves that the technique is affective, a designer can proceed to find individual or cluster of buildings that lack mentioned elements and proceed to develop designs to improve the spaces they share.

There is an opportunity to take existing buildings and easily apply inexpensive 2D graphics to enhance the immediate and surrounding spaces by applying illusion-based designs. A façade can be manipulated in multiple other ways such as light projection, use of mirrors, and tilted floors to name a few. There lies an excellent collaboration opportunity between local artists and building owners to come up with murals that encourage city identity. Everyone wins, artists get to have their work displayed for a long period of time, free exposure and marketing. Owners will see their property value increase and locals will take part in the growth of an urban environment.

In the past two decades, architecture has been stripped of its character. No longer are ornamentation found in modern and post-modern architecture. Ornamental detail used in previous architectural styles like Goth-

ic, Baroque and Art Nouveau allowed an architect to express or hint at a specific technique. The incorporation of design elements created a unique, one-of-a-kind building. It avoided the current trend of cloned buildings present throughout the United States. The removal of patterns has resulted in boring and bland aesthetic. Introducing 2D optical illusion tricks into 3D masses will force visitors to interact with a building, creating a more memorable and pleasing experience. Illusion in architecture also has an opportunity to bring excitement and allure to structures like it did to 2D drawings and paintings in the 19th century.

Incorporating flat illusions into multi-directional objects such as buildings is not an easy task. A flat surface has a singular plane, making the illusion more evident, more powerful, and easier to create. A multi-dimensional object has infinite perspectives. Creating visual trickery for the point of views of all visitors is counterproductive. Just like the history of ornamental design, excess illusion can prove to be messy, overwhelming even confusing at times. Instead of viewing this as an issue, one must be forward thinking and use intentional perspective as a theatrical tool. As a statement, a visual introduction that captures the inhabitant’s imagination and attention and thus manage to build up excitement and intrigue. This maintains interest, as one walks through the structure. A strategic promenade that builds a sensory climax. This technique is found in films to generate drama and anticipation. The effect is magnified when subtle, for it catches the viewer by surprise.

Understanding the psychology of human vision is crucial in creating optical illusions. In 1964, David Hubel and Torsten Wiesel's research on "Optical Development in Kittens" discovered that certain neurons in the brain's visual cortex fired only when objects were oriented at certain angles. Imagine for example, a triangle drawn like so \triangle indicating it to be stable. This is due to our perception of gravity. If the same triangle is flipped ∇ , instability is conjured. For the pointed corner gives the illusion that it will tip over. Such imagery has been imbedded into our conscious over thousands of years of evolution. Our eyes are very powerful visual processors. The speed in which our retinas evaluate shapes is extremely rapid. Mark Changizi, a theoretical neurobiologist, believes the brain may make predictions about our surroundings in order to perceive the present. Such scientific research is important to an architect even if illusion is not the intended outcome. Humans absorb the experience of architecture via visual stimulation. It is very crucial to dig deep into the psychology of the visual cortex. An architect can reap an abundance of benefits from such knowledge. Louis Sullivan proclaimed famously "form follows function". Yet his own buildings were highly ornate with Art Nouveau ironwork and Celtic-inspired masonry. His quote was misinterpreted as a call for simplicity. In 1908, Adolph Loos wrote an essay titled "Ornament and Crime" where he argued against ornamentation. Declaring that a lack of ornamentation was a "sign of spiritual strength". These ideas quickly became dogmas of the architecture profession. When done right contemporary architecture can be

extremely efficient and powerful. Unfortunately, over the years this mindset has contributed to cheap minimalistic designs that further strip away the soul of a building. For the sake of speed and profit, developers now use a template to replicate floor plans across the country. A sad trend. In retrospect, it is much harder to implement optical illusions in architecture without ornamentation, without carved or painted patterns. A balance of articulated and tactful patterns strategically placed throughout a project can be easily implemented. It can provide a lasting impression, a fond memory when illusion is integrated within the concept.

Manipulating edges of various depths of field visually merges and/or blends the two adjacent surfaces into one. Alignment is essential in achieving such a visual deception. Just like placing two colors flush against each other, both will always appear as separate objects. Only until they blend or fade within one another will they appear as one. That is what it boils down to. How can an architect attempt to arrange multiple surfaces to display as one? Identifying contour and color of shapes helps make the closest alignment. For example, articulating two parallel triangles via intended placement can be merged to form a diamond.

Applied perspective graphics is an effective technique to trick the eye if the person is standing directly in the right spot. But for everyone else located away from direct point of view sees a skewed design. This idea is common in street art. The illusion should be minimal and done with purpose. Over-use of this concept can hinder the overall experience.

Illusion has successfully been applied to large buildings. Perhaps not intentional. For example, the Flatiron building by Daniel Burnham and the recent Howe Tower building by Bjark Ingles stemmed from a confined land use. Both structures have a triangular base. So, one can say that their hand was forced to deal with the shape that resulted in an optical illusion. Looking at one side of the building does not fully explain the mass, for one must view all angles to capture the full understanding of its actual dimensions. Mirrors are also being used in residential designs to reflect surrounding landscape. The intent of such concept is to blend house among nature. To not disturb the natural beauty of the forest. But one must be aware of negative side effects like birds flying into these mirrors not knowing a surface exists. Reflection may also play a role, in hot climates, mirrors can enhance reflected temperatures to adjacent objects and possibly ignite fires. The reflection of sun's radiant heat wave is increased off mirrors. Therefore an architect must intricately consider and evaluate using such material based on the environment.

Illusion in architecture is achievable. An architect's tool set for implementing this new architectural style has a lot to do with understanding optical illusion and how humans perceive and/or absorb their surroundings. If done right, some buildings can be unique, can stand out among its neighboring structures. To bring excitement back to architecture. That is the ultimate intent. To eliminate repetitive designs. To generate iconic concepts that capture the imagination of visitors and encourage a social interaction among a current society that des-

perately needs such environments.

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THEORETICAL FRAMEWORK

The process of implementing new ideas, new theories require one to research the parameters of the proposed subject. To mentally organize the thought process needed to prove suggested hypothesis. This entails narrowing down the categories for which the study en-

compasses. Based on initial research surrounding illusions in architecture, it was determined that the psychology of sight, history of illusions and forced social interactions collectively conjure excitement for subjects interacting with buildings. A dive into these three variables' history and context will further advance the implementation of illusions in architecture.

Psychology of sight is a complex subject that breaks down into many sub-categories. Humans receive information from our immediate environments using multiple senses. Our most dependent sensory organs are our eyes for sight. Followed by our ears for hearing. And lastly our sense of smell uses our noses. All simultaneously process our surroundings to formulate a realistic and immediate perception. Illusion primarily focuses on sight. Therefore, a deep dive into the biological understanding of the eye will prove helpful.

Two major psychologists James Gibson and Richard Gregory discussed in depth how our visual cortex tends to process the objects that surround us. Gibson in 1966 suggested that "perception involves innate mechanisms forged by evolution and that no learning is required" Gibson, J.J. (1966). He called this "Bottom Up Processing", which means that sensory information is analyzed in one direction: from simple analysis of raw sensory data to ever increasing complexity of analysis through the visual system. His argument stated that perception is necessary for survival, without it we would be living in a dangerous environment. Because our ancestors dealt with predators,

they relied heavily on their senses thus suggesting perception is evolutionary. For Gibson, sensation is perception: coining the term "what you see is what you get". He also explained that perception involves 'picking up' the rich information provided by the optic array in a direct way with little to no processing involved. Other concepts he explored are invariant features. Two good examples of invariants are texture and linear perspective. Texture gradient gives the appearance of depth while linear perspective uses the idea of parallel lines which appear to converge as they recede into the distance. His theory cannot however explain why perceptions are sometimes inaccurate in illusions. For example, the general tendency for people to overestimate vertical extents relative to horizontal lines. Nor if you stare for some time at a waterfall and then transfer your gaze to a stationary object, the object appears to move in the opposite direction. An exact visual illusion Aristotle experienced in 350 B.C.

Richard Gregory argued in 1970 that "perception is a constructive process which relies on top-down processing" Gregory, R. (1970). He argues that a lot of information reaches the eye, but much of it is lost by the time it reaches the brain. Therefore, the brain must guess what a person sees based on past experiences. We actively construct our perception of reality. Our perceptions of the world are hypotheses based on past experiences and stored information. Visual illusions occur when the information of incorrect hypotheses leads to errors of perception.

The Necker cube (Fig. 1.1) is a good example of this. When you stare at the crosses on the cube the orientation can suddenly change, or 'flip'. It becomes unstable and a single physical pattern can produce two perceptions. Gregory argued that this object appears to flip between orientations because the brain develops two equally plausible hypotheses and is unable to decide between them.

Illusion is described as a perception that is distorted from reality. Optical illusions are images that deceive and mislead us. Visual illusions have been used in paintings and architecture since ancient times. It started in 5th century B.C. when Epicharmus believed that even if our mind knows and understands everything clearly, the sensory organs deceive us and present an optical illusion. Greek philosopher Protagoras from the same period instead believed that the environment is what fooled us and not the senses. Plato concluded that both senses and our minds played a role in visual deception. The subject gained popularity in the 19th century when J.J. Opper and Johannes Mueller heavily studied this phenomenon.

Illusions come in a wide variety. Three main classes are: physical, physiological and cognitive illusions. In each class there are four kinds: Ambiguities, distortions, paradoxes, and fictions. An example of a physical illusion is when mountains appear to be much nearer in clear weather with low humidity than with haze as a cue for depth perception, signaling the distance of faraway objects. Physiological illusions are afterimages following bright lights, or adapting stimuli of excessively longer alternating patterns which is triggered by bright-

ness, color, position, size, movement, etc. Cognitive illusions arise by interaction with assumptions about the world and are broken into four parts:

- 1. Ambiguous Illusions** – pictures or objects that elicit perceptual “switch” between the alternative interpretations. An example is the Necker cube. (Fig. 1.1)
- 2. Distorting or Geometrical-Optical Illusions** – characterized by distortions of size, length, position or curvature. An example is the Ponzo illusion. (Fig. 1.2)
- 3. Paradox Illusions** – generated objects that are paradoxical or impossible. Examples are M.C. Escher works. (Fig. 1.4)
- 4. Fictions** – when a figure is perceived even though it is not in the stimulus. (Fig. 1.3)

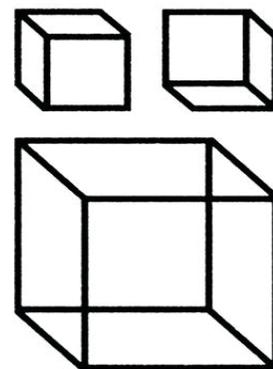


Fig. 1.1 - Hogenboom, M. (n.d.). How your eyes trick your mind. BBC Broadcasting House. (<http://www.bbc.com>)

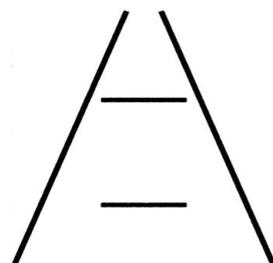


Fig. 1.2 - Hogenboom, M. (n.d.). How your eyes trick your mind. BBC Broadcasting House. (<http://www.bbc.com>)

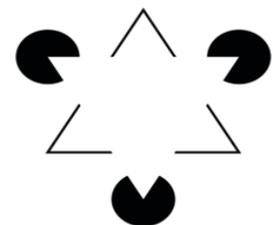


Fig. 1.3 - Kunizsa Triangle. Note. From *Feed Doppel*. (<https://feeldoppel.com/blogs/news/optical-illusions-explained>)



Fig. 1.4 - Belvedere, lithograph, 1958 by M.C. Escher.

Forced social interactions can be initiated via illusions in architecture. For example, a group of strangers recognizing the visual trickery together generates discussion. It focuses the thoughts and attention of all present to interact with structure and with one another. Conversation becomes necessary to confirm what every-one saw. To discuss how this illusion was achieved. Key terms correlated with social interaction are:

Dyad: A pair of things standing relation; dyadic relation.

Social Interaction: A social exchange between two or more individuals.

Social Group: A collection of humans or ani-

mals that share certain characteristics, interact with one another, accept expectations and obligations as members of the group, and share a common identity.

Social interactions can be differentiated into accidental, repeated, regular and regulated. These interactions form the basis for social structure and therefore are a key object of basic social inquiry and analysis. Ethnomethodology, a symbolic interactionism questions how people's interactions can create the illusion of a shared social order despite not understanding each other fully and having different perspectives.

Flat illusions are more definitive thus easier to decipher. Multidimensional illusions proposed within buildings can be trickier to achieve but may provide more tools at its disposal.

Based on the Oxford dictionary the term illusion is defined as "a thing that is or is likely to be wrongly perceived or interpreted by the senses", "a deceptive appearance or impression" and "a false idea or believe". Sight is the only sense used to trick the mind in 2D optical illusions. In 3D, the senses of touch, sight, hearing and smell can all be incorporated to enhance illusions.

Materials can be manipulated to trick the sense of touch. Fabric may be applied on walls to imitate the pattern of concrete. This will provide conflicting experiences. Humans are used to concrete being a strong and solid material with miniscule bumps evident of aggregate. The initial observation of sight will confirm this. But the second observation of

touch will prove otherwise, for the material will feel soft and smooth. The sense of sight will be dramatically enhanced in real life with the aid of time. For light will play a big role in triggering emotion. The sudden differences of light will allow the architect to trick the mind of onlookers just like stage directors do in plays, concerts and circuses. This has the most effect, for people tend to absorb more information in their immediate surroundings via visual intake. Natural sunlight has an opportunity to create precise shadows as well. Shadows that change with time. Perforated metal can skew the angle of light for example to either bring into focus the shadow or blur it. Sound is also a powerful tool that may be used to conjure and heighten emotion. It may also create conflicting responses with the addition of sight. For example, an omni sound of wind echoing in an evidently enclosed building triggers the confusion and therefor makes the illusion affective. The sense of smell is also very powerful in triggering old memories whether they are negative or positive. If a building is constructed away from nature using masonry or concrete, the odor of various trees and flowers can bring nature indoor. In ways this technique is being used currently and frequently. So, one may say it is an illusion of sorts.

PROBLEM STATEMENT

Today's architecture lacks character, a case of stripped identity. The "Modern" style has managed to remove all descriptive elements. As if nude, without clothing, reduced to bare minimum.

According to research by Zaretskaya, N., Anstis, S., Bartels, A. (2013) *"Grouping local elements into a holistic percept, also known as spatial binding, is crucial for meaningful perception. Previous studies have shown that neurons in early visual areas V1 and V2 can signal complex grouping-related information, such as illusory contours or object-border ownerships."*

Zaretskaya, N., Anstis, S., Bartels, A. (2013). Illusionism in Architecture. Anamorphosis, Trompe L'oeil and other Illusionary Techniques from the Italian Renaissance to today. (Bachelor of Architecture). Manchester School of Architecture, University of Manchester, Manchester Metropolitan University.

RESEARCH METHODS

CHAPTER II

PROBLEM WORDS

To identify buildings lacking artistic elements, a common visual language emerges. From this language, problem words are identified. Each of the five words are to be defined and addressed aesthetically. An opposing word is generated as a solution to the problem. Statements from published research papers pertaining to visual studies in architecture are listed within to provide further proof of the importance artistic designs have on building facades. Samples of enhanced exterior images are provided to showcase their uniqueness.

1. BORING – dull and monotonous.

- No visual stimulation generated from the aesthetic of facades.
- No mental stimulation is conjured by single colored, flat facades.
- No social interaction is created by spaces.
- Design is in abundance, thus decreasing the value of the property.

Opposing word: Stimulating.

Maust, Erica Janine (2013). Placing Color: Architectural Color & Facade Improvement Programs in Commercial Corridor Revitalization in Philadelphia. (Master's Thesis). University of Pennsylvania, Philadelphia, PA.

“Color impacts human perception of the environment. Changes in exterior color in the built environment through façade improvement programs signify change and can be powerfully motivating in depressed urban communities.”



Fig. 2.1 -Tromp L'oeil art by Patrick Commecy 1. Note. From *A-Fresco*, by Patrick Commecy (<https://www.a-fresco.com>)



Fig. 2.2 -Tromp L'oeil art by Patrick Commecy 2. Note. From *A-Fresco*, by Patrick Commecy (<https://www.a-fresco.com>)

2. REPETITIVE – cloned, template-based designs.

Opposing word: Gestalt.

- Cloned designs are profit based actions taken by architects.
- Profit over advancement keeps architectural development stagnant.
- Decrease in quality, increase in quantity is primary intent.
- No unique traits or attributes present in repeated patterns.
- Lazy effort carries no strategy nor seriousness to the table.

Schling E., Barthel R. (2020). Repetitive Structures. In: Gengnagel C., Baverel O., Burry J., Ramsgaard Thomsen M., Weinzierl S.

“Throughout the history of architecture, the use of repetitive building parts has been a key goal to simplify fabrication, ease construction, and save costs and time. This may be achieved by laying identical bricks or using identical ball joints, dividing a sphere into congruent triangles, or rationalizing a curved façade to only use planar glass panels. In any case, using repetitive parts inevitably effects the overall shape and layout of a structure.”



Fig. 2.3 - Mural art by Manuel Di Rita 1. Note. From *Peeta*, by Manuel Di Rita (<https://www.peeta.net>)



Fig. 2.4 - Mural art by Manuel Di Rita 2. Note. From *Peeta*, by Manuel Di Rita (<https://www.peeta.net>)



Fig. 2.5 - Mural art by Manuel Di Rita 3. Note. From *Peeta*, by Manuel Di Rita (<https://www.peeta.net>)

3. NO IDENTITY – lack of descriptive elements.

- No consideration for local culture, tradition, or customs.
- Styles seem borrowed, non-organic in creation.

Opposing word: Identity.

Lozanova, Sasha. Tasheva, Stela (2017). Inscriptions in architectural exteriors in the 20th century: style, image, semantics, functions, and symbolic features (Papers of BAS, Humanities and Social Sciences). University of Forestry & Institute of Art Studies, Bulgarian Academy of Sciences.

“Building inscriptions are a dynamic element, inextricably linked with both the architecture and all the changes in the social, political, ideological, and economic climate of the period.”



Fig. 2.6 - Mural art by Yuri Cansell 1. Note. From *Mantra*, by Yuri Cansell (<https://www.mantrarea.com>)



Fig. 2.7 - Mural art by Yuri Cansell 2. Note. From *Mantra*, by Yuri Cansell (<https://www.mantrarea.com>)



Fig. 2.8 - Mural art by Yuri Cansell 3. Note. From *Mantra*, by Yuri Cansell (<https://www.mantrarea.com>)

4. NO CHARACTER – no distinctive quality.

- Lack of artistic elements in modern facades diminish unique qualities.
- Character is built through memories, standing out requires drastic visual shift from adjacent and local buildings.

Opposing words: Character. Novelty.

Kunawong, Chalay (1986). *The Study of Responses to Architectural Exteriors by Architectural and Non-Architectural Students*. (Ph. D). The Ohio State University.

“Three variables which are Order, Simplicity, and Novelty affected the judgements on building exteriors. Therefore, a designer’s attention should be given to these variables for visual satisfaction. For example, to increase preference Arousal, Order and Novelty in the building facades should be increased and to increase Arousal, Simplicity should be decreased.”



Fig. 2.9 -Tromp L'oeil art by Patrick Commecy 3. Note. From *A-Fresco*, by Patrick Commecy (<https://www.a-fresco.com>)



Fig. 2.10 - Mural art by David Louf. Note. From *Mr. June*, by David Louf (<https://www.mrjune.com>)

5. NO REPRESENTATION OF PROGRAM -
no indication of its purpose.

- Facades are void of symbols, text and colors giving no indication of the program.
- When there is no hint of interior use indicates a failure in design or an intentional approach.
- No visual introduction of the building eliminates the idea of promenade and mutes the idea of exploration.

Opposing words: Storefronts. Visual introduction. Context.

Findley, L. (2005). *Building Change: Architecture, Politics and Cultural Agency*. New York, NY: Psychology Press.

“I had never seen a building that looked like this. It was like a dream of a distant planet, or a glimpse of a different future. And yet, its uncanny beauty persisted as I approached and only became muted as I entered and began to wander through the exhibition rooms with the crowd of other awestruck visitors.”

