Spring 2013

Filling the Gap: The Effect of Temporary Environments on Deteriorated Cities

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Filling the Gap

The Effect of Temporay Environments on Deteriorated Cities

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Foreword

Foreword

Issue

The development of new technology and production has brought upon the age of fast pace consumerism. The growing wants of the client's demands and satisfaction are framed on the immediacy of here and now. As sections of the world are thrown into turmoil through economic and environmental frustrations, communities are looking for fast solutions for shelter, work and education. With the cost of building rising and the construction phase long, clients are turning toward quick and temporary solutions. I believe that temporary and multi-faceted architecture can fill the needs of the community and become the crutch for an injured society.

Concept

Can temporary environments act as a conducive stimulate for damaged communities?

Intent

The result of the intervention will provide a new tactic of community rehabilitation by creating a framework utilizing temporary architecture as a tool for deployment and restructure.

Notes

1.Peter Bishop and Lesley Williams. The Temporary City, (Routledge 2012) 5-7

2. Cleveland Urban Design Collaborative, Pop Up City, (Ohio: Kent State University 2009) 4

Foreword

The project I'm proposing will analyze the effect of temporary environments on deteriorated cities that have been damaged environmentally and economically. While attempts have been made to motivate cities through the use of vacant and public space, "research on temporary urbanism is still in its infancy".(1) I claim that temporary architecture, if ideally placed, can alleviate the strain placed on communities from environmental and economic disasters. I will demonstrate that temporal space is the needed structure for human cultural permanence and preservation.

Major influences of architectural and cultural times have been temporal establishments designated for only a few months occupation, such as London's Crystal Palace built for the great exhibition of 1851(2). These series of temporary environments have provided societies with cultural identities that have become an icon for progress embedded within inspiration for economic growth. Reestablishing the argument for temporary architecture as a motivator for communities within the twenty first century, organizations such as the Cleveland Urban Design Collaborative begin to discuss the rehabilitation of ravaged communities through the use of temporary spaces. These communities not only provide a need for severe social restructuring but contain an abundance of unused and vacant space providing a clear surface for interventions.

The initial stage of research will address hurricane Katrina's effect on New Orleans city dynamics. Analyzing the governmental and city preparedness as well as relief and restoration will provide a case example of the federal resources or lack thereof. Using firms such as Cooper Carry and their submittal for the rehabilitation of New Orleans, focusing on environmentally damaged zones and the establishment of temporary living for its former inhabitants, as a means for understanding the process to recovery.

Foreword

The second phase will interpret the governmental and social requirements of the Federal Emergency Management Agency (FEMA). Understanding the framework of FEMA as a disaster recovery system will provide keen insight into not only the staging of recovery but also flaws within the governmental system. The result of the analysis will establish a foothold within the framework for future development and growth.

The final phase of the project will implement a FEMA Headquarters within a selected city that will act as a catalyst for smaller segmented installments throughout the civic ecosystem. Addressing locations and program based on in depth land use and vacancies. The program will be broken into 3 phases of deployment. The initial phase will contain a command center and clinic, followed by a shelter conjoined with a portable power and water facility and finally a transportation hub. The high demand of public interaction provide a large open surface for social and communal gatherings. Understanding the workings of these spaces will further allow the implementation of larger interventions that will act upon these areas as nodes for the city. Also utilizing this information self sustaining nodes might be projected separate from already established public zones.

In addition to providing help to devastated cities, this project will add to the discussion of the reformation of civic centers. Through the understanding of underutilized public opportunities within existing cities, urban designers will be better prepared as they propose their next development. This research will also argue the permanence of buildings themselves as the concept of temporary inhabitance within the void counters the idea of lifelong monuments.

Notes

1.Peter Bishop and Lesley Williams. The Temporary City, (Routledge 2012) 5-7

2. Cleveland Urban Design Collaborative, Pop Up City, (Ohio: Kent State University 2009) 4

FEMA

FEMA plays a key role in the reconstruction of damaged cities. Though their time of intervention is only temporary, understanding their key network of stabilization can provide a framework for community needs during a time of crisis.

The time frame of action breaks FEMA into 3 phases

- Pre-Disaster
- Event
- Post-Disaster

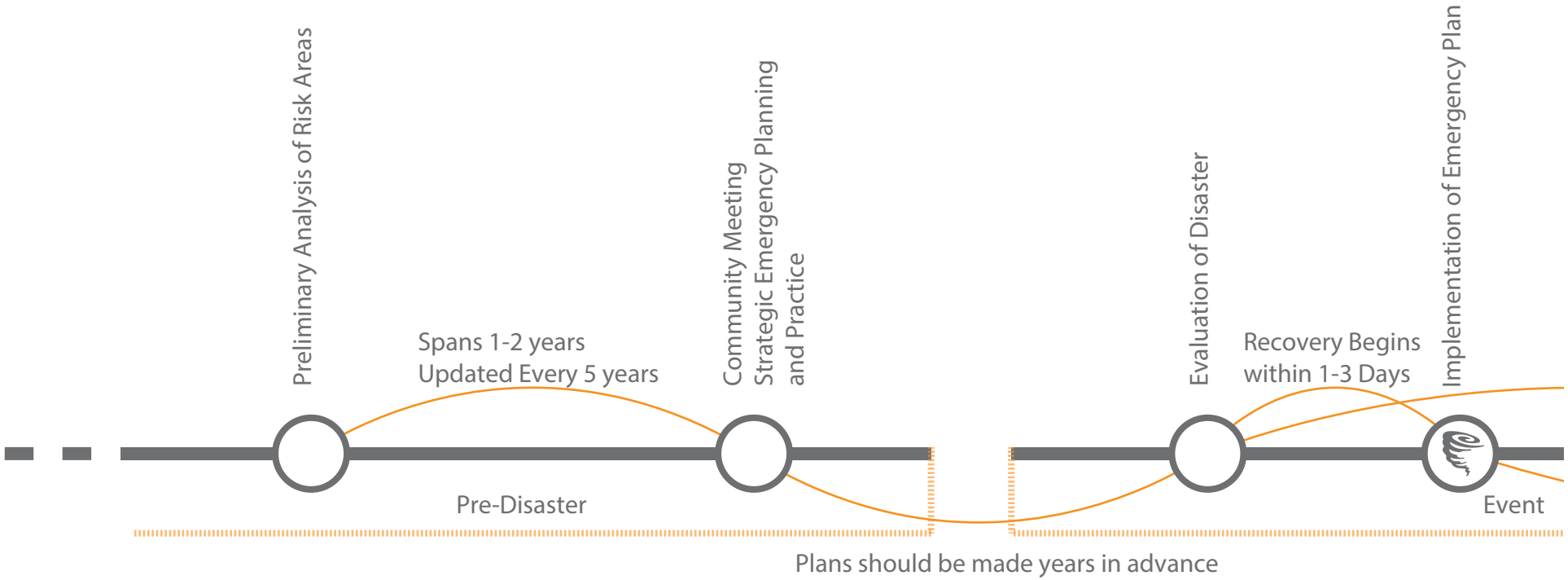
Within each of these categories FEMA has a set framework of needs and suggested responses. The analysis of this framework provides the supplements of programmatic needs that can then be interpreted depending on various situations.

FEMA

Timeline 08
Framework 13
Data Sharing 15
Needs 17
Baseline Recovery 19

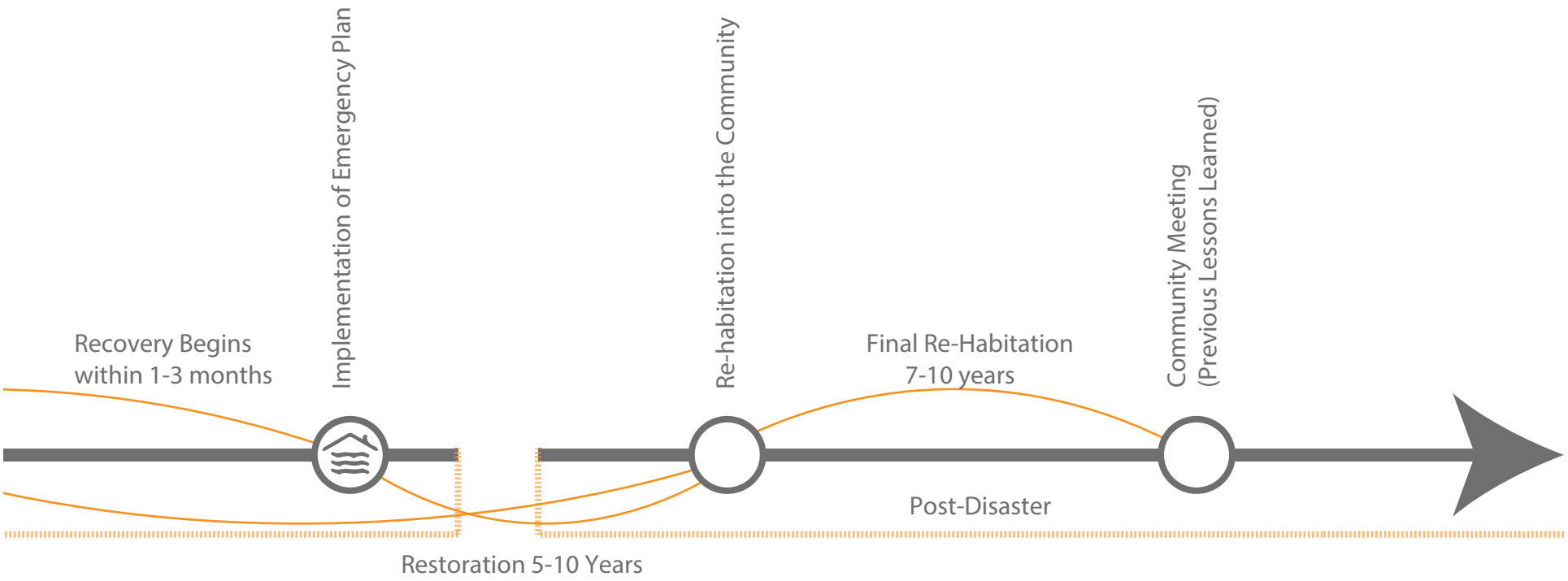
FEMA

Responsive TimeLine

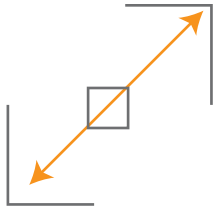


FEMA

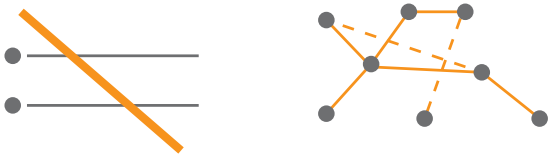
Responsive TimeLine



FEMA



1 Recovery plan needs to be scalable and flexible. (1)



2 State should be wary of imposing a rigid guideline for activation. (1)

3 Vague language should be used in the recovery Framework to allow for the most flexibility in activation. (1)

Locals are the Key

Non-Profits ← Connection → City

4 Activation considerations can include the number of displaced residents, affected businesses and infrastructure and job loss; however every disaster must be handled differently. (1)

5 Activation depends on the community's ability to handle recovery. Are resources (personnel, volunteers, funding, etc.) lacking that are necessary for recovery? Communities can become quickly overwhelmed and burnt out during and following a major disaster and may need additional help. (1)

6 Activation depends on an assessment of local services and needs. A comprehensive review of damage assessment data may be required to assess loss and understand the long-term impacts of the disaster. When there is a strain on local services, external assistance from the state may be needed. (1)

Notes
1.FEMA, *National Disaster Recovery Framework*, U.S. Department of Homeland Security (2011)

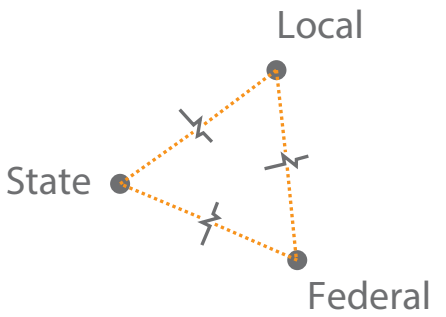
Actual

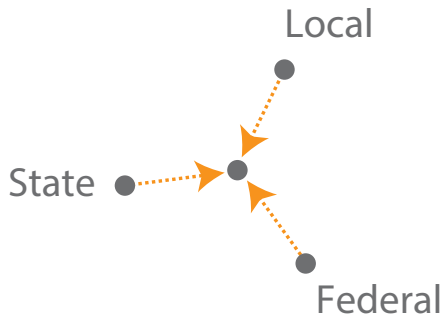
Needed

1 Many local and state agencies don't have the necessary back-up for response or recovery events, making it very difficult to do additional work during these desperate times. (1)

2 There should be enough flexibility for the use of 28E agreements with various agencies so staff can immediately be ramped up during times of disaster. (1)

FEMA





1 Quality data is needed for a successful recovery, however the acquisition of this data can be one of the most difficult things to accomplish in a timely fashion. (1)

2 There is a definite need for a common database which can be shared with local, state and federal officials, as well as non-governmental agencies. (1)

3 Right now, it is difficult for the state to know the names/addresses and numbers of those that have been impacted and to what extent since various databases are restricted to certain agencies. (1)

4 Better data sharing would significantly reduce the burden of paperwork that must be filled out by each impacted family or individual. (1)

5 If agencies could deal with one form for funding versus multiple versions, it would also cut back on wasted time and unnecessary paperwork. (1)

6 A system similar to GIS or CAN needs to be established so multiple agencies can tap into one centralized database system to understand an individual or a community's need. (1)

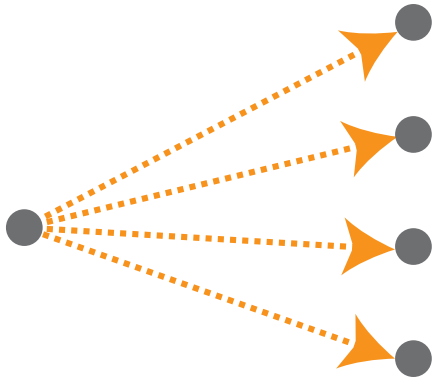
Notes

1.FEMA, *National Disaster Recovery Framework*, U.S. Department of Homeland Security (2011)

FEMA

Repository for Recovery Information

Previous Lessons



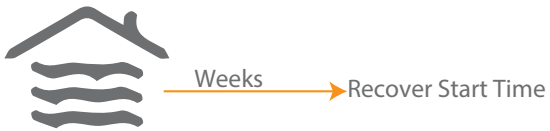
1 An office or location should be designated as a repository for information and lessons learned from past disasters and recoveries.(1)

2 House staff members with previous disaster experience or those which are educated on recovery programs.(1)

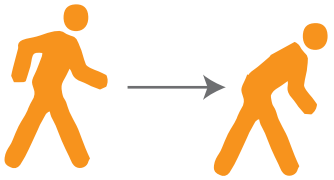
3 Group should be held accountable for the coordination of future recovery funds and/or duplication of benefit issues. (1)

FEMA

1 Tornado –
Most people have insurance and within a day they are outside cleaning up. (1)



2 Flood –
Not everyone has insurance and recovery cannot be started immediately. (1)



3 Individuals and local communities may start suffering from burnout. (1)

Notes
1.FEMA, *National Disaster Recovery Framework*, U.S. Department of Homeland Security (2011)

FEMA

Economic

The tax base has stabilized and there are jobs and services to sustain a population. (1)

Infrastructure

Water, waste water, power and other essential services are restored and reliable. (1)

Transportation

Roads, bridges and other transportation services are safe and operational and allow full access to services, work and commerce. (1)

FEMA

Housing

There are units and locations available for people who want to rent or own according to their needs. (1)

Health and Human Services

Basic care can be accessed at a level sufficient for all community members. (1)

Government / Local Leadership

Basic government functions are open and operational. (1)

Notes

1.FEMA, *National Disaster Recovery Framework*, U.S. Department of Homeland Security (2011)

New Orleans

New Orleans provides an insight to one of FEMA's larger controversies. Hurricane Katrina allows research into FEMA's implementation and recovery process as well as signifying some of their major flaws.

By analyzing Katrina through FEMA's designated framework it exposes some of their key opportunities for improvement.
Focusing on:

- Deployment Time
- Transportation Needs
- Preparedness Schedule

New Orleans

Displacement 23
Elevations 13
Preparedness 27
Event 29
Super Dome 31
Aftermath 33

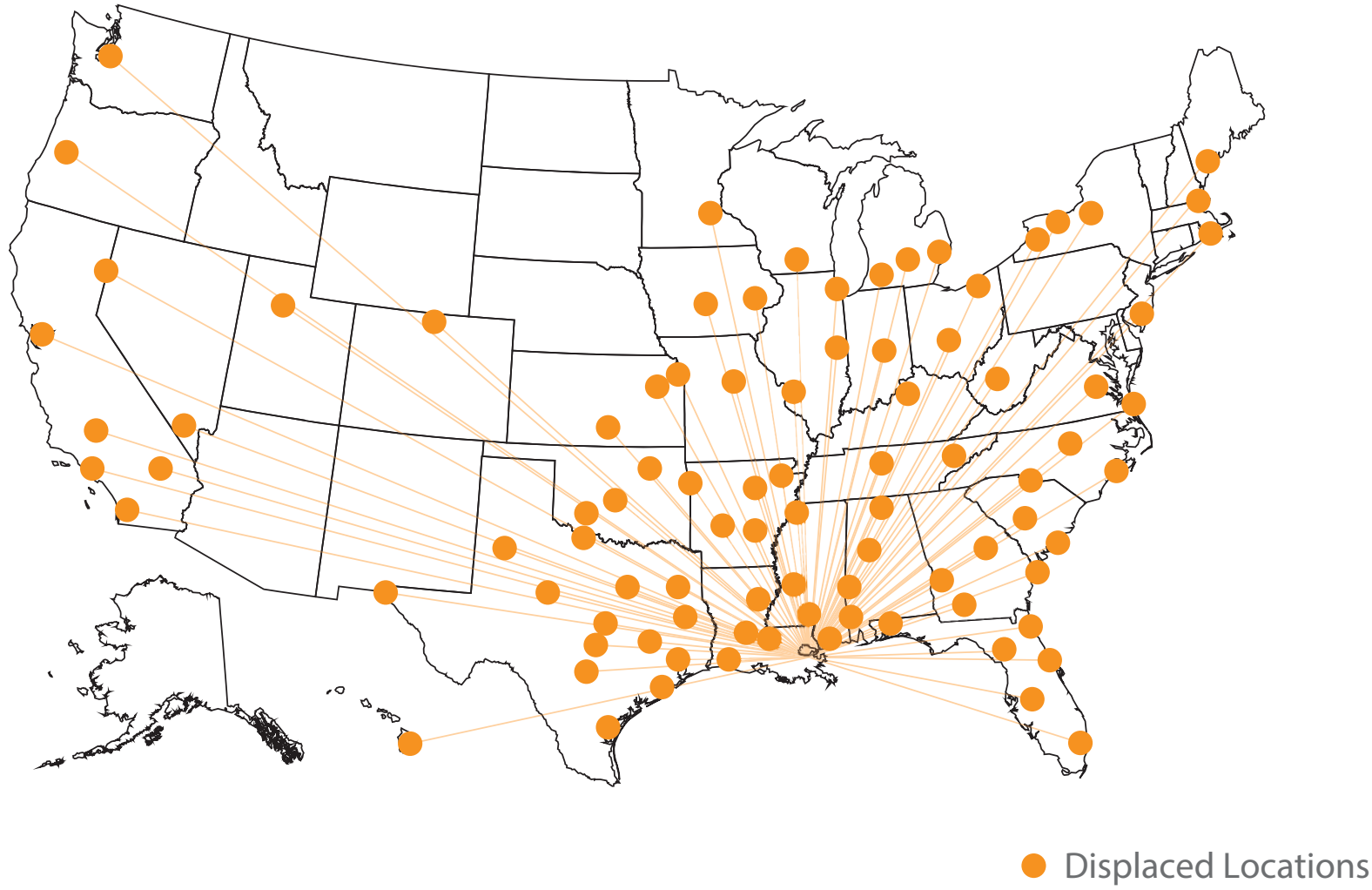
New Orleans

1 Katrina Landfall Timeline
Showing the estimated time the city had to prepare

2 Population Displacement
Tracking the movements of the community after the hurricane

(1)

