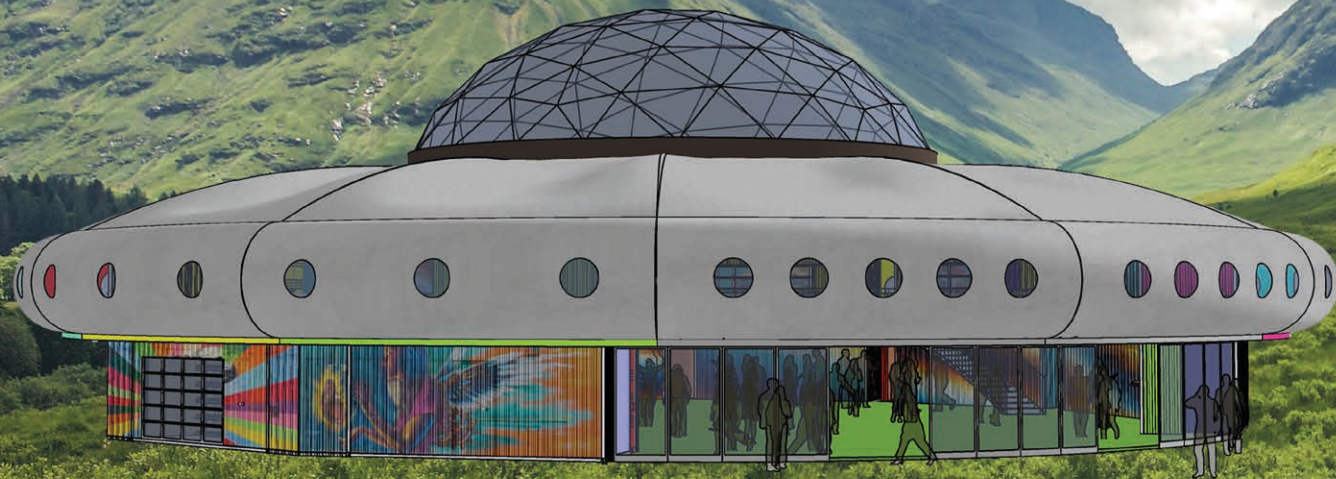




INSPIRE Taos

A Transportable Community Structure



Inspire Taos

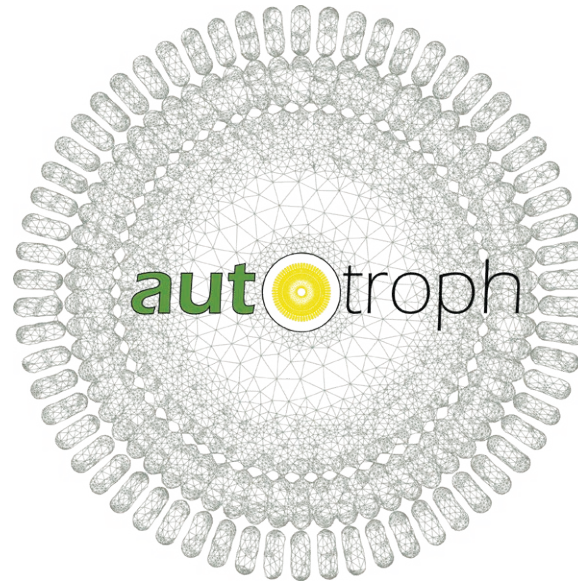
A Transportable Community Structure

Preliminary Design Study

06.11.19

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Prepared by:



Prepared for:

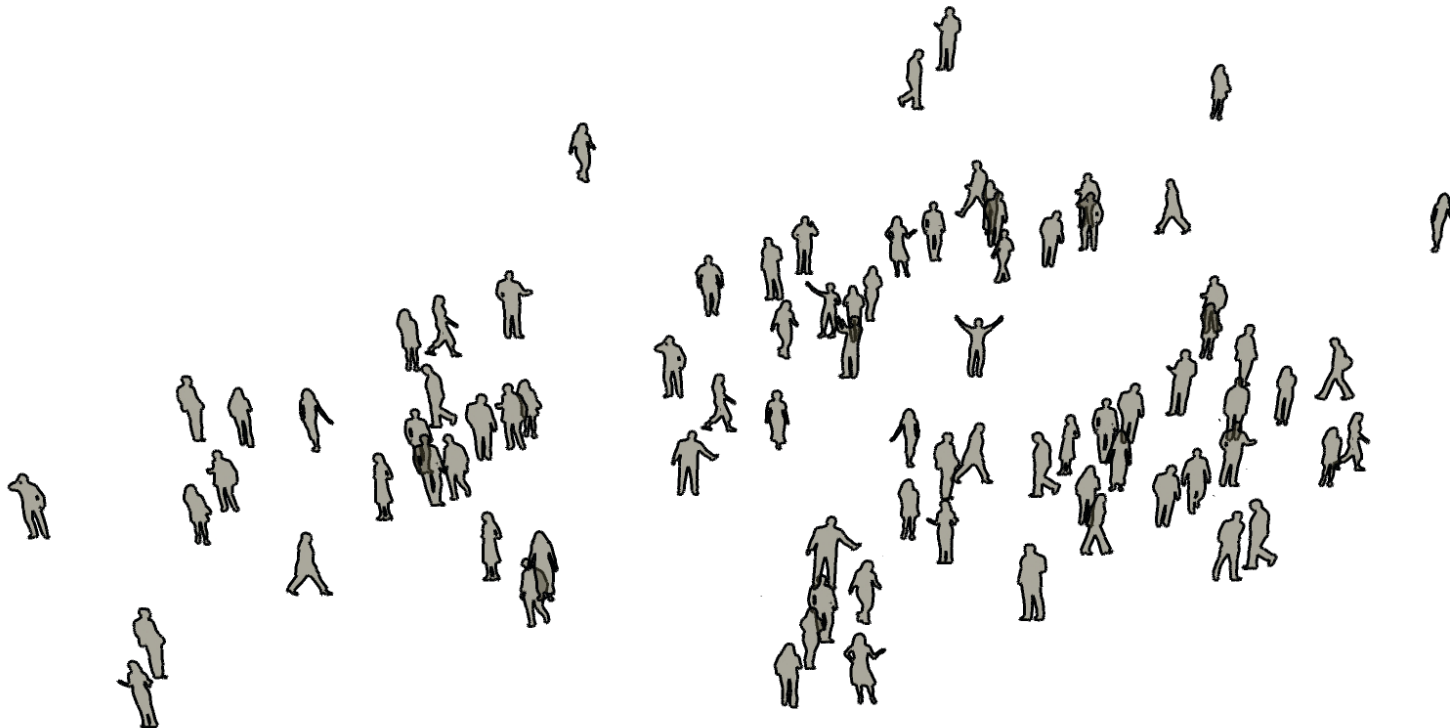
Tim Schwartz

This document is a conceptual design study for a temporary & movable community structure. It is intended to show the overall concept, size, layout and assembly as a basis for further study and engineering. All Materials, assemblies and systems shown are preliminary and this document shall not be utilized for construction purposes.

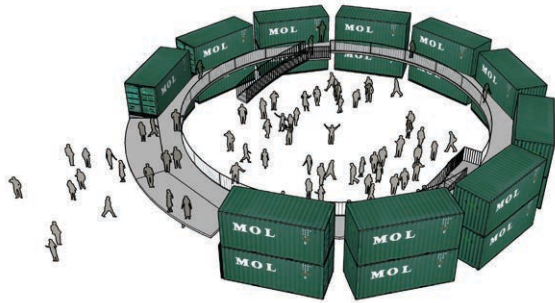
A Place to Gather

Concept

Inspire Taos will provide a place to gather for present day wanderers. It is envisioned as a common house and focal point for a temporary community. The spaceship form provides live / work / gathering spaces inside a futuristic, circular structure. It is constructed of pre-fabricated components that can be assembled and utilized for a period of time on a particular site; and then be disassembled, transported and re-assembled on a new site. Shipping containers are re-purposed as living and support spaces and will also contain infrastructure components so that the entire facility can operate off the grid. The center of Inspire Taos shall be a large gathering space for activities as varied as concerts, parties, meetings, gardening and working. With its forward thinking design and innovative community concept, Inspire Taos will be a model for Eco-conscious temporary communities.

