Modular Housing Units:

A New Approach for Homelessness Reduction Through Alternative Sheltering

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01. Thesis Review

Thesis Question

Can Modular Housing Units provide an approach utilizing cost effective and sustainable methods, to create an alternative to current homeless sheltering?

Thesis Relevance

- **Chronic homelessness reduction benefits the community as a whole by:**

reducing economic impact of social services

increasing access and reducing costs of healthcare

generating housing opportunities

Hypothesis and Objectives

Hypothesis:

Modular Housing Units can provide an approach utilizing cost effective and sustainable methods, to create an alternative to current chronically homeless sheltering

Objective:

Identify the necessary components and characteristics Modular Housing Units must utilize to ensure cost effective and sustainable methods, while successfully creating an alternative to sheltering the chronically homeless.

02. Literature Review

Types of Homelessness

- 4 Types of Homelessness: transitional, hidden, episodic, and chronic

- Transitional is the most common followed by episodic, hidden, and chronic

- Emergency Shelters typically serve all types but chronic

- Chronically homeless individuals are the most susceptible to health and safety risks of all homeless individuals

??% Hidden Homeless

5% Chronically Homeless

15% Episodically Homeless

80% Transitionally Homeless

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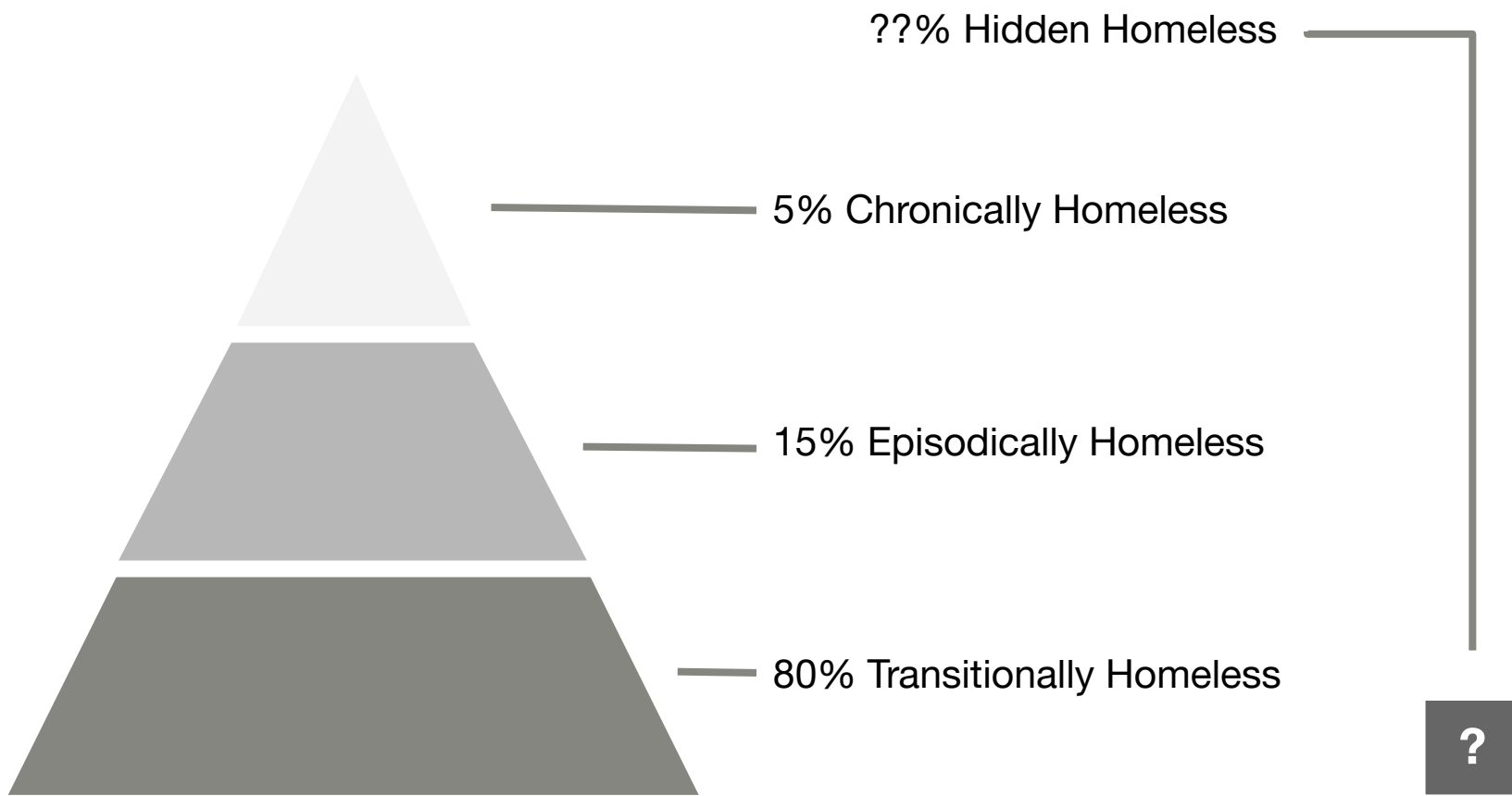
Chronic Homelessness

- **Chronic homelessness is defined as:**
" a single individual (or head of household) with a disabling condition who has either:

   Experienced homelessness for longer than a year, during which time the individual may have lived in a shelter, Safe Haven, or a place not meant for human habitation.
OR
   Experienced homelessness four or more times in the last three years."