New Orleans

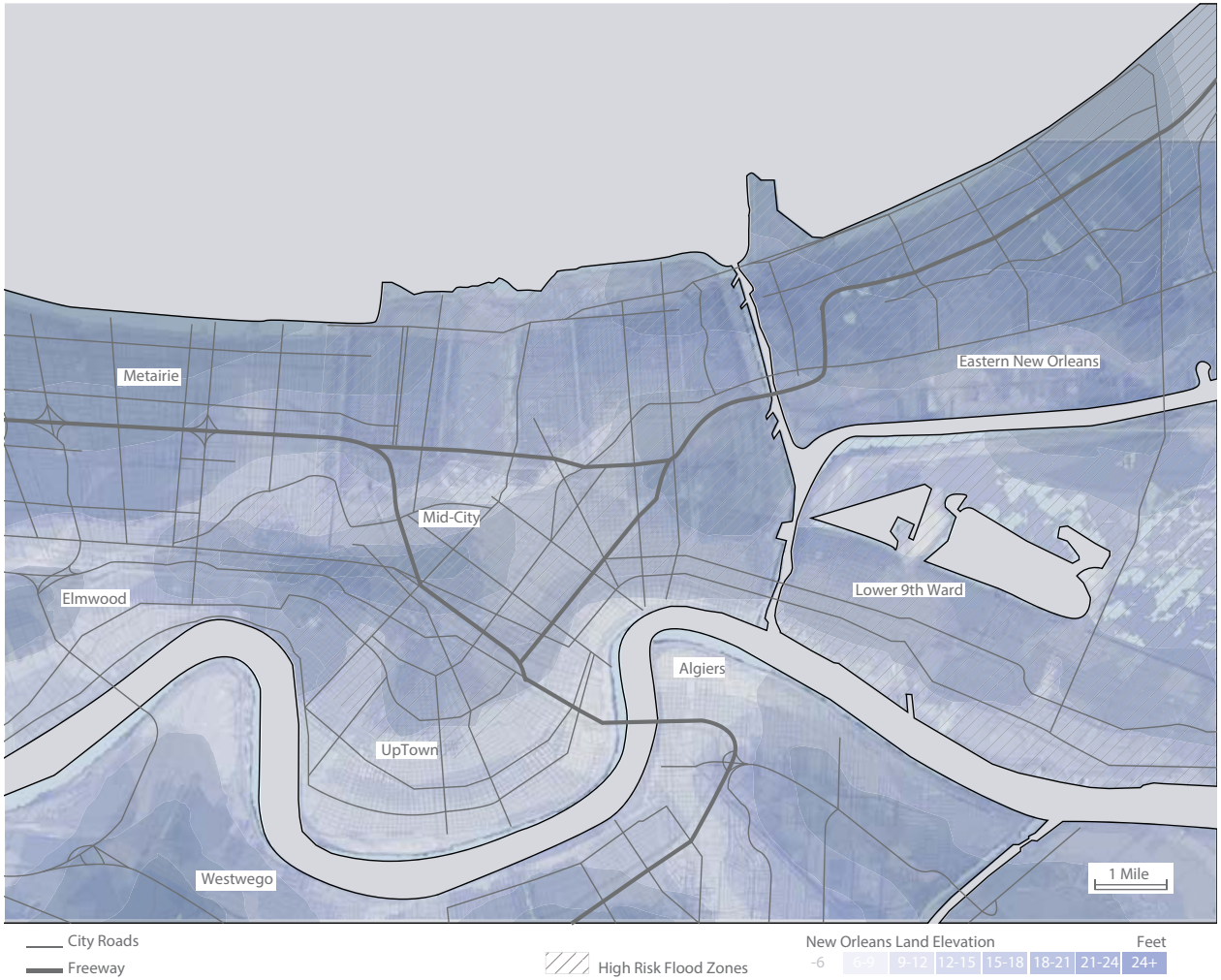


(2)

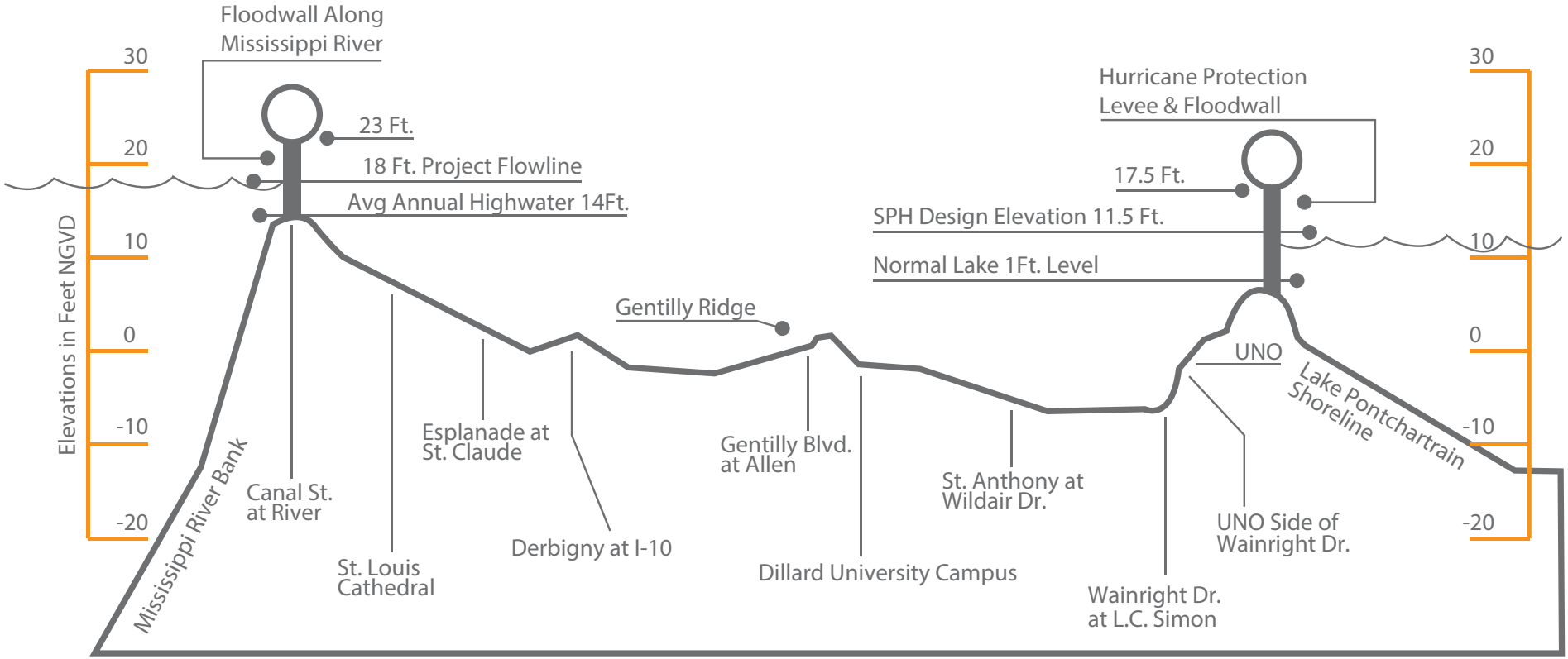
New Orleans

1 New Orleans Land Elevation
Focusing on the awareness of the city and it's flood zones

2 New Orleans Site Section
Understanding the actual water level in relation to the city



New Orleans


Floodwall Along
Mississippi River
23 Ft.
18 Ft. Project Flowline
Avg Annual Highwater 14Ft.
Hurricane Protection
Levee & Floodwall
17.5 Ft.
SPH Design Elevation 11.5 Ft.
Normal Lake 1Ft. Level
Elevations in Feet NGVD
30
20
10
0
-10
-20
Gentilly Ridge
UNO
Lake Pontchartrain
Shoreline
Mississippi River Bank
Canal St.
at River
St. Louis
Cathedral
Esplanade at
St. Claude
Derbigny at I-10
Gentilly Blvd.
at Allen
Dillard University Campus
St. Anthony at
Wildair Dr.
Wainright Dr.
at L.C. Simon
UNO Side of
Wainright Dr.

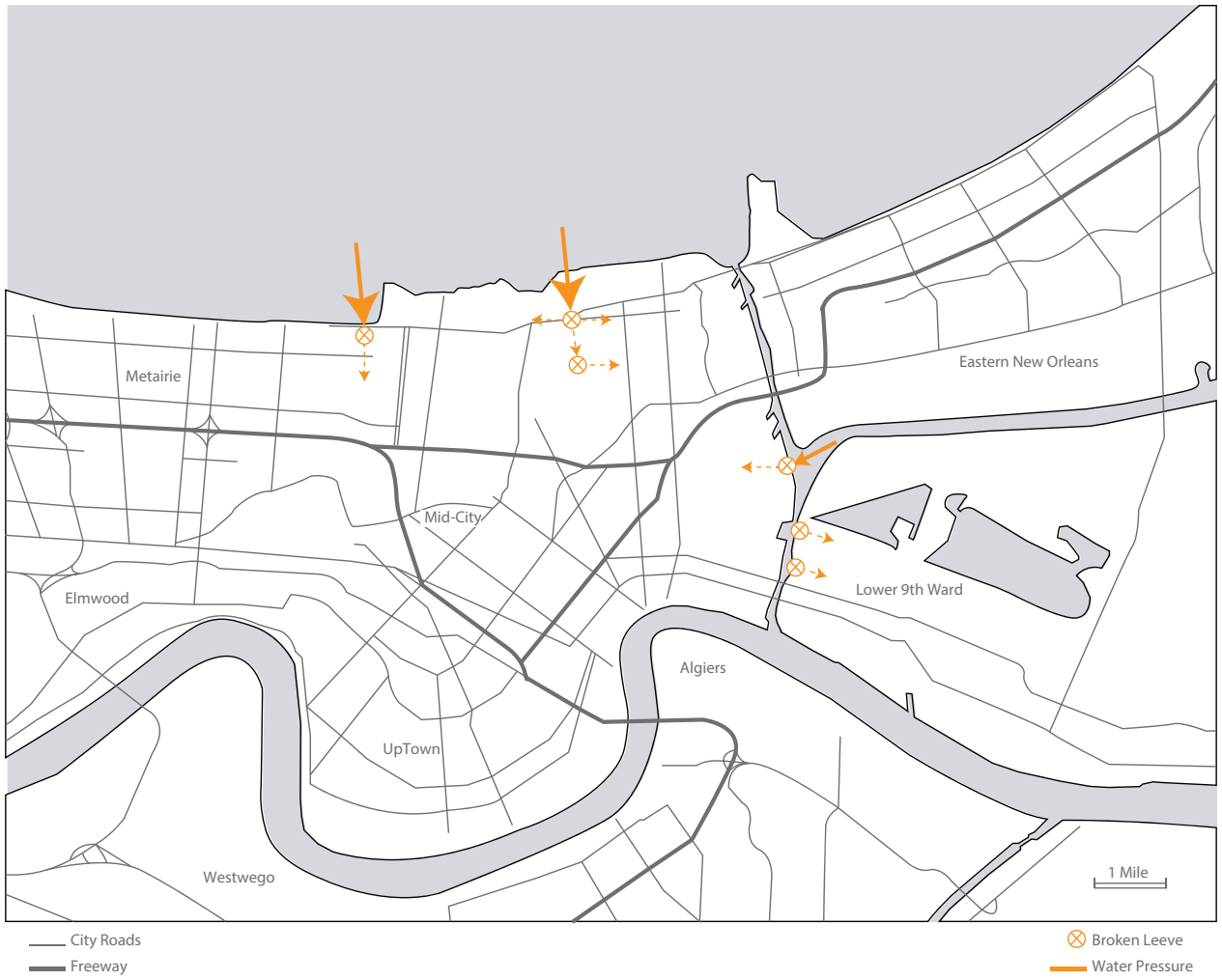
New Orleans

City's Population

484,000 people (1)

City's Flood Defenses

The Army Corps of Engineers was working on upgrading the city's flood defenses to protect against a Category 3 level storms, but ran into construction problems. The city's levee system was incomplete when Katrina came ashore. (1)



(1)

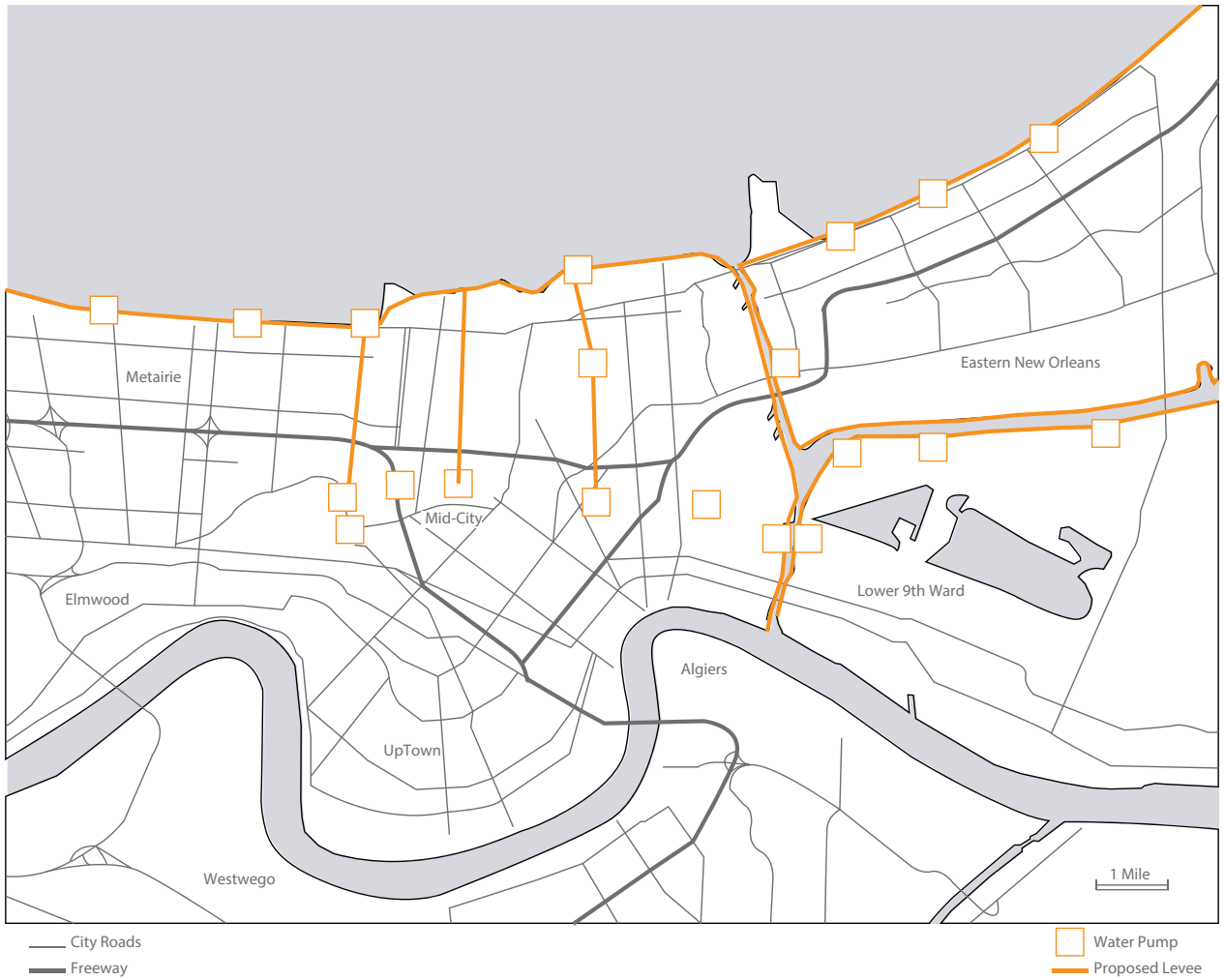
Notes

1. The Associated Press, *New Orleans Since Katrina: Before And After*, Huffington Post (2013)

New Orleans

1 Levee Breach
The location of major water pressure and infiltration in to the city

2 Proposed Levee System
Proposed system, unable to finish before Katrina



(2)

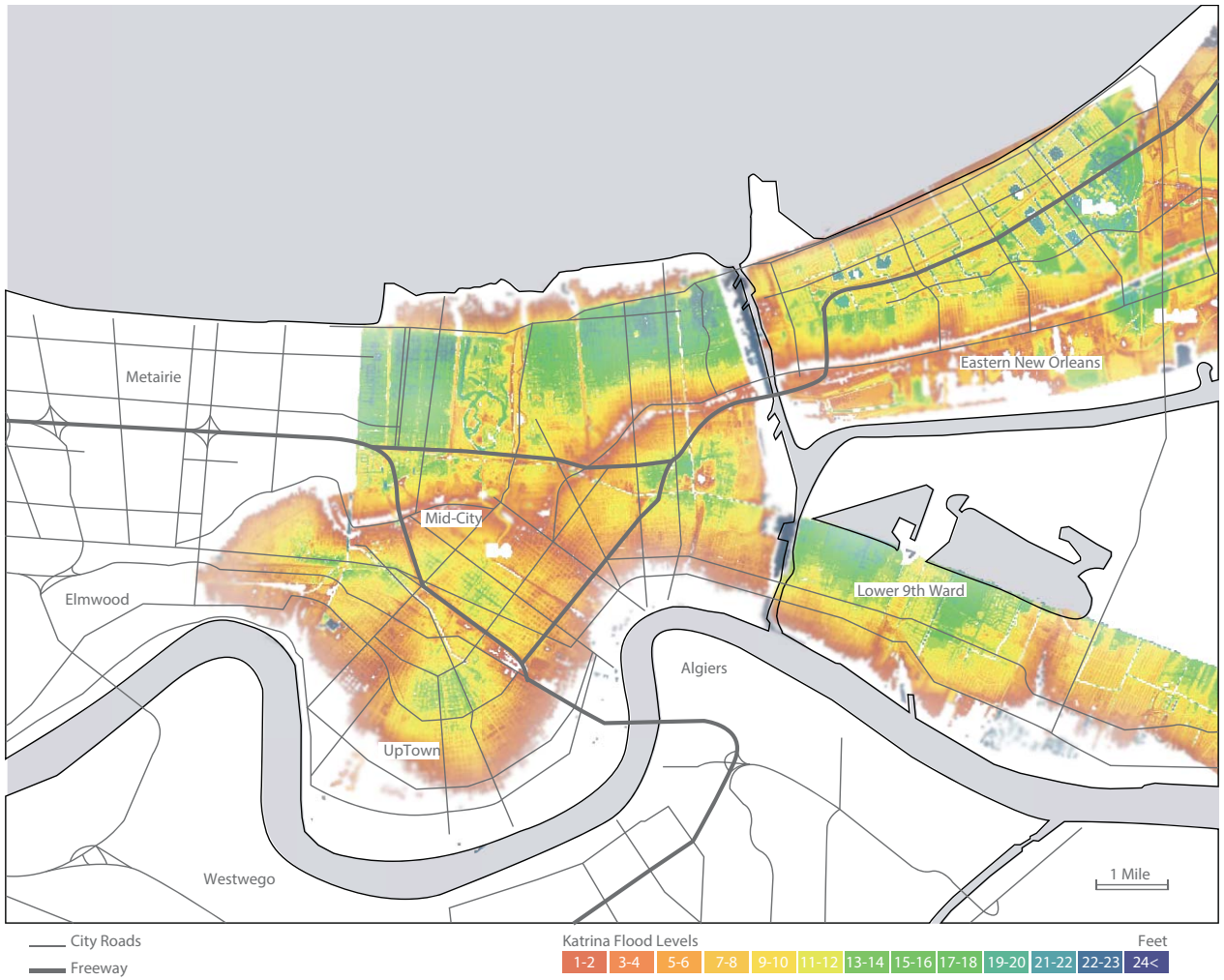
New Orleans

Flood Damage

Due to the heavy rain 80 percent of the city was underwater and 1800 people were killed. (1)