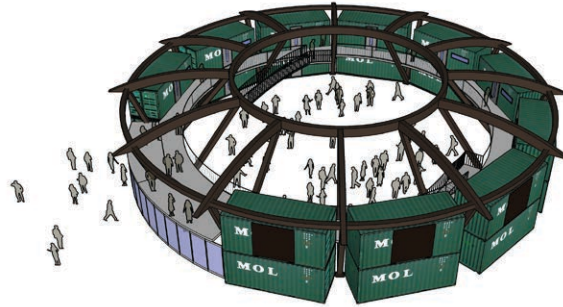


Construction



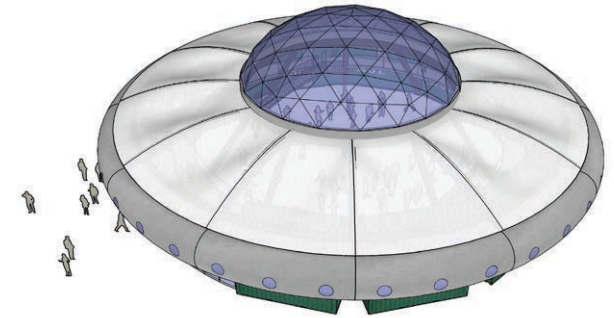
Layout

20 shipping containers are arranged in a 100' Dia. ring with one side left open for an entry / porch. The containers are stacked two high. Stairs and walkways provide access to upper floor elements.



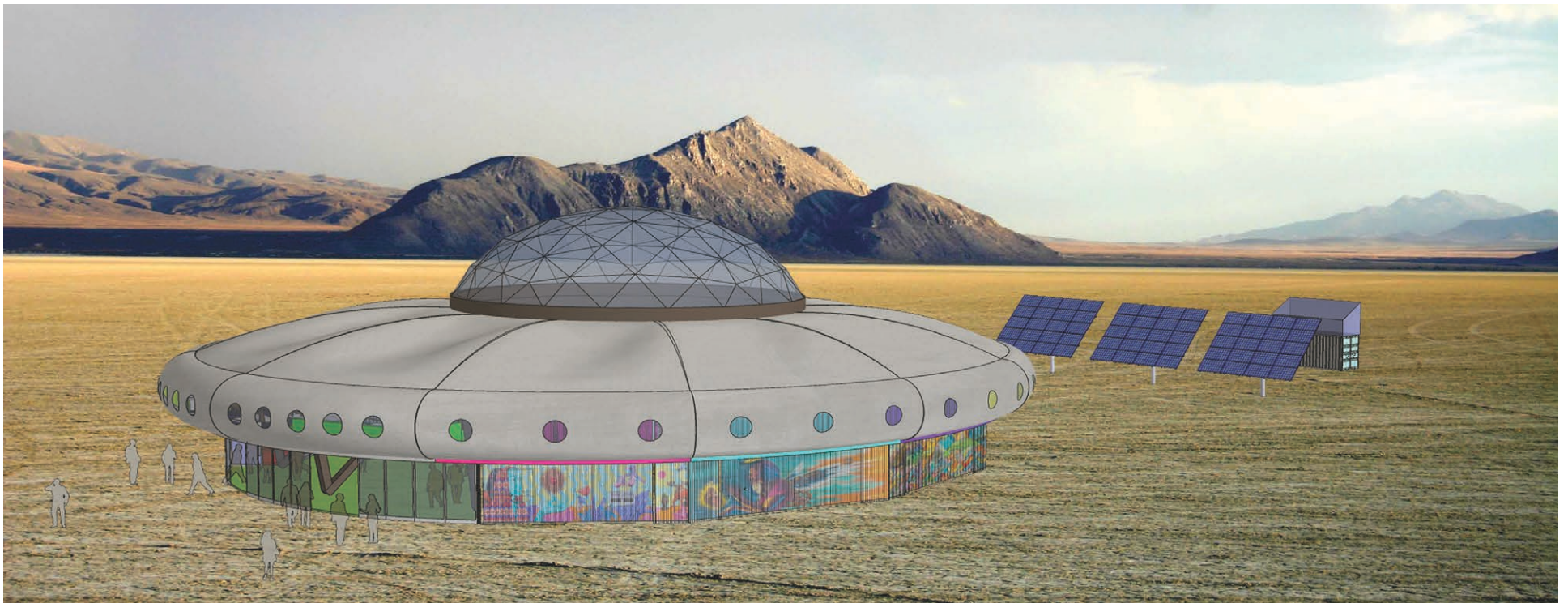
Structure & Fenestration

The shipping containers are modified to accommodate living, support and infrastructure spaces. A sliding door system provides enclosure on the open end and 12 steel frames w/ steel tension & compression rings provide the roof structure.



Roof

A geodesic dome is placed on the center of the roof. Fabric roof wedges are attached to the steel frame structure. A ring of fabric shell extensions are added to the upper level shipping containers.



Building Layout

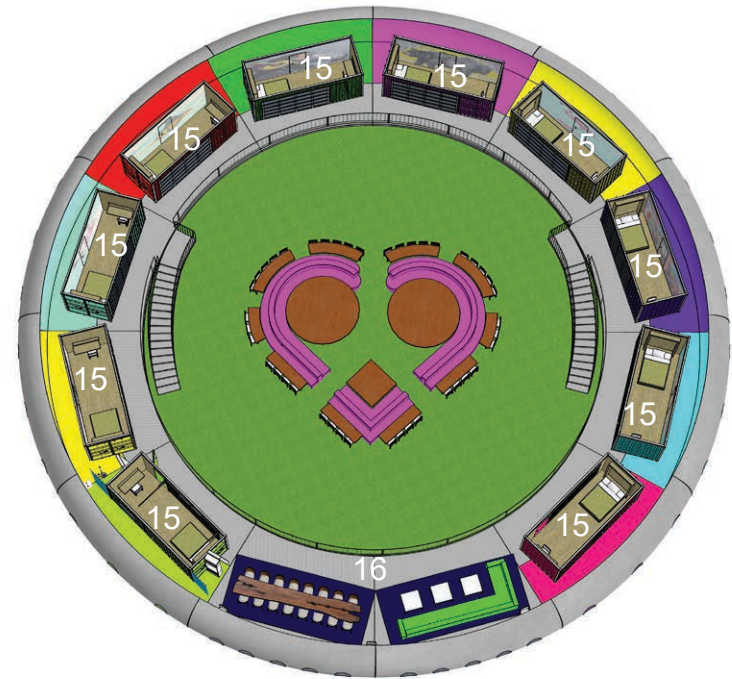
Enclosed Area: 12,100 SF

The circular spaceship form of Inspire Taos is organized around a central gathering space. This is a flexible area with heart shaped furniture for eating, meeting and working in everyday use. Other configurations include seating rows for presentations & performances. The lower level shipping counterpanes consist of Support & Infrastructure Modules. Support modules such as Kitchen, Office and Pop-up retail spaces support the daily operations of Inspire Taos. Infrastructure modules including Grey water, Electric Batteries and Restrooms include all the off-grid infrastructure components required to operate the capability with a zero Carbon and Zero Water foot print. Several infrastructure components, such as the waste water module and PV arrays on solar trackers are located outside of the enclosed space.

Color and art are fused into the design for Inspire Taos. The exterior walls of the ground level Shipping containers will be painted with murals by local artists. The upper level Living / Conference Modules will be painted with vibrant colors on the exterior and enlivened with Murals on the interior.

Key:

1. Entry
2. Gathering Space
3. Container Gardens
4. Kitchen
5. Pantry
6. Restroom
7. ADA Restroom
8. Electric Battery Storage & Controls
9. Laundry
10. Grey Water Treatment & Storage
11. Pop - up Restaurant
12. Pop - up Retail
13. Office
14. Fresh Water Tank
15. Living / Conference Module
16. Lounge



Second Level Plan



Ground Level Plan

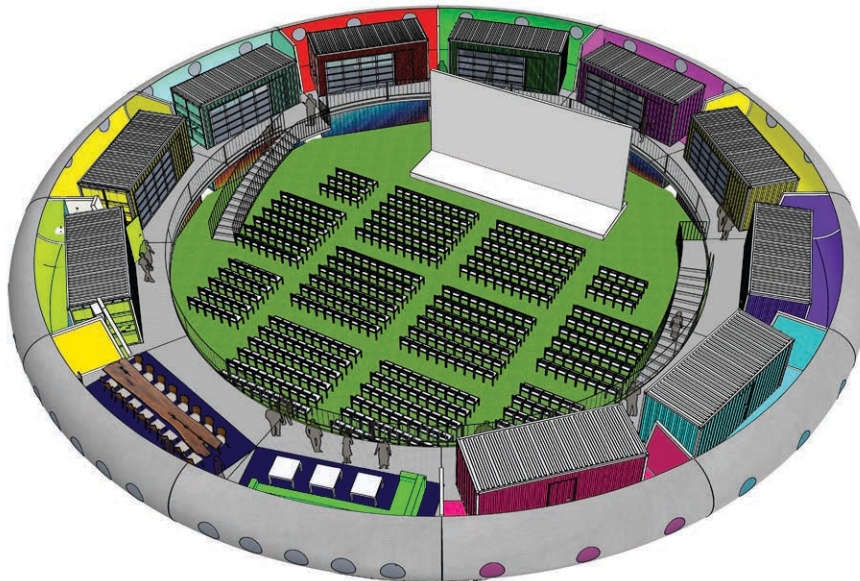
Gathering Space

The central gathering space provides a large flexible area for wide variety of activities including concerts, parties, meetings, presentations, gardening and working. At 5,000 SF, the capacity for the space is:

330 for banquet style table events
715 for seated presentation events
1,000 for standing room only Events



Gathering Space in everyday use



Gathering Space in Presentation / Performance configuration

Assembly

Inspires Taos is constructed from 12 standardized “wedges” which are in turn constructed from prefabricated and standardized “components”. The parts of this system will be bolted together to facilitate, assembly, disassembly and transportation.