Sheltering Types

- Four main types of homeless sheltering: transitional, rapid re-housing (RRH), permanent supportive housing (PSH), and emergency sheltering

- Rapid rehousing rehouses people as fast as possible, while transitional offers stays ranging from 6-24 months, and permanent rehousing is a permanent supportive solution

- Emergency shelters are often the first line of defense and provide services for those experiencing immediate crisis

Emergency Sheltering

- **The US HUD defines Emergency Sheltering as:** "any facility, the primary purpose of which is to provide a temporary shelter for the homeless in general or for specific populations of the homeless and which does not require occupants to sign leases or occupancy agreements"

- A fundamentally downstream service that is utilized as an upstream service

03. Research Agenda

Research Methods
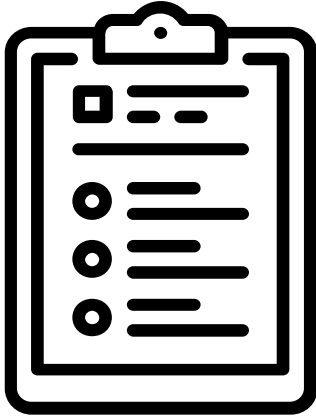
Surveys

Interviews
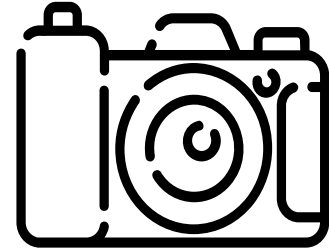
Site Analysis

Survey Statistics

Key Demographic Data (30 Responses)**:**

    Gender: 70% Male, 30% Female

    Race: 50% White, 40% Black, 10% Mixed

    Age: 60% 25-49, 20% 18-24, 20% 50+

    Household: 70% Alone, 30% Other Adults

    Time Homeless: 66.6% >1 Year, 33.3% 0-12 Months

Survey Statistics

Unsheltered: 90% Yes, 10% No

Type: 50% Encampment, 30% Street, 10% Car, 10% Shelter

Sanitary Access: 50% Toilet, 20% Toilet & Shower, 30% N/A

Utility Access: 60% Water, 20% Electrical & Water, 20% N/A

Safety Concern: 50% Yes, 50% No

Survey Statistics

If Yes, What Makes You Feel Unsafe?
30 Responses

lack of privacy	(85.7%)
lack of climate control	(71.4%)
lack of independence	(14.3%)
being alone	(0%)
no control of surroundings	(71.4%)
fear of other residents	(57.1%)
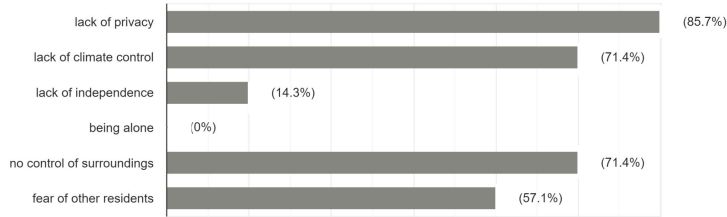
What Do You Need Out of a Shelter?
30 Responses

privacy	(40%)
food	(80%)
place to sleep	(40%)
safety	(40%)
stability	(30%)
climate control	(10%)
showers	(40%)
assistance	(20%)
autonomy	(10%)
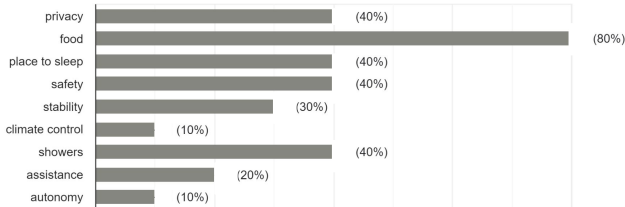
What Makes You Feel Supported?
30 Responses

food	(90%)
income	(70%)
friends	(30%)
employment	(10%)
shelter	(80%)
pets	(10%)
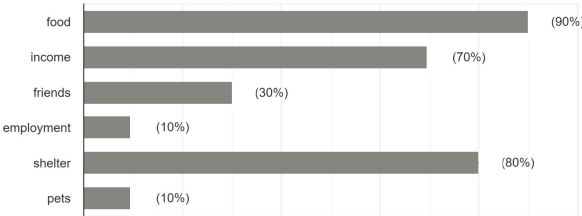
What Worries You About Being Re-Housed?
30 Responses

losing the house	(70%)
rules	(50%)
change of routine	(20%)
rent	(30%)
no help	(30%)
holding job	(50%)
fear	(30%)
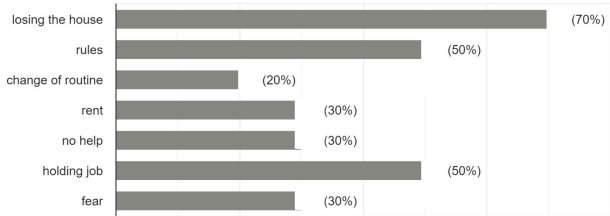
Interview Summary

Nick Coulter PCHO:

- Site needs increased security and monitoring to deal with unforeseen situations. Cited a resident death and unit fire

