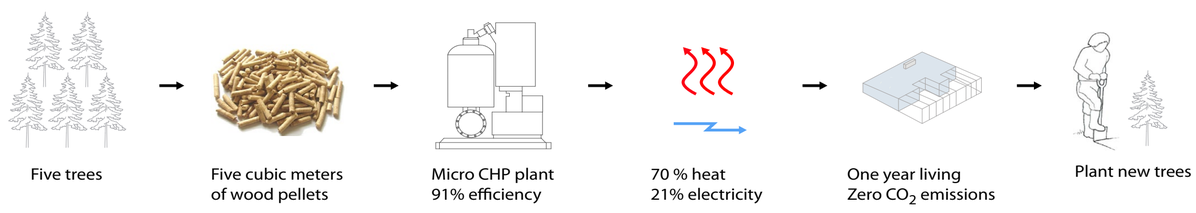
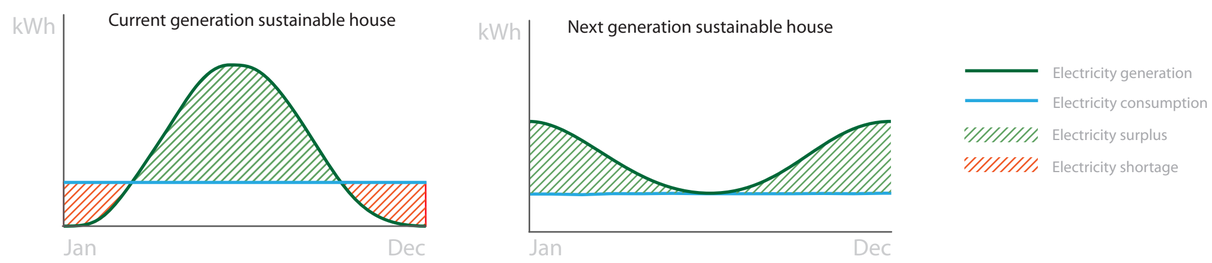
THE FIVE TREE HOUSE