Components

A. Steel Frame - Tube steel w/ bolted connections; connected to adjacent fems w/ tube steel rings.

B. Fabric Roof - PVC or similar architectural grade fabric.

C. Steel Walkway - Bolted to Shipping Containers & Steel Frames

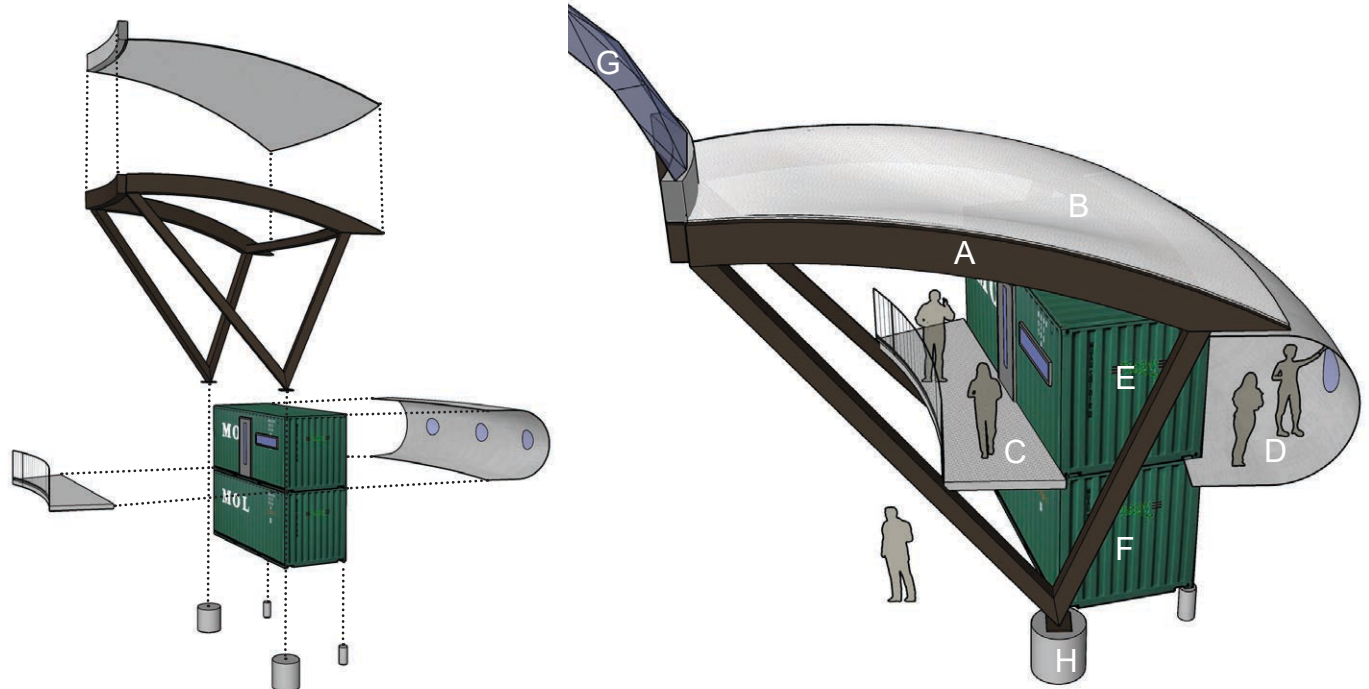
D. Collar Extension - Constructed from steel frame w/ fabric skin. Bolted to Shipping Container.

E. Living Module - 20'x8' modified Shipping Container.

F. Infrastructure Module - 20'x8' modified Shipping Container. For self contained off-grid infrastructure or other support uses.

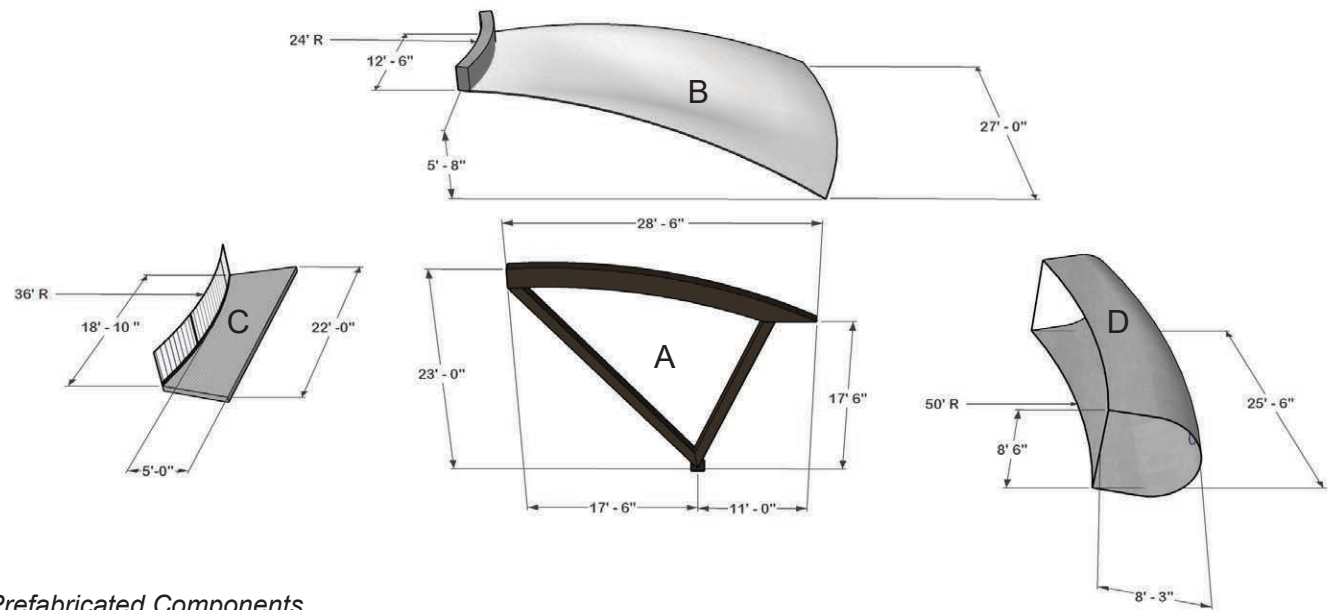
G. Geodesic Dome - Engineered, prefabricated green house dome structure

