# Sensory Architecture

## Redefining How One Interprets Space

Heather C. Holz

# Problem Statement

How do **combinations** of our **senses** influence the way we interact with our surrounding built environment?

# Theoretical Premise/Unifying Idea

The built environment can trigger and or stimulate the senses, creating a more holistic experience of one's surroundings.

# Justification

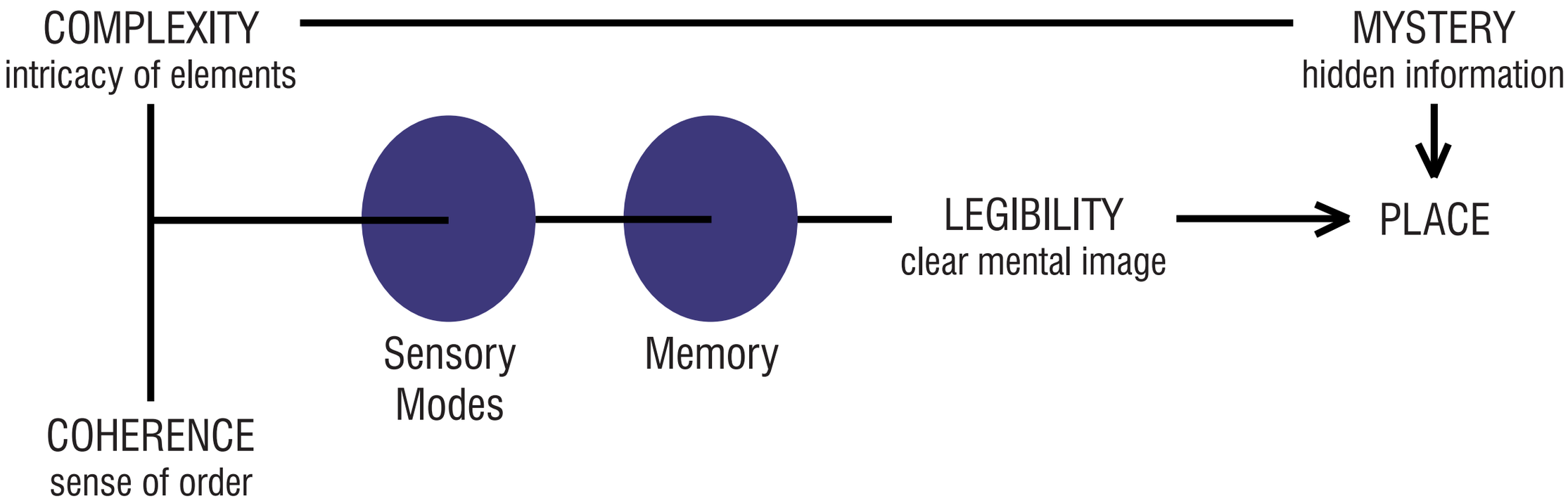
Humans are visually dominant creatures but it is important that designers address not only this visual sense, but all of our senses, for people experience a space or environmnet with different sensory strenghts, and this differentiates their experience and or understanding of that space.

# Research

***"places are specific, but their elements are general; we comprehend places through sensory data; our understanding of place is filtered through memory; and our delight in place is enhanced by a degree of mystery."***

- Henry James

# Character of Place Schematic




***"The complexity of the individual part is only understood against the coherence of the larger paradigm...it is the clarity of this relationship that grants legibility. And while mystery indeed gives delight, it is likely not critical to our understanding of spatial construct..."***

- Joy Monice Malnar and Frank Vodvarka

*Authors of Sensory Design*

# Legibility Schematic

| Sense | Complexity | Coherence | Contextual |
|---|---|---|---|
| **Visual** | **Figure** (detail) | **Ground** (context) | **Icon** |
| **Sound** | **Signal** (note) | **Keynote** (ground) | **Soundmark** |
| **Odor** | **Immediate** (context) | **Ambient** | **Episodic** (memory) |
| **Haptic 1 - Touch** | **Gradient** (surface) | **Context** (type) | **Attribute** |
| **Haptic 2 - Kinesthesia** | **Tension** (muscular) | **Resistance** (mass) | **Task** |
| **Haptic 3 - Plasticity** | **Compression** | **Expansion** | **Expected** |
| **Haptic 4 - Temp/Hum.** | **Degree** | **Range** | **Comfort** |
| **Orientation** | **Self** (body) | **Space** (surround) | **Activity** |

**Complexity:** the intricacy of detail present in a specific location

+

**Coherence:** our sense of order, our knowledge of the larger environment

=

**Figure/Ground Relationship**

**Contextual:** sensory data that is neither figure nor ground but fundamental components to the identification of a particular place.

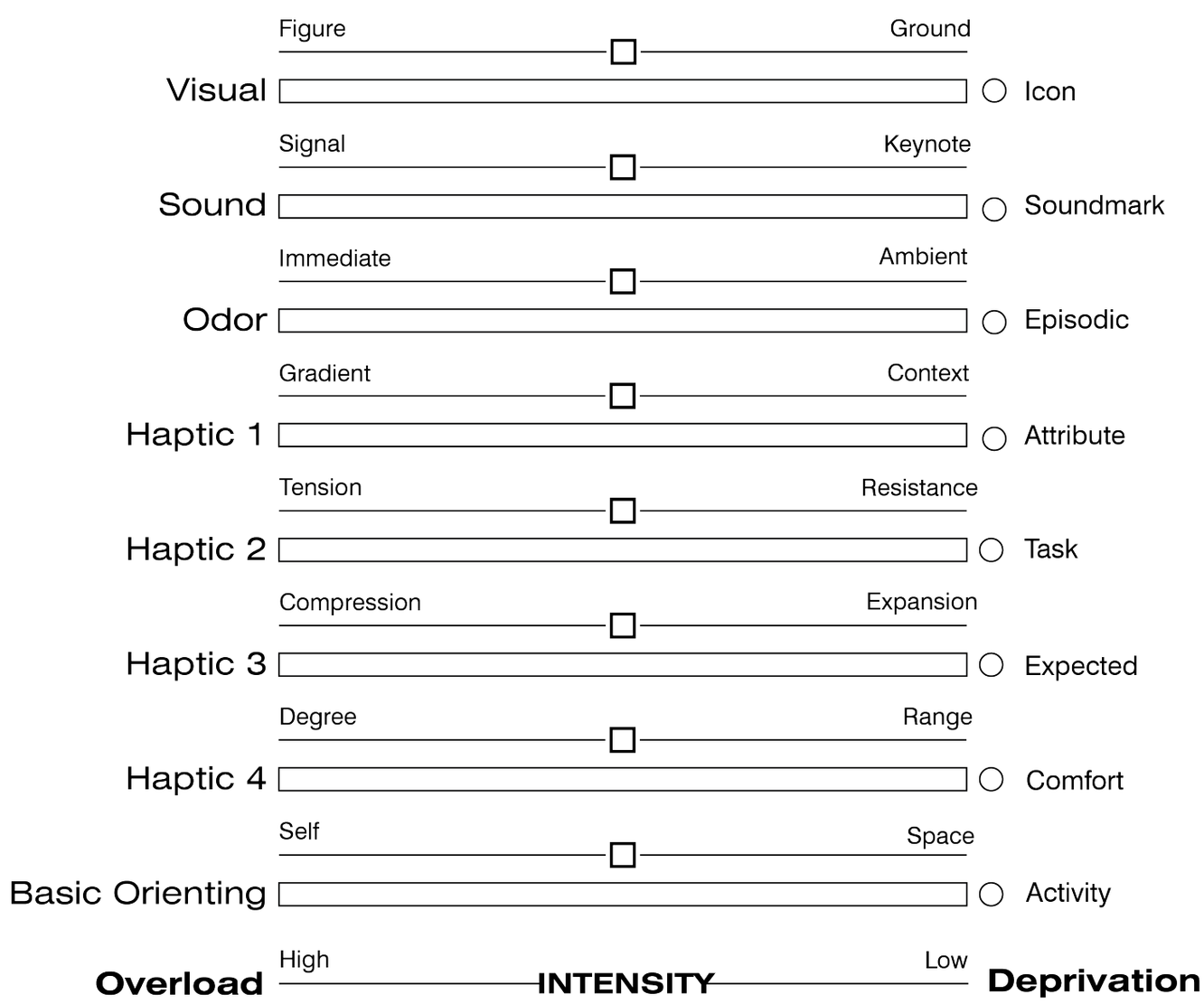
# Sensory Slider

**The Sensory Slider is a design tool based on the Legibility Schematic, which has a bar, that for each sense, measures the intensity of the figure/ground clarity from overload to deprivation.**

**= Complexity/Coherence**

**= Contextural**

Joy Monice Mainar and Frank Vodvarka are the creators of the *Character of Place Schematic, Legibility Schematic* and *Sensory Slider* Diagrams/Graphics.



# Process

# Sensory Matrix

## New Design

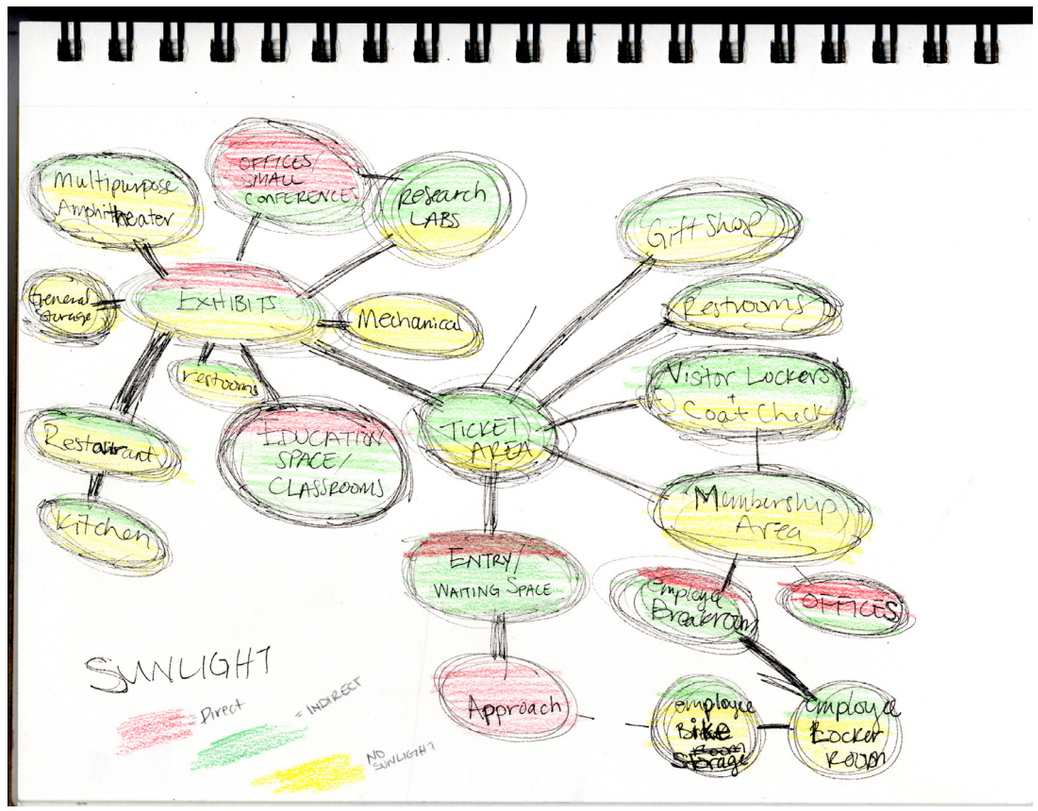
| | Approach | Entry | Ticket Area | Coat Check | Gift Shop | Restrooms | Exhibits | Education Space | Restaurant | Kitchen | Offices | Employee Break Room | Employee Locker Room |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| The Basic Orienting System | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| The Auditory System | 15 | 20 | 20 | 0 | 20 | 0 | 20 | 30 | 20 | 20 | 20 | 0 | 0 |
| The Haptic System | 10 | 10 | 10 | 15 | 20 | 0 | 20 | 15 | 10 | 0 | 15 | 15 | 0 |
| The Taste-Smell System | 5 | 0 | 0 | 0 | 0 | 15 | 15 | 0 | 30 | 30 | 0 | 40 | 40 |
| The Visual System | 65 | 50 | 65 | 80 | 55 | 80 | 20 | 50 | 20 | 30 | 60 | 40 | 35 |
| Thermal | 0 | 15 | 0 | 0 | 0 | 0 | 20 | 0 | 15 | 15 | 0 | 0 | 20 |
| | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

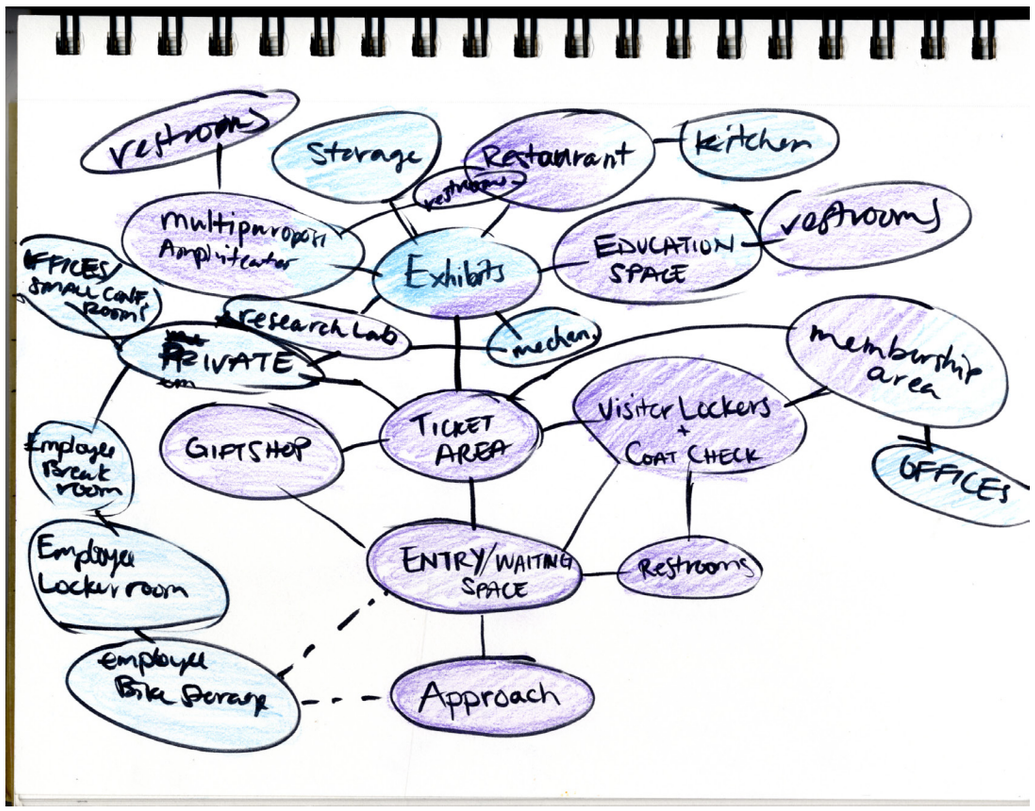
## Standard Design

| | Approach | Entry | Ticket Area | Coat Check | Gift Shop | Restrooms | Exhibits | Education Space | Restaurant | Kitchen | Offices | Employee Break Room | Employee Locker Room |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| The Basic Orienting System | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| The Auditory System | 25 | 25 | 0 | 0 | 10 | 0 | 10 | 10 | 10 | 30 | 10 | 5 | 5 |
| The Haptic System | 0 | 0 | 0 | 0 | 15 | 0 | 20 | 0 | 10 | 0 | 0 | 0 | 0 |
| The Taste-Smell System | 0 | 0 | 0 | 0 | 5 | 10 | 0 | 0 | 30 | 60 | 0 | 10 | 10 |
| The Visual System | 75 | 75 | 100 | 100 | 70 | 90 | 65 | 90 | 50 | 10 | 90 | 85 | 85 |
| Thermal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

# Spacial Diagrams

## Sunlight and Public vs. Private




| | Approach | Entry | Ticket Area | Coat Check | Gift Shop | Restrooms | Exhibits | Education Space | Restaurant | Kitchen | Offices | Employee Breakroom | Employee Locker Room | Employee Bike Storage | General Storage | Mechanical |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direct Sunlight | 100 | 50 | | | | | 33.3 | 50 | | | 70 | 50 | | | | |
| Indirect Sunlight | | 70 | 60 | 60 | 50 | 40 | 33.3 | 70 | 50 | 50 | 50 | 70 | 40 | 50 | | |
| No Sunlight | | | 40 | 40 | 50 | 60 | 33.3 | | 70 | 70 | | | 60 | 70 | 100 | 100 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Public (Occupiable by visitors) | 50 | 70 | 90 | 90 | 80 | 100 | 20-30 | 60 | 90 | | | | | | | |
| Private | 50 | 30 | 10 | 10 | 20 | | 80-70 | 40 | 10 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

# Site

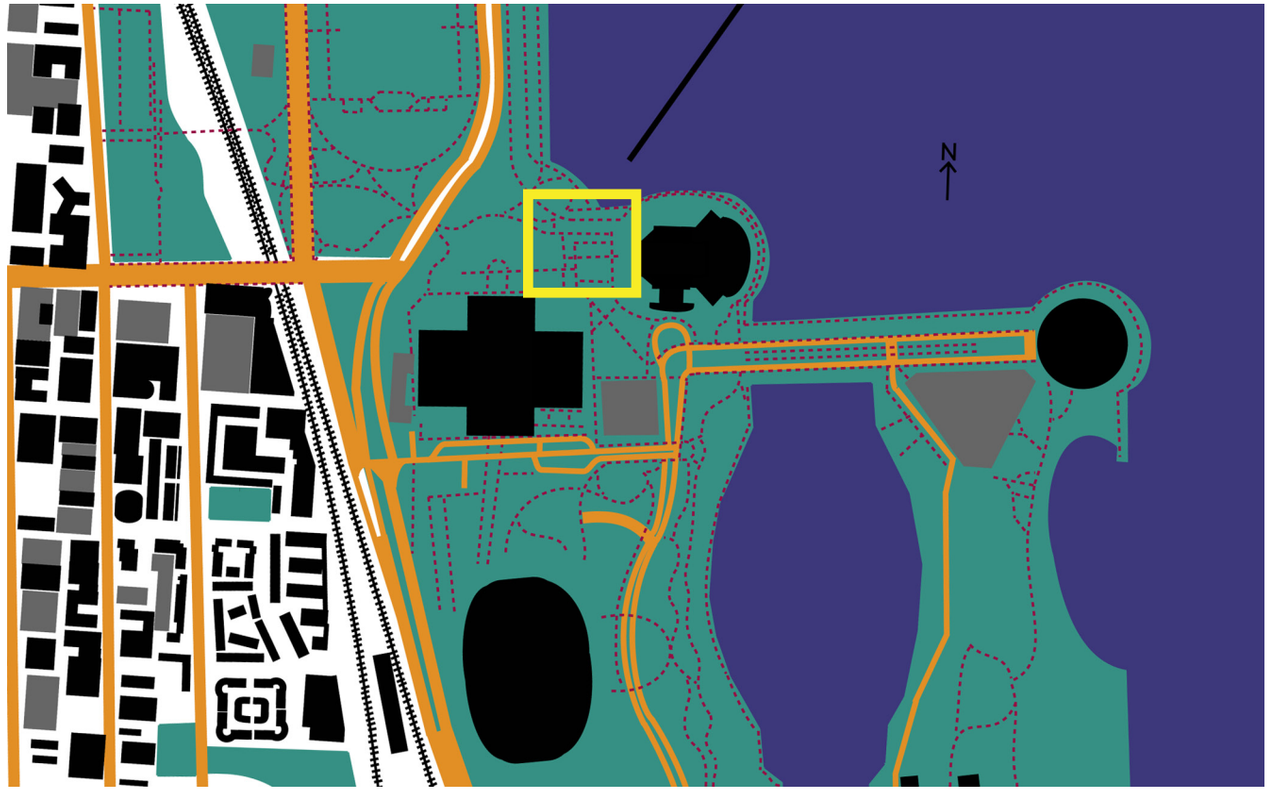
## Chicago, Illinois - Museum Campus



# Typology

## Addition to the John G. Shedd Aquarium

- Roadways
- Buildings
- Parking Lots
- Green Space
- Lake Michigan
- Railroad Tracks
- Pedestrian Paths
- Site