- Unit is needed for resident and site management where a staff member may stay 24/7

- Climate control, water, and electrical access all needed to make the site truly habitable

Site Information

Sun Conditions:

165 days of sun, 40 days under national average

June:

    Average day length of 15.3 hours

    Average sunrise and sunset being 5:30 AM
    and 8:49 PM

December:

    Average day length of 9.1hours

    Average sunrise and sunset being 7:33 AM
    and 4:37 PM
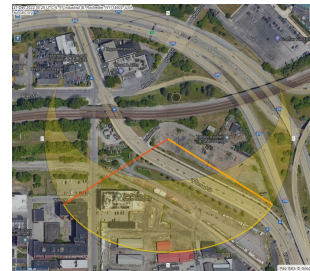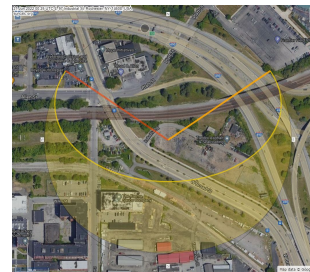
Sun Diagram (Top: June Bottom: December)

continued.

Wind Conditions:
Higher winter wind speeds
June
>   Primarily Southwest
>   Average speeds of 11.2 mph, gusts
>   to 32mph

December:
>   Primarily West
>   Average speeds of 15.2 mph,
>   gusts to 39mph
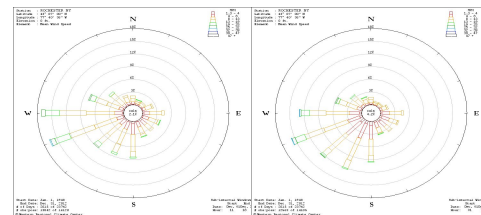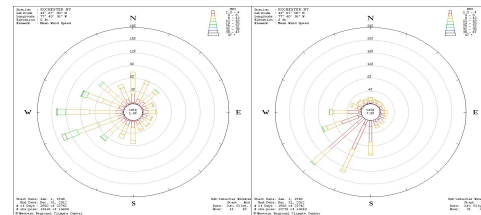
Wind Speed (Top: June Bottom: December)

continued.

Precipitation Conditions:
Average 133.7 days of precipitation a year, 31 days above the national average, January has the most precipitation

Rain

Average 33.8 inches of rain, below the national average

Snow

Average 84.3 inches of snow, quadruple the national average of 27.8 inches
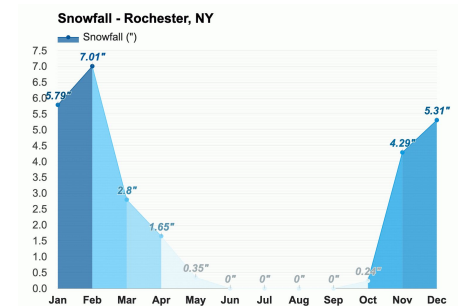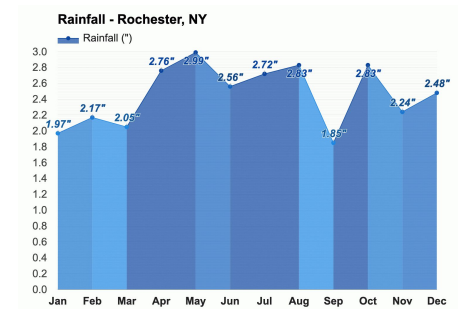
continued.

Temperature Conditions:
Average high temperature of 81.4°F, 4° lower than the national average
June:

Average high of 73°F and a low of 57°F

December:

Average high of 38°F and a low of 27°F

Temperature - Rochester, NY

Capstone Oral Defense
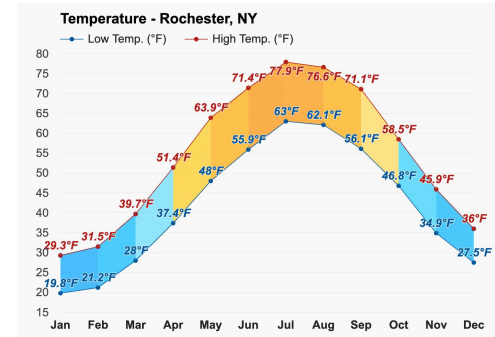
04. Creative Agenda