H. Foundation - Concrete Piers, the only permanent component.



Typical Wedge Construction

Typical Wedge - Assembled

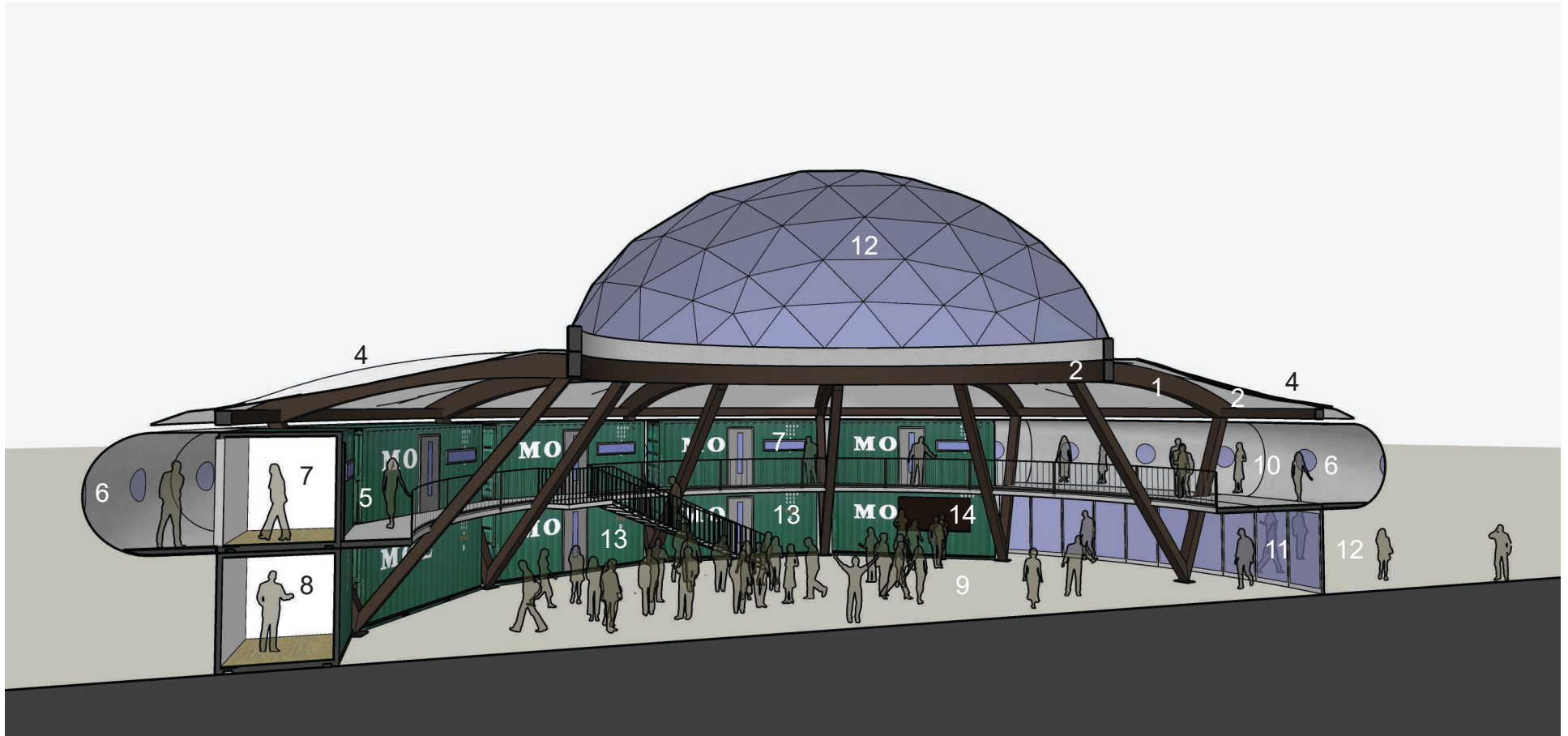


Prefabricated Components

Cross - Section

Key:

1. Steel Frame
2. Steel Ring
3. Geodesic Dome
4. Fabric Roof
5. Steel Walkway
6. Collar Extension
7. Living / Conference Module
8. Infrastructure Module
9. Gathering Space
10. Flex Space
11. Sliding Door System
12. Porch
13. Plumbing Module
14. Kitchen Support Module