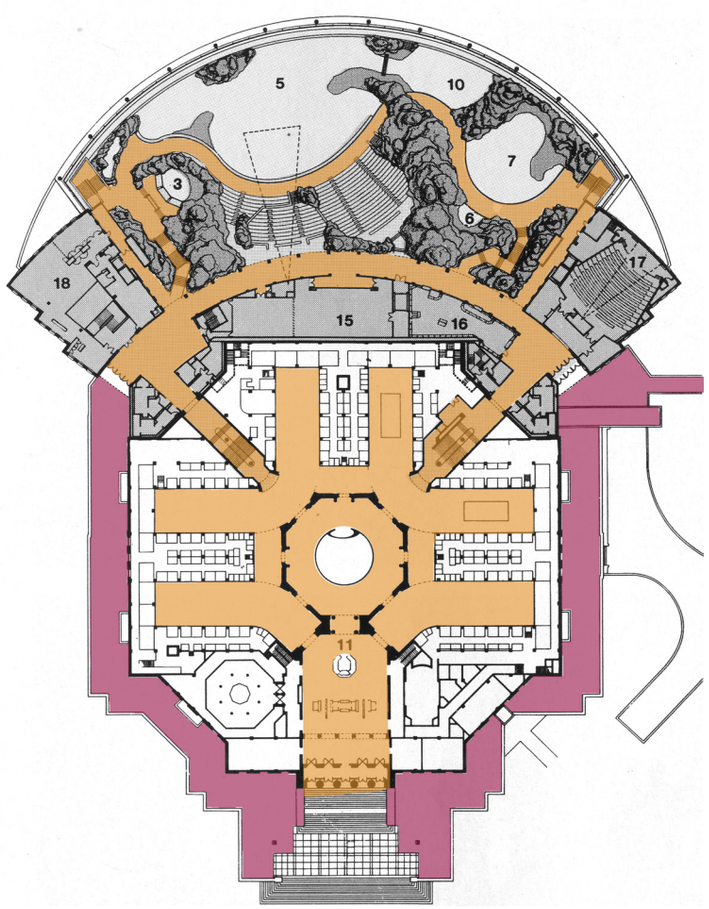
# Existing Site

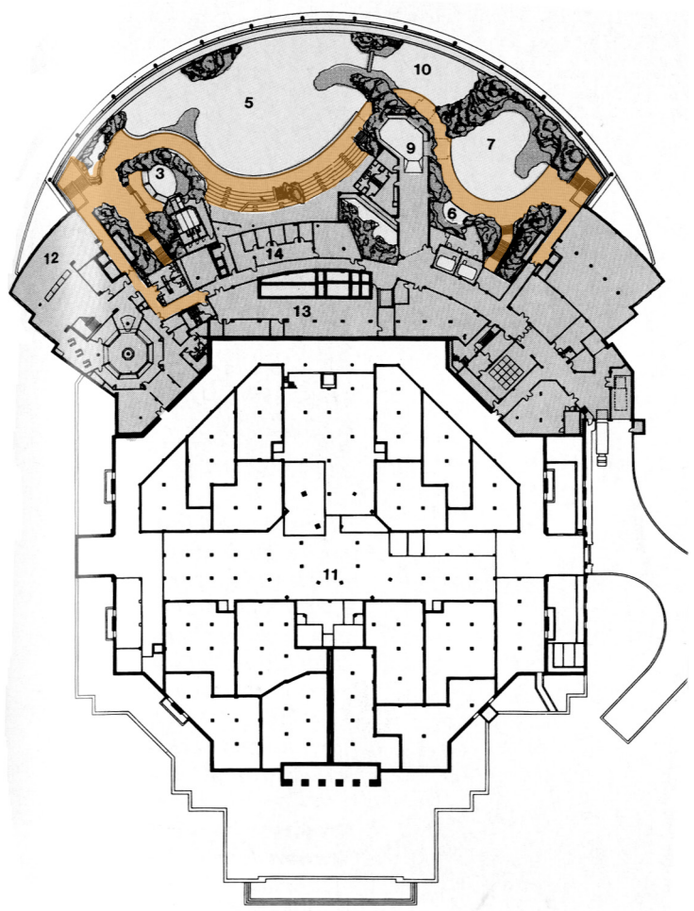
## Current John G. Shedd Aquarium

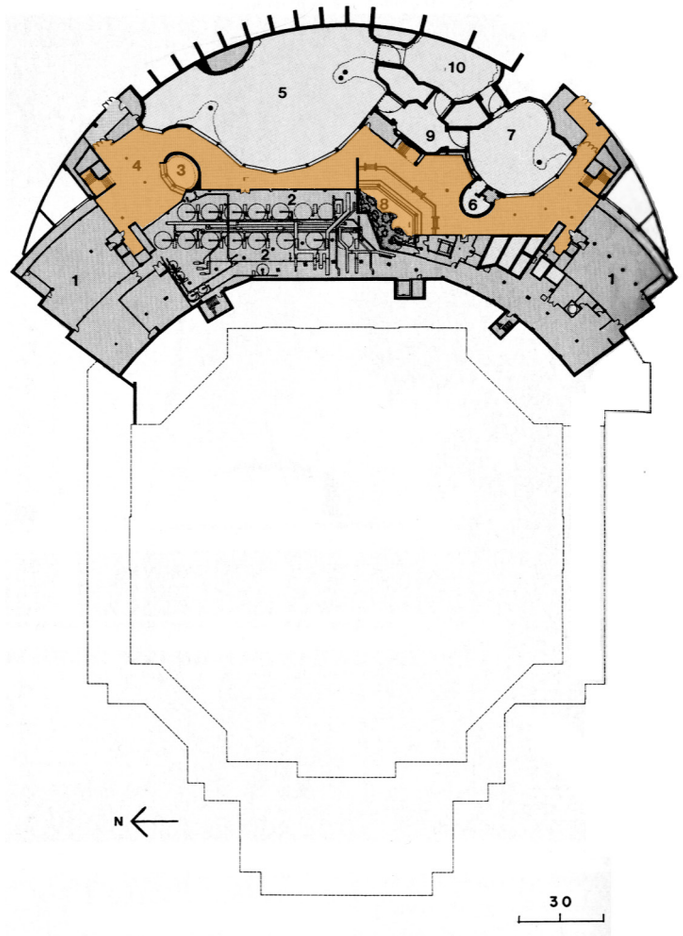

## Neighboring Field Museum

# Original Building and Oceanarium

## Floor plans from Arch Record

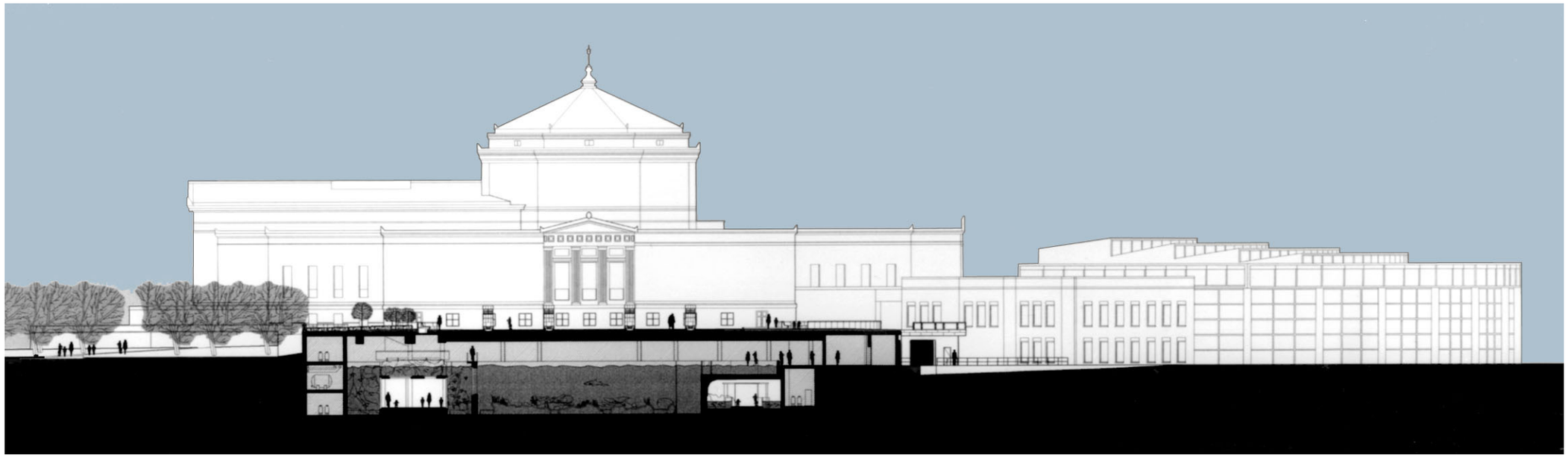


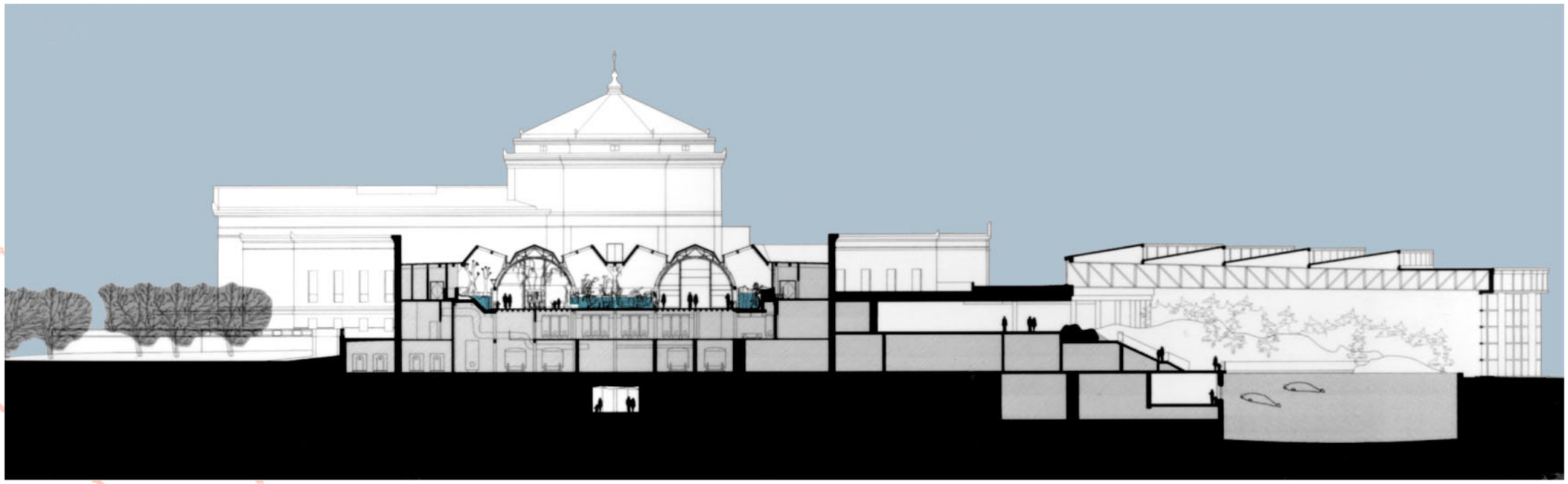



# Presentation Drawings from EHDD

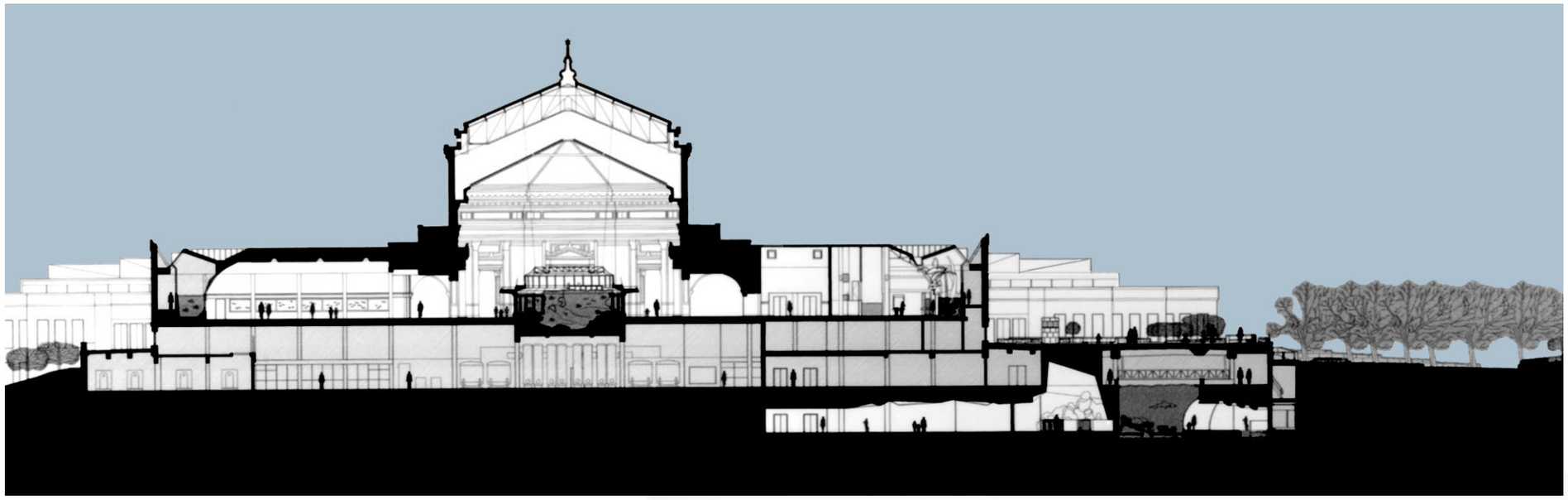
## Sections Looking North



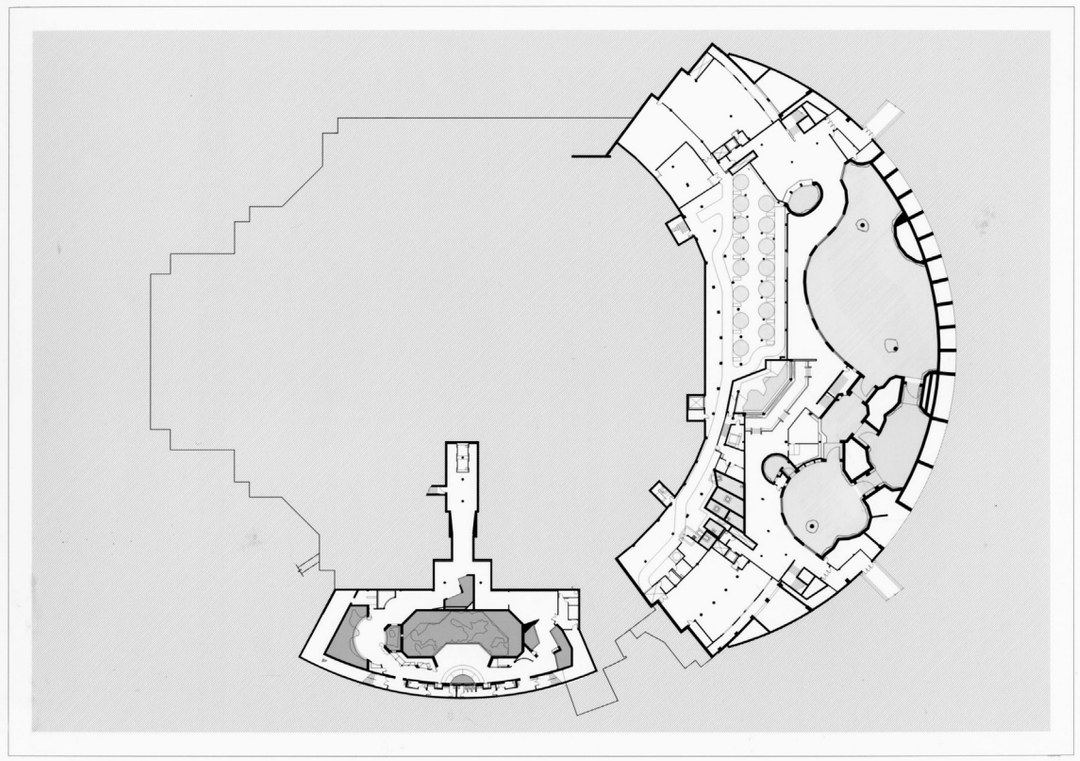


# Presentation Drawings from EHDD

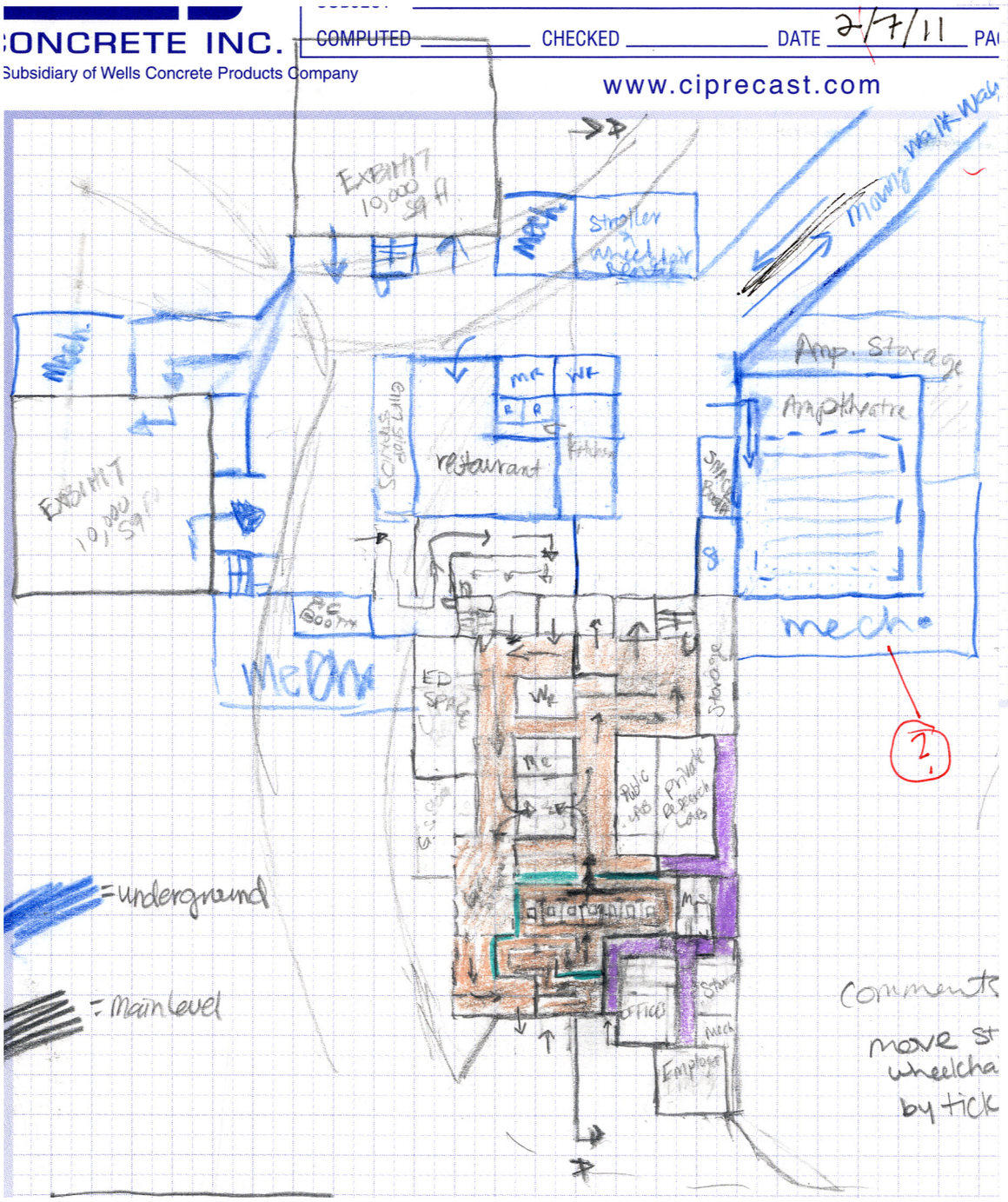
## Section Looking East through center of Aquarium

