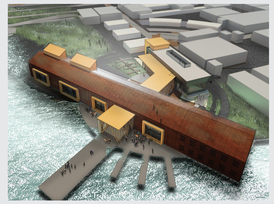
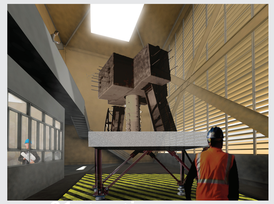
P [RE] FAULTS generative

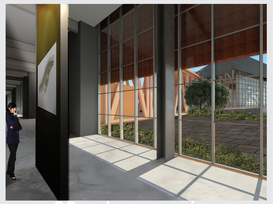
Regeneration is local in practice and addressess how we partner and thrive in a relationship with the unique social and ecological systems specific to a particular place. It also addresses how these relationships evolve, change and transform over time.
- Bill Reed (Design Collaborative)

Matthew Moreno
Masters of Architecture Candidate | Terminal Thesis Project | Advising Instructor: Hajo Neis | Project Location: San Francisco




01_testing area

02_research commons


03_observation

04_sculpture garden

05_museum

05_earthquake room

Regenerative Strategies

Regeneration or Urban Infrastructure
Upgrading roads and transit networks on a city scale
Layering transit types and scales
Increasing flexibility of network and node connections

Regeneration of Built Environment
- Adaptive Re-use of Buildings and Infrastructure
- Upgrading and maintaining existing environment
- Planning for future growth and needs

Cultural and Social Regeneration
Layer building types to encouraged activity at all times of day
Creating core program anchors to establish district identities

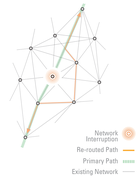
Energy and Resource Regeneration
- Creating micro-systems that generate the required energy
- Creating a system for sharing and recycling energy

Economic Regeneration
- Overlapping programs and systems to share costs
- Funding projects using multiple sources and organizations

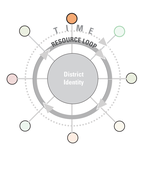
Ecological Regeneration
- Restoring or improving ecological site systems
- Development that improves rather than hinders ecology

Bay Network Regeneration

Urban Network Regeneration



District Identity Regeneration



San Francisco

Pier 70 District

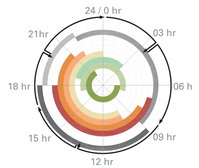
Warehouse 6

Layer of District Program Building Types

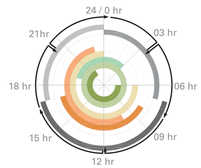
- Business
- Educational
- Shopping and Restaurants
- Arts and Culture
- Bars and Nightlife
- Residential
- Recreation

Program Hours of Operation for 24-Hour Period

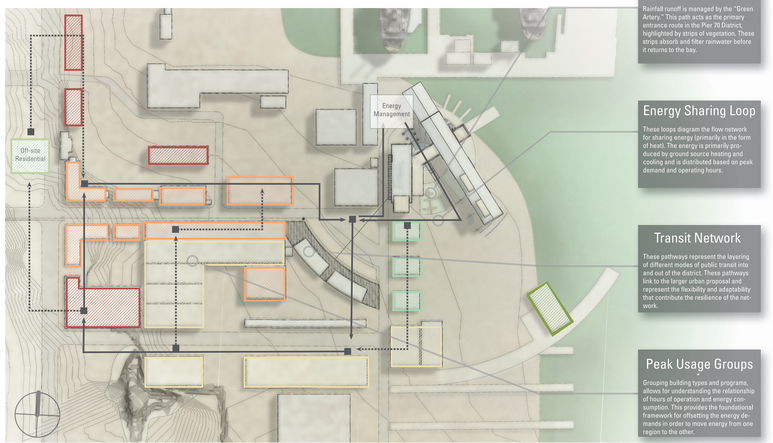
Weekdays



Weekends



Urban Design and District Energy Plan Scale: 1"=64'