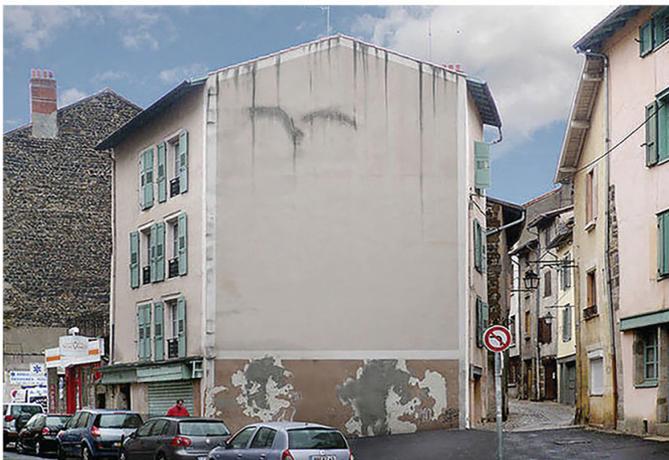


Fig. 2.11 -Tromp L'oeil art by Patrick Commecy 4.
Note. From *A-Fresco*, by Patrick Commecy (<https://www.a-fresco.com>)



Fig. 2.12 -Tromp L'oeil art by Patrick Commecy 5.
Note. From *A-Fresco*, by Patrick Commecy (<https://www.a-fresco.com>)

CASE STUDIES

The identification of “Problem Words” are used as tools to search for case studies. Buildings that demonstrate matching terms to existing facades. The search radius for such buildings focused primarily on the County of San Diego, California. Buildings in densely populated cities that have an opportunity to improve the immediate urban environment by in turn improving the facades of their artistically lacking structures. Sites with high foot traffic, with unique characteristics/opportunities that allows for visual alterations to heighten the quality of the building.

Pachenga Arena San Diego, previously “Sports Arena”
3500 Sports Arena Blvd., San Diego, CA 92110

Info: A multi-purpose arena that is home to San Diego “Sockers” a national soccer team, the “Gulls” with the American Hockey League, the “Seals” with the National Lacrosse League and “Strike Force” with the Indoor Football League. Venue also hosts many live music events. Capacity is 16,100. Built in 1966.

Aesthetic: No visual stimulation from an entertainment complex. Fins on facade are underutilized. Lacks color to enhance visual appearance and give the building detail. Striped of design elements. Neutral off-white color makes structure boring and non-significant the opposite of its purpose. Using visual gravity one can paint a story. Establish a gravitational graphic using darker colors towards the bottom.



Fig. 2.13 - Aerial View of Pachenga Arena.
Note. From *Google Maps*, by Google
(<https://www.google.com/maps>)



Fig. 2.14 - Streetview of Pachenga Arena 1.
Note. From *Google Maps*, by Google
(<https://www.google.com/maps>)



Fig. 2.15 - Streetview of Pachenga Arena 2.
Note. From *Google Maps*, by Google
(<https://www.google.com/maps>)

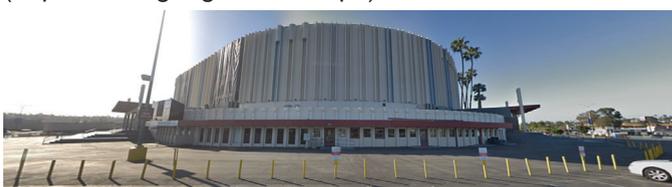


Fig. 2.16 - Streetview of Pachenga Arena 3.
Note. From *Google Maps*, by Google
(<https://www.google.com/maps>)



Fig. 2.17 - Streetview of Pachenga Arena 4.
Note. From *Google Maps*, by Google
(<https://www.google.com/maps>)

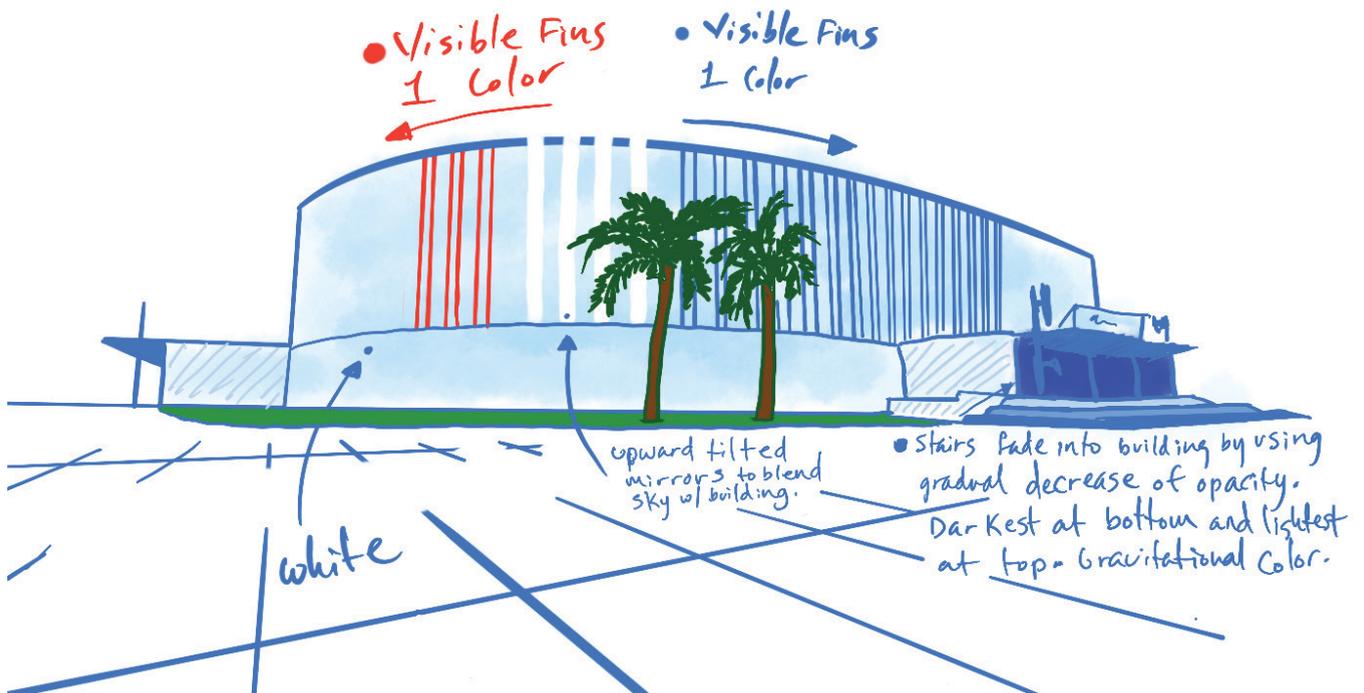


Fig. 2.18 - Digital sketch of fig. 2.14, facade analysis of Pachenga Arena.
 Note. Adapted From Google Maps, by Google
 (<https://www.google.com/maps>)

US Naval Military Sealift

937 N Harbor Dr. San Diego, CA 92132

Info: The Navy Broadway Complex is a bay-side military facility located in Downtown San Diego, California. It houses the primary offices of the Navy Region Southwest and is closely tied to regional United States Coast Guard operations. The Global Advanced Traceability and Control (ATAC) and function is housed in the Navy Broadway Complex. This building is of great significance. Harbor drive is a San Diego tourist hub. The Navy has a long history with the county. USS Midway is across the street. Airport is near. There is an opportunity to stand out and make a statement.

Aesthetic: Visually it looks un-appealing, un-tended, mix of architectural elements over the years that have been covered by white paint. Remanence of a confused aesthetic. Unclear of typology.



Fig. 2.19 - Streetview of Sealift 1.
Note. From *Google Maps*, by Google
(<https://www.google.com/maps>)



Fig. 2.20 - Streetview of Sealift 2.
Note. From *Google Maps*, by Google
(<https://www.google.com/maps>)



Fig. 2.21 - Streetview of Sealift 3.
Note. From *Google Maps*, by Google
(<https://www.google.com/maps>)

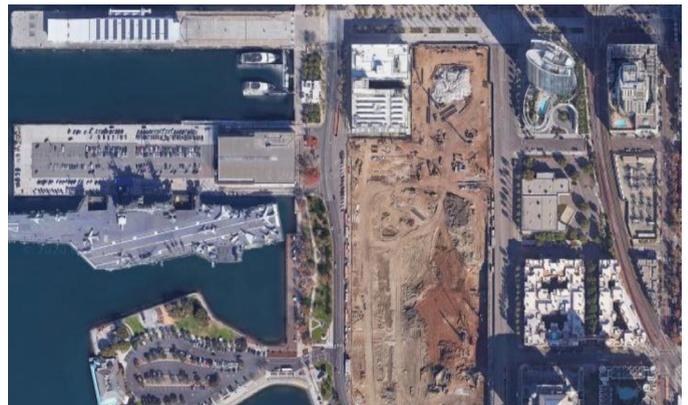


Fig. 2.22 - Aerial view of Sealift.
Note. From *Google Maps*, by Google
(<https://www.google.com/maps>)

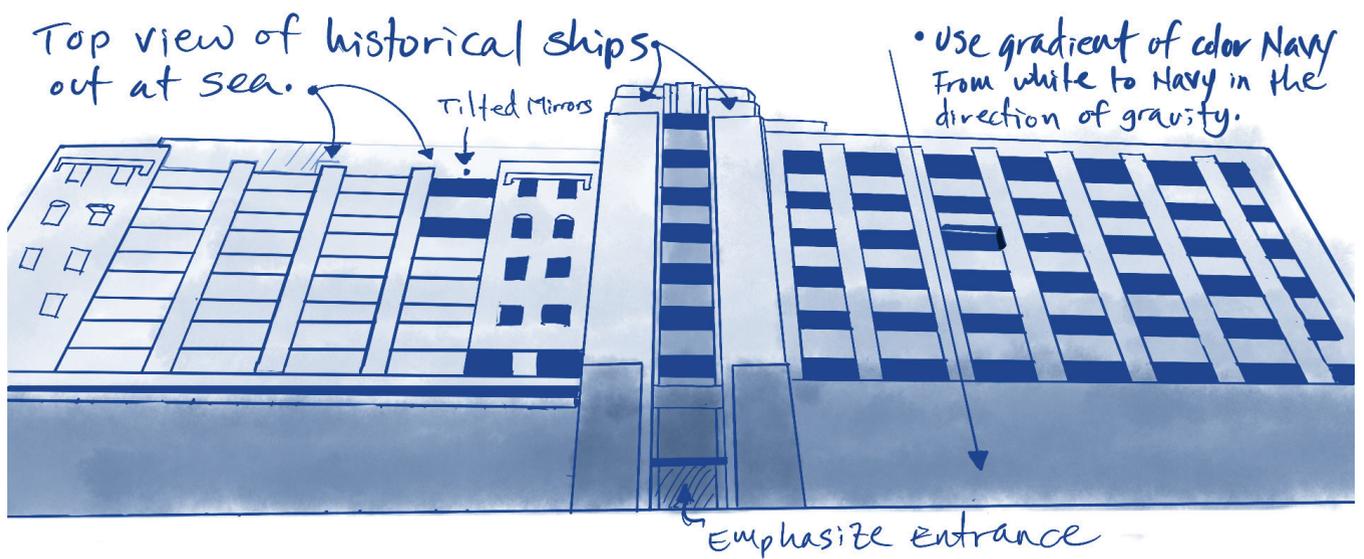


Fig. 2.23 - Digital sketch of fig. 2.19, facade analysis of Sealift.
Note. Adopted From *Google Maps*, by Google
(<https://www.google.com/maps>)

Port of San Diego

3165 Pacific Hwy, San Diego, CA 92101

Info: In charge of 34 miles of San Diego Bay waterfront along Chula Vista, Coronado, Imperial Beach, National City and San Diego. From Real Estate to Aquaculture and Blue Tech, the Port invests in major redevelopment and community infrastructure, competitive in the global market.

Aesthetic: Blank façade. A tower or prison like feel due to lack of windows at street level. Minimal to a fault. No representation of interior program. Un-inviting entrance. As if purposefully hidden, weird for a large public institution. Building design was clearly an afterthought. Structure must match its success.



Fig. 2.24 - Streetview of Port of SD 1.
Note. From Google Maps, by Google
(<https://www.google.com/maps>)



Fig. 2.25 - Streetview of Port of SD 2.
Note. From Google Maps, by Google
(<https://www.google.com/maps>)



Fig. 2.26 - Digital sketch of fig. 2.25, facade analysis of Port of SD.
Note. Adopted From Google Maps, by Google
(<https://www.google.com/maps>)

NewSchool of Architecture and Design

1249 F St, San Diego, CA 92101

Info: An award-winning & globally recognized architecture & design university. NewSchool is an innovative architecture, design, and construction management school located in San Diego, California, that offers a range of degrees for students looking to advance their careers in architecture, construction management, graphic design & interactive media, interior architecture & design, and product design.

Aesthetic: F Street is one of the gate ways into downtown San Diego. A visual introduction is necessary. Art always enhances urban communities. NSAD has an opportunity to make a design statement and stand out. Downtown is booming with redevelopment. Many adjacent buildings already utilize design elements. Immediate blocks also being constructed. No visual description of school. Subtle design can be extremely effective in making building more visually inviting and hint at programs offered.



Fig. 2.27 - Streetview of NSAD 1.
Note. From Google Maps, by Google (<https://www.google.com/maps>)



Fig. 2.28 - Streetview of NSAD 2.
Note. From Google Maps, by Google (<https://www.google.com/maps>)



Fig. 2.29 - Streetview of NSAD 3.
Note. From Google Maps, by Google (<https://www.google.com/maps>)



Fig. 2.30 - Streetview of NSAD 4.
Note. From Google Maps, by Google (<https://www.google.com/maps>)

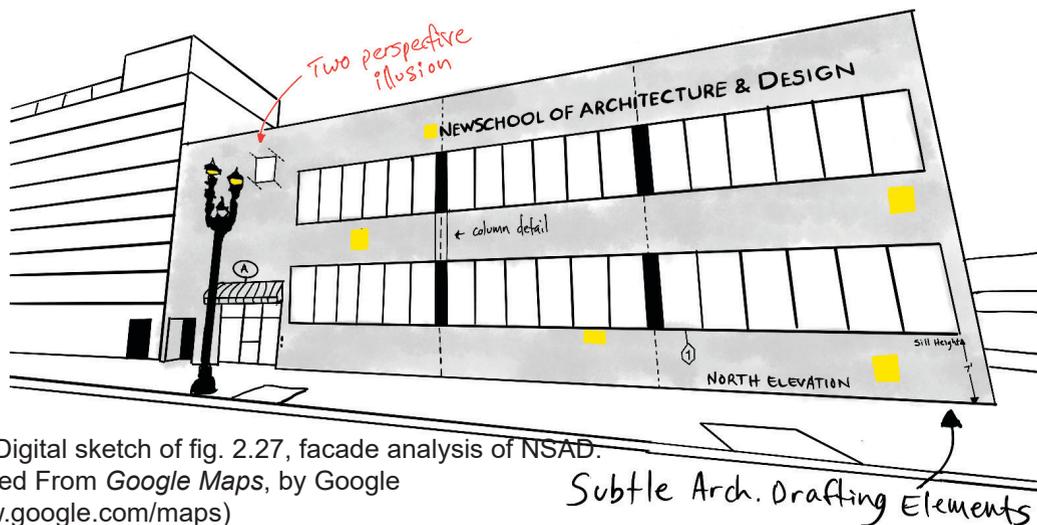


Fig. 2.31 - Digital sketch of fig. 2.27, facade analysis of NSAD.
Note. Adopted From Google Maps, by Google (<https://www.google.com/maps>)

Street Retaining Wall

Coast Blvd., La Jolla

Info: Busy road. Intro to La Jolla Cove. Tourist destination.

Aesthetic: Coast Blvd is a good intro to tourist attraction, La Jolla Cove. Simple flat text design with La Jolla themed scenes and context and can dramatically improve the aesthetic of this wall. Must be minimal and easy to read. Must not hinder driver's visual perception to avoid incidents. Elements from above should be intertwined with below to blend the two scenes together. To make it cohesive, a gestalt intent.



Fig. 2.32 - Streetview of Coast Blvd 1.
Note. From *Google Maps*, by Google
(<https://www.google.com/maps>)



Fig. 2.33 - Streetview of Coast Blvd 2.
Note. From *Google Maps*, by Google
(<https://www.google.com/maps>)



Fig. 2.34 - Digital sketch of fig. 2.33, facade analysis of Coast Blvd.
Note. Adopted From *Google Maps*, by Google
(<https://www.google.com/maps>)

CRITERIA

Based on the “Problem Words” and “Case Studies”, criteria are generated. The below table chart in (Fig. 2.35) indicates that Balboa Theater suffers from all five problem words. Making it an ideal site to attempt and improve the façade. Like other researched

sites, Balboa Theater has heavy foot traffic, and is centrally located in downtown San Diego, CA. It has a historical presence in the region and it considered one of the original buildings constructed in 1924.

	PROBLEM WORDS					
	Pachenga Arena San Diego	US Naval Military Sealift	Port of San Diego	NSAD	Retaining Wall, La Jolla	Balboa Theatre
BORING	X			X		X
NO REPRESENTATION OF PROGRAM		X	X	X		X
NO CHARACTER	X	X	X		X	X
NO IDENTITY		X	X			X
REPETITIVE	X				X	X

Fig. 2.35 - Table by author.

Balboa Theater

868 Fourth Ave, San Diego, CA 92101

Info: A historic vaudeville/movie theatre in downtown San Diego, US, built in 1924. Listed on the National Register of Historic Places, the Balboa was refurbished (beginning in 2005) and reopened as a performing arts venue in 2008.

- * Opened in March 1924
- * Designed by architect William Wheeler and constructed by the Wurster Construction Company for \$800,000, it opened as a vaudeville and cinema theatre.
- * During the 1920s, the theater presented a mixture of vaudeville performances and films.
- * After a 1934 remodeling, the theatre was reopened as El Teatro Balboa, featuring contemporary films from Mexico City, and presenting Latin stars to San Diego's increasingly diverse audience.
- * During World War II, the theatre's office space was reconfigured by the U.S. Navy into bachelor quarters for sailors waiting to ship out.
- * In 1959, when the Balboa was to be razed in favor of a parking lot, it was purchased by the Russo Family Enterprises, remodeled, and operated by the Fox chain.
- * The Russo family took over its operation in 1976 and eventually leased it to Walnut Properties, which operated the Paris Pussycat Theatre nearby. Though no X-rated films ever were shown at the Balboa, its management by Walnut further tarnished its reputation at a time when downtown theaters were being demolished wholesale in the name of redevelopment.
- * The City of San Diego purchased it in 1986.
- * In 1996 the Balboa Theatre Foundation nominated the Theatre to the National Register of Historic Places to save both the interior and exterior of this community asset.
- * The Balboa Theatre was closed for over twenty years until the City's Redevelopment Agency made the commitment in 2002 to retain the Theatre as a public asset and fully fund its \$26.5 million restoration and rehabilitation. The Theatre would be reopened in 2008 as a community performing arts center to be managed by San Diego Theatres.

Aesthetic: The site hits all problem words. From the exterior it is not evident what the building is. Façade has hints of artistic elements but seems to have been coated with one color to try and imitate the boring modern style and in the process lost its historical characteristic. Clearly this does not enhance the aesthetic of the building. Ultimately the theater is an art venue, yet no artistic elements are displayed on the exterior. The site is a prime location, a busy street that hosts many locals and visiting tourists aiming to experience the city. Horton Plaza is in the process of being redeveloped thus bringing much more foot traffic to the area. Immediately adjacent is the recently completed Horton Plaza Park. There is an opportunity here to make a statement about art, San Diego, and its history. To promote a social urban dynamic and local pride.



