

Matthew M Gordon
Bachelors of Architecture
Woodbury University | San Diego | 2012

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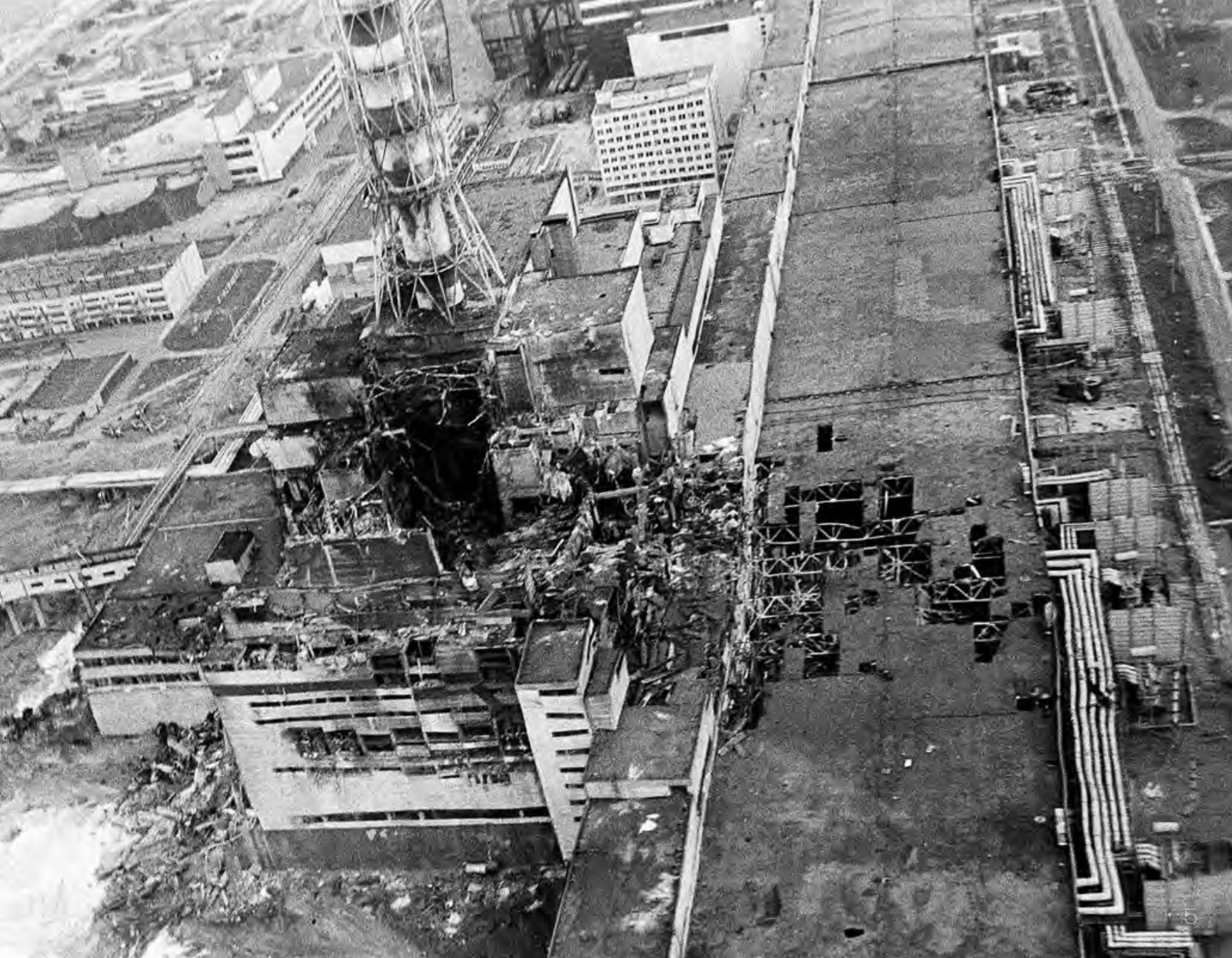
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Thesis Statement

Nuclear power, though controversial, isn't going anywhere. Renewable energy resources such as solar and wind power are helping to fill in the needs, but for the bulk of developing countries, nothing can match the power output/cost of nuclear power. The sites of Chernobyl's Exclusion Zone in the Ukraine and the Fukushima Prefecture in Japan prove that nuclear contamination is a real possible consequence of poor planning. With nuclear driving the second industrial revolution, the issues of contamination and waste storage become significant questions. Think of how different the current environmental situation might be if the captains of industry had thought about coals' ramifications early in the first industrial revolution of the 1800's.

I believe that the insertion of architecture into the ecological cycle is the key to reclaiming areas lost to contamination. My proposal is to insert architecture into this radioactively contaminated ecological cycle, allowing it to become a critical component in gaining knowledge of the area, and to eventually become a tool for remediation itself. Architectural interventions are placed at key points in the Exclusion Zone, and begin their life as survey stations, collecting physical information about the site before remediation begins. Entering their second iteration, these interventions then function as ecological monitoring stations, and dependent on location, either actively work with and react to the ecology, or silently monitor it. Stations that interact with the ecology allow and encourage bio-remediatory vegetation to grow on and around them, helping to reign in and move radioactive contaminants to key locations. Stations that serve as monitor-only collect data such as pH levels, heavy metal toxicity, and radioactivity in the area, and begin giving us an idea of exactly how the ecology has been functioning in the absence of humans for more than 20 years. Once this data is collected and analyzed, it is then disseminated along different channels to key research centers across the world. With this new data, research can be carried out in a variety of different applications, forging the path for safe and sustainable nuclear.

Adaptive
Paradigms

Location: Kiev Oblast, Ukraine

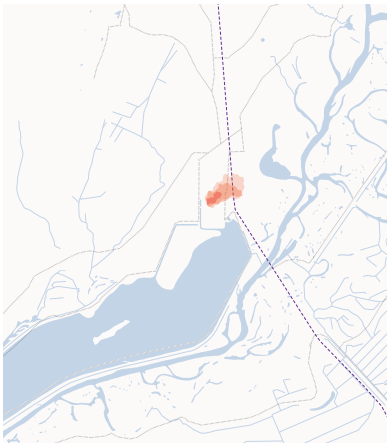
Program: Environmental Study/
Bioremediatory Framework

