

CONCEPT

Intro

Triangle Island represents everything that is wild and untamed. A juxtaposition of untouched beauty, almost inhabitable weather and fragile ecosystem. Over the history of Triangle Island, no human has stayed for long. The original lighthouse was deserted due to the often hurricane level winds. Over the past century the incredible ecological value of the bird population on this island has brought scientists back to the island in limited stints. What humans need for this island is shelter, in the most pure and traditional form.

Building is aerodynamic to prevailing wind directions

Our building was inspired by survival makeshift tarp structures that use a strong waterproof membrane angled towards the current wind direction to redirect the wind up over space up the person inside creating highly functional shelter with minimal materials. Our exterior building form is created using protruding weatherproof PV Panels to recreate this idea. Directly under this PV canopy we have covered outdoor access to the Outhouse and Storage area. The form of the PV cladding was done by using an EPW weather file, to extract the 3 most prominent wind directions on our site. The aerodynamic building form cuts below these specific angled wind flows resulting in the wind flow naturally redirecting above the 1:3-degree angle.

Protected outdoor space as product of PV cladding

As a result of pushing the prevailing wind flow up over the building using the geometry of our protruding cladding, we create a low wind area behind the shelter. Through this concept we extend the usable and comfortable area meters beyond the floorplan of the building. This low wind outdoor area can be used as a comfortable hangout area between field work as well as a space to build, hang clothes and other outdoor activities.

PV Panels designed from sun path

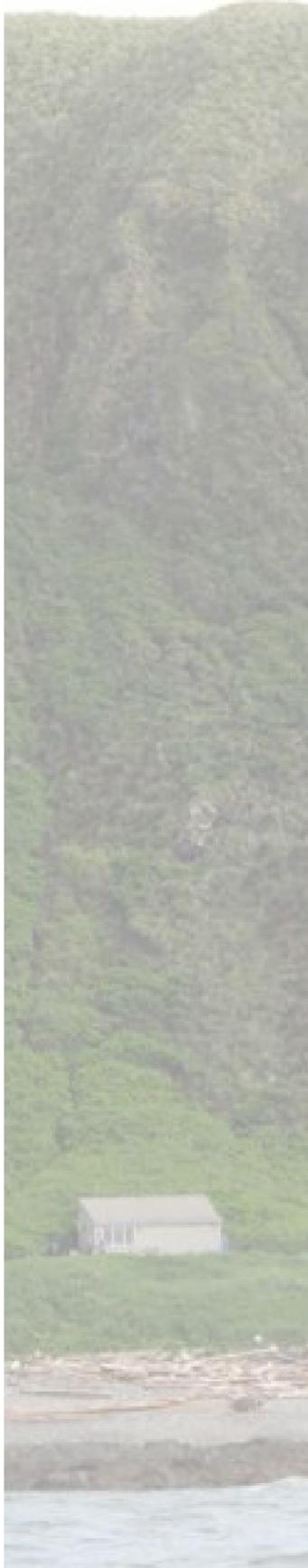
We wanted to ensure the building could generate all of its own energy. Our BIPV panels are angled to correspond to the sun path maximizing the amount of solar radiation on the panels.