Current Site
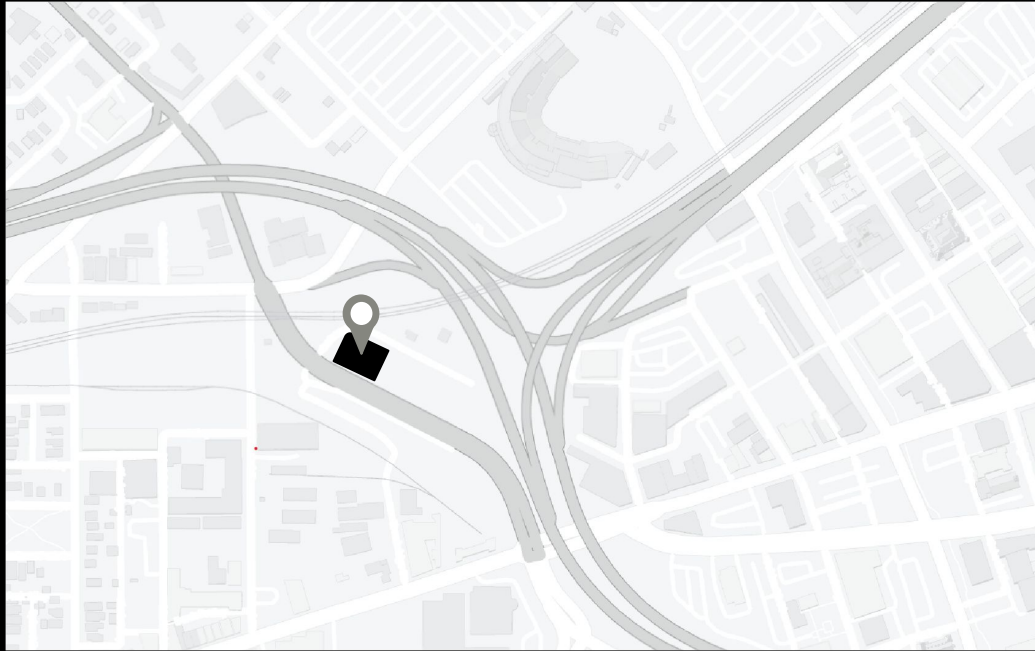
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Peace Village

- Permanent Homeless Encampment in Rochester, NY

- 97 Industrial St in the Susan B Anthony

- Community Land Trust Site, PCHO managed
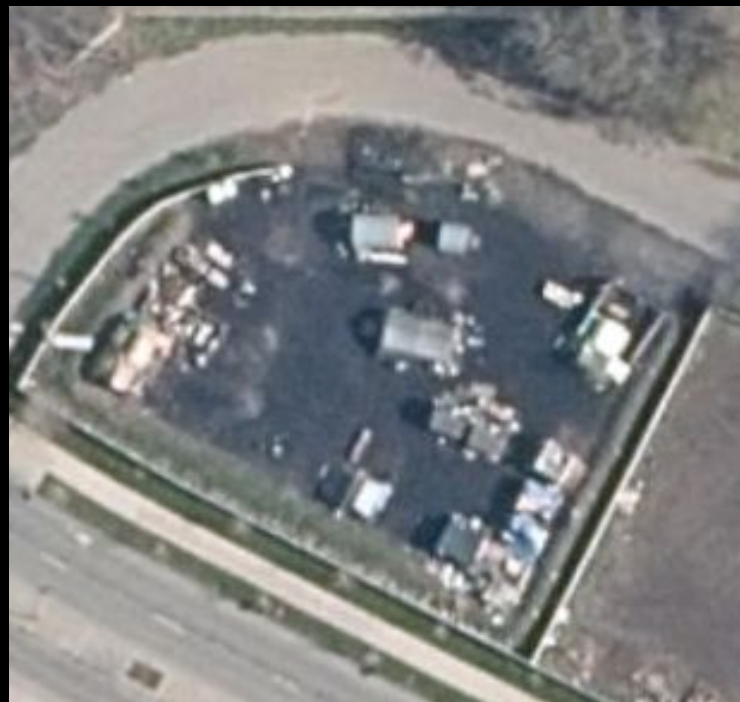
continued.

Current Conditions:

- 12 units on site, 9 fully functional

- No onsite office for security/help

- No water or electrical access

continued.

Project Goals

A prototype design focusing on a full redesign of a prospective, in-need chronically unsheltered homeless encampment in downtown Rochester, New York.

continued.

Site Redesign:
Site Layout
Spatial Planning
Community Involvement
Use of Vertical Space
Landscape Design
Security Design

continued.

Creation of 6 Unit Types:
Housing Unit
Community Unit
Office Unit
Hygiene Unit
Development Unit
Garden Unit

How?

Shipping Containers
- The new site is comprised of 19 recycled shipping containers
    - **4** 20' Containers
    - **15** 40' Containers