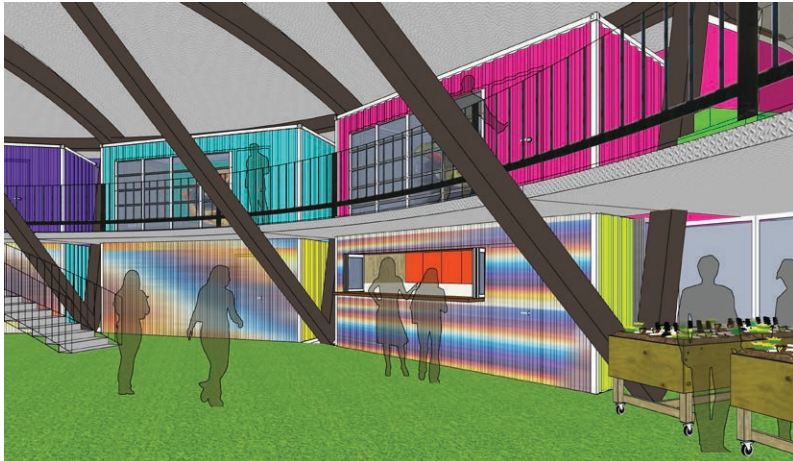
Interior



Gathering Space

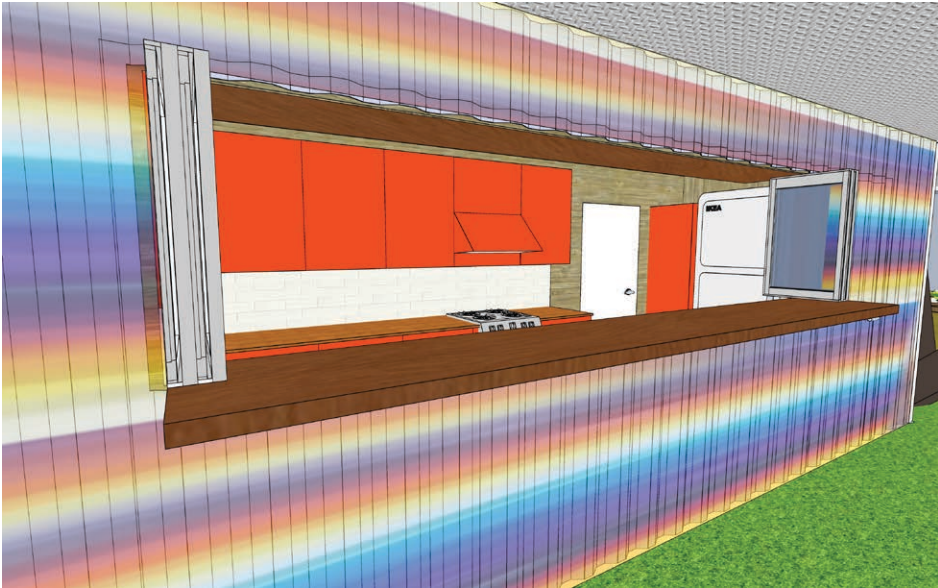


Lounge

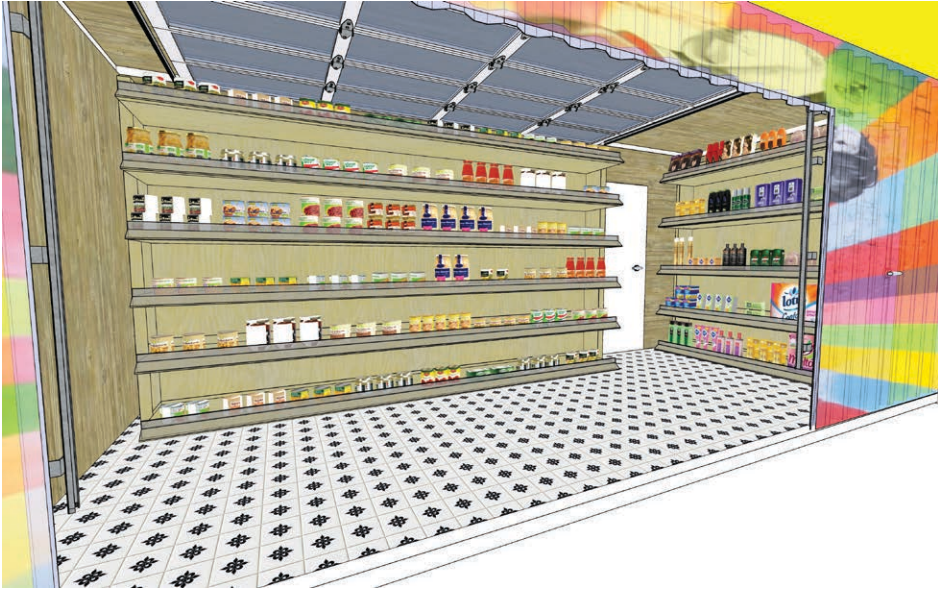


Kitchen & Living / Conference Modules

Support Modules



Kitchen Module

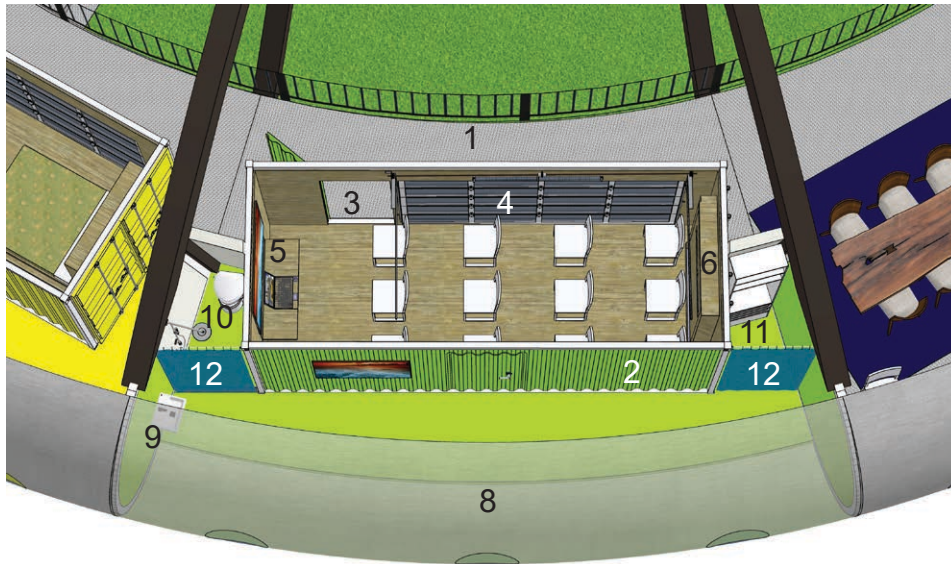


Pop-up Retail Space

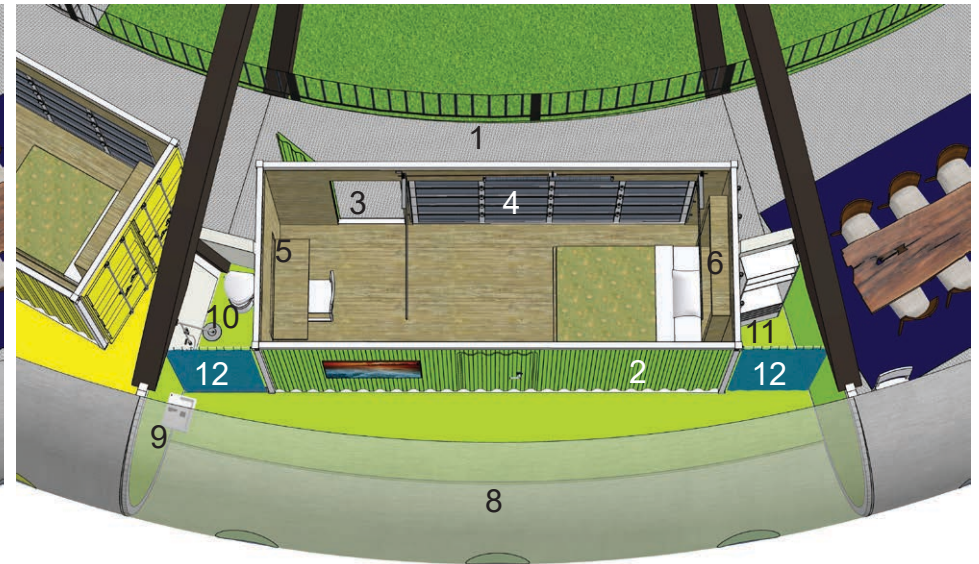


Office

Living / Conference Modules



Meeting configuration



Living configuration

The Living / Conference Modules are flexible spaces that can be configured for meeting / working spaces or Short term lodging. A flip-down desk and Murphy bed are included in each module. A glass roll-up garage door provides borrowed light and allows the module to directly open up to the central gathering space. Beyond the walls of the 20' shipping container is a collar extension that provides additional space to the Living / Conference Module. Included in the collar extension is a bathroom with a combined wet area for the toilet and shower. There is also a closet for personal storage.

Key:

1. Walkway
2. 20' Shipping Container
3. Entry Door
4. Glass Garage Door
5. Flip-down Desk
6. Murphy Bed - Closed
7. Murphy Bed - Open
8. Collar Extension
9. Sink
10. Wet area: Shower & Toilet
11. Closet
12. Curtain Divider