Comfortable & efficient indoor spaces

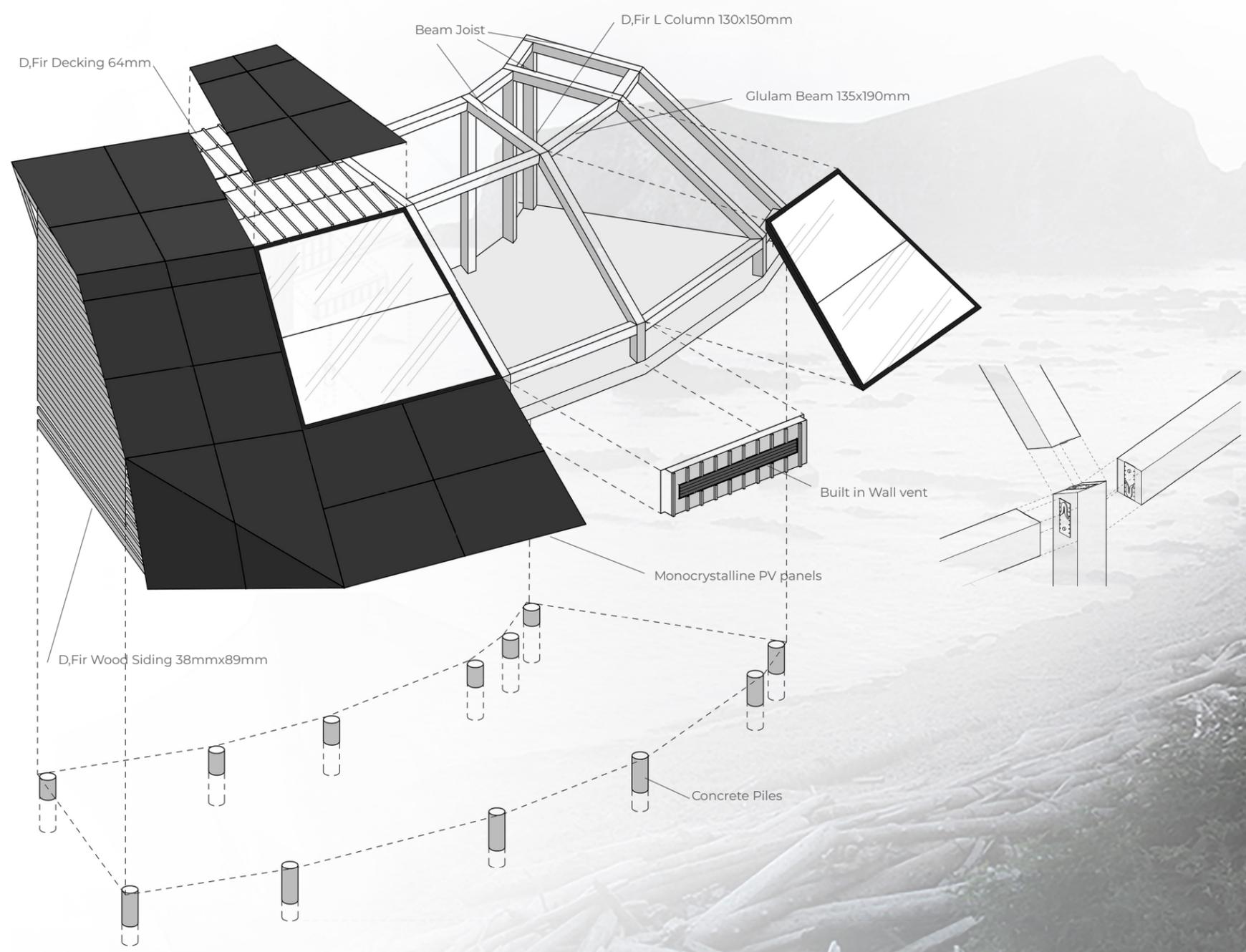
Much like makeshift survival structures, the building has to be simple, efficient and very fast to construct. The building's assembly and innovative structural connections can all be preassembled in a shop, allowing construction time to be minimal. Two large windows placed vertically directly above the sightline of the salmonberry bushes allow users to observe the spectacular views and birds from the comfort of the shelter. We used a wood panel interior to bring warm and comfortable material sensibility to the space.

STRUCTURE

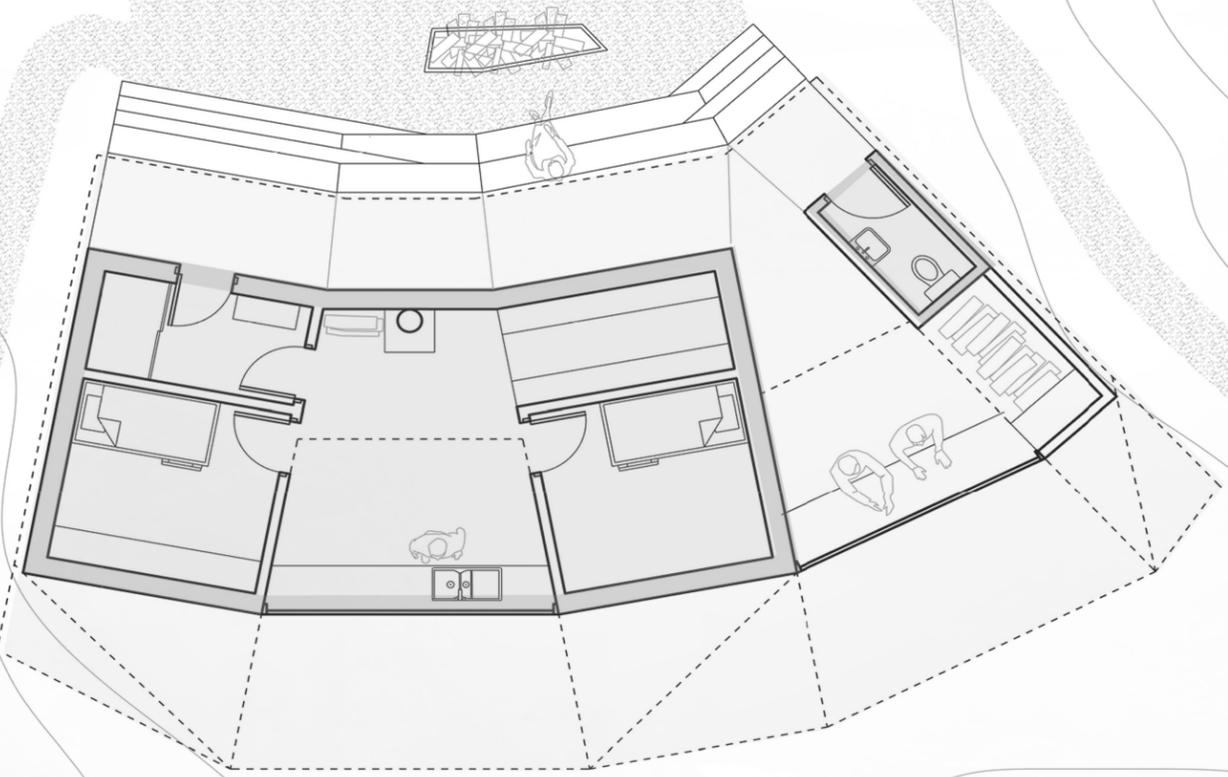
The structural design of the Triangle Island Research Shelter consists of glued laminated timber elements of Douglas Fir Larch. The exterior face of the building is comprised of PV cladding which is not only aesthetic but also helps in reducing the energy consumption. Commercial grade decking of sawn timber is adopted for the roof. Sloped roof is provided in order to avoid snow accumulation. The beams and columns are made up of D-Fir-L of glulam and are combined by using concealed connections which are angled at 45 degrees. The use of the concealed connectors with self tapping screws has a higher profitability in fixing on site as they can be installed conveniently. They also give a very appealing look to the structure as the connections are invisible on the outside unlike other conventional connections. Due to the high intensity of winds in the location, the structure is equipped with a slope of 1:3 in the direction of the wind so that it can make the structure laterally efficient. The interior of the structure is made of glulam as well for uniformity. The floors are made of engineered wood and laid down as layers. Airlock is provided for warm environment inside the structure and a fireplace in front of the house can be installed, as it is a wind-covered area. The choice of lightweight wood material ensures that the structure can be easily lifted by helicopter.