Fig. 2.36 - Streetview of Balboa Theater 1.
Note. From Google Maps, by Google
(<https://www.google.com/maps>)



Fig. 2.37 - Streetview of Balboa Theater 2.
Note. From Google Maps, by Google
(<https://www.google.com/maps>)



Fig. 2.38 - Streetview of Balboa Theater 3.
Note. From Google Maps, by Google
(<https://www.google.com/maps>)



Fig. 2.39 - Streetview of Balboa Theater 4.
Note. From Google Maps, by Google
(<https://www.google.com/maps>)



Fig. 2.40 - Digital sketch. Aerial view of Balboa Theater 1.
Note. Adopted From Google Maps, by Google
(<https://www.google.com/maps>)



Fig. 2.41 - Digital sketch. Aerial view of Balboa Theater 2.
Note. Adopted From Google Maps, by Google
(<https://www.google.com/maps>)

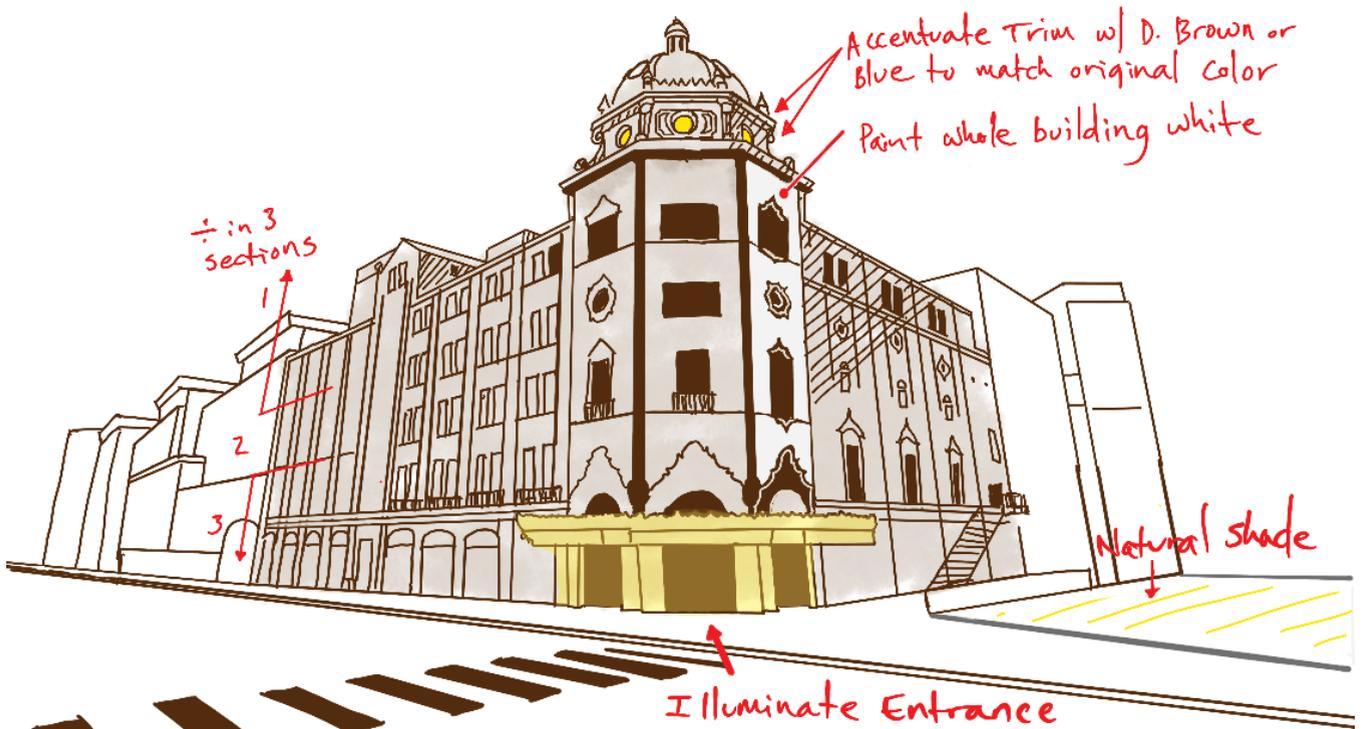


Fig. 2.42 - Digital sketch of fig. 2.37, facade analysis of Balboa Theater 1.
 Note. Adopted From *Google Maps*, by Google
 (<https://www.google.com/maps>)

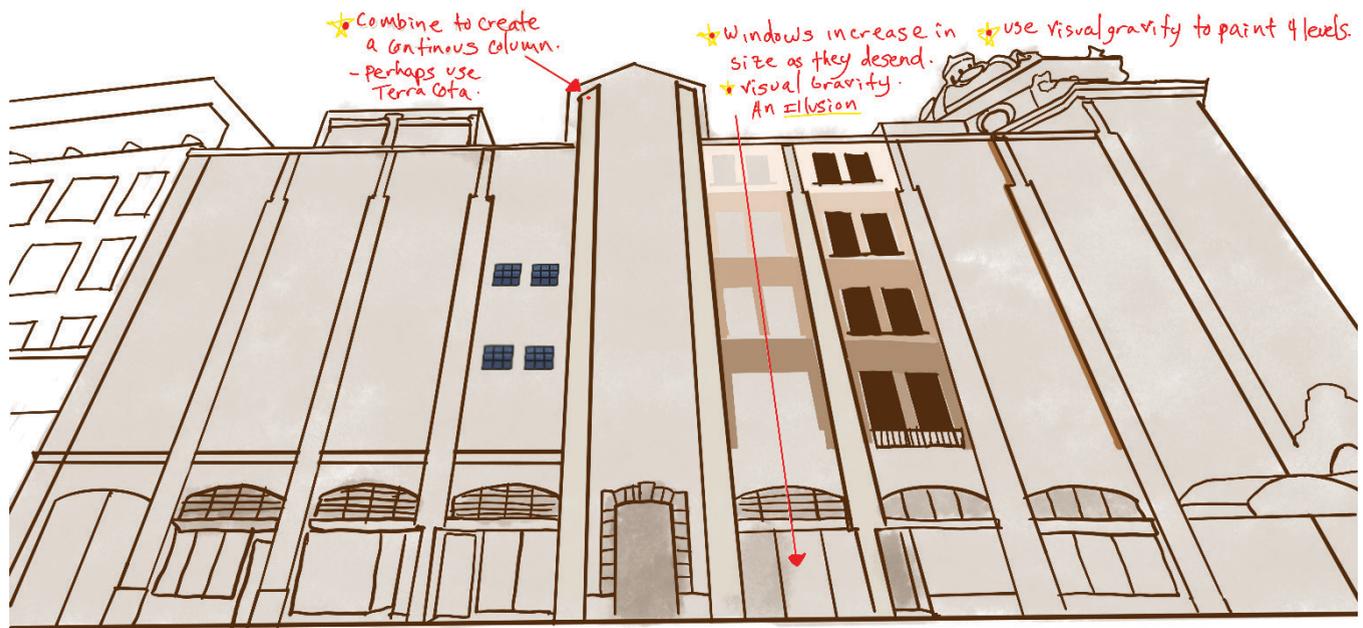


Fig. 2.43 - Digital sketch of fig. 2.36, facade analysis of Balboa Theater 2.
 Note. Adopted From *Google Maps*, by Google
 (<https://www.google.com/maps>)

SUMMARY

All selected sites share a commonality, a lack of design aesthetic. The facades are very minimal, no description of program. No eagerness to provide visual stimulation. No intention of generating social gatherings.

If the intent were to hide or decrease significance of building, then goal is achieved. But these sites are all located in tourist driven hotspots. They play a significant role in the community.

Facades of “Modern Architecture” have currently no representation of program. Good representation is essential, a company must display its might through architecture. The success should match the appearance. Instead today's architecture has no character, no indication of mood. When creating a visually dynamic city, one must be unique, original, and forward thinking in their design. It ties into this deep thought of future and progress, a psychological optimism of sorts. Like a positively creative destination sought by locals and foreigners.

Tourism is a terrific economical factor. Boring facades hinder this thought. Local identity and pride must be displayed in urban driven concepts to increase social interaction. An important human activity. An ethnically diverse county such as San Diego demands various locations for all to meet and talk. Architects must compose such scenes in a calculated effort to produce interactions at various destinations. Creating a promenade using design hierarchy will encourage conversation and raise status of space.

Dense urban communities are ideal for such architecture. Destinations that allow social gatherings are also ideal sites. Locations

that incorporate such design aesthetics depend on foot traffic. There is an opportunity for exposure, for vibrant display of art by local artists naturally providing organic promotions. This will help areas that lack identity. Facades must conjure excitement, must provide visual stimulation. Subtle optical illusions play an evident role.

Typology has a role. Not all facades need to make a statement. Some intentionally seek to provide a calming experience by having a monotone color or pattern less design on exteriors. It does not make any sense to create a visually dynamic façade in rural residential neighborhoods. Like clothing, aesthetically pleasing design should represent the interior spaces and program intent. Excess has crippled and killed many architectural styles. So, one must be very aware of this and aim to create a visual balance, a subtleness of sorts so not to overwhelm passersby.

Repetitive design discourages free imagination. Artistic elements like shapes, colors and lines sprout the imagination of children and young adults. Patterns create positive psychological understanding of design basics. So, one can argue that facades are silent art teachers. Planting visual seeds for those who seek the thrill of art.

CRITICAL ANALYSIS

As the research advances and strategies are re-evaluated. A realization has occurred. Keeping the research narrow to only existing building facades seemed to limit the potential new strategies one can generate. By initiating the design of a typology specific to site early, allows the architect to use illusionary geometry and techniques to compose a cohesive visual language that ties the collective masses to a

central theme. To do so, a study into the implementation of successful 2D optical illusions on 3D masses is to be explored via sketches and notations as a means of a generative process. Intent is to recognize existing architectural illusionary techniques and attempt to discover new strategies that produce similar results.

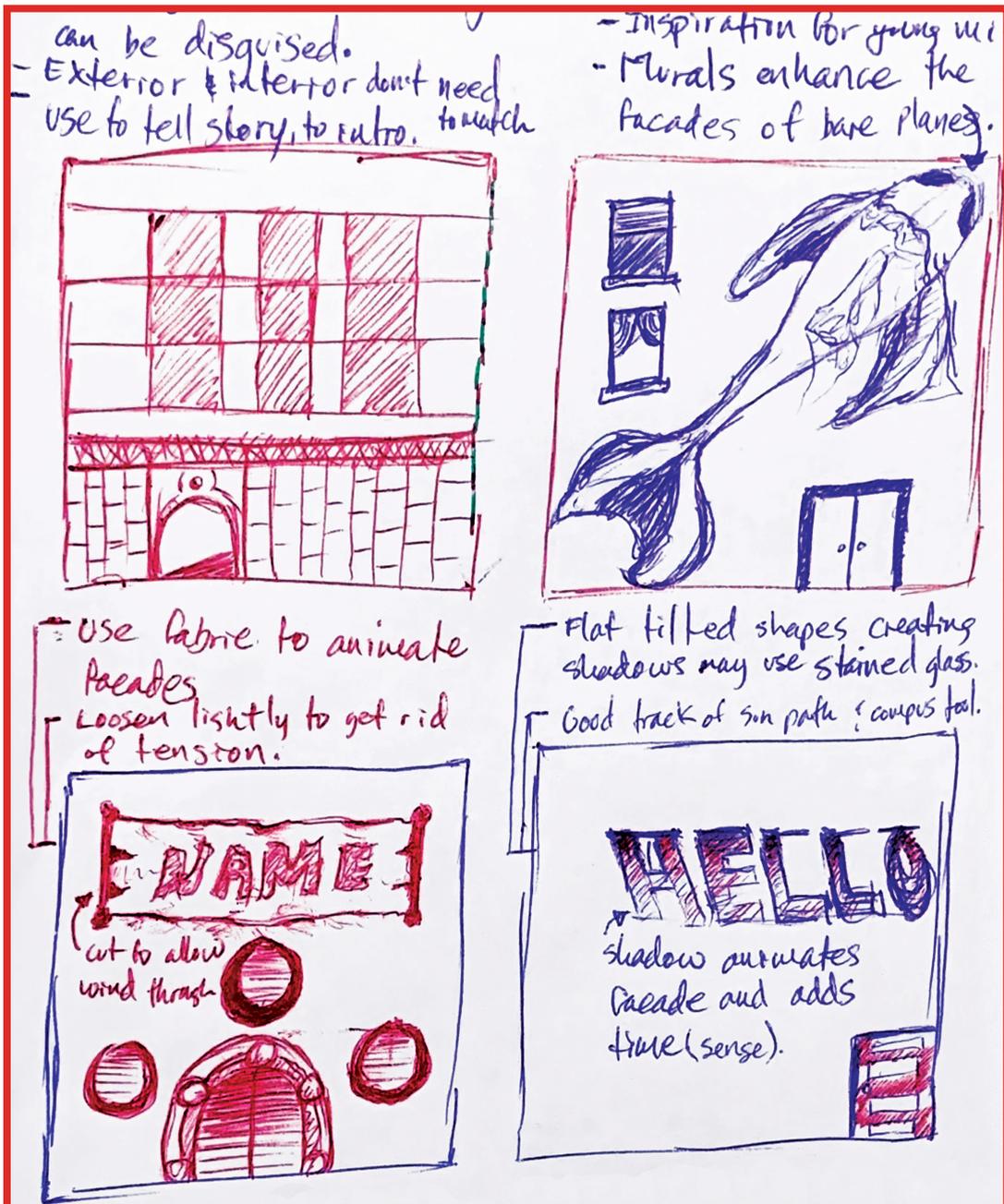
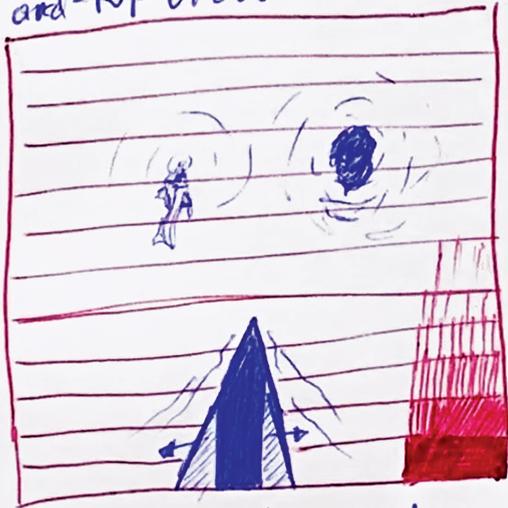


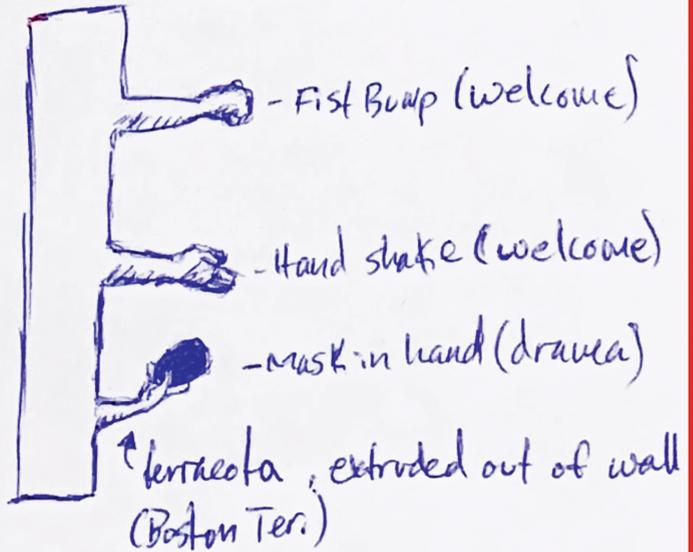
Fig. 2.44 - Critical Analysis Sketch 1 by author.

- Visual perspective shift is easy when breache can be both in elevation and top view.



- Create visual gravity by increasing opacity closer to ground level.
- Darker colors towards the bottom, they indicate heavy and fitness that adding visual weight.

- Place near entrance as a welcoming gesture.
- Hand move along w/ accessory determines a hint at typology.



- Extruded entrance creates an opport. to have a procession, a gradual visual build up. A story using architecture.

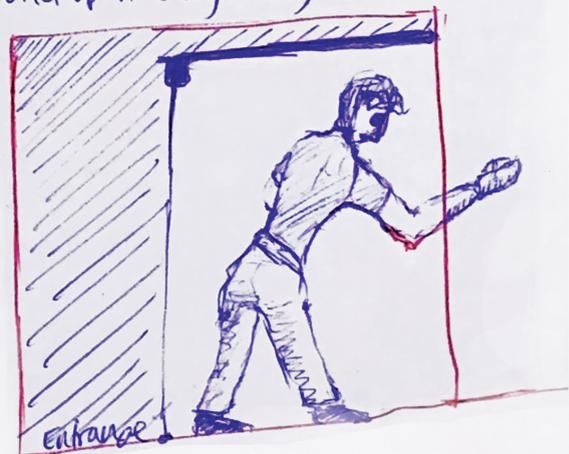
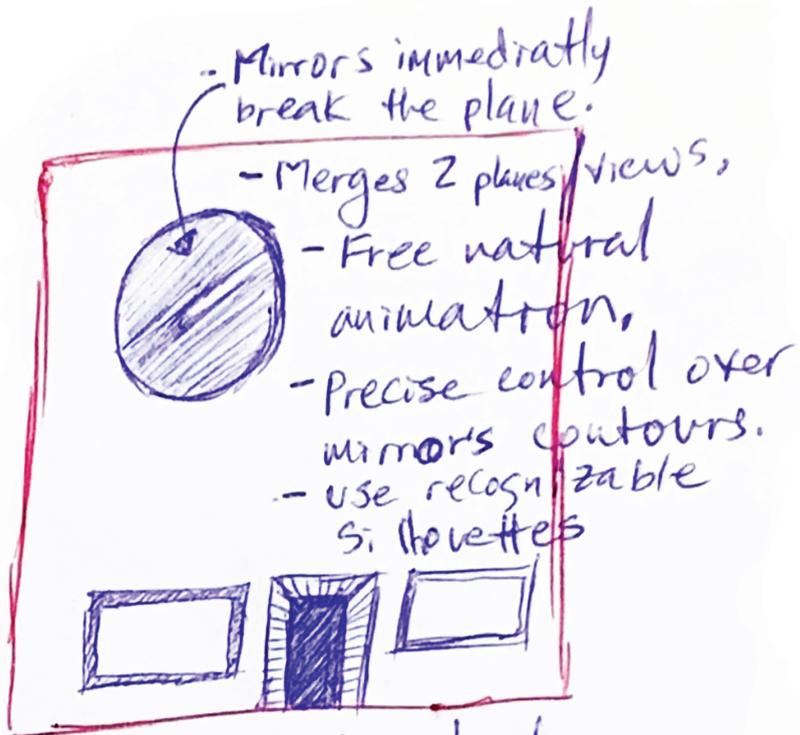
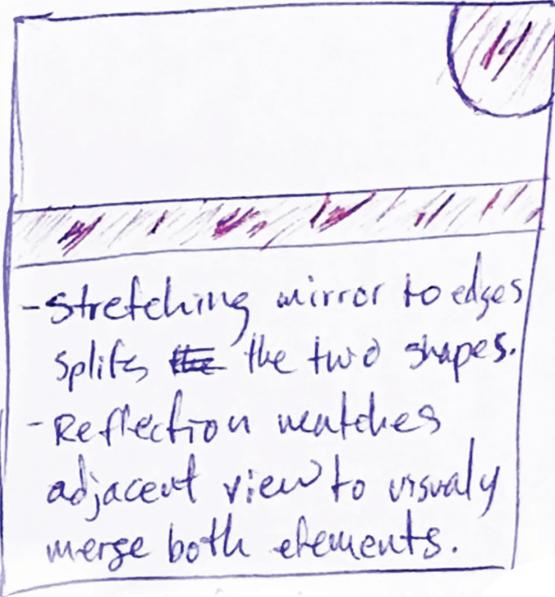


Fig. 2.45 - Critical Analysis Sketch 2 by author.



- Reflective material is to plexiglas, what ink is to paper.
- Top corner placements allow to bleed



contours of mirror to sky.

- Stretching mirror to edges splits ~~the~~ the two shapes.
- Reflection matches adjacent view to visually merge both elements.

Fig. 2.46 - Critical Analysis Sketch 3 by author.

