“We don’t discriminate that is the beautiful part of it. No matter what you have done, we are going to get you in for the night. It took a while to look at it in that sense. Just being human having love.”

-Major Beesley
ECOSA INSTITUTE
design with nature
OUTLINE

- Research
- Design Constraints
- Sleeping Pod Lookbook
- Future Development
RESEARCH
EXPLORATION OF HOMELESSNESS

- Benefits and fallbacks of current Shelter Systems and Service-Based support, where the growth commonly gets stuck
- Criminalization of sleeping in public spaces
- Creating individual and community design to support those that can not afford or be accepted into housing market
RESEARCH INTENTION

- Case study of Efforts to Combat Homelessness across the United States
- **RESEARCH QUESTION**
  ○ Are Housing First models effective?
METHODOLOGIES

- INTERVIEWS
- SAMPLE POPULATION
  - Adults experiencing homelessness (4)
  - City Officials (2)
  - Organizations (4)
- CASE STUDY LOCATIONS
  - Portland, OR
  - Detroit, MI
  - Norwood, MA
  - Prescott, AZ
HOUSING FIRST MODELS...

1. Allow those experiencing homelessness to practice agency,
2. Show higher housing retention rates, and
3. Improve treatment outcomes.
SUCCESSFUL HOUSING FIRST MODELS - DETROIT, MI
HOUSELESSNESS VS. HOMELESSNESS

- Identifying core issues that lead to state Of houselessness/homelessness--degree of alienation, collective attitudes

- Intersection between Social Justice and Environmental Justice

- Remembering and defining “Home” Comfortability, ability to see, listen and connect, integration

- What is allowed and given space for? What is invisible? The power dynamics in Public Space and Community
DESIGN CONSTRAINTS
CONTENTS:

01  Site Analysis Process
02  217 Hillside Avenue
03  222 Spring Street
04  913 Jovian Drive
ECOSA Site Planning Process for CCJ Pod Initiative

At ECOSA, the primary ethos is “Design with nature”, by creating systems that are rooted in the ecology of a site, and design to regenerate. So, with site planning, one must understand the ecology of the property and look to regenerate it while also providing all the necessary deliverables to the client (ideally stacking those two).

In this case of the CCJ pod initiative, locate where the sleeping pods should be laid out where they will have the most minimized impact on the ecology of the site. There are many things to consider, but one of the first things that must be done is gaining an understanding for the site. Truly understanding the site will provide the proper insight as to where to put what and in what orientation. A tool for understanding a site is a sector diagram (our sector diagram for the CCJ site is shown to the right), which visualizes some of the most important environmental details of the site. Some of which include:

- Solar Orientation
- Slope
- Wind & storm direction
- Fire area

The sector diagram doesn’t show all the important factors when considering site, but the general overview is very beneficial. From here, as the site planner, you will want to leverage the elements and working with them, rather than against them to provide the necessary deliverables to the client. For example, orienting the pods to where they receive natural light to reduce the amount of artificial lighting required. After achieving the necessary deliverables to the client leveraging the elements, one should look to aid in the regeneration of the natural ecology while adding to the site experience. In the case of CCJ, we designed a rain garden that boarders the western portion of the property line in the back yard. We did this because the slope of the property was from northwest to southeast with a drop-off from the west alleyway into the western property line, and the rain garden will absorb much of the runoff from the alleyway into the yard, stopping the flow of runoff into the space where the pods are placed. This also adds native plant species to the site that previously weren’t there. This rain garden also acts as a visual barrier blocking the view to the alleyway and adding privacy to those living in the pods.