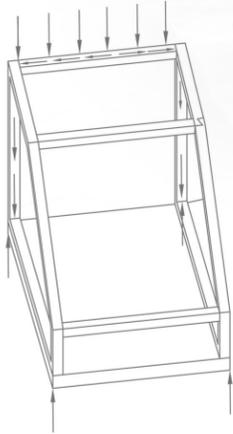
TRIANGLE ISLAND RESEARCH SHELTER



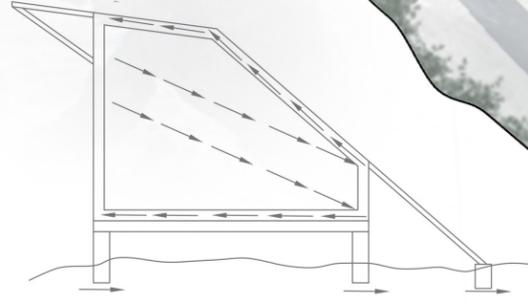
TRIANGLE ISLAND WIND ROSE



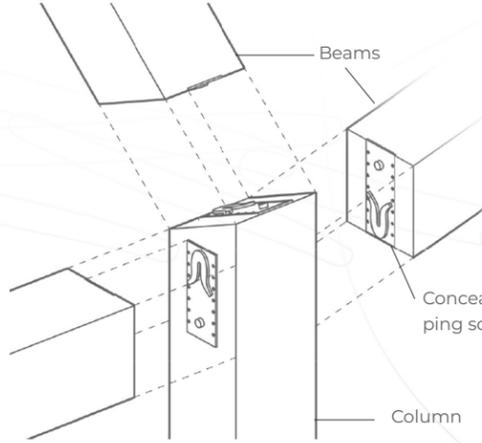
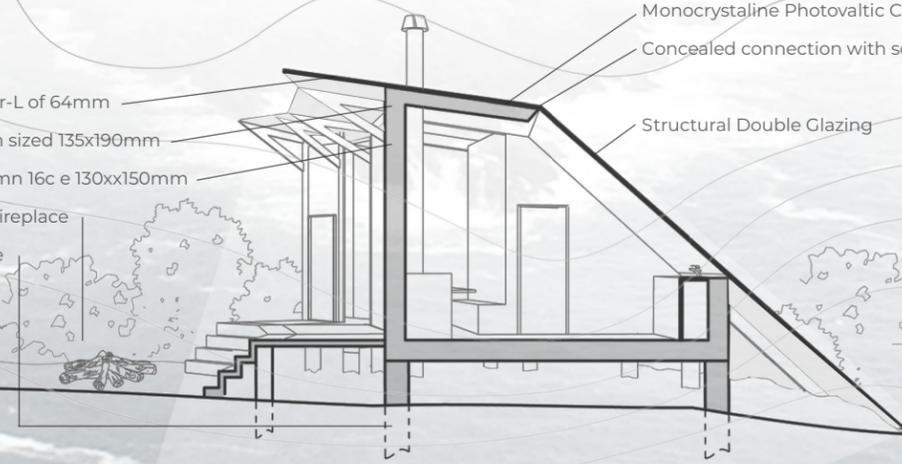
GRAVITY LOADS



LATERAL LOADS



- Monocrystalline Photovoltaic Cladding
- Concealed connection with self tapping screws 15 no.s
- Structural Double Glazing
- Decking D-fir-L of 64mm
- D-Fir-L beam sized 135x190mm
- D-Fir-L Column 16c e 130xx150mm
- Sitout with Fireplace
- Concrete Pile



Concealed Connection with self tapping screws at 45 degree of 15 no.s