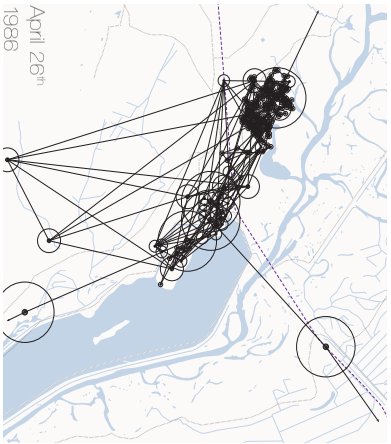
Vegetative
Expansion

Radiological
Dispursion

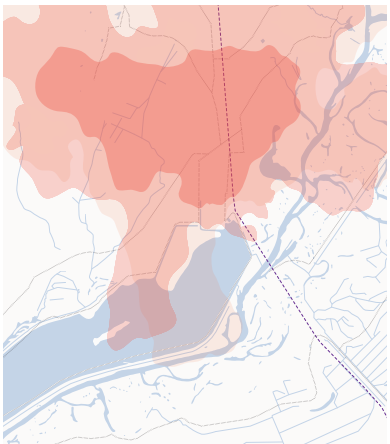
Infrastructural
Collapse

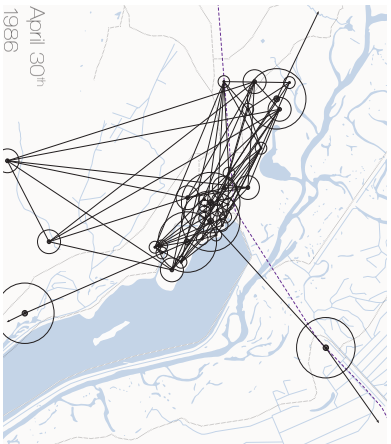




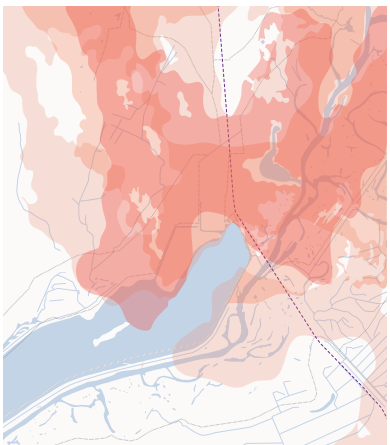


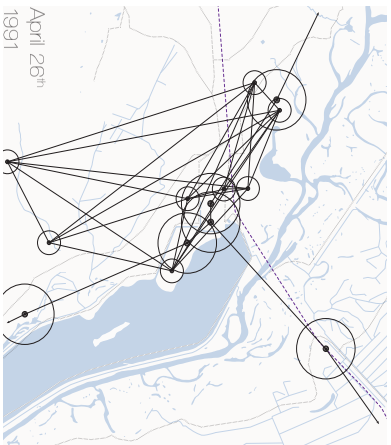


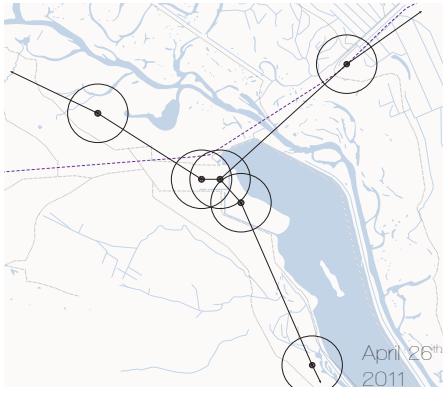


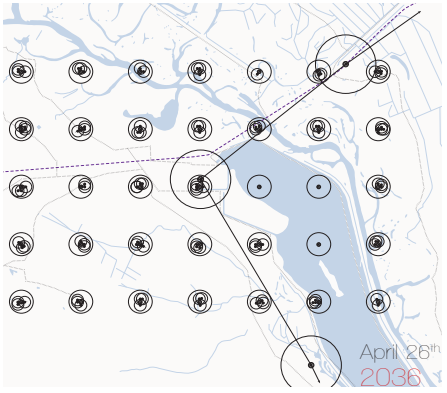


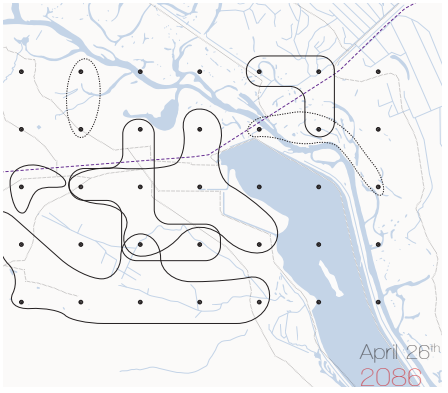


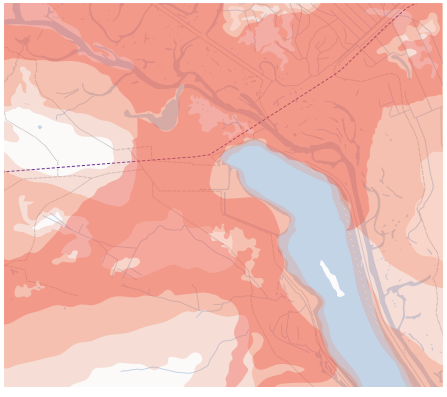


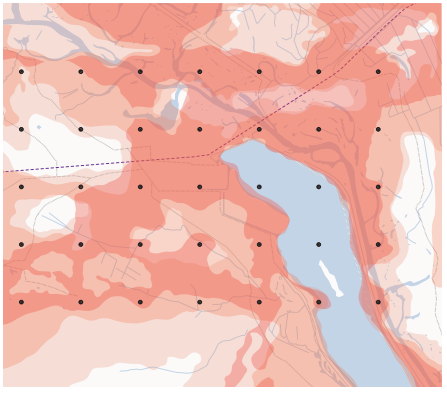


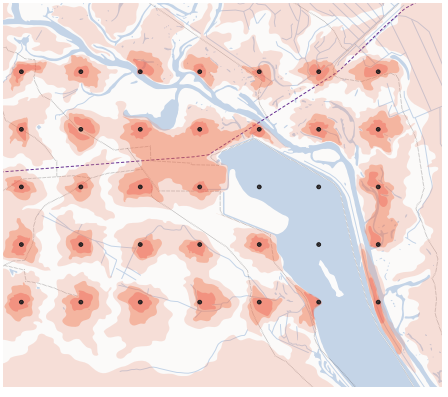

April 26th
2011


April 26th
2036


April 26th
2086





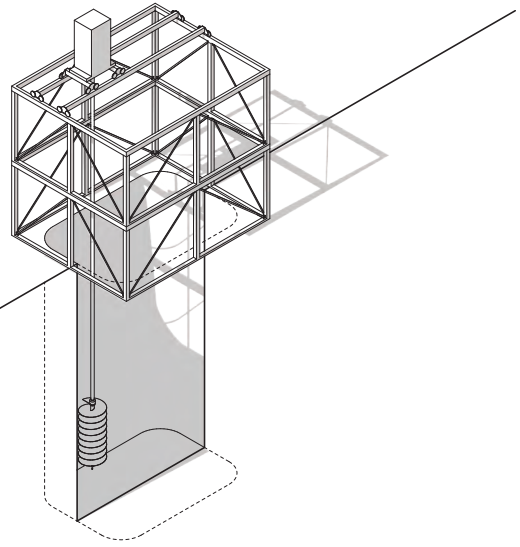






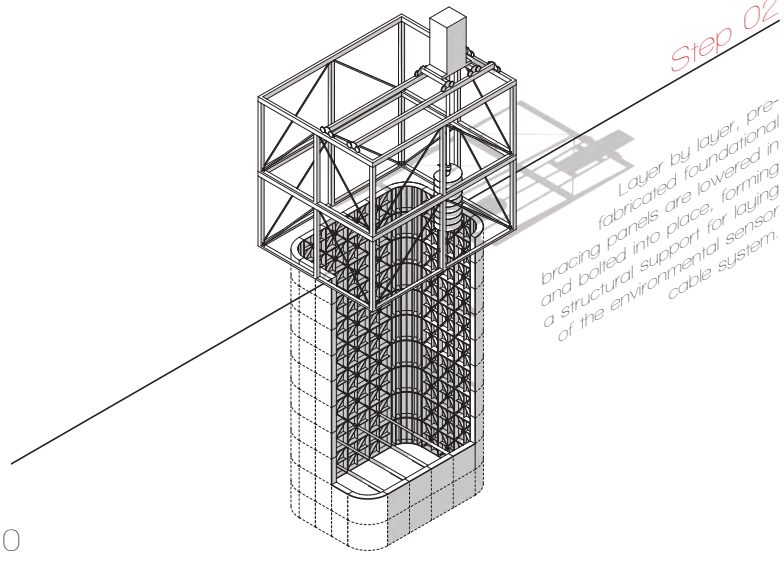


Construction Sequence



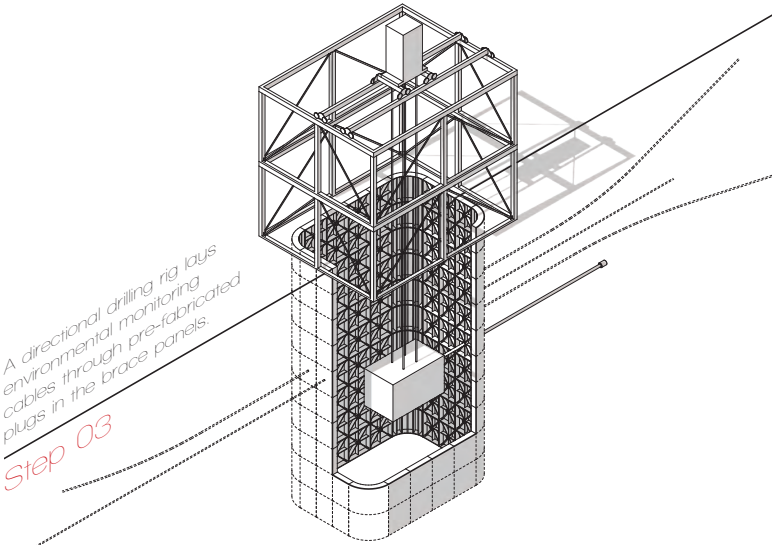
Construction gantry is set up above site for foundational drilling. Material is excavated, forming a cavity that will become the foundation pedestal.

Step 01



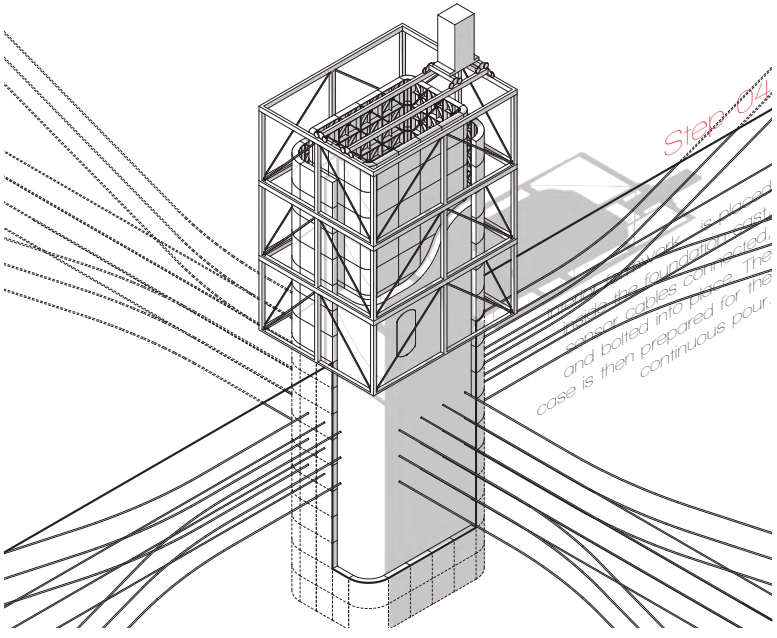
Step 02

Layer by layer, pre-fabricated foundational bracing panels are lowered in and bolted into place, forming a structural support for laying of the environmental sensor cable system.



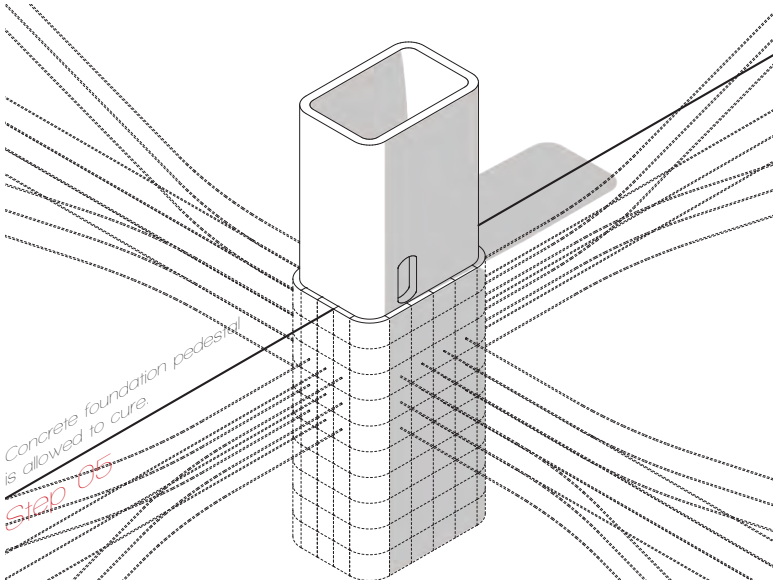
A directional drilling rig lays environmental monitoring cables, through pre-fabricated plugs in the brace panels.

Step 03



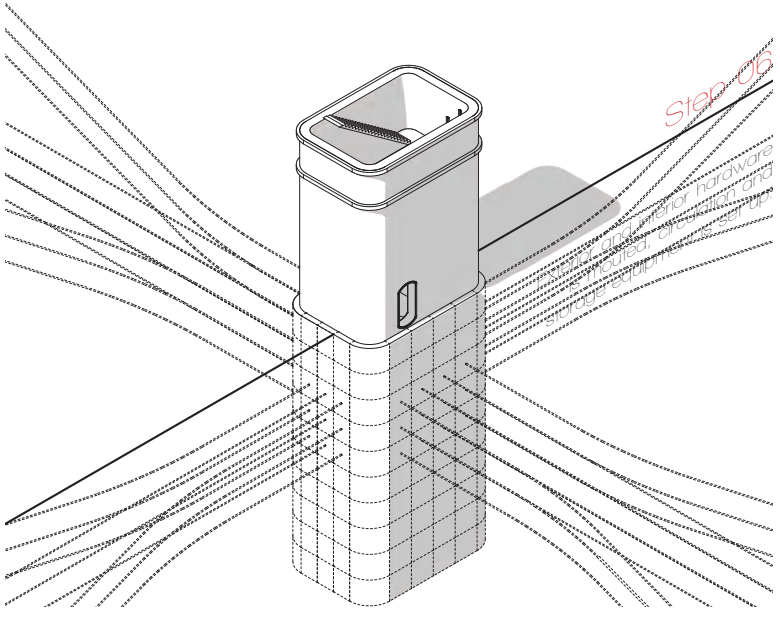
Step 04

[illegible] is placed [illegible] foundation pedestal, sensor cables connected, and bolted into place. The case is then prepared for the continuous pour.



Concrete foundation pedestal is allowed to cure.

Step 05



Step 06

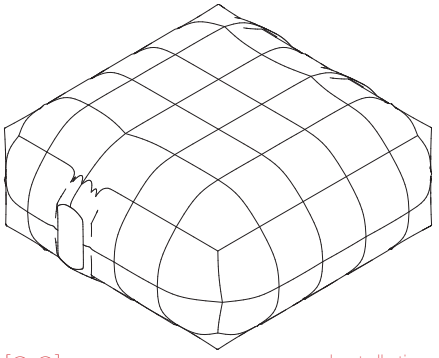
Step 07

Environmental Monitoring Stations are airlifted into place, and mounted to the foundation pedestal.

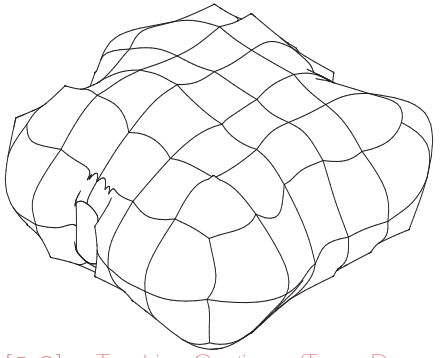
Skin Deformation Sequence

The environmental monitoring stations will be wrapped in a dynamic skin that will serve as both protective shield, and a tool for visualizing data collected by the hundreds of sensors installed during the construction phase.

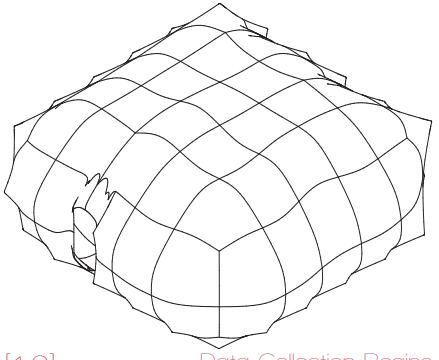
As ranges of data are processed, the actuators connected to the skin begin to move. When radiation levels are high, the skin moves outward to increase the distance between the occupants and the shield. As temperatures drop, an inert gas mixture is pumped between layers of the skin, increasing its thermal mass. Non-environmental data; vegetation growth and animal population and migration patterns, are also indexed - tracking, responding, and adapting to the ever-changing conditions of the site.