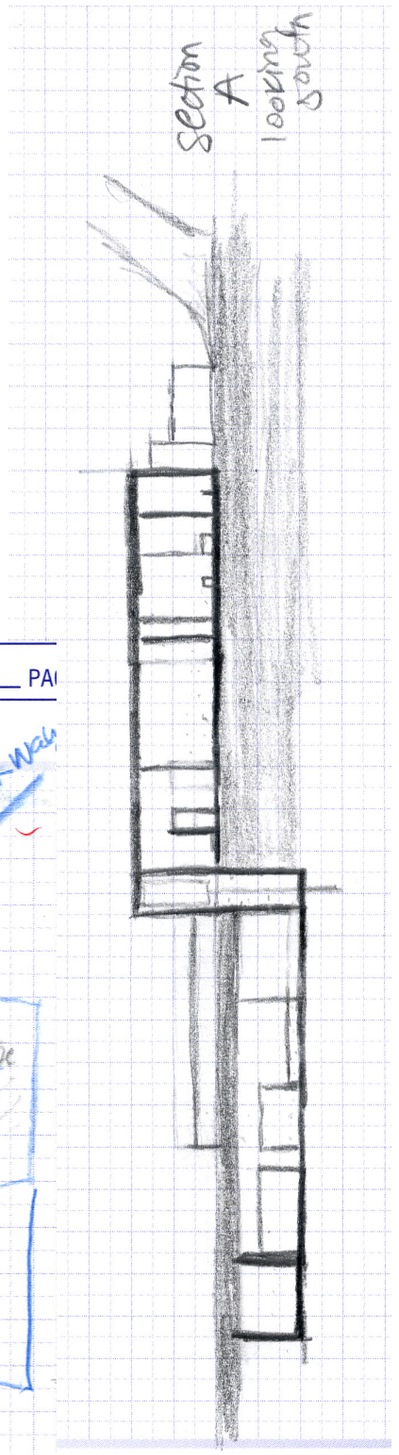


## Sub-Basement Plan of Existing Shedd Aquarium

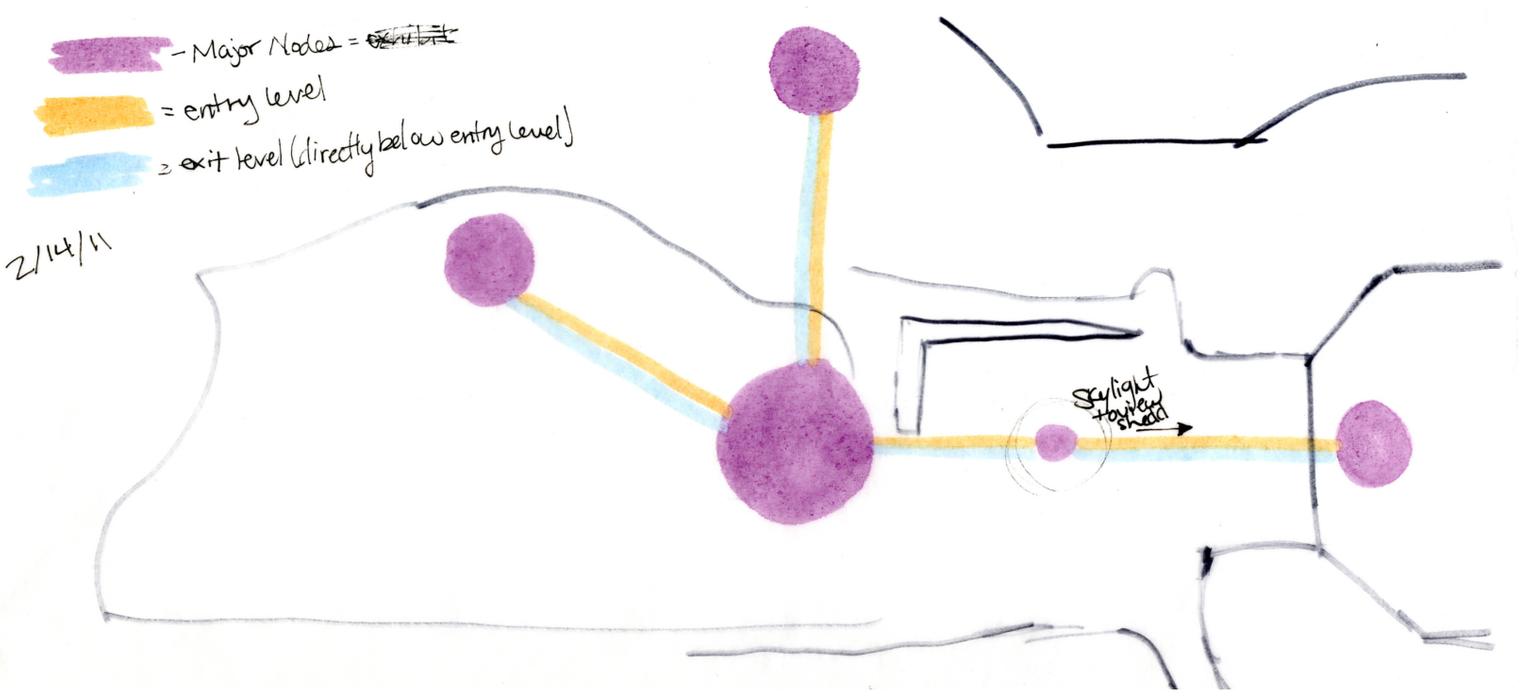


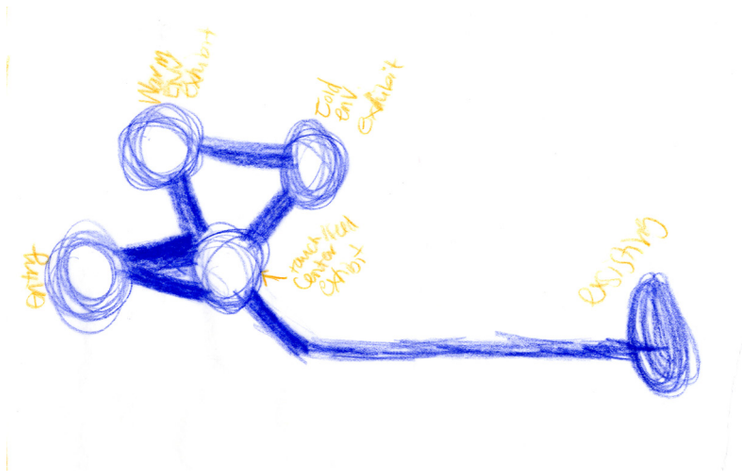
# Initial Floor plan

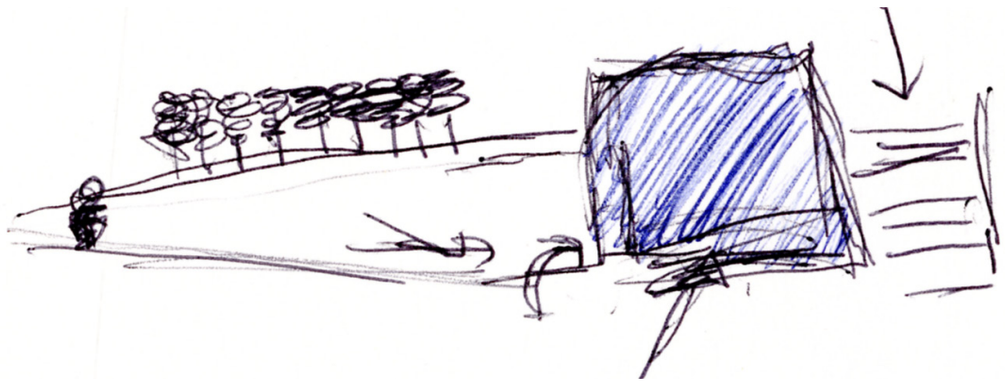


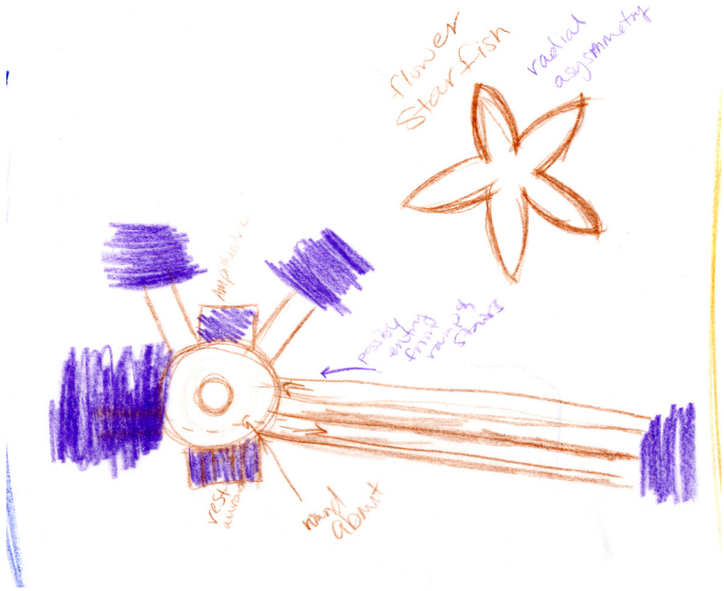



# Nodes and Paths



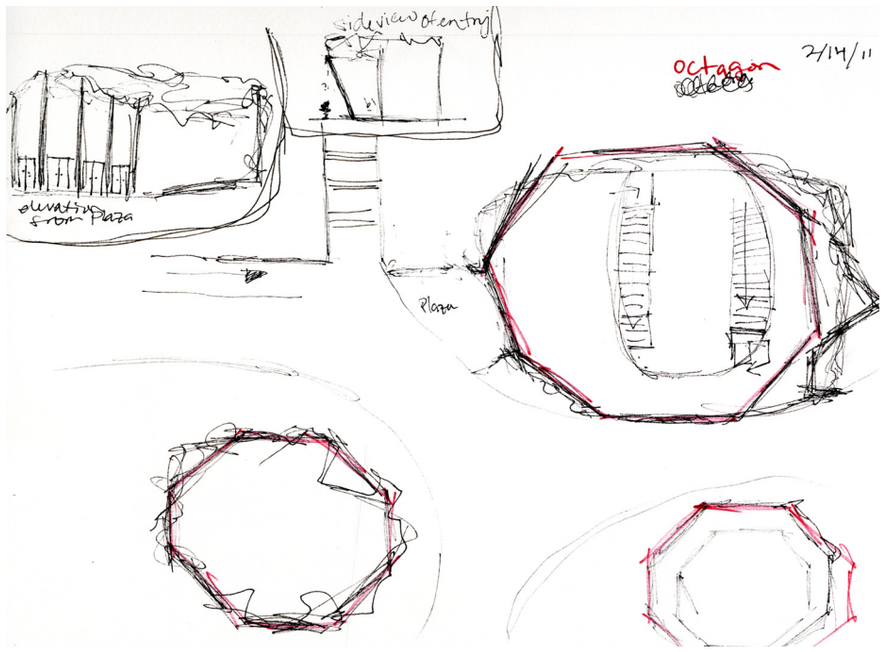



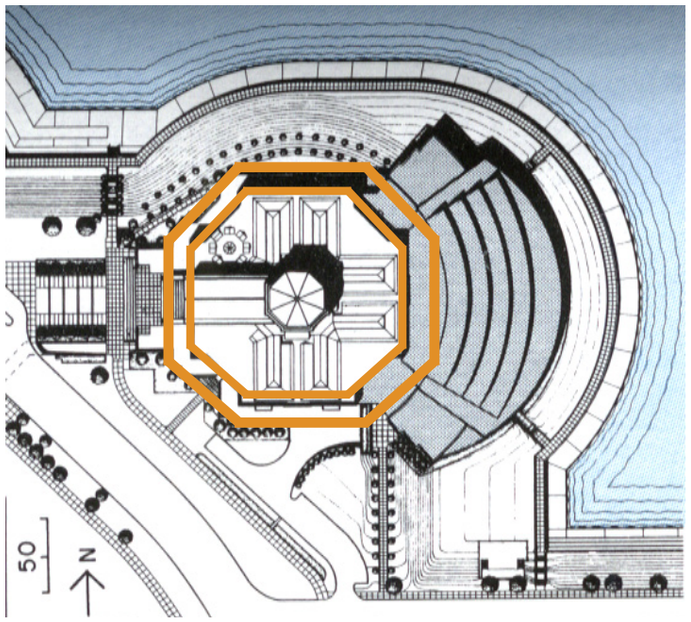


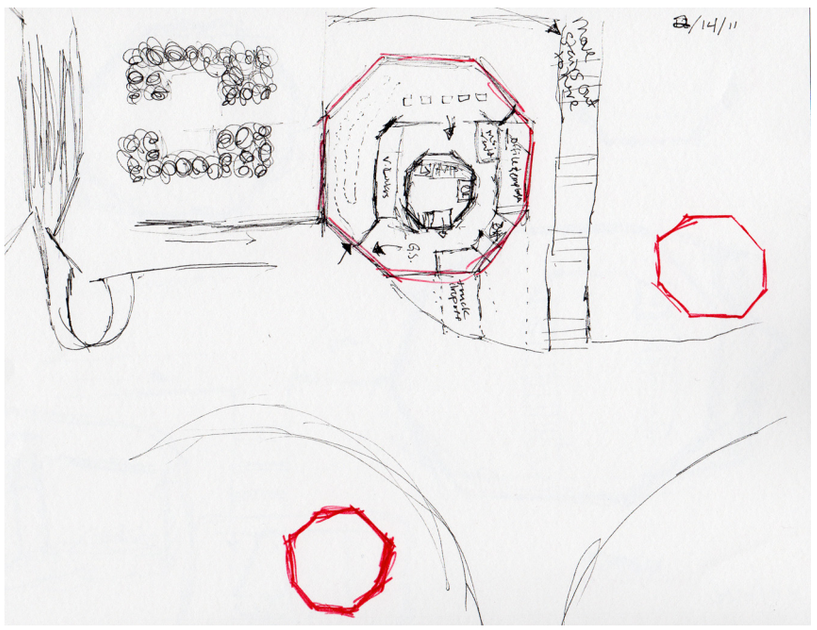
# Discovery of Form

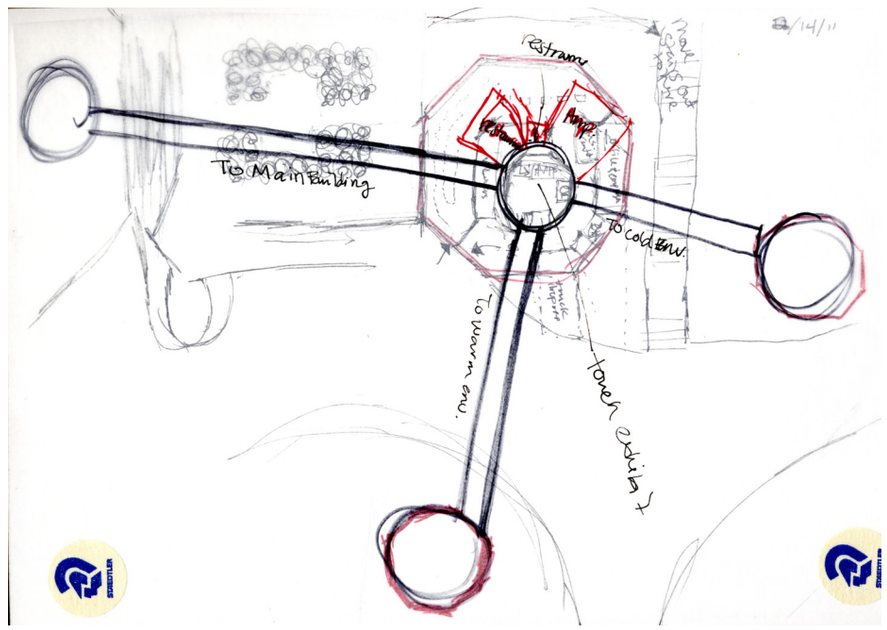
## Iceberg to Octagon

Exploration of the iceberg in various sketches, led me to discover the relation and importance of the octagon to the site. It is used throughout the original aquarium.

