# FINAL PAPER

Dignity village is the city-recognized area in Portland, Oregon, United States. This village is near Portland International airport. This village has around 60 homeless persons living there. It provides the homeless people a place to live and have the community to help them to get back on their feet as well as have stronger voice than as individuals. Since these homeless people live in city-recognized area, they are potential to build these houses under city codes: maximize size of temporary housing structure will be no more than 10feet x 14 feet and with a maximum average height of 10 feet from finished floor, it must have a buffer of 18 inches from the ground to finished floor, and height from ground floor to roof cannot be more than 11.5 feet. The materials to build these houses are recycling material or donated and restricted by the city codes. The house’s structure needs improvement and standardized design that creates the conformable feeling and easily built for these people. Since there is the need for these people, our group decided to design a model house that satisfies these needs. This project is not only is our part to contribute to society but also apply what we learn to real life.



One of the houses in Dignity Village

With the idea in hand, we applied the concept to build the product in Design Thinking class. The idea will build from craft and material available in the class room. From the draft to the finished product, the idea will flow through many stages. The idea needs to pass each stage in order to go to next stage and get the end product that fit to target customers.

Design Thinking flow.tiff

The first stage is empathy. In this stage, we visited Dignity Village to understand people who live there and find out what they need from the houses. Based on that we interview we will determine what types of product and feature they need. We ask some basic questions to find out what they need.

1. *What challenges do you face in trying to find a stable shelter?*
2. *What is good living in a situation like this?*
3. *What kind of help or service do you need now?*
4. *How do you feel living in here?*
5. *What do you need the most for you shelter?*

Each individual has different view and each gender has different view point what they need and considerate personal view. We organized the answers from the most common needs. Then we narrowed down the needs and the questions and started to go deeper in their personal view and why they need it and why is it important to them. We also consider their reaction and face expression throughout the interview. We divided these views and opinions about the house into three kinds: emotional, social, and functional. From there we can understand more about what their needs and the constraints from the houses where they live in. We interviewed a variety of people and these answers have three things in common. The first commonality is that since they live in the city land, these houses need to move when city requests them to move. The current houses are built to stay together, this creates a problem that when they move, they have to move the whole house or have to disassemble them. Since these houses are nailed together, most of the time these materials are broken. That is why they need the house’s structure that can be easily to disassemble and assembled without breaking the material. The second problem is that since these houses aren’t built as the original houses, these houses are lack of insulation. In the weather of Oregon, the weather is always wet and cold sometimes has snow, it is really hard for these people to live in these houses without insulation. Moreover, the state law doesn’t allow people to hang anything on the walls. So only way to for them to keep the house warm is to add one layer of insulation. The final problem is that since these houses are less than 200 square feet, there is no space for these people to have their space to do their personal hobbies.

After collecting user information in the empathy stage, we moved on to the next stage which is the define stage. Based on the common patterns from the empathy stage, we built up our characters who need this house and reason the needs for this house. Our male characters name is Duke. He is homeless and wants to get back to society. He needs the place to live in that belongs to him and provides him privacy. He needs a basic house which should be smaller than 200 square feet to avoid building and fire codes. The house is a way for him to regain his confidence and boost his self-esteem in addition to giving him a personal private space. However, this place needs to be easy to move, inexpensive and still gives him enough warmth in the winter with sufficient basic needs. Our female character name is Daisy. She is looking for a place that she can call her own. She wants a place that can provide her a break for a day even though that place is small but she can enjoy and be accepted with people like her in addition to storing her personal stuff and feeling relief with her hobbies.

Daisy and Duke are alike but are different looking from male and female perspectives. It is hard to pick who we will focus our attention on. After our discussion, our group decided to concentrate on Duke’s needs. Since the statistics stated that the male homeless was 51.3% versus 24.7% female with the remainder being made up of children. The target Duke represents a segment of single homeless and the population that would like to get back on their feet and earn acceptance from society. Living in under-privileged areas with people like him, he needs a place more private with enough room for his personal space as well as to serve his hobbies and collections. This is a fundamental principle for our attention. Thus, in our view on the opportunity of providing Duke a place for him to call his own that addresses his needs and helps him get back on his feet is appealing and promising, and most of all worth doing as a social impact. In addition, since Duke and Daisy are very alike, the design for Duke eventually can reach to the need of Daisy.