1 Flood Levels

Estimated per foot of water after Katrina hit



Notes

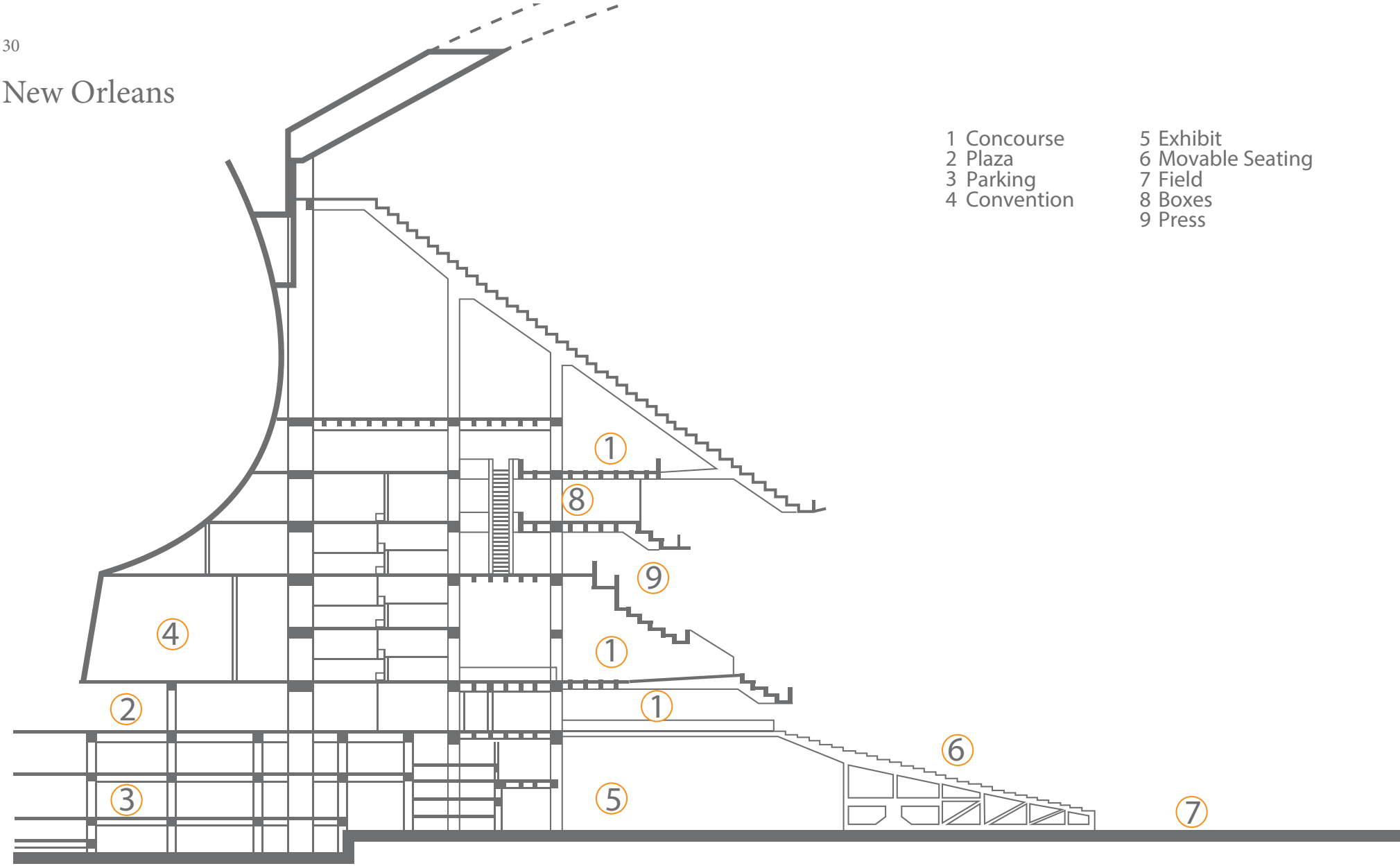
1. The Associated Press, *New Orleans Since Katrina: Before And After*, Huffington Post (2013)

New Orleans

1 Uptown Flooding

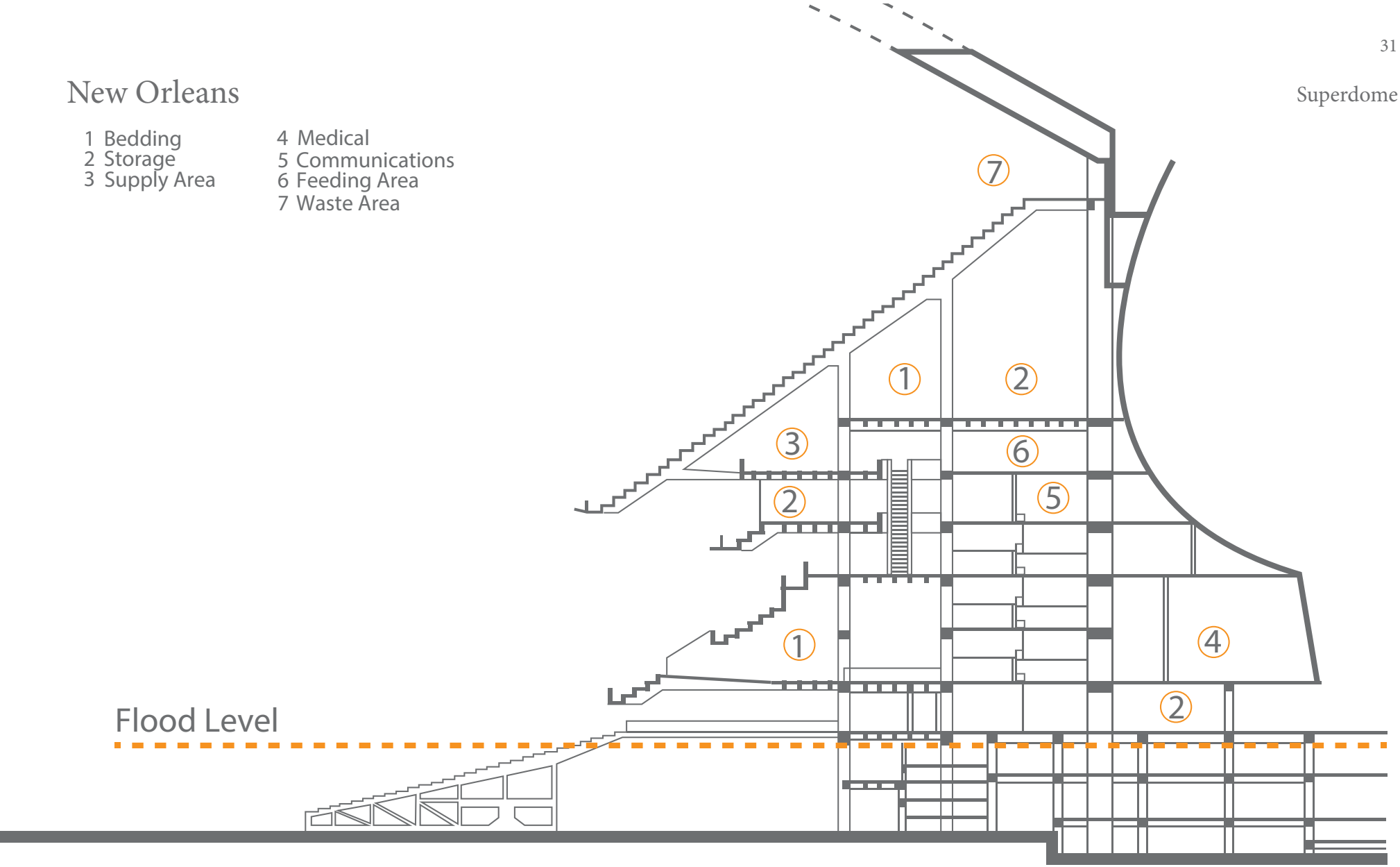
2 Mid City Flooding

New Orleans


1 Concourse
2 Plaza
3 Parking
4 Convention
5 Exhibit
6 Movable Seating
7 Field
8 Boxes
9 Press
1
8
9
4
1
2
1
6
3
5
7

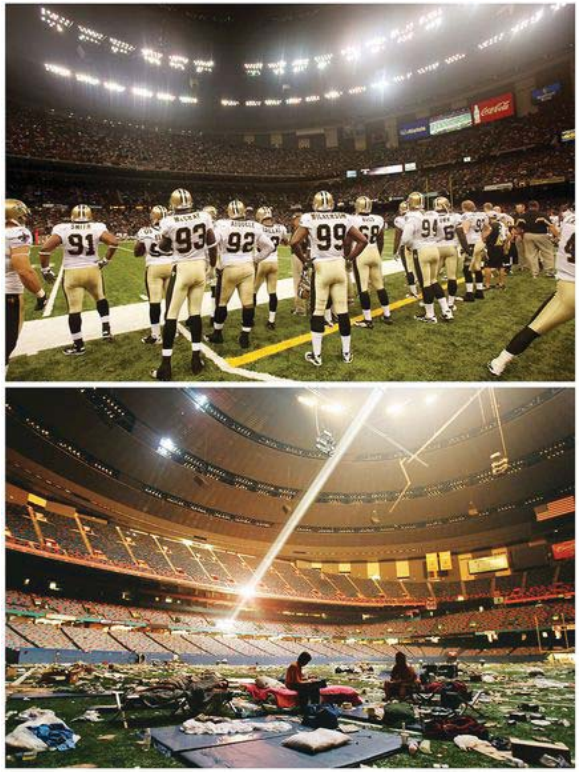
New Orleans

1 Bedding
2 Storage
3 Supply Area
4 Medical
5 Communications
6 Feeding Area
7 Waste Area

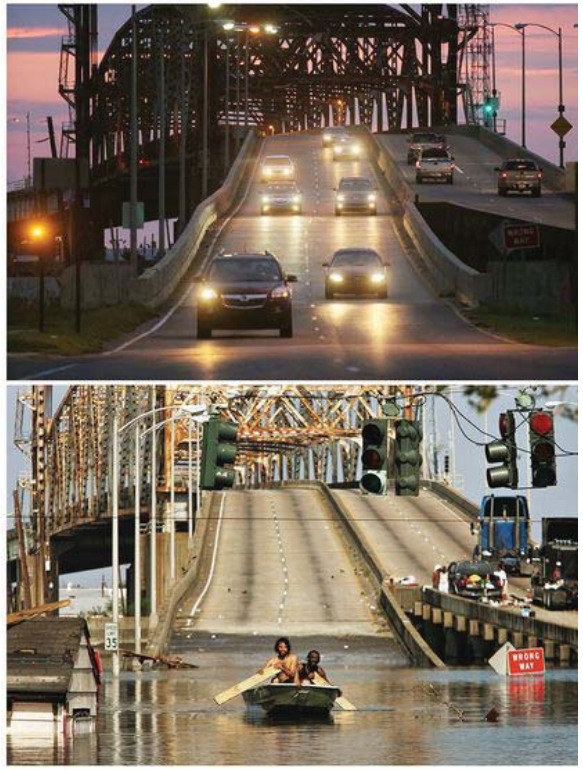


New Orleans

1 Water Front
Houses completely swept away



2 Super Dome
Using large public spaces for shelter



3 New Orleans Bridge
Transportation system shutdown

New Orleans

4 Super Dome Aerial
Stadium was unsuited for the crisis

City's Population
360,400 people (1)

City's Flood Defenses
The Corps was given about $14 billion to improve flood defenses. The majority of the post-Katrina work has been completed and the corps said the city was ready to handle a storm a Category 3 hurricane, with winds of at least 111 mph. (1)

City's Failures
With the main road closed the lack of heavy land lift helicopters caused for a major delay in resources.

Notes
1. The Associated Press, *New Orleans Since Katrina: Before And After*, Huffington Post (2013)

Natural Disasters

Natural disaster mapping provides a background for the varied needs and requirements for recovery efforts.

Focusing on higher risk areas covers a wider range of involvement that may then be further deployed into lower risk areas.

U.S.

High Risk 37
Natural Disasters 41

Site

Highest Risk Cities

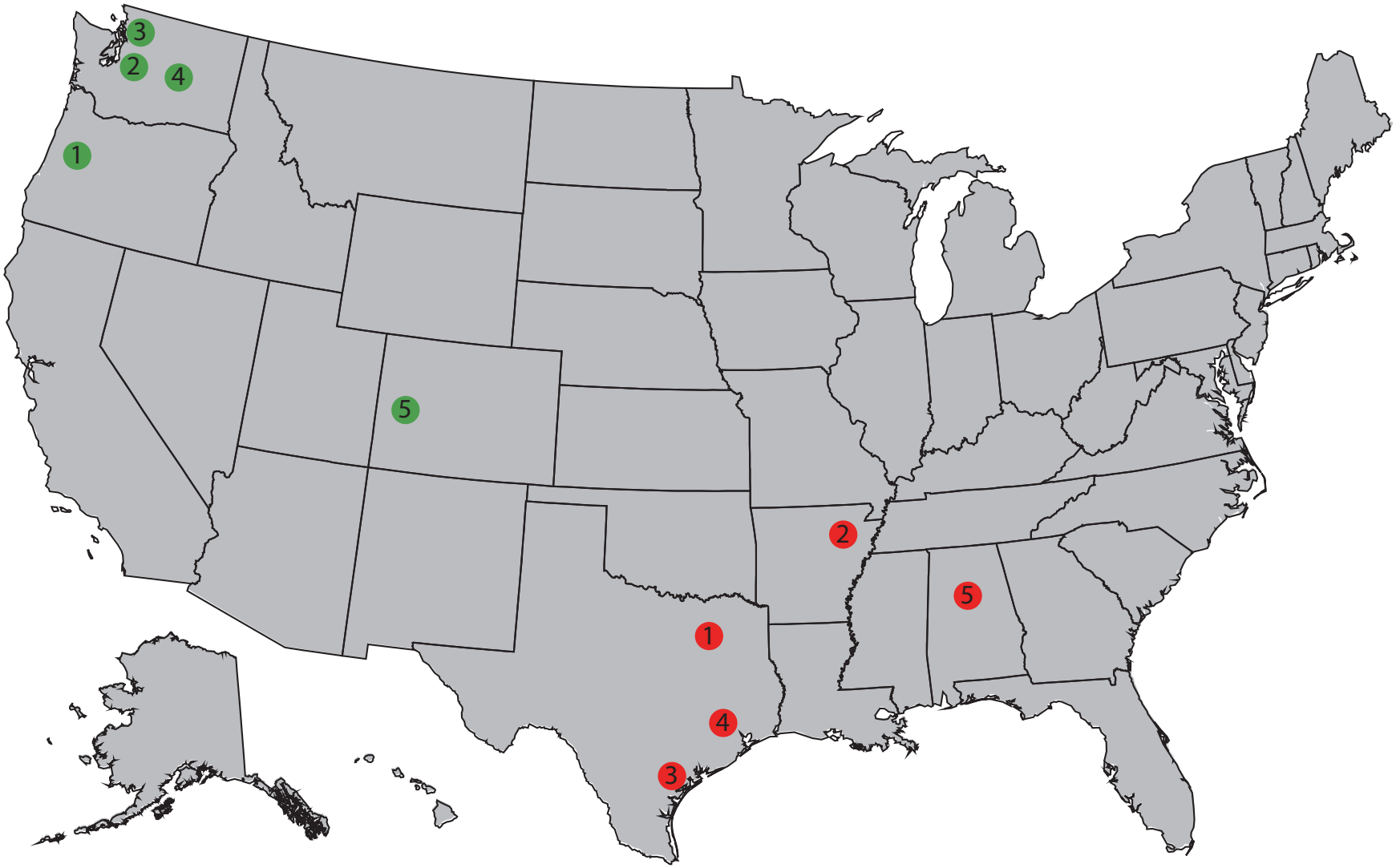
Higher risk cities provide a greater need for relief and reform

Metro areas with lowest risk:
1. Corvallis, Ore.
2. Mt. Vernon-Anacortes, Wash.
3. Bellingham, Wash.
4. Wenatchee, Wash.
5. Grand Junction, Colo.

Highest risk:
1. Dallas-Plano-Irving, Tex.
2. Jonesboro, Ark.
3. Corpus Christi, Tex.
4. Houston
5. Birmingham, Ala.

Site

High Risk



Site

High Risk

Population and Hazard

Metro area population

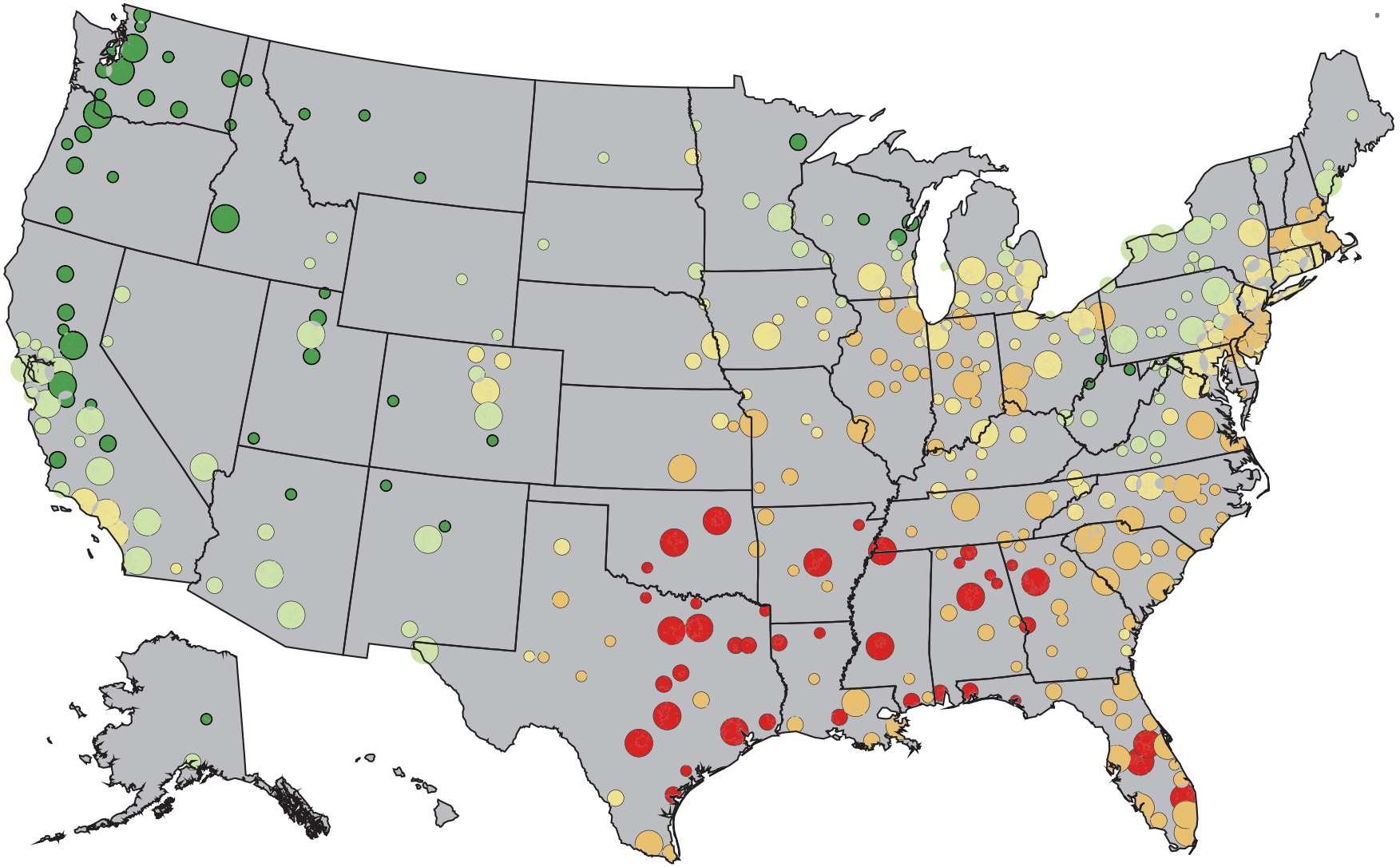
- Less than 175,000
- 175,000 to 500,000
- More than 500,000