This strategy of stacking of functions is a key strategy when designing the layout of the site. If you take this approach to the planning process, along with leveraging the elements rather than working against them, you will be taking the necessary approach to designing the site “with nature.”
DISTRIBUTED SHELTER MODEL & the Promotion for Sustainability

REGENERATIVE DESIGN

PASSIVE SOLAR
SITE ANALYSES
PRESCOTT, ARIZONA
ORIENTATION DETAILS:

- Solar gain (south facing windows)
- Thoughtful placement of entrances
- Multiple garden beds
- Communal space
- Privacy created by pod placement as well as bike rack acting as screen
- Opportunity for two communal spaces
- Pods as well as the tree (bottom left) provide shade from western sun
ORIENTATION DETAILS:

- Solar gain (south facing windows)
- Thoughtful placement of entrances
- Multiple garden beds
- Communal space
- Privacy created by pod placement as well as the relation to the house and tree
- Opportunity for two communal spaces
- House provides shade from western sun
ORIENTATION DETAILS:

- Solar gain (south facing windows)
- Thoughtful placement of entrances
- Multiple garden beds
- Communal space
- Lots of space between pods, option for personal gardens or privacy screening
- Trees and garage/sheds provide shade from western sun
SLEEPING POD LOOKBOOK
FOR THE ONES WHO HAVE ALREADY BEGUN SINGING SONGS THAT SOUND SOMETHING LIKE PEOPLE TURNING THEIR PORCH LIGHTS ON AND CALLING THE HOMELESS BACK HOME
Artist: Charity White
Material: Ceramic Slip cast

Park bench design to design against sleeping in public spaces.
“Like slavery and apartheid, poverty is not natural. It is man-made and it can be overcome and eradicated by the actions of human beings.”

Nelson Mandela.
A TIMELINE OF SOLUTION BASED HOMELESS VILLAGES IN THE U.S.A.
Nature is an interconnected web of patterns we just need to observe and study it to further understand its solutions to natural challenges. The Pattern Language served as an inspiration for our Lookbook to make an accessible reference tool for building community through principles of patterns and community permaculture. Offering approaches and considerations when building communities at a large and small scale.

Our Lookbook is sectioned in three parts
- Opening
- Challenge
- Plan
- Solution

The Lookbook, “HOME”, is intended to be an open source reference platform to initiate conversation by presenting a challenge with defined restraints.
- Challenges including: low cost, 3-d printed designs, microbial insulation, passive/active solar, water retainment, with repeatable modularity qualities.

The presented challenge will, in turn, foster distant and local collaboration and give a platform to compile and think through the design process with detailed plans and considerations, material needs, and cost estimates.

After a completed plan has been developed, a call to action will be illustrated in the project section showcasing what has been and is being built. This documentation process will allow for further understanding, and refinement to the design and building processes.
Design a simple shelter that is beautiful, cheap, and easy to build

**Deadline:**
Rolling - Monthly Recognition

**Where to submit:**
www.trinyl.com/1234

**CONSTRAINTS**
- Cost less than $500
- Ties up to 17 feet
- Include a detailed plan
- Include a materials list
- Be easily transportable

**GOALS**
- Cost as little as possible
- Be as easy to build as possible
- Be as well insulated as possible
- Be as comfortable as possible
- Be as customizable as possible

**METRICS**
- Total cost
- Insulation value
- Repeatability
- Build Time

**Related:**

**PROJECTS**
- Portland POD Initiative
- Kenton Wrens Village
- Clackamas Veterans Village

**PLANS**
- City Repair Pod
- SAFE Pod
- PlyPad Pod

**CHALLENGES**
- Build a Pod
- Start a Village

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**The Challenge**

The success of the Portland POD initiative demonstrates the power of good design challenges. Humans are smart, resourceful, and compassionate. When we direct our attention to solving specific problems, we can almost always come up with workable solutions. And when many people generate lots of different solutions, it allows us to compare our results and learn from our mistakes.

Can you design a tiny home that is better, lighter, cheaper, easier to build, more energy efficient, and/or better-looking than Portland's top architects? Of course you can.

This is an open challenge to try your hand at designing your own sleeping pod. Join the conversation, do the best you can, and share what you come up with! This is a living document, and new designs will be added.
The pods have endured two Portland winters and are holding up well to the elements. As an experiment, one of the pods was sided with cheap twinwall corrugated plastic, a material commonly used for sign-making. The sheets were cut into 4” slats and then overlapped to mimic the look of traditional siding. This ended up being an effective, cheap, lightweight strategy for siding, but we learned that over time the plastic expands due to heating, causing it to warp and bow slightly. This can be corrected by making small horizontal cuts in the sheets before screwing them in place, so that the sheets have room to expand.