Living / Conference Modules

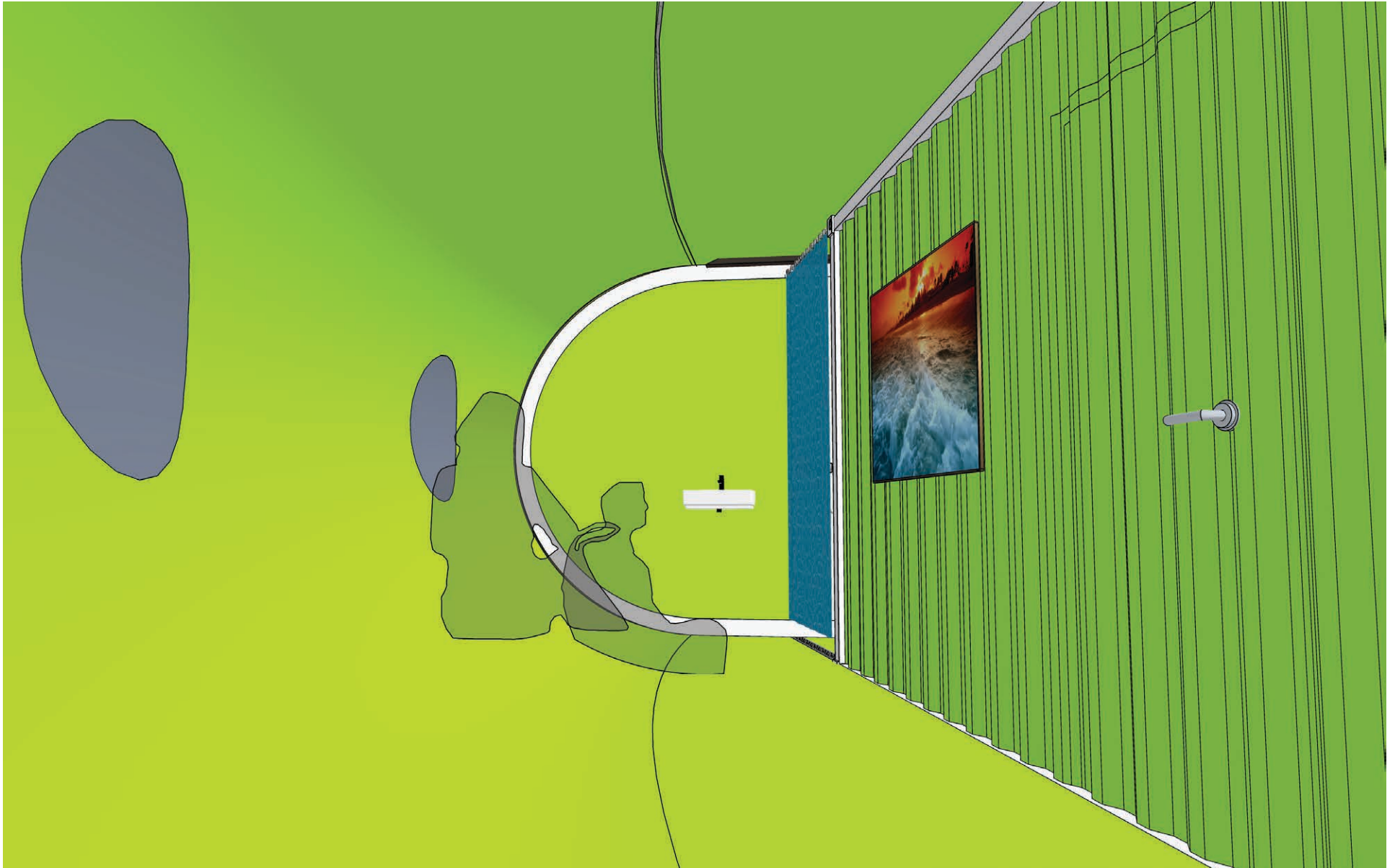
Meeting configuration



Living configuration

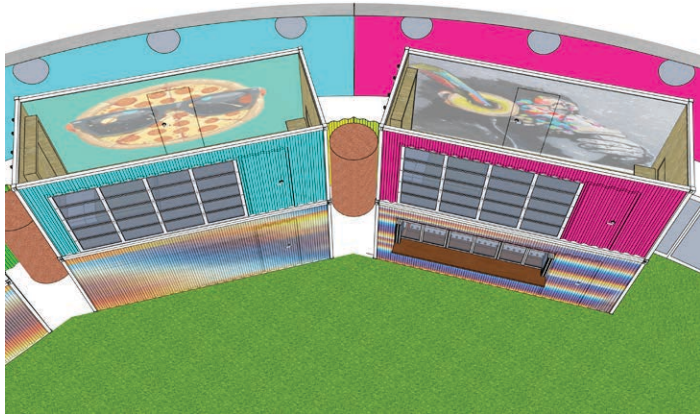
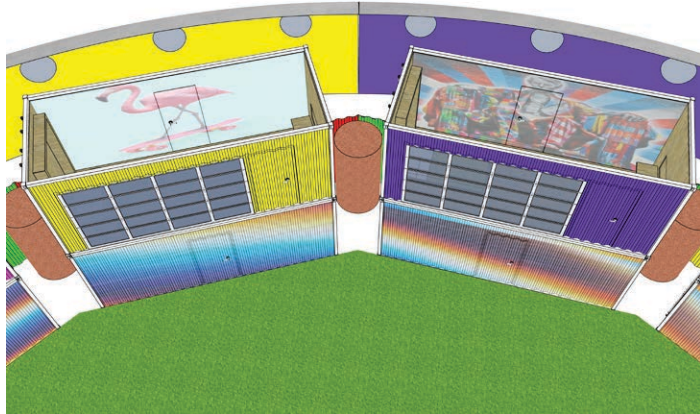
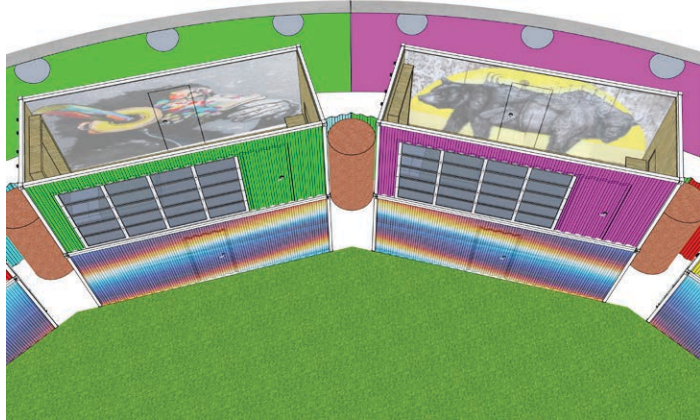
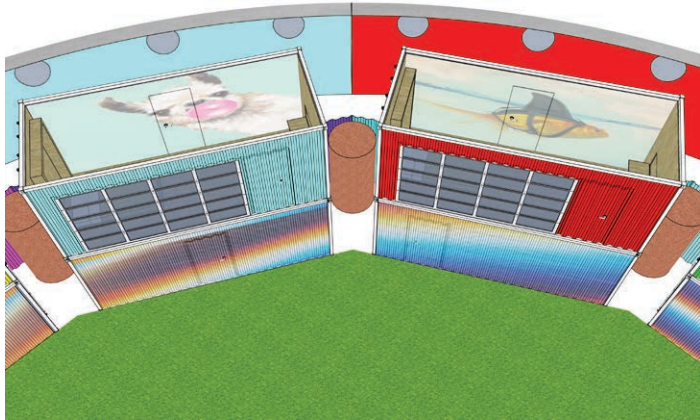
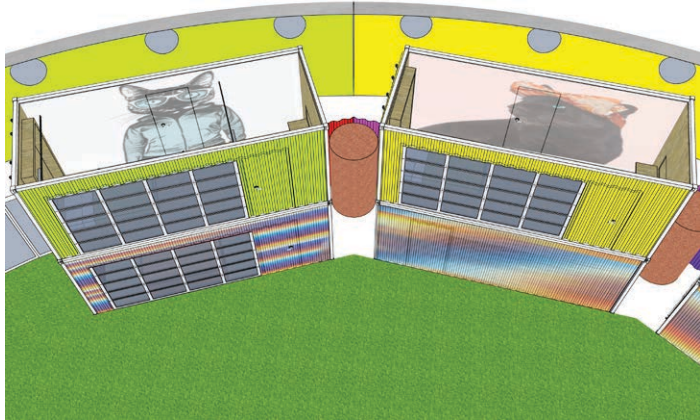


Collar Extension

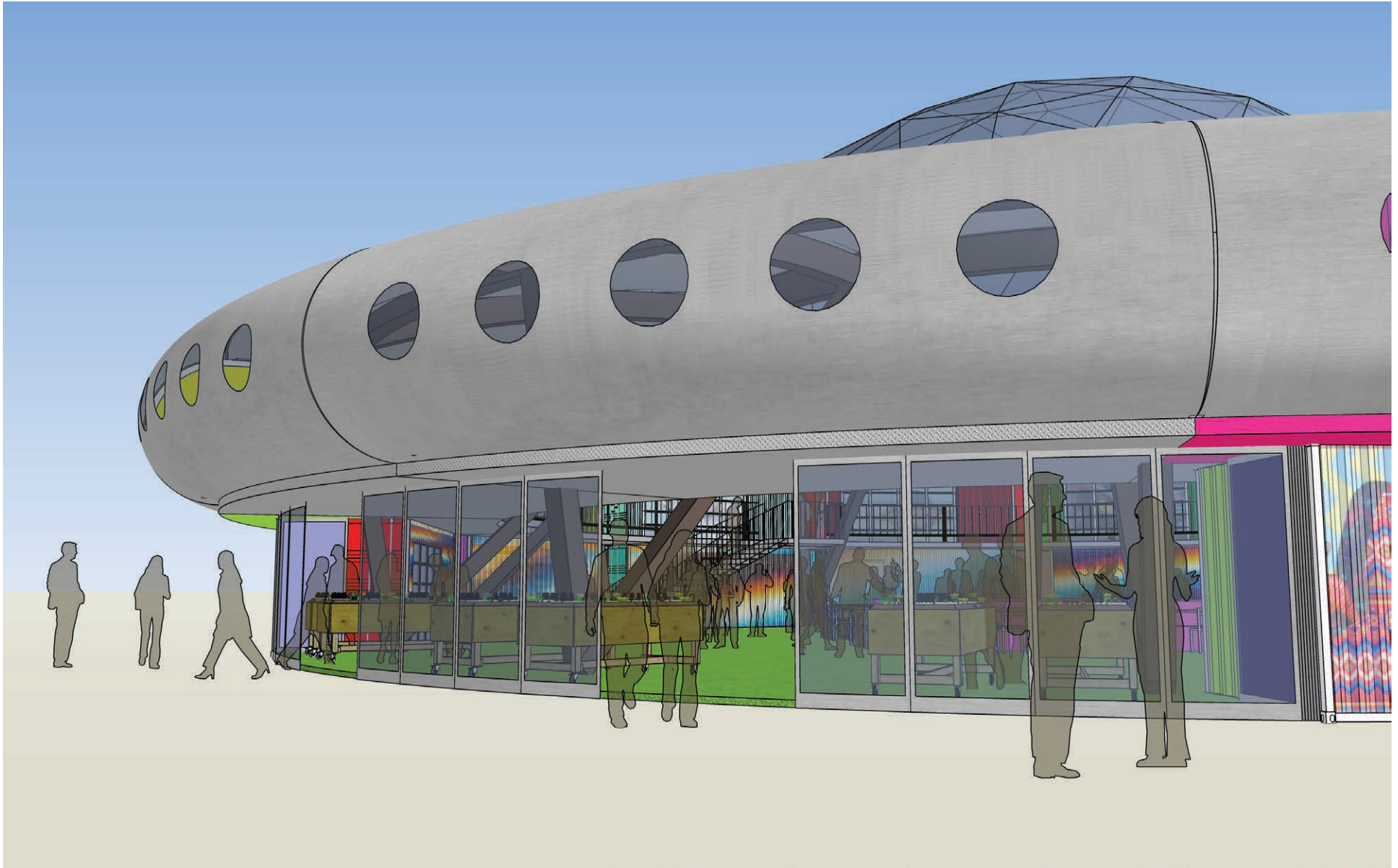


The collar extensions provide additional hang-out space for the Living / Conference Modules