Scale of Hazards

Lower → Higher

Site

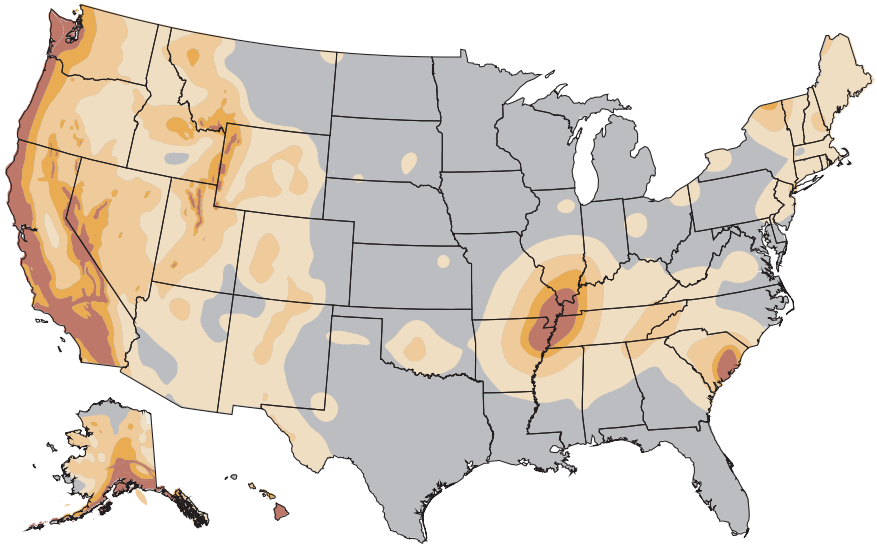
High Risk



Site

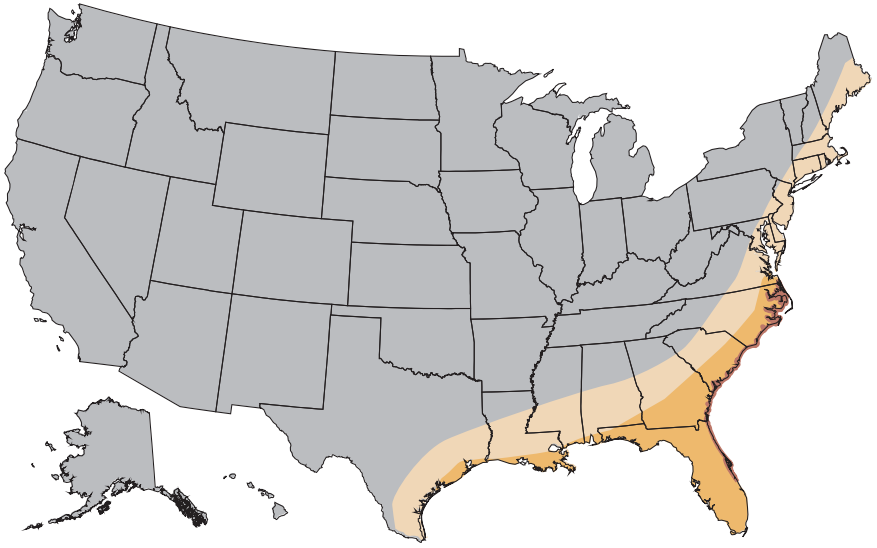
Natural Disasters by State

Earthquake Risk



Lower Higher

Hurricane Risk

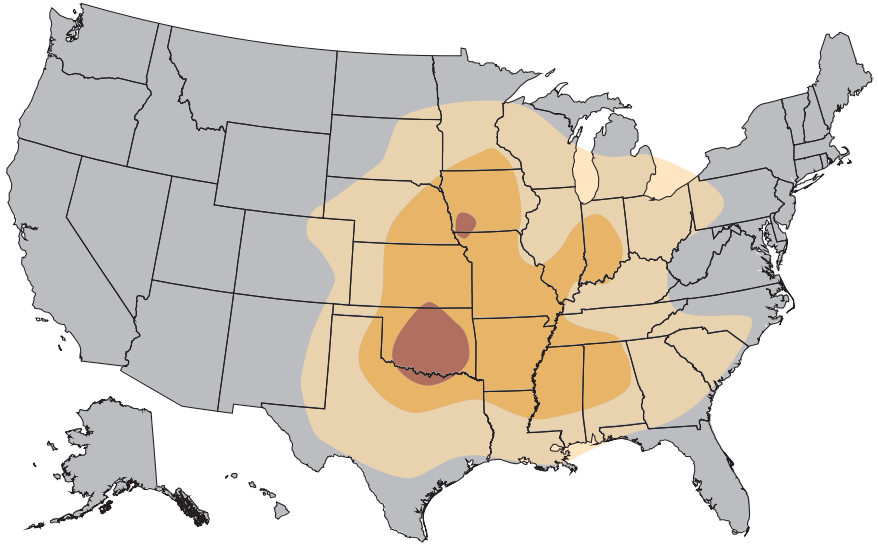


Lower Higher

Site

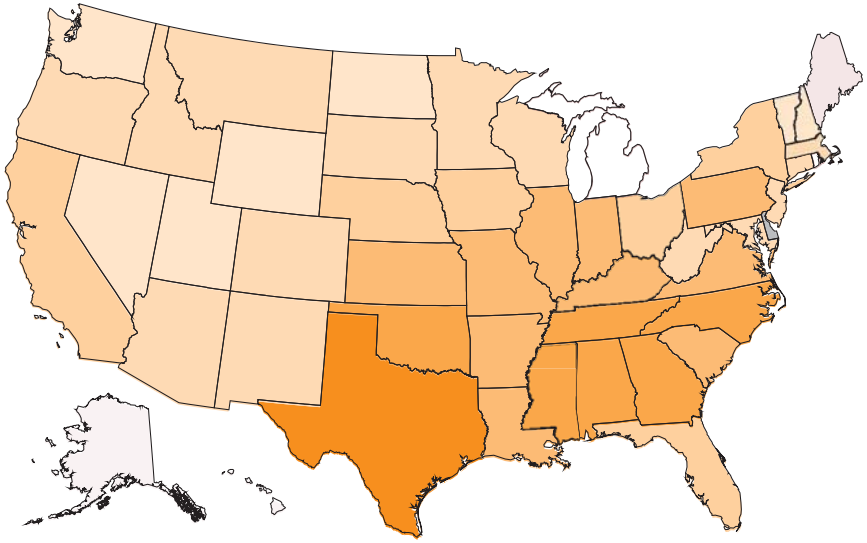
Natural Disasters by State

Tornado Risk



Lower Higher

1980-2012 Billion- Dollar Weather Disasters by State



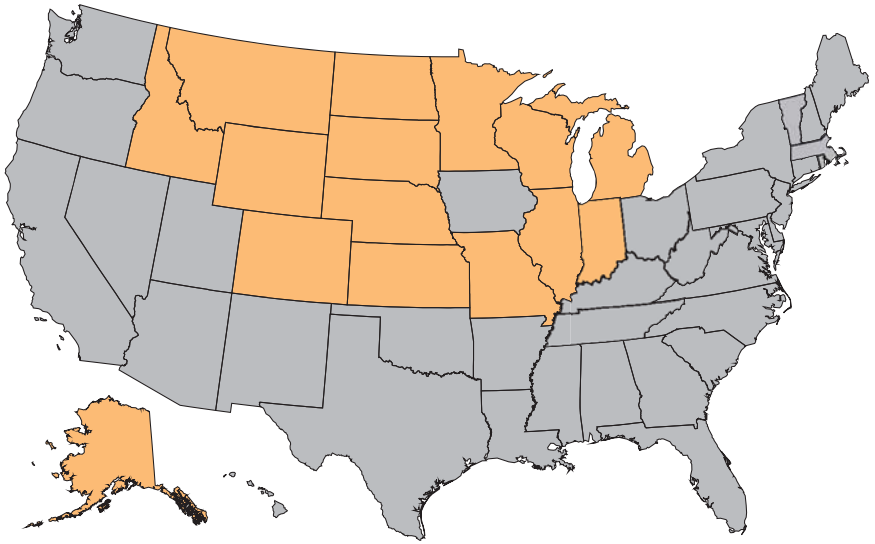
0 54

Site

Natural Disasters by State

Blizzards

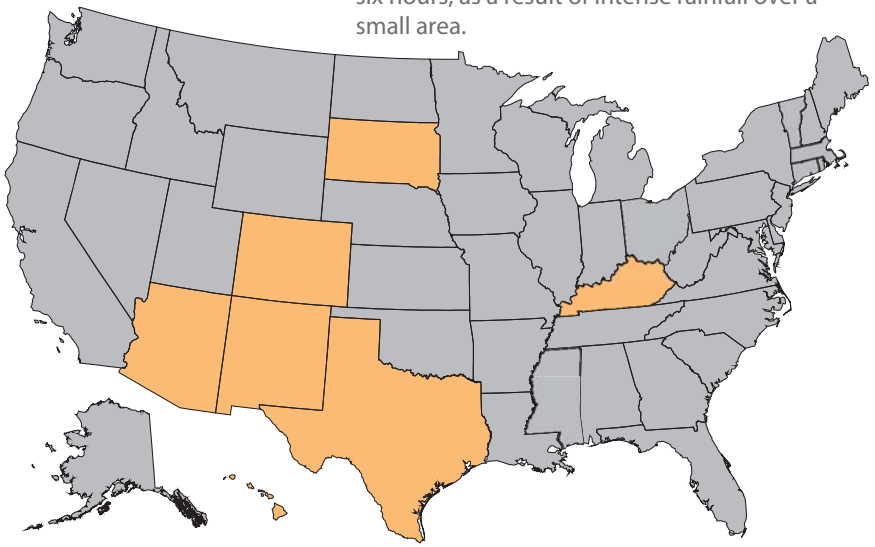
Overview Winds greater than 35 mph and visibility of 1/4 mile or less for a duration of at least 3 hours



Season December through April

Flash Floods

Overview A flood that rises and falls rapidly, usually under six hours, as a result of intense rainfall over a small area.



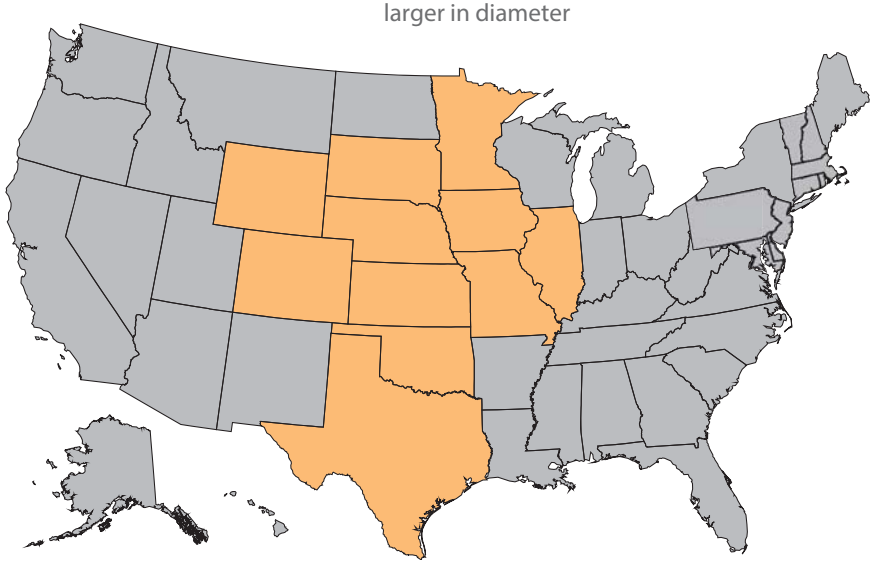
Season July through September

Site

Natural Disasters by State

Hail

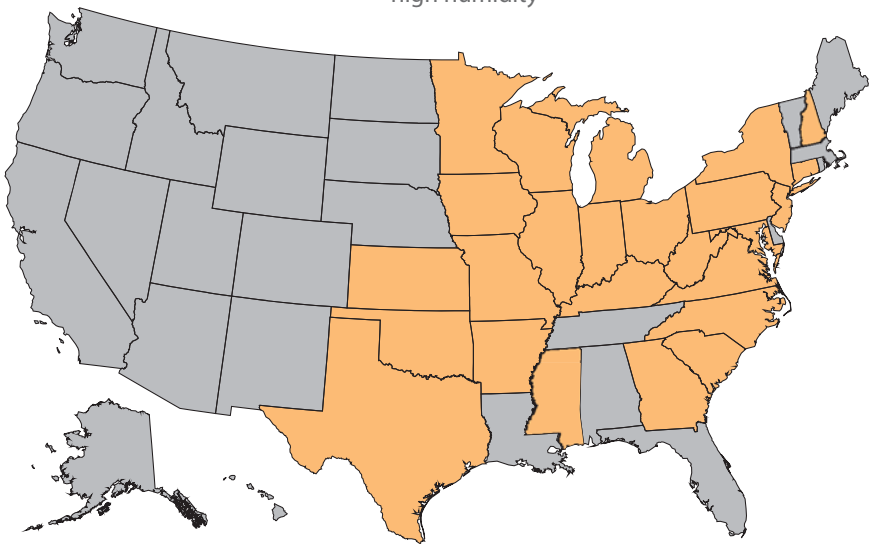
Overview Severe storms produce hailstones 3/4 inch or larger in diameter



Season December through April

Heatwave

Overview Prolonged periods of high temperatures and high humidity



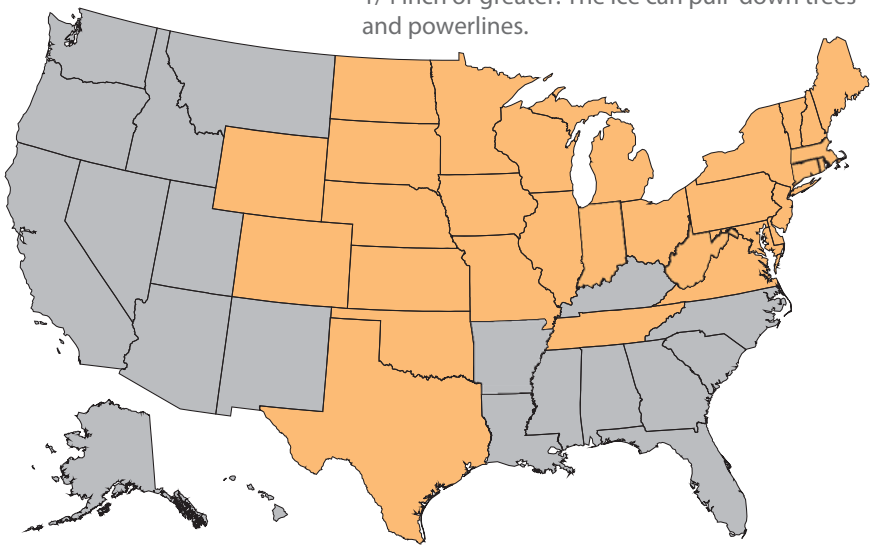
Season May through August

Site

Ice Storms

Overview

Significant accumulations of ice are defined as 1/4 inch or greater. The ice can pull down trees and powerlines.



Season

December through April

Nor'easters

Overview

White Blizzards, these storms move up the northeast coast

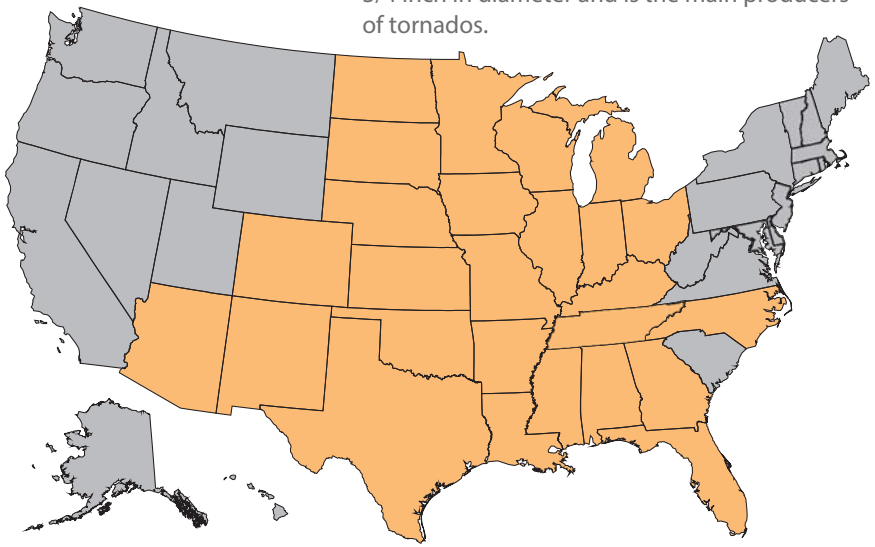
Season

December through March

Site

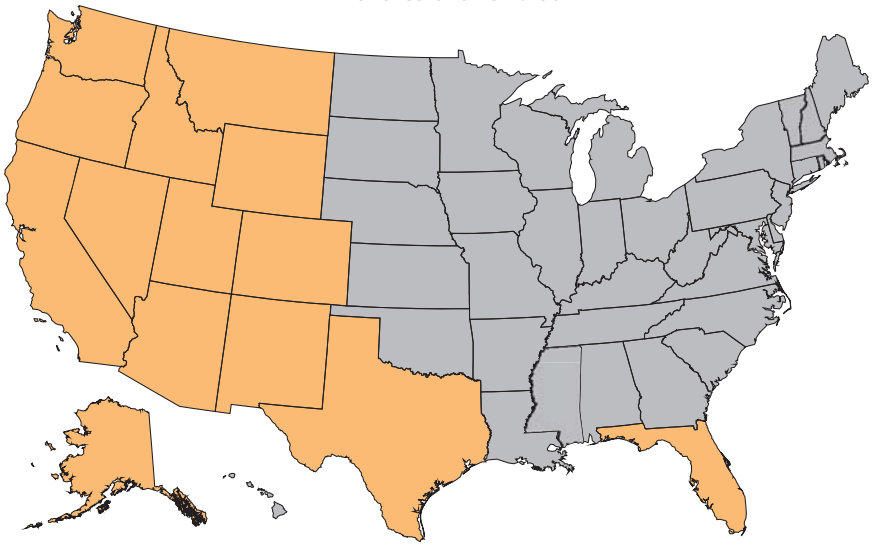
Natural Disasters by State

Thunderstorms Overview Wind gusts reach up to 58 mph, hail reaches 3/4 inch in diameter and is the main producers of tornados.



Season February through October

Wildfires Overview Quick-moving and uncontrollable fire in a forest or area of thick brush



Season May through January

High Risk Areas

Texas is chosen because it provides the highest range of natural disaster as well as one of the top states for social crisis