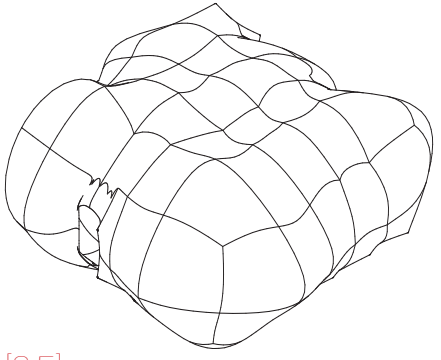
[0.0] Installation



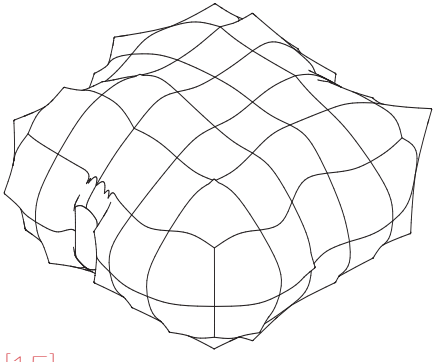
[2.0] Tracking Continues/Temp Drops



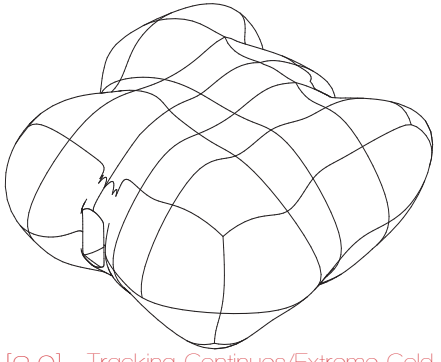
[1.0] Data Collection Begins



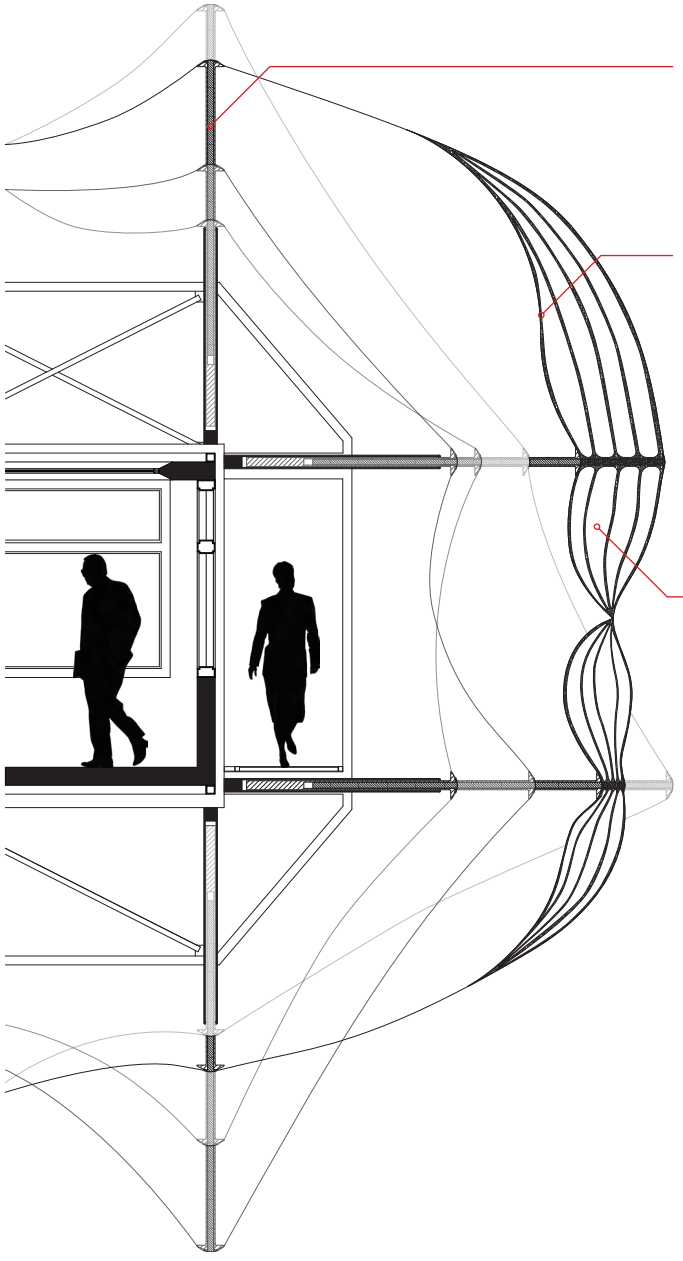
[2.5]



[1.5]



[3.0] Tracking Continues/Extreme Cold



Actuators

Pneumatically controlled actuators drive physical changes in the geometry/ layout of the skin,

Transpiration Layer

Micro-perforations & Gore-Tex technologies form a composite, one-way semi-permeable membrane, allowing CO_2 & moisture to exit, while shedding rain water & snowfall.

Inflatable Cells

Inert gases pumped into the skin between multiple layers of EFTE allow for automated adjustment of thermal mass, as well as diffusion of natural lighting. The ability to inflate/ deflate on-the-fly allows stress points to be alleviated by rounding out the skin where needed, increasing material longevity.

Skin Material Details

ETFE

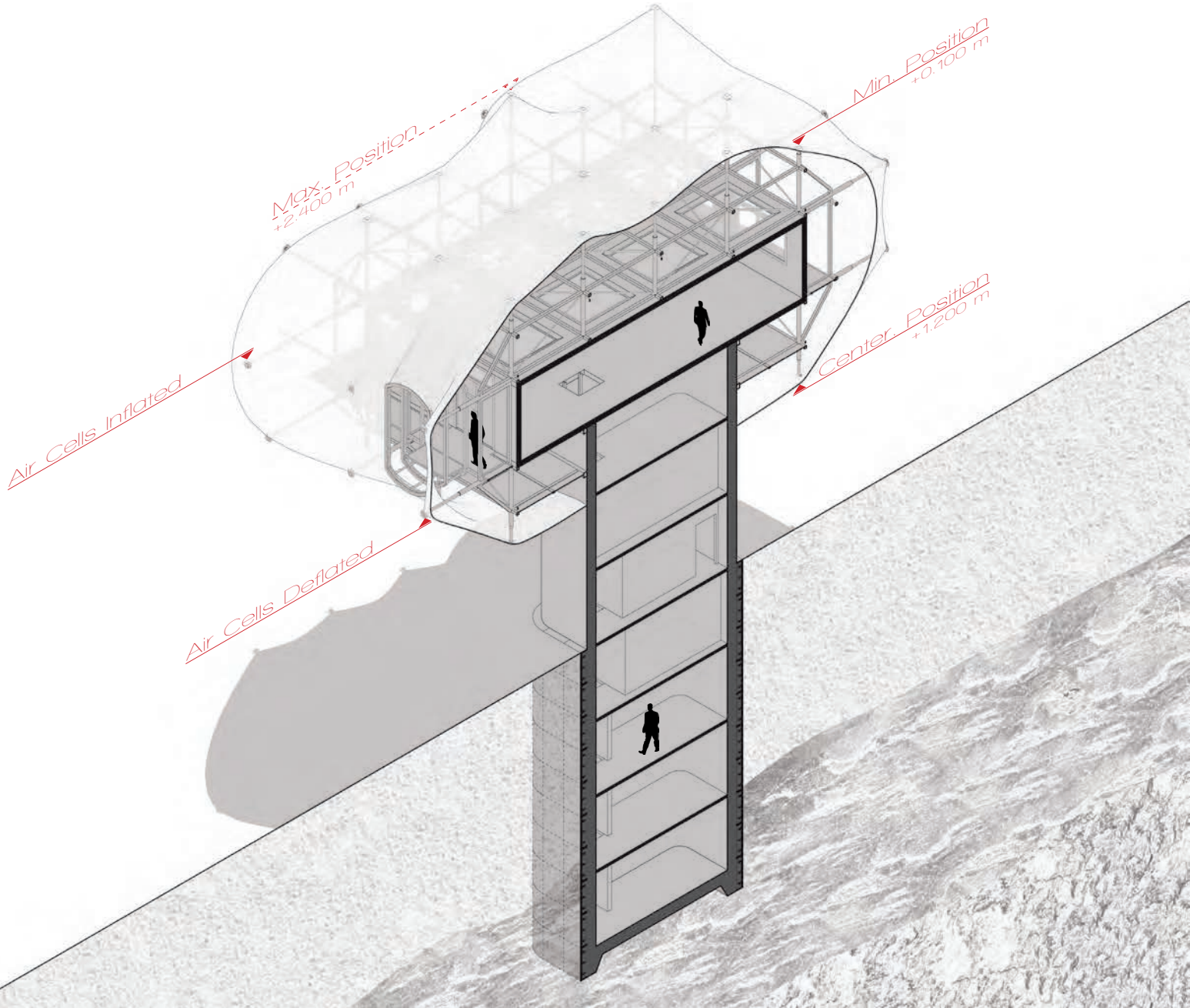
poly(ethylene-co-tetrafluoroethylene)

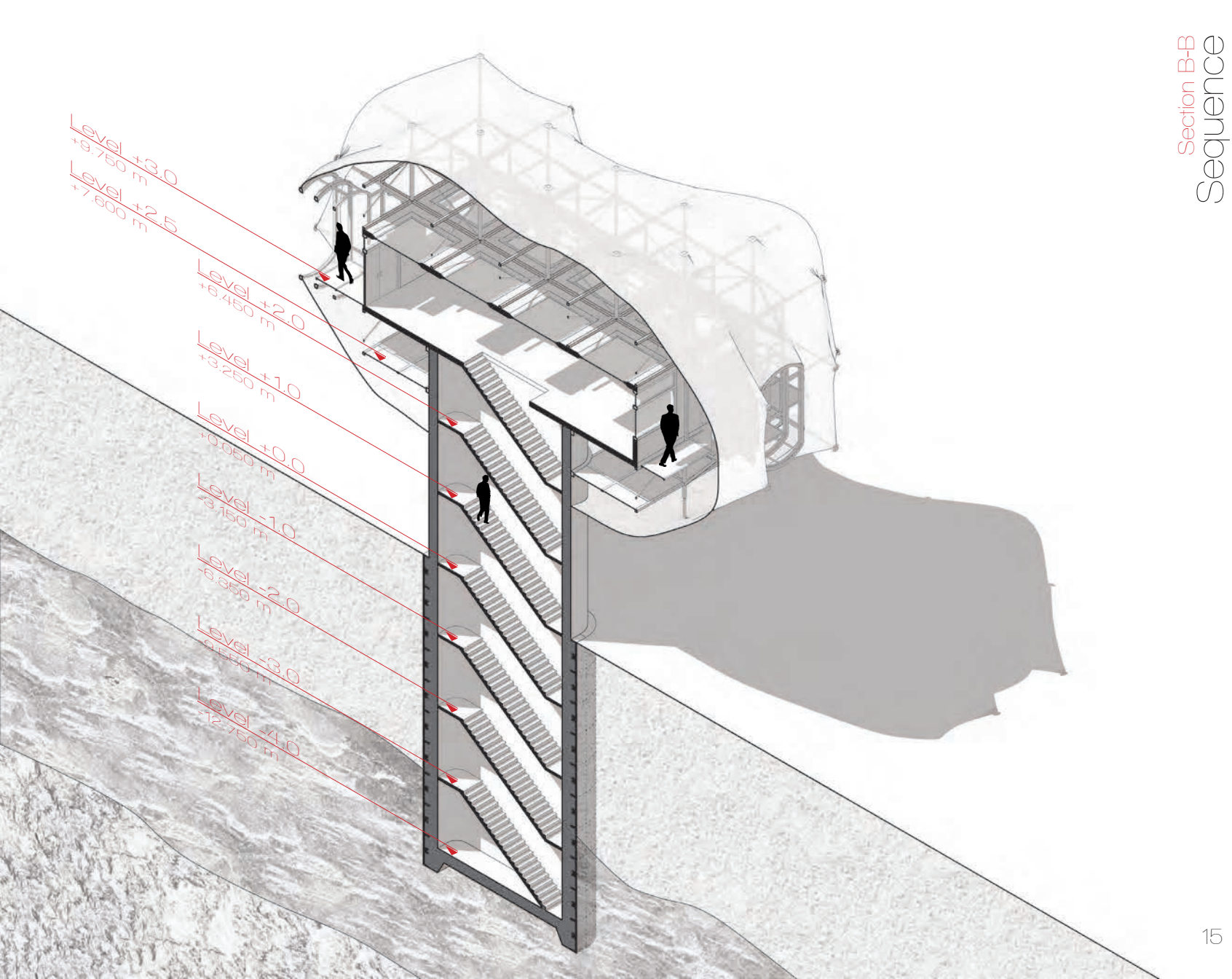
This fluorine based plastic is designed for high resistance to corrosion while maintaining its strength in extreme conditions. With its high melting point and its excellent resistance to chemical, electrical and radiation energies, ETFE is a perfect material to form the radiation shield.

Since the Kiev Oblast exhibits a wide range of environmental conditions, ETFE is perfectly suited as a building envelope. Its strong chemical resistance and low coefficient of friction allows it to be self-cleaning, reducing maintenance costs, and to function as the outermost layer of the shield. Additionally, the inherit flexibility of ETFE allows for constant changes in tension and compression associated with an adaptive skin.