Mural Art

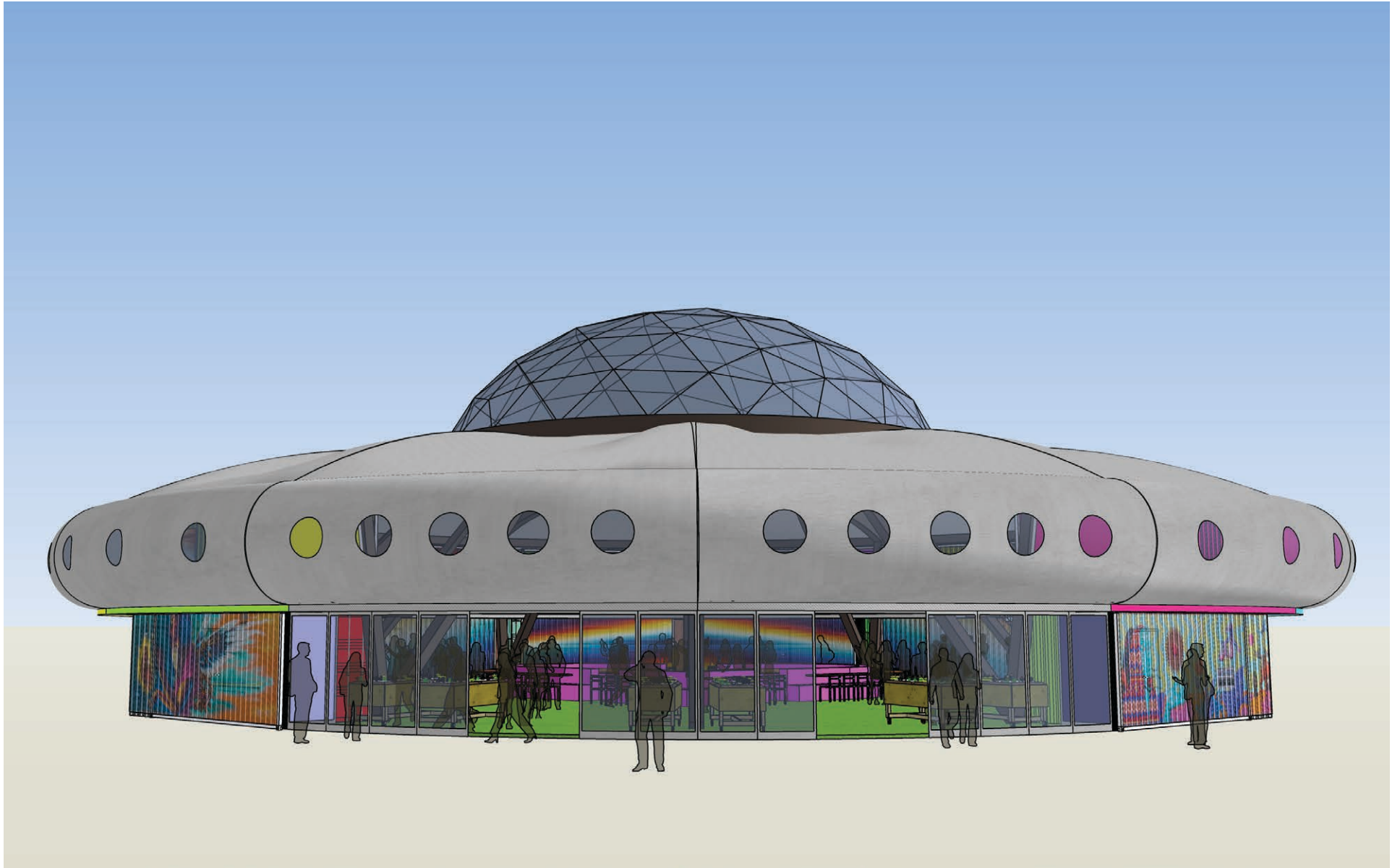


Entry Porch

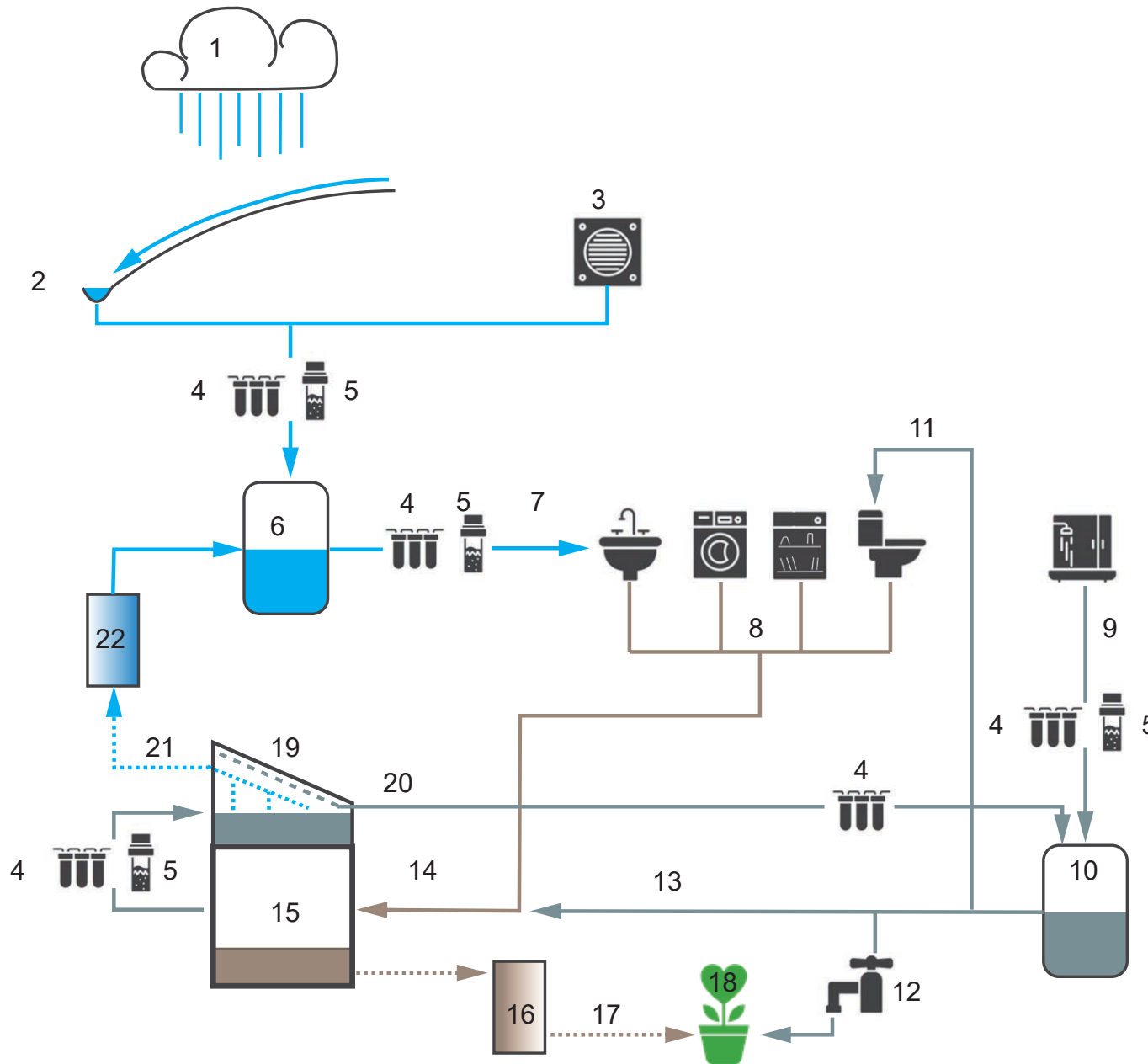


Visitors enter past vegetable container gardens through a porch with a movable glass panel wall system.

Exterior



Water System Diagram



Key:

1. Rain water
2. Rain water Catchment
3. Air-conditioning condensate
4. Carbon Filters
5. UV light Sanitation
6. Fresh Water Storage Tank
7. Fresh Water to Plumbing Fixtures
8. Black Water Producers (sink, Laundry, Dishwasher, Toilet)
9. Grey Water from Shower
10. Grey Water Holding Tank
11. Reuse of Gray water for toilet flushing
12. Sub-dural Irrigation of vegetable garden
13. GreyWater overflow to Wastewater Bio-reactor
14. Blackwater to Bio-Reactor
15. Bio-Reactor
16. Composting Unit (6-8 Weeks Processing)
17. Compost to Vegetable Garden
18. Vegetable Garden
19. Solar Still (Distillation)
20. Condensate to Gery Water Storage
21. Humid Air drawn off for AWG
22. WaterSeer (Atmospheric Water Generation)

Water System Components

Carbon Filters

Nano Fiber Carbon Filters co-developed by NASA are Poly wound pre-sediment filters with anti-microbial options, pleated carbon, and coconut carbon block.

Reduction levels:

- 99.9999% virus reduction
- 99.9998% bacterial reduction
- 99.99% cysts, guardia reduction
- Reduces, fluoride, chlorine, lead, heavy metals, pesticides, pharmaceuticals, DNA, RNA, arsenic, chromium, endotoxins, mercury, and much more
- Silver/Carbon infused, they are anti-microbial
- 5 micron pre-filter outer wrap for longer field life

Ultraviolet Light sanitation

Ultraviolet (UV) sanitizers utilize a cutting-edge, non-chemical process that uses germicidal UV light rays to sanitize water, air and surfaces that may be contaminated. Ultraviolet sanitizers emit a high intensity germicidal light ray that alters or disrupts the DNA or RNA of targeted organisms such as algae, bacteria, viruses, cysts and protozoa. The highly concentrated electromagnetic energy also destroys organic matter, eliminating the formation of dangerous chlorine by-products. SpectraLight is installed in-line just after filtration systems. SpectraLight bombards the passing water flow with a high intensity germicidal ultraviolet ray that destroys more than 60 waterborne pathogens, including algae, bacteria, cysts, and viruses. The UV sanitizing lamp is housed in an industrial graphite housing optimized for high flow rates. A highly specialized quartz glass sleeve protects the lamp from passing water while transmitting 99.9% of the UV light.

Bio-Reactor

Membrane Bio-Reactor (MBR) processes produce effluent of high quality enough to be discharged to reclaimed for irrigation and other non-potable uses. Membrane filtration is combined with biological action to remove bacteria, suspended solids and other chemicals from wastewater. The system converts wastewater into an effluent which can be returned to the water cycle in an environmentally-friendly manner or directly reused for non-potable uses.

Composting Unit

Composting sewage waste sludge results in the production of a humus-like, sanitized organic soil improvement. Composting of wastewater residual sludge is a bio-thermal aerobic process that decomposes the organic portion of the residuals. The composting process reduces the organic material in the residual by approximately 25 percent. During composting the heat generated by the decomposition of the organic portion of the residuals reduces the moisture content of the residual, stabilizes it and renders the residual harmless by transforming it into a usable biosolid.