- Incremental sizes allow for ease of installation and maximum repeatability

- Recycled containers are inexpensive and durable

- Constructed of durable, "self healing" corten steel

Site

Site Plan
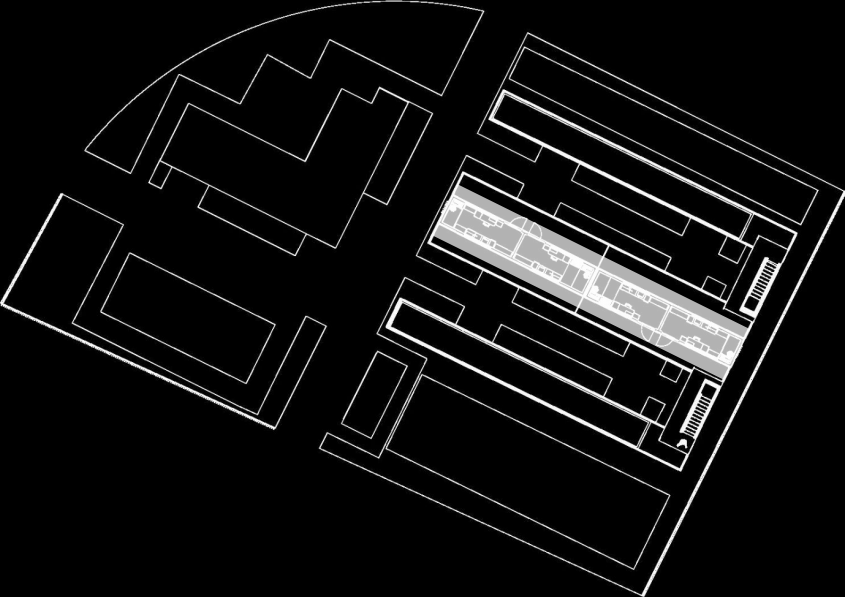
Legend

▰	Office Unit
▰	Garden Unit
▰	Community Unit
▰	Hygiene Unit
▰	Housing Unit

Ground Level

Upper Level

Site Renders

Site Housing

Site Outdoor Lounge

Housing Unit

Housing Unit Drawings
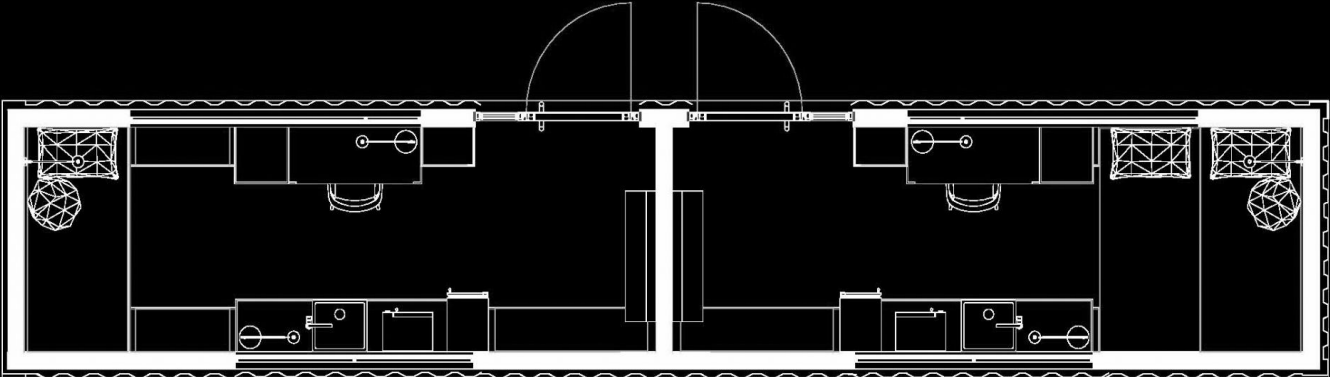
Floor Plan
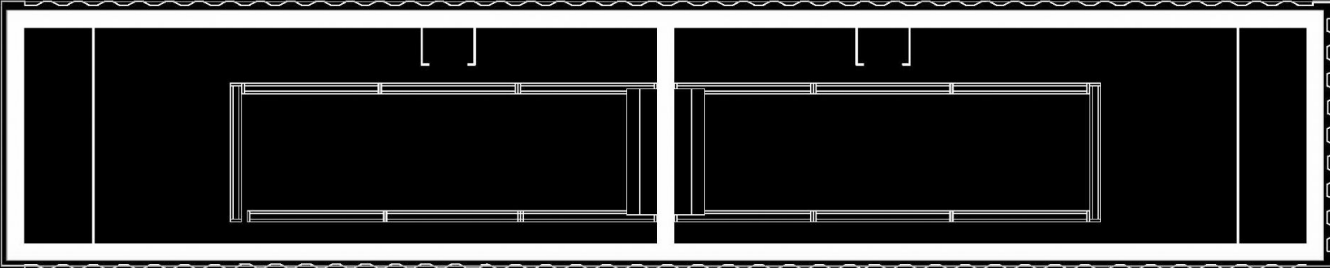
RCP

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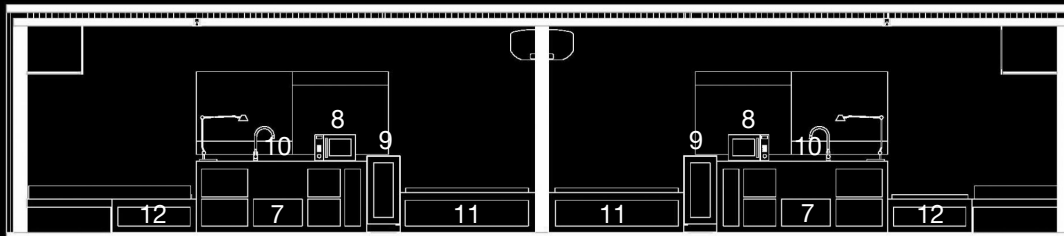
7. Kitchenette Storage
8. Microwave
9. Mini Fridge
10. Sink
11. Bench
12. Seating/Storage
Kitchenette Section

1. Workstation
2. Seating/Storage
3. Sleeping Space
4. Overhead Storage
5. Wardrobe
6. Climate Control
Workstation Section
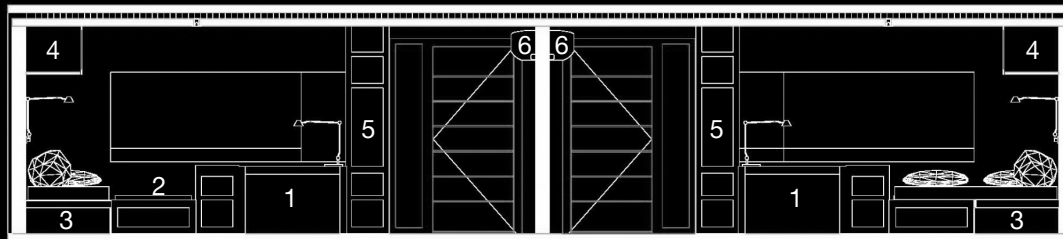
Housing Unit Renders

Housing Lower

Housing Upper

continued.

