A Pinch of Earth.

A pinch of earth is an outpost building. Designed to look like a giant hand has pinched a section of the land, lifted and twisted it up into a shelter and expedition base. Like the old mountain shelter for climbers and explorers. Its sculptural cosy form set in perfect balance with its surroundings will inspire creativity. The feeling of being surrounded by and immersed in the natural environment. After a long hike out into the wilder parts of the the Ranch it will be a very welcoming place to arrive and become the base of operations for any projects.

A pinch of earth is designed to be self sufficient. Being able to be built in the more remote areas of Fly Ranch. The building is set on a special magnetic track foundation that allows the whole structure to rotate. The structure will have systems to collect and store water, generate electricity deal with waste. The space within the structure will be decided up into a large one lounge kitchen with large glass windows funnelling the natural world into the space whist maintaining a feeling of safe protection. There is a separate bathroom and two further rooms for sleeping. Part of the main room will be a data hub for each expedition to store any information and access information from all the previous expeditions. Creating a sharing of knowledge and ideas to further spark the imagination and possibilities of each expedition.

Magnetic rotation system

The building sits on a framework underneath which sits a network of electromagnets which are powered by energy harvested from the solar panels on the roof. Inspired by the Maglev Train, the force of the magnets creates electromagnetic propulsion, and just enough levitation to enable the rotation of the platform, initiated and aided by people. The human participation is fundamental and encourages the user to engage with and appreciate the natural rhythms of their surroundings. Aided by low resistance tracks, the inhabitants can easily (and quietly) adjust the direction the building faces by “walking” it around from the outside. And they must do so at key moments throughout daylight hours to maximise the roof’s exposure to the sun in order to generate electricity and to allow the living roof to photosynthesise.

A further automatic system can be added with light sensors and motors so the building can slowly track the sun throughout the day.

Solar roof

Around a quarter of the roof will be covered with electricity generating solar panels made of Polycrystalline Silicon PV. The panels will sit on the highest part of the roof ensuring minimum damage from rain water, run off and debris. The electricity will be used to power the magnetic rotation system,  internal lighting, data hub, kitchen and any other small appliances. Any supplementary power generated will be stored in batteries for lower light days. By using Polycrystalline Silicon PV, the panels can be coloured to blend in with the surroundings and the remainder of the roof, causing as little disruption to the visual environment as possible.

Living roof

Around three quarters of the roof constitute a “living” surface. By planting the roof with flora from the surrounding area, the building creates a continuation or replacement of the land it has covered and creates habitat for insects and birds. Alternatively, the roof could be planted with edibles to be consumed by visiting groups or researchers staying at the building. As well as improving air quality, living roofs have the added benefit of noise insulation, minimising any sound pollution caused by the inhabitants.

Water will be collected from precipitation and filtered through the plant composite roof panels. This clean water is then stored in a tank. Further collection can be taken from the atmosphere through condensation, however this will rely on on temperature differences between atmosphere and surface.

Compost toilet

Modern toilets are major culprits of water waste, so the toilet shown here would be a compost version, using little or no water. The compost collected would be stored and turned into fertiliser to be used on the surrounding soil. The shower would be supplied with water harvested using only passive methods and waste water would be treated onsite meaning it could be recycled. The overall aim being to achieve a total of net 0 water usage and no further adverse impact to local water quality.

Data hub

Within the building would be an interactive “data hub”, a computer allowing passers-through to document their experience, ideas, thoughts and emotions elicited by the unique surroundings. What this results in is a rolling documentation of anecdotes; creating a collective creativity and honest portrayal of the immediate impact that Fly Ranch has on its visitors.

Users can access the entries of those before them, adding too and commenting on entries, relating to other people in their shared experience of something so special.

By capturing feedback and ideas from people *in the moment*, we can access people’s state of mind at the right time, rather than when they get back to civilisation. Future projects and developments could be informed by these unique insights.

The data hub also provides a straightforward bank of research for visiting scientists, a place for researchers to input data and findings after a day in the field without having to carry around their own laptops, hard drives and battery packs.

With these systems in-place the structure will be ready to be used when people arrive.

Activities it will support:

* Education space.
* Science research base.
* Remote shelter hub.

System inputs and maintenance.

* Arrival check lists.
* Technologies repair and service.
* Waste removal.
* Cleaning.

Primary materials used:

* Galvanised steel magnetic tracks runners and subframe.
* Timber frame
* Plant composite roof panels
* Solar panels
* Glass
* Natural wool insulated timber frame and lime render walls.

Conceptual cost estimate

Magnetic subframe = $10,000

Sensors and motor = $3,000

Timber floor = $2,000

Timber framing = $6,000

Glassing = $8,000

Walls = £2,000

Furniture including toilets = $10,000

Solar and batteries = $10,000

If successful we would aim to test the rotation system and build the basic structure. Including the roof panels.