

UNIVERSITY OF BRITISH COLUMBIA SMART CITY

Indigenous Architecture, Sustainable Energy, and a More Enjoyable Bus Ride



- Parking
- Commercial
- Institutional
- Detached Housing
- Apartments
- Transit Facilities
- SkyTrain
- Power Line

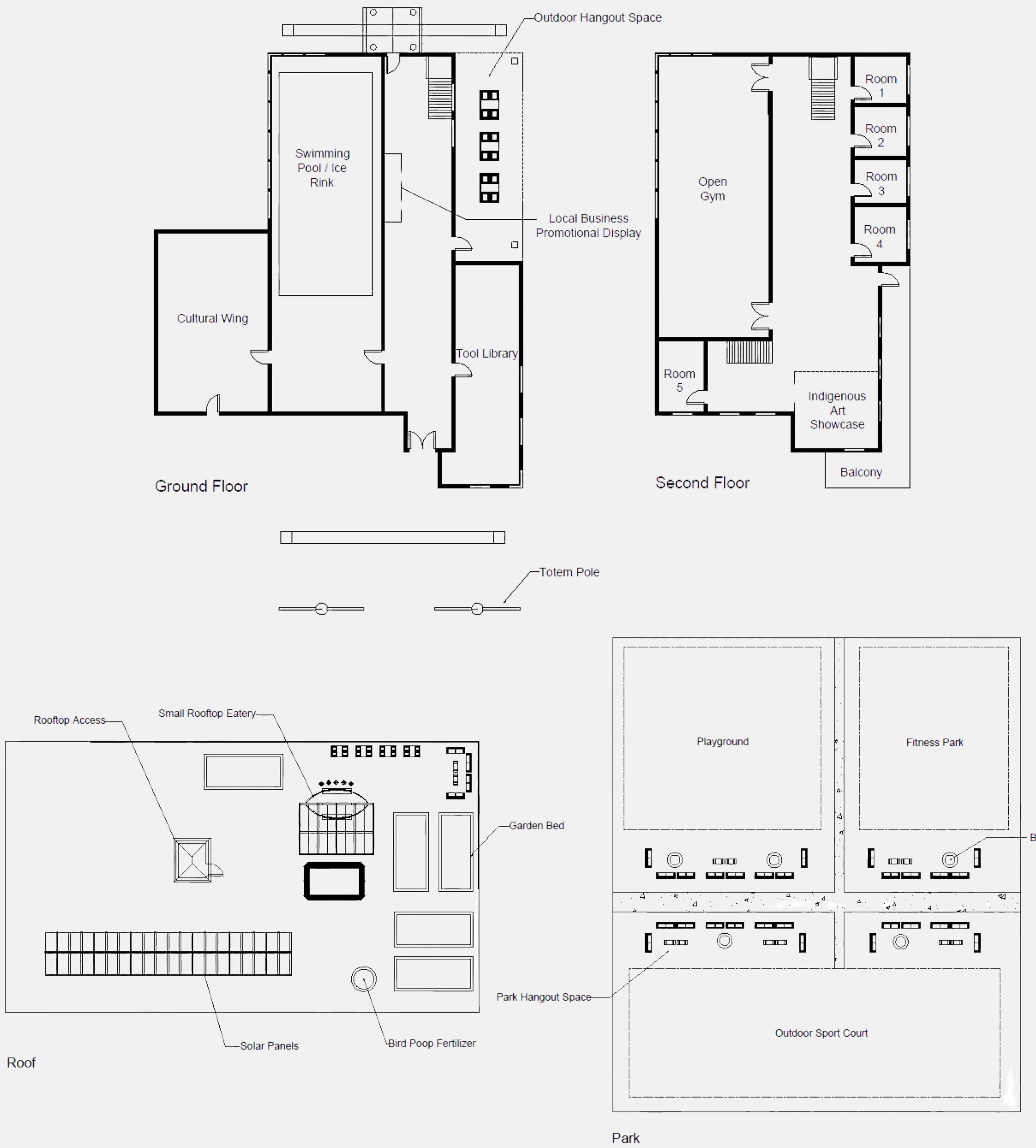


INTRODUCTION

With population growth, sustainability, and indigenous concerns in mind, a new neighbourhood development is proposed for the immediate vicinity around 22nd St. SkyTrain station. Some changes include higher density buildings, a new bus shelter, community centre, parking areas and new streetlights for the neighbourhood. Here, a map layout and artistic rendering from the aerial perspective depicts a regenerated community.