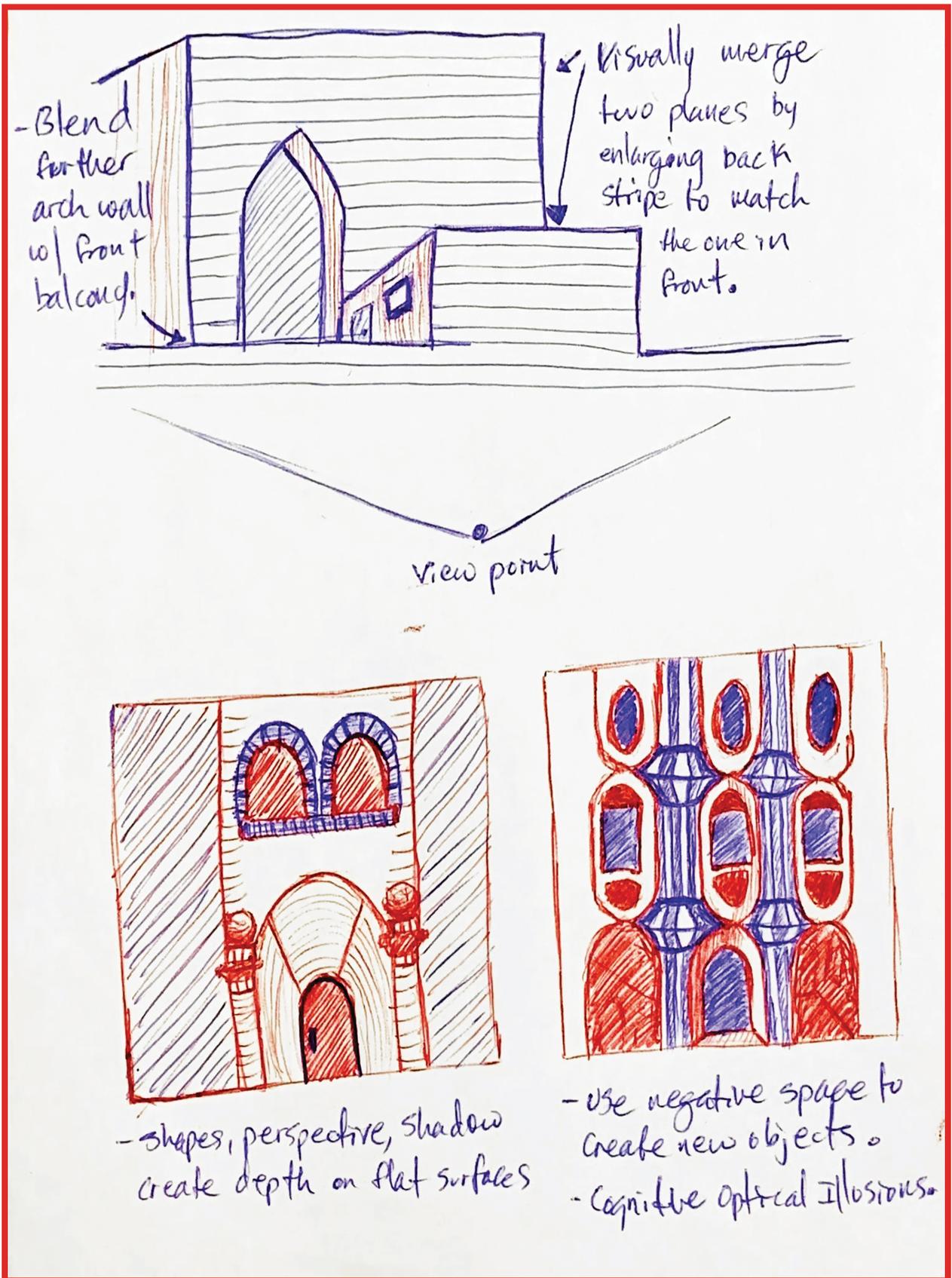


Fig. 2.47 - Critical Analysis Sketch 4 by author.

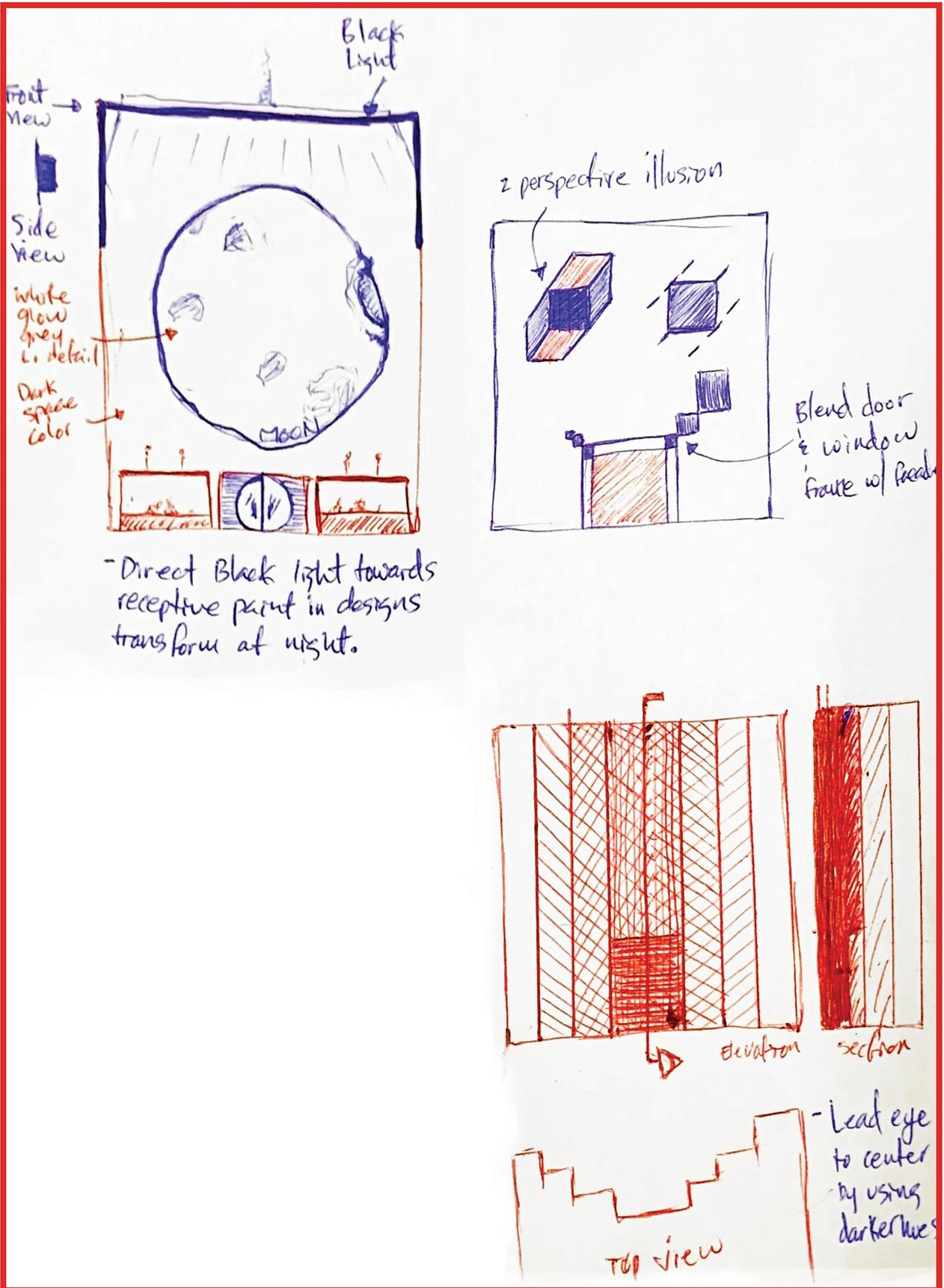


Fig. 2.48 - Critical Analysis Sketch 5 by author.

THOUGHTS ON 501

The research format for AR501 has immensely helped focus the optics of Illusion-al Facades. Having the topic broken down into smaller subcategories helped organize thoughts related to approach and process. It also created tons of material that proved essential in the final gathering of information. Citations helped anchor the hypothesis and prove the theory has teeth backed by published articles and papers. The biggest welcomed challenge was not jumping ahead and providing solution. Instead spending more time cementing the problem thus providing a clear direction going forward to 502 and 503. I had to always remind myself that I alone have self to blame if output is not to par, for I dictate the pace, direction, and intensity of research. I am satisfied with progress made thus far and confident that the next two quarters will sprout organic and creative results.

**RESULTS /
DESIGN PROTOTYPE**
CHAPTER III

MASSING STUDY

A massing study will further explore the Ideas produced from the previous critical analysis findings. To implement found design tricks. To decipher whether proposed theories can truly be applied and if limitations exist. The basic geometrical shape of proposed building, the “parti” contributes a great deal to the number of opportunities an architect has on spaces with herein proposed mass studies.



NECKER CUBE

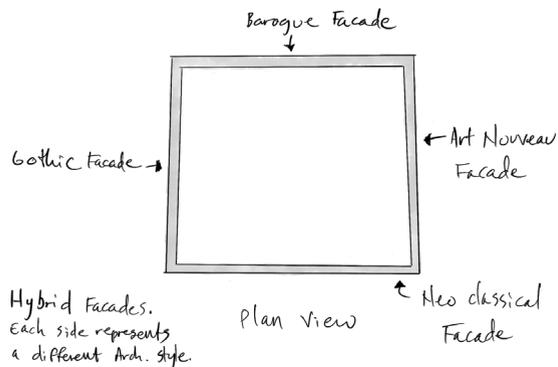
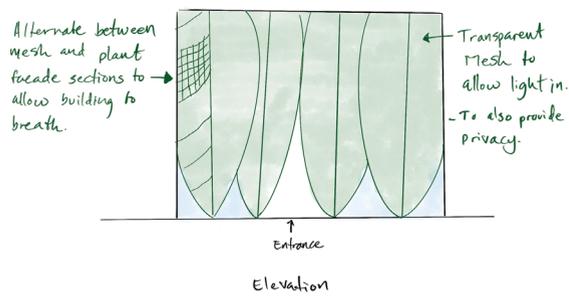
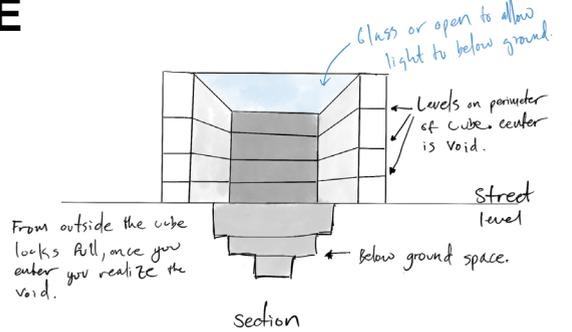


Fig. 3.1 - Model, illustration, & photograph by author. Necker Cube.



SLICED TARGET

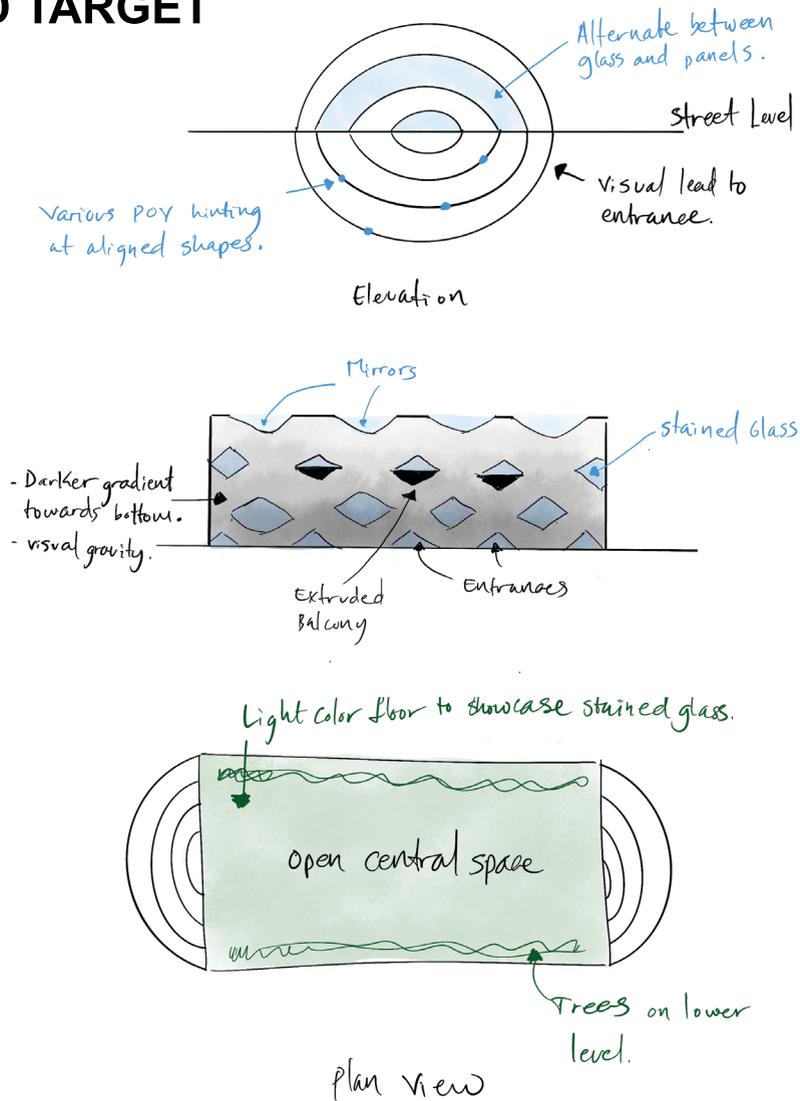
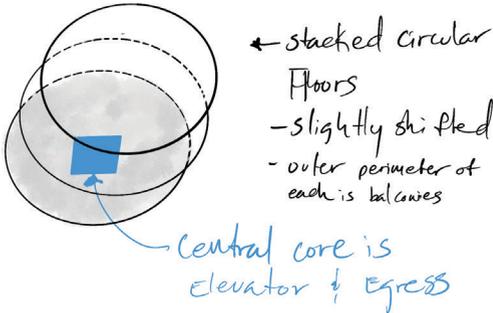
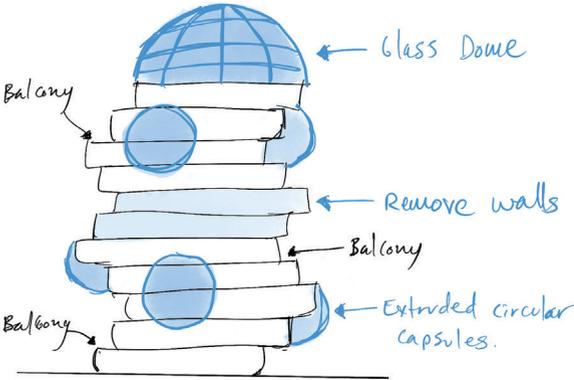


Fig. 3.2 - Model, illustration, & photograph by author. Sliced Target.



ROLLED THREAD



Plan View

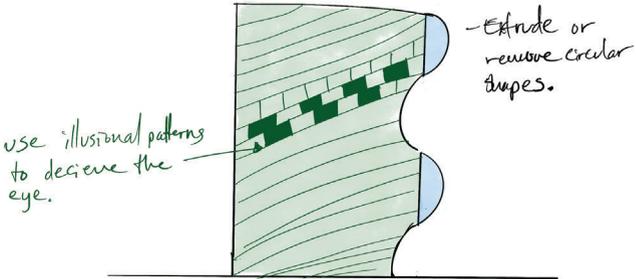
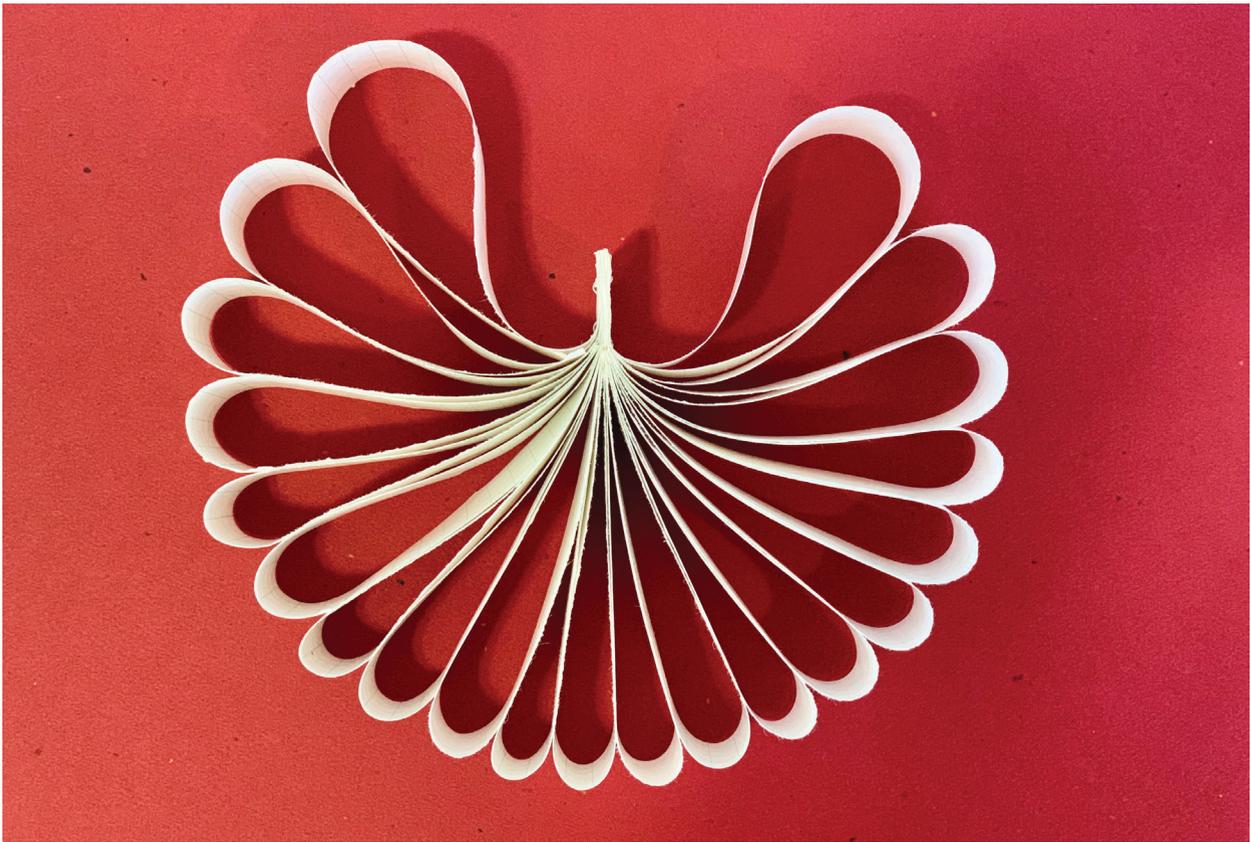
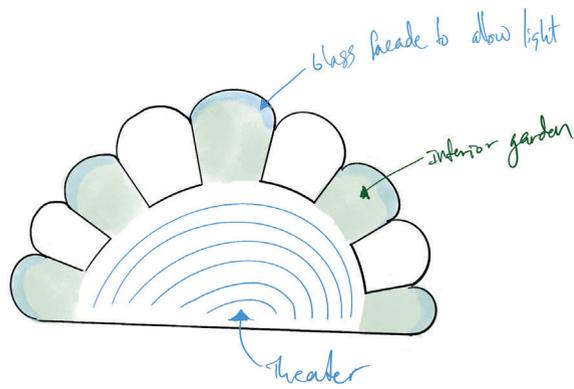


Fig. 3.3 - Model, illustration, & photograph by author. Rolled Thread.



FANNED



Plan view

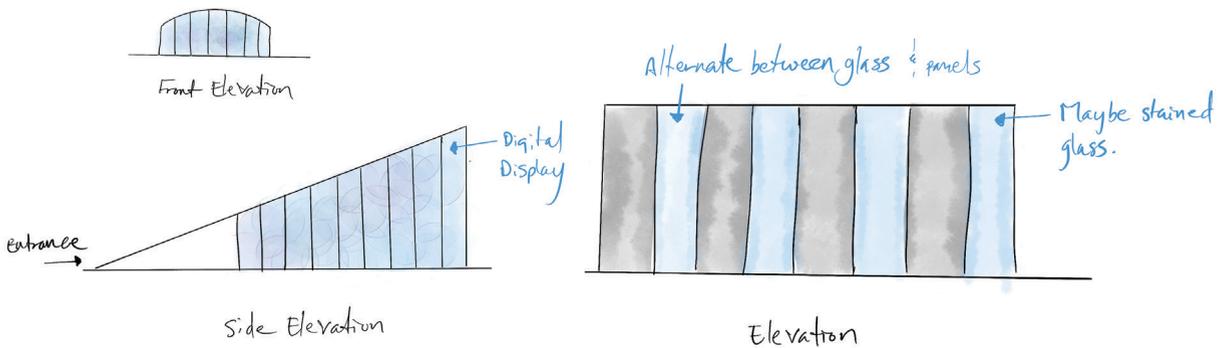


Fig. 3.4 - Model, illustration, & photograph by author. Fanned.

TYOLOGY, OCCUPANCY & PROGRAM MATRIX

To showcase all existing and proposed optical illusions into a single piece of architecture, a typology must be chosen that indicates a relation to the subject discussed. The most fitting approach would be to design an illusion museum that pays tribute to all existing and past artists that have produced illusion themed artworks throughout history. While also implementing newfound illusional techniques within the architecture itself. This will announce an artistic statement in architecture to the San Diego residents and beyond. A thought-provoking destination that encourages social interaction and advocacy for the arts.

