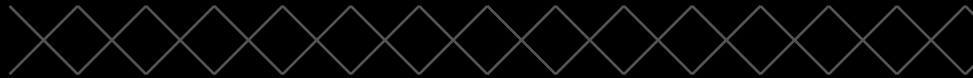


# Portable Recycled Tiny Homes



# Design Challenge/Rationale

## Problems:

1. Land with soil that's **not suitable for construction**
2. Increase of population living in **poverty**
3. Lack of **homeless** shelters
4. Frequent **destruction of homes** post natural disaster (hurricanes, earthquakes, etc).
5. **Relocation complications** for larger homes
6. Materials that can be recycled/repurposed are **currently harming wildlife and Earth** (plastics, metal, etc)
7. Increased **carbon footprint** in the U.S (Every person worth 3 Earths est.2019)

# Current Research

- 3D printed recycled polymer materials for creation of lightweight homes
  - Homes constructed with wood structures
  - Tiny Homes such as the Spite House and the Pie House (not wood structure or recycled materials)
-

# Objective

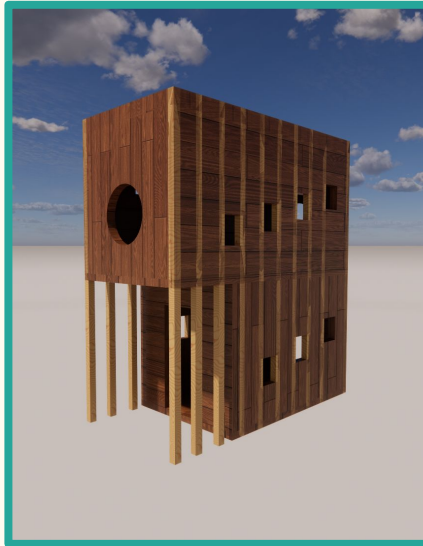
- Our aim is to use recycled polymer materials to create lightweight tiny homes. These lightweight tiny homes will be anchored to the ground but can easily be moved in the case of natural disasters or potential destruction of homes.

# Evolution of Design Process

Step 1



Step 2



Step 3



# Prototype



# Prototype - Exterior Views





# Prototype - Interior Structure





# Future Considerations

1. The current design is a tiny house on a 12' X 24' buildable area with 5 bays (dimensions: 2'X2'). There are examples of other tiny houses that are existing with small dimensions, but the idea is to make these tiny houses out of recycled materials.
2. More research can be conducted comparing the durability of different 3D recycled materials
3. More research can be conducted to determine the best anchoring techniques for each tiny home built with different materials.

# Bibliography

- Mynio, Erika P. "Recycled material selection for affordable and sustainable homes using large scale additive manufacturing." PhD diss., Massachusetts Institute of Technology, 2020.
- Mitchell, Ryan. Tiny houses built with recycled materials: Inspiration for constructing tiny homes using salvaged and reclaimed supplies. Simon and Schuster, 2016.
- Dialameh, Marieh. "Portable Post-Disaster Home." Master's thesis, University of Waterloo, 2017.