Section A-A

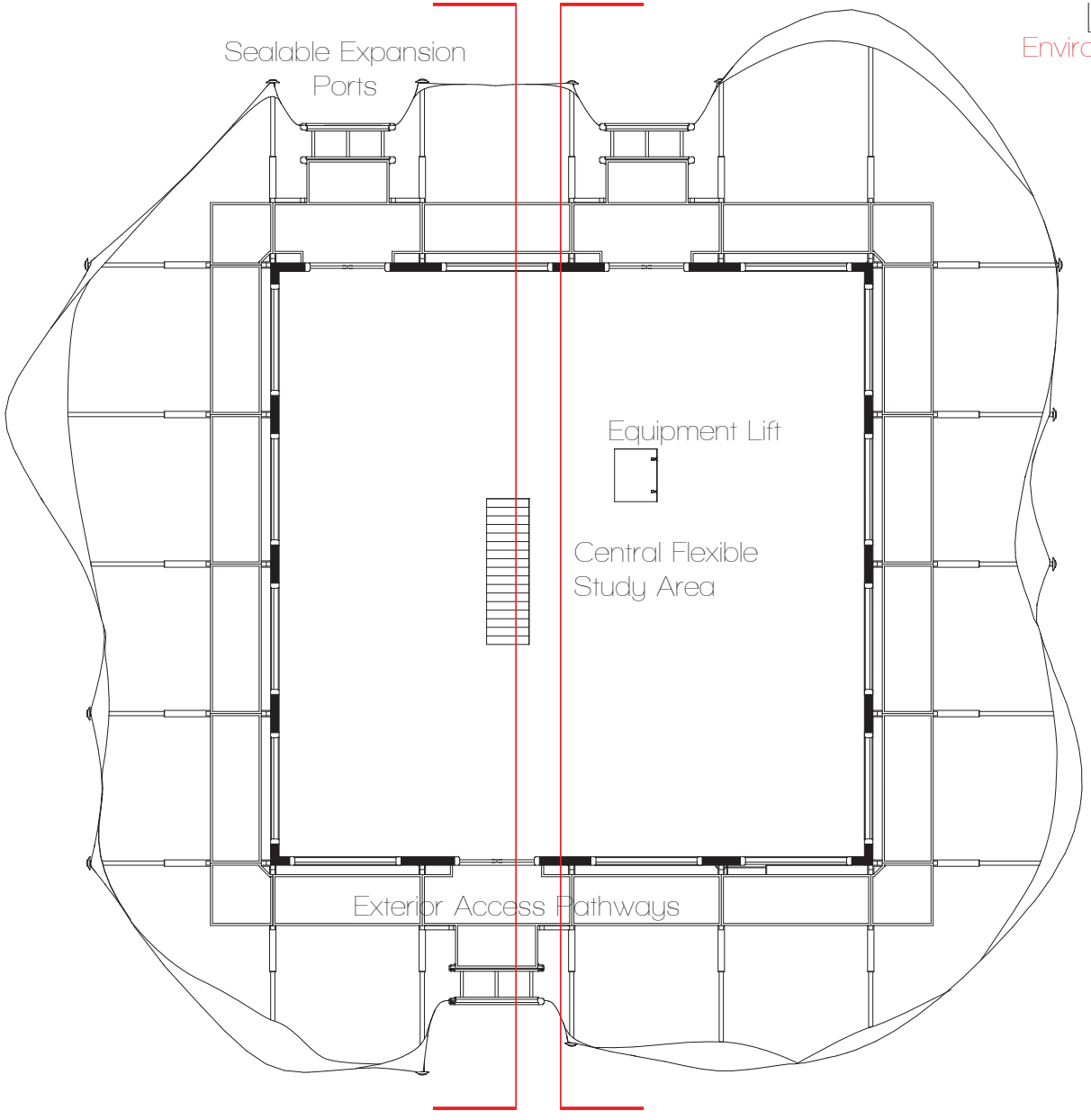
Sequence



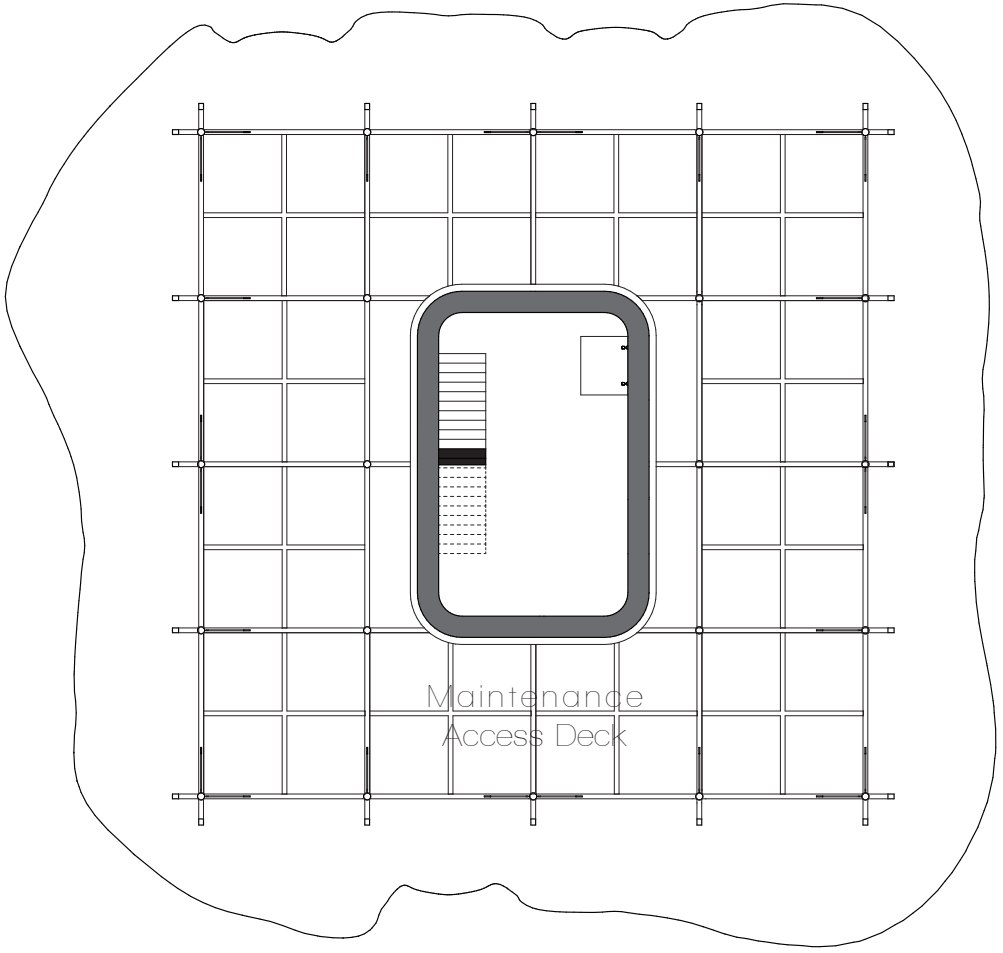

Level +3.0
+9.750 m
Level +2.5
+7.600 m
Level +2.0
+6.450 m
Level +1.0
+3.250 m
Level +0.0
+0.050 m
Level -1.0
-3.150 m
Level -2.0
-6.350 m
Level -3.0
-9.550 m
Level -4.0
-12.750 m