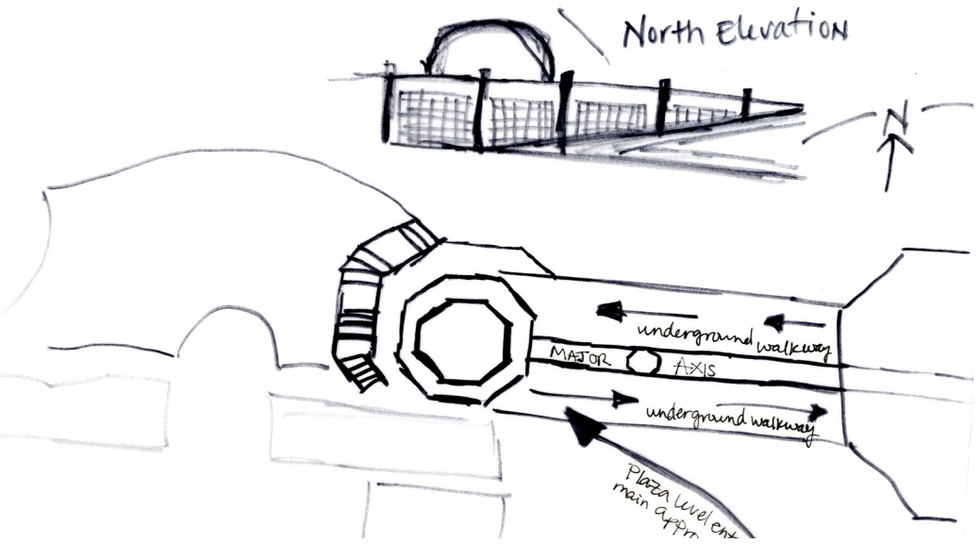


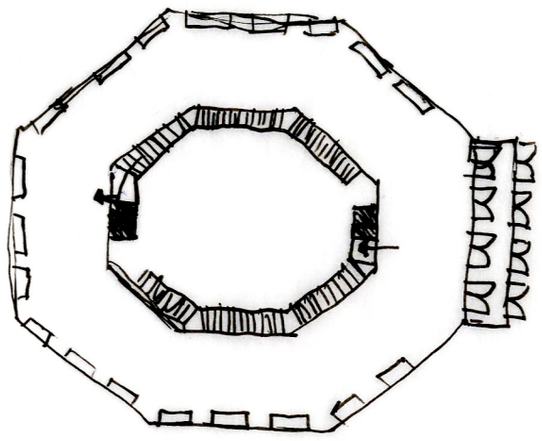



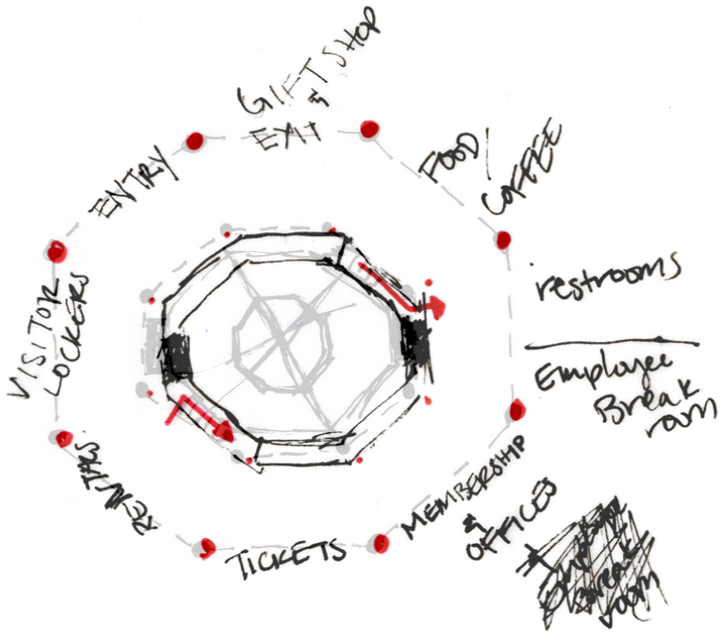



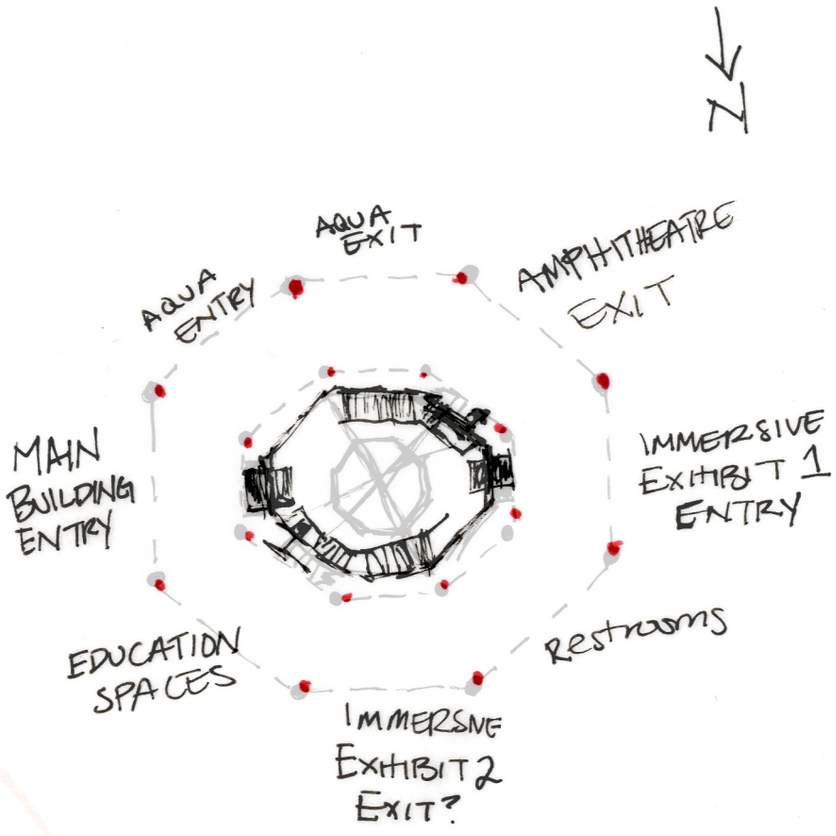



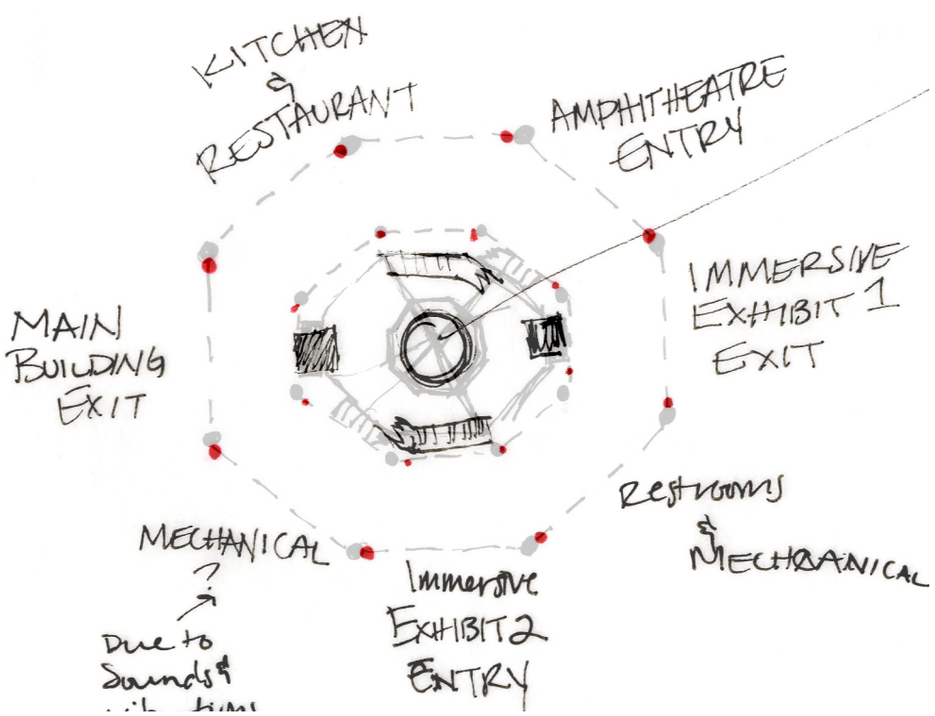
# Development of Octagon



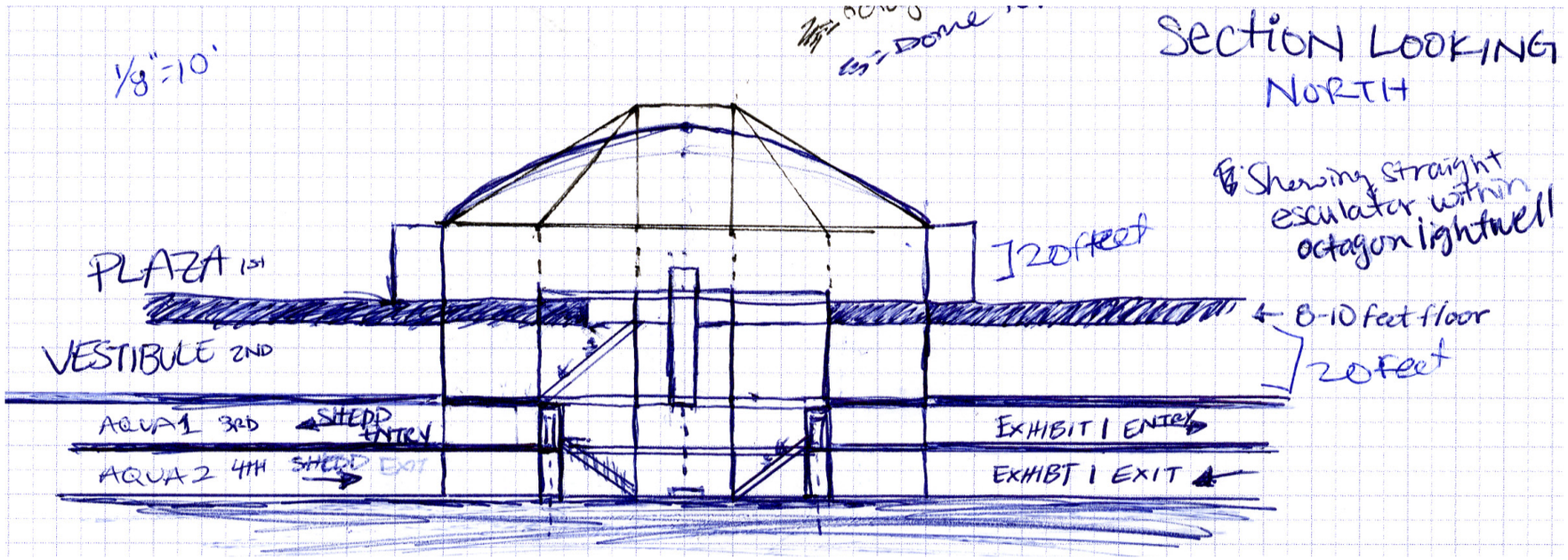


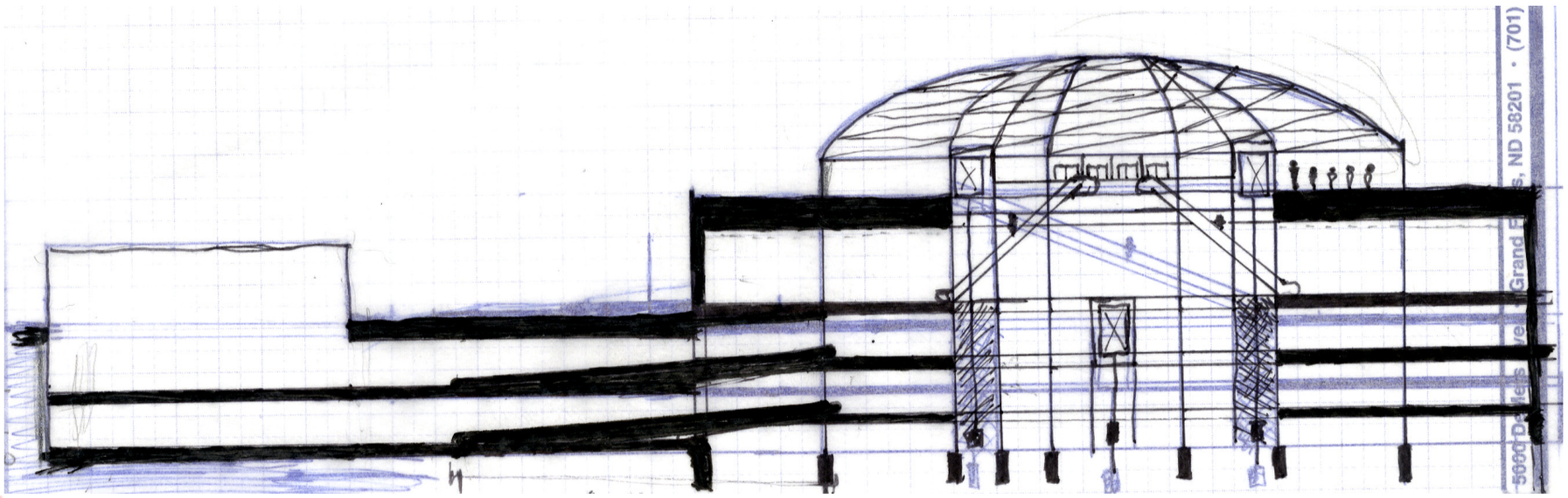



# Further Development

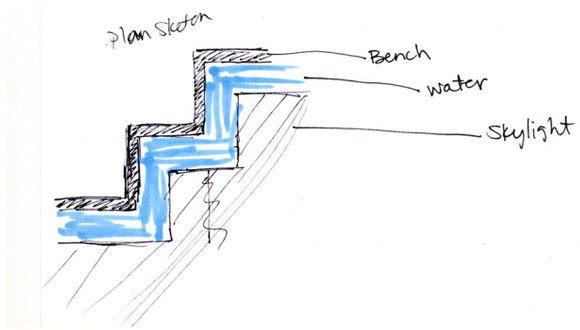
## Process Sections

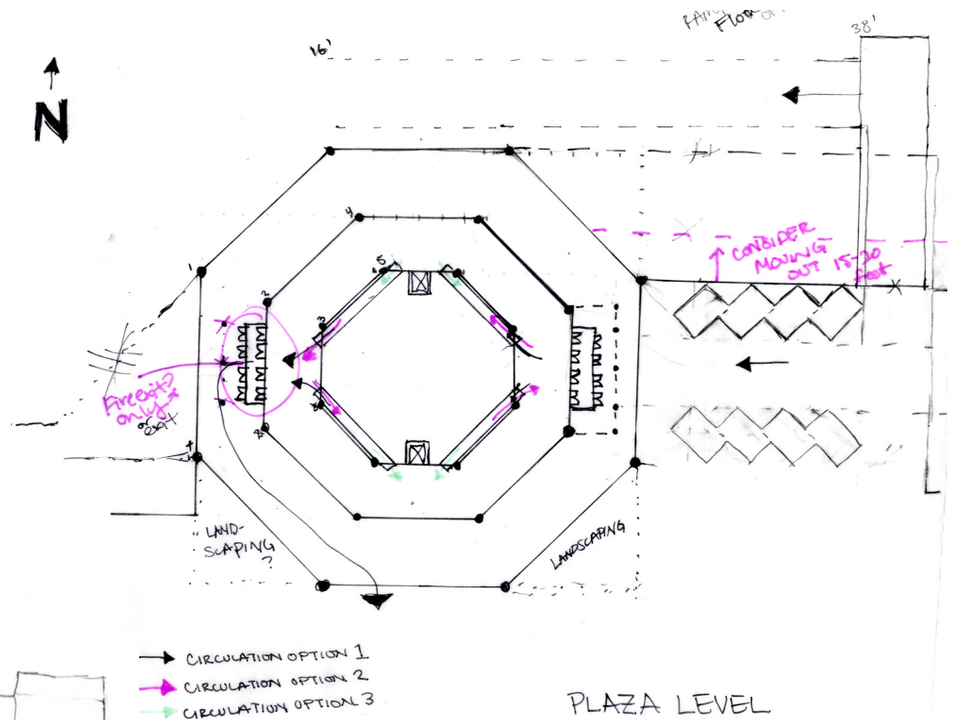


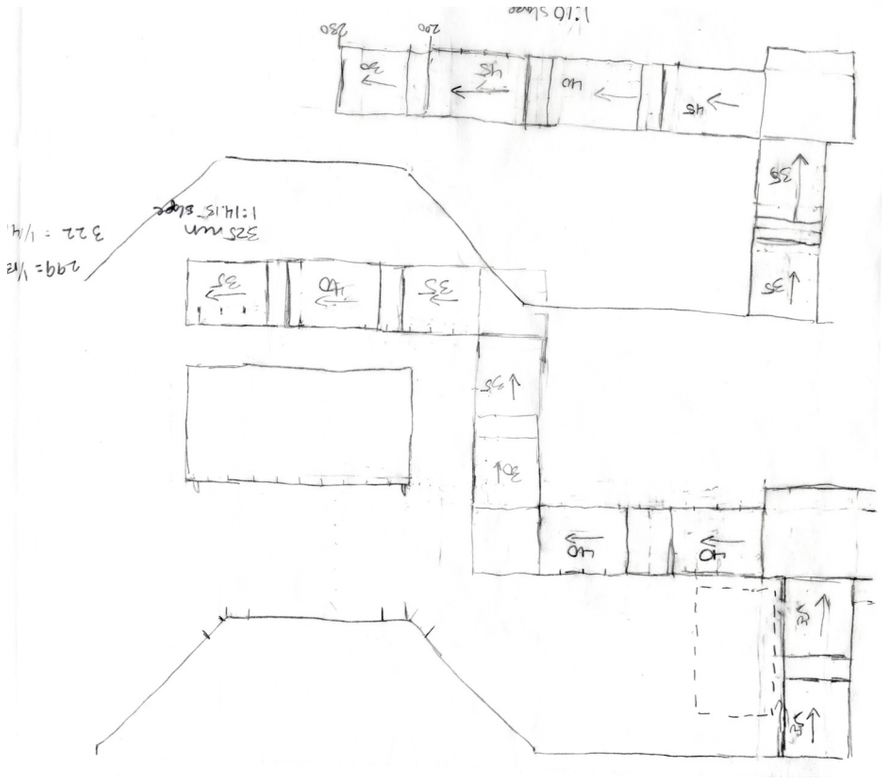



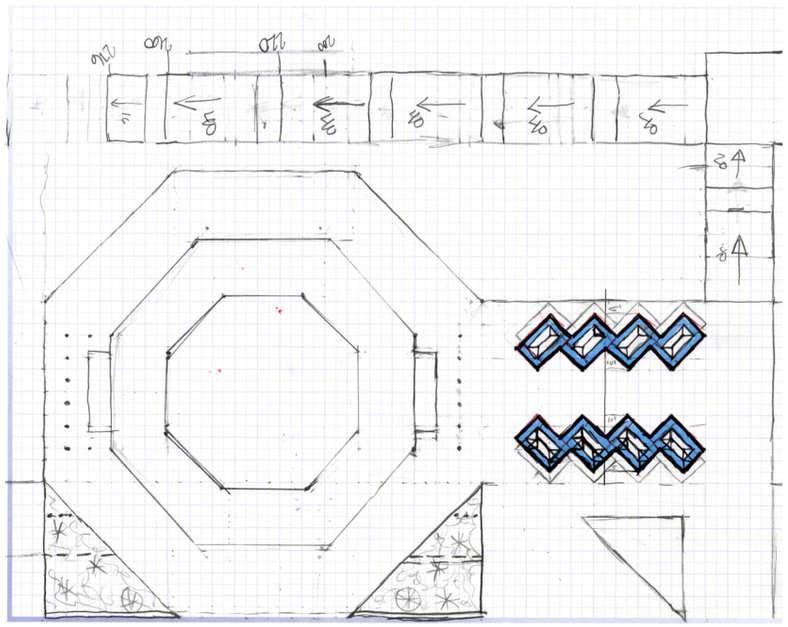
# Plaza Development

## Skylight and Ramp Design





# Midterm Programmatic Elements

## Plaza and Entry

## Aquarium Level One

- Tickets
- Cafe
- Rentals
- Coat Check
- Membership Desk
- Employee Break Room
- Aquarium Entry
- Aquarium Exit with Giftstore

## Aquarium Level Two

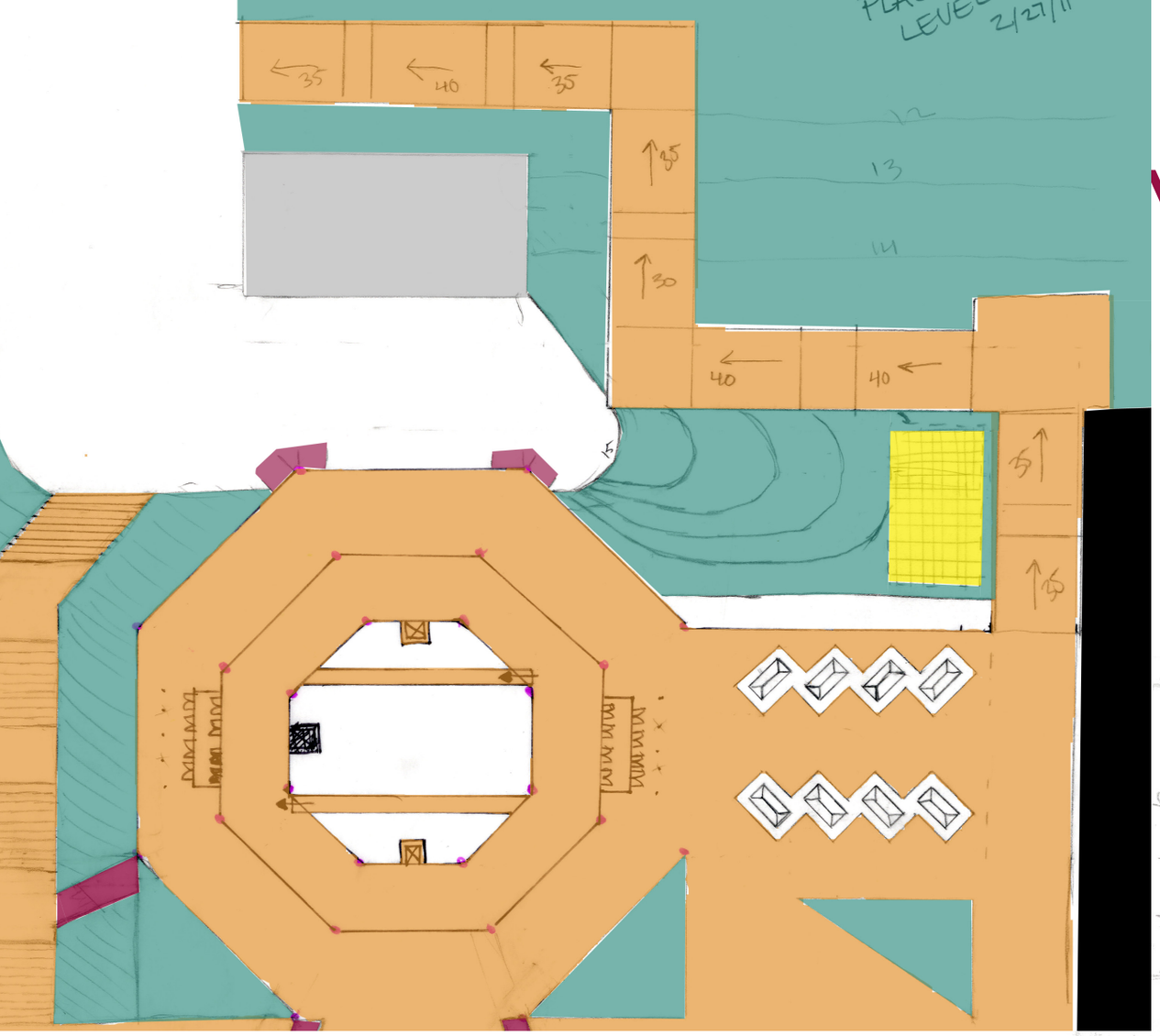
- Aquarium Entry
- Aquarium Exit with Giftstore
- Entry to Existing Shedd
- Education Spaces
- Exit from Amphitheater
- Exit from Immersive Exhibit

## Aquarium Level Three

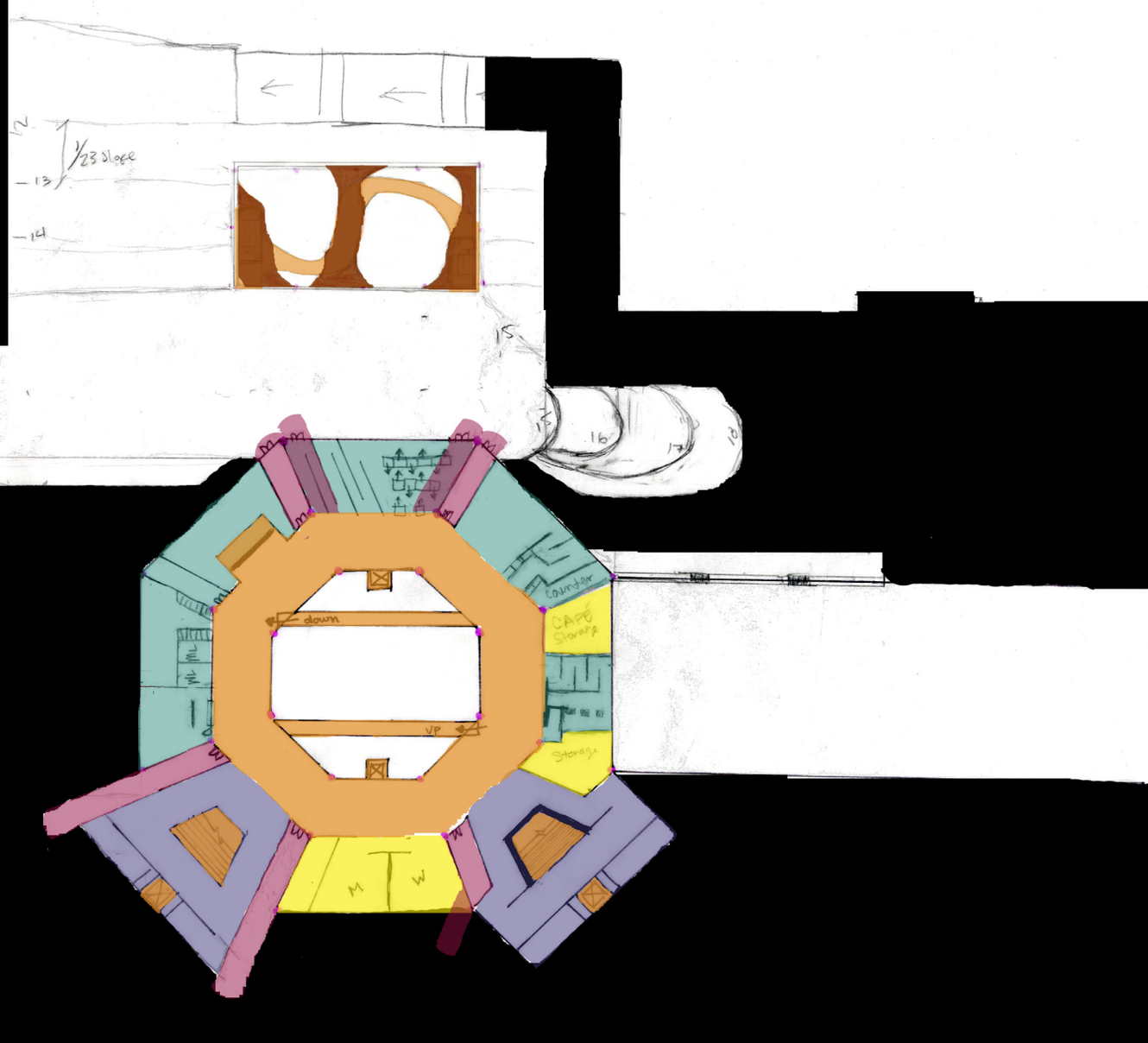
- Exit from Existing Shedd
- Entry to Immersive Exhibit
- Entry to Amphitheater
- Restaurant
- Jellyfish and Sting Ray Exhibit