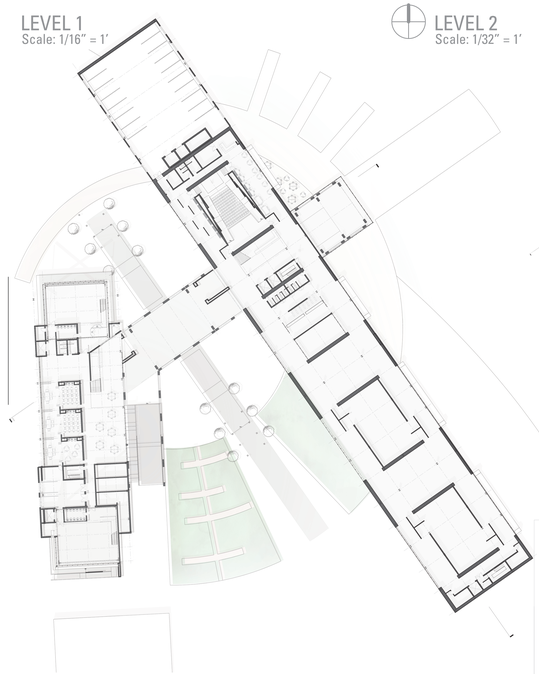
Water Management
Rainfall runoff is managed by the "Green Artery." This path acts as the primary entrance route in the Pier 70 District, highlighted by strips of vegetation. These strips absorb and filter rainwater before it returns to the bay.

Energy Sharing Loop
These loops diagram the flow network for sharing energy (primarily in the form of heat). The energy is primarily produced by ground source heating and cooling and is distributed based on peak demand and operating hours.

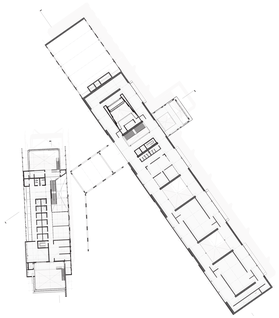
Transit Network
These pathways represent the layering of different modes of public transit into and out of the district. These pathways link to the larger urban proposal and represent the flexibility and adaptability that contribute the resilience of the network.

Peak Usage Groups
Grouping building types and programs, allows for understanding the relationship of hours of operation and energy consumption. This provides the foundational framework for offsetting the energy demands in order to move energy from one region to the other.

LEVEL 1
Scale: 1/16" = 1'



LEVEL 2
Scale: 1/32" = 1'



Building Design Goals

Upgrade the Testing and Research Facilities of PEER
Providing state-of-the-art testing and research facilities for the Berkeley Branch of the PEER (Pacific Earthquake Engineering and Research) in order to expand network and presence in both the academic and urban community.

Creating Transparency Related to Earthquake Research
Providing opportunities for the public to view the research and testing processes related to seismic design. This will help to start the conversation about strategies and priorities for increasing the seismic resiliency in the region.

Using the Building Structures as Pedagogical Tools
Using the building, structure, and components as working displays that diagram their function and design. This allows the public to gain a first-hand experience understanding the systems of the building related to structure.

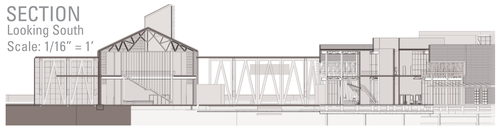
Improve Creativity and Collaboration
Providing several internal gathering areas to promote collaboration and creativity. Provide additional meeting spaces to accommodate expansion and temporary learning areas for visiting professionals and researchers.

Educating the Public About Regional Vulnerability
Teaching about the vulnerability of the infrastructure in San Francisco and the high risk of liquefaction on the land surrounding the bay.

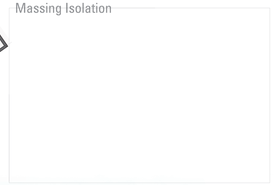
Designing Opportunities for the Public to Experiment
First-hand experimentation provides users with a hands on learning experience that is both more engaging, and more efficient in teaching the general public about the physics behind earthquakes.

LEVEL 1
Looking Northeast
Scale: 1/16" = 1'

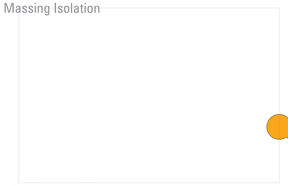
SECTION
Looking South
Scale: 1/16" = 1'



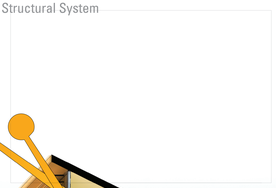
Massing Isolation



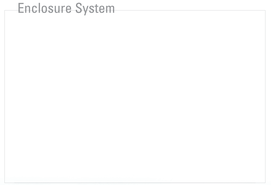
Massing Isolation



Structural System

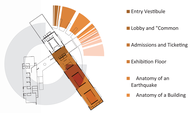


Enclosure System



Program Breakdown

Museum



Research

Collaborative Exploration

Support Programs