A current open parking lot taking up a full block on N. Harbor Dr between W. Grape St. and W. Hawthorn St. on the West side edge of downtown San Diego, CA. Is an opportune site that includes many positive elements. Adjacent to the San Diego Administration Building and N. Embarcadero, an area high in vehicular and foot traffic. A tourist destination due to its close walking relation to Petco Park, Convention Center, Seaport Village, Little Italy, USS Midway, and other museums of historic ships. A few blocks from San Diego International Airport, sandwiched between W. Grape St. and

W. Hawthorn St., two roads heavily used by airport visitors, thus allowing for an opportune push to build an iconic building, welcoming visitors to San Diego. The two intersections on N. Harbor Dr west of the lot have notoriously high waiting times. Always congested with intersecting cars and crossing pedestrians. A proposed effort to resolve this traffic issue proposes taking roads adjacent to lot, West of Pacific Hwy. down to -20' elevation allowing for a continuous traffic flow underground. While, also allowing people to walk around freely above, at ground level without worries of vehicular dangers. An attempt to reclaim parts of N. Harbor Dr. for public use.

An Occupancy Group (Fig. 3.5) can now be defined, now that the typology and site are selected. Next, identifying the program's total square footage and buildable area is crucial, along with developing spaces within the program adhering to the various departments needed for museum to function at a high level. A program matrix (Fig. 3.6) is developed to organize these spaces within their respective calculated areas to determine scale adjacencies as masses are arranged in a hierarchical pattern on site.

OCCUPANCY

Assembly Group A-1 per 302.2 is for assembly areas, usually with fixed seats, intended for the the viewing performing arts or motion pictures. The presence of absence of a stage is not calssified in this occupancy will have fixed seats.

Function of Space	Floor Area in Square Feet Per Occupant*
Assembly Concentrated	5 Net
Standing Space	15 Net

Total Occupant Load:

Theater w/ 9,900 SF ÷ 5 Net = 1,980 Occupants

2D Masters Gallery w/ 6,300 SF ÷ 15 Net = 420 Occupants

Fig. 3.5 - Occupancy table by author.

PROGRAM MATRIX

Lot size is 120,000 SF. Reclaimed road is 30,000 SF.
 Total is 150,000 SF.
 60% Buildable area is 90,000 SF
 30% Outdoor area is 45,000 SF
 10% Circulation area is 15,000 SF

Public	SF
Lobby	1,000
Information Desk	500
Administration	1,000
Total	<u>2,500</u>

Info	
Theatre	9,900
Gift Shop / Bookstore	2,400
Library	1,000
Workshop	1,000
Coffee Shop	800
Total	<u>15,100</u>

Galleries	
Youth	2,000
Interactive	4,600
Trompe L'oeil	5,400
2D Masters	6,300
Anamorphic Design	3,000
Shadow Art	3,400
Total	<u>24,700</u>

Support	
Collection Storehouse	6,020
Electrical	500
Computer Network	500
Security Office	500
Restrooms	1,200
Total	<u>8,720</u>

Circulation	
Terrace	5,000
Stairs / Elevators	1,000
Total	<u>6,000</u>

TOTAL BUILDABLE	57,020
------------------------	---------------

Underground	
Parking	118,000
Loading Dock	2,000
Mechanical	500
Total	<u>120,500</u>

Restaurant / Brewery On the Pier	5,000
-------------------------------------	-------

Fig. 3.6 - Program matrix by author.

PROGRAM STUDY

A program study (Fig. 3.7) using bubble diagrams aids in determining best placements, adjacencies, and orientation of masses. To initiate the development of a promenade of some sort, a gradual introduction to the site. Developing a storyline of the museum, gifting

it character, a uniqueness. Various options were explored to maximize on this idea. Views of the San Diego Bay and the wind patterns arriving through bay are to be taken into consideration.

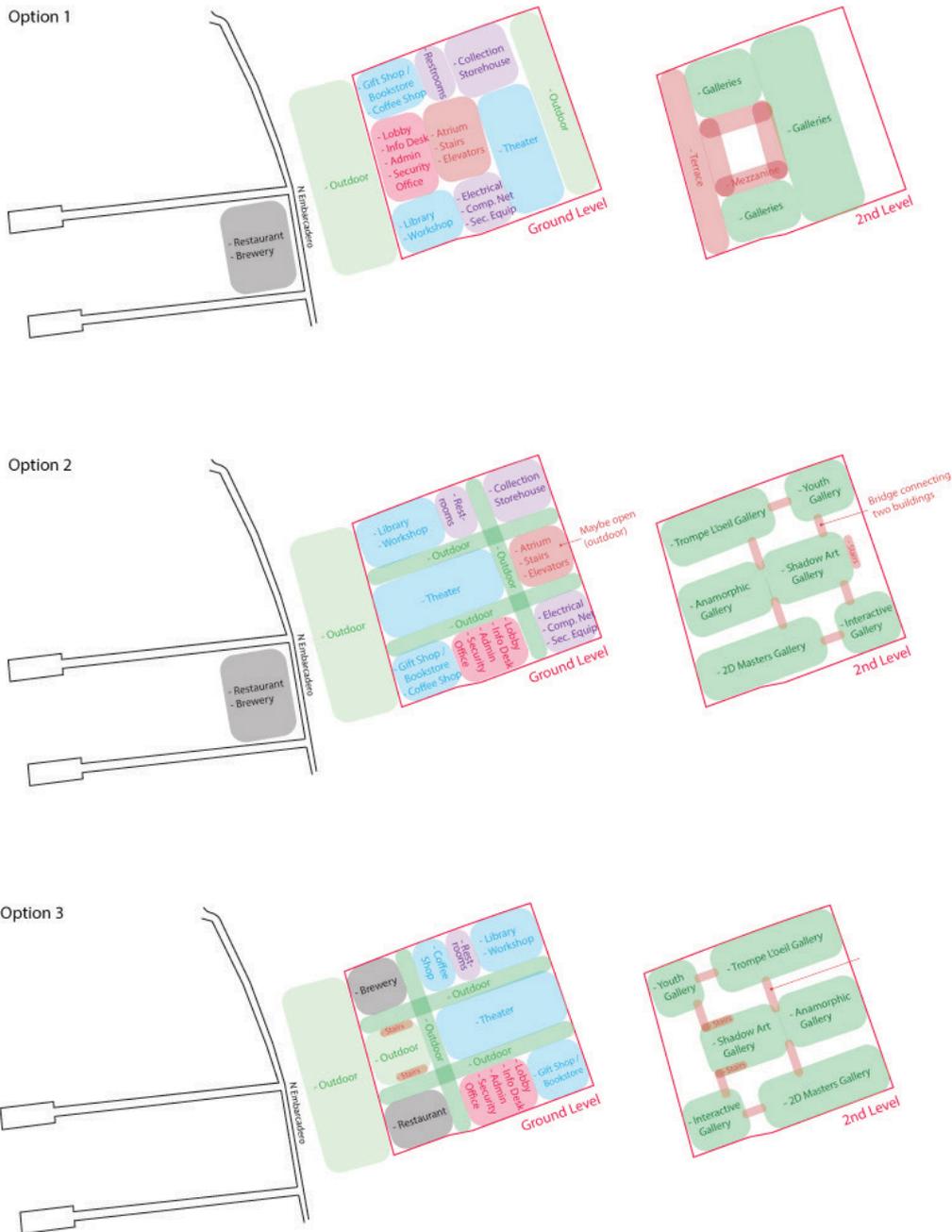
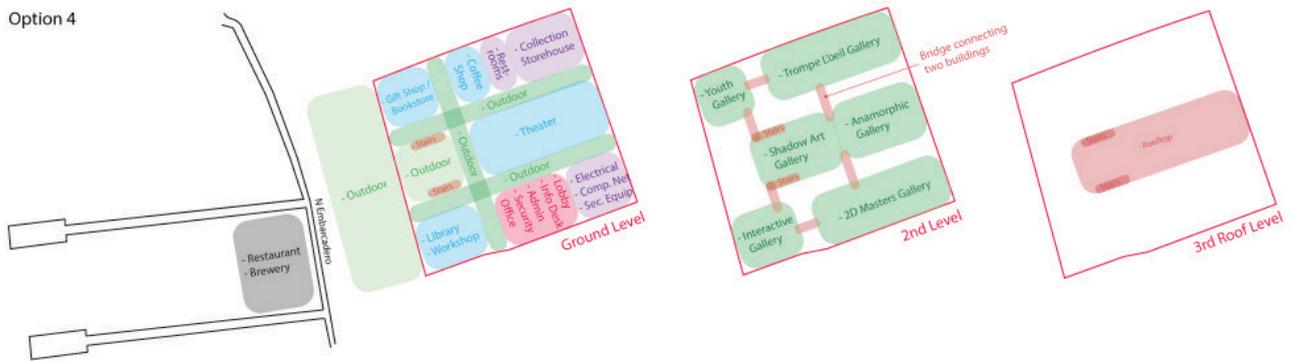


Fig. 3.7 - Illustration of program study 1 by author.

Option 4



Option 5

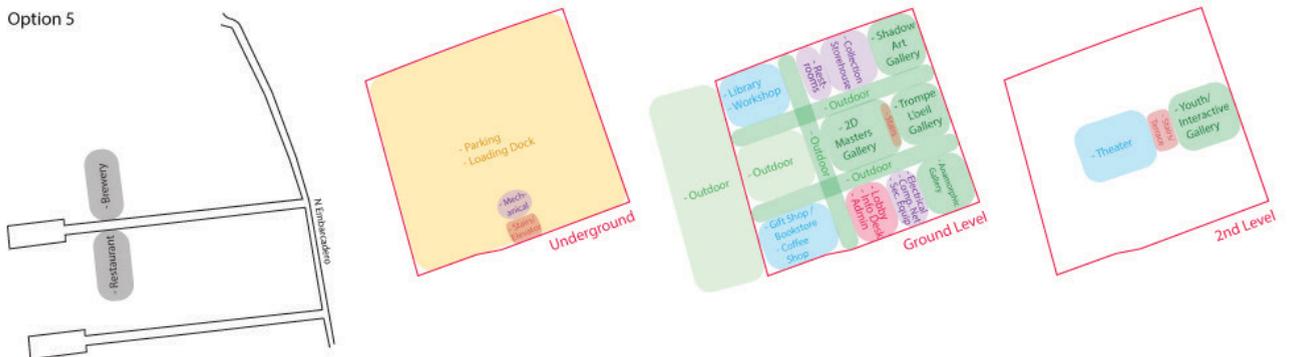


Fig. 3.8 - Illustration of program study 2 by author.

TRAFFIC ANALYSIS

The Traffic Analysis (Fig. 3.9) works to identify current traffic issues surrounding property. Nestled between two busy streets used to access San Diego International Airport from the I5 Freeway that runs up and down the Southern California coast. W. Hawthorn St. is used by drivers exiting the I5 Freeway heading towards the San Diego International Airport. W. Grape St. funnels drivers back from the airport via N. Harbor Dr. to merge them back onto the I5 Freeway.

The parcel exists between these two streets and a drastic move is required to reclaim the partial length of N. Harbor Dr. along the West side of the lot facing San Diego Bay. Ultimately the decision was made to funnel traffic underground as roads intersect on the West side. Parking structure will also be underground allowing for vehicle access without disturbing visitors above on foot.

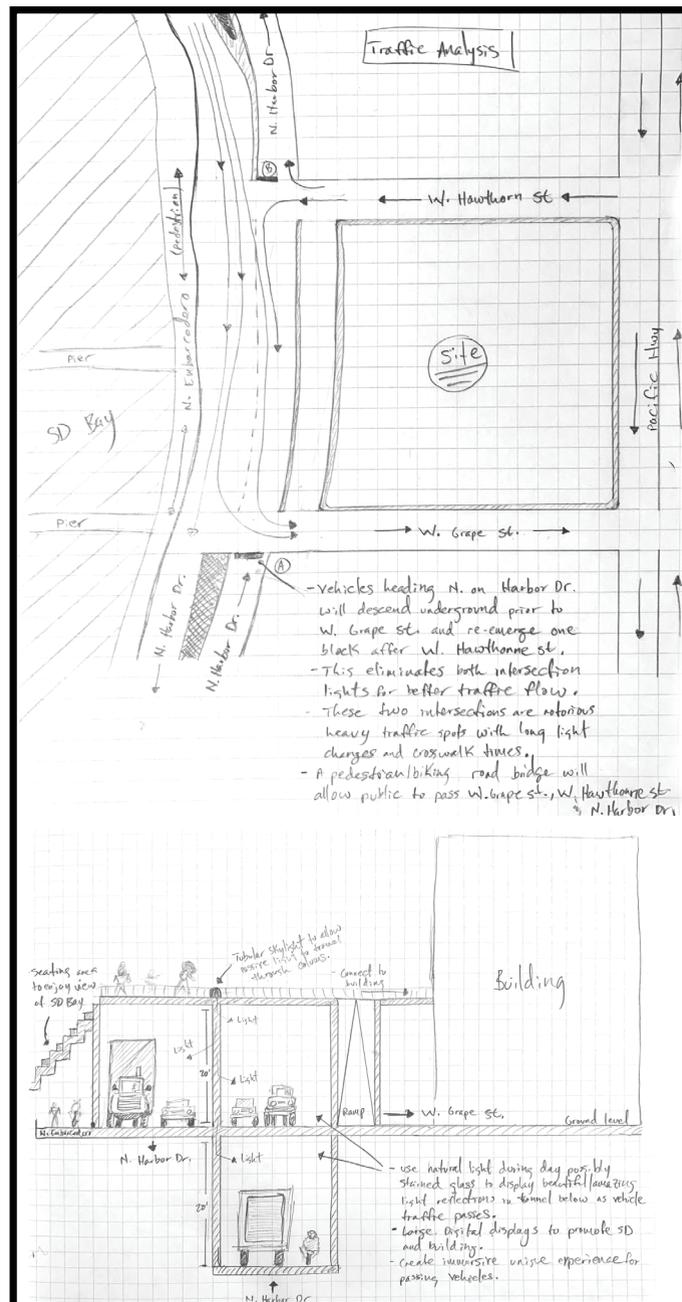


Fig. 3.9 - Traffic analysis sketch by author.

SITE ANALYSIS

It is important to analyze the site (Fig. 3.10), to make an illustration of, or account of buildings nearby. This plan gives an overview of lot and immediate adjacencies of roads, landscape, and boardwalk. It visually clarifies

the sites placement among the other blocks. Placing it well into context as overlaid programs further bring into focus the intention of museum.

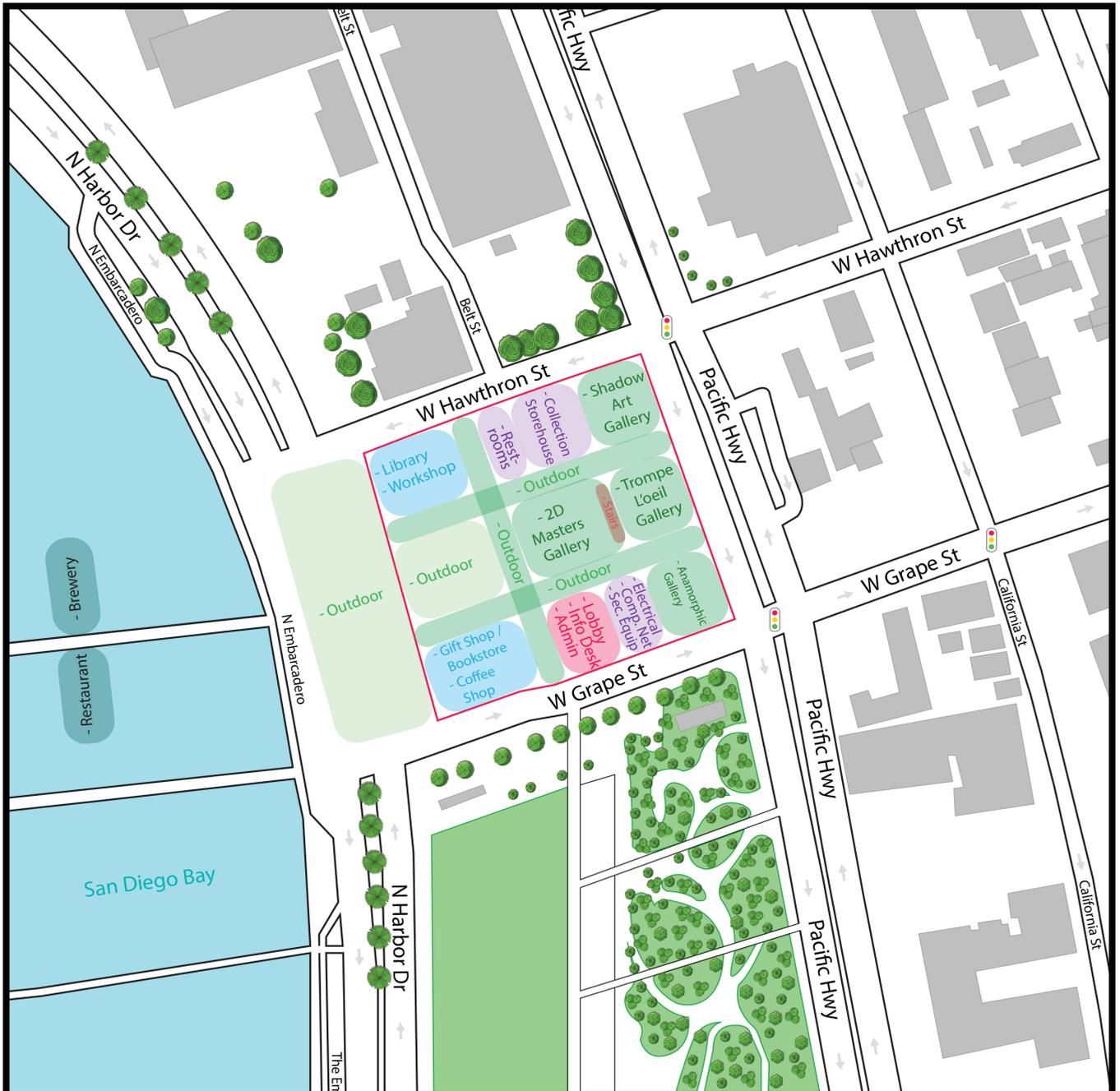


Fig. 3.10 - Site analysis illustration by author.

LANDSCAPE STUDY

It is essential that the design begins with an illusional theme. Now that the site and typology are chosen, and program is resolved. Integrating an illusional idea, a visual language of sort that anchors the overall concept to a single source is paramount to the theory proposed. Advice from Professor Daniel Manlongat proposed to begin with the landscape study (Fig. 3.12), for resolving the outdoor space in Master Plan can hint at or introduce new design elements to implement. Initiating the design in plan allows the architect to use flat geometric shapes that interact in a collective manner.

The Kanizsa Triangle (Fig. 3.11) by an Italian psychologist named Gaetano Kanizsa describes the triangle in 1955 as a visual illusion of a triangle without a corresponding retinal image. The idea is used as social nodes. Creating radial outdoor spaces that are sliced

by benches, following the contours of the imaginary triangle. The triangle ties the three spaces together visually and psychologically. By placing the benches within the corners of the triangle, the designer can control the visitor's point of view (POV). In this case, visitors are purposefully oriented towards one another within the node to encourage social relationships.

Placement of these nodes were aligned to a larger radial geometry that ripples out from the West side of the lot against the bay. Naturally, a hierarchy emerges, the individual trees centrally placed among spaces expand the further away they are from central point. Adding a psychological visual relation to expanding radial forms. Cohesively the trick works. The radial geometry was the basis for placing the program. A visual language reveals itself, it helps narrate and guide the rest of the design.