# Midterm Floor Plans

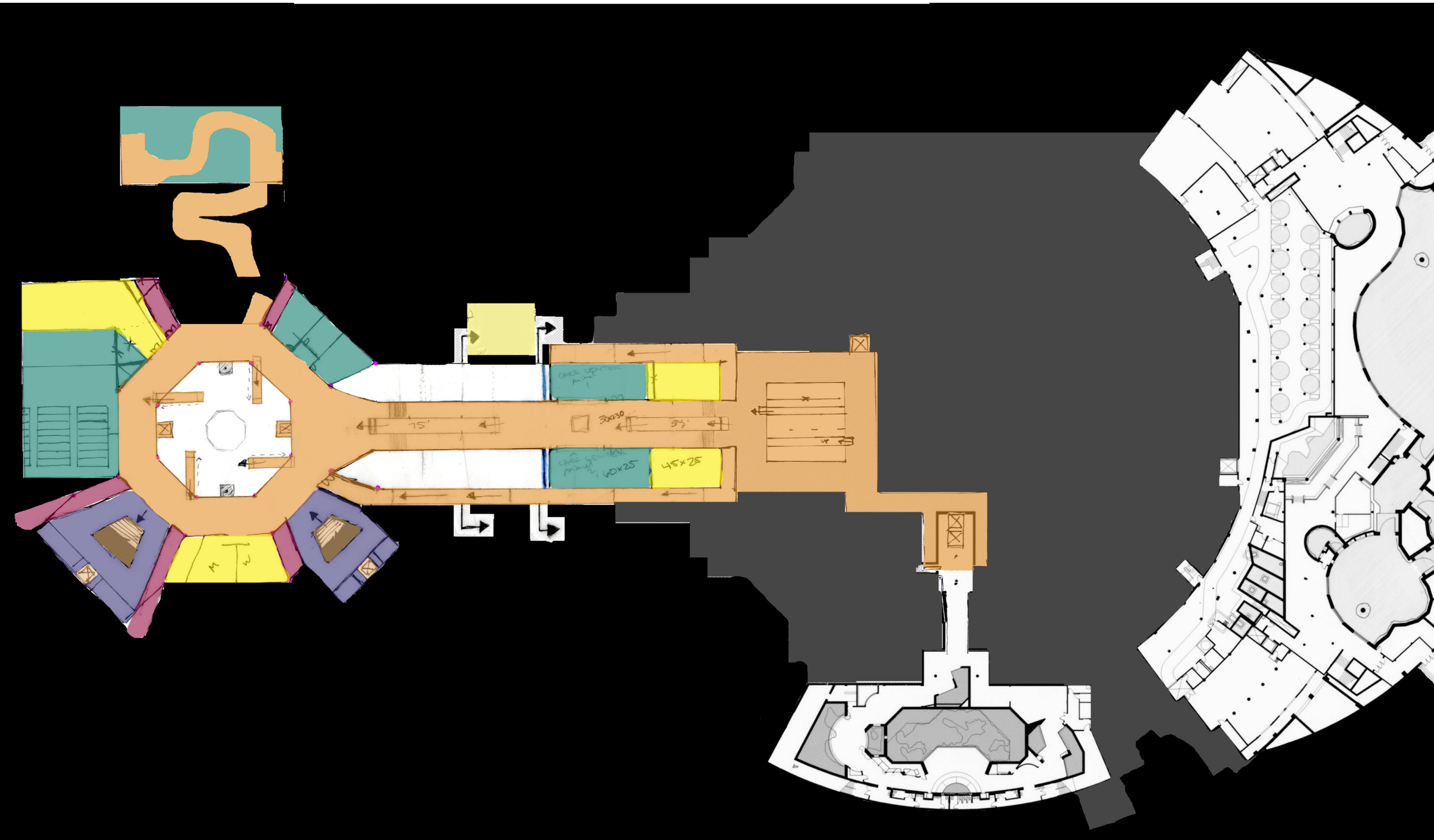
## Sub Level One



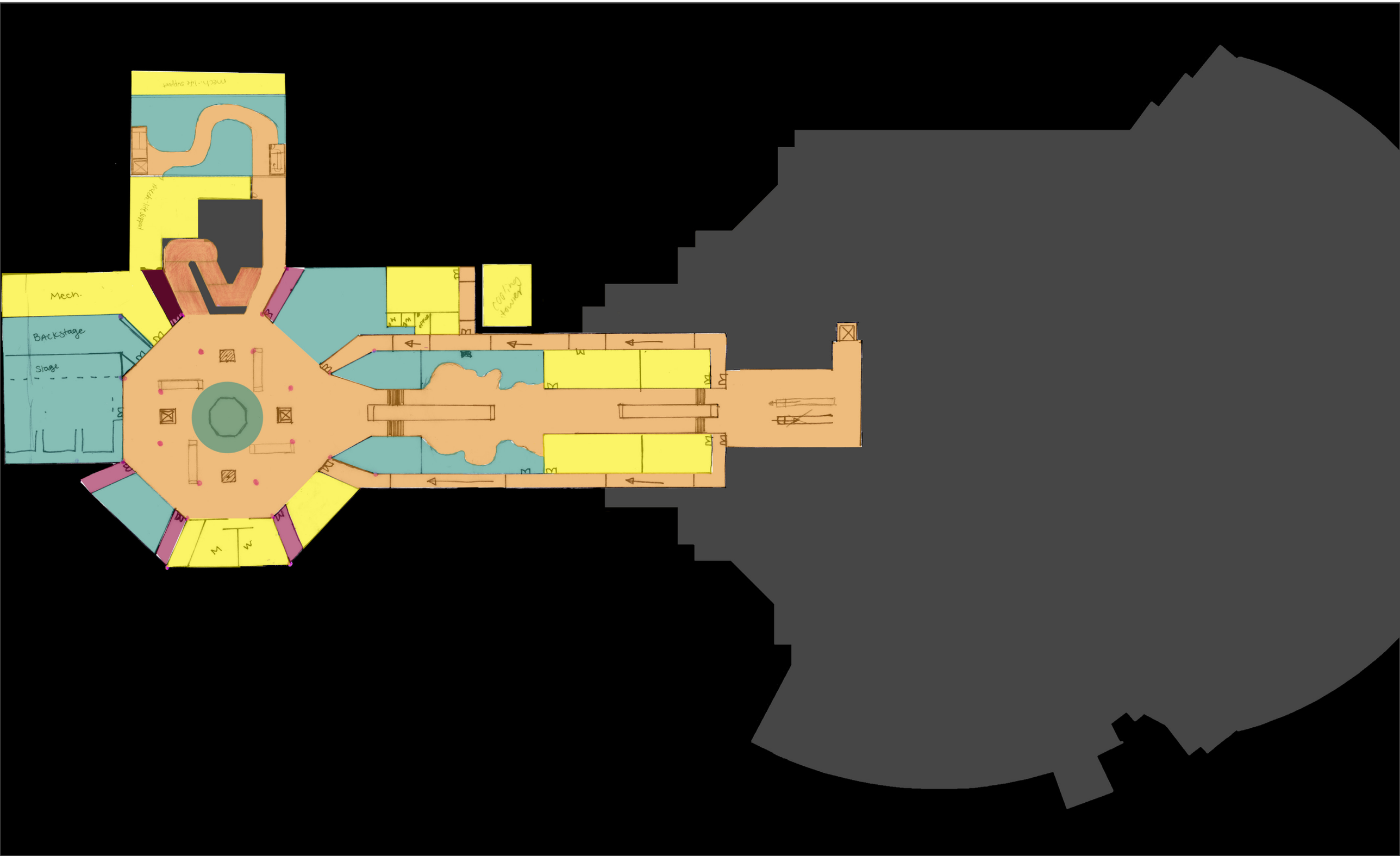
## Plaza and Entry



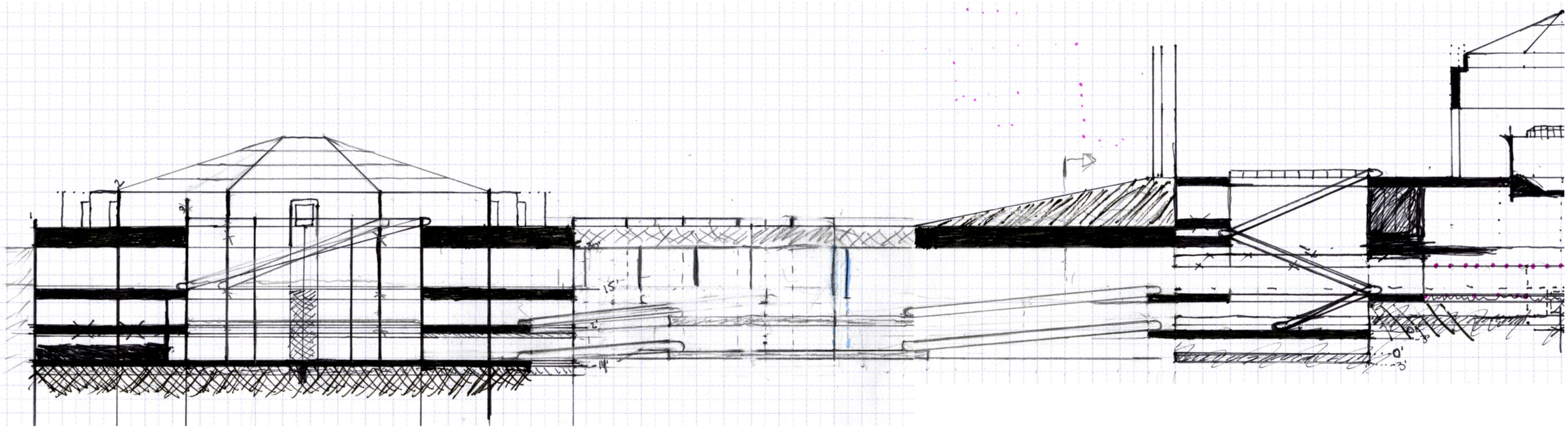
# Sub Level Two



# Sub Level Three

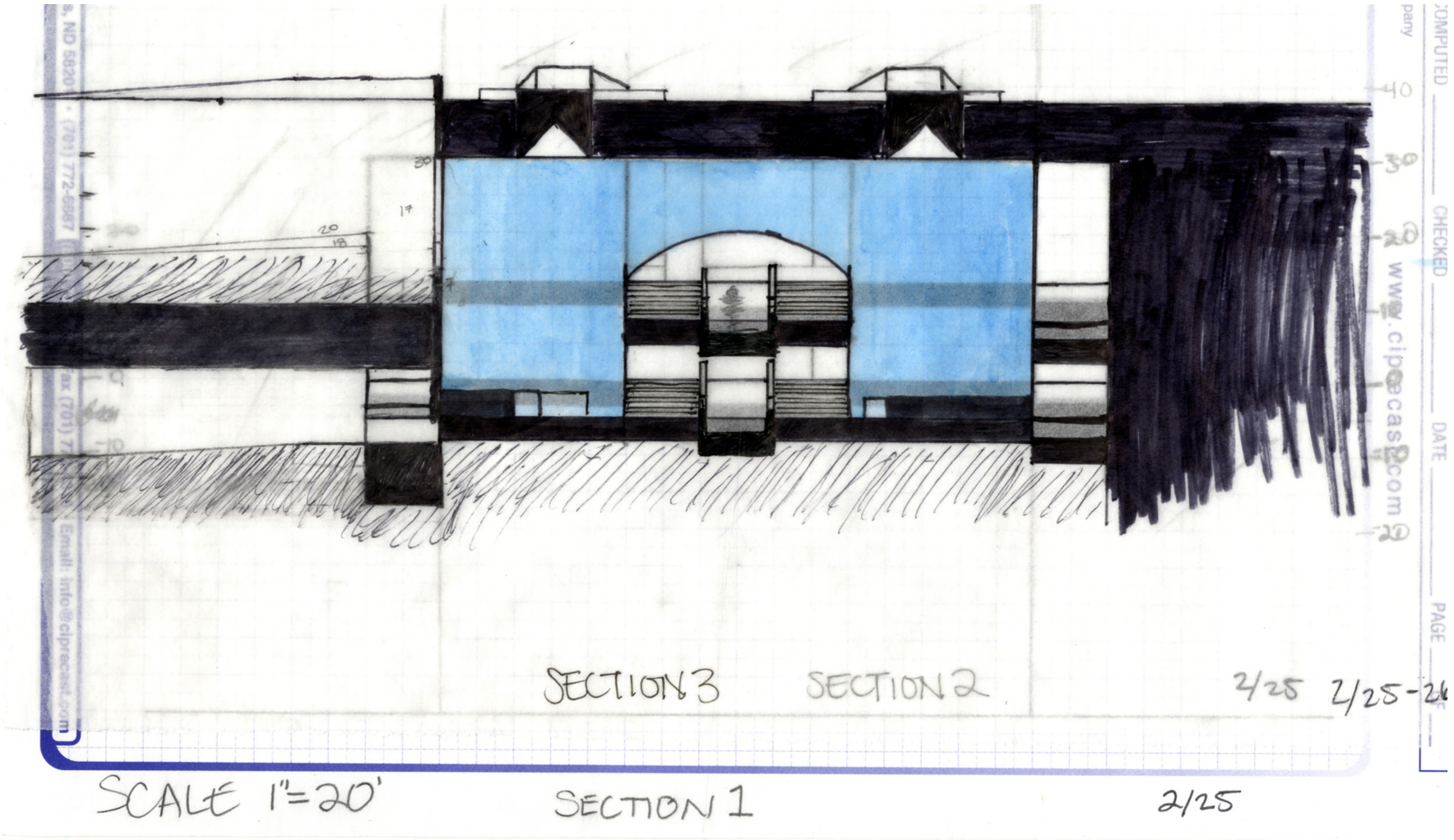


# Transverse Section



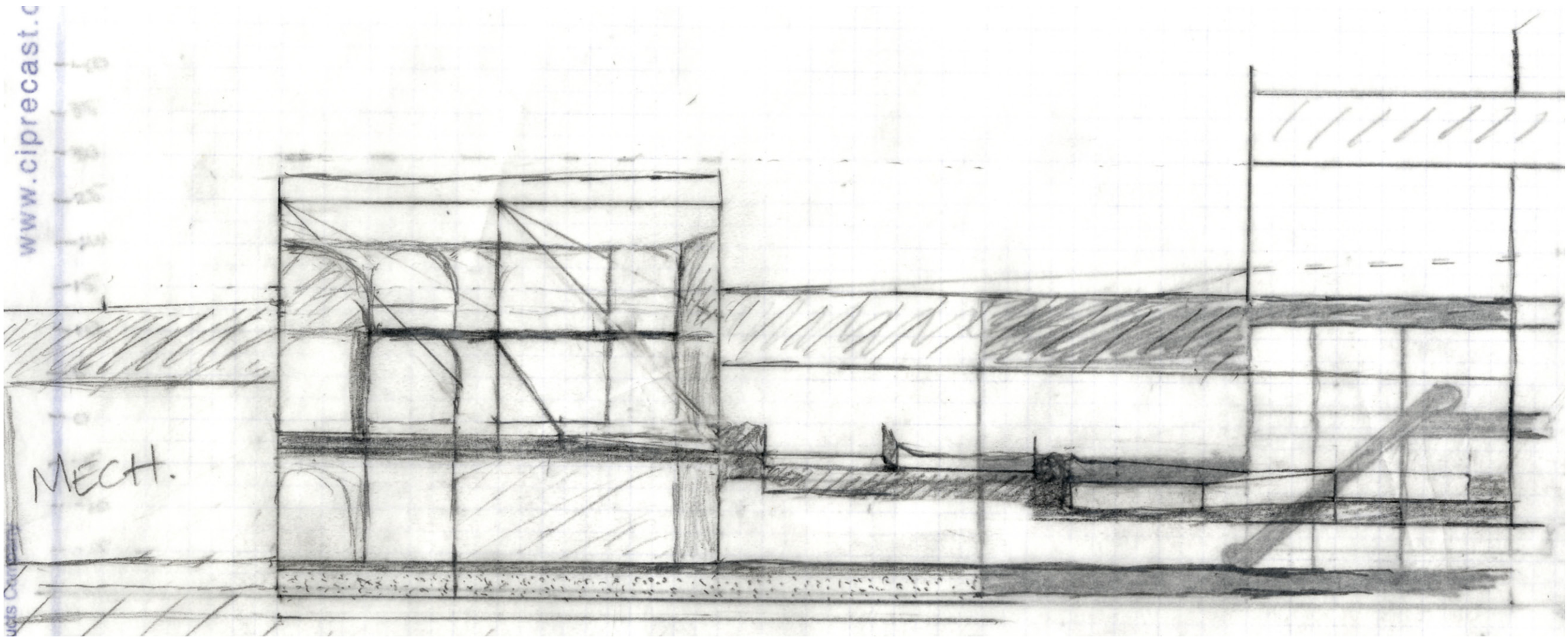
# Transition to Original Shedd

## Three Sections Looking East

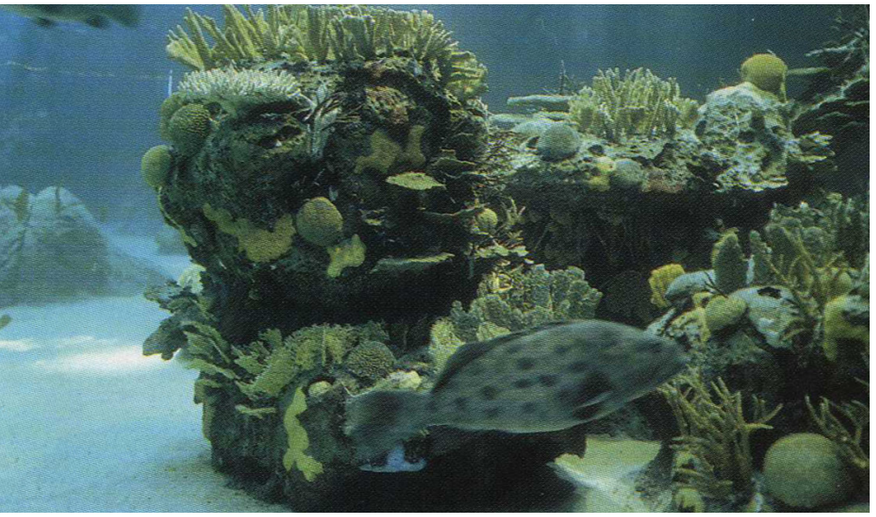


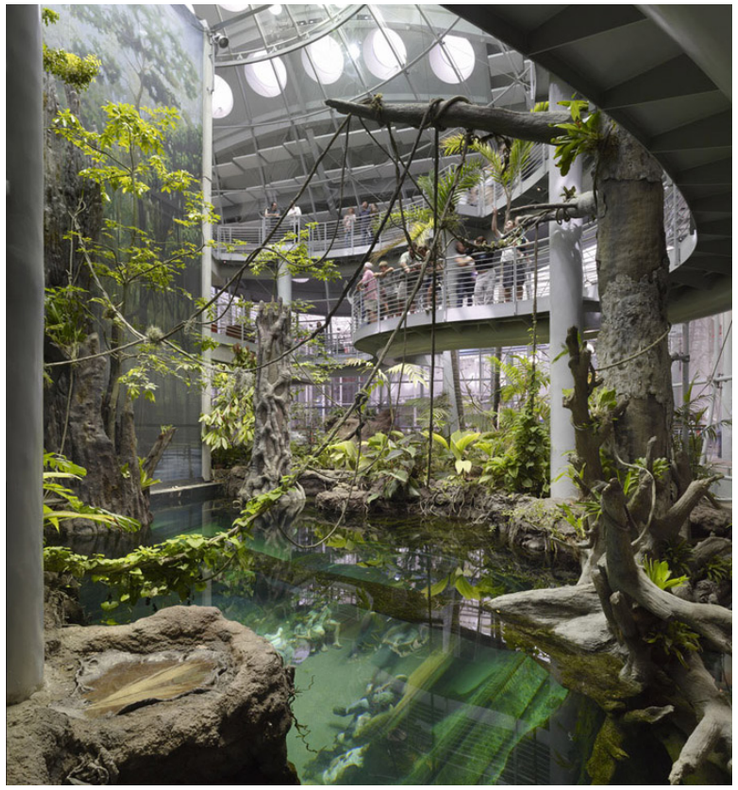
# Immersive Exhibit Section

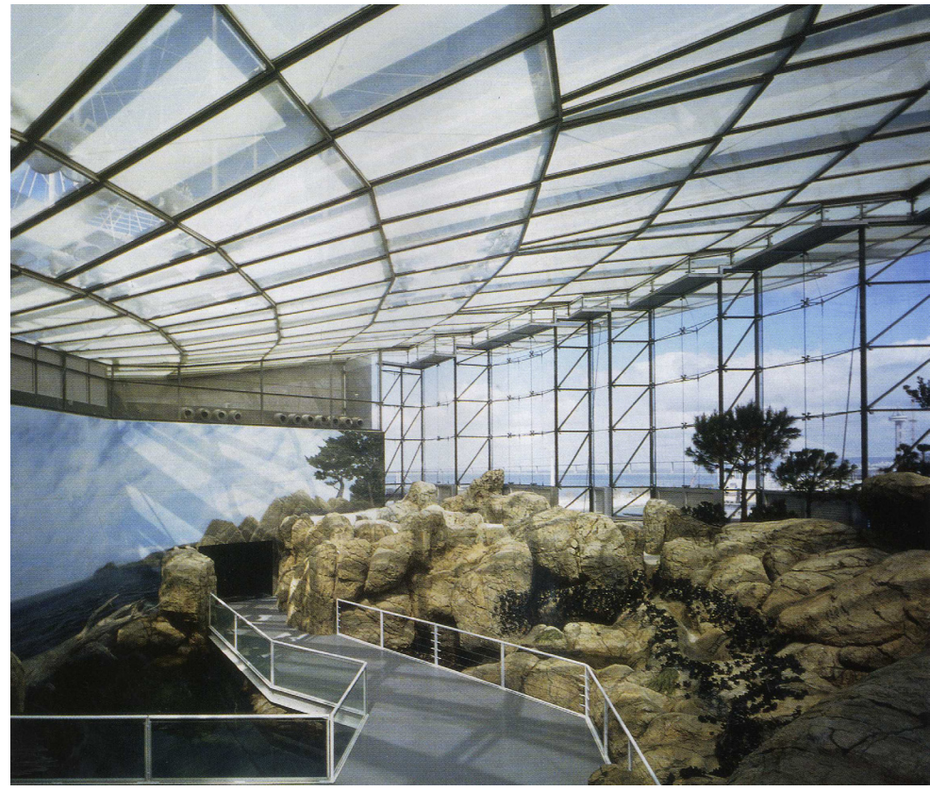
## Looking East

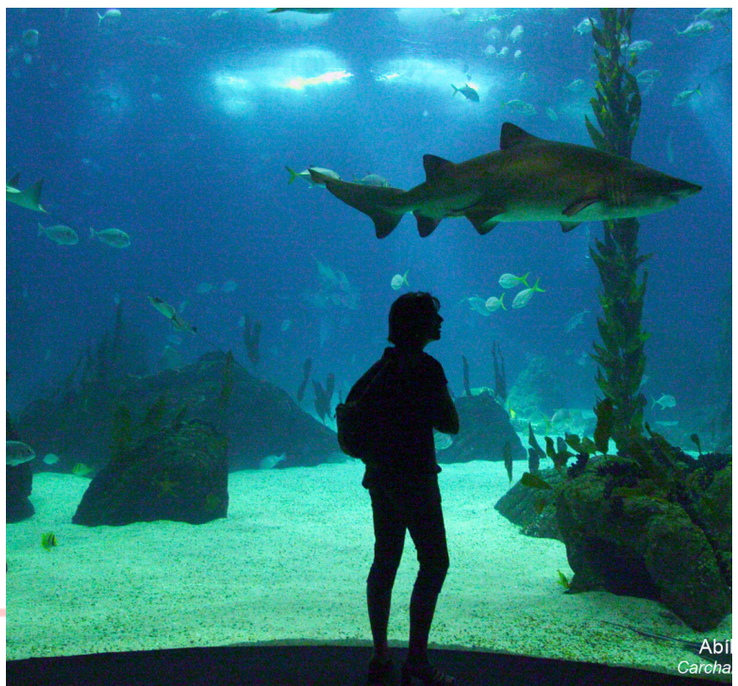


# Immersive Exhibit Concepts










# Programmatic Elements

## Plaza and Entry

- Ticket Sales
- Cafe
- Membership Desk
- Offices
- Employee Break Room

## Sub Level One

- Rentals
- Coat Check
- Aquarium Entry
- Aquarium Exit
- Giftstore
- Restrooms
- Chicago Skyline Exhibit
- Storage