COMMUNITY CENTER

YELƏLKʷƏ (QAYQAYT)



Community centers serve as an important place in neighbourhoods. These buildings are common areas for community members of all backgrounds to foster connections and engage in recreational activities. Furthermore, community centers can be used to promote and engage in cultural practices and generational transfer of knowledge. The proposed community center design aims to persevere First Nations traditions and promote downtime and well-being of its residents, while also remaining environmentally conscious.

Ground floor

- Swimming pool/ice rink (can change between the two depending on the season)
- Tool library
- Local business promotional display – local businesses can display and advertise the products/services they provide, displays can be refreshed weekly
- Cultural wing – contains cultural art/displays, offers culture and language classes, provides a space for cultural performances
- Covered outdoor hangout space
- Totem poles outside main and back entrance

Second floor

- Open gym with equipment for various indoor sports
- 5 extra rooms that can be rented out for events/office spaces
- Indigenous art showcase – a dedicated space in the community center to display Indigenous art and artifacts
- Balcony

Roof

- Rooftop garden and hangout space
- Troughs below overhangs to collect guano
- Small rooftop eatery that serves snacks/small meals and produce grown from rooftop garden
- Solar panels – powers the entire community center

Park

- Includes a playground, outdoor fitness park, and outdoor sport court
- Park hangout spaces with small tables and city-controlled bonfire pits
- Clear sliding walls and retractable roof are incorporated for bad weather (locked and controlled by city)