47

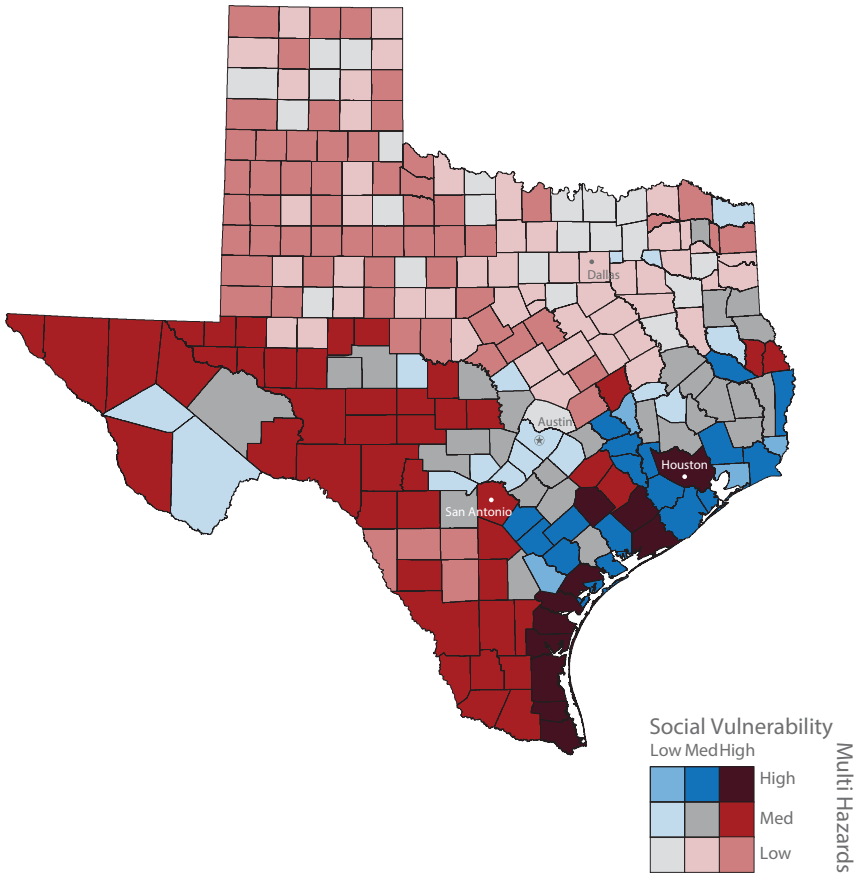
Texas

High Risk 49

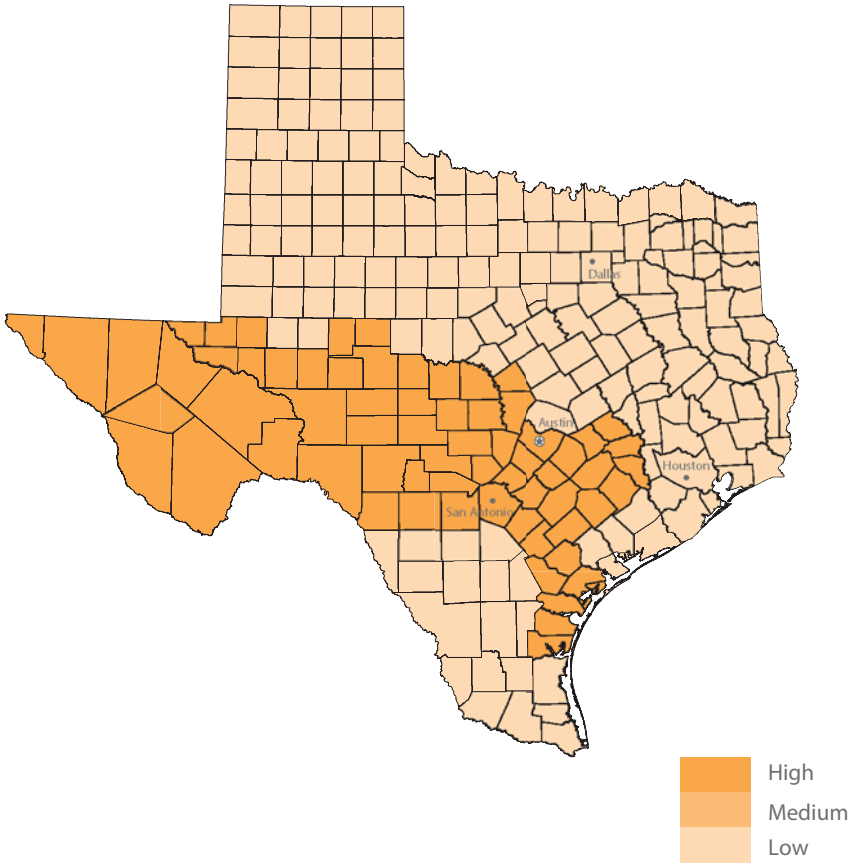
Site

Social Vulnerability to Multiple Hazards

Texas



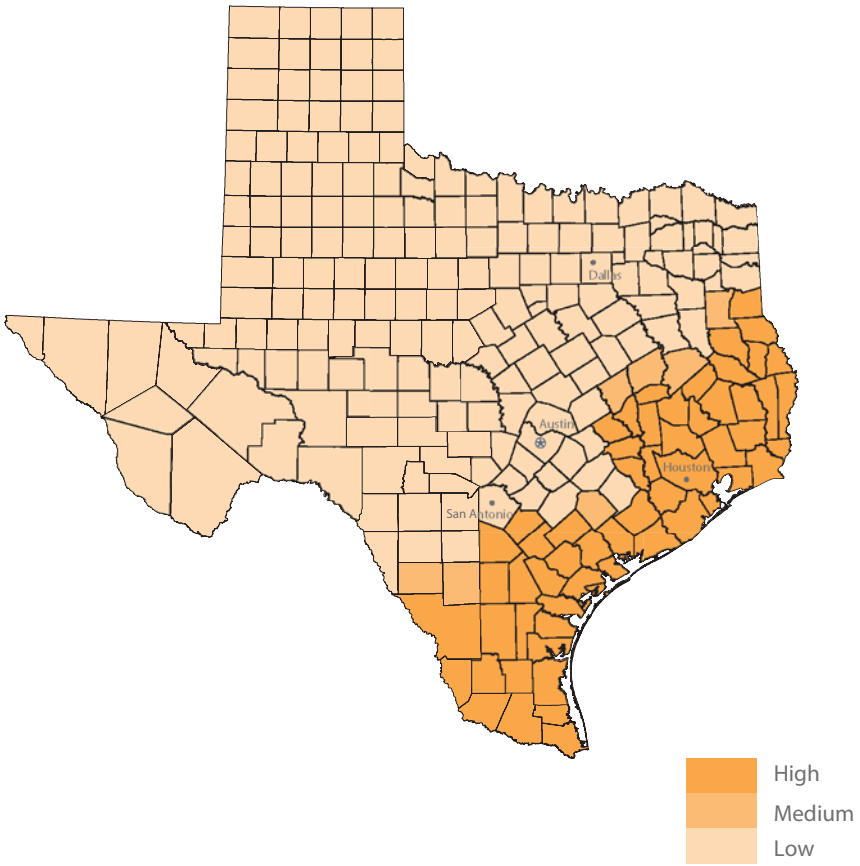
Drought Hazard Identification



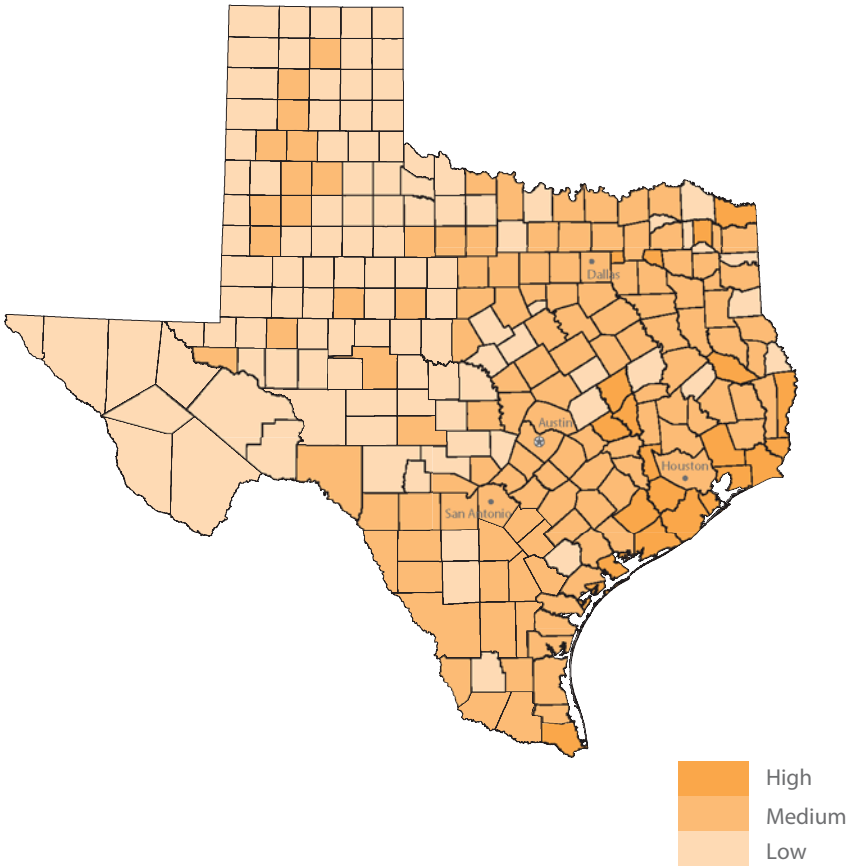
Site

Risk Area by State

Hurricane Wind Hazard Identification



Flood Hazard Identification



Houston

Houston is a growing city with number of concerns social and environmental.
Midtown provides connections to multiple areas:

- Third ward- Lowest Poverty Rate
- Fourth ward- Highest crime Rate
- Museum District – Redevelopment for the Community
- Downtown District- Central for Commerce and Medical Facilities

Site

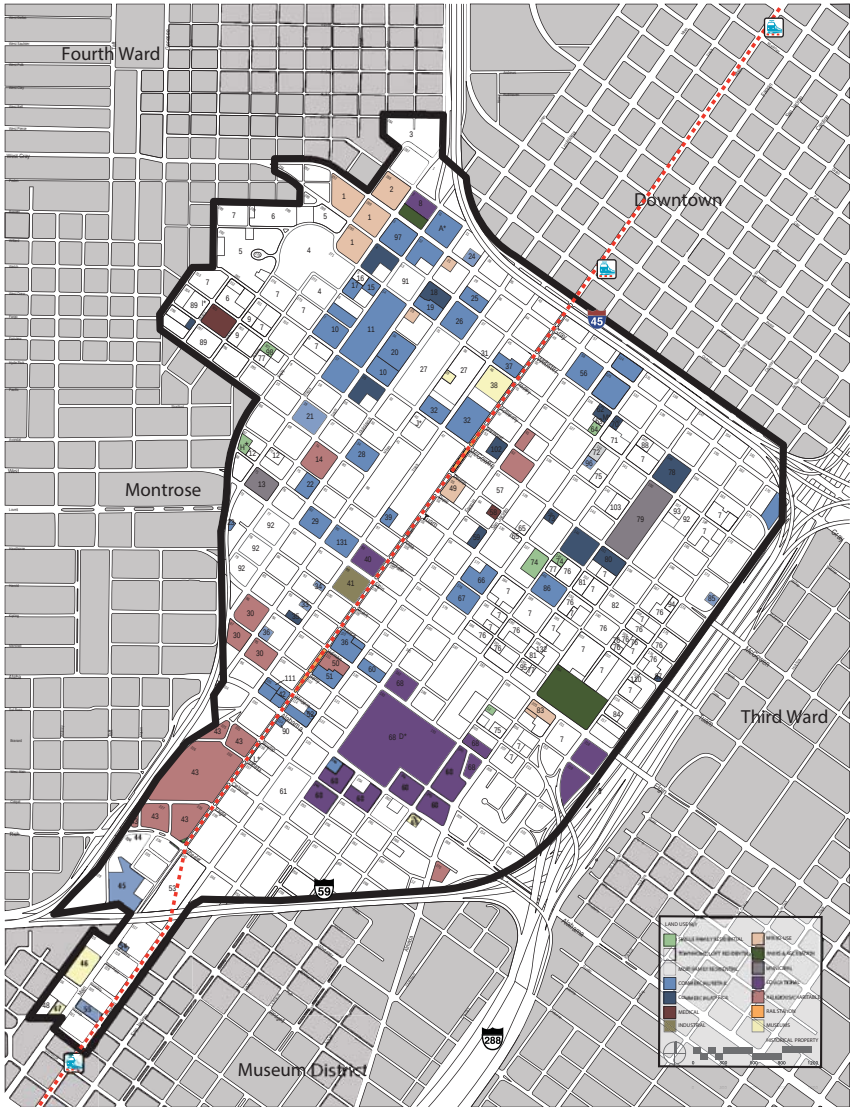
Houston

Midtown 53
People 55
Program 59
Access 61
Phasing 63
Transportation 67

Site

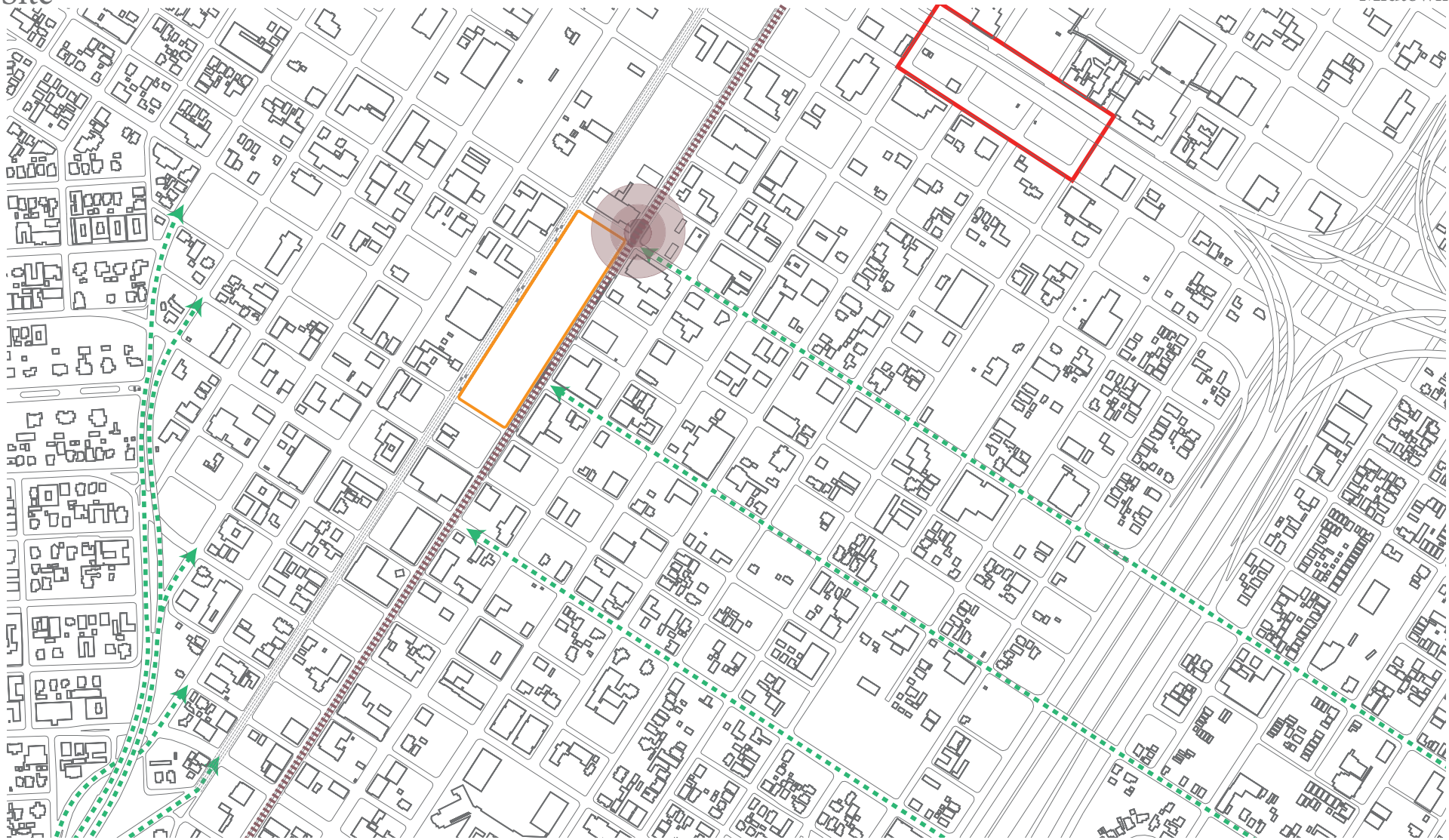
Mid Town

With Midtown in the mist of redevelopment between the high-rises of downtown and the residential flattops of the surrounding wards it provides a crucial opportunity for a structured development.



Site

Midtown



People

Children, Early Adulthood

Under 5 years	171,026
5 to 9 years	151,041
10 to 14 years	137,307
15 to 19 years	142,544

Child bearing, Child Rearing

20 to 24 years	171,086
25 to 29 years	199,906
30 to 34 years	174,079

People

Peak Income

35 to 39 years	153,662
40 to 44 years	137,556
45 to 49 years	136,112
50 to 54 years	132,549

Mature Adults

55 to 59 years	113,365
60 to 64 years	89,276
65 to 69 years	62,299
70 to 74 years	44,011
75 to 79 years	34,269
80 to 84 years	25,988
85 years and over	23,375

People

Children, Early Adulthood

- Needs
  - Education
    - After school programs
    - Preschool Programs
    - Play Room
  - Day Care
    - Cafe Space
    - Storage
    - Sports

Child bearing, Child Rearing

- Needs
  - Education
    - GED Classes
    - Interview Areas
    - Computer Lab
    - Family Counseling
    - Fitness
    - Ethnic
    - Do-it-Yourself
  - Family Based
    - Family Counseling
    - Kitchen
    - Club events
    - Stages
    - Clothing Storage

People

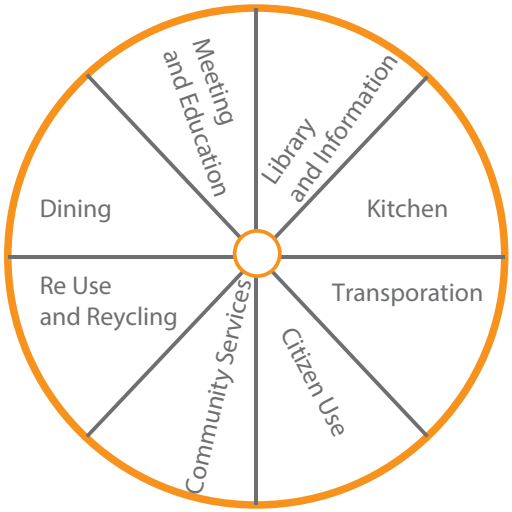
Peak Income

- Needs
  - Education
    - GED Classes
    - Resume Building
    - Interview Areas
    - Computer Usage
    - Fitness
    - Ethnic
    - Do-it-Yourself
  - Housing
    - Clothing Storage
    - Dry Cleaning
    - Living Essentials
    - Temporary Beds

Mature Adults

- Needs
  - Education
    - Multi-Purpose rooms
    - League Meetings
    - Rental Space
    - Studios
    - Lounge Areas
    - Flexible Activity Space
  - Housing
    - Clothing Storage
    - Living Essentials
    - Temporary Beds

Program



Standards

Sufficiently integrated and physically condensed to provide for shared and mixed use of the facilities

Suitably sized for the Community

As energy efficient as possible

Easily accessible and very close to, or actually, the center of local public transport services

Built with local materials

Built with local labor

Program

Personal Benefits:
- Exercise, fitness & conditioning
- Fun and entertainment
- Learning and education
- Relaxation
- Health

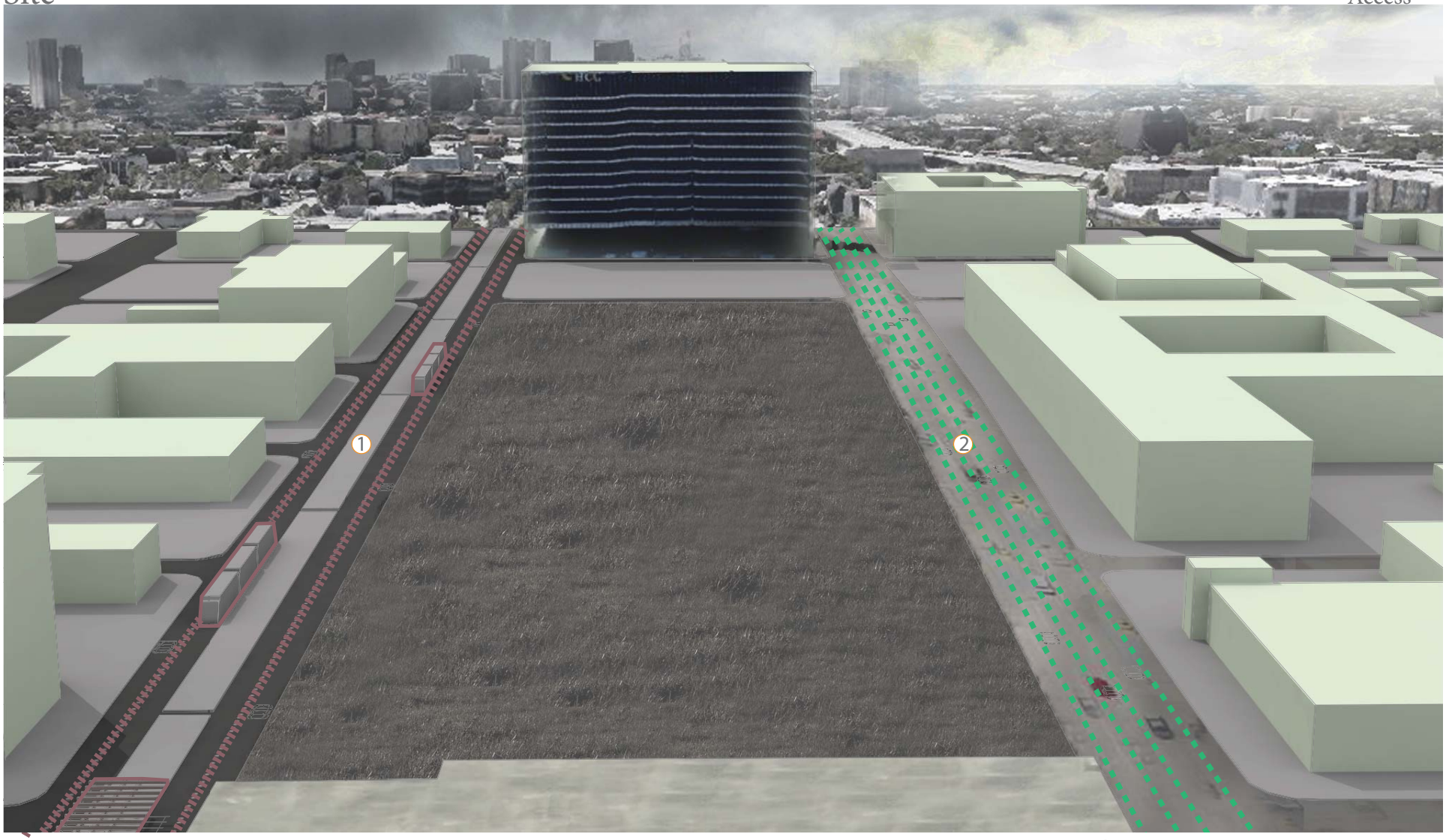
Facility Benefits:
- Having instructional classes
- The joy of playing
- A place to go
- A place for recreation
- Exposure to arts
- Crafts
- Watching organized sports

Environmental Benefits:
- Fresh air
- Nature
- A place to be outdoors

Social Benefits:
- Getting to know people
- Group participation
- Interaction of adults and kids
- Community awareness
- Team spirit