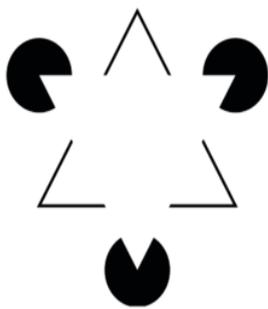


Fig. 3.11 -
Kunizsa Triangle.
Note. From *Feed Doppel*.
(<https://feeldoppel.com/blogs/news/optical-illusions-explained>)

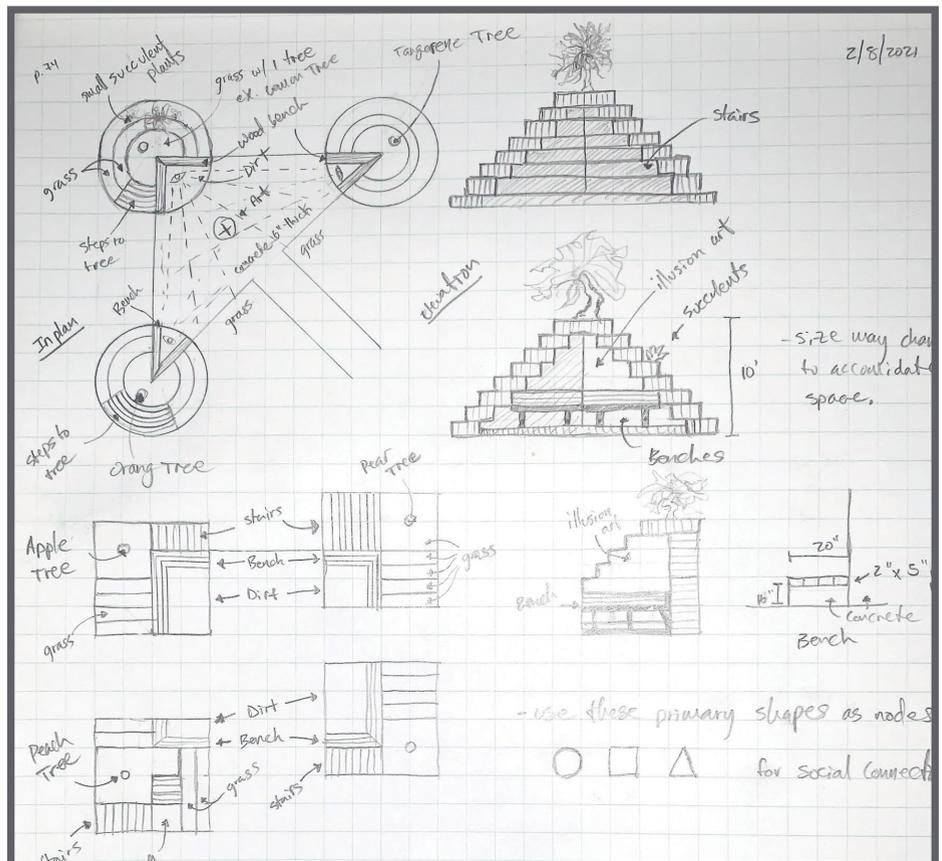


Fig. 3.12 - Landscape study sketch by author.

VISIBILITY STUDY

Optical illusions are all about perspective, views approaching the site must be recorded and analyzed then utilized to take advantage of all angles. Placing reflective steel

panels on a roof for example, merges visually partial of the building façade with the sky. That is an architectural optical illusion, an “Archillusion”. Architecture that deceives the mind.

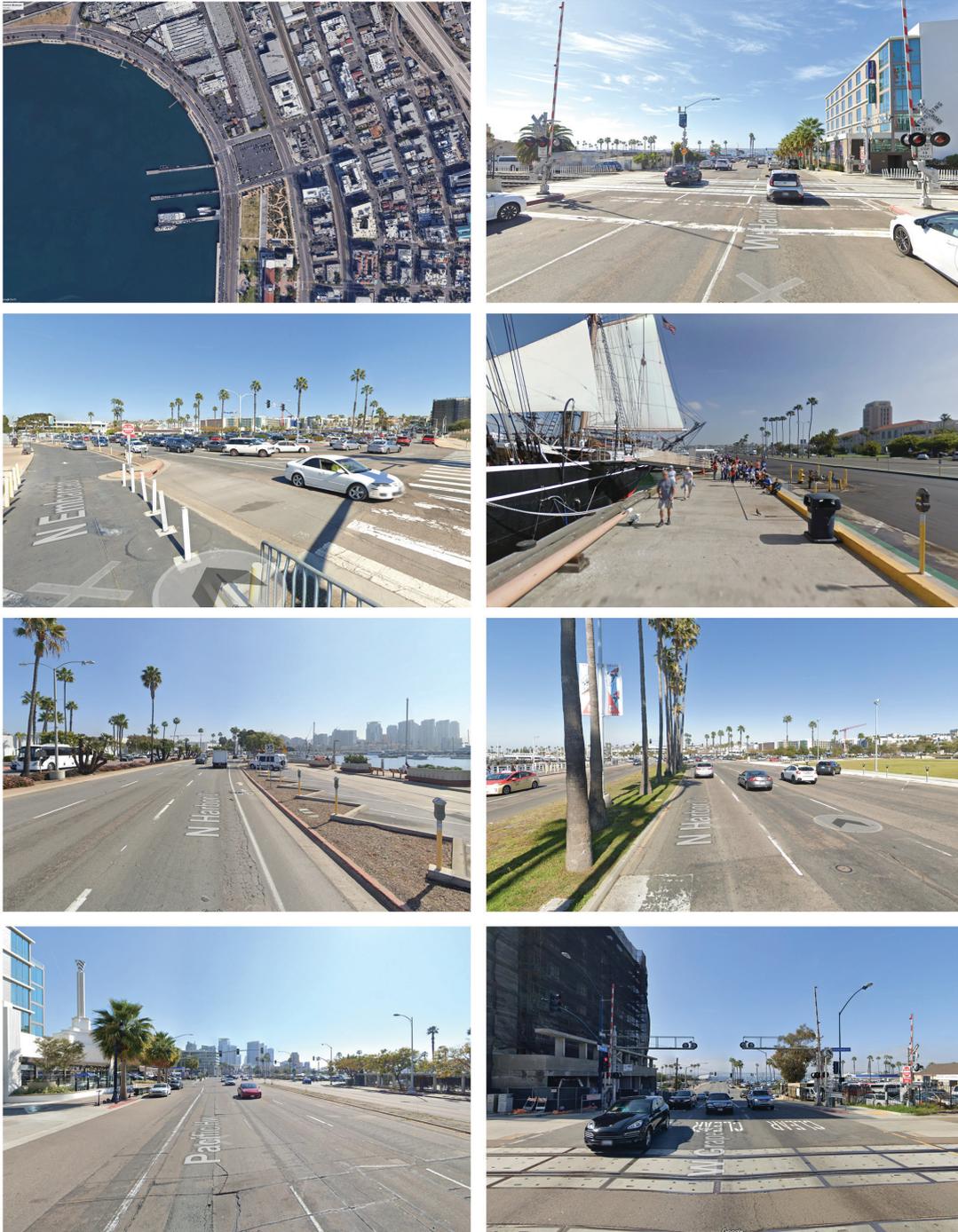


Fig. 3.13 - Aerial, streetviews, and approach to site.
Note. From Google Maps, by Google
(<https://www.google.com/maps>)

1ST DESIGN ITERATION

A micro view (Fig. 3.14) of the building nestled against San Diego Bay and the Embarcadero harbor. The ripple driving the

over all aerial design aesthetic ignites exactly where these two points meet. As if produced on contact, “visually” speaking.

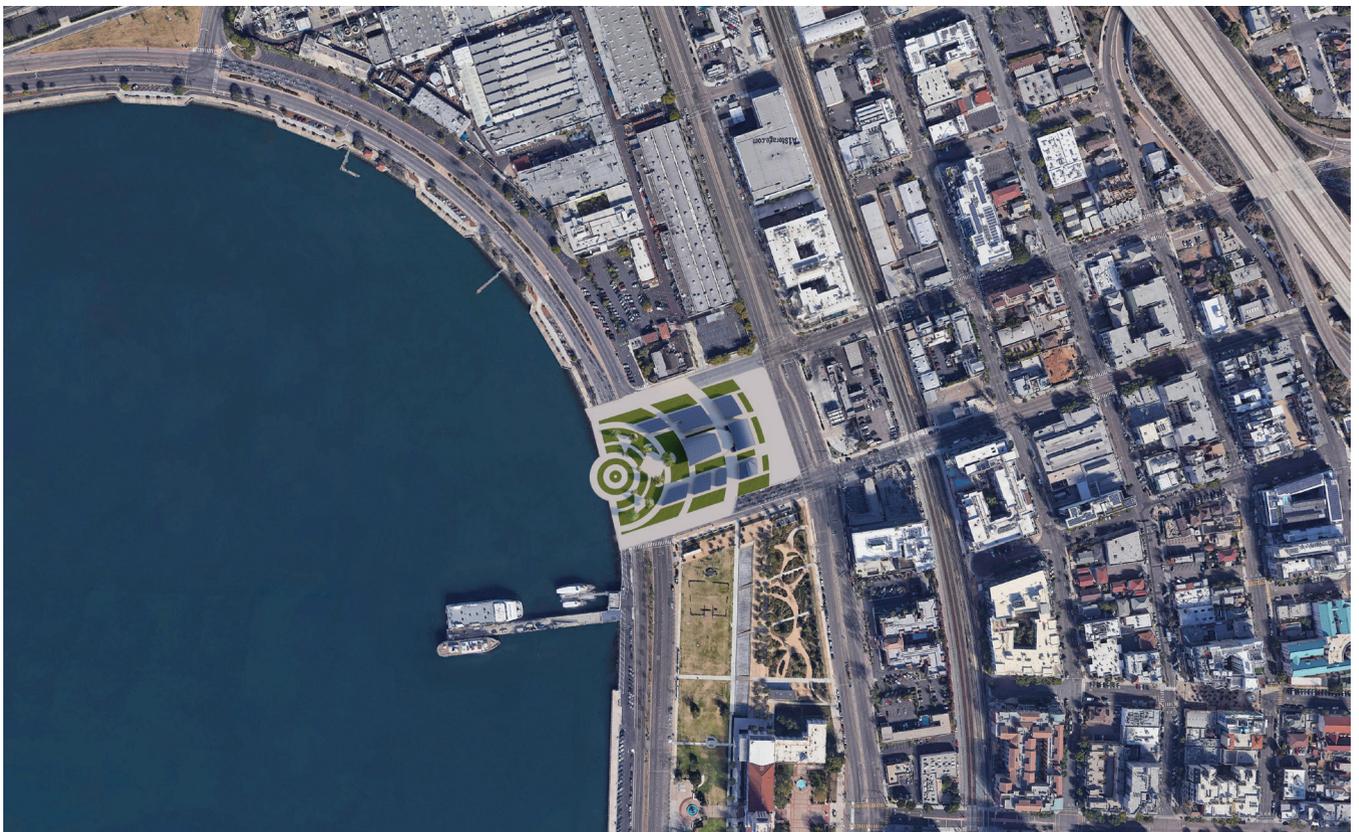


Fig. 3.14 - Digital collage. Micro view of site design & render by author, overlapped on Google Maps aerial views. Note. Adopted From *Google Maps*, by Google (<https://www.google.com/maps>)

Site Plan (3.15) gives a closer look at the landscape design, traffic reroutes, and collective building spaces. Brings into focus the radial geometry of mass placement that generates

a visual language. An attempt to optically unify adjacent detached buildings. The outdoor social nodes are placed in relation to radial ripples.



Fig. 3.15 - Digital collage. Site Plan. Illustration, design & render by author, overlapped on Google Maps aerial views. Note. Adopted From *Google Maps*, by Google (<https://www.google.com/maps>)

The basic layout of the ground floor (3.16) is finalized at this stage. The 2D Master's Gallery has a linear path that cuts down the center with an open flow floor plan. The space is open to the public for free. The rib-like layout allows for 10' of space in between sections, ample room to view 20' artworks

displayed behind non-glaring tempered glass. The perimeter walls are reflective steel. A mirror like material that will make the theater above seem as if its floating. It camouflages standard wall types. The Trompe L'oeil Gallery will be developed further next quarter Spring of 2021.

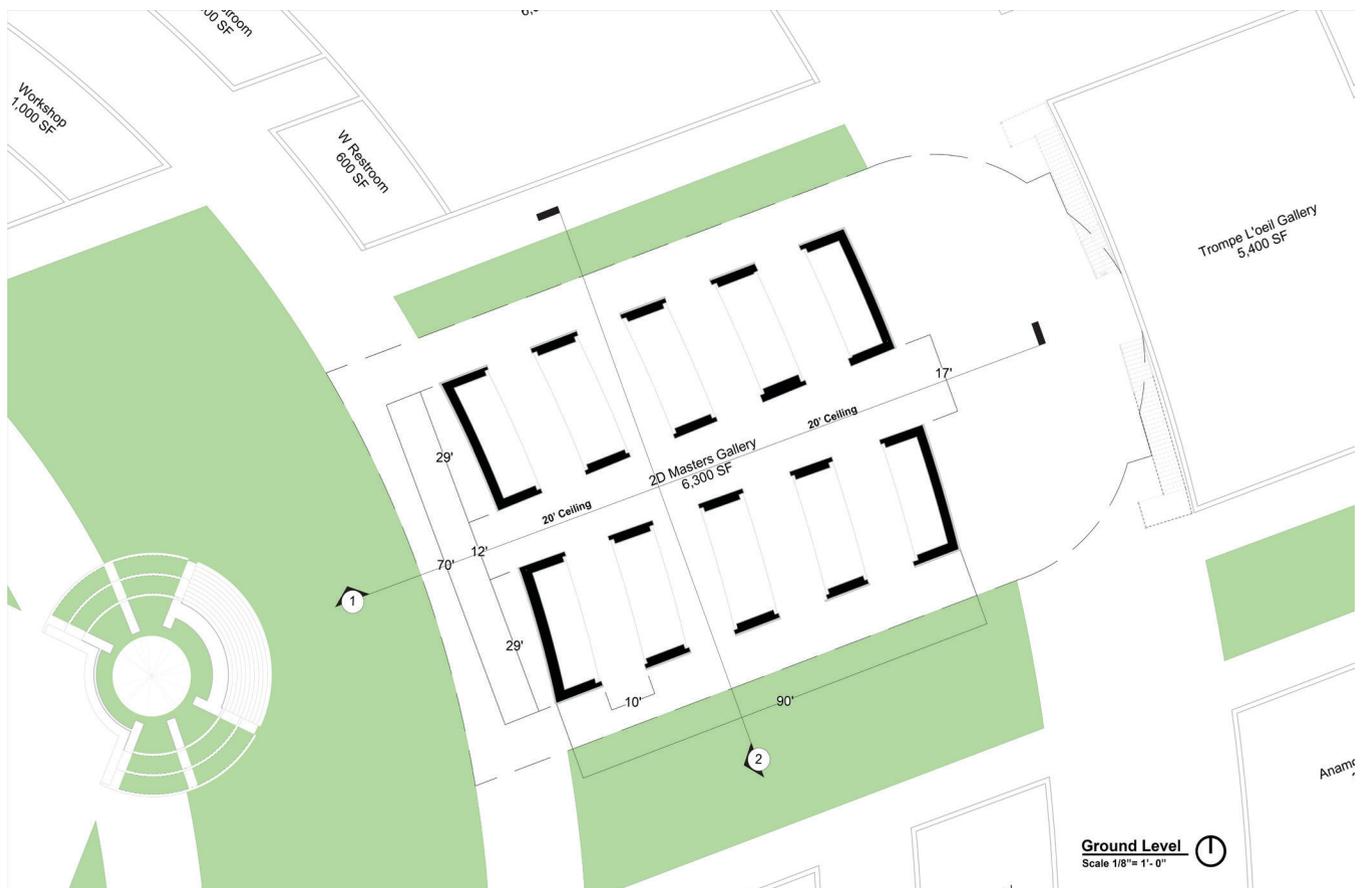


Fig. 3.16 - Ground Level, D1, illustration by author.

The 2nd Level (3.17) will contain a communal public theater. A central and important space for the museum. A capable entertainment venue utilizing efficient sound and lighting equipment to handle high profile events held either publicly or in private. The shell-like mass tapers towards the East, disguising its true size from the West's point of view. Radial steps lead to a vestibule like space that con-

tains a snack bar and a social seating area for attendees to network and discuss the event. A sound suppressing hallway to avoid sound distractions during performances is also included. Along with a control room to give producers the tools necessary to run an event. West façade is concave to adhere to radial language initiated in plan.

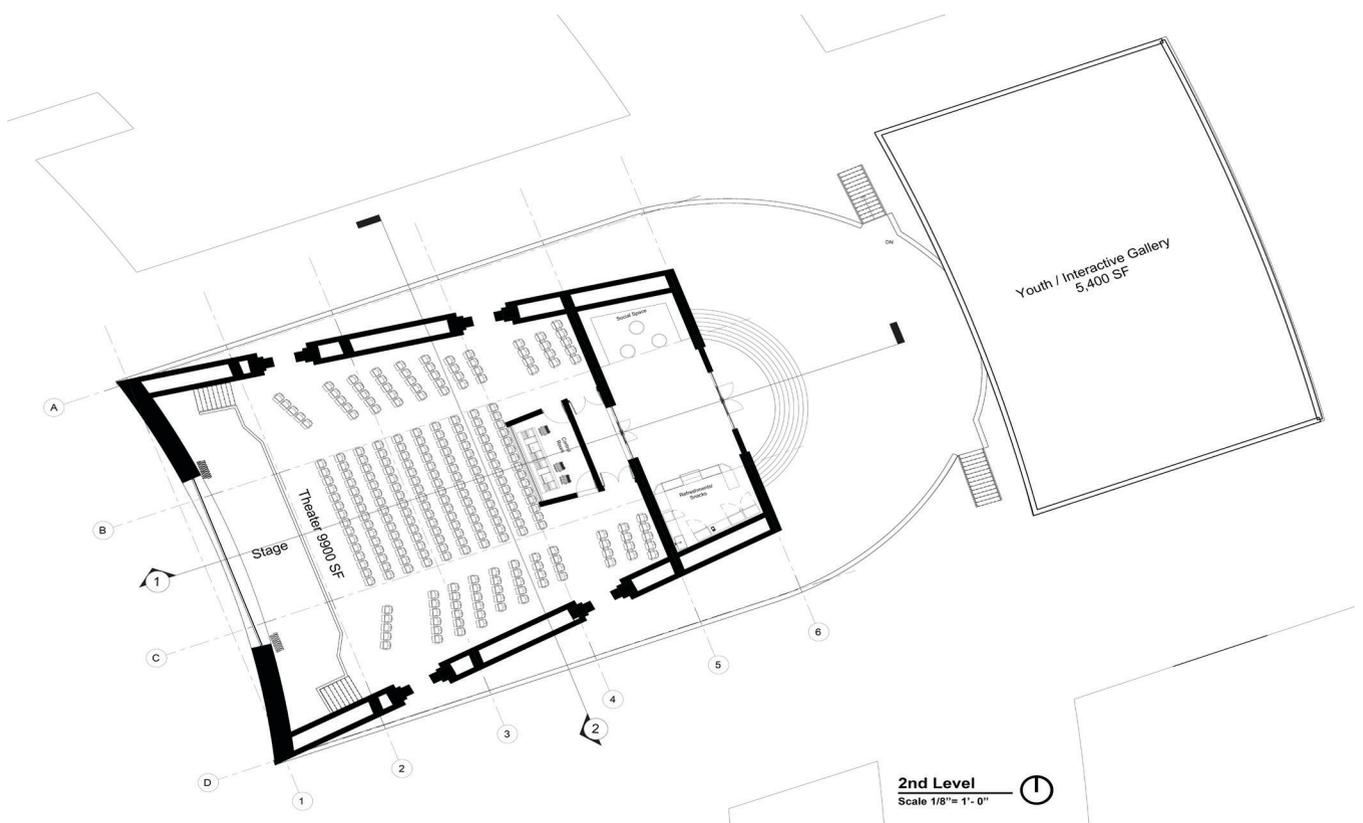


Fig. 3.17 - 2nd Level, D1, illustration by author.

In the center of the theater towards the West is a 40'x16' double sided screen that displays images and video to both interior and exterior visitors. It can also be hidden from view from the interior and exterior using eight 10'x16' mechanized panels, four on each side of the screen that converge at the center. With this flexible technology, various event scenarios can take advantage. During a film showing, a play, and or private event the exterior panels will close to control passive light. When public

events take place such as ceremonies, speeches, and music performances the glass can be exposed so the theater viewers will have the amazing San Diego Bay framed in the background. Theater is strategically elevated to level 2 so the human activity taken place outdoors in the park is not a distraction, for they will not be in view. From the exterior park point of view the screen after dark will showcase event announcements, local artist promotions, and movie nights in the open.

