

The Nucleus

Group 2

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Group 2 Tiny House Design

Interior Architecture:

The main body of Group 2's tiny house has an insulated gazebo environment. The upper-half of the east and west walls will be cut out for succulent and small plant growing in trays protruding from the 8"x4' shelf space, which has hinges to open into the greenhouse. The south side of the main interior contains a window pane for white-board usage. The center floor space is an open area for multipurpose usage, which brings to mind a cellular nucleus. The people that would exist in the center are the "DNA" who dictate what happens to the rest of the cell through verbal instruction and communication.

The interior of Group 2's tiny house is especially adaptable to the seasons in passive ways due to the heat generated from the greenhouse diffusing from the greenhouse entryways to the meeting space. This will allow the Tiny House to be used during the Winter and facilitate plant growth. Once the greenhouse panes are removed during the summer, there will be constant air flow into the tiny house for a cooling effect, as well as the ability to use the house as a shelter for shade from the summer sun.

Interior Decoration:

The interior contains a series of collapsible and multi-purpose furniture, as well as passageways into the greenhouse area. Fold-down tables will be attached to the north walls, and rectangular chests are used for both sitting and storage. The storage space of the benches remind Group 2 of a cellular vacuole, which is a membrane used for the purpose of storing cellular material for later use.



Exterior Architecture:

The main feature of the exterior is a wrap-around greenhouse that extends 3 feet out from the interior to the edge of the roof overhang. The greenhouse is made with panes of polycarbonate that are attached to layers of tracks. The tracks lead the panes to the north side of the house, ending on either side of the main entrance door.

To allow light into the main building, the 3 pitch plywood roof will have a cut out on all sides. The roof and cutout will then be insulated with a layer of double wall polycarbonate paneling.

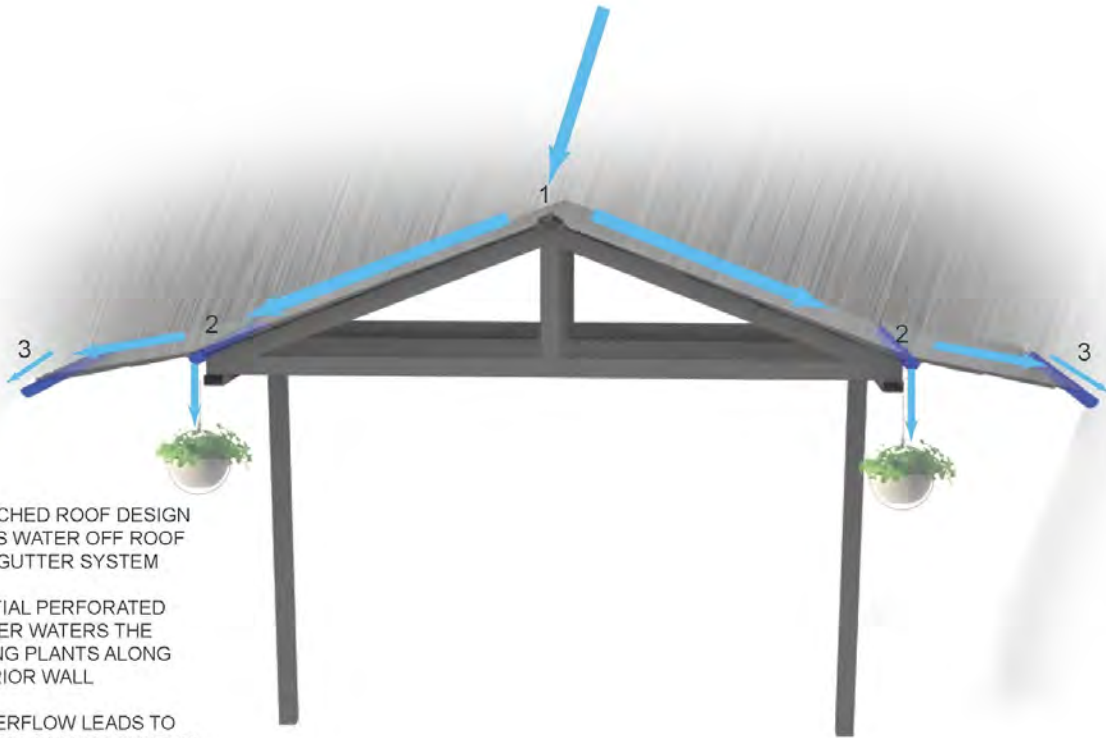
There is a rainwater flow system that consists of three parts. The first is a three sided pitched roof that guides the water to the gutters. The second is the primary gutter system that is perforated. It is designed to effectively water a series of potted plants hanging from the interior wall and the saplings below. The final part is a secondary gutter system that catches the overflow from the first and guides it to a series of water collection barrels.

A vertical garden shelving system is attached to the south exterior walls, which are also a good lesson in gardening with minimal space availability. It will be as adaptable to the seasons as the rest of the greenhouse at all times, since it will be protected by the polycarbonate panels with the rest of the indoor plants.