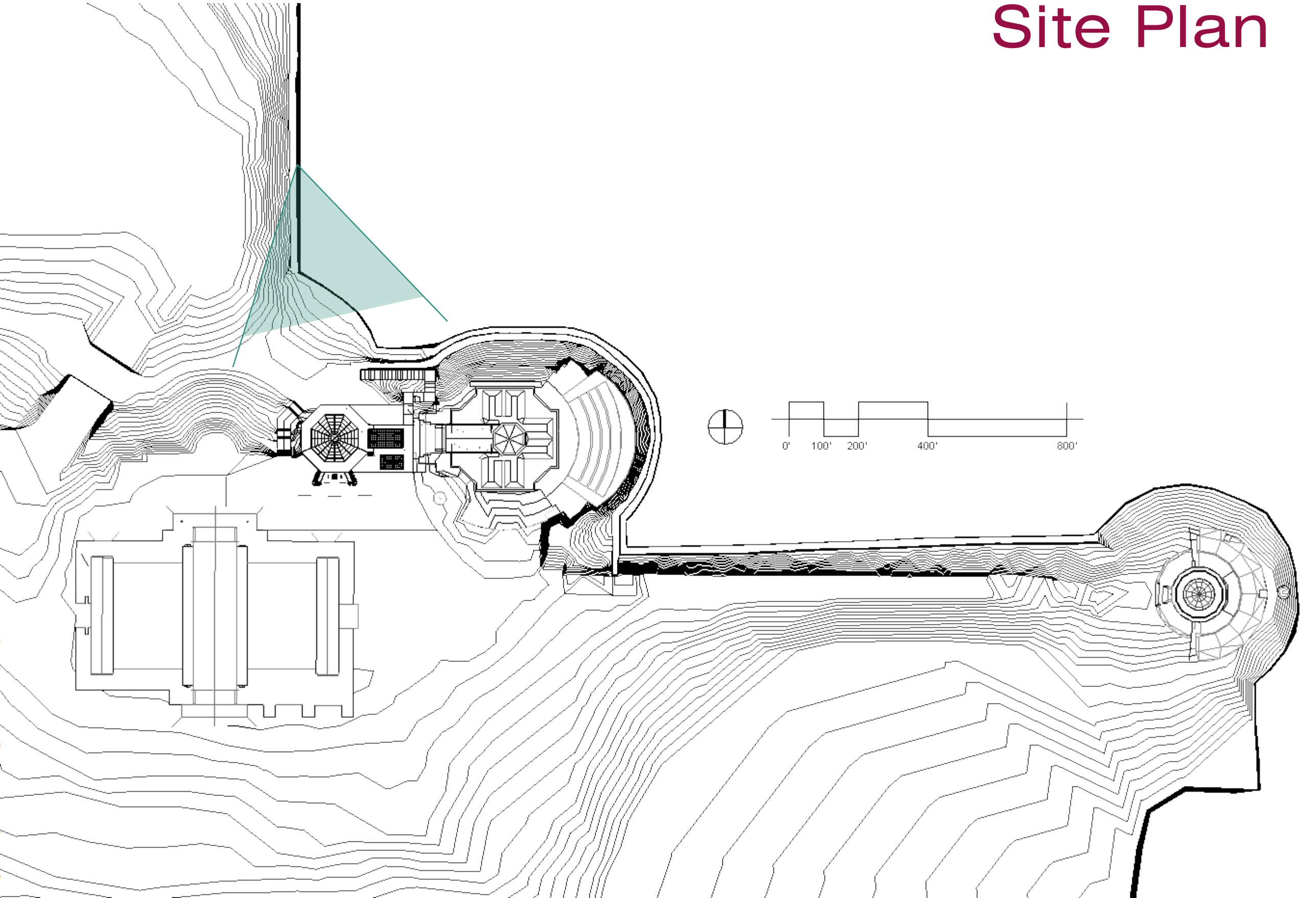
## Sub Level Two

- Aquarium Entry
- Aquarium Exit with Giftstore
- Immersive Exhibit Entry
- Education Spaces
- Restrooms
- Jellyfish Exhibit
- Storage

## Sub Level Three

- Link to and from Existing Shedd
- Kitchen and “Buffet” Line
- Seatting
- Touch Pond/Sting Ray Exhibit
- Short Film Viewing Area
- Family Area
- Restrooms
- Storage