Housing Workstation

Housing Kitchenette

Community Unit

Community Unit Drawings

Floor Plan

RCP

Capstone Oral Defense
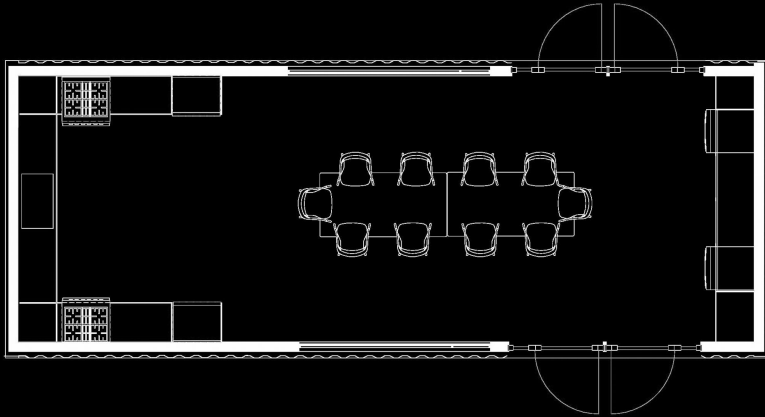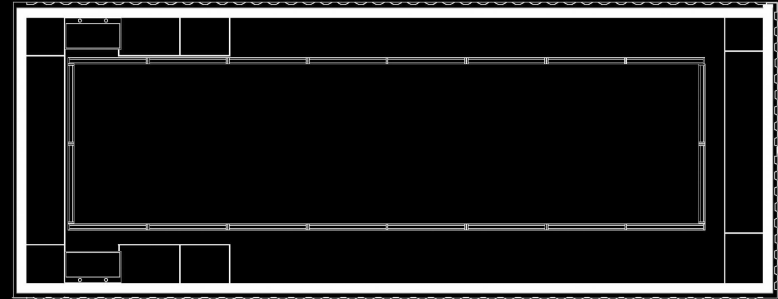
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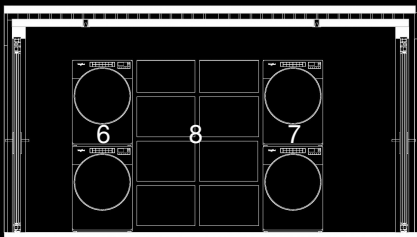
6-7. Washer/Dryer Stacks
8. Dry Storage
Laundry Section
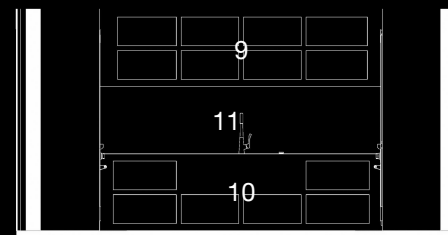
9-10. Dry Storage
11. Sink
Kitchen Cross Section

1. Refrigerator
2. Stove
3-4. Dry Storage
5. Community Seating
Longitudinal Section
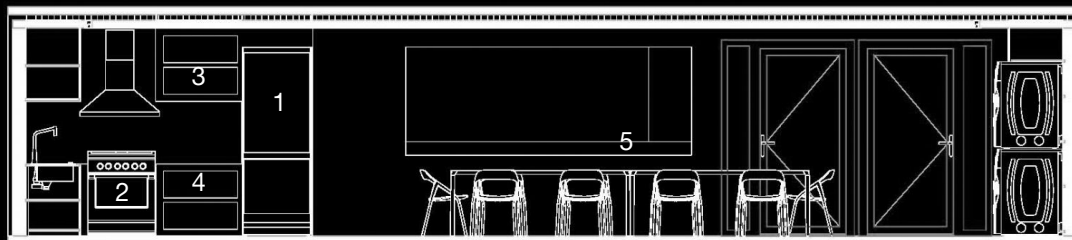
Community Unit Renders