After deciding the target customer, we created the list of questions that need to be answered. These questions are the first step to help us to get idea to satisfy Duke’s needs:

1. *How might we help Duke to gain his dignity back from our design?*
2. *How might we help Duke have a comfortable and relaxing place?*
3. *How might we help Duke organize his belongings?*
4. *How might we help Duke feel connected with his place?*
5. *How might we help Duke to design a place that can be flexible and swift?*

Collecting the answers, we moved to next stage which is the ideate stage. Based on the answers, we brainstormed the basic ideas to build these houses. We classify these ideas into three categories: “most likely to success”,” most like to delight”, and “most break through if”. We separate the ideas for each Duke’s need:

* **Help Duke to gain his dignity back from our design:**

The first design is the same as original house which has four walls, base, and shed top. This idea is most likely to succeed because this design is standardized for the house in Dignity village.

The second design is the house which has four walls, base, and the top which is curved. This idea is most likely to delight Duke because he can have the different top compare to his group member. His top will stand out from the rest of the house in the village. However, since his budget is limit, the curve top may cause extra money to spend and it is harder to construct.

* **Help Duke organize his belongings:**

The first design would be to use up the storage on the ceiling. We will design the shelf on the ceiling. This idea is most likely to succeed because since the space above his head haven’t use for anything. So we use up this space for his storage.

The second design would design storage on the wall for him. This idea is most likely to breakthrough if he has the more room in his house. Since the house has to build less than 200 square feet, his bed barely to fin in the house, the extra room for his storage can’t happen.

* **Help Duke to design a place that can be flexible and swift:**

The first design is used four walls that have the attachments to attach the base and roof. This idea is mostly to succeed because the attachments can disassemble any time and put it back together easily. This design he won’t break his wall, base or top.

The second design is to use the same method as normal houses. This design is most likely to breakthrough if his house won’t be moved, so all the walls, base, and top can stick together. If he moves often, this design won’t work because it would break the wall, base and top.

The third design is that the wall can be fold to small pieces. Then it has the attachment to the base and the top. This idea would be delightful to him, because it’s easy to fold and move when he needs to. This idea seems to satisfy his needs but we realize that this design is not feasible because it doesn’t add extra value to him but except more time to fold and keep the wall stand straight when he assemble.

* **Help Duke to get insulation to his place:**

Our first design would be the same as many houses. There are two walls and insulation in the middle. This idea would be likely to breakthrough because we need to add more wall layer. Since our budget is limited and cost of wood in US is so expensive. Adding more layers and more insulation would go over our budget.

Our second design is to cover the wall with space blanket. This idea is most likely to success because the space blanket is cheap and its function acts same like insulation. Moreover, it’s also light weight and it’s easily to opt it on the wall.

After we go through each phase above, our group moves to next stage which is the prototyping and testing stage. Based on the ideas and classified categories, we decide to we will provide two A-B prototypes and test our prototypes to other users in order to find out the best solution for our product as well as satisfy the needs of our customers. We conducted the interviews after letting the users test the house in order to explore the full function and also to experience the design of our product to fit more with customers’ desires. We wanted to explore the customers’ feelings and look when the users use our product while we observe their interaction between the users and house to explore the usage of house and further function that the original houses can’t provide.



Standard House

The first A-B prototype – hinges attach to the walls, base, and top:

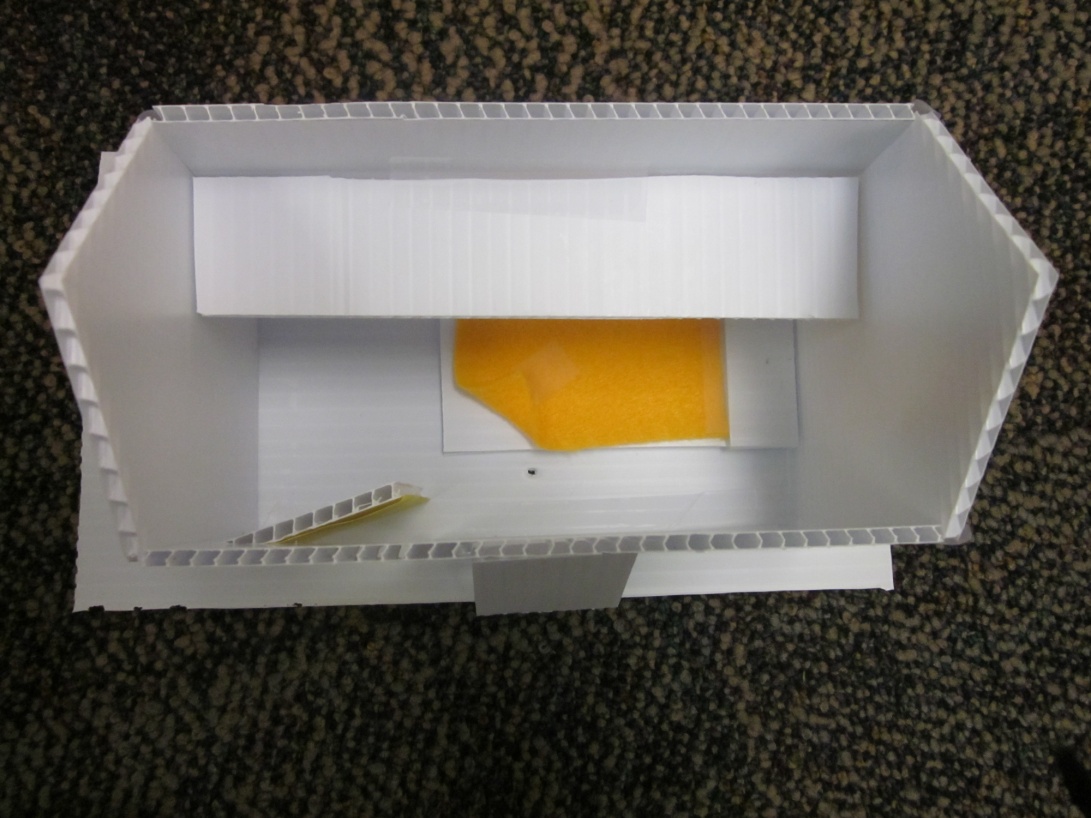
We have two different ideas for our prototype, so we build two different products. The first prototype is the house which has four walls sticks with hinges. The hinges help the walls and base stick together. Since the house will need to move anytime, with the normal nails to stick walls, base together will get destroy when they move the house. For each wall, there are four hinges on the corners. Because the house would be moved when the state requests, the customer need to have something which is easier to disassemble as well as reassemble. The hinges will help to disassemble and save time to pull everything apart.

Most of our interviewees liked the second prototype better because the first prototype has the space between the wall and the base, it is annoying to them because the water will come in and damage their stuff. The second design brings the convenience when they disassemble and put it back together really easily. The bed inside helps them to have additional space when they don’t need to sleep they can use it to work on the stuff they like. They also like the space for storage because, when they don’t use their stuff, they can put it on the storage.

They like the peg that they are easily resemble it when they need and put it back together. That means they can save time and material for the house. Usually when they move the house, they pull them apart carefully. So they can reuse them. But the problem they face right now is when they pull, the walls, the base will be damaged. With this design they can save material cost and use that money to do other things.

They also like the bed because most of them don’t have beds and they sleep on the floor in sleeping bags. The bed can provide them as a bed as well as the table for them to do personal stuff.