Typical Floor
Plan Layouts

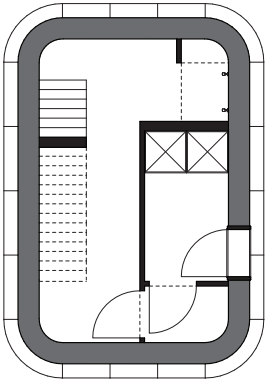
Level +3.0
Enviromental Studies



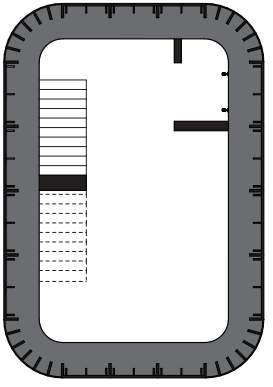
Level +3
Maintenance

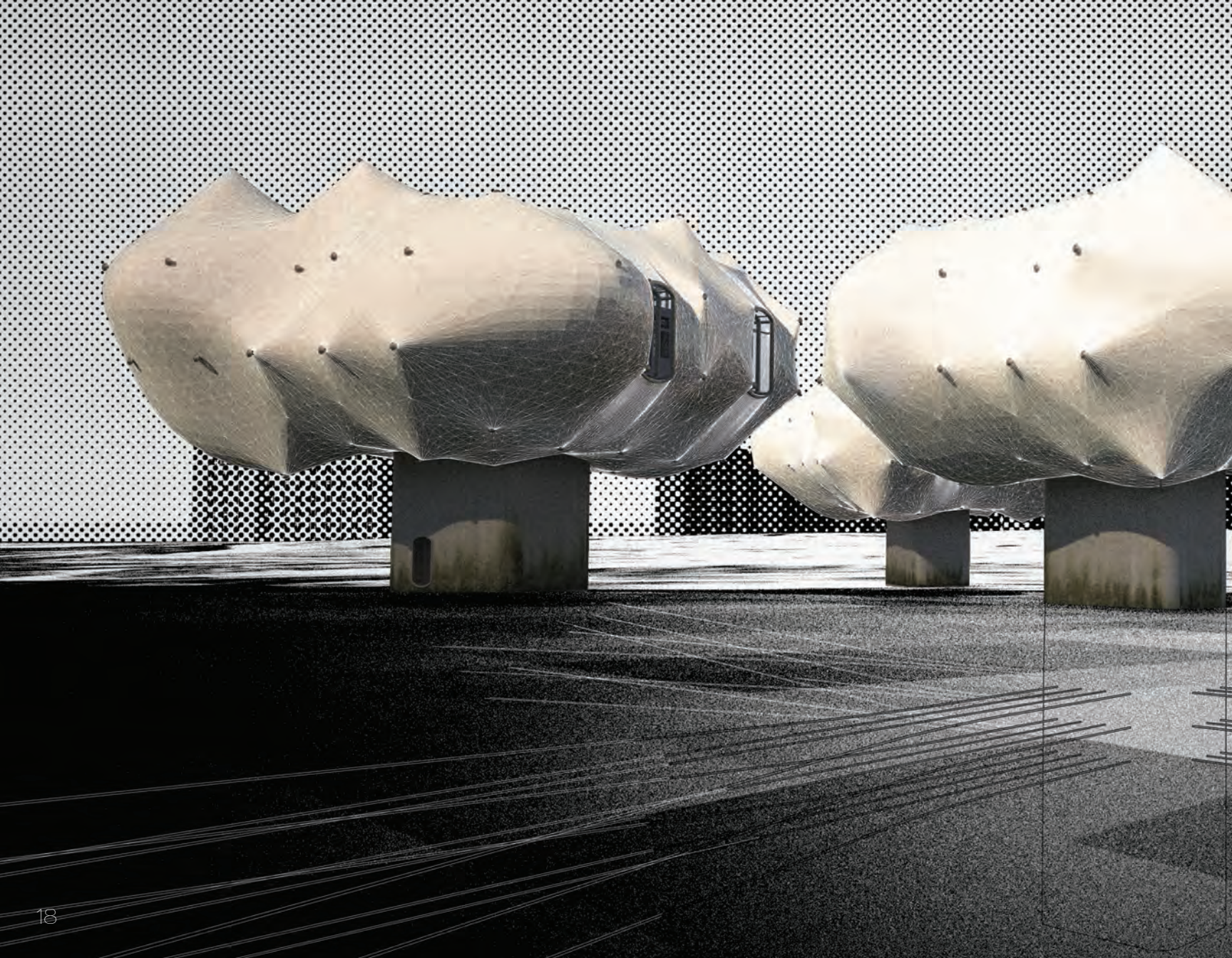


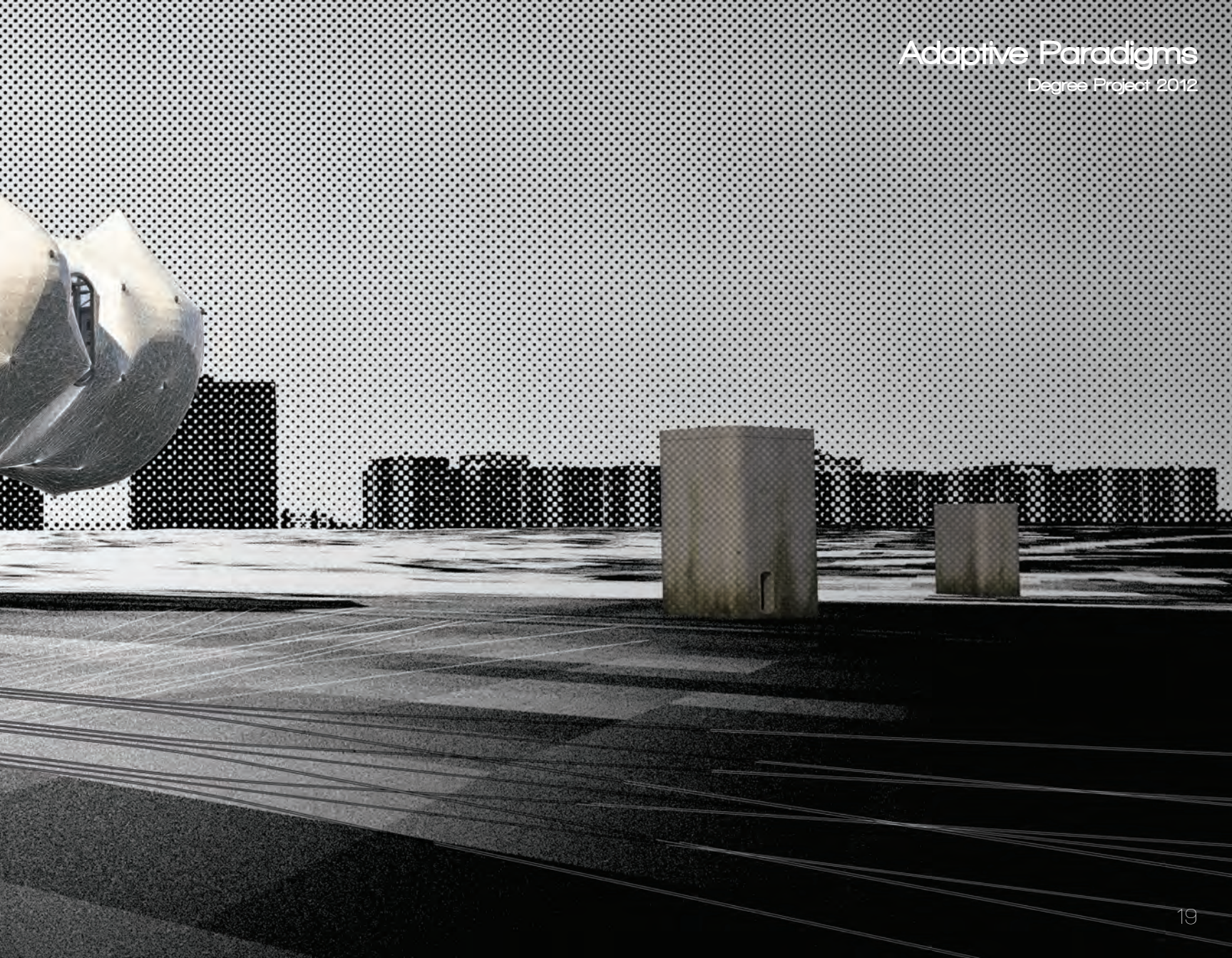
Level +0.0
Entry/Decontamination



Level -3.0
Storage







Waiting for Godot focuses on men that decide to stand around and wait for a man called Godot. Through the course of the play, Godot never comes, but the men insist they continue to wait. They choose to repeat the same day over & over. Although the conversations change day to day, the end result is the same. The men continually choose an absurd path to get to the same place.

The Pathways Theater was inspired by this absurd path. With all of the primary public circulation space moved to the exterior, the visitors choose a variable path, sometimes absurd, to reach the theatrical space inside.

Pathways
Theater

Location: Oceanside, Ca

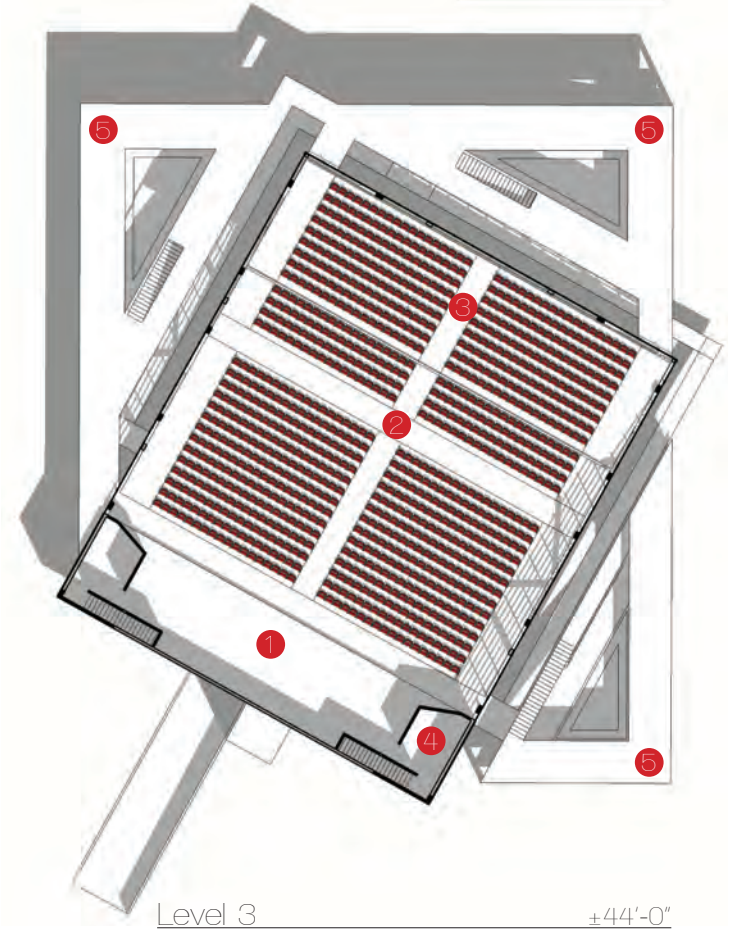
Program: Flexible Theater Venue



Pathways Theater

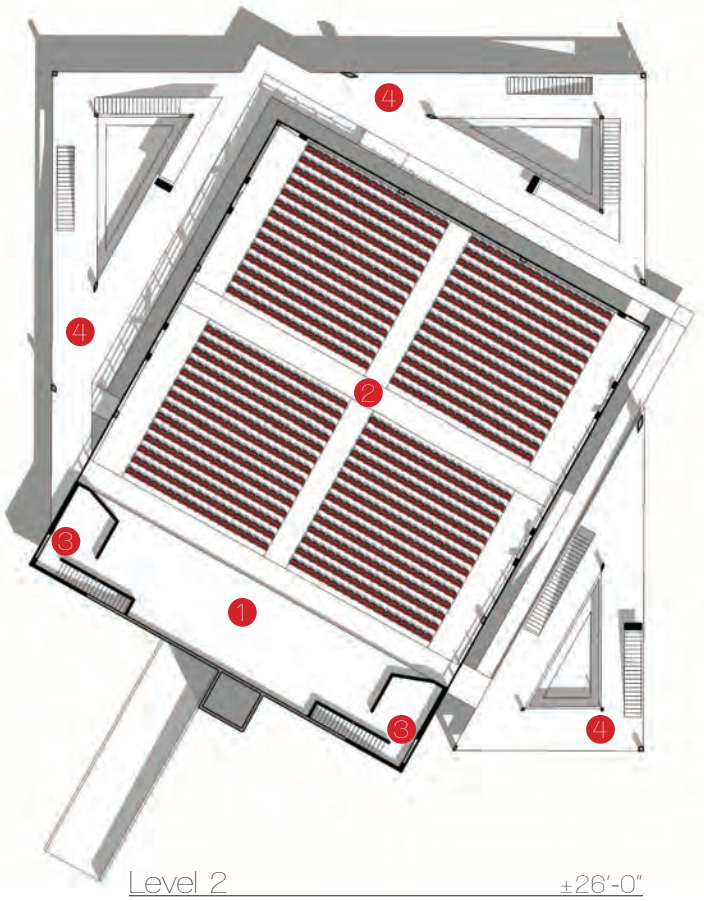
USITT Competition 2011





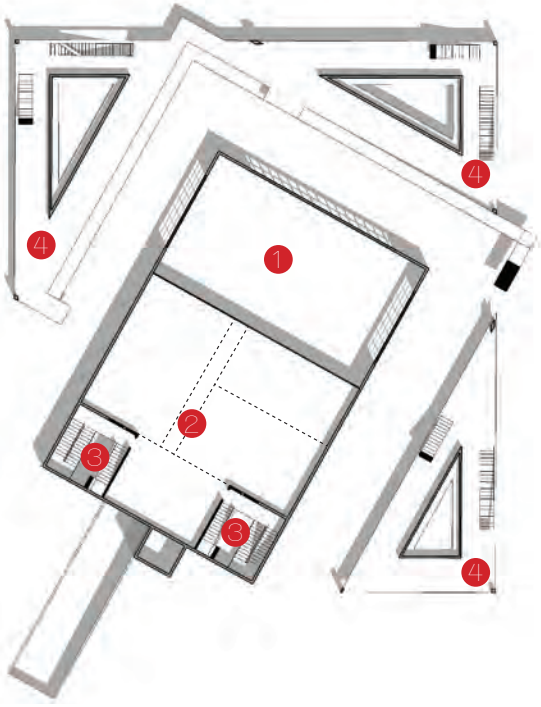
Level 3 ±44'-0"

1. Fly Space
2. Main Theater Floor
3. Upper Theater Balcony
4. Full Height Pre-staging Rooms
5. Outdoor Elevated Patios



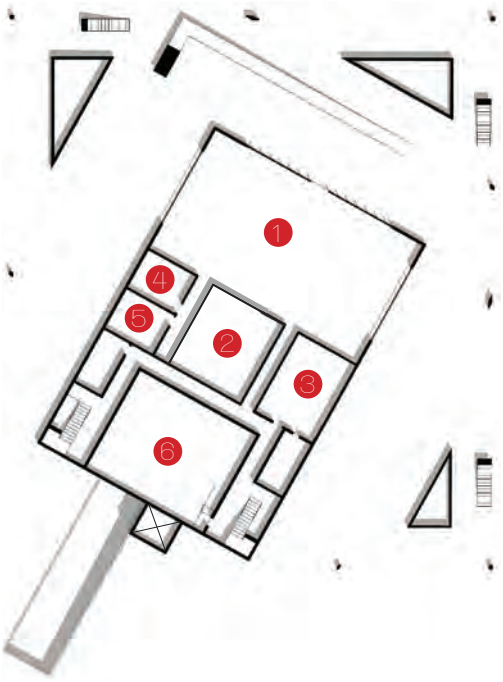
Level 2 ±26'-0"

1. Main Performance Stage
2. Main Theater Floor Seating
3. Stairs down to Practice Rooms
4. Covered Multi-level Patios



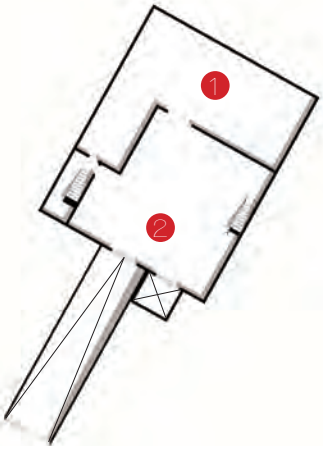
Level 1 ±12'-0"

1. Open to Below
2. Main Rehearsal Flex-Space
3. Circulation Cores
4. Covered Multi-level Patios



Level 0 ±0'-0"

1. Lobby Space
2. Conference/Green Room
3. Kitchen
4. Men's Restroom
5. Women's Restroom
6. Set Fabrication Workshop



Level -1 -16'-0"

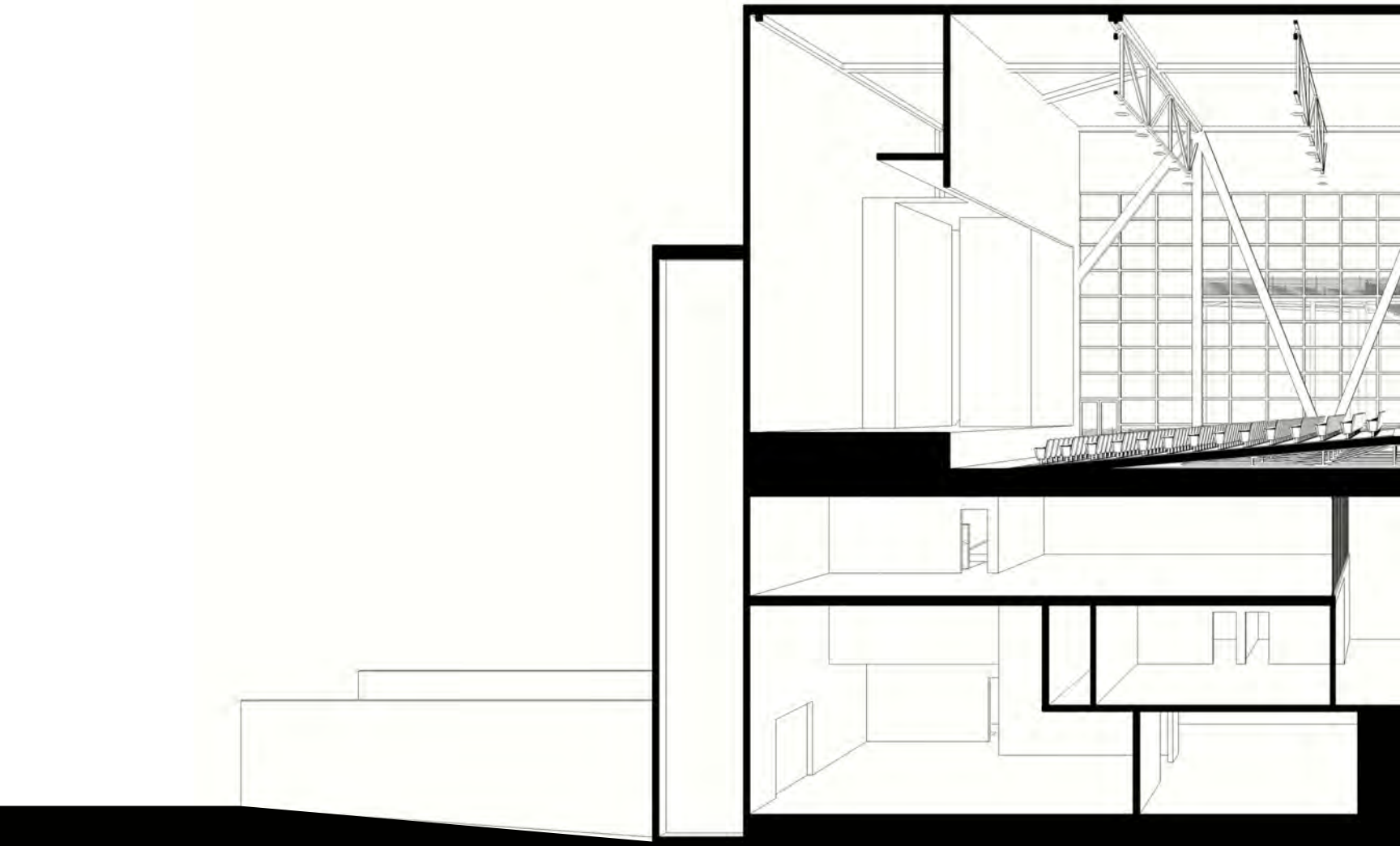
1. Costumes Storage/Shop
2. Set Fabrication Workshop