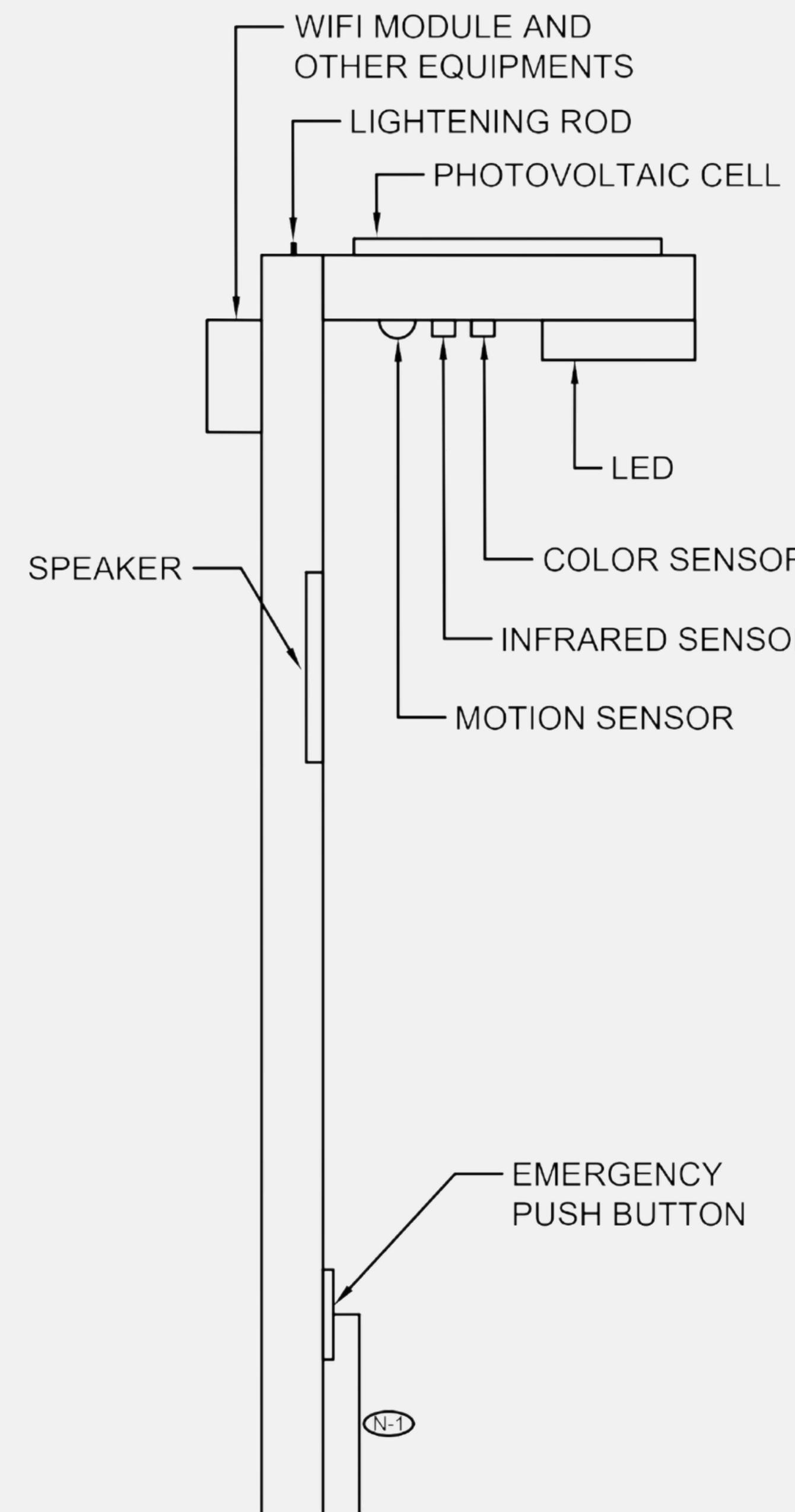
INFRASTRUCTURE IMPROVEMENTS

SMART STREETLIGHT

Streetlights constitute a fundamental element of urban infrastructure, ensuring driver and pedestrian safety and mitigating crime rates in designated areas. Despite their significance, traditional street lights face challenges such as high energy consumption due to operational inefficiencies, and maintenance difficulties due to the absence of an interconnected fault detection system, necessitating a reactive maintenance approach. Also, inadequately designed luminaire distribution and light level controls contribute to increasing levels of light pollution.

To address these issues, the proposed smart streetlight design incorporates a Wi-Fi module, three sensors, a speaker, an emergency push button, and photovoltaic cells. The Wi-Fi module facilitates interconnectedness among streetlights, enabling the detection of faults on a broader scale for more prompt responses.

Data gathered from these faults can enhance maintenance services with a proactive approach. The three sensors, color, infrared and motion, directly impact operational efficiency and control light pollution by emitting the appropriate light level and color at the right time. The speaker serves as an annunciator or can play music for special occasions. Emergency push buttons, integrated with LEDs and speakers, not only alert local police stations via the Wi-Fi module but also change color and sound an alarm when activated. Furthermore, the photovoltaic cell contributes to sustainable power generation, potentially generating surplus energy for grid feed-in as needed.