FIVE TREES // ONE YEAR // ONE HOUSE // ZERO EMISSIONS

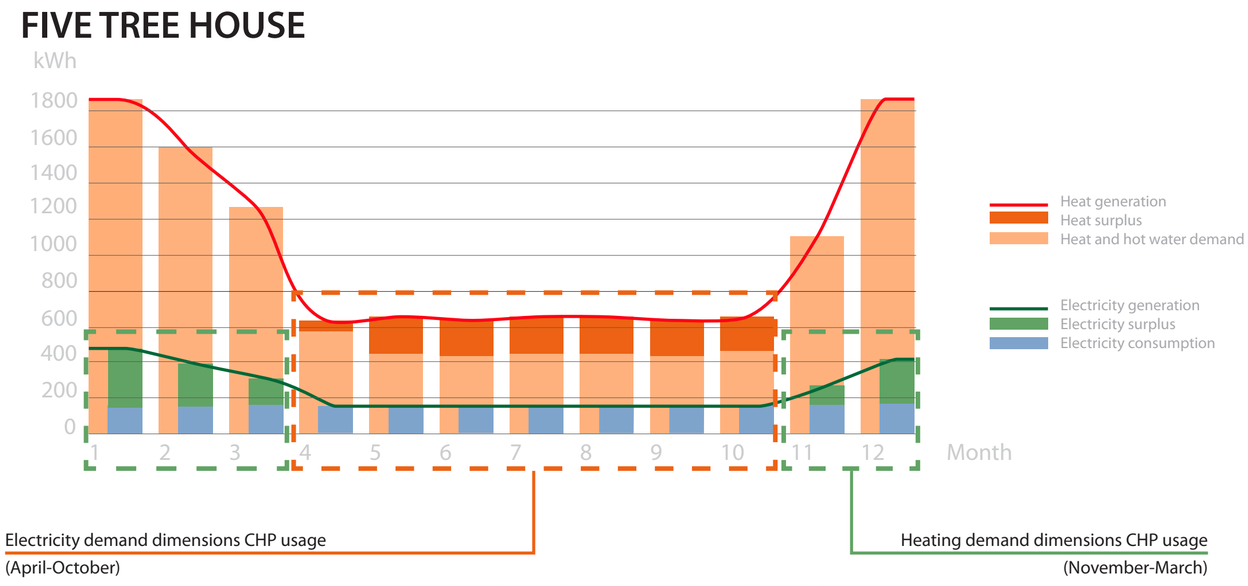


NORTHERN CLIMATE SUSTAINABLE HOUSING SOLUTIONS

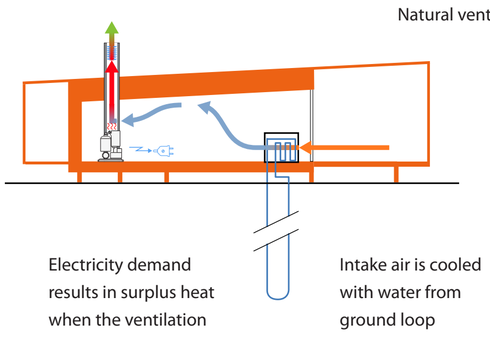
The current generation approach to sustainable housing is to focus on highly optimized building envelope and photovoltaics to generate household energy. In a northern climate this has the drawback of being ineffective during the winter months when the grid is most strained, while during the summer months it produces a surplus of electricity that the grid cannot effectively use. This approach often overlooks the accompanying technical complexity and high embodied energy costs of the technology.



FIVE TREE HOUSE



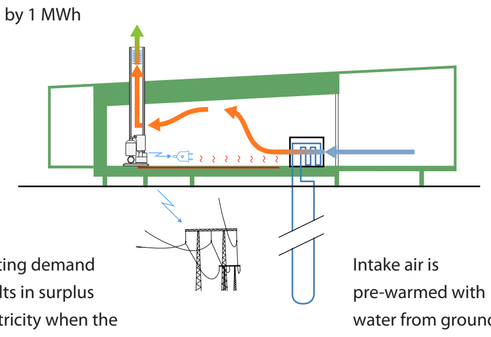
Natural ventilation reduces electricity demand by 1 MWh