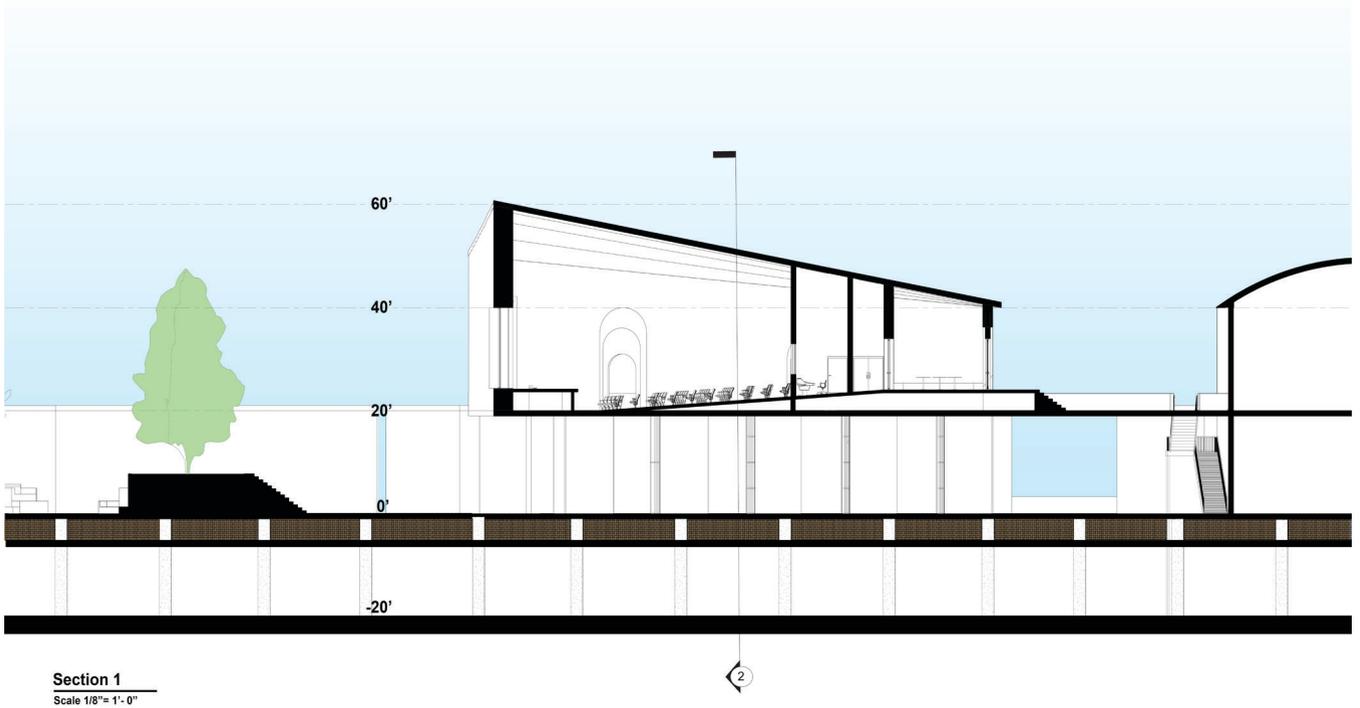


Fig. 3.18 - Section 1, D1, illustration by author.

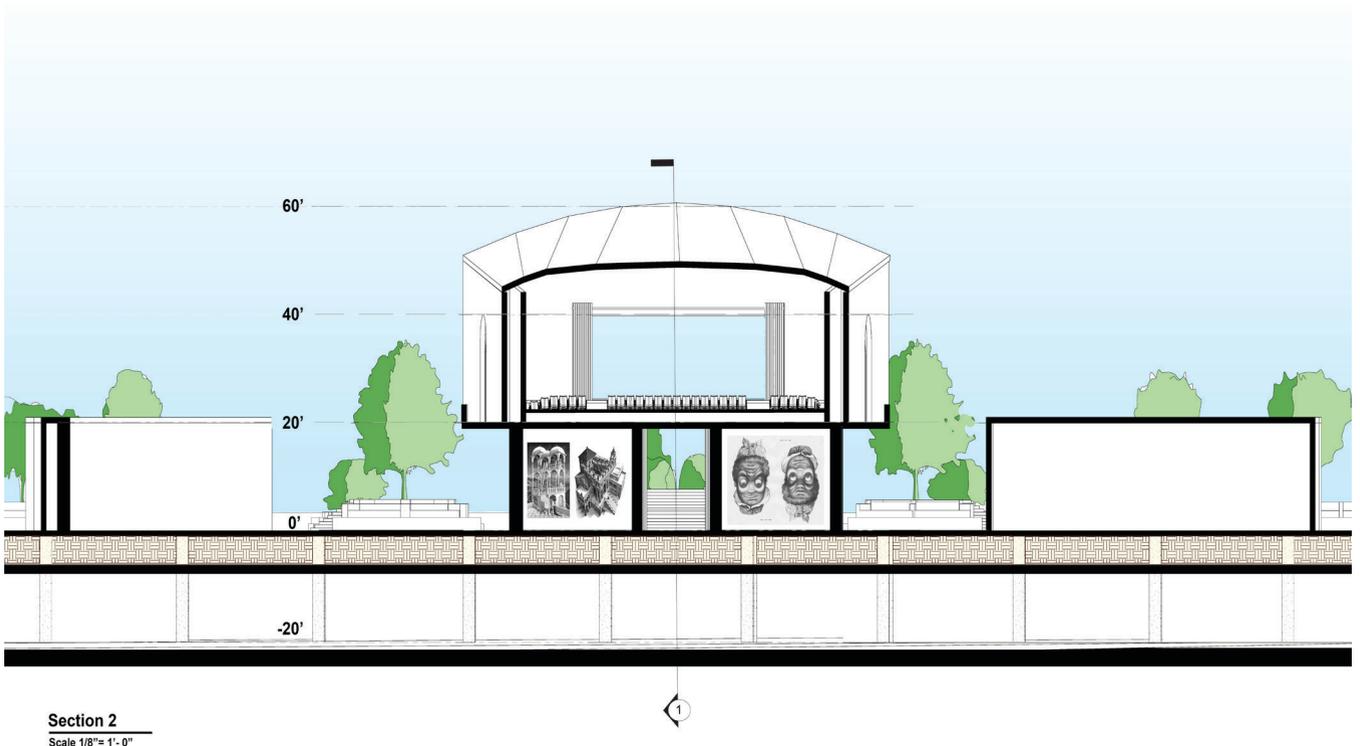


Fig. 3.19 - Section 2, D1, illustration by author.



Fig. 3.20 - *Render 1* by author.

The exterior render displays a hint of park's walking paths. It also gives the site scale in relation to neighboring buildings. It helps identify weak design points to further enhance in next iteration. Additional landscape

color, material, and tree placement can be utilized to create more depth and more of a unique aesthetic to the site. Optical illusion statues need to be added to triangular social nodes to heighten the parks experience.



Fig. 3.21 - *Render 2* by author.

The render of theater's interior frames the San Diego Bay using the double-sided digital screen. Further design development is needed to resolve this tech, so passive light is controlled. The massive outdoor tree is hinde-

ring the view and must be re-thought. Roof structure is yet to be resolved. Exits also need to be conceptualized with an illusion-based theme to tie in thesis statement.



Fig. 3.22 - *Render 3* by author.

The circular stepped social nodes need planters that have a visual language of their own. Lighting will be a crucial added element

that will bring attention to space and all while providing a well-lit environment for visitors at night.



Fig. 3.23 - *Render 4* by author.

This render showcases the view from the bay, the symmetry of the site and reaffirms the removal or re-thinking of the massive tree

blocking theater screen. It also makes the case for adding an art installation in the center of the target like grass area.

THOUGHTS ON 502

502 was fast paced and design heavy. Exciting combo, for one who can immerse himself into the project and begin the wonderful design process. Choosing a thesis about illusion, a subject I love, made it easier for me to do the research. I was not hesitant to jump in anytime of the day and continue drawing and writing. Starting with a new site and typology this quarter and not prior was challenging, because I had to search for, analyze, and

implement findings rapidly. I am glad to have made the decision, I believe the move strengthened my thesis and allowed me more flexibility in administering illusion-based elements throughout the design process. The course pace was excellent and effective. Critiques were as always informative and useful. Having ample time to work on thesis book towards the end was extremely helpful. It allowed for gathering assignments and finetuning.

2ND DESIGN ITERATION

The micro view (3.24) of the site again gives context in relation to the neighborhood that is downtown San Diego and the San Diego Bay and N. Embarcadero boardwalk. Interstate 5 is five blocks away. Little Italy, a thriving tourist and local social hub is a couple

of blocks from site. Along with many other important buildings within the area discussed in previous chapters proves the importance of site selection identifying area to be the center of San Diego's tourist attraction.

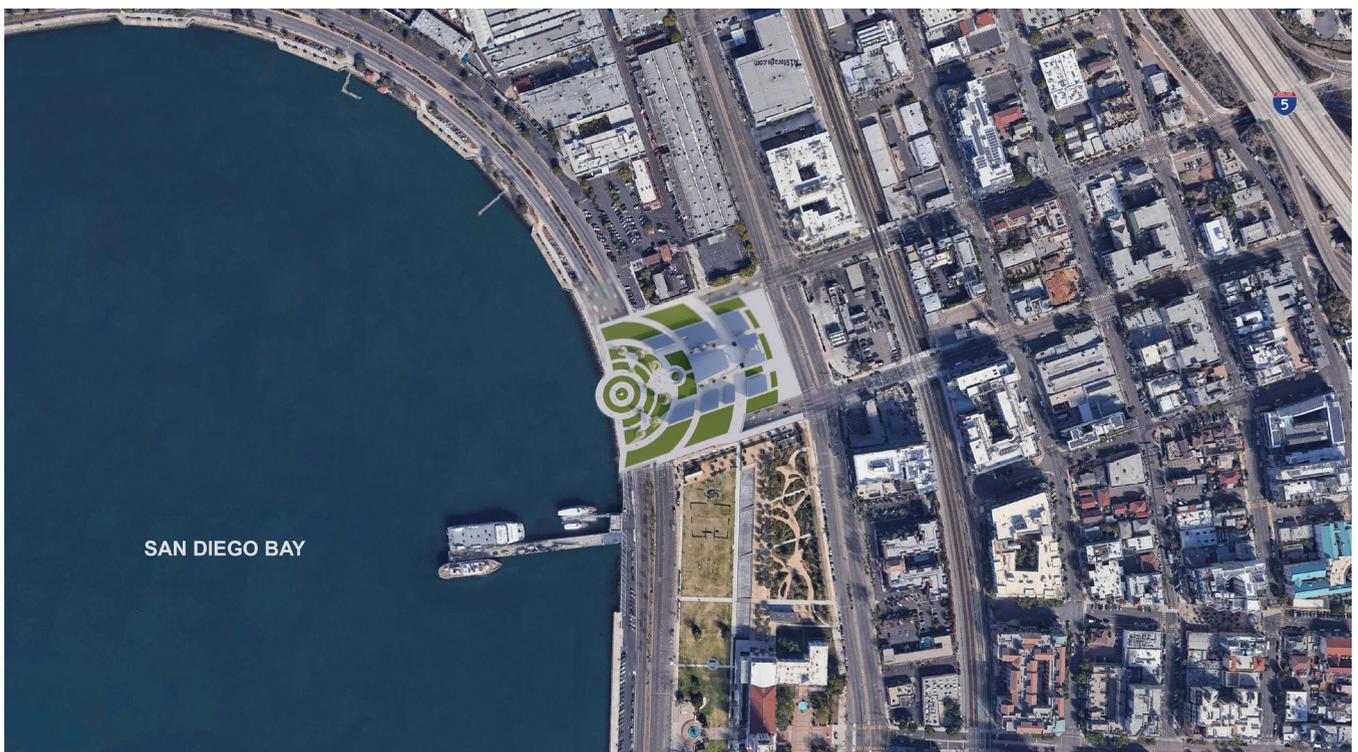


Fig. 3.24 - Digital collage. Micro view of site design & render by author, overlapped on Google Maps aerial views. Note. Adopted From *Google Maps*, by Google (<https://www.google.com/maps>)

The site plan render (3.25) improves on previous iteration in giving a more detailed explanation of how the streets of W. Hawthorn, W. Grape and W. Harbor Dr. descend underground towards the West side of site to reclaim the public space without having to deal with

the dangers and traffic of vehicles. The landscape is further developed to tie in the radial geometry. The various paths cut right through the site enticing passers by to interact with the architecture. It also gives context in relation to surrounding buildings.

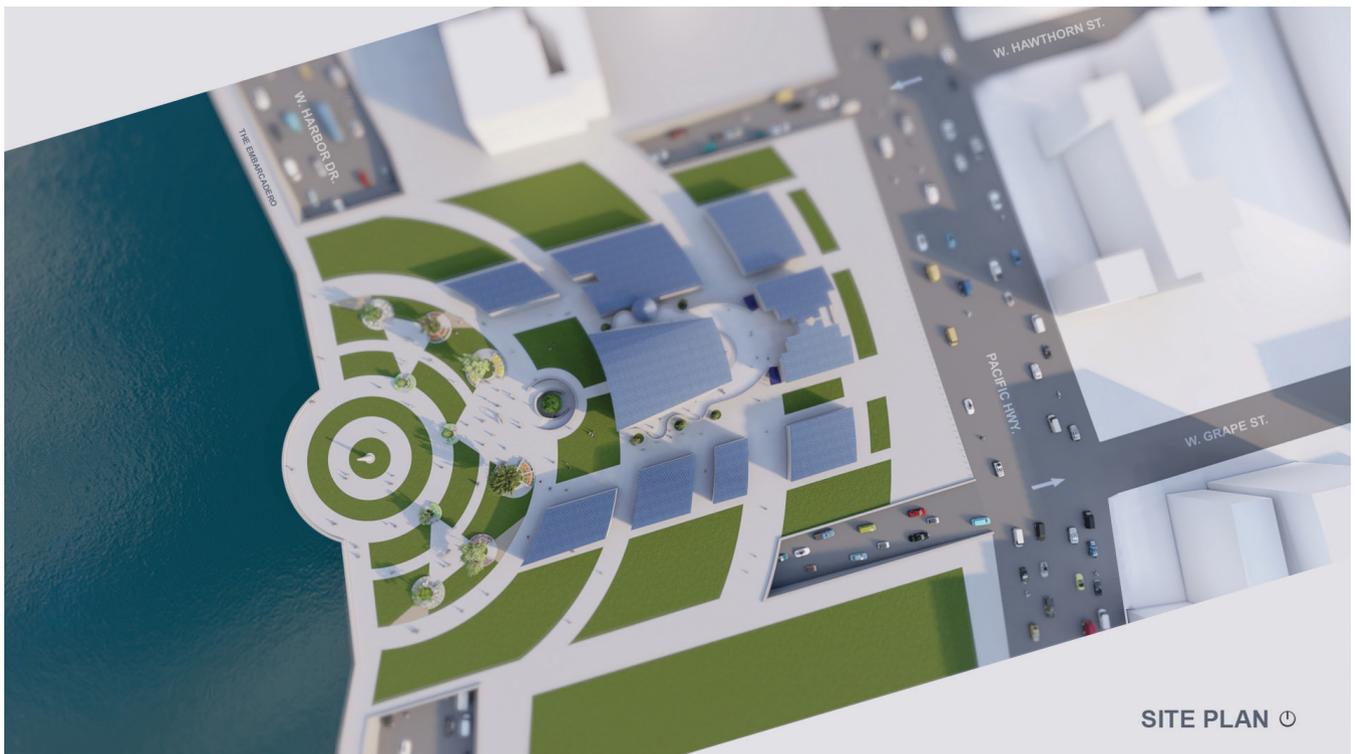


Fig. 3.25 - Render 5 by author.

Ground level (3.26) is further developed to include an elevator linking the levels. The axial central 2D Master's Gallery walkway has louvers that allow for passive cool air to reach the 2nd level theater. Additionally, the HVAC ducts are hidden in the north facing wall adjacent to steel column that allows the VAV system to supply air to the theater. The grass

area surrounding the 2D gallery is re-designed to accommodate new columns supporting above walking space. The Trompe L'oeil Gallery space is designed similarly to the 2D gallery in that it has an open floor plan that is open free to the public and also hides the HVAC ducts within its walls to supply air to the enclosed galleries above.

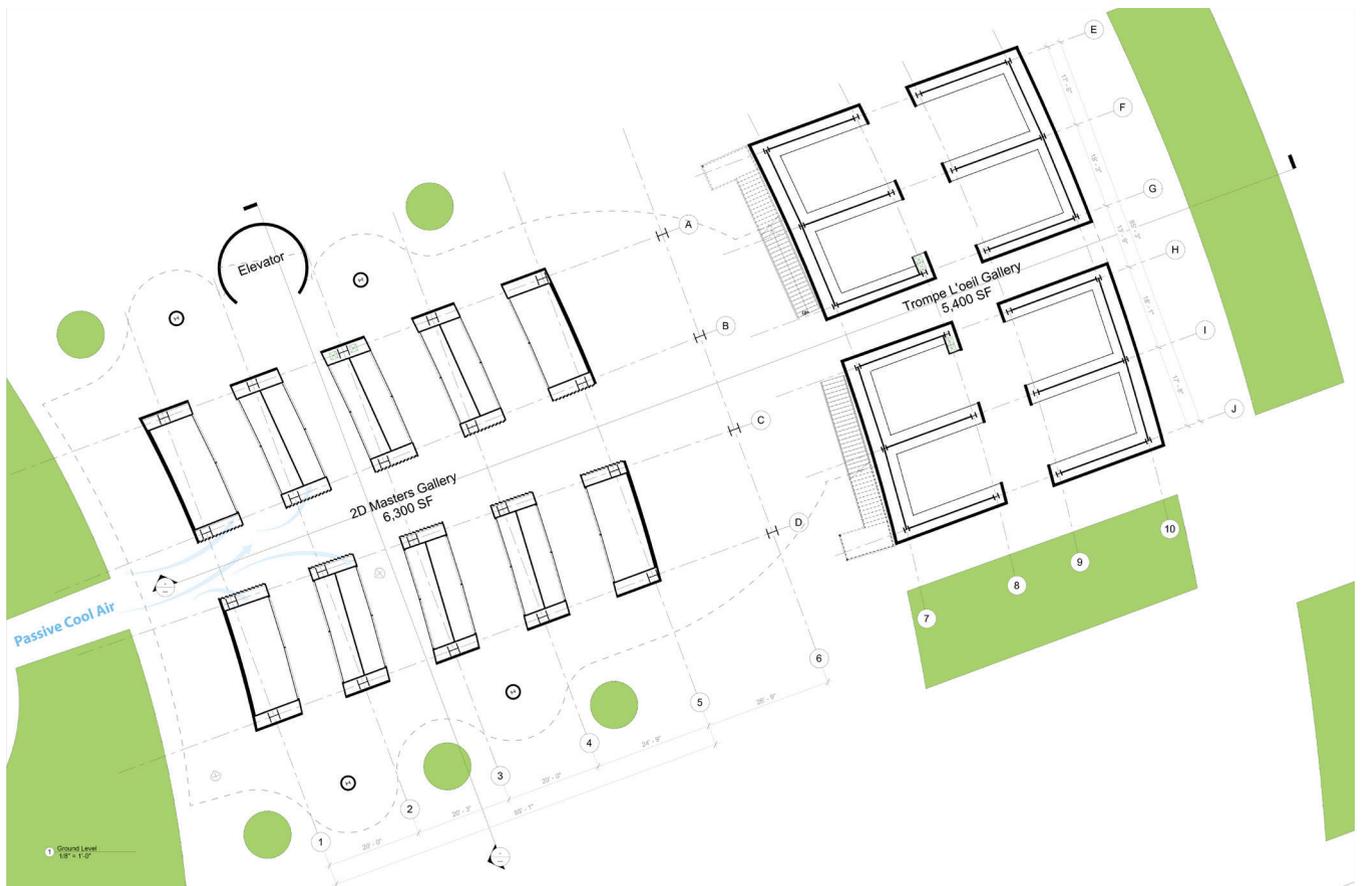


Fig. 3.26 - Ground Level, D2, illustration by author.

2nd level (3.27) builds on previous iterations of detailing the 10'x16' mechanized panels that helps to hide the digital screen from the interior or exterior. A better egress space is added near theater exits to provide a safe escape walking path incase of an emergency. This new space uses circular shapes to stay within the overall radial language of the site. Small stairs are placed inside the theater to accommodate the sloping seating area to make exiting for viewers easier. The Youth

and Interactive galleries are developed for a controlled light setting, for light projections are mainly utilized on the interior. A symmetrical shape gives equivalent identical galleries. The East and West cuts allow for a visual invitation either for Pacific Hwy. Street level or those exiting the theater. In the center is an open cylinder like atrium of sorts that has a circular opening to the ground level. The space has seating along the concave walls for an intimate and calm experience.