BUS SHELTER

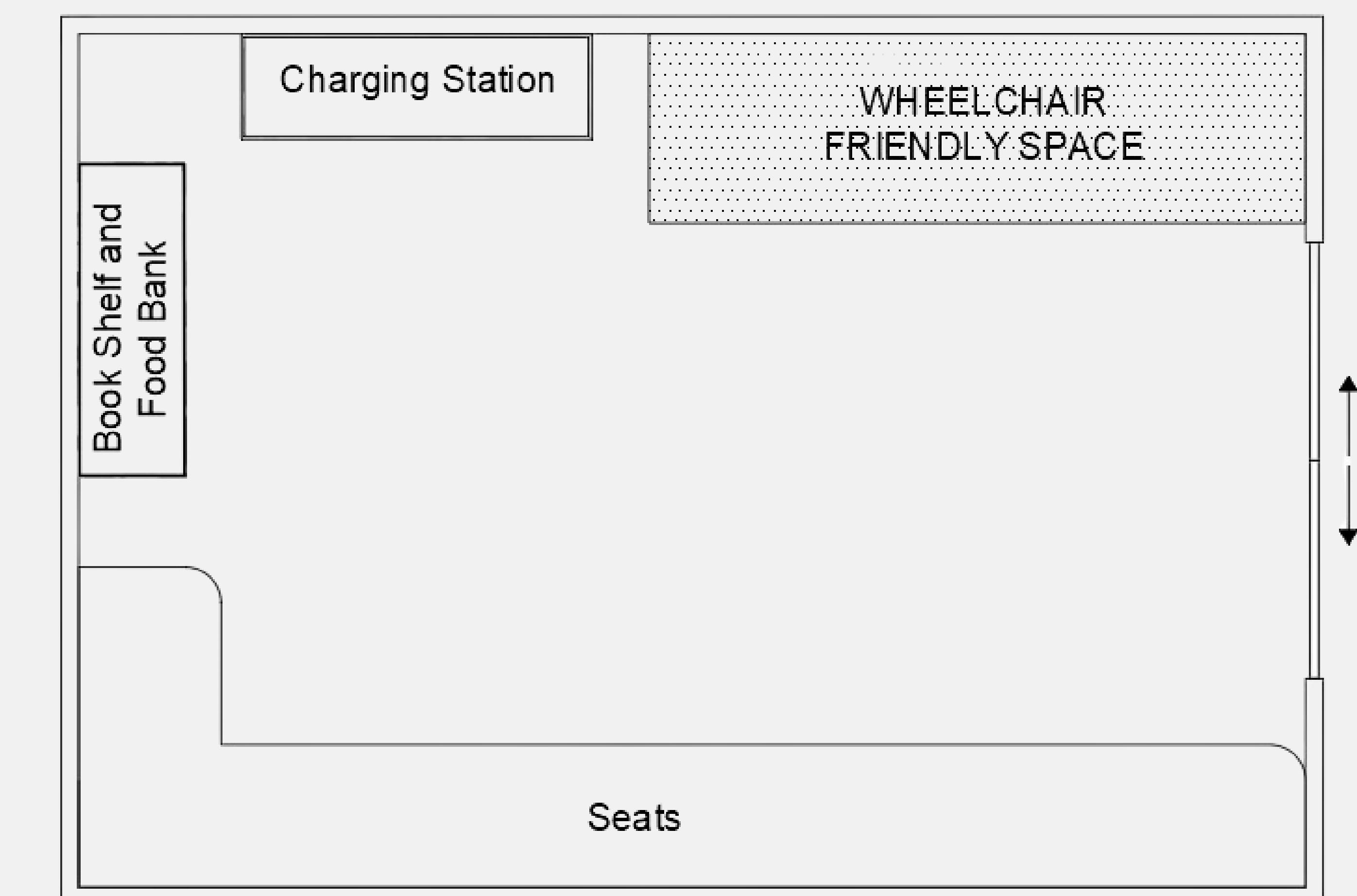
Safe and accessible transit is another core aspect of a sustainable community. A major challenge in encouraging transit use is the current state of bus stops. They are often small and cramped, and provide virtually no protection from the elements.

The proposed bus shelter design serves as a true shelter and safe point in transit. Its cabin-inspired design keeps transit users warm and dry, while a charging station allows them to keep their devices charged for a reliable journey. The relatively large size allows wheelchair users and strollers to also take shelter.