Community Unit Outdoor

Community Unit Indoor

Office Unit

Capstone Oral Defense

Office Unit Drawings
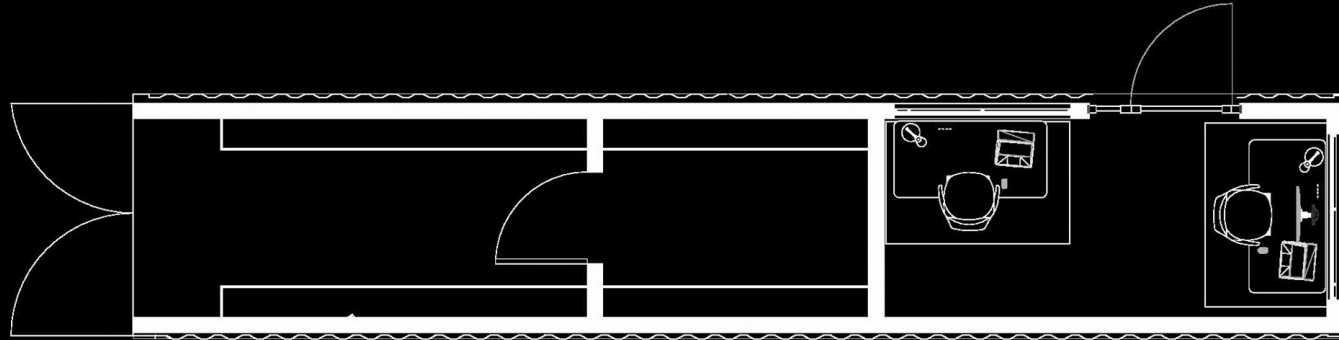
Floor Plan
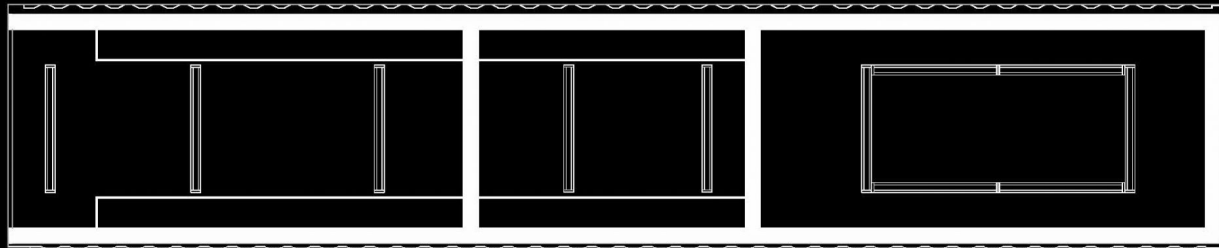
RCP

Office Unit Renders

Office Unit Outdoor

Office Unit Indoor

Hygiene Unit
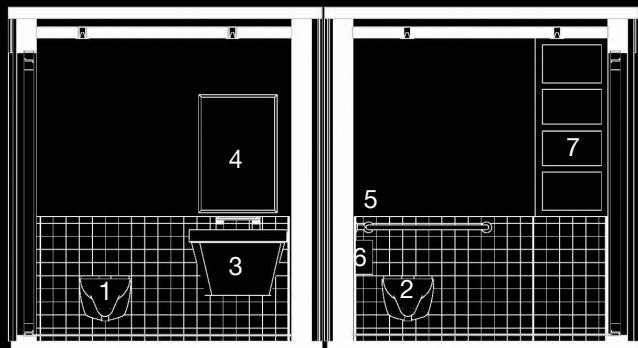

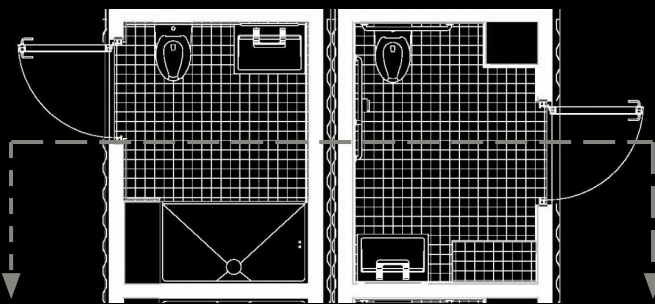Capstone Oral Defense
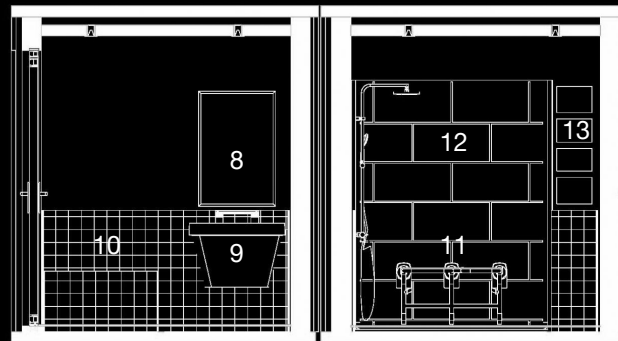
Hygiene Unit Drawings
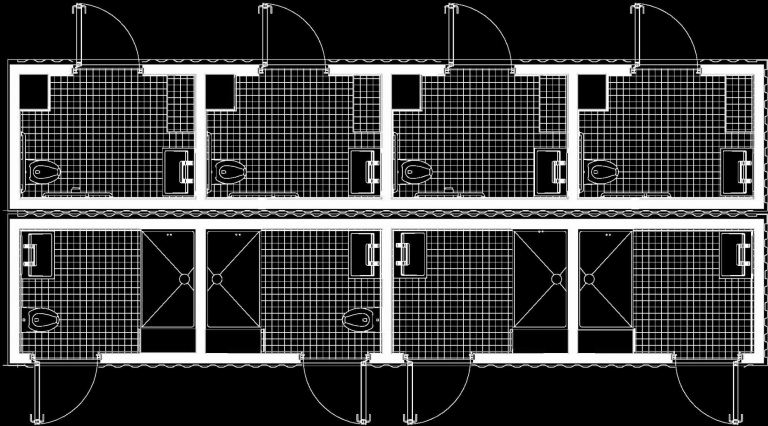
Floor Plan
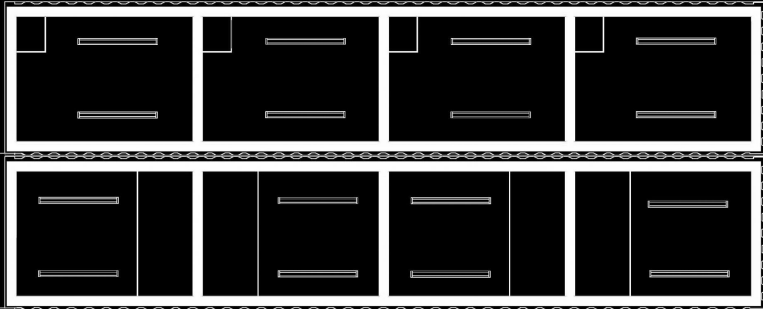
RCP

continued.