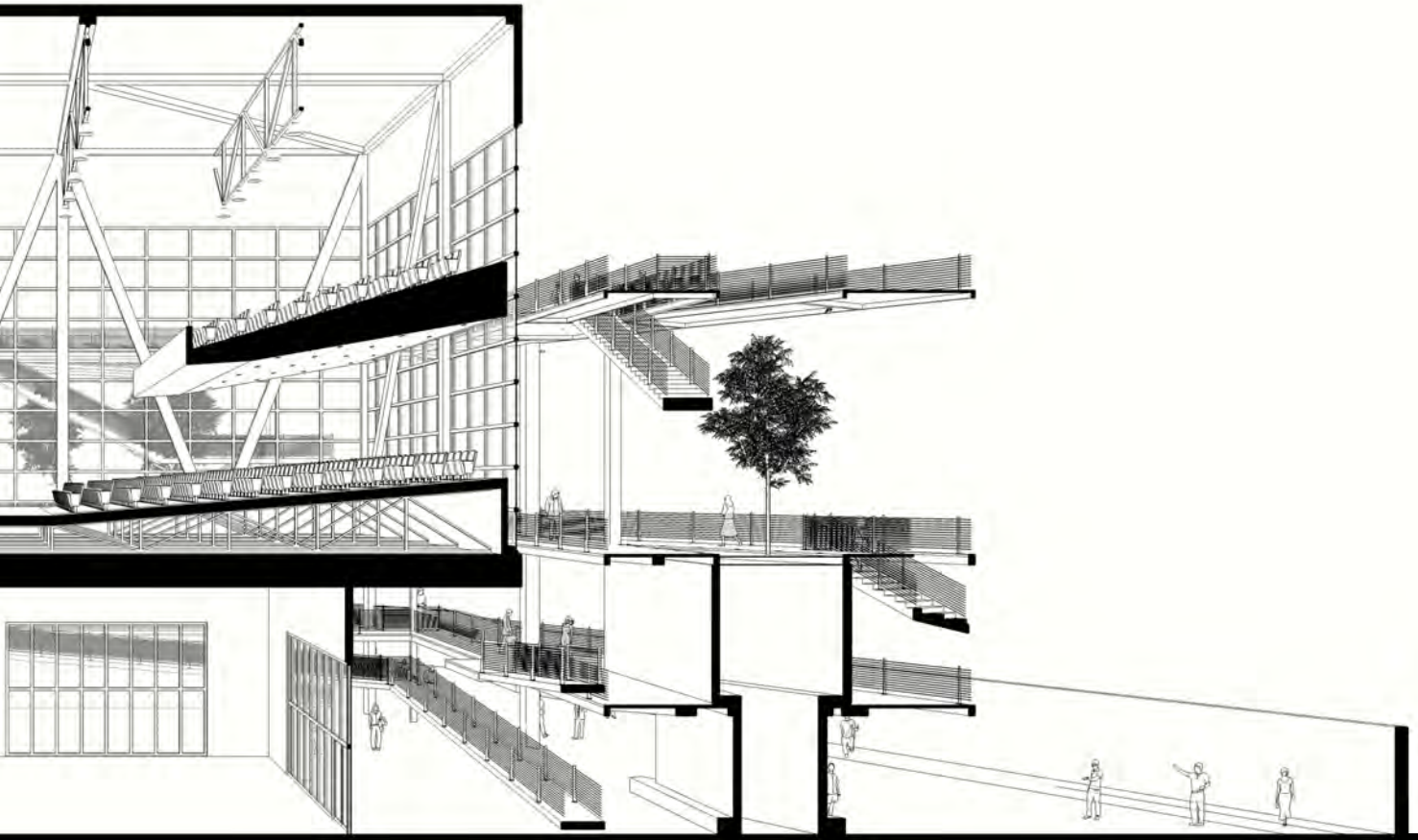




Pathways Theater

USITT Competition 2011





When hearing "The Ideal Theater", many different meanings and pictures can come out of such simple words. For this competition, we decided to take a step and focus on what exactly the combination of "ideal" and "theater" meant to us. First, theaters incorporate a great variety of performance aspects in to their daily use. Theaters usually cater to music, live performance, Shakespearian theater, movies, and any number of digital performances and creations. One feature that all of these different types of performances is that they all tell a story. The narrative aspects of all of these different performances involve differences in meaning and metaphor.

Meaning and metaphor permeate every different type of performance. We feel when a building that is to play host to a constant influence of metaphor, passion, and performance, that the very building itself should be influenced by those things it will play host to.

We chose to take a look in Pink Floyd's "The Wall" written in 1969. This "concept" album, was one of the first of its time. An album in which the narrative continues throughout the entire performance was not a feat that had been tackled before. The entire album deals with the story of Pink, a boy whose father is lost in the great war, and whose trials and tribulations of growing up with an oppressive and over-protector mother lead him down a path toward darkness. Locking himself away from everyone and everything, he builds his "wall" of emotions, and struggles to stay sane behind it all.

We chose to take a deeper look into, and analyze the song "The Trial", which represents a summary of all the things that have transpired so far in the life of Pink, and forces him to come to terms with all those events that have led up to the building of the wall, and leads us to the final question...will it still stand?