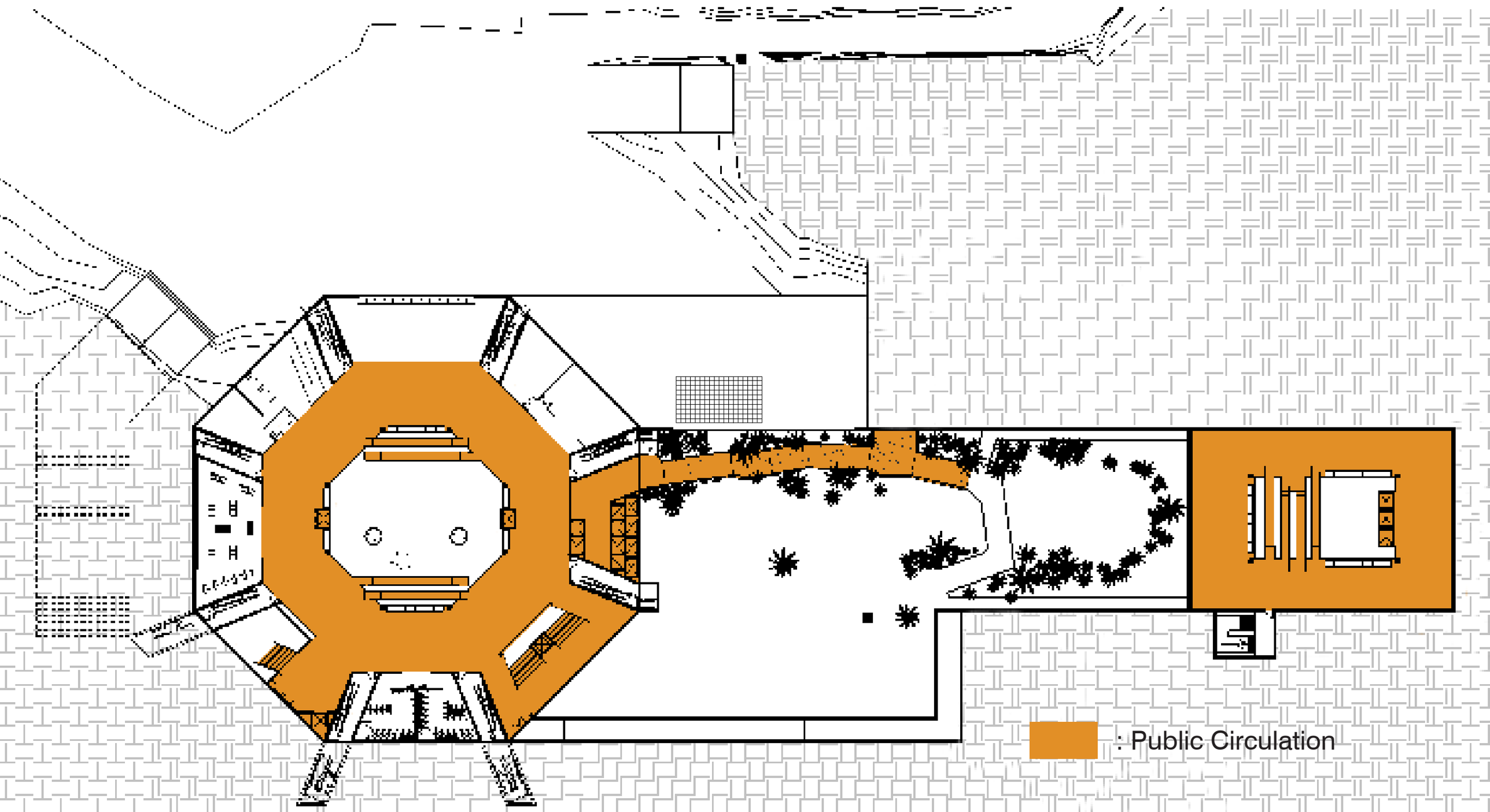
# Site Plan



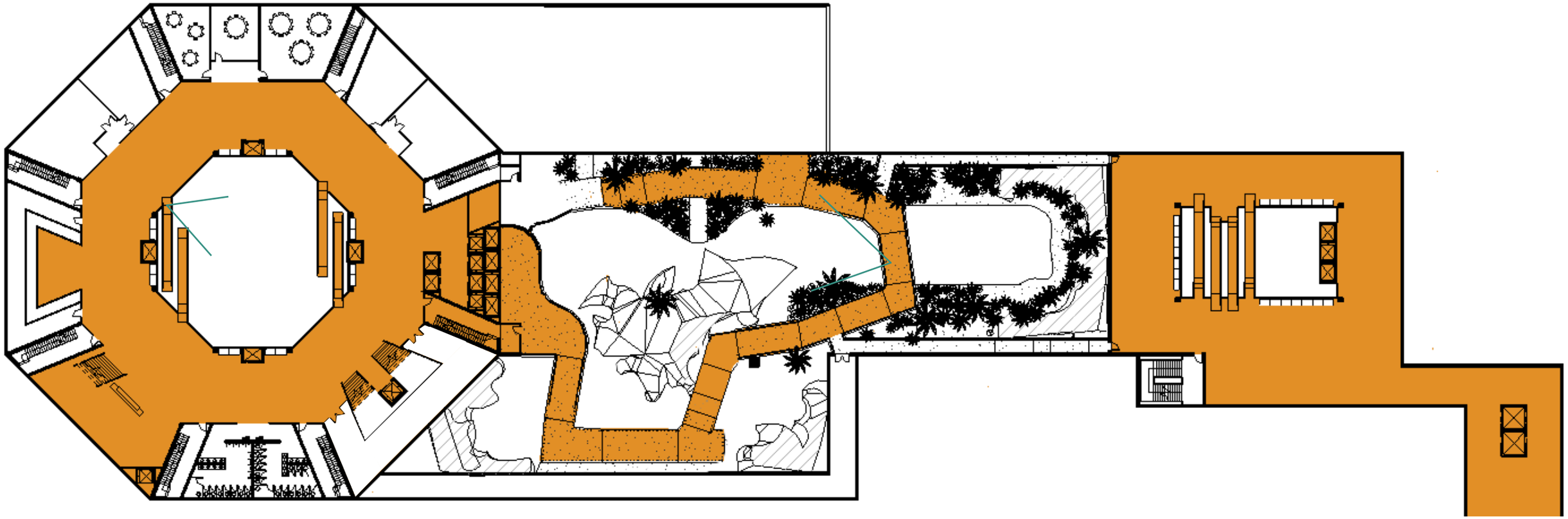
# Plaza

: Public Circulation

# Sub Level One

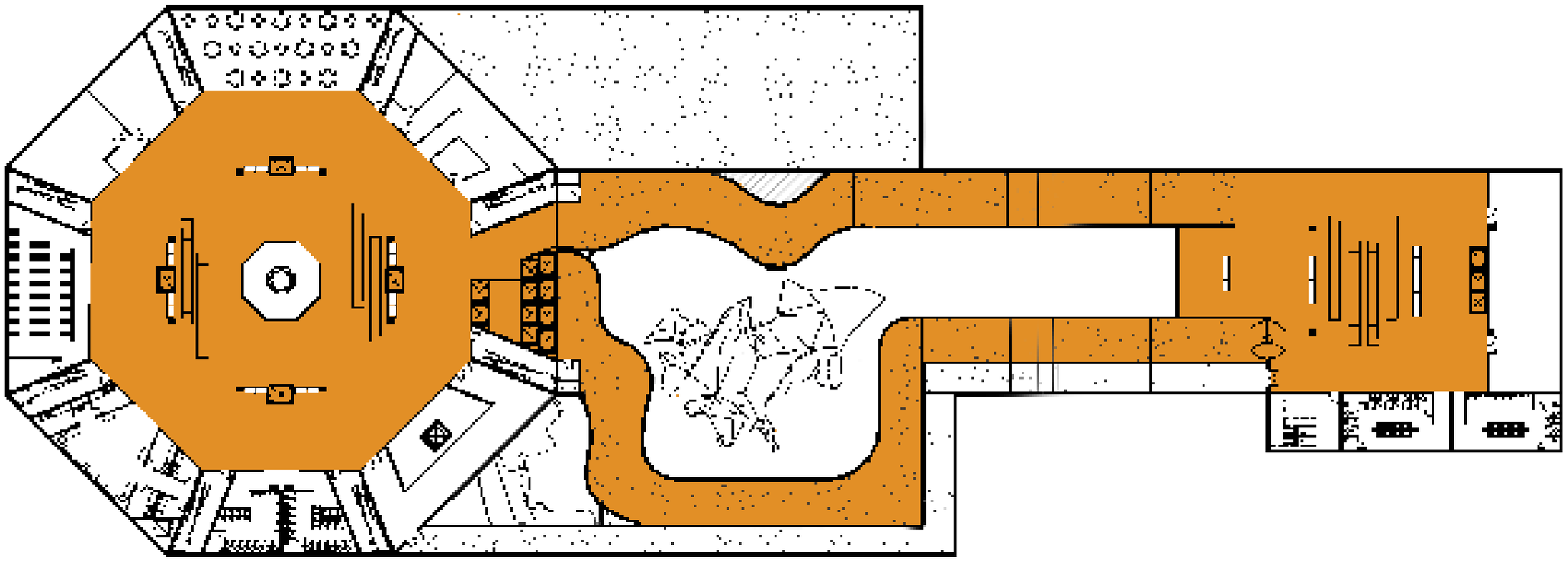


# Sub Level Two



: Public Circulation

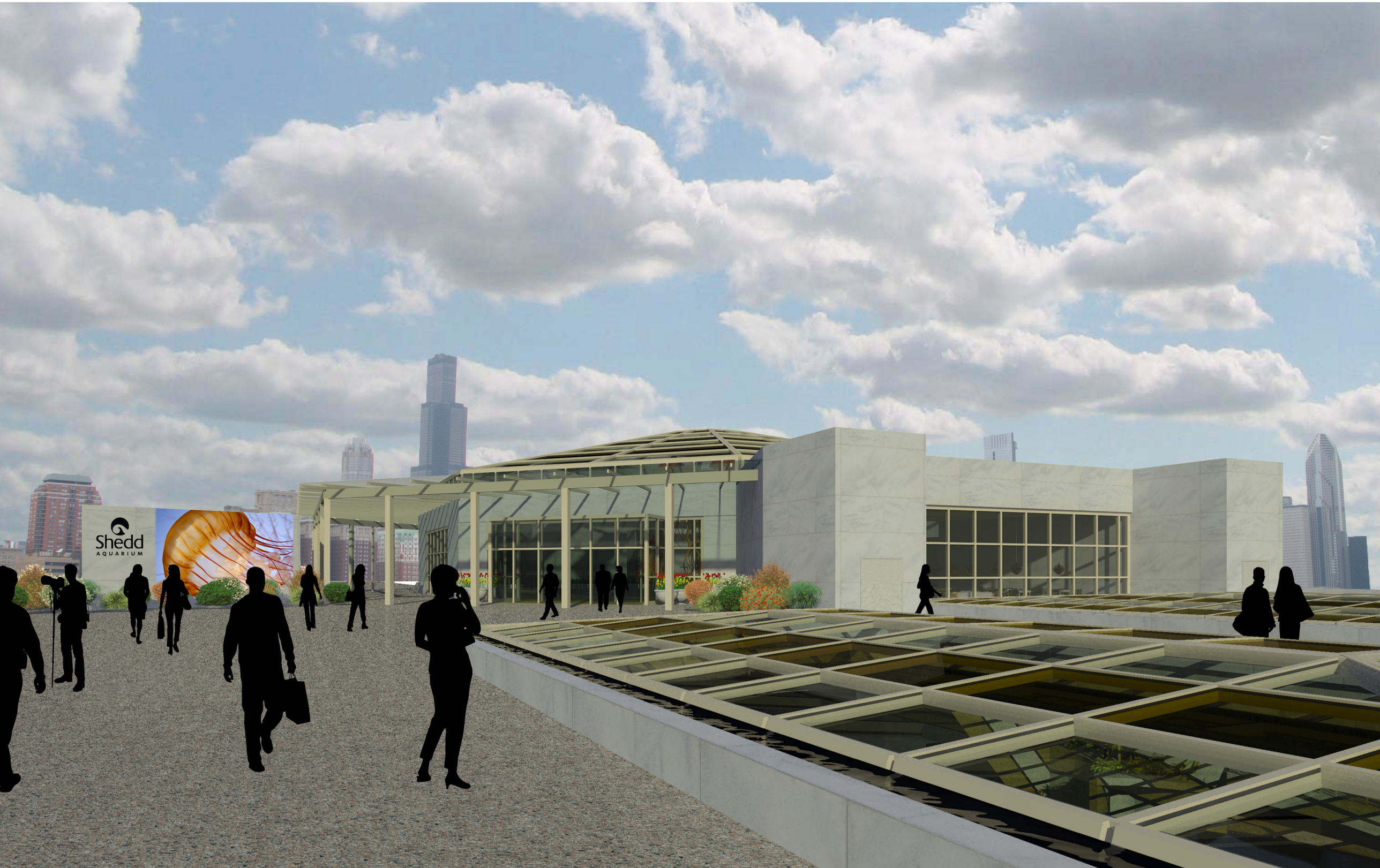
# Sub Level Three



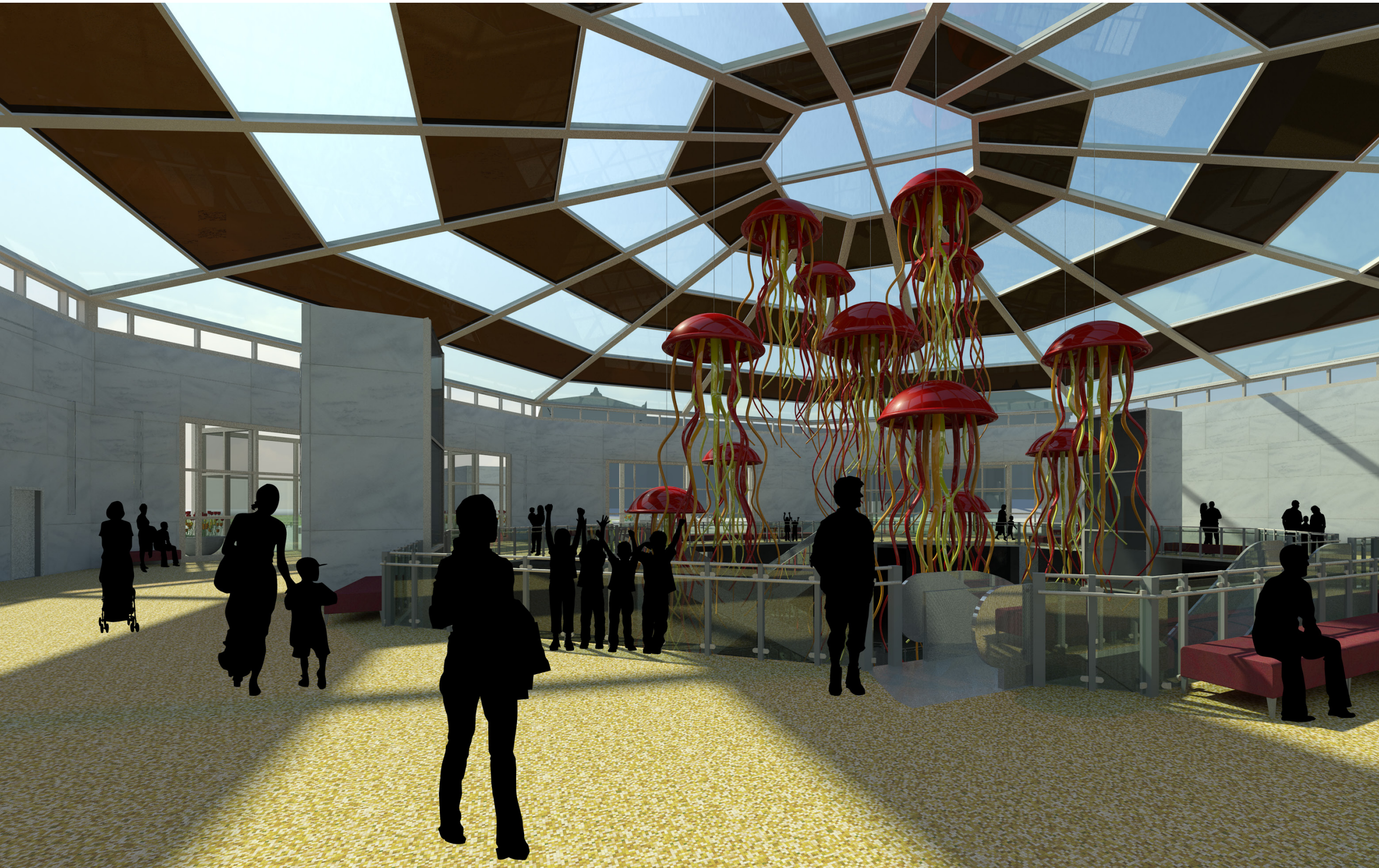
: Public Circulation

# North Facade

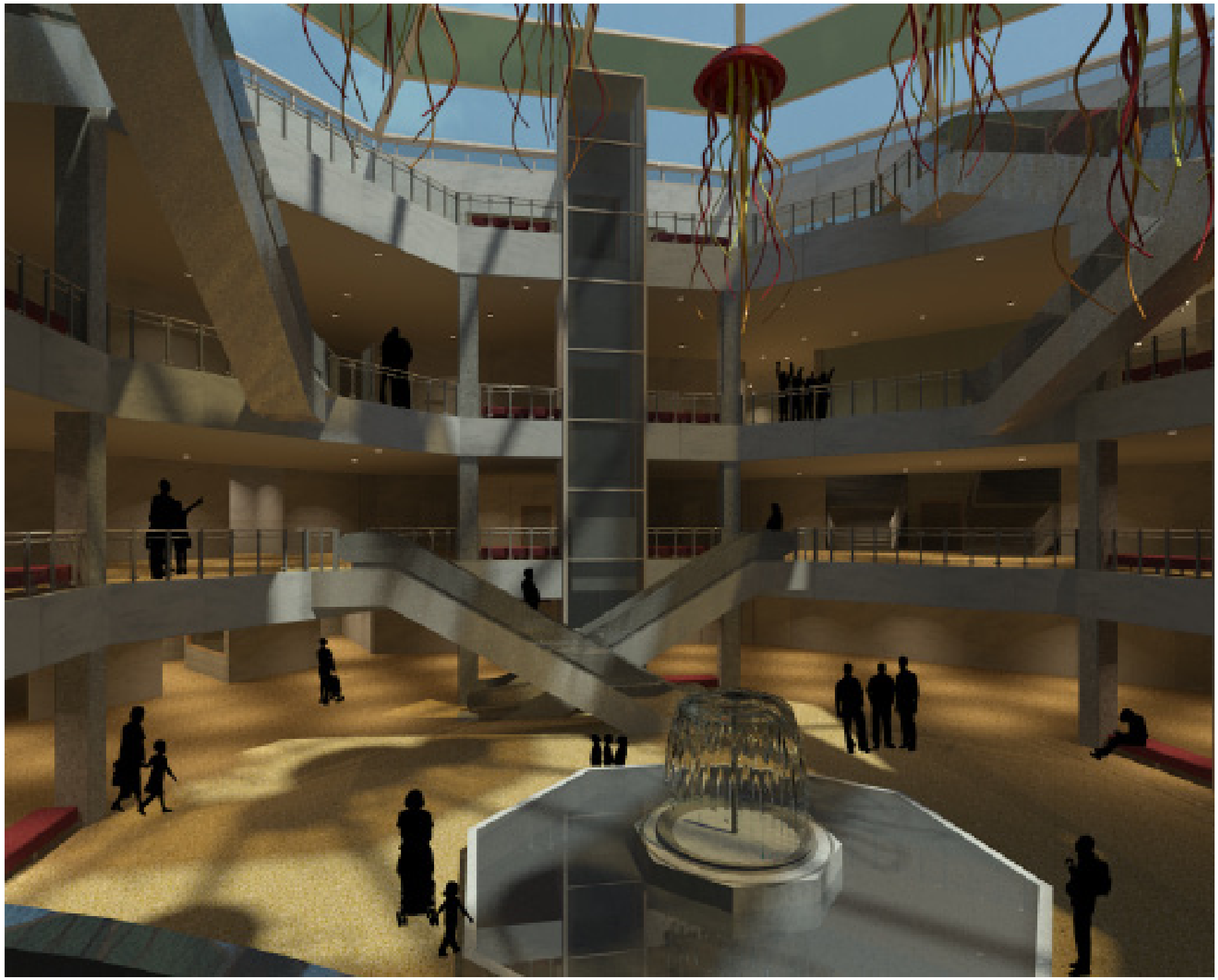
# Approach



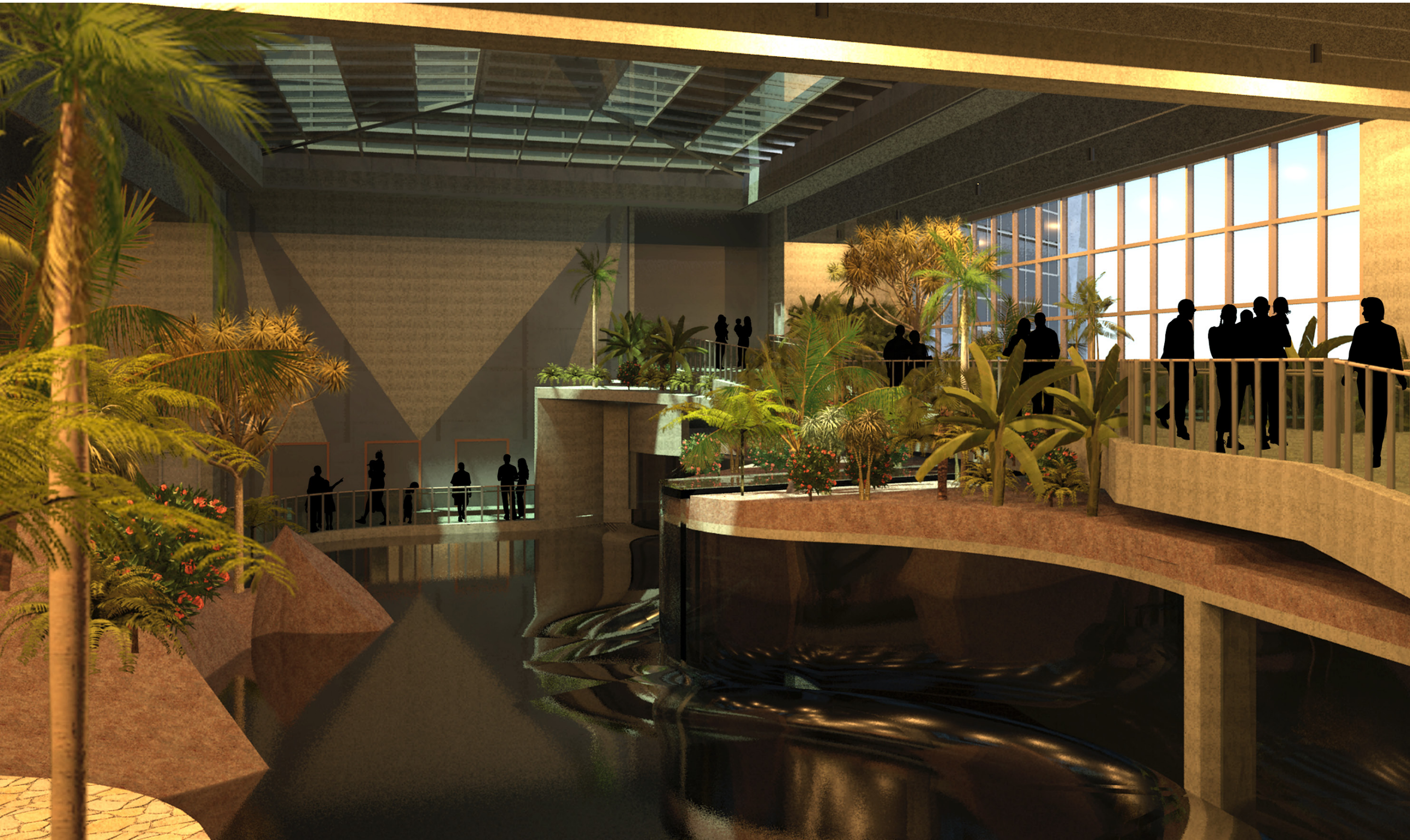
# New Entry Interior



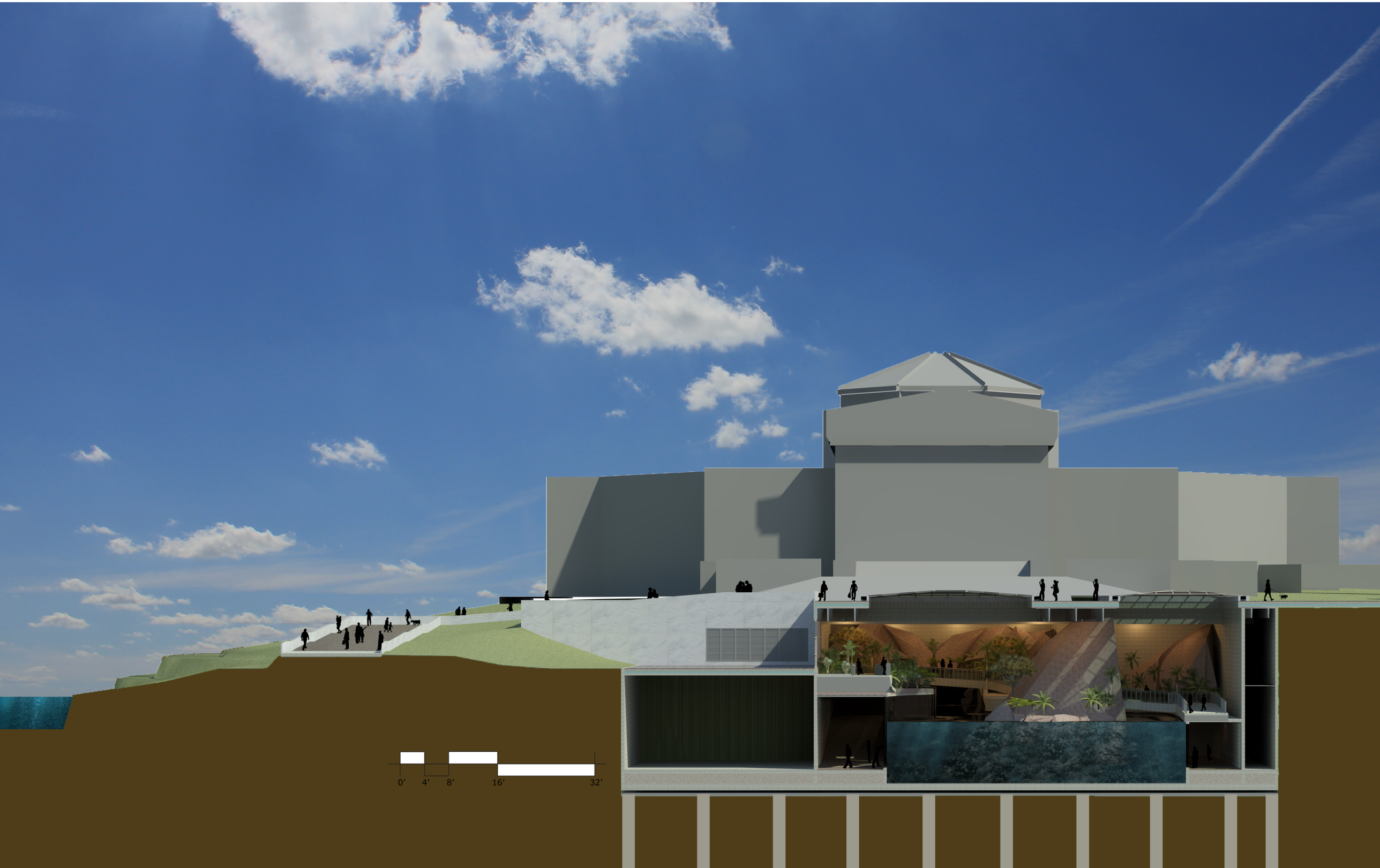
# Atrium



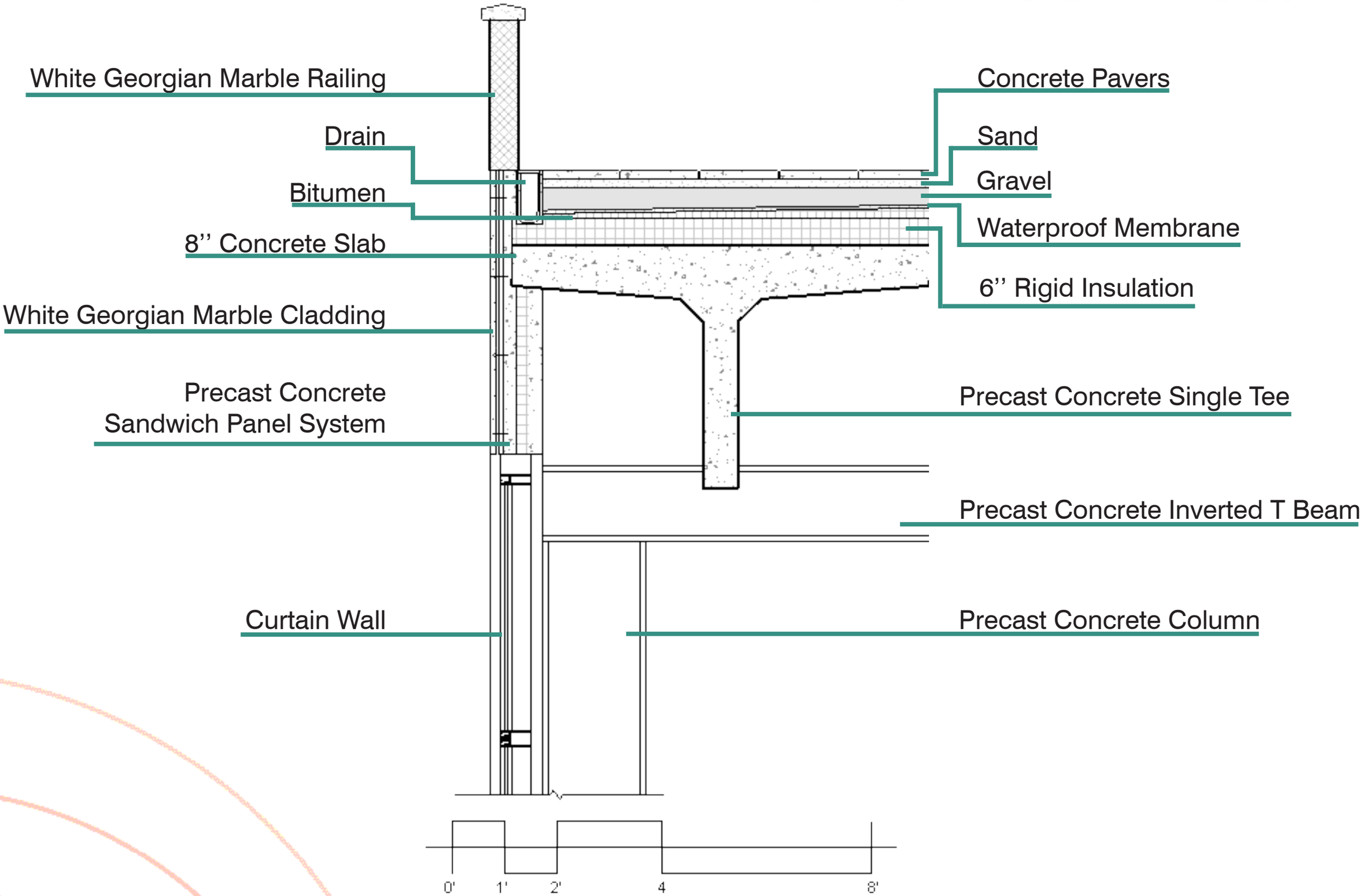
# Immersive Exhibit



# Transverse Section

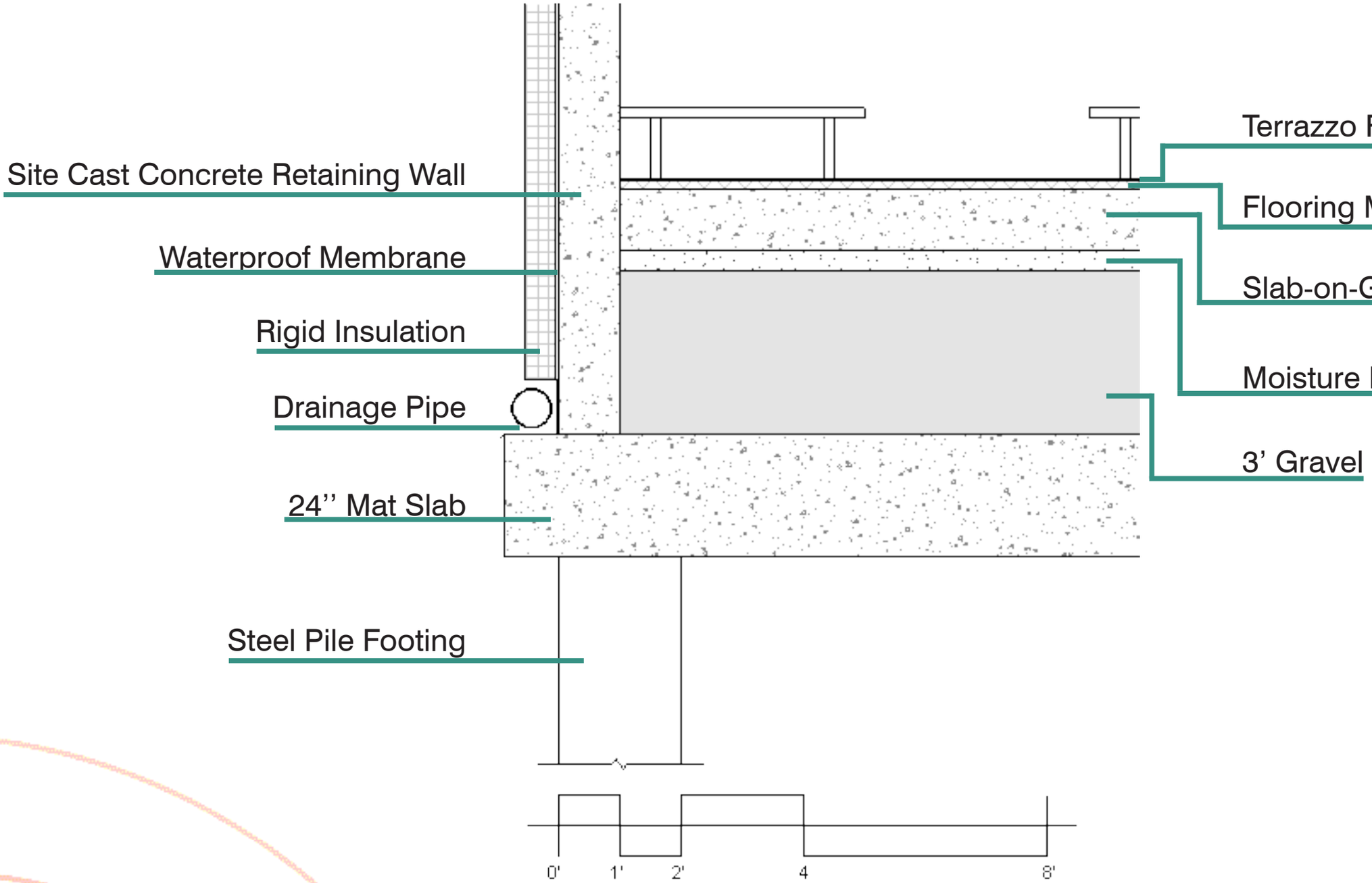


# Plaza Roof Detail

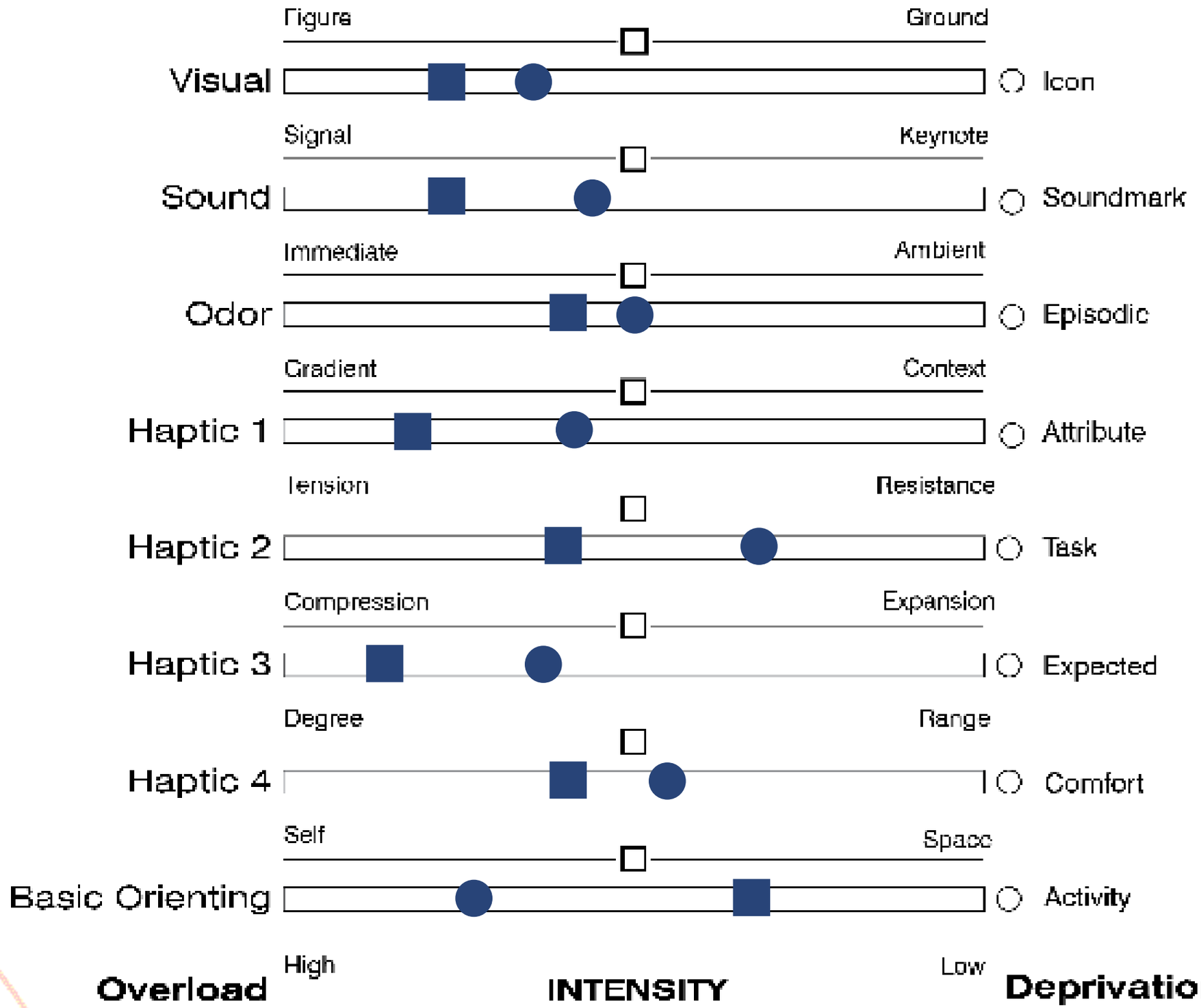


# Longitudinal Section

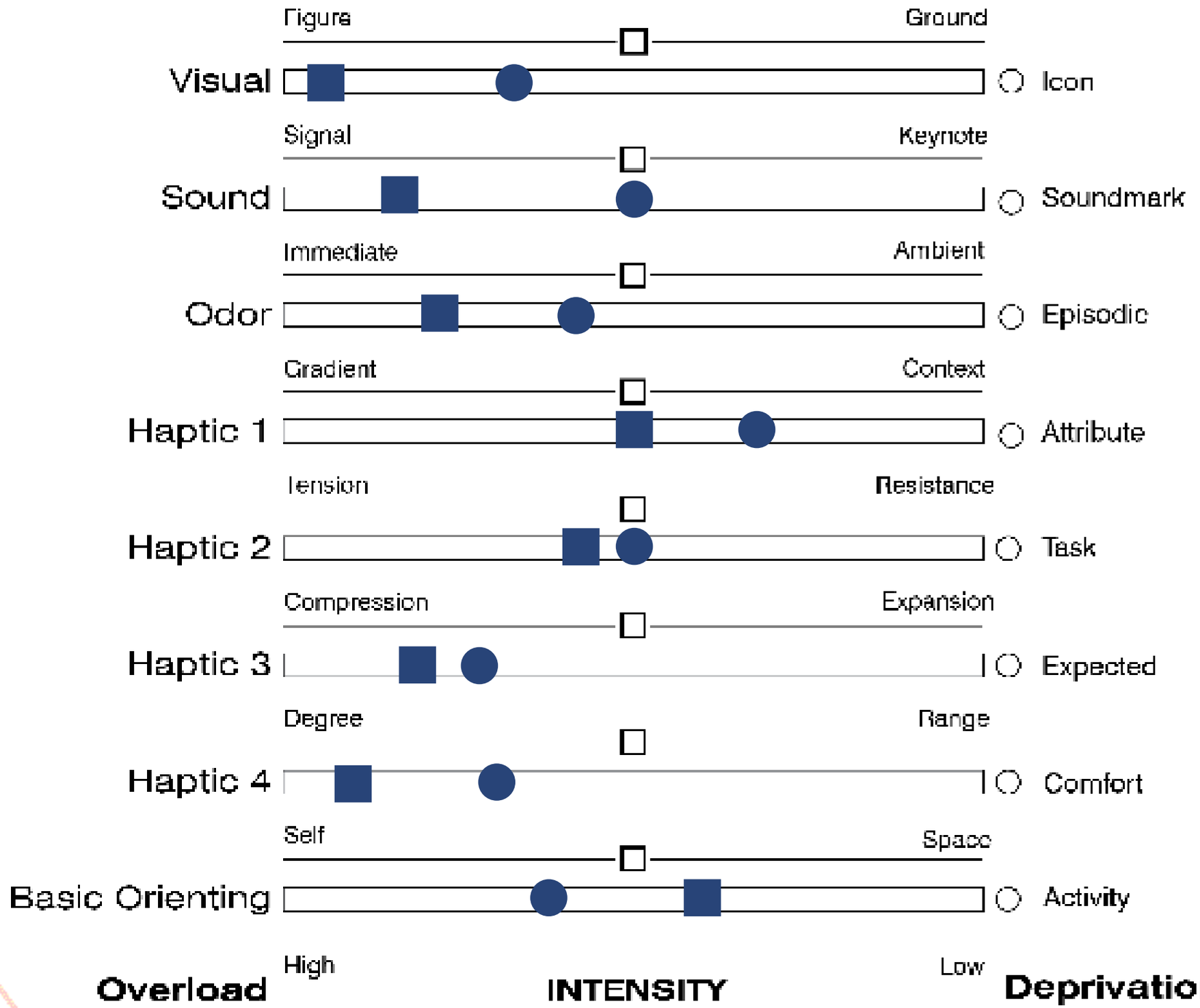