Site

Access



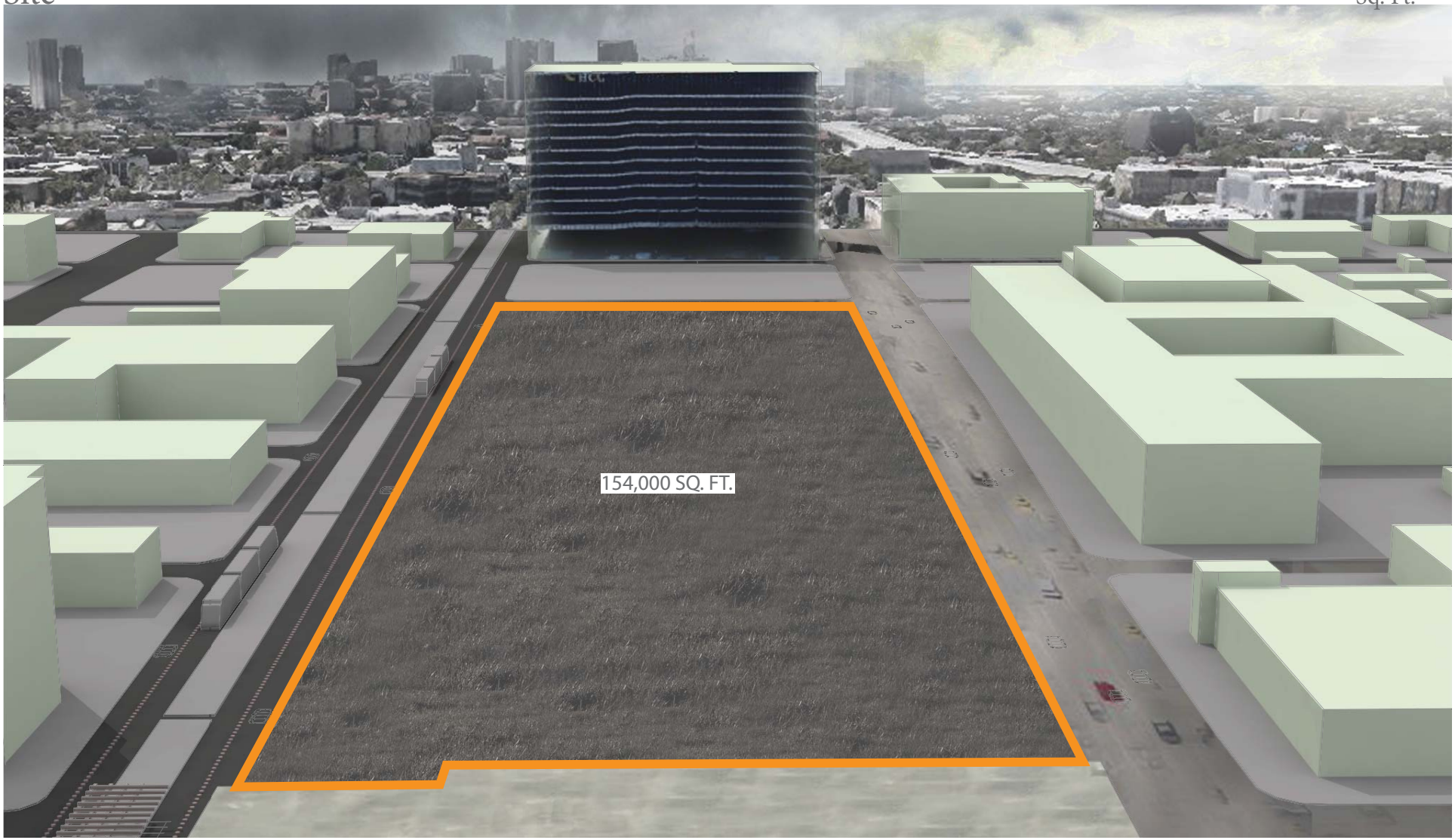
1 Rail Line Access
2 4-Lane Evacuation Route

Site

Access

Site

Sq. Ft.



Site

Phasing

Phase 1 — Public

Health — 4,000 SQ. FT.
- Office
- Clinic Room
- Reception
- Waiting Room
- Storage

Food — 4,000 SQ. FT.
- Kitchen
- Seating
- Storage

Community — 2,000 SQ. FT.
- Offices
- Multi-purpose Rooms
- Reception

Phase 2 — Public

Housing — 5,000 SQ. FT.
- Offices
- Sleeping Area
- Changing
- Storage
- Check-in

Phase 3 — Public

Transport Management — 5,000 SQ. FT.
- Offices
- Dispatch
- Repair
- Storage

Phase 1 — Government

Fema Administration — 5,000 SQ. FT.
- Offices
- Conference Rooms
- Reception
- Storage

Command Center — 4,000 SQ. FT.
- Conference Rooms
- Reception
- Storage

Helipad — 2,000 SQ. FT.
- Landing Pad
- Offices
- Storage

Phase 2 — Government

Power and Water — 5,000 SQ. FT.
- Generators and Tanks
- Storage
- Maintenance

Additional Fema Admin. — 3,000 SQ. FT.
- Offices
- Storage

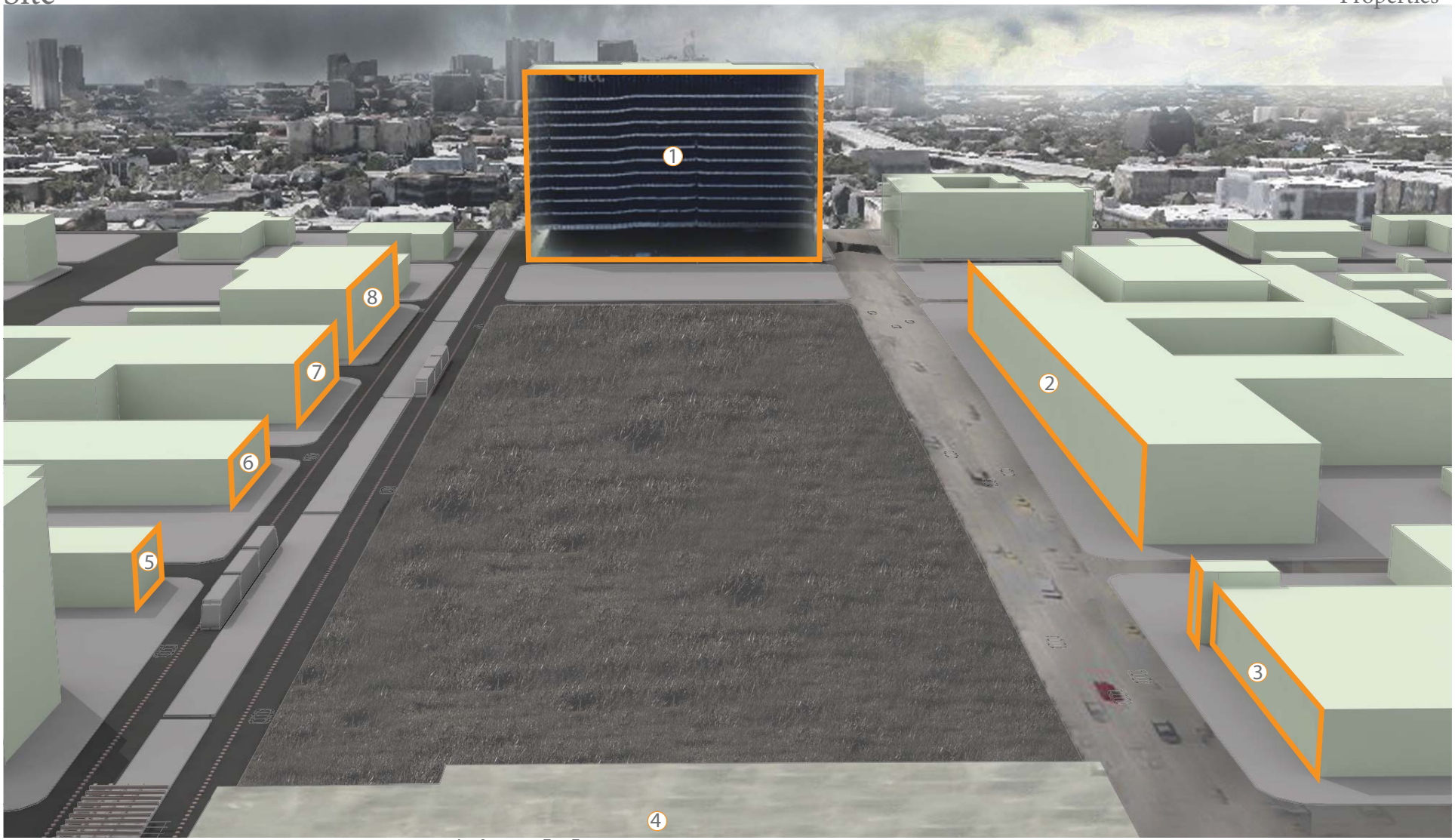
Phase 3 — Government

Transport Management — 5,000 SQ. FT.
- Offices
- Dispatch
- Repair
- Storage

Site

Phasing

Site



1 Houston Community College
2 Murphy's Lodging
3 Reef
4 Steward Cadillac
5 The Green Sheet
6 Art Supply
7 Art Bar
8 Watch Clinic

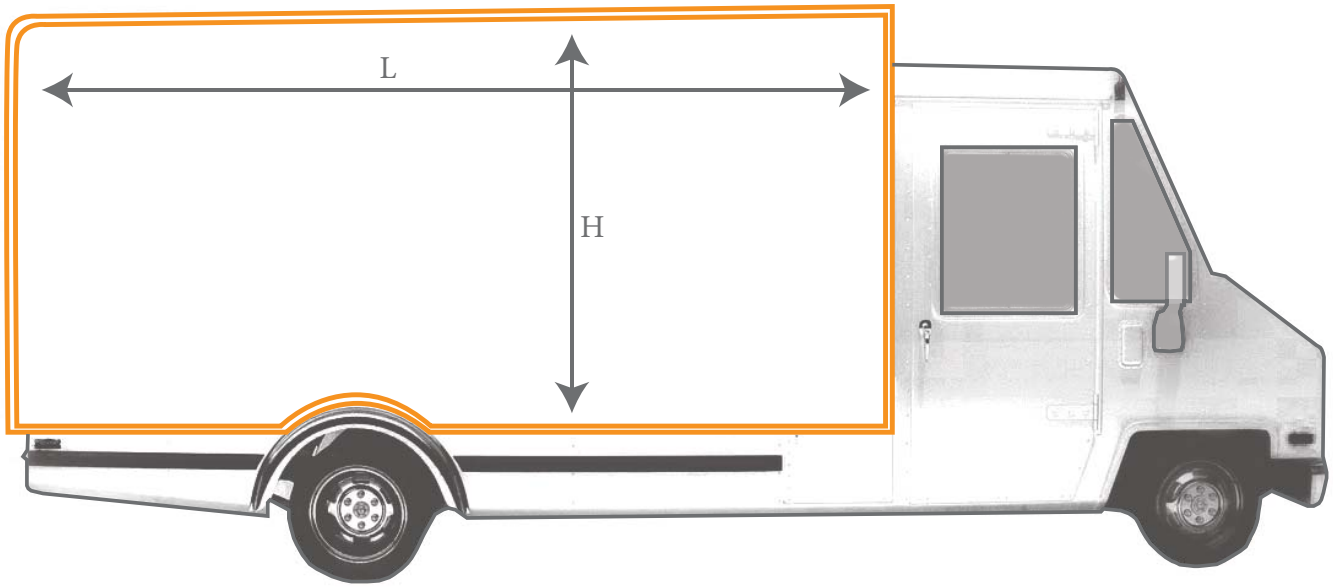
Site

Transportation

1 Food Truck Festival
Engagement with the community through mobile trucks

2 Food Truck Stand
Occupation of vacant areas

Processes



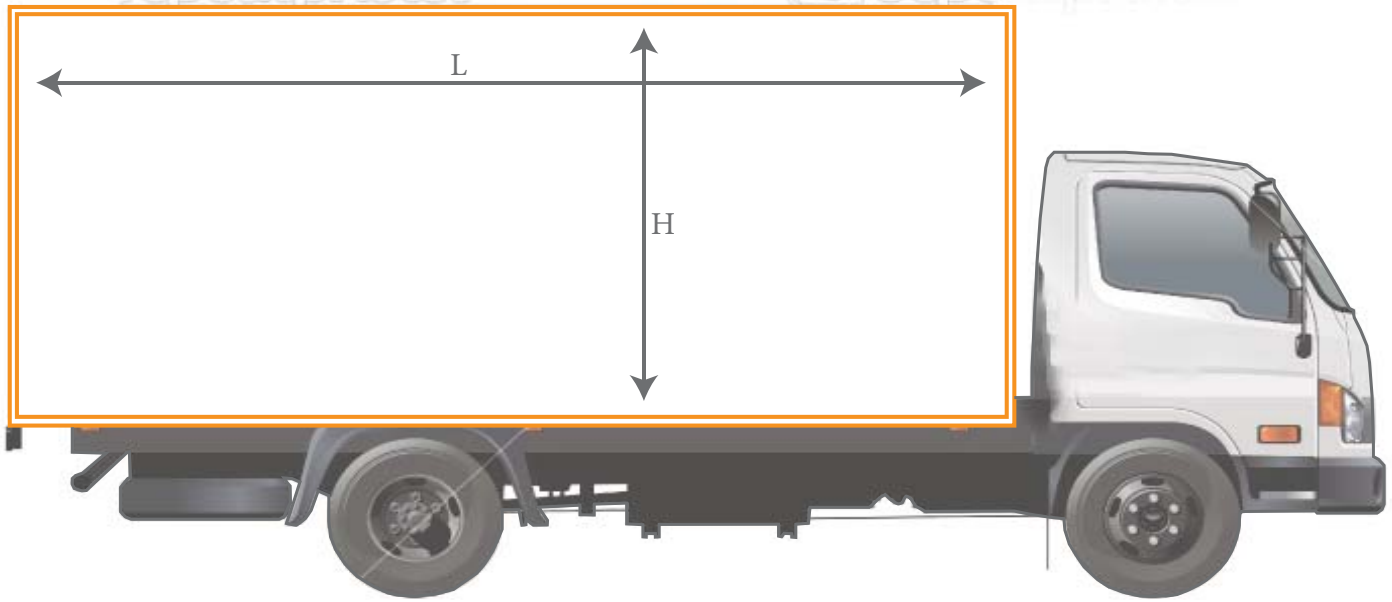
Food Truck

L- 9 Feet
W- 5 Feet
H- 6Feet

1 Food Delievery
The mobilization of perishable items

2 Delievery Truck
Mass storage of materials

Processes

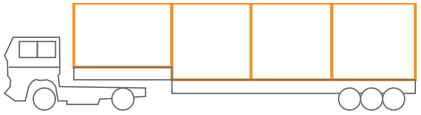


Delivery Truck

L- 14 Feet
W- 8 Feet
H- 5 Feet

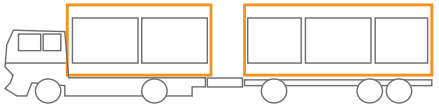
Tilt Trailer

L- 44 Feet
W- 8 Feet
H- 9 Feet



Jumbo Trailer

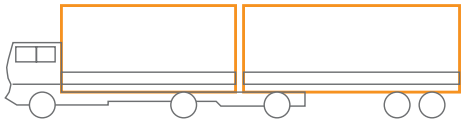
L- 44 Feet
W- 8 Feet
H- 10 Feet



Normal Truck w/Trailer

Truck
L- 20 Feet
W- 8 Feet
H- 8 Feet

Trailer
L- 27 Feet
W- 8 Feet
H- 8 Feet



Jumbo Truck w/ Trailer

Truck

L- 25 Feet
W- 8 Feet
H- 10 Feet

Trailer

L- 27 Feet
W- 8 Feet
H- 10 Feet

Open Truck

L- 60 Feet
W- 8 Feet

Jumbo Open Truck

L- 60 Feet
W- 8 Feet

Cedric Price

Through a series of sketches and drawings Cedric Price's investigations of mobile cities and environments provides collaboration of architecture and transportation. Understanding key components of mobility will lead to the rationalization of program and transport.

Cedric Price

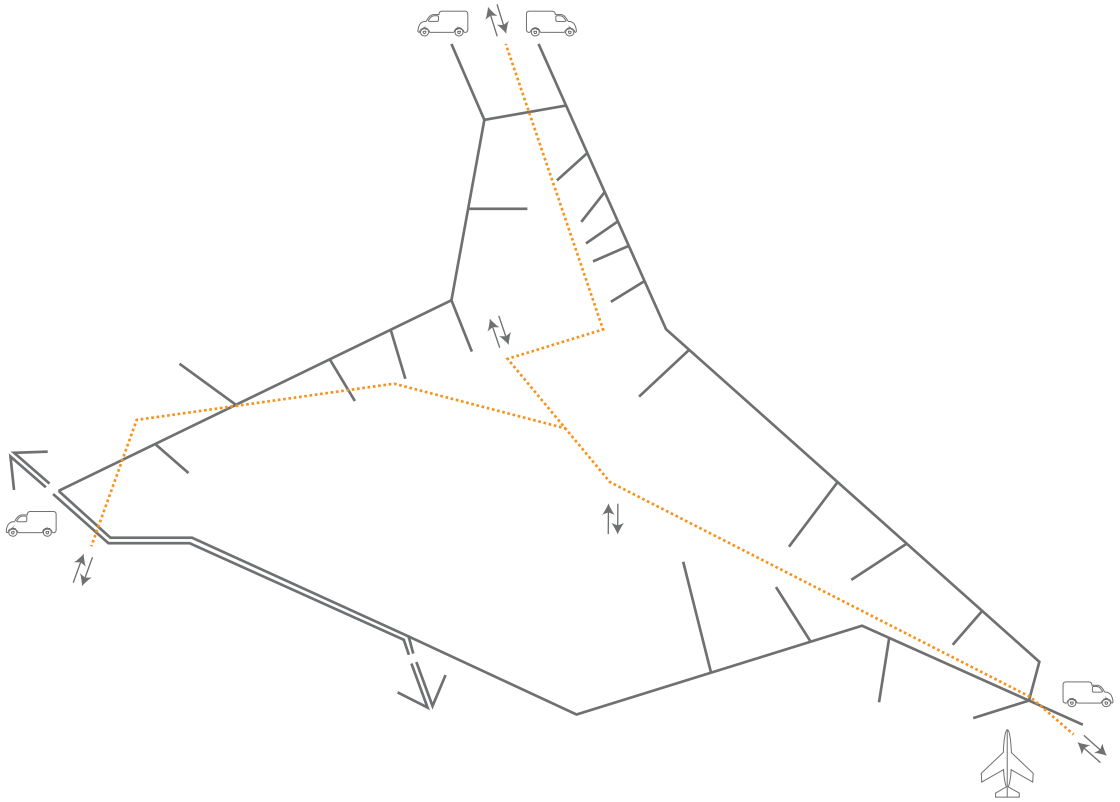
Thinkbelt 77
Housing Unit 79
Mobile Units 81

Precedent

Cedric Price

Thinkbelt

Compartmentalized city focusing on transportation hubs and connections

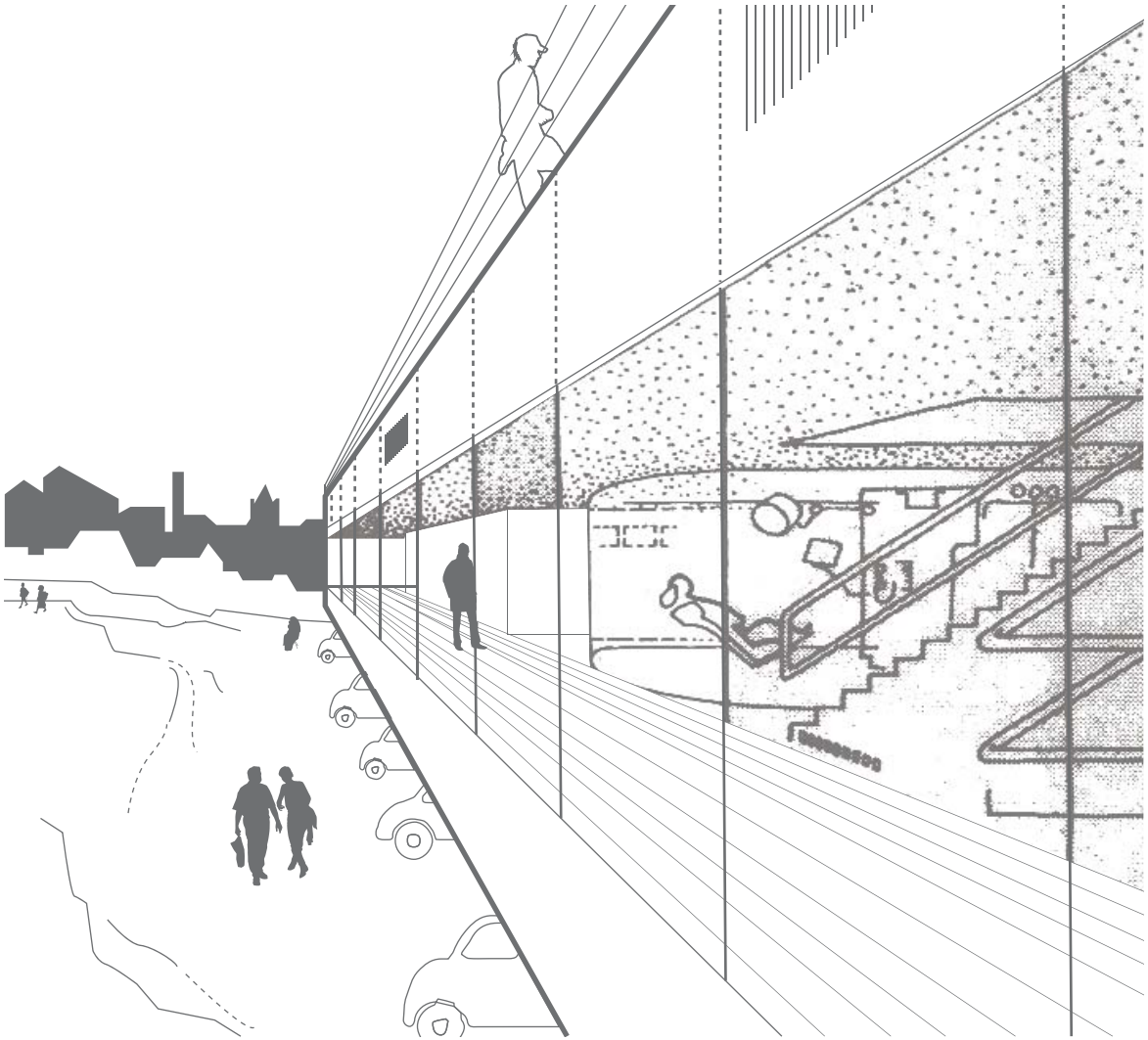


Cedric Price

Precedent

Thinkbelt

Developing a city through the use of adaptability and transportation begins to inform my thesis on how the restoration of a single community can have a grander effect on the creation of communities alone.