Electricity demand results in surplus heat when the ventilation boost is needed

Intake air is cooled with water from ground loop

Use of electrostatic particle separation reduces particulate emissions up to 90%

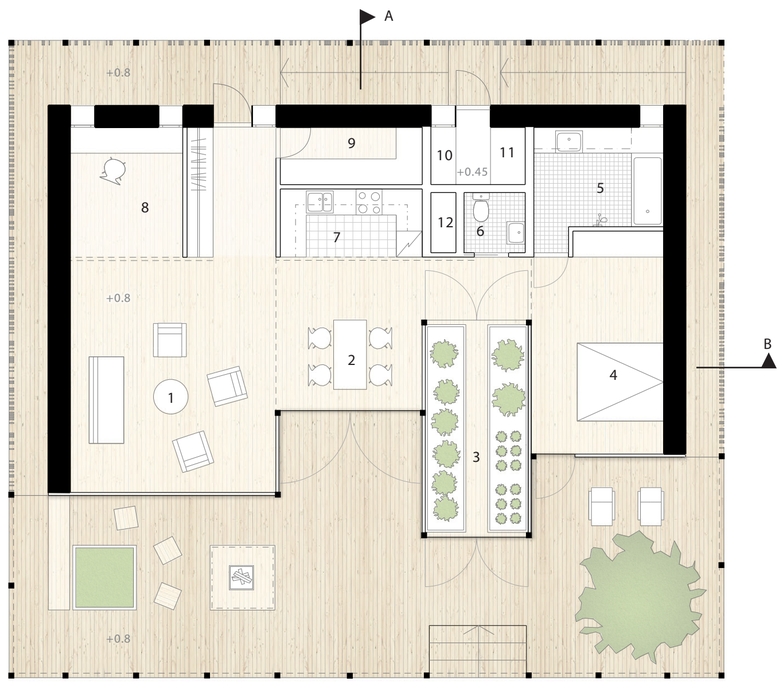


Heating demand results in surplus electricity when the grid needs it the most

Intake air is pre-warmed with water from ground loop

OFF-GRID WITH SIMPLICITY

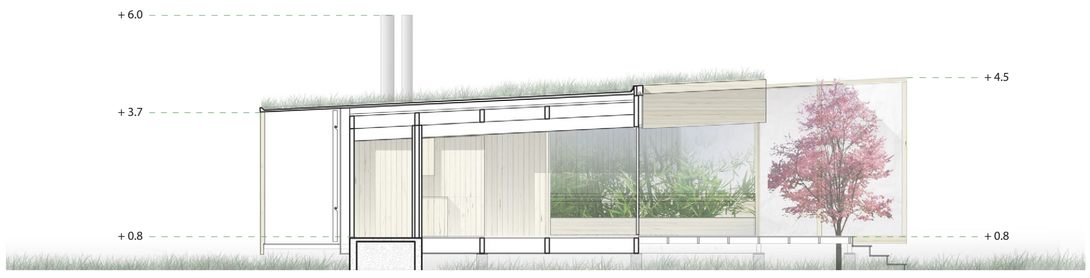
The next generation approach takes a more nuanced view towards the challenge of sustainable living. By understanding the limitations and advantages of available technology, the Five Tree House enables a new sustainable lifestyle rather than passively supporting an outdated one. Utilizing a micro CHP (Combined Heat and Power) system powered by wooden pellets, the house achieves its heating and electricity needs annually through the consumption of five trees. The five trees provide a renewable and carbon neutral energy resource that is no longer an abstract source of energy, but one that the inhabitants of the home can actively support through the annual planting of trees.



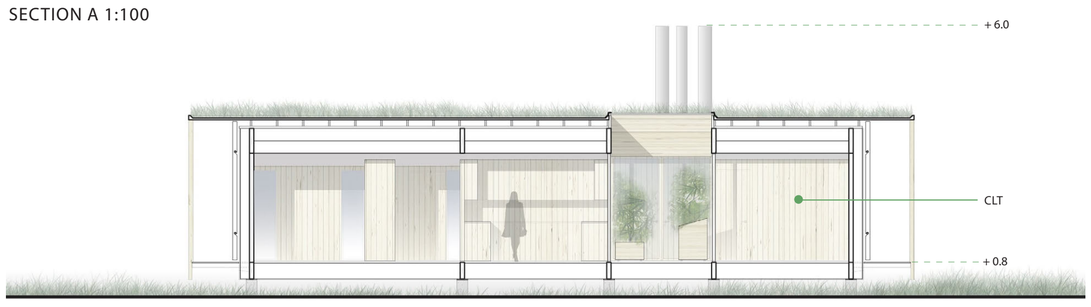
PLAN 1:100

1. LIVING AREA
2. DINING AREA
3. GREENHOUSE
4. BEDROOM
5. BATHING
6. WC
7. KITCHEN
8. WORK / GUEST ROOM
9. STORAGE
10. PELLET STORAGE
11. MICRO CHP
12. HEAT STORAGE

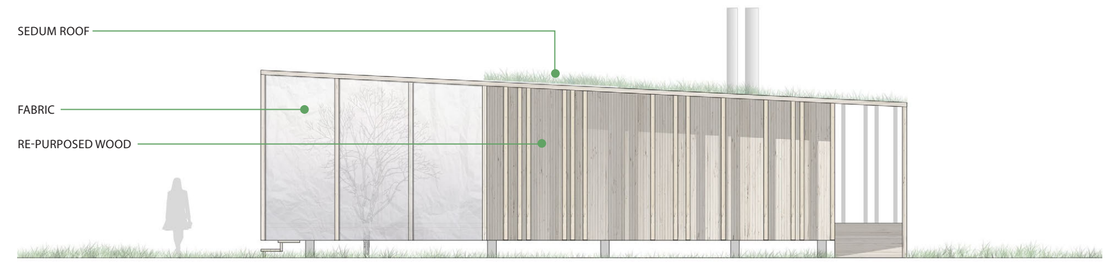
As the community grows, the planted trees enhance the community in the form of a recreational forest. The trees grow to replace the existing technical infrastructure that is complex and vulnerable to outages. The forest is a more resilient source of energy and promotes a healthy relationship with nature.