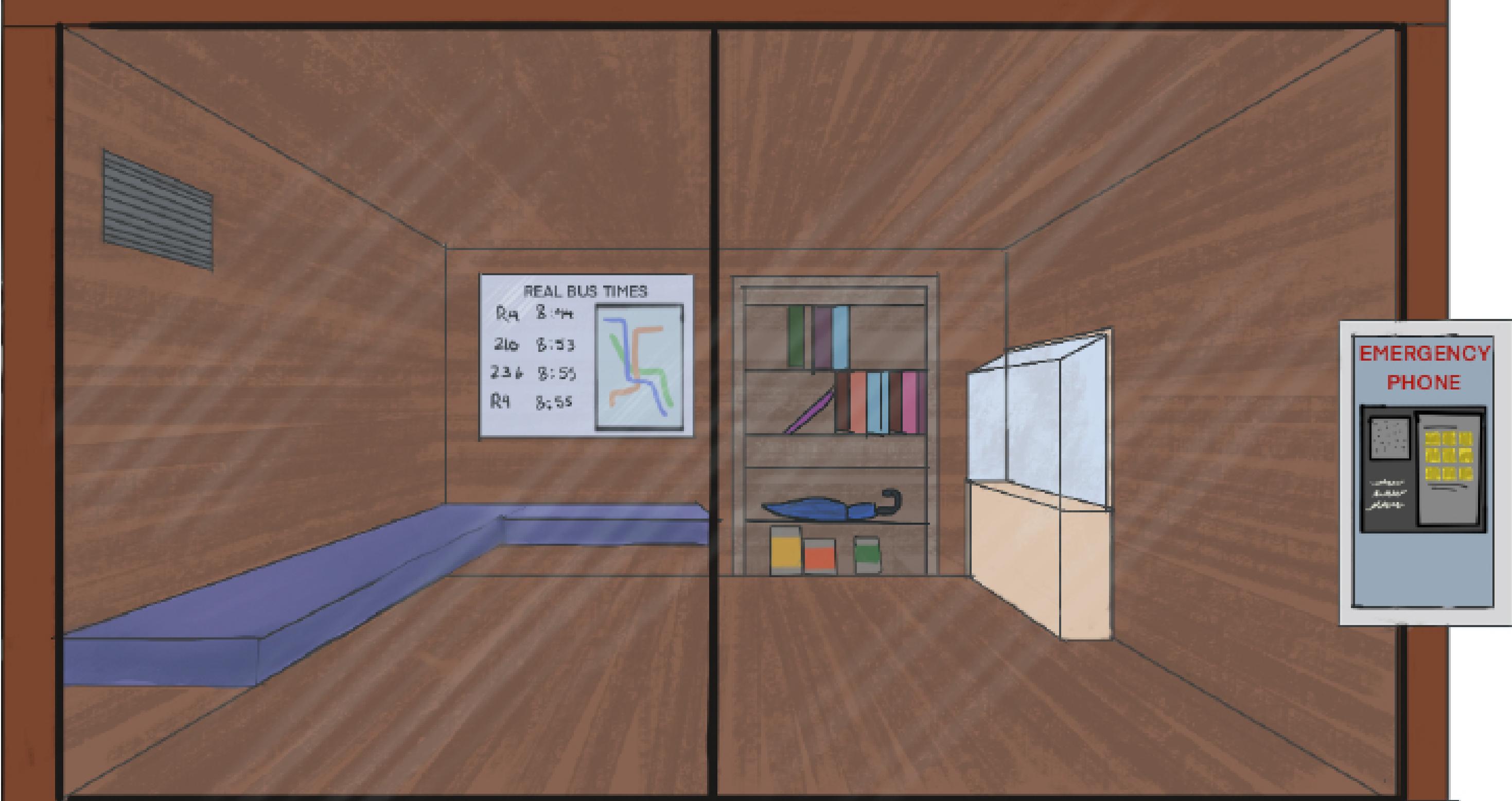
In the spirit of community, the shelter provides a small "library" in the form of a "give-one-take-one" bookshelf. Commuters that are expecting a long waiting time can enjoy a book while they wait.