The Wall
Theater

Location: 2286 Main Street
San Diego, CA 92113

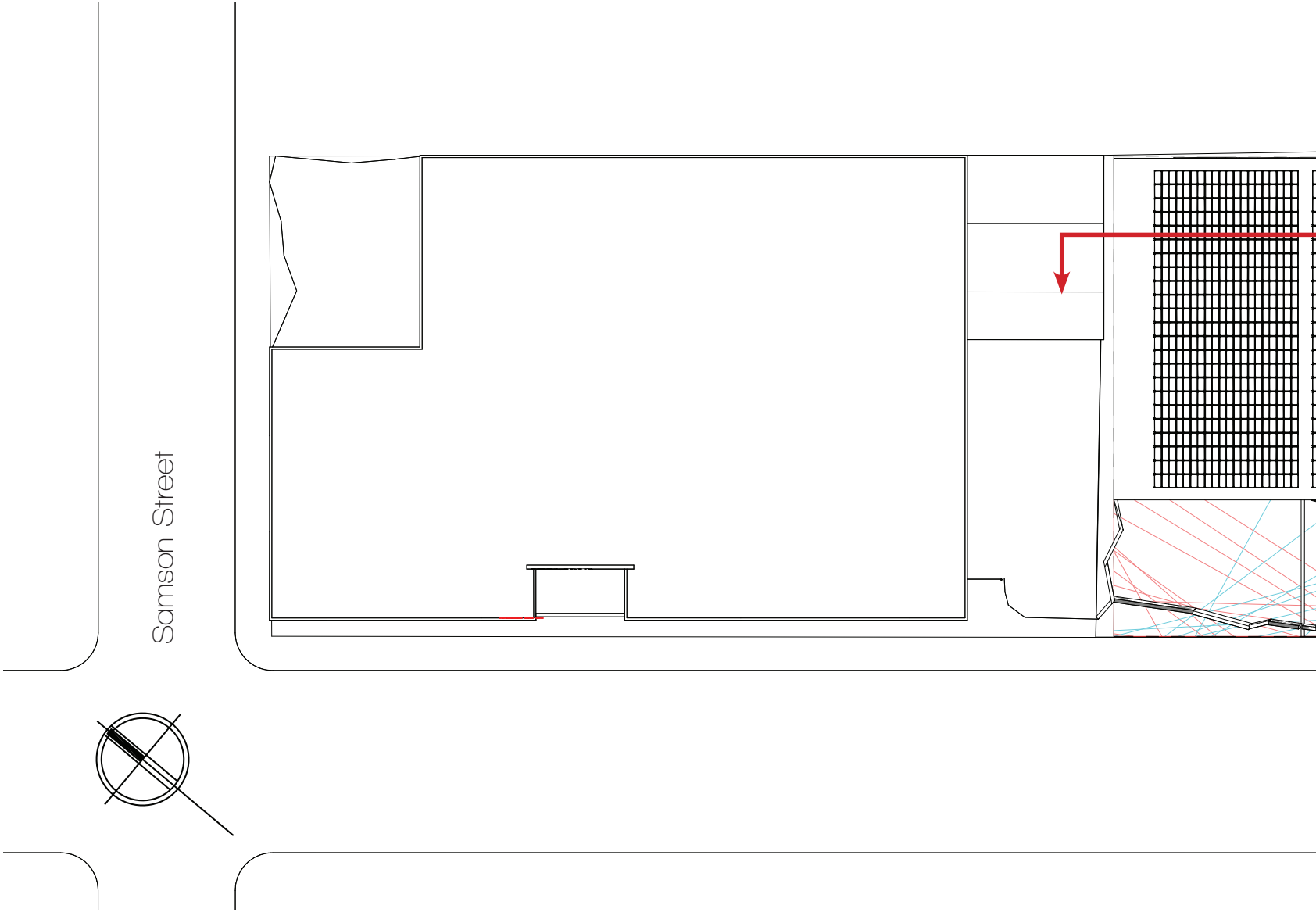
Program: Flexible Theater Venue

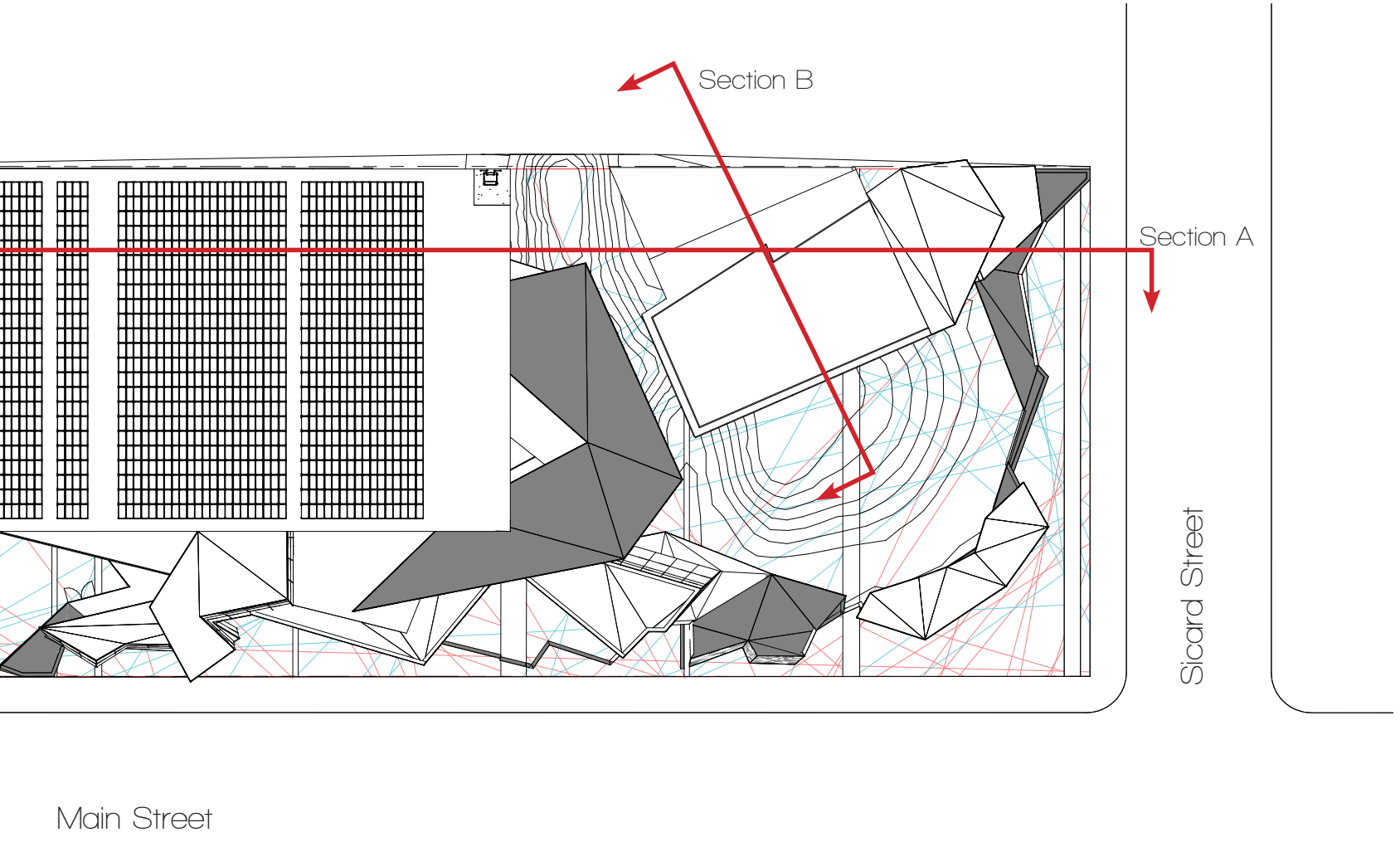


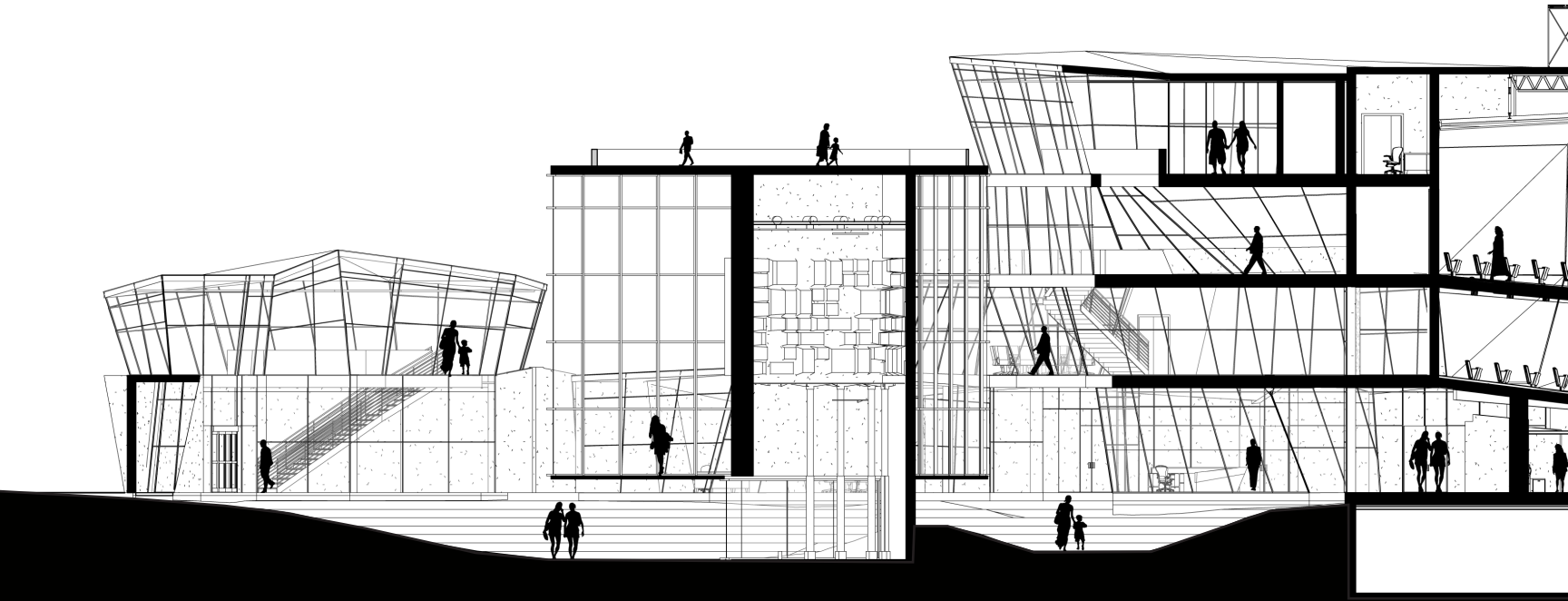
The Wall Theater

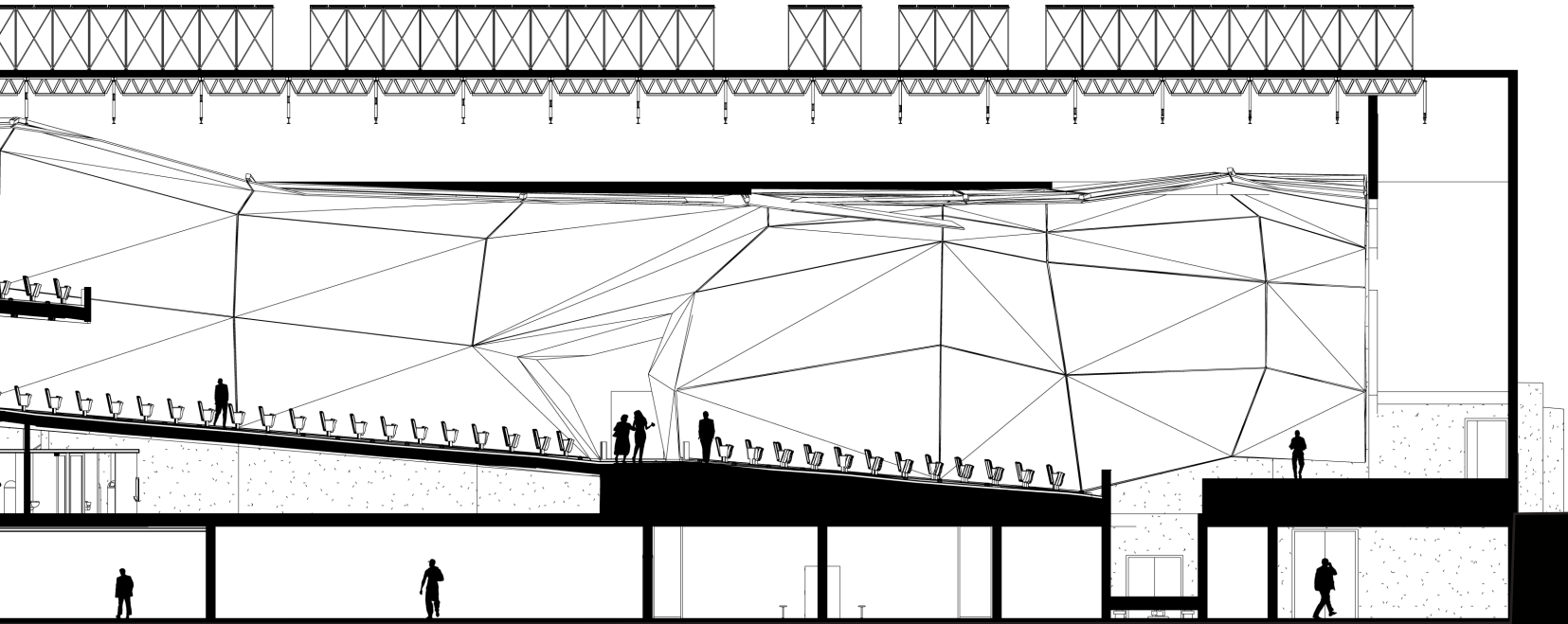
USITT Competition 2010




Samson Street

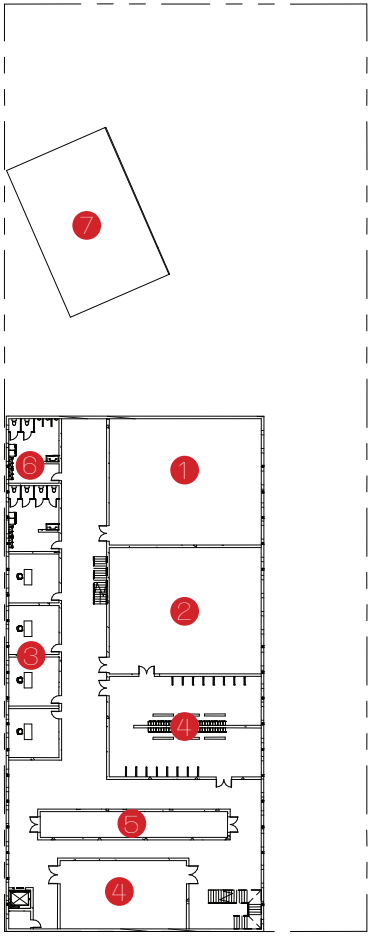

Section B
Section A
Sicard Street
Main Street





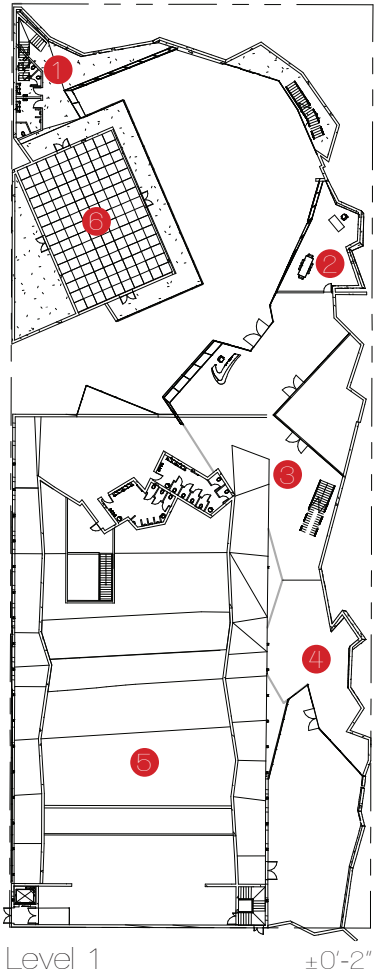






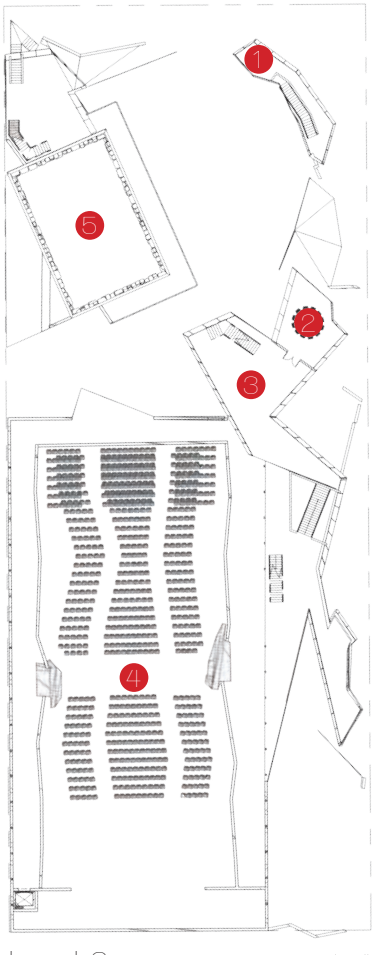
Level -1 -12'-0"

1. Classroom
2. Practice Studio
3. Offices 1-4
4. Storage
5. Orchestral Pit
6. Restrooms
7. Machine Theater



Level 1 ±0'-2"

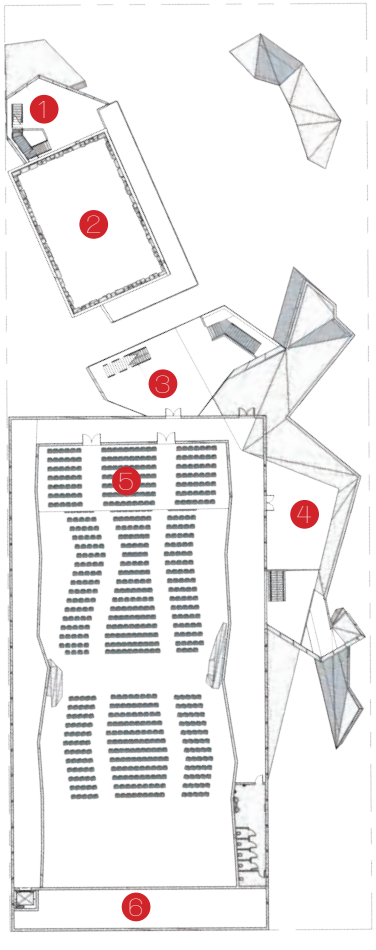
1. Black Box Lobby
2. Main Office
3. Theater Lobby
4. Gallery
5. Sigma 6 Theater Structure
6. Machine Theater Mech.