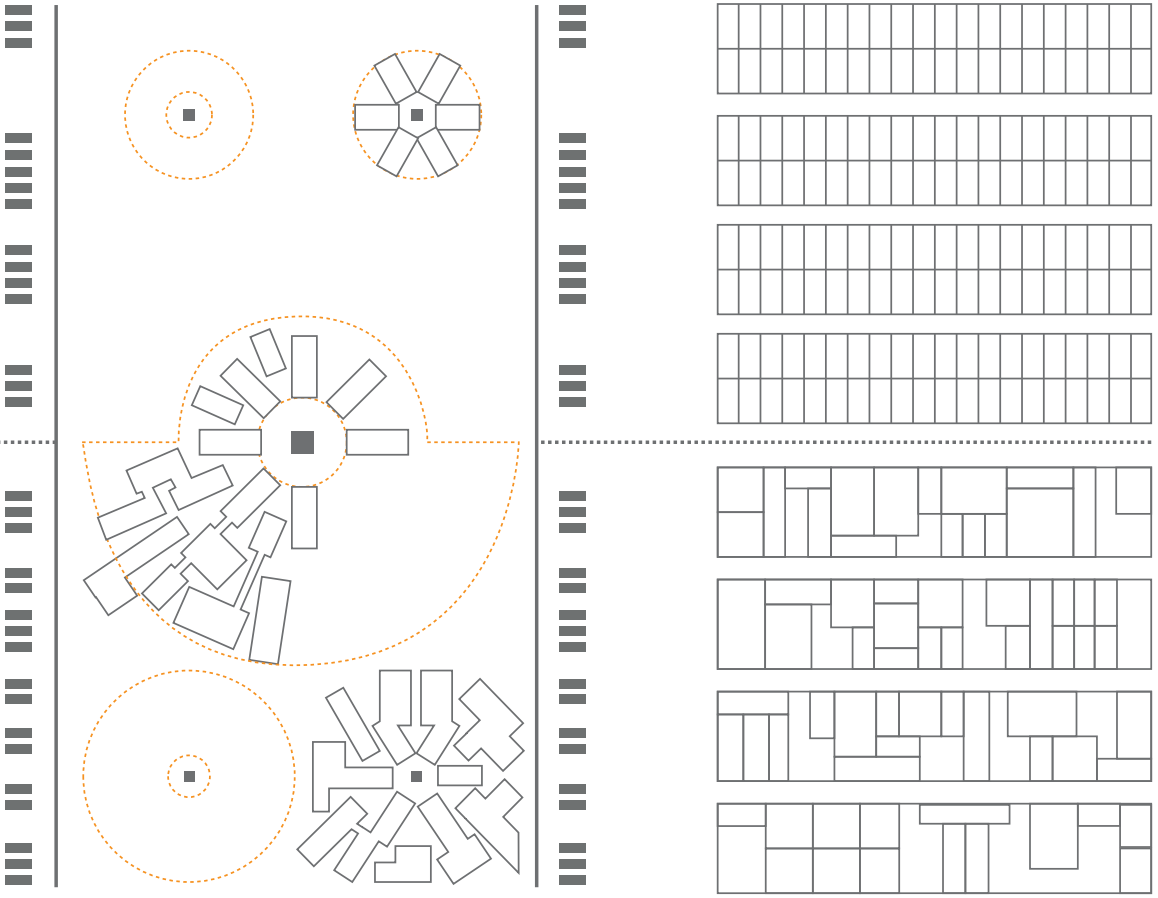


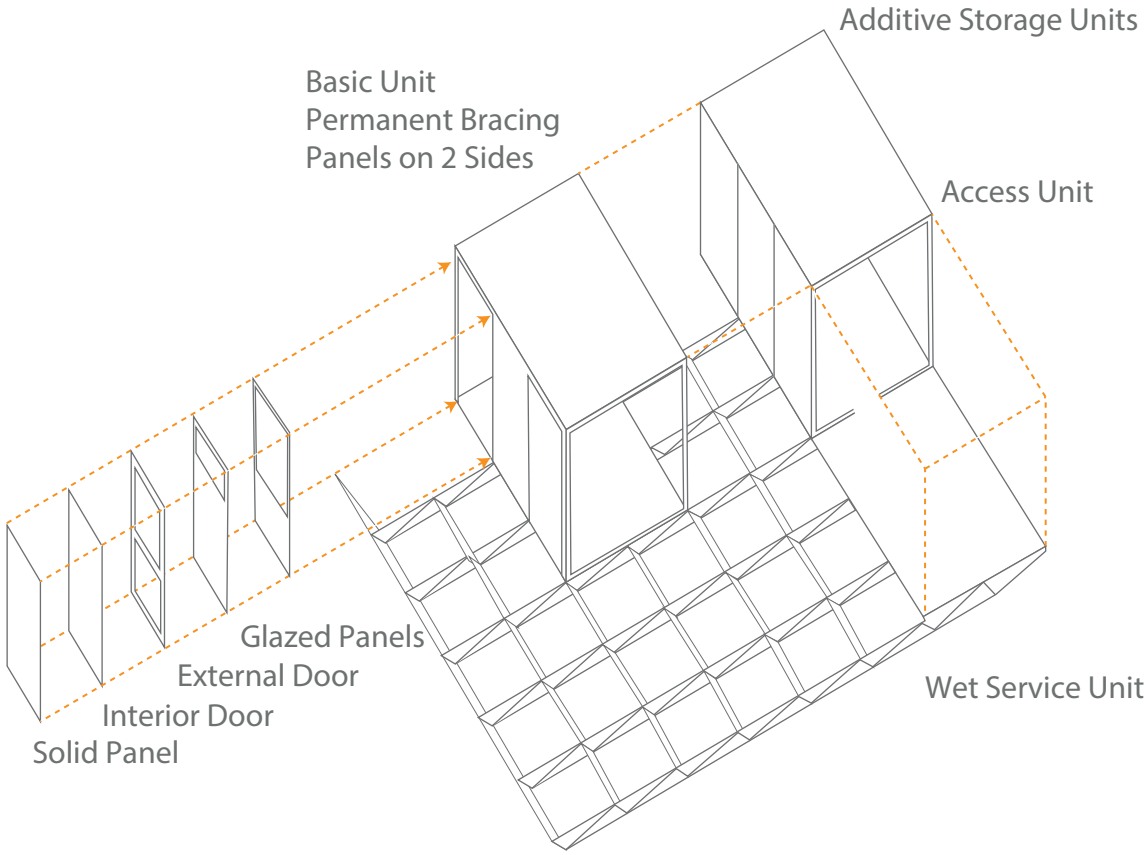
Housing units

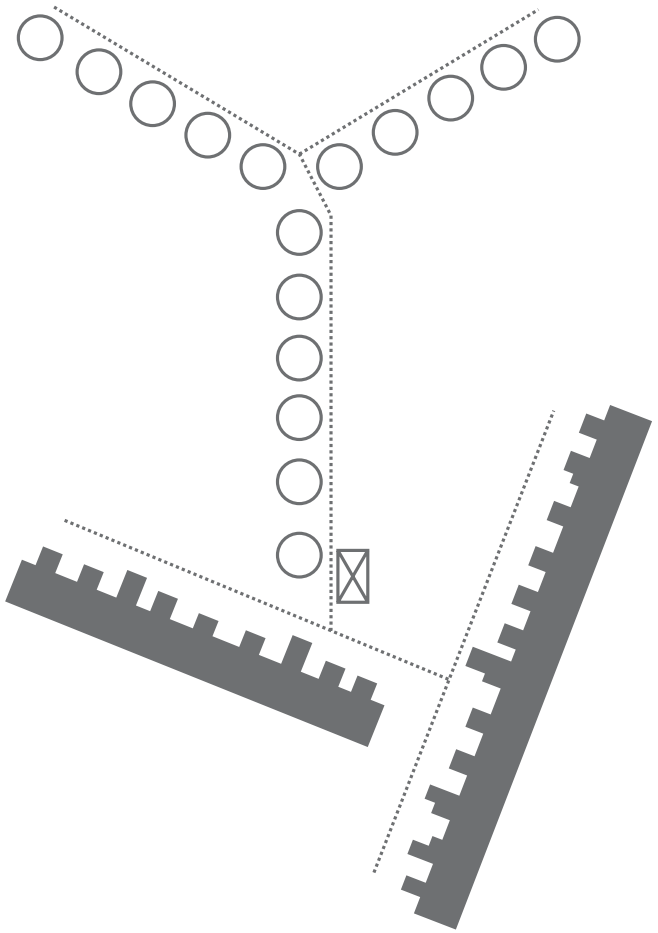
Mobile Housing units were designed for optimal configuration and simplicity of transport

Initial
Construction

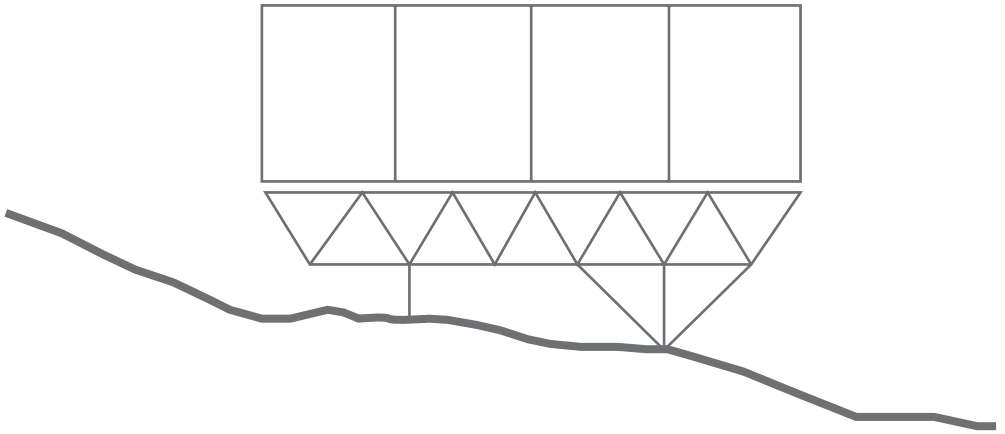
Subsequent
Individual
Space
Expansion



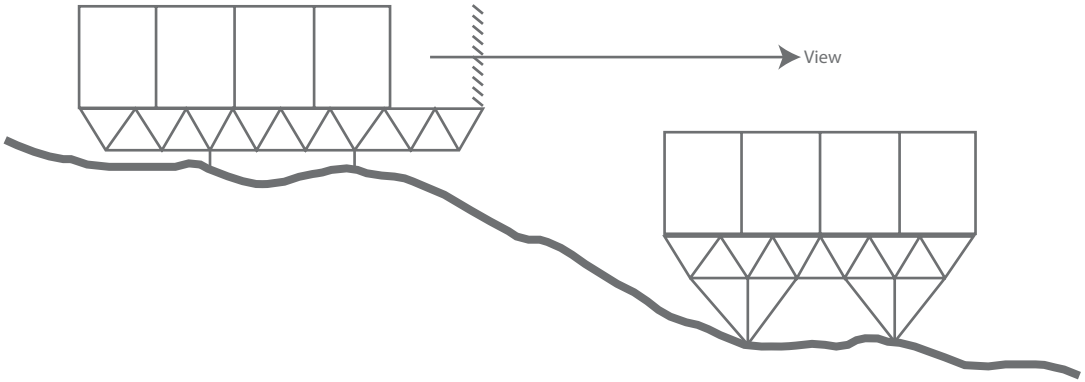

Additive Storage Units
Basic Unit
Permanent Bracing
Panels on 2 Sides
Access Unit
Glazed Panels
External Door
Interior Door
Solid Panel
Wet Service Unit



Sprawl Servicing used to provide temporary rehabilitation
for existing housing with 10-15 year structural life



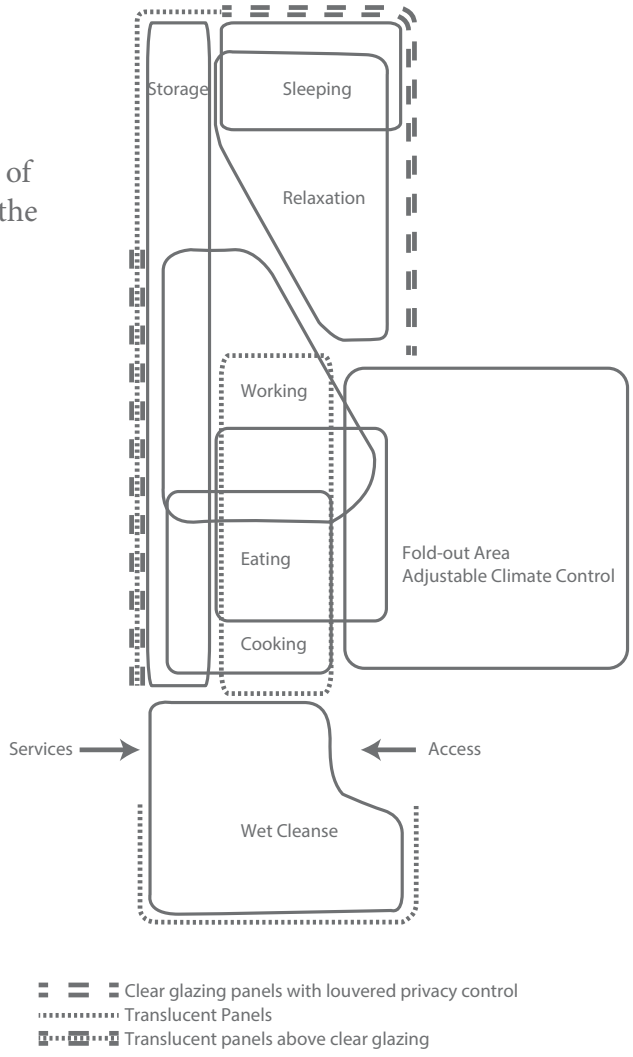
Space frame deck with braced 3-point jacked support [uneven site]

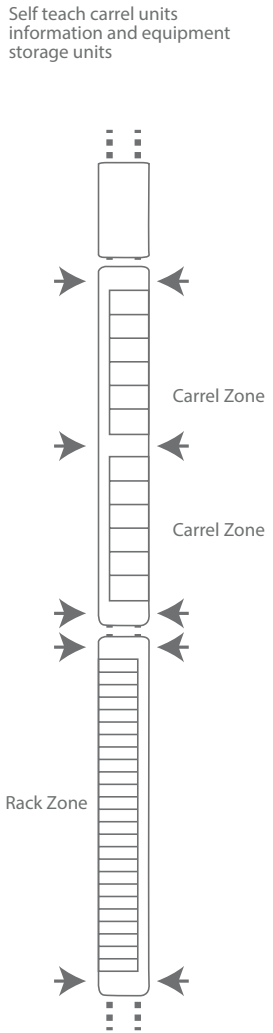


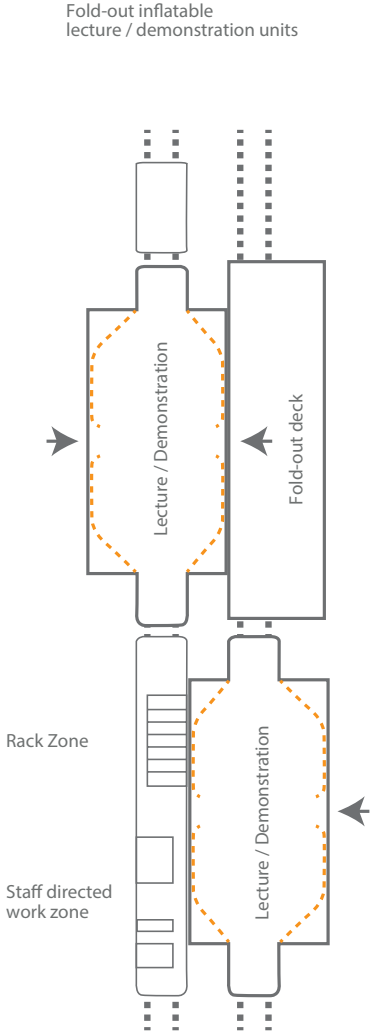
Sloping site allows closer proximity of jack units with integral private open space

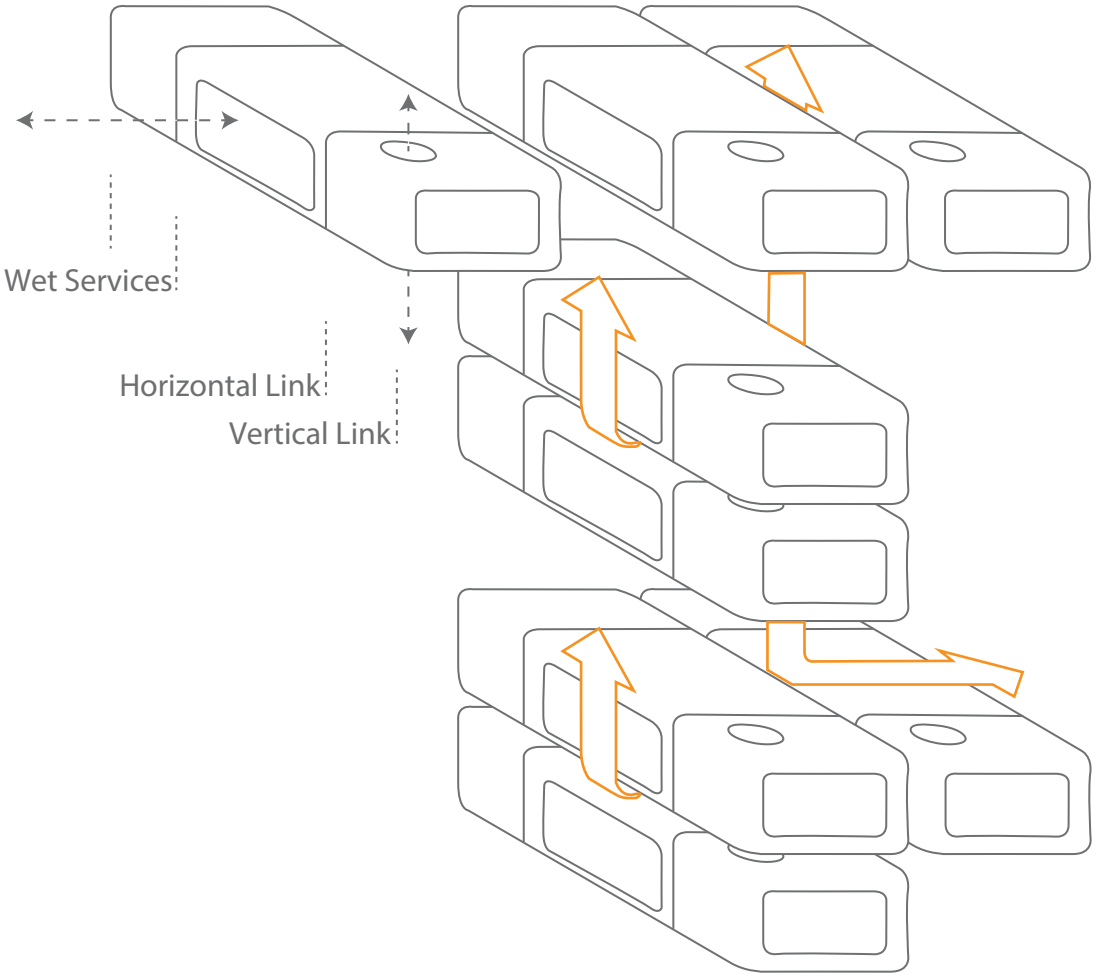
Mobile Units

Mobile Units is focused on the efficiency of everyday life. Price attempts to mobilize the user and its environment.