Solar Still / Distillation

Solar distillation uses the heat of the sun directly in a simple piece of equipment to purify water. The equipment, commonly called a solar still, consists primarily of a shallow basin with a transparent glass cover. The sun heats the water in the basin, causing evaporation. Moisture rises, condenses on the cover and runs down into a collection trough, leaving behind the salts, minerals, and most other impurities, including germs. Additionally the moist air produced from evaporation can be transferred to an atmospheric water generation device (WaterSeer) where the moist air is utilized to condense water vapor into pure drinking water.

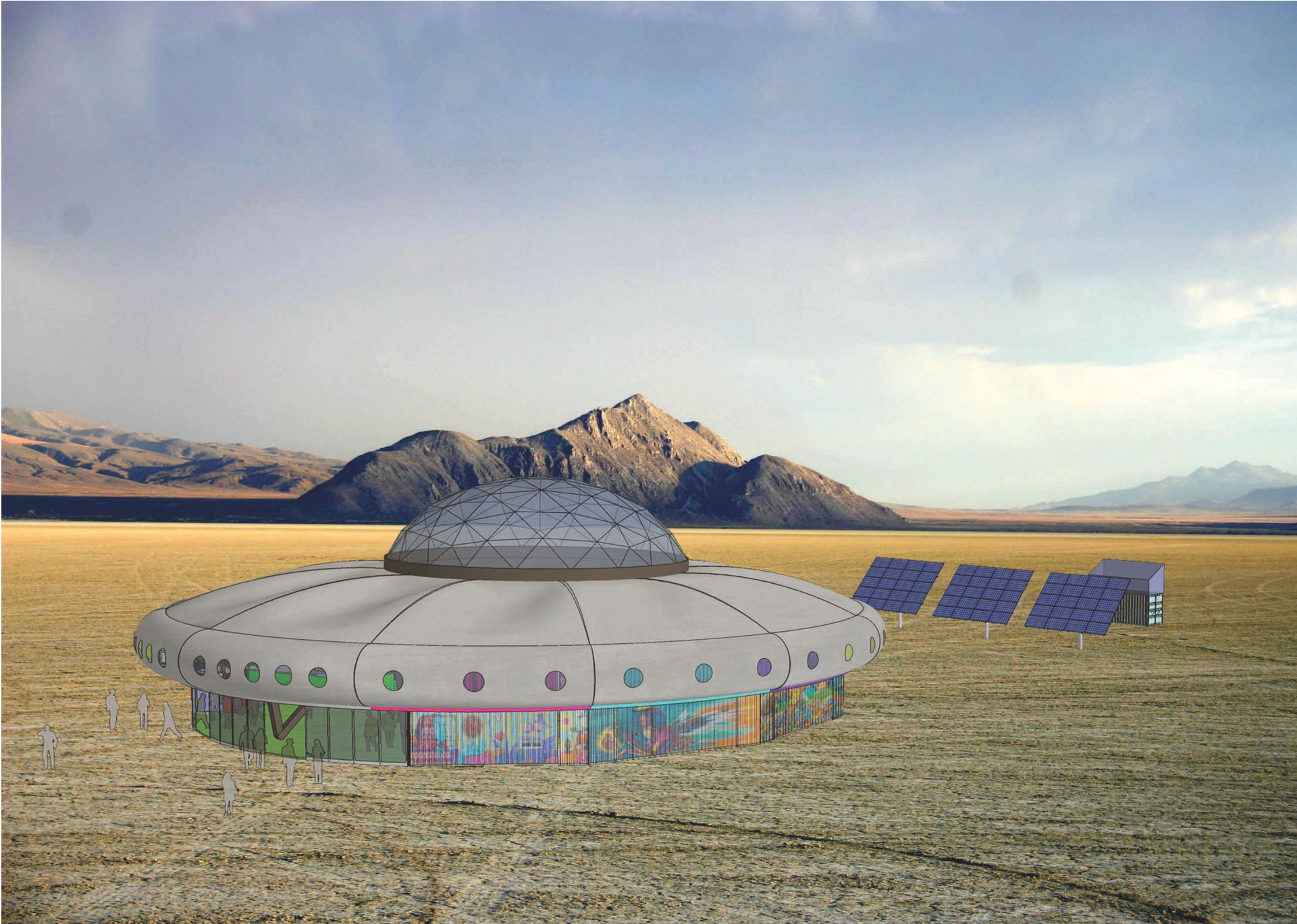
Atmospheric Water Generation

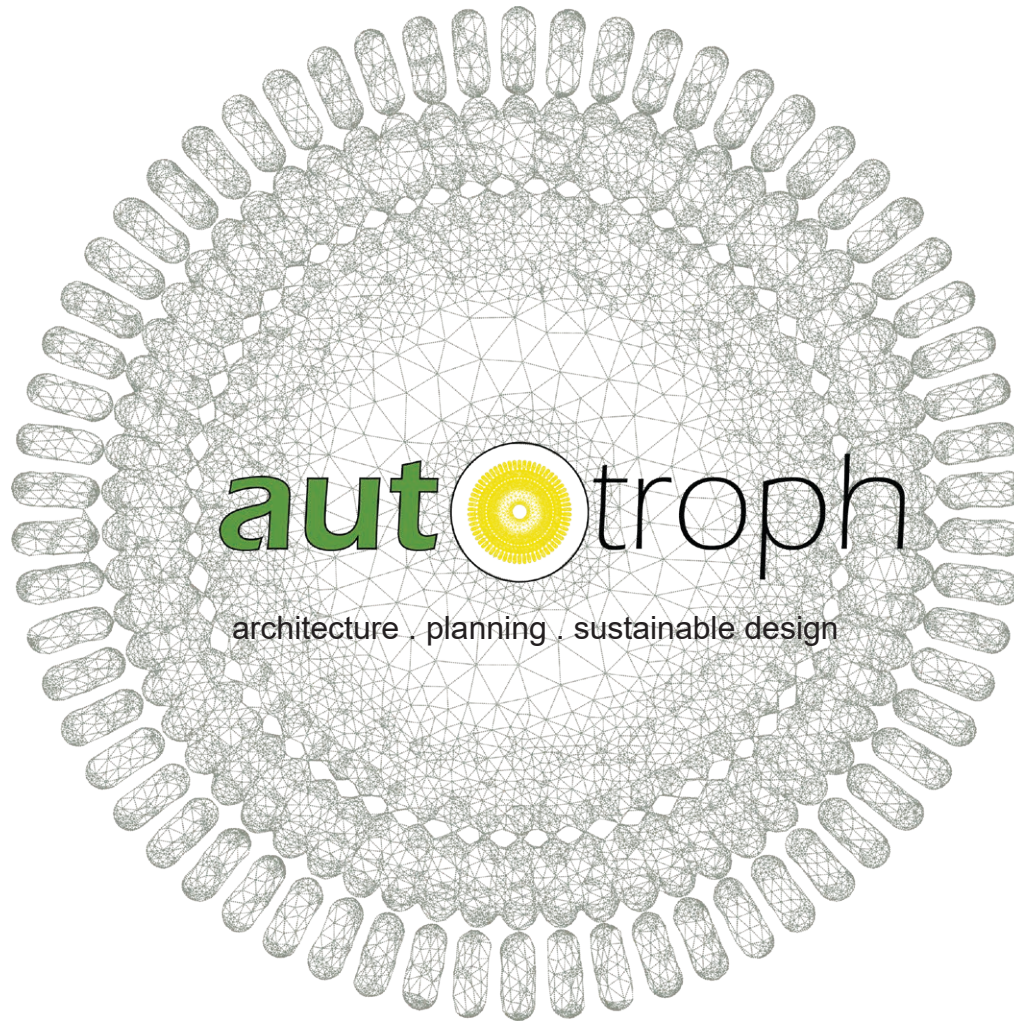
WaterSeer™ is a green, low maintenance, mobile water atmospheric water generation solution for any individual or community, that utilizes the endless supply of water in the air we breathe extracted by a process of condensation producing pure water for drinking, agriculture and nature. WaterSeer utilizes a hydrostatic controller which reads the ambient air temperature, moisture content, air speed and anticipates a dew point to economically condense the water found in our atmosphere. In moderate environments, a single WaterSeer Sonoma will generate about five gallons per day, depending on season and location. It will generate over 10 gallons per day in a hot, high humidity environment, such as a tropical or coastal region, or in a green house or hydroponic grow house. The WaterSeer uses approximately 300 watt hours in continuous mode. Additionally the WaterSeer has a sterilizing UV light which bathes the condensation chamber with sterilizing ultraviolet light killing algae, bacteria, viruses, cysts and protozoans and any organic matter.

Grey Water Treatment & recycling

Grey water from showers that do not contain heavy chemicals, human waste, food particles, etc can be filtered, sanitized and reused for toilet flushing, plant irrigation. Additional treatment, filtration, sanitization, and distillation must be performed in order to consider this water use for human consumption.

Exterior





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