Level 2 ±14'-0"

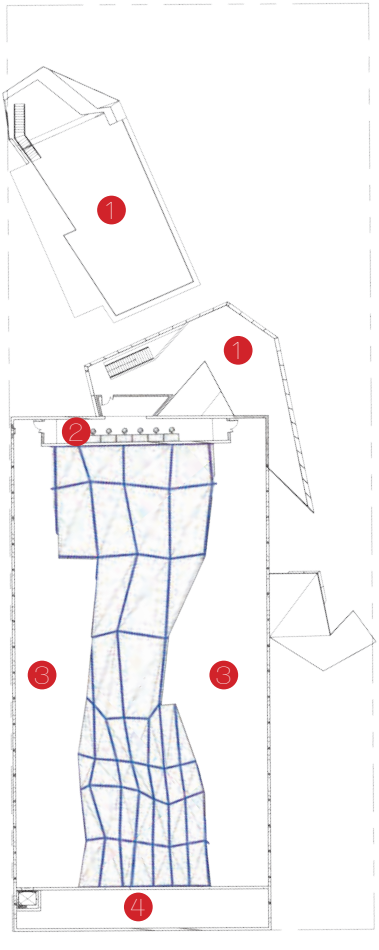
1. Projection Room
2. Meeting Room
3. Main Theater Lobby
4. Sigma 6 Theater Floor
5. Machine Theater Floor





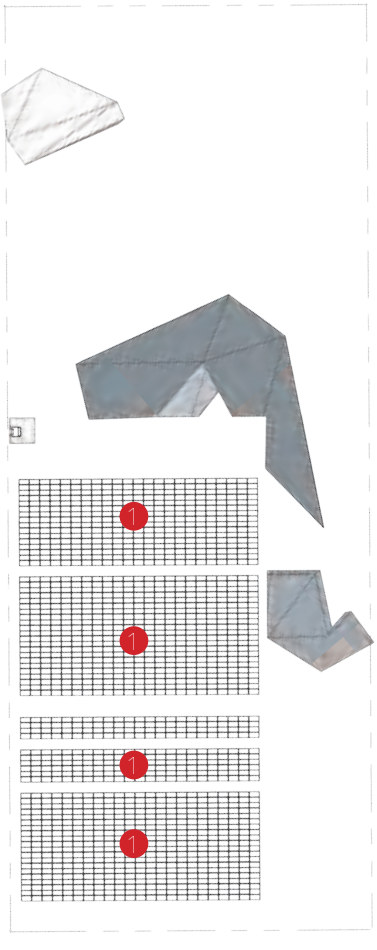
Level 3 ±26'-0"

1. Roof Deck Access
2. Machine Theater
3. Cafe Kitchen
4. Cafe Terrace
5. Sigma 6 Theater Balcony
6. Fly Space



Level 4 ±38'-0"

1. Viewing Area
2. Audio/Visual Control Room
3. Catwalks/Lighting Access
4. Fly Space



Roof Plan ±54'-0"

1. Solar Panel Clusters





The Machine Theater

USITT Competition 2010

Project Narrative

Oceanside has expressed a desire to begin an area anew: an arts district. what is currently comprised of residential, commercial, light industrial and mixed use zones is to become an area that comprises all of these, while blurring the lines between them. However, an interesting question comes to mind...how do we proceed? Do we stick to the old adage of "out with the old, in with the new", or do we keep the spirit of oceanside intact? By building on top of existing buildings on our site, what once made up part of oceanside remains, albeit with a new look, and more importantly, a new lease on life. Repurposed as a multi-purpose housing complex, the existing site of wisconsin ave & cleveland st. open up to artists to live, create and interact.

Oceanside Artist Housing

Location: 305 Wisconsin Avenue
Oceanside, CA

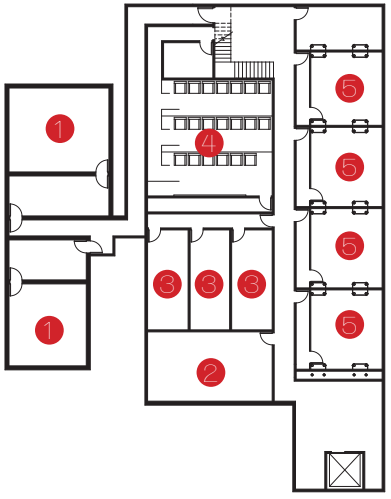
Program: Artist Housing

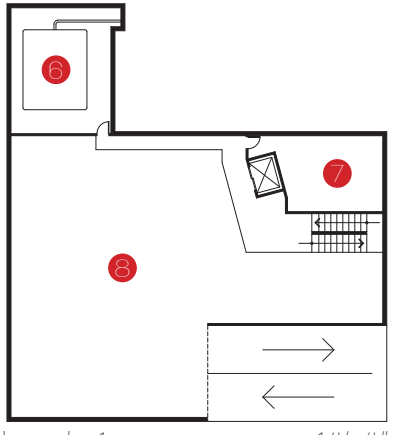


Oceanside Artist Housing

Housing Studio - Fall 2009

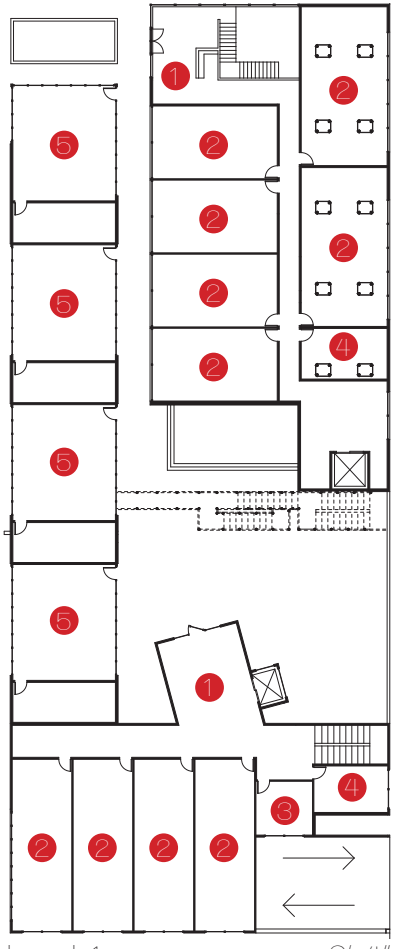






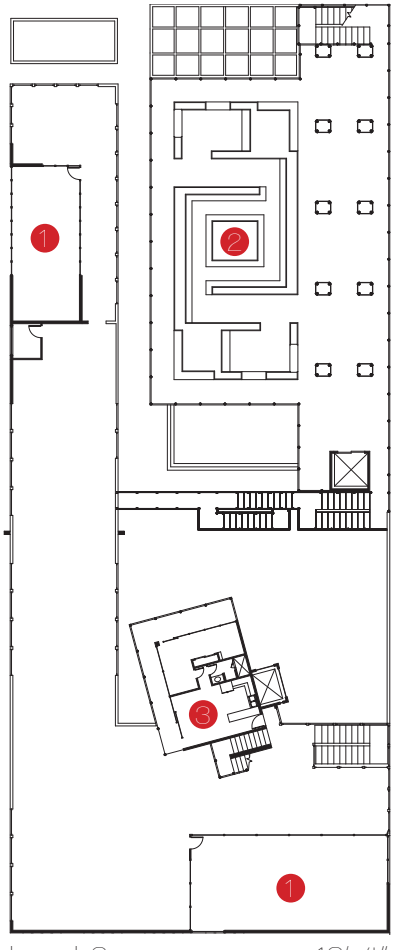
Level -1 +14'-4"

1. Recording Studio
2. Media Production Studio
3. Edit Bay
4. Screening Room
5. Dark Room
6. Cistern
7. Storage/Utilities
8. Tenant Parking



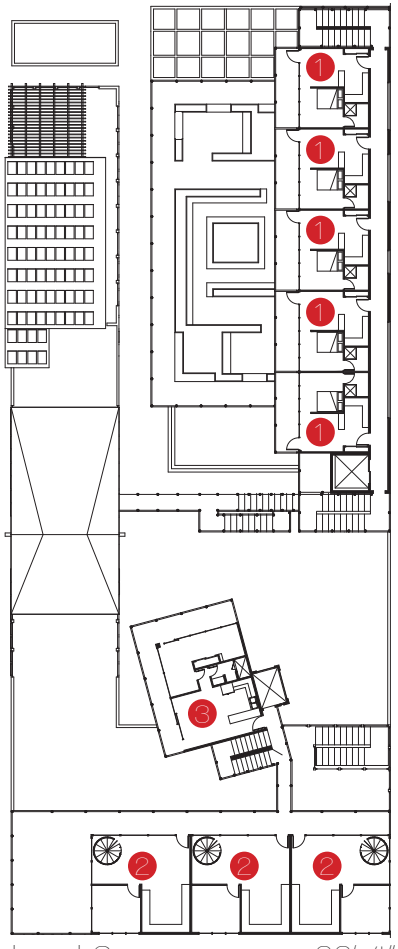
Level 1 +0'-4"

1. Lobby
2. Artist Work Studio
3. Writers Studio
4. Supply/Maintenance
5. Retail Space
6. Outdoor Work Space



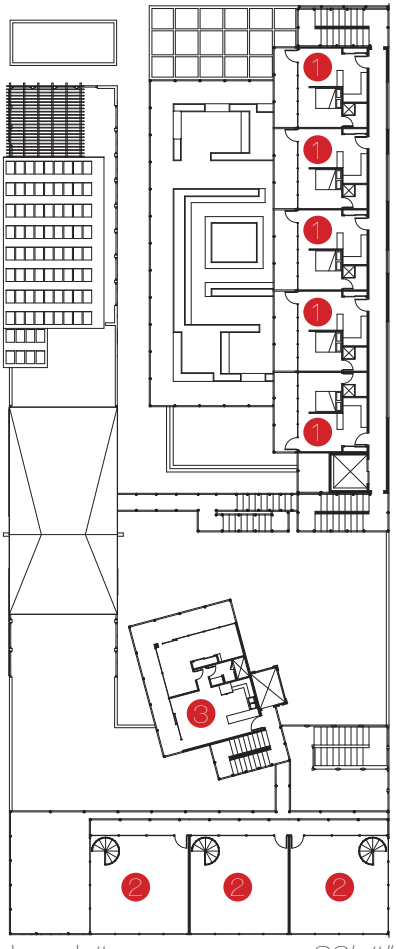
Level 2 +12'-4"

1. Cafe
2. Open Air Rooftop Garden
3. Tower Apt, 600 sq ft



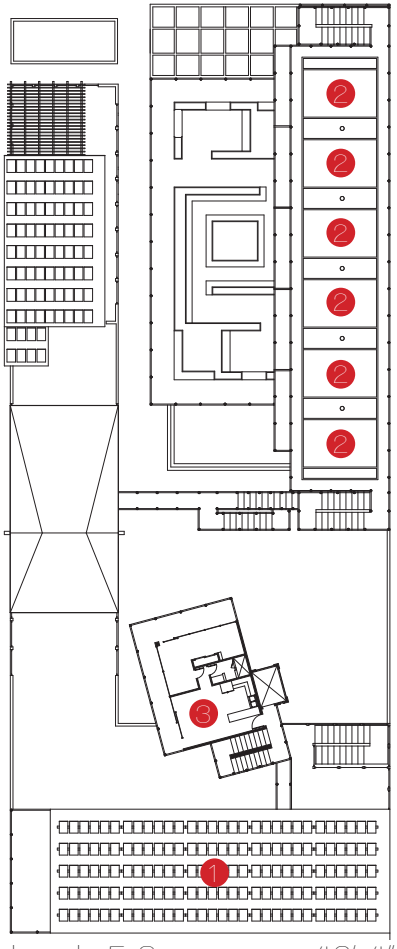
Level 3 +22'-4"

1. Studio Apt, 300 sq ft
2. Family Apt, 600 sq ft
3. Tower Apt, 600 sq ft



Level 4 +32'-4"

1. Studio Apt, 300 sq ft
2. Family Apt, 600 sq ft
3. Tower Apt, 600 sq ft



Levels 5-8 +42'-4"

1. Solar Collectors
2. Upper Rooftop Garden
3. Tower Apt, 600 sq ft