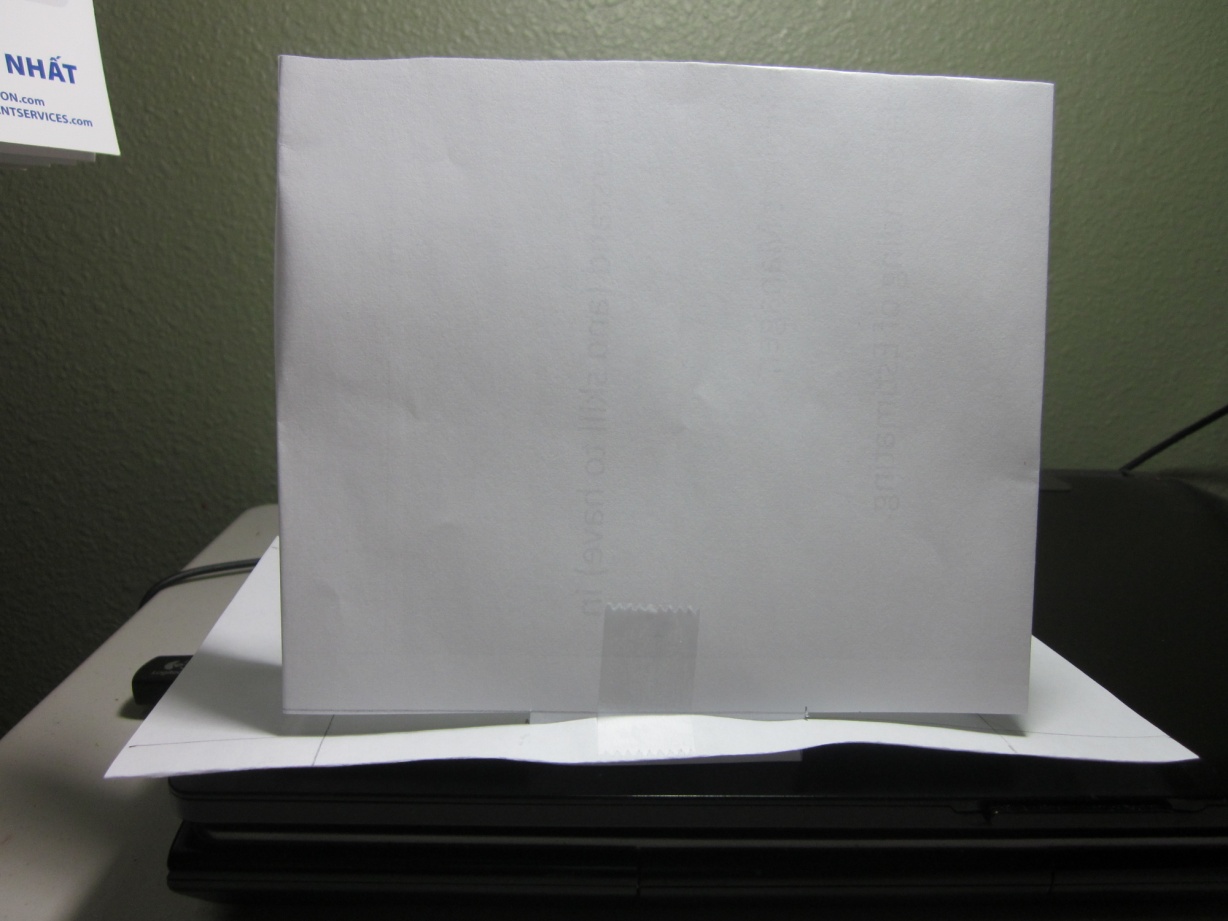




The second A-B prototype- fold wall-puzzle house:

For the second prototype instead using the hinges we will use the wooden pegs to attach to the walls. The wooden pegs will help the walls attach to the top, base closer. Since Oregon has rain six months a year, water can go inside the house if the base and wall don’t stick close enough and damage the house. The inside will have the folded bed and one layer of insulation. The bed also is the table for them to doing any of their habits as well as use as the table for them. With our design, hanging the space blankets is not possible because the state doesn’t allow hanging anything around the wall. The first problem for them is insulation which we have solved by using only insulation and no second wall. By doing this the cost will remain low. The second problem is the space; we will use the upper space for storage. Since the house cannot get bigger than 200 square feet, there is not much room for the storage so we are limited. We only can provide them with small storage.

The second A-B prototype, the first prototype is instead of using big walls and base, our design would be folding walls that can be easy to fold and move. The walls will use wooden pegs to attach to the base and the top. The inside will have the folded bed and one layer of insulation. The bed also is the table for them to doing any of their hobbies as use as the table for them. With our design, hanging the space blanket is not possible because the state doesn’t allow hanging anything around the wall. The first problem for them is insulation is solved because we will use only insulation and no second wall. The cost will not add much to the total cost. The second problem is the space; we will use the upper space for storage. Since the house can get bigger than 200 square feet, there is not much room for the storage so we are limited, so we only can provide them with the small storage.



Wall attaches to base without any hinges or pegs

The second prototype is designed like the puzzle they can fit together without any pegs and nails or hinges. We can cut the wall to be the shape that fit together. The inside would be same as the first prototype.

The first prototype is only an idea because the folding wall is hard to make it stand and it will create the space for water to come in. With the fold wall, we can’t have insulation install because we need to keep the wall flat so we can fold the wall when they move.

The second one is also an idea because these walls will fly away if there is no peg or nail to hold it together. It would take more time to them to cut the wood to specific shape since most of their material is donations.

After testing two prototypes, we will design our final product. In this stage, we will find the free materials online and search for material donations. This will reduce the cost for buying material. We use the plastic to build the prototype. In side we will have the bed, storage place in the prototype. We use tape to pretend as hinges or wooden pegs. We can’t design the holes for the walls and base because the natural of our material- plastic.

After that, we will put it on Facebook and see the comments from the users in order to make the full use and explore all the function of this design. This step also helps us to reach more users and get comments to develop our product that really fit for the users’ desires.

If we get the positive response, we will upload on Kickstarter in order to get funding to do the real house. The real house would be the best opportunity for us to test our design and see the real response and get feedback from these homeless. If the house is feasible, more Dignity Village can open more in US.