# Foundation Detail



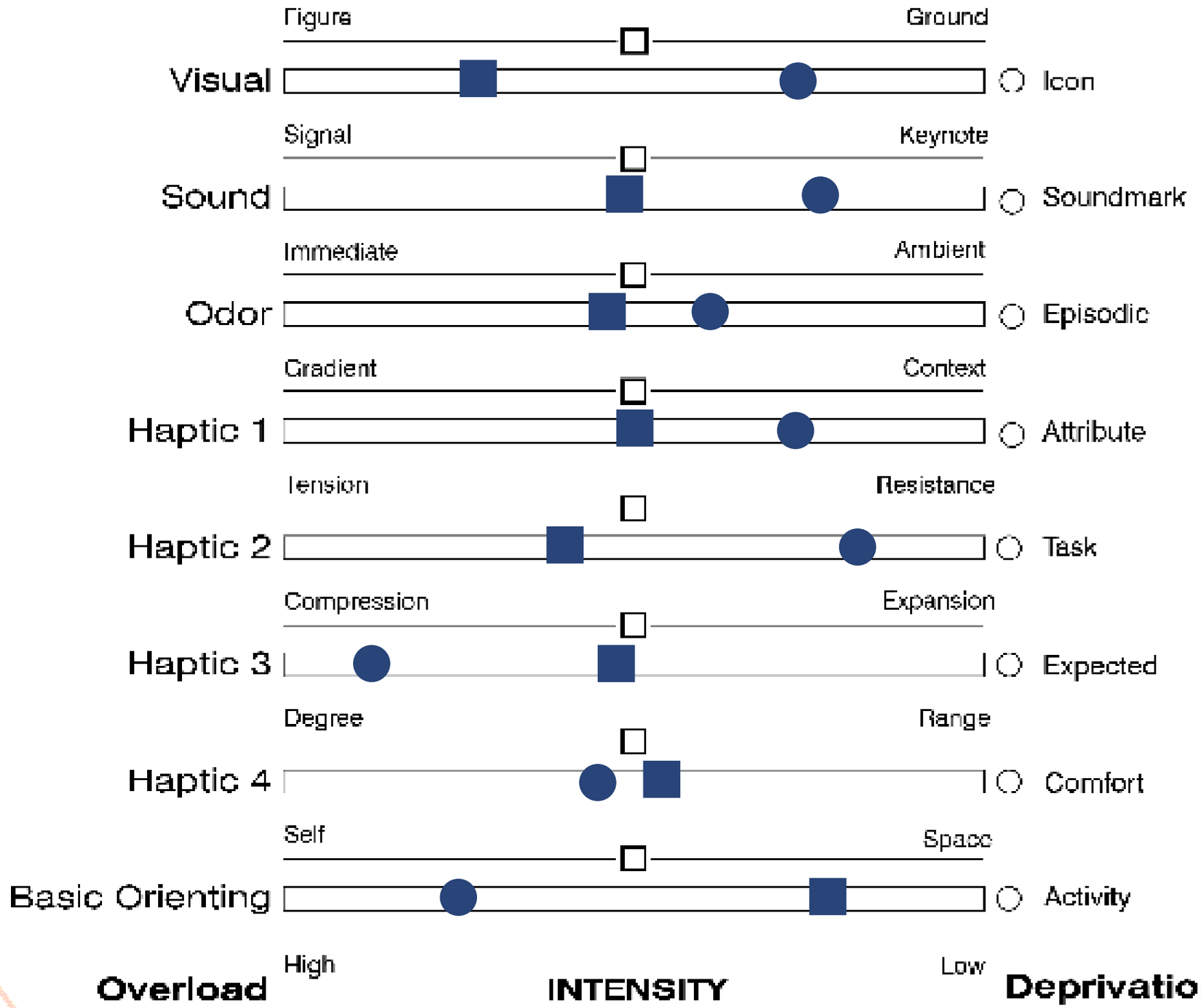
# Sensory Slider : Atrium



# Sensory Slider : Immersive Exhibit



# Sensory Slider : Connection



# Active and Passive Systems

Active Systems
- Central Air and Water System (CAV) - Multizone System
- Geothermal with use of Lake
- Photovoltaic Glass in Roofs

Passive Systems
- Daylighting
- Permeable Plaza Surface

# HVAC and Mechanical Diagram

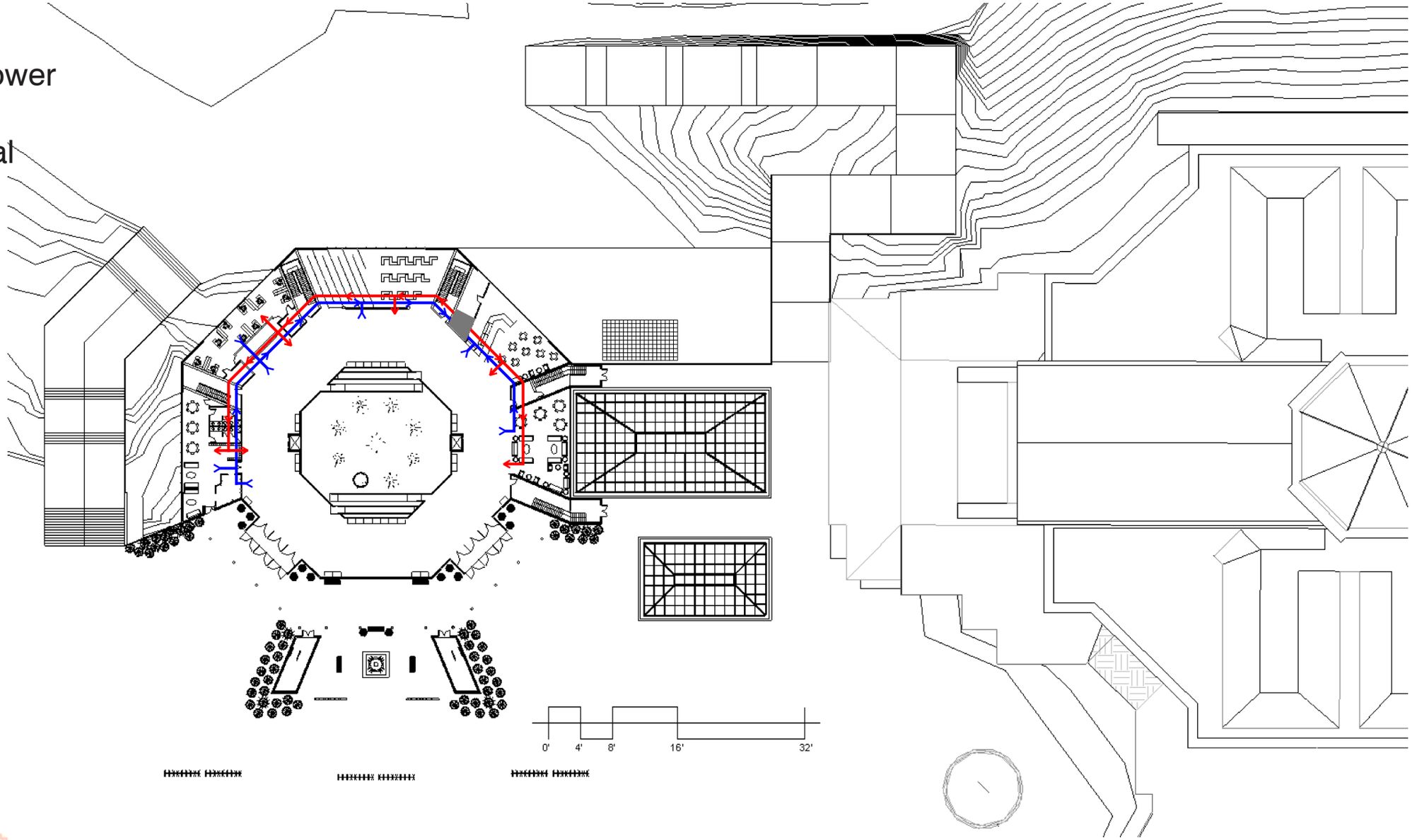
## Plaza

: Cooling Tower

: Mechanical

: Air Supply

: Air Return



# HVAC and Mechanical Diagram

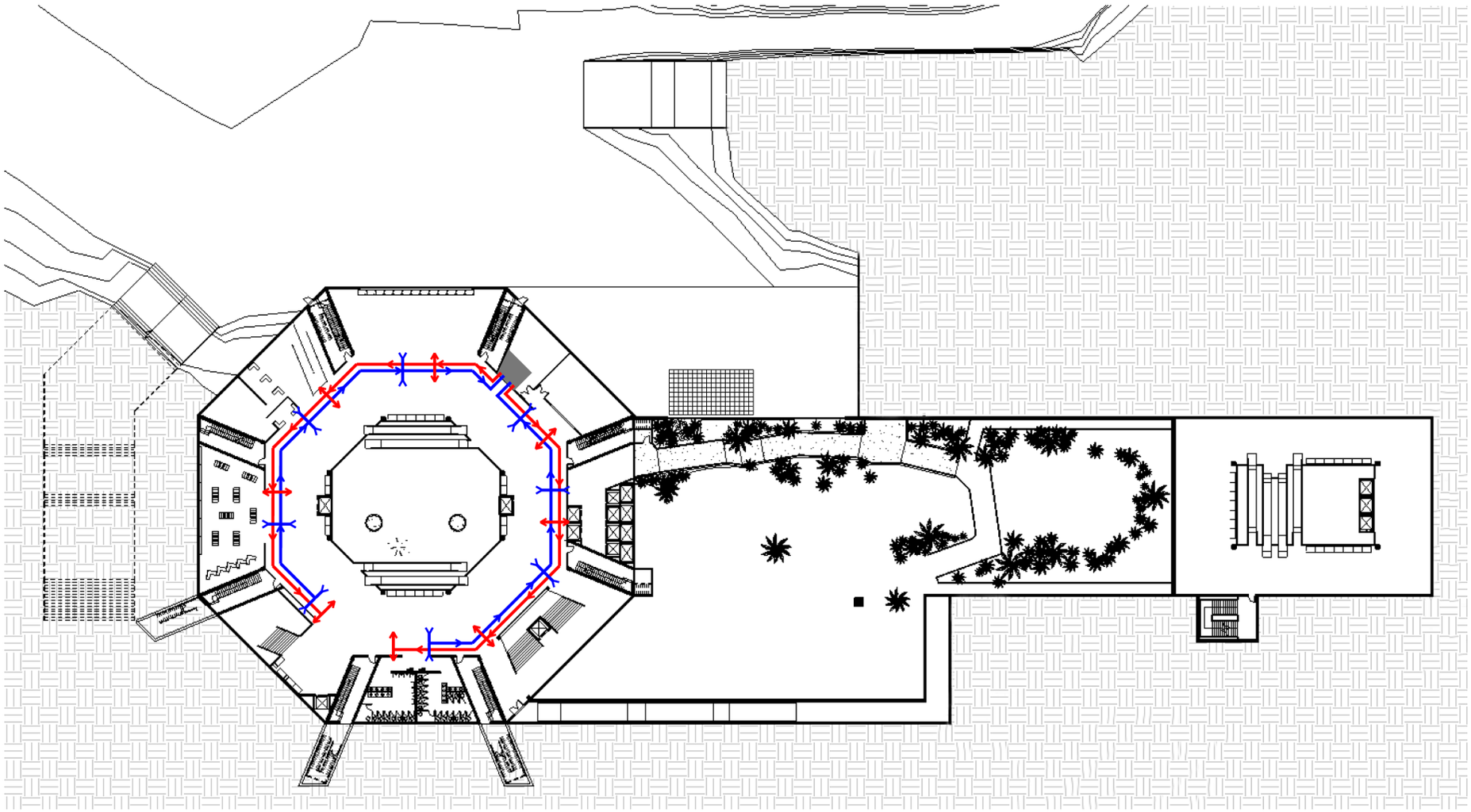
## Sub Level One

: Cooling Tower

: Mechanical

: Air Supply

: Air Return



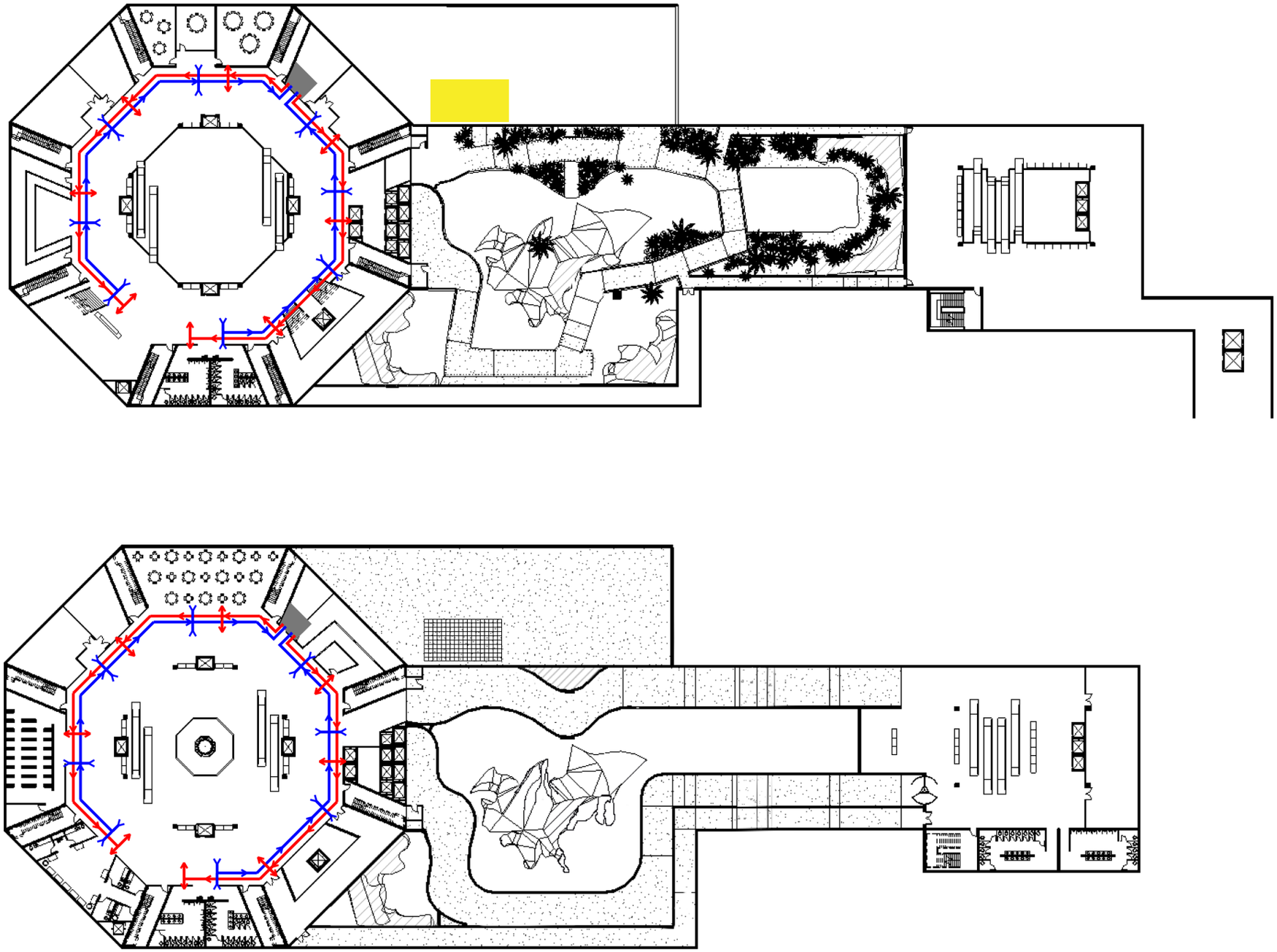
# HVAC and Mechanical Diagram

: Cooling Tower

: Mechanical

: Air Supply

: Air Return



# Thank You