**MATERIALS REQUIRED**

1. 10’ 1x4’s, untreated wood
2. 10’ 1x6’s, untreated wood
3. 10’ 2x4’s, treated wood
4. 10’ 2x6’s, treated wood
5. 10’ 2x8’s, treated wood
6. 10’ 2x10’s, treated wood
7. 10’ 2x12’s, treated wood
8. 10’ 2x16’s, treated wood
9. 10’ 2x20’s, treated wood
10. 10’ 2x24’s, treated wood
11. 10’ 2x30’s, treated wood
12. 10’ 2x36’s, treated wood
13. 10’ 2x40’s, treated wood
14. 10’ 2x48’s, treated wood
15. 10’ 2x60’s, treated wood
16. 10’ 2x72’s, treated wood
17. 10’ 2x84’s, treated wood
18. 10’ 2x96’s, treated wood
19. 10’ 2x108’s, treated wood
20. 10’ 2x120’s, treated wood
21. 10’ 2x132’s, treated wood
22. 10’ 2x144’s, treated wood
23. 10’ 2x156’s, treated wood
24. 10’ 2x168’s, treated wood
25. 10’ 2x180’s, treated wood
26. 10’ 2x192’s, treated wood
27. 10’ 2x204’s, treated wood
28. 10’ 2x216’s, treated wood
29. 10’ 2x228’s, treated wood
30. 10’ 2x240’s, treated wood
31. 10’ 2x252’s, treated wood
32. 10’ 2x264’s, treated wood
33. 10’ 2x276’s, treated wood
34. 10’ 2x288’s, treated wood
35. 10’ 2x300’s, treated wood
36. 10’ 2x312’s, treated wood
37. 10’ 2x324’s, treated wood
38. 10’ 2x336’s, treated wood
39. 10’ 2x348’s, treated wood
40. 10’ 2x360’s, treated wood
41. 10’ 2x372’s, treated wood
42. 10’ 2x384’s, treated wood
43. 10’ 2x396’s, treated wood
44. 10’ 2x408’s, treated wood
45. 10’ 2x420’s, treated wood
46. 10’ 2x432’s, treated wood
47. 10’ 2x444’s, treated wood
48. 10’ 2x456’s, treated wood
49. 10’ 2x468’s, treated wood
50. 10’ 2x480’s, treated wood

**TOOLS REQUIRED**

- Impact Driver or Power Drill
- Jig Saw
- “Coro-claw” composted cutter
- Razer Blade
- Metal Shears
- Router with 1/2” bit

**SKILLS REQUIRED**

- Intermediate to Advanced
- Construction Experience
- Creativity and Patience

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**The Basics**

Two versions of the City Repair Pod have been built to date, one for the POD initiative that currently lives at the Kenton Women’s Village, and one that lives the designer’s backyard in Portland. The construction method was inspired by slotted plywood furniture, and it uses significantly less material than traditional stud framing, which drastically reduces material cost and overall weight of the structure. This makes it a very cheap option that can be built entirely with materials available at any Home Depot, however, it will also make it difficult to get permitted, so consider your use before building. The low cost and light weight make it a good candidate for installing on a mobile trailer, since trailer-based homes are often exempt from local building codes. The box construction has the benefit of allowing the window and door openings to be cut fit recycled or found doors and windows, which lowers cost, but adds a bit of difficulty.
The Basics

Seattle's Low Income Housing Institute has designed simple shelters that has allowed to establish 7 villages within the greater Seattle area in just a few years. Detailed plans for the shelter are available in PDF form on their website, and include a bill of materials, schematics, step-by-step assembly instructions, and even safety guidelines. The detail of these plans allows these pods to be rapidly assembled with volunteer labor and at low cost.