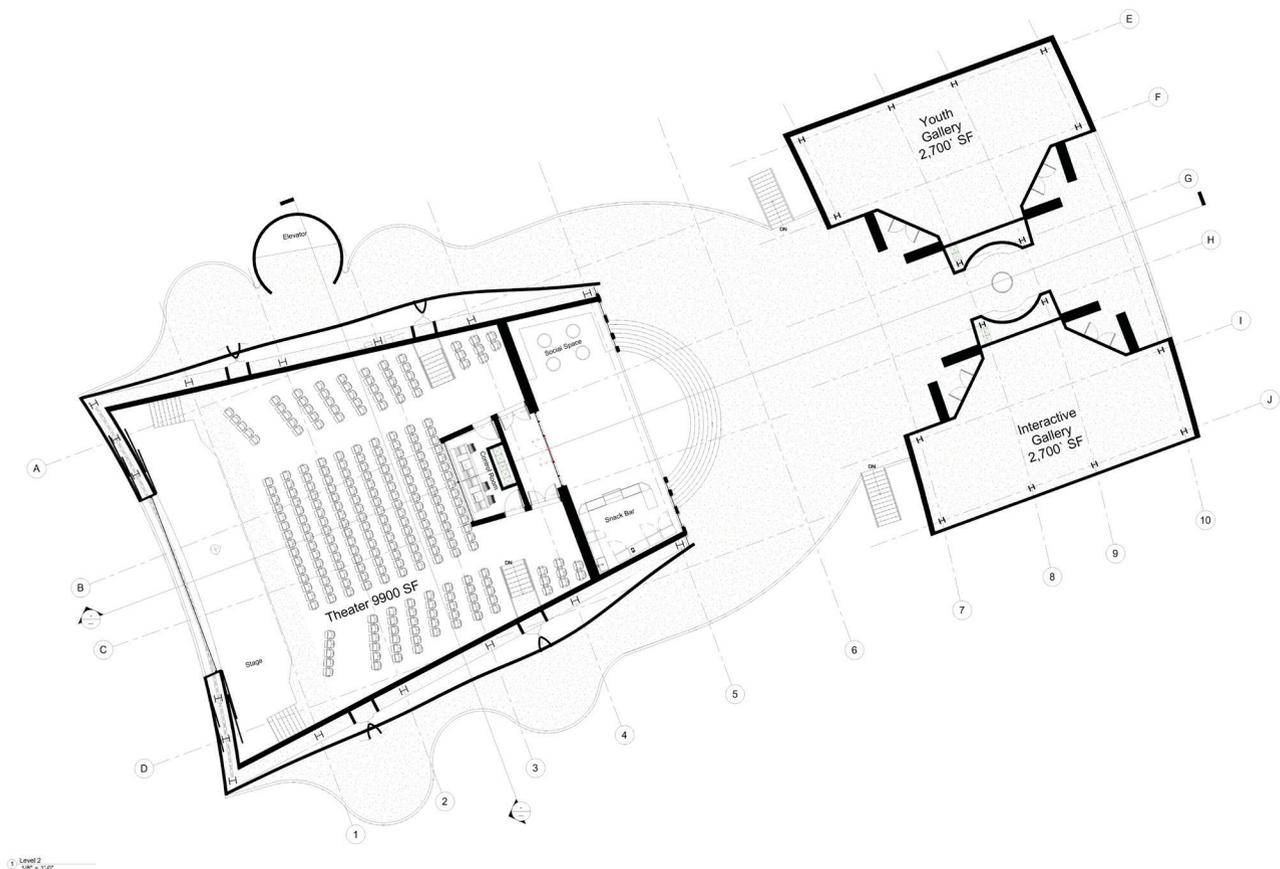
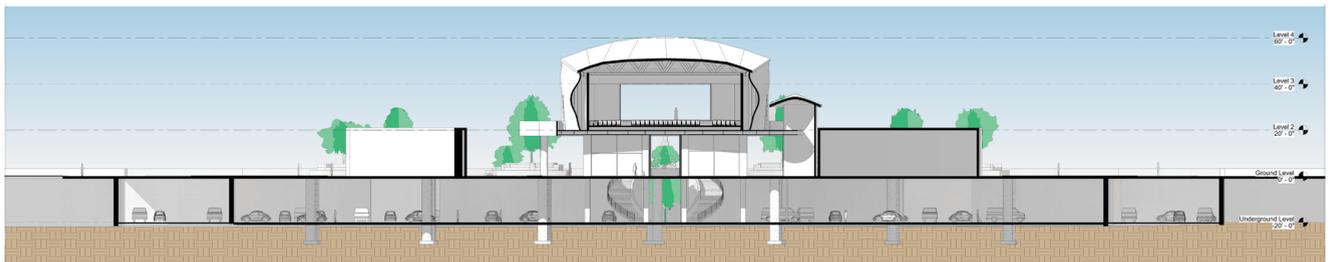


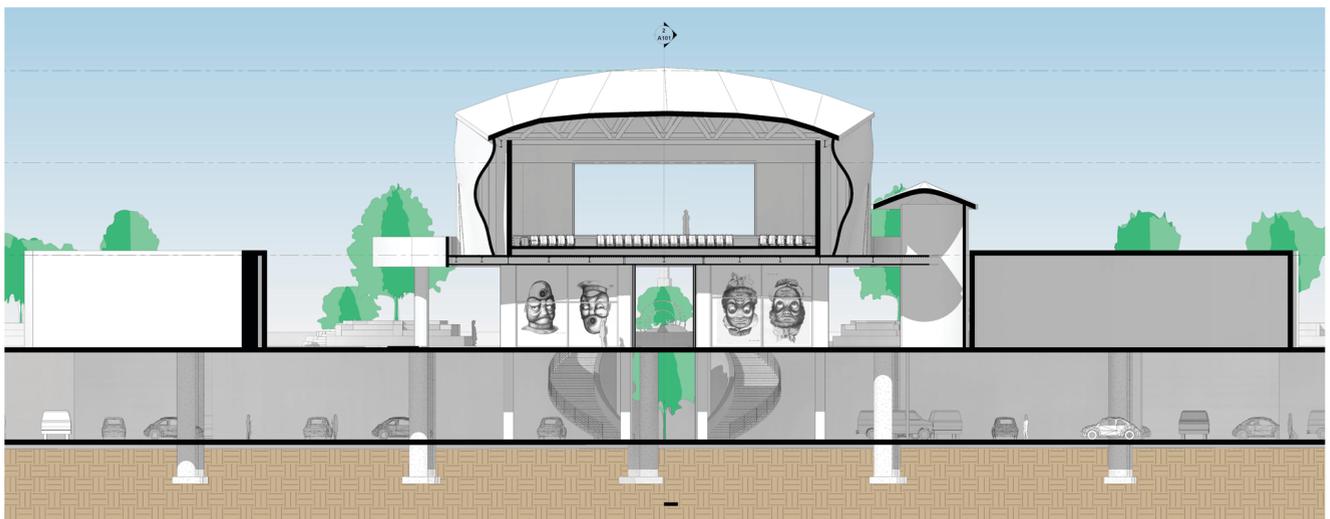
Fig. 3.27 - 2nd Level, D2, illustration by author.

Section 1 (3.28) shows how the relation between descending roads interact with underground parking structure. The concrete columns support the ground level while the steel columns support the galleries on ground and 2nd level. The curved stairs encompass a circle to again stay within the circular design language with benches against the curved

walls underground. The theater wall is fluid shaped to imitate liquid and will be further discussed in more clarity in the upcoming renders. Rex Whistler's artwork is displayed on ground level 2D gallery to give scale to of art display. The axial open center allows visitors to always have views of the park and San Diego Bay.



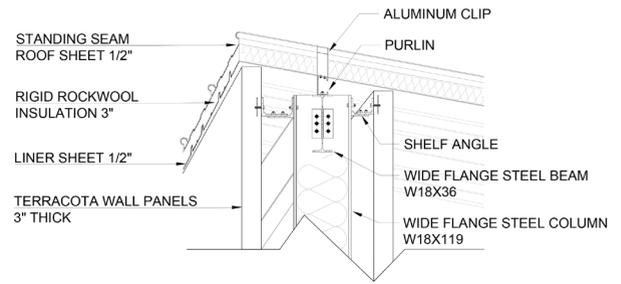
Section 1
1/16" = 1'-0"



Section 1
1/16" = 1'-0"

Fig. 3.28 - Section 1, D2, illustration by author.

Section 2 (3.30) displays the site in relation to the bay and the 20' underground road clearance that accommodates small vehicles and large trucks. It clearly shows the tapering theater mass with the various floor elevations within. The underground VAV HVAC system allows the supply and return ducts to climb hidden along the steel columns within the 2D gallery walls, behind the control room to the theater. The passive cool air is shown more clearly in this illustration delivered to above theater through louvres on ground level.



S2 Callout - Wall Detail
Scale 1/2" - 1'-0"

Fig. 3.29 - S2 Callout. Wall detail., illustration by author.

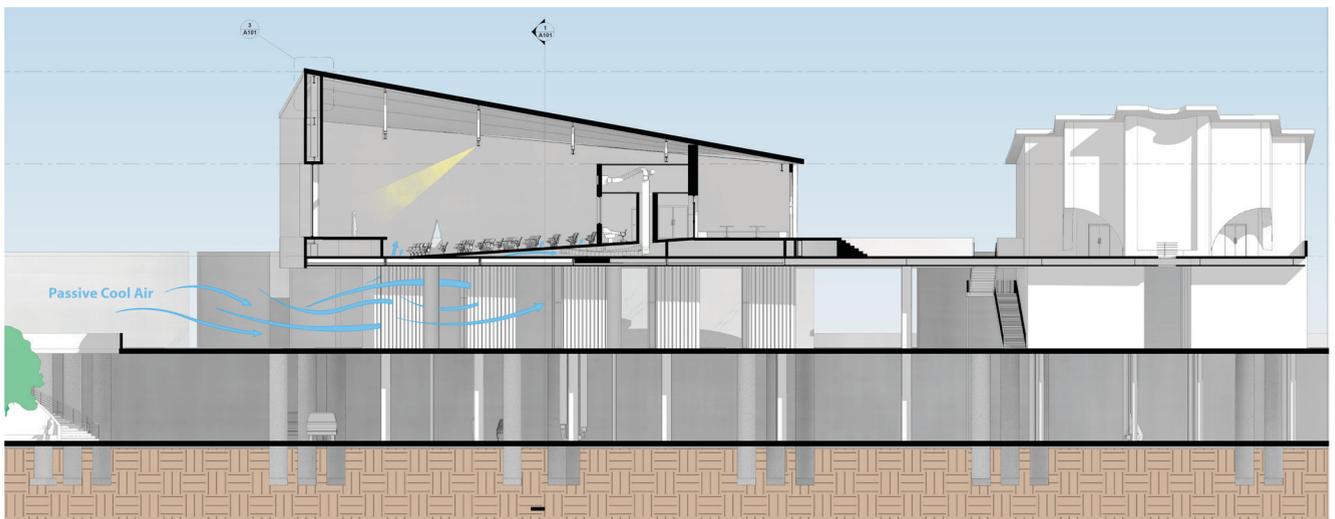
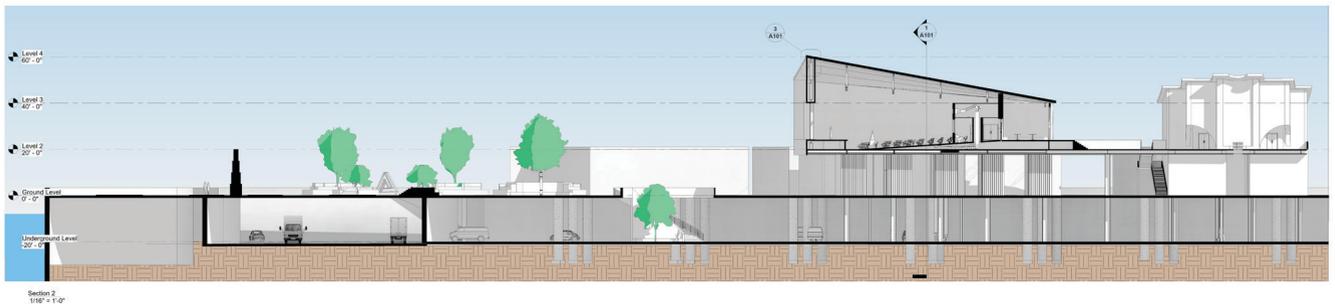


Fig. 3.30 - Section 2, D2, illustration by author.

The below structure image (3.31) gives multiple views of the skeletal steel frame that supports the three galleries and theater. The elevation perspective clearly shows the warren trusses utilized in the theater to allow for 80' spans. A 2nd level plan view of grid shows the connection between the theater and galle-

ries. Steel is also versatile regarding curvature. For it was ideal to shape the west facing wall. Primary steel columns utilize bearing piles HP10x42 and secondary members use wide flanges W10x33. While primary steel beams utilize girders W18x35 and secondary beams use W12x26.

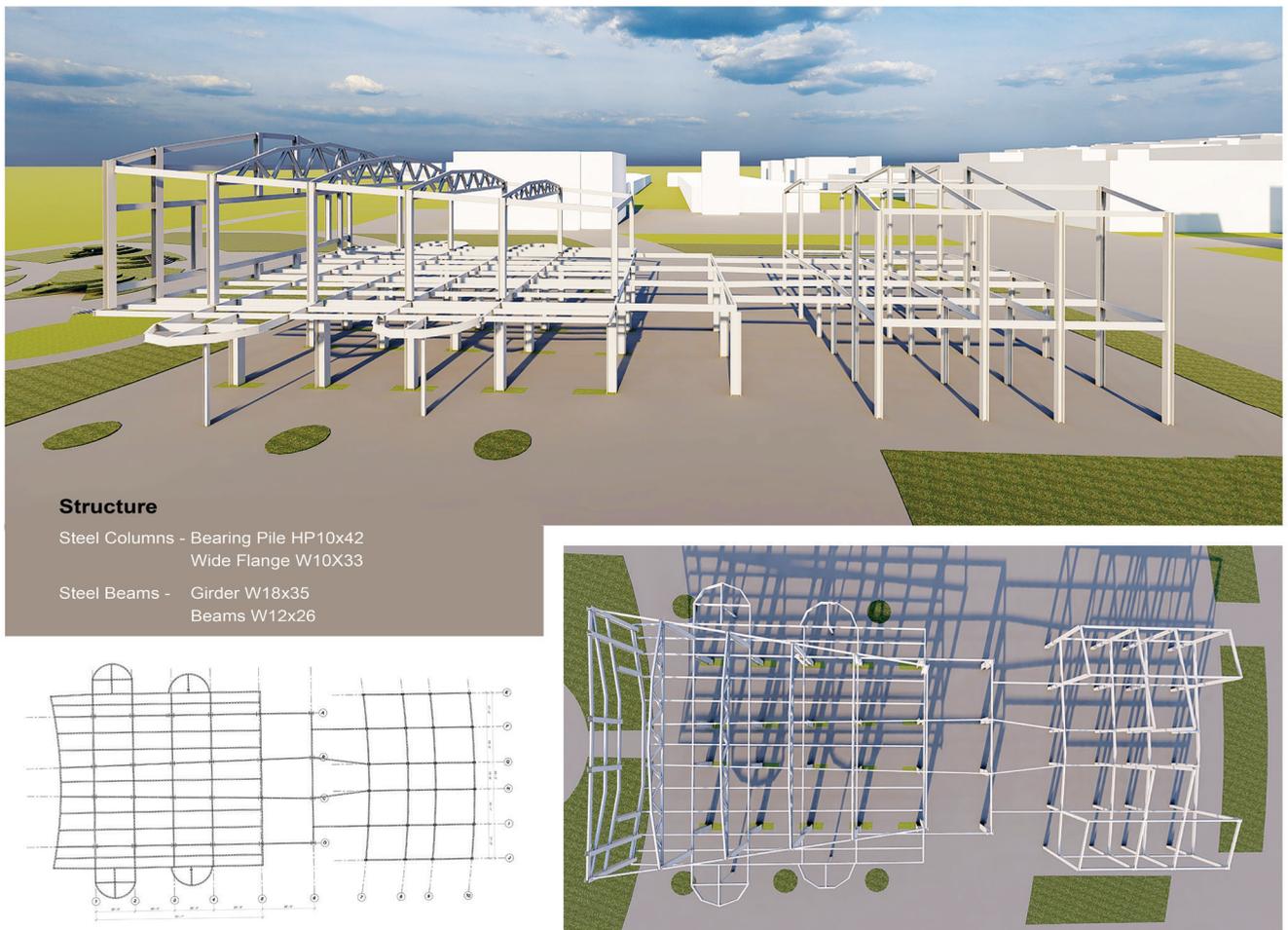


Fig. 3.31 - Structure, illustration and render by author.



Fig. 3.32 - *Render 6* by author.

Landscape is enhanced by using grouped colors in each social node. Flowers and succulents fill the rounded stepped flower beds giving each space a unique and distinct

character. Three primary shapes of a square, circle, and a triangle act as statues that display fun shadows in the center of social nodes.



Fig. 3.33 - *Render 7* by author.

Both sides of the theater have an “ocean wall”. A top view optical illusion of the ocean with faint wave patterns overlaid in fluid terracotta panels. Boats are used as en-

trances into the theater so that multiple perspectives and scenes are conjured by one building. The edges of boats align to the openings below on ground level.



Fig. 3.34 - *Render 8* by author.

An interesting materiality observation. Reflective steel blurs the line of separation between two objects making them seem as one. The connection point immediately reflects the

adjacent material. The material gives the building life, for the reflection changes and varies constantly based on sun and visitors. Creating constant unique compositions in reflections.



Fig. 3.35 - *Render 9* by author.

This render shows what is like standing underneath the curved theater overhang looking out to the park and bay. It also gives scale to the walking paths that are large enough to

accommodate a busy public event. The site encourages physical activity by creating bike paths and exercise grass space for outdoor workouts.



Fig. 3.36 - *Render 10* by author.

Forced perspective is used on the theater entrance to create false depth. Creating a visual trickery that seems to indicate a non-existent vanishing point. The stained blue hue

glass creates a subtle separation of the spaces. The open arched shape into the vestibule area matches the curtain wall entrance, so the eye makes a visual connection.



Fig. 3.37 - *Render 11* by author.

Darker colors can be used to create atmospheric perspective, the farther the wall the darker it may be portrayed. Murals can be

displayed to create enticing facades that hint at building program.



Fig. 3.38 - *Render 12* by author.

The opposite direction of the Kanisza triangle where the steps meet the turf is turned into beach sand for visiting children to play without worrying about getting hurt if they fall.

The Park is well lit so families feel safe visiting site after dark. The reflective steel makes above theater seem as if it is floating.



Fig. 3.39 - *Render 13* by author.

In this render the dual digital screen is utilized to have movies at night free of charge to the public. A light projection uses the front of theater as a canvas to display any pattern or

image. In this case random small circular light is used to imitate night sky above to blend the building with nature.

THOUGHTS ON 503

The final 503 quarter has been exciting. For one, I was able to add the final details that brought my thesis project to life. I always had in mind what the Illusion Museum would look like, but I had to produce those images via design so professors, school colleagues, and those who had doubts of the concept can visualize it as well. So really, I had to sell my design. I had to finally prove my point that 2D optical illusions can indeed be applied to a 3D mass. It is not a straightforward conversion. The path was not always evident at first. Research into past illusion artists, human visual psychology, materiality, and the location of the visitor's point of view were all very crucial in the effort to trick the mind. I was also able to satisfy my architectural problem that buildings void of artistic elements are abundant, boring, and non-stimulating. Humans have always loved the arts and visual trickery. Fusing these

elements in architecture made clear sense to me and I hope it makes clear sense to you now that you have read this book. I foresee these spaces sparking social interactions, intrigue, and curiosity. Emotions that are absent in current bland Modern buildings.

Thesis year has been a definite career learning experience. I have learned to trust the process, to narrow my topic, to manage my time well, to visually present my ideas, to speak with professionalism and intent, to motivate myself when the mood was off, to have an open mind and observe, to research all angles, to constantly sketch and develop ideas, and to accept that ideas are continuous and forever evolving. A fitting end to a five-year bachelor program. I am ecstatic to finish my degree and begin a new rewarding life as an architect.

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