One of this shelter's most important additions to the community is the non-perishable food bank it houses. Commuters are encouraged to place un-opened, non-perishable foods in the bin. The bank works on an honor system that asks people take what they need and give something back too.

Finally, the shelter is outfitted with an easy-to-use emergency phone to allow commuters to report any unsafe behaviour.



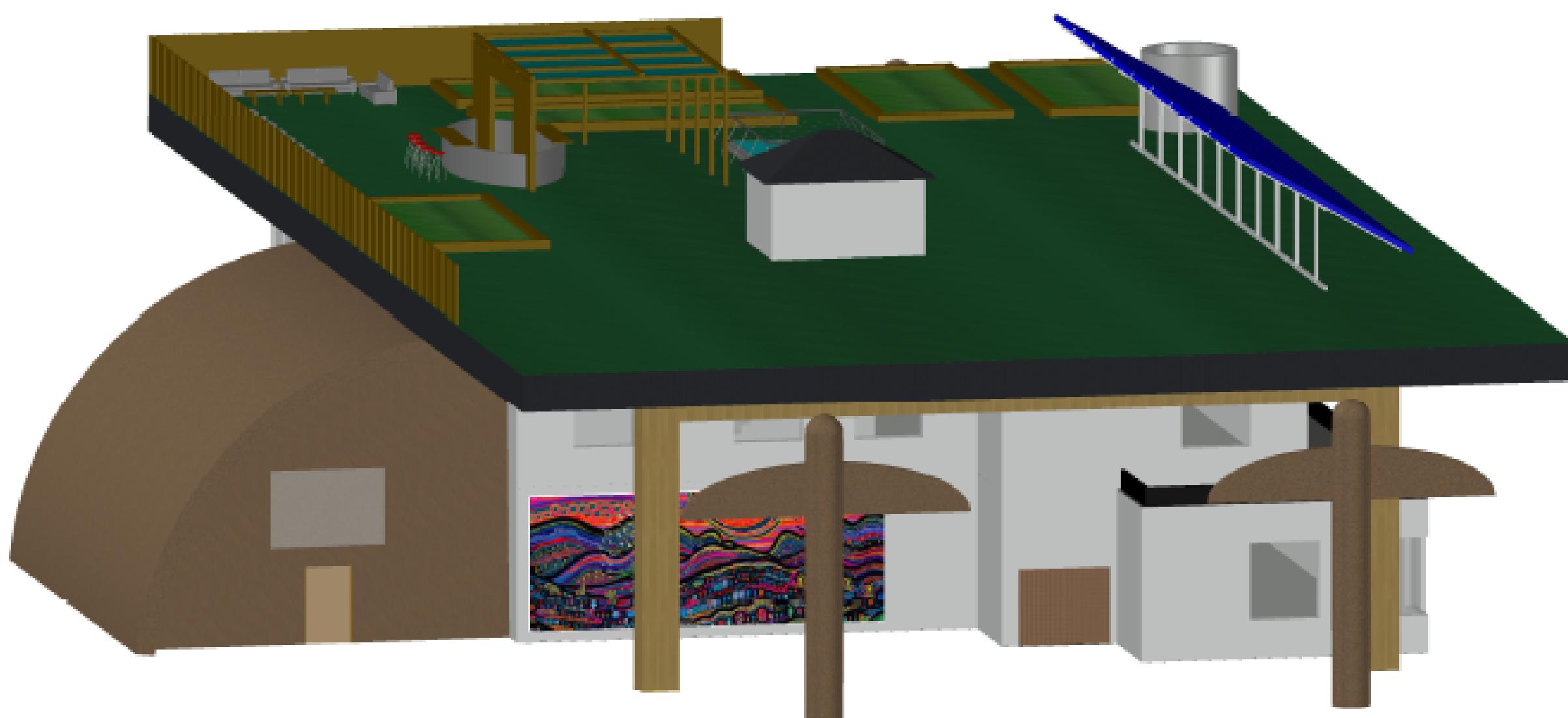
Bus Shelter Imagined



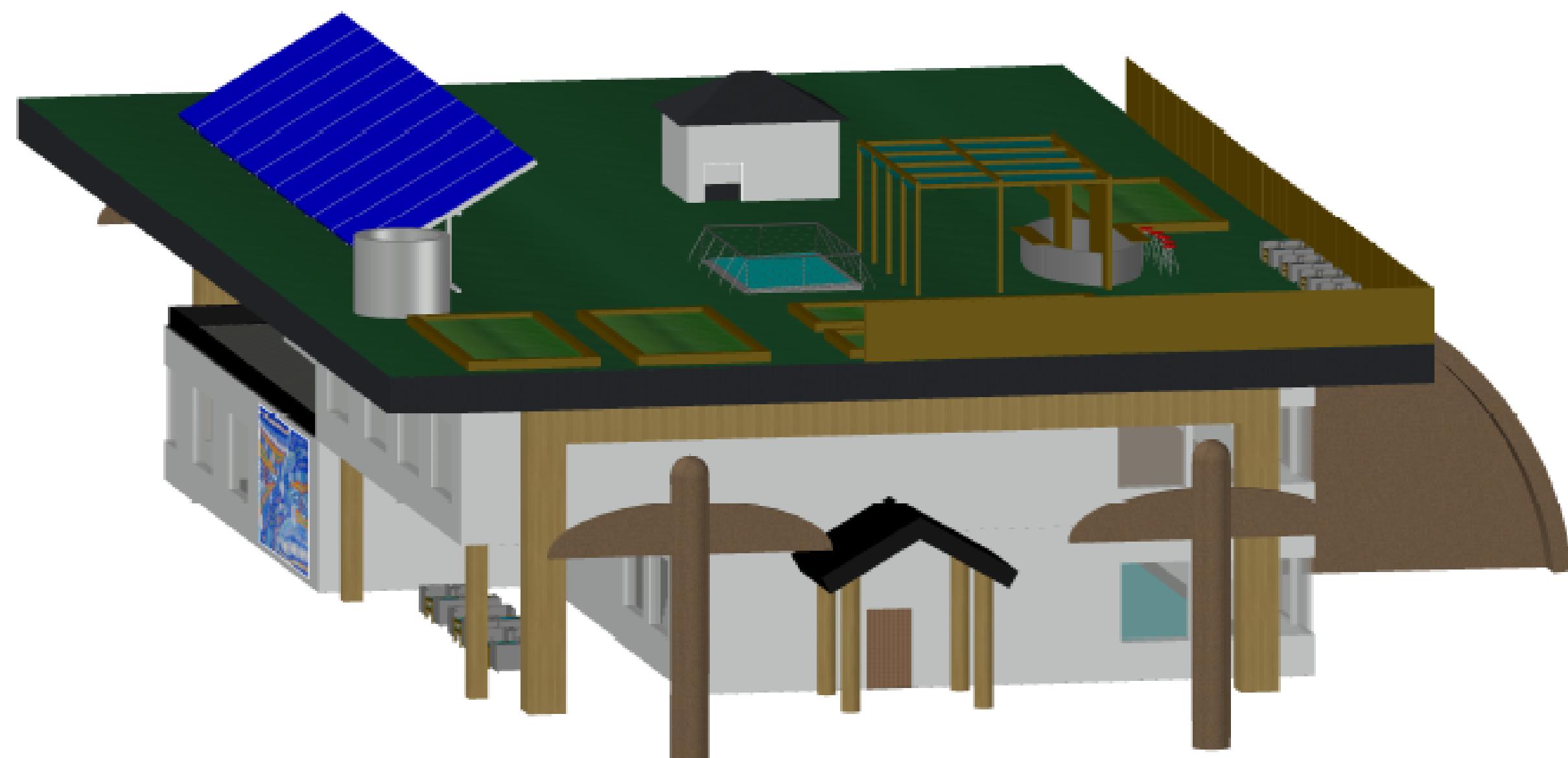
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Community Center Imagined



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