LIHI has partnered with the Seattle non-profit Sawhorse Revolution, which teaches teenagers carpentry, design, and leadership skills through construction projects. Partnerships like these have made the LIHI pod the most-replicated design in this book, and have become homes for numerous families, couples, and individuals.
**PROJECT:**
Clackamas Veterans Village

**Location**
Clackamas,
Oregon

**Date Established**
Winter, 2017

**Folks Housed**
30

**Legal Status**
Legal; Permitting
In process

**Current Status**
In Progress

**Website:**
tinyurl.com/y974riw3

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*The Story*

Clackamas County, a fairly conservative community to the SE of Portland, Oregon, has set a goal to end veterans homelessness within the county by 2019. It is estimated that of the 2,300 unhoused people within Clackamas County, around 100 are US veterans. As a significant step toward that goal, Clackamas county is working with Catholic Charities, Portland State University, and the City Repair Project to design and construct a temporary transitional shelter community. The community will consist of 30 of the SAFE Pods, designed by SRG Architects for the Portland Pod Initiative. Construction began in the Summer of 2017. Students from the PSU School of Architecture assembled 700 identical trusses, which we’re joined together to create the “Treeline Stage” at the annual Pickathon Music Festival in August of 2017, to draw public awareness of the project.

When the festival ended, the students disassembled the stage, leaving the trusses intact. In the fall of 2017, students helped transform those same trusses into their final form as permanent supportive housing for homeless veterans. The Village is set to complete just one year after the SRG pod was designed for the Portland POD initiative, and using this existing and proven design saved the county a considerable amount of time and money. In the process of building these pods, SRG Architects noted improvements they have made to the original design, letting real-world experience refine the design to be more practical, and easier to build.

Clackamas County commissioners declared a housing emergency Nov. 8, 2017. At the time of writing, the pods have been mostly built, and final zoning and planning issues are being resolved, and ADA accessibility ramps are being added to some of the pods.
FUTURE DEVELOPMENT
Zoning and Construction Considerations

Zoning and site impact
  trailers on wheels and boxes on piers
  Site impact significantly less than traditional construction (bull dozers/poured foundations)
Semi-mobile, Semi permanent (material lifespan)
Detached sleeping pods
  minimum sq footage for habitability (~96ft^2)
    code for sheds (no need for permit for non-habitable under 120ft^2)
    habitable structures still require permitting, plan approval, and site arrangement
  (placement on parcel)
Wilderness Urban interface (WUI wildfire code)
Flood plane (watershed and topography)
  placement and grating of site
Permanent power (burried conduit and outlets positioned on plans)
Heating (floor heater with minimum clearance on all sides based on manufacturer specs)
Minimum insulation requirements (aggregate material calculation)
  eaves and 1’ ceiling void (R38 calculated total )
Egress through window and entry door (technical issues versus code, what’s necessary?)
Ventilation (bathroom fan on ceiling)
  volume of air that must be recycled/replaced per hour
Risks and Benefits

Municipal zoning board could approve a specific prohibition on detached sleeping units.

A successful example could serve as precedent for further adoption by homeowners. (Virtue Terror) If solutions are effective then barriers to their implementation will likely fall.

With ~400 homeless individuals in Yavapai county, affordable housing is in dire need.
Future Development
Containers and Beyond

Legacy of Ecosa Design Studio
Jones-Glotfelty container home Coconino county
Container Home PDF from ecosa.org
http://www.ecosa.org/container-house-design/
Similar cost to a stick and board construction home of 2kft^2
Sustainable home tours (Flagstaff, AZ)
Requests and interest directed to Ecosa Institute office

Tension between serving prefabricated designs and building to site
Most inquiries are for generic plans (where do I start?)
Code departments don’t know how to classify containers
Ideas range from

  Crypto-Warehouse drop boxes (like PO boxes)/Rural office space
  Trustless coordination (key codes, transactions, Ethereum)
  Environmentally friendly (low impact) Home
  Maker space (desktop machines lowering production/repair cost)
  Greenhouses (Geodesic Domes, triangular additions, HOA approval)
CONCLUSION
RECAP

- Research
- Design Constraints
- Sleeping Pod Lookbook
- Future Development