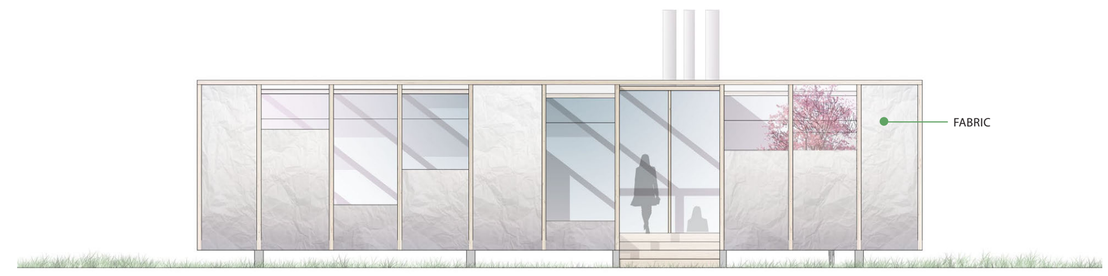
SECTION A 1:100



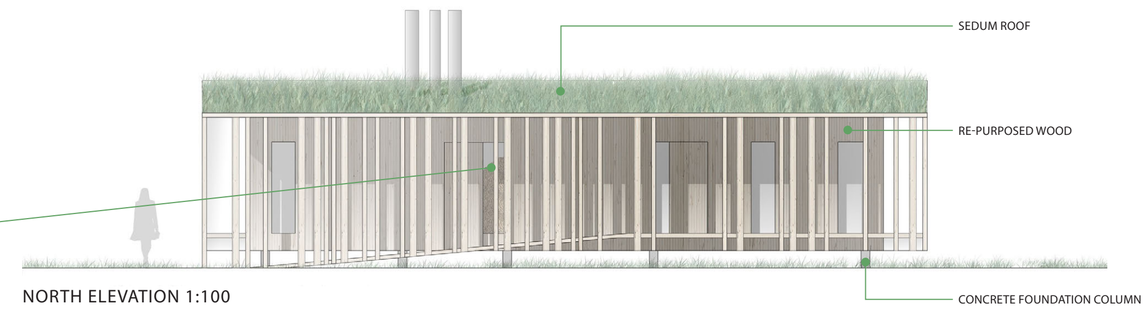
SECTION B 1:100



EAST ELEVATION 1:100