1-2. Toilets
3. Sink
4. Mirror
5. ADA Grab Bars
6. Toilet Paper Holder
7. Storage
Cross Section

8. Mirror
9. Sink
10-11. Bench
12. Shower
13. Storage
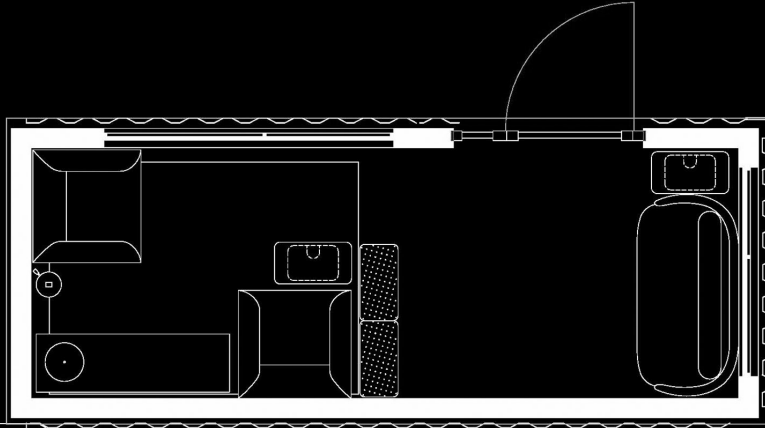**Cross Section**

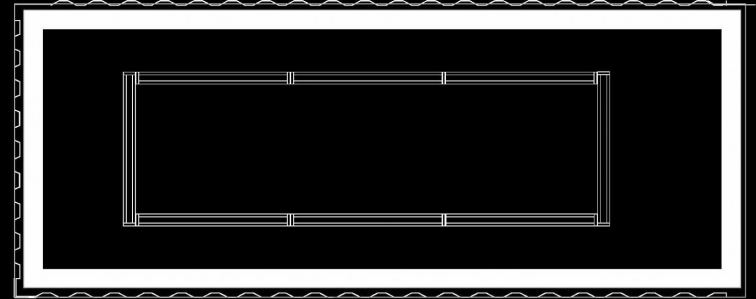# Hygiene Unit Renders

Toilet Unit

Shower Unit

Capstone Oral Defense

Development Unit

Capstone Oral Defense

Development Unit Drawings

Floor Plan

RCP

Development Unit Renders

Development Unit

Garden Unit

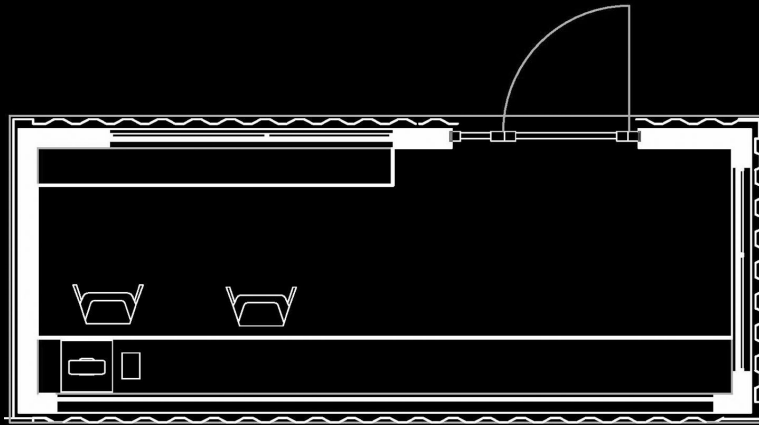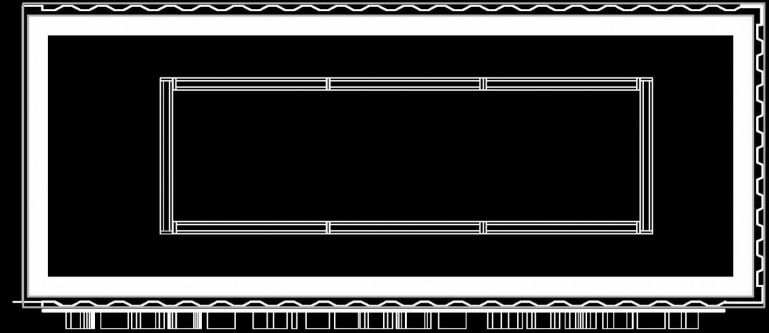# Garden Unit Drawings

Floor Plan

RCP

Garden Unit Renders

Garden Unit Outdoor

Garden Unit Indoor

Thank You