Winter VS Summer

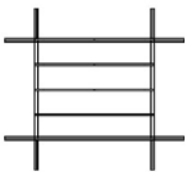


Roof Design

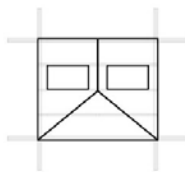


- 1_PITCHED ROOF DESIGN LEADS WATER OFF ROOF INTO GUTTER SYSTEM
- 2_INITIAL PERFORATED GUTTER WATERS THE HANING PLANTS ALONG INTERIOR WALL
- 3_OVERFLOW LEADS TO SECOND GUTTER SYSTEM AND FLOWS TO BARREL SOTRAGE SYSTEM

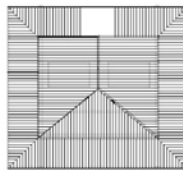
ROOF ASSEMBLY



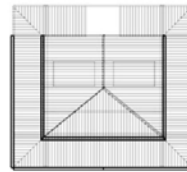
TRUSS SYSEM



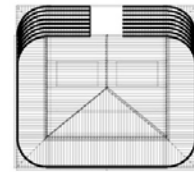
PLYWOOD SYSEM (WITH FENESTRATION)



CORRUGATED POLYCARBONATE



GUTTER SYSTEM



TRACKS FOR PANEL SYSTEM

Sustainable Building Components and Technology

Group 2's Tiny house implements four sustainable components, the overall exterior design, the stormwater management system, the materials used, and a wind turbine for sustainable energy.

The exterior design of the Tiny house is designed so there isn't a need for an artificial heating system or cooling system. The Tiny House becomes a Greenhouse during the Winter with polycarbonate walls in place to heat the entire building during the day and trapping the heat for the Winter nights. During the summer the Polycarbonate walls are removable, so the tiny house becomes a Gazebo, allowing the interior of the tiny house to cool down from natural airflow while protecting people inside from the harmful summer rays.

The stormwater management system is designed to water the plants hanging off the overhang while still allowing excess water to run off. This system allows all plants in the tiny house to be watered naturally and passively depending on the weather.

Recycled or "waste" material is used for the construction of the storage benches and wood table. The use of recycled materials reinforces the idea of sustainable design.

The use of wind turbine technology to collect energy for a battery is another sustainable component to the tiny house. The battery will power an outlet which will allow people in the Tiny House to charge electronic devices such as phones, laptops, and lamps for light at night.

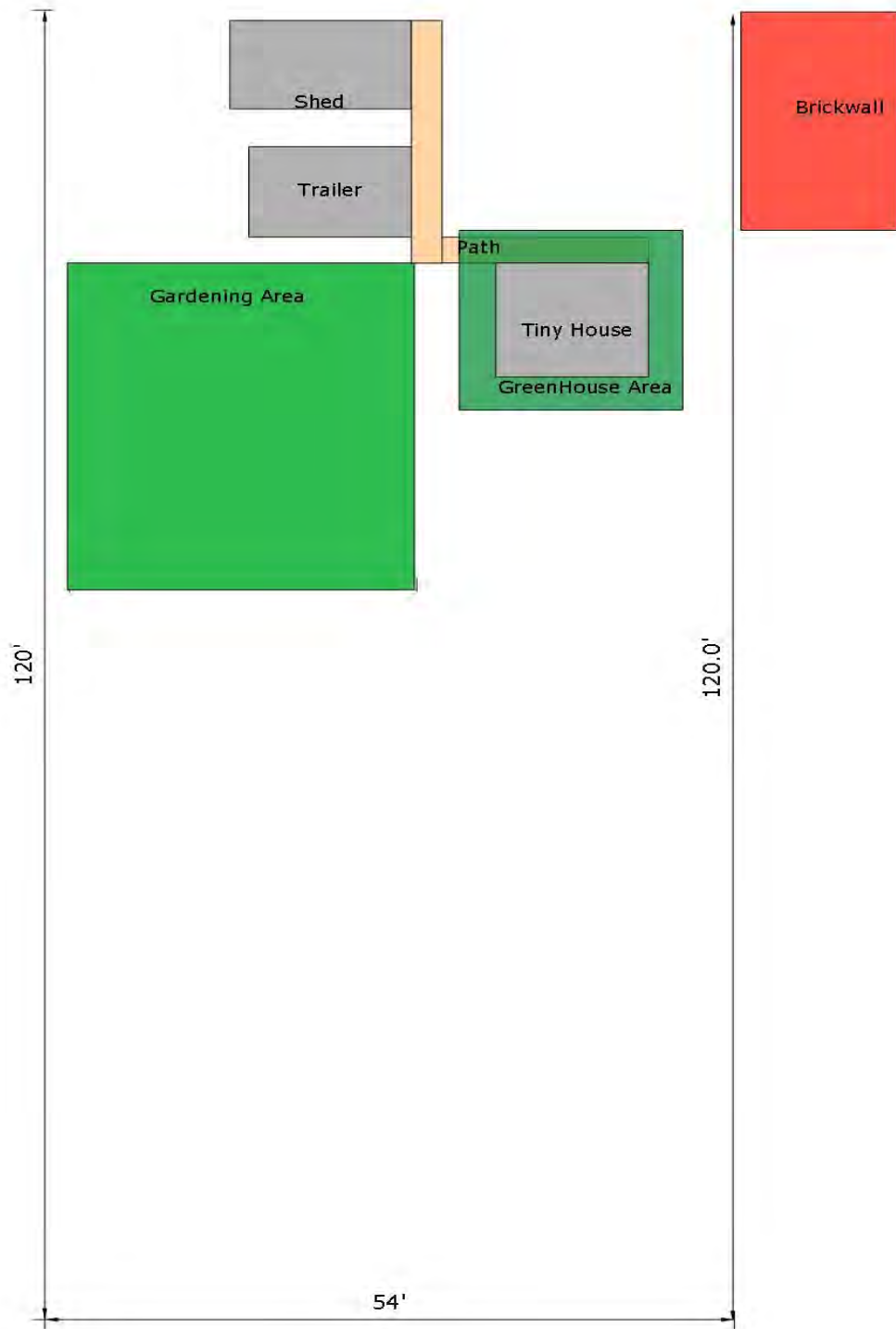
Access to House:

A series of pathways will be created from plants to lead from the tiny house, to the shed, to the trailer. The pathways will be a way to incorporate landscape architecture into the garden by allowing creativity with the types of bushes, potted plants, and flowering plants that create the pathway. Ideally, the pathway will also be adaptable to the seasons by using evergreen bushes that survive the winter, have various tall grasses, or change the potted plant species throughout the year.

Innovation:

The two main innovations are the track system for the polycarbonate greenhouse paneling, and the roof system, including the window cutouts and watering system. The innovation of the track system comes from the idea of the adaptability of living Cells as they adapt to different environments to sustain homeostasis. Like the cell Group 2's tiny house adapts to the weather to sustain a suitable environment for plant life to grow in. The stormwater management system also is based upon the idea of homeostasis. Similar to a Cell that undergoes osmosis when it receives too much water, the Tiny House's gutter system is designed to water the plants in the greenhouse but also allow excess water to flow into a rain collector.

Site Map



Building Cost Estimate

*Costing estimates based off pricing of Home Depot

- Polycarbonate Sheets 4ft x 8 ft x .157 in = \$1870
- Truss = \$ 134.52
- 2x4x12 = \$ 147.32
- 4x4x8=\$31.88
- 1x6x10=\$157.68
- 1x2x8=\$27.00
- Wind Turbine Estimate = \$500
- **Total Approximate Cost= \$2500-\$3000**

Marketing Plan

Executive Summary

Temple Community Gardens (TCG) is a project from the Office of Sustainability at Temple University currently covering two sites near to its Main Campus in Philadelphia. The main focus of this initiative are to establish a closer relationship with the surrounding communities and, at the same time, to teach sustainability concepts which are becoming every day more popular and needed. To endorse this commitment, a sustainable tiny house was projected seeking to be the innovative spot of the program standing out through its scale, function and portability.

Business Overview

The tiny house is a structure built to be a physical installation of the organization responsible for the community gardens having as its main functions: to serve as a meeting space for the main reunions of the staff; to shelter a mini greenhouse for the development of the seedlings that will be later transferred for the beds on the site and to be used as a storage space for the belonging of the members during working hours. In addition to that, sustainability is being applied to the building to save resources and to be shown as a model for the community taking advantage of conventional and engineered sustainable components such as use of natural ventilation and lighting, solar panels and recyclable materials.

Target Market

This plan is directed to possible funders or sponsors of TCG which want to have engagement with the project and to have its company associated with some kind of initiative that helps the development of some community in the city, having as a benefit the recognition for participation in social projects.

Marketing Strategies

- **Location Strategy:** this project is located in an existent site within the neighborhood that can be easily accessed by the people around it, including the students from Temple University and other all ages residents;
- **Promotional Strategy:** to promote this project and its role in the society there is the possibility of promoting events to disclosure the goals and work done on the site; participation of TCG members in architecture/sustainability conferences; elaboration of items containing the TCG label to be sold/distributed in events and to help to reach a further recognition of the project; the promotion of workshops, lectures and cultural events in the site of the building with the participation of funders; and the disclosure of the project through TCG website, banners, flyers and posters spread along the main points of the city.
- **Positioning Strategy:** the values associated with this project include the concern about the critical current environment situation throughout the globe; the initiative of engaging the community in a project towards the common good benefitting people from the most varied ranges of age, culture, instruction, etc.; the support from funders to set a reliable credibility image of the work and to help its disclosure; and mainly the innovation through a different feature (sustainable tiny house), which is not so usual to find.