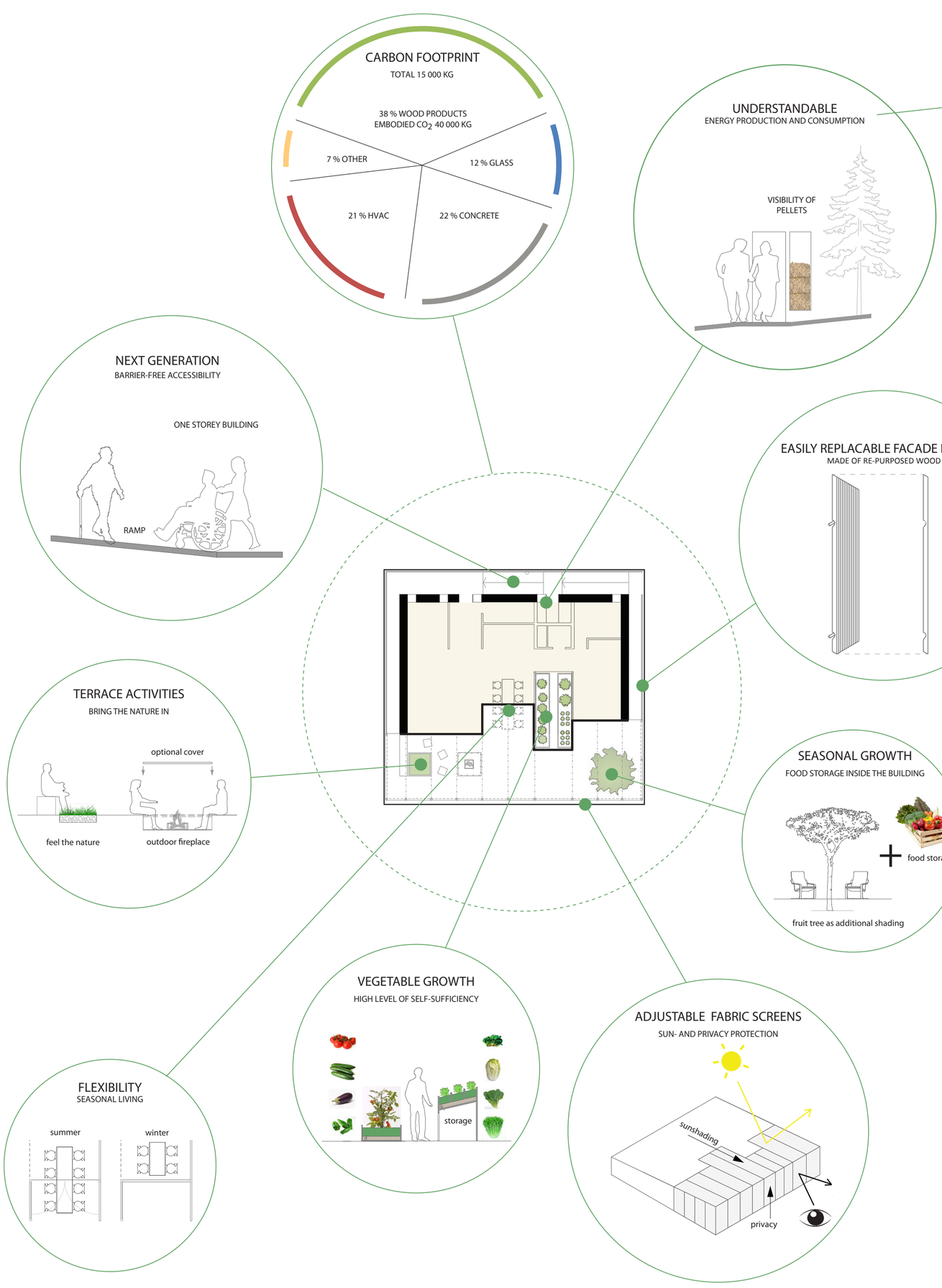


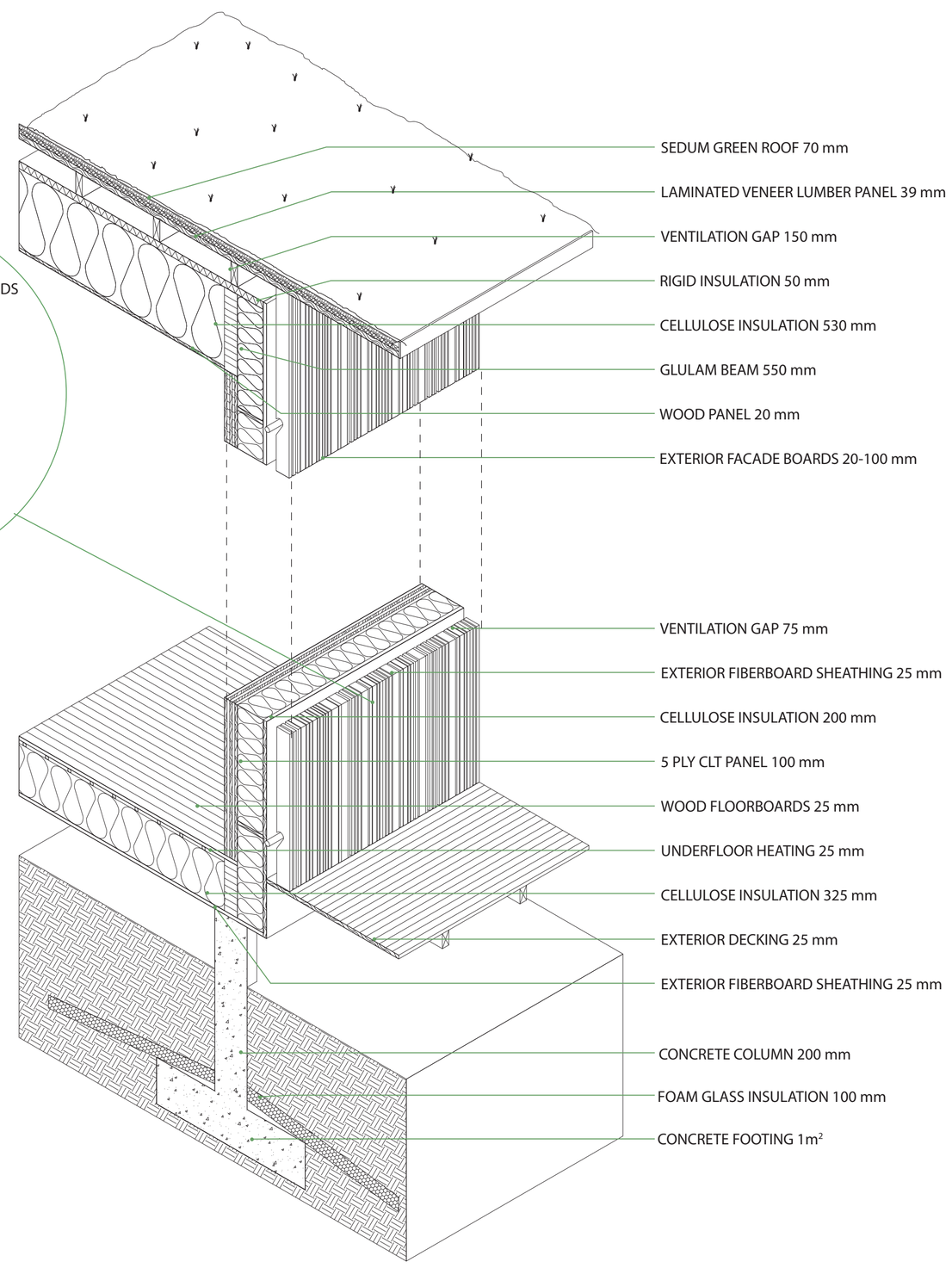
SOUTH ELEVATION 1:100



NORTH ELEVATION 1:100

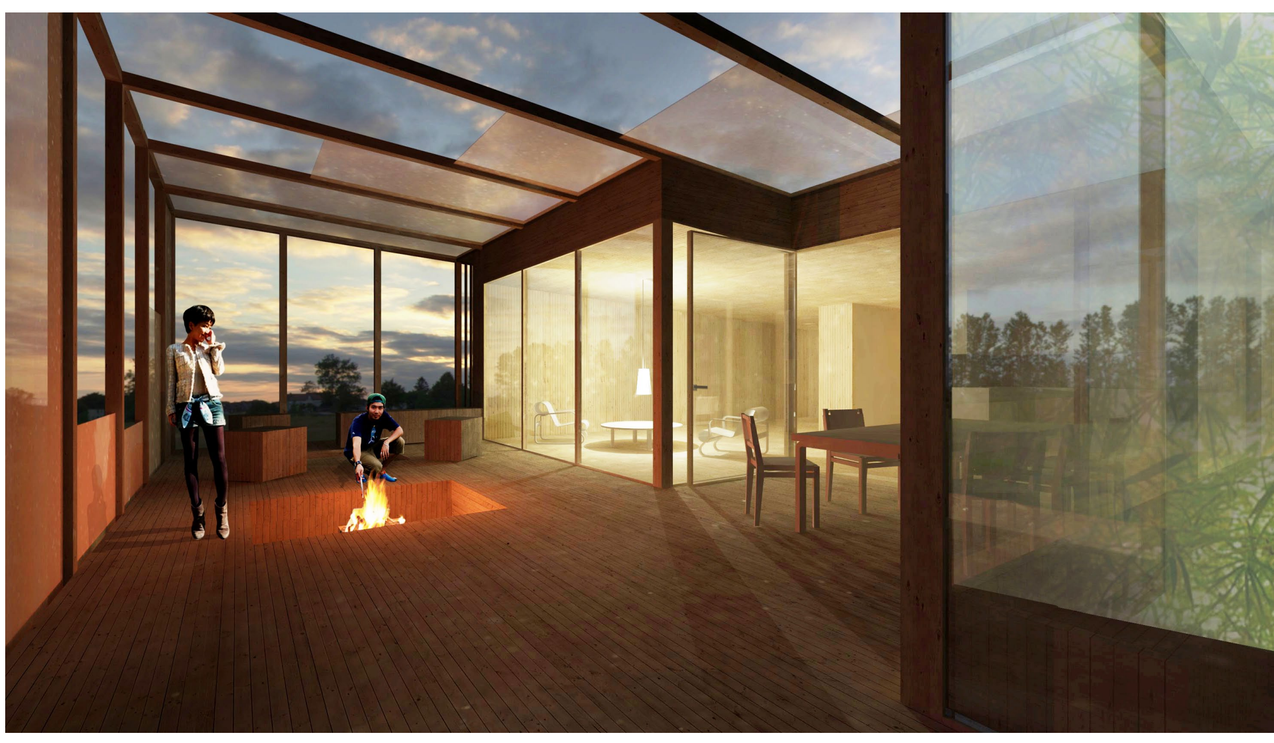
NEXT GENERATION SUSTAINABLE LIVING





AXONOMETRIC DETAIL 1:25

INTERIOR PERSPECTIVE TOWARDS SOUTH



TERRACE PERSPECTIVE TOWARDS WEST