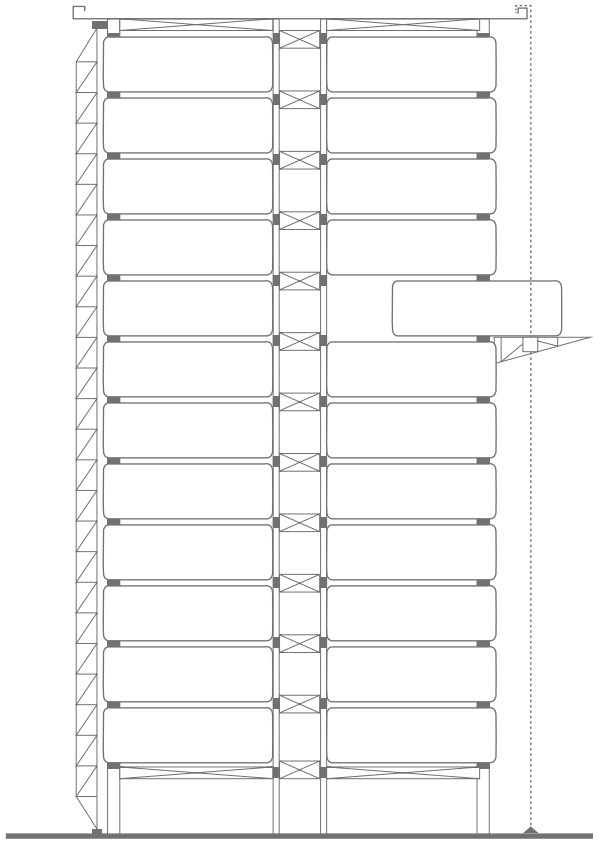






Triple segment construction allows wertical and horizontal linkage of units through wariation of ‘front’ and ‘Centre’ segments

Cross Section



Kobberling & Kaltwasser

The Jellyfish Theatre provides an example of an adapt and reuse project.
Focusing on

- Community Involvement
- Readaptable Materials

Kobberling & Kaltwasser

Jellyfish Theatre 87
Materials 91

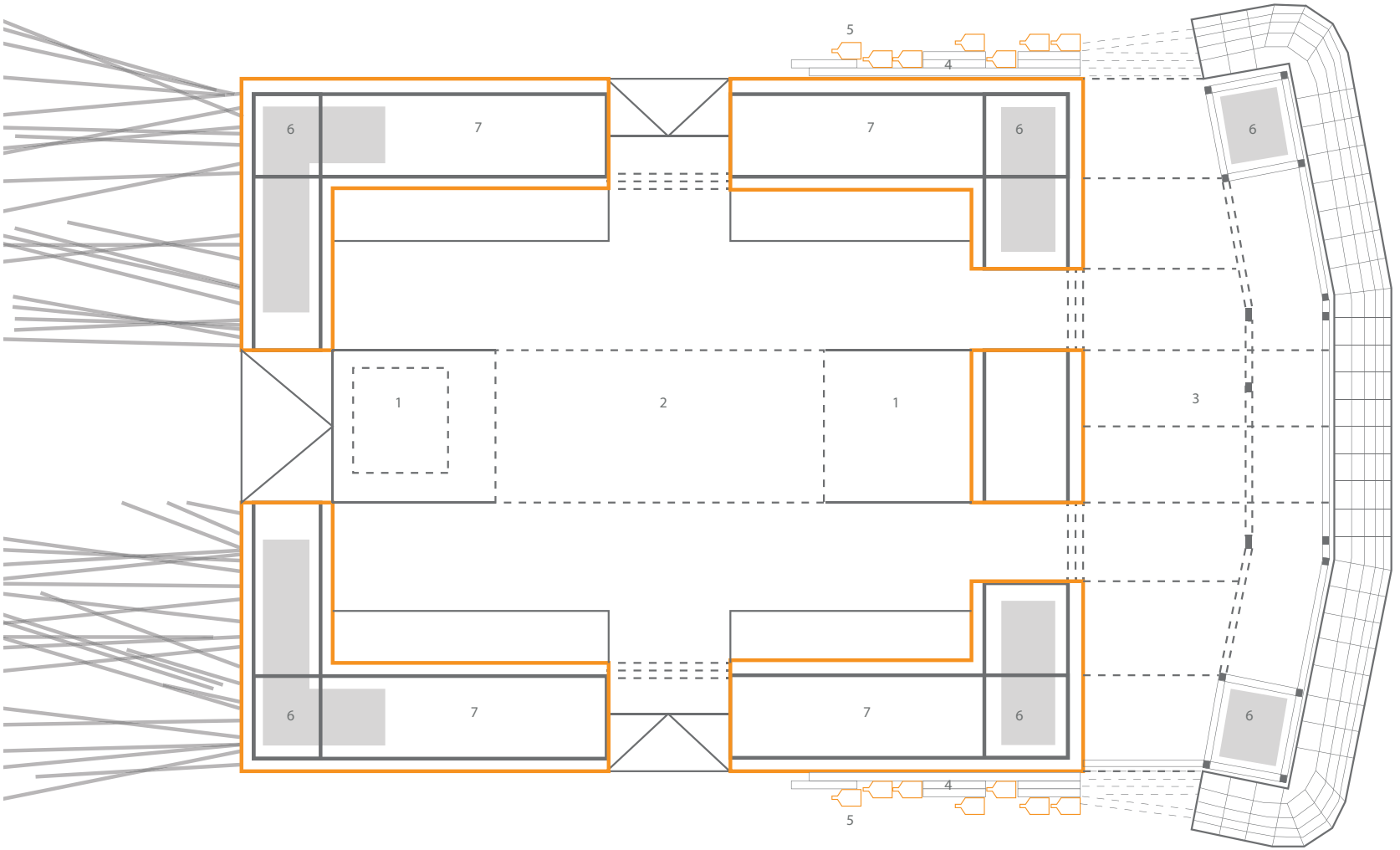
Precedent

Jellyfish Theatre

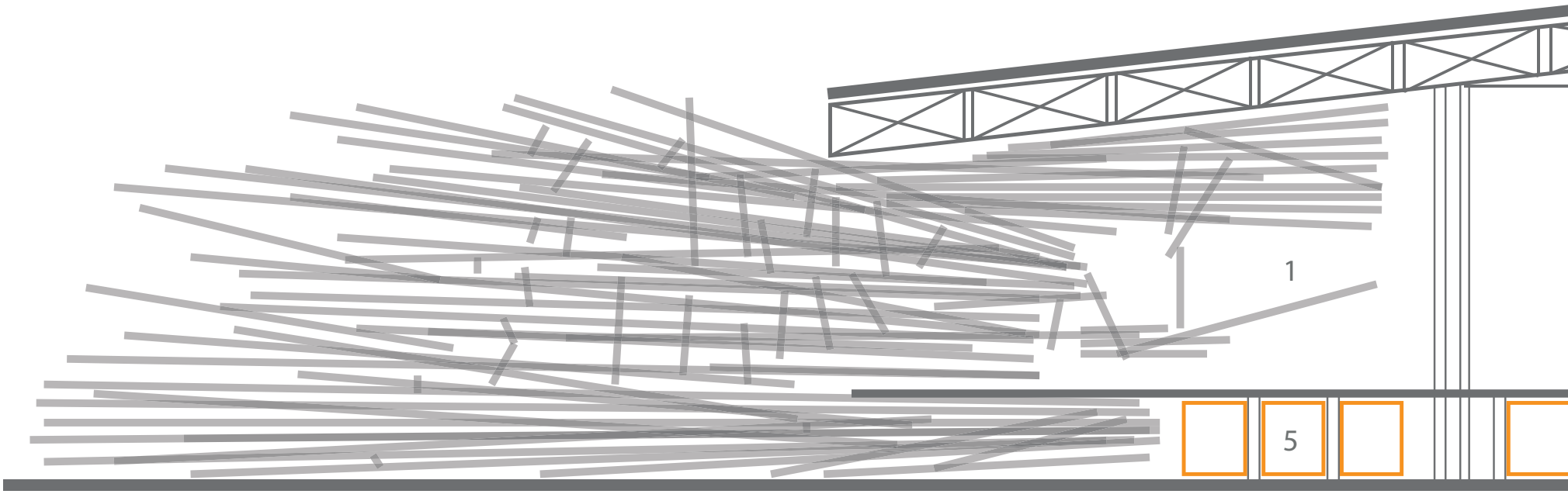
The Jellyfish Theatre is London's first functioning theatre that is made on 100 percent recycle material. The project focuses on the co-operation of the community and human scale construction.

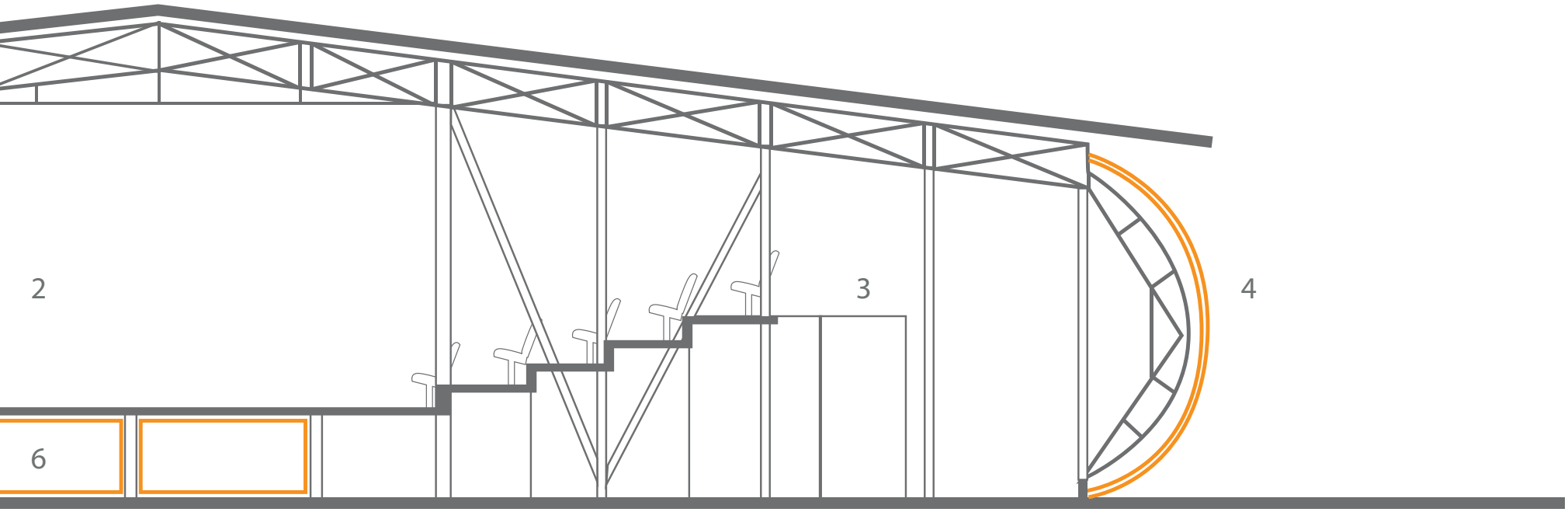
Precedent

Kobberling & Kaltwasser



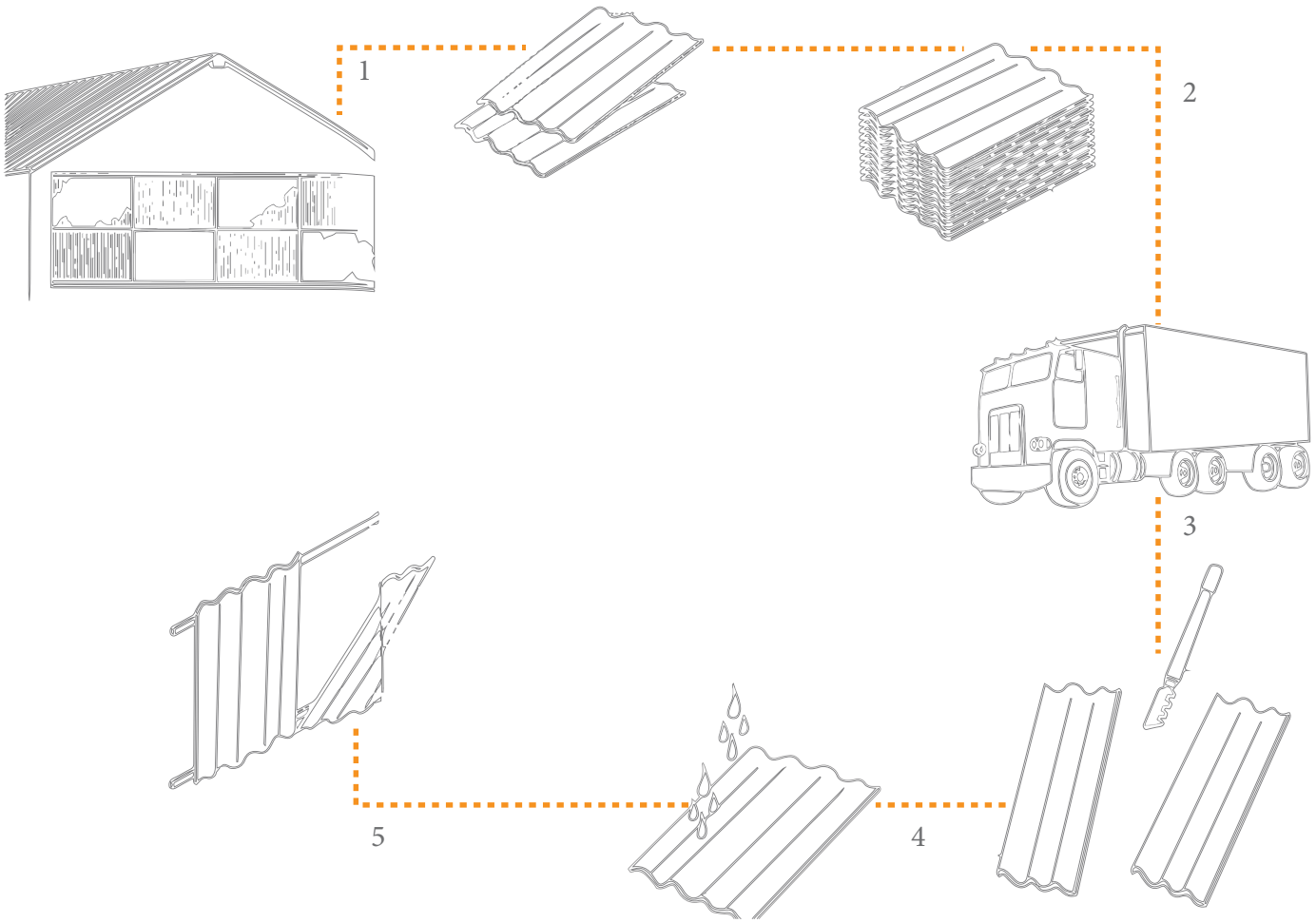
1 Back Stage
2 Stage
3 Lounge
4 Recycled Pallets
5 Water Basins
6 Water Ballast Chutes
7 Storage


1
5



1 Back Stage
2 Stage
3 Lounge
4 Recycled Pallets
5 Water Basins
6 Water Ballast Chutes

Processes



Processes

Recycled Corrugated Glass

1 Panels originally fitted are dismantled, piled and stored. (1)

2 The panels are transported to the factory, where they are cleaned and cut. (1)

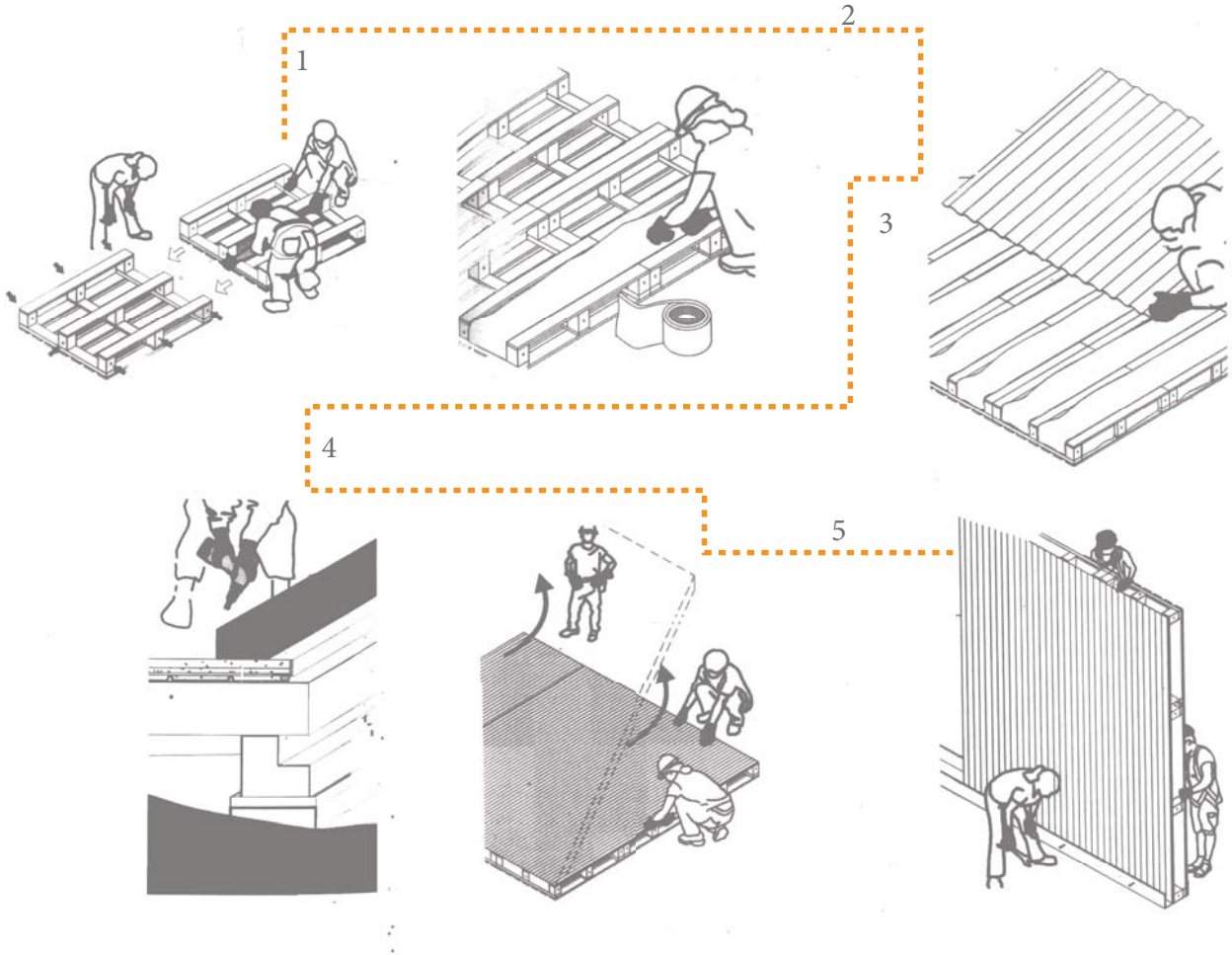
3 The panels are cut to size with a hydraulic jet. (1)

4 The panels are cut to size and prepared for installation. (1)

5 The various pieces of glass are installed in the Pittburgh Glass Center. (1)

Notes
1.Alejandro Bahamon and Maria Caila Sanjines, *REmaterial*, (Parramon Ediciones, S.A. 2008) 38-39

Processes



Processes

Recycled Pallets and Aluminum Sheeting

1 The Pallets are grouped together with coiled rods to create the total area of the wall.(1)

2 Rock-wool insulation is placed in the gaps in the pallets.(1)

3 The corrugated aluminum sheeting is placed on top of the pallet structure.(1)

4 Holes are drillined in order to insert a beam that acts as a support for the wall.(1)

5 The walls are put up and placed in their new site.(1)

Notes
1.Alejandro Bahamon and Maria Caila Sanjines, *REmaterial*, (Parramon Ediciones, S.A. 2008) 260-261

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ADDITIONS TO BE MADE TO THE BIBLIOGRAPHY