

PARTNERS IN HOPE REFUGE HOSPITAL

LILONGWE, MALAWI, AFRICA

1. Malawi is among the world's poorest countries and is ranked 172nd out of 182 globally according to Oxfam.
2. Less than 13% of the government's budget allocates to healthcare resulting in a significant shortage of healthcare professionals.
3. Malawi poverty rate is 50.7%.
4. There is one physician per every 53,000 people and one surgeon to over 1,000,000 Malawians.
5. 90% of those providing surgery on over 50,000 people each year are not surgeons.
6. 2.8 million Malawians, which is nearly 20% of the whole population, are experiencing food insecurity, making Malawi one of the worst hit in southern African Drought.
7. HIV/AIDS and malnutrition are the leading causes of death according to UN Women.



INITIAL DESIGN OBJECTIVES

1. Implementing inexpensive construction methods and materials.
2. Creating jobs for locals to help the economy.
3. Providing higher life and care quality to attract more physicians, surgeons, and medical staff.
4. Implementing healthy community strategies.
5. Improving birth-control related care to decrease the number of newborns babies with HIV infection.

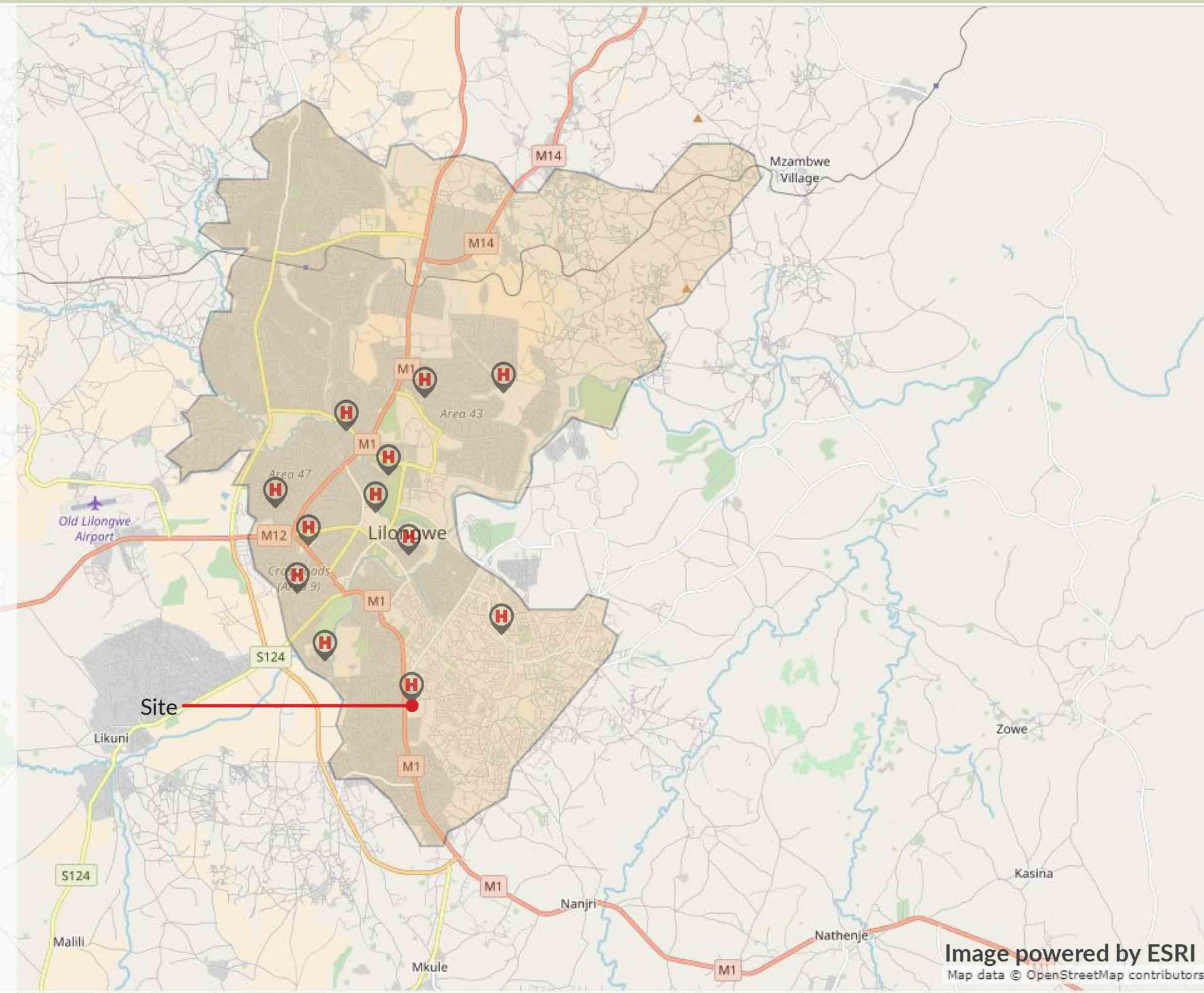
Facility site is located next to an existing small health-related non-profit facility called "Partners in Hope."

This facility is unable to service to 420,000 people in surrounding areas and neighborhoods.

There is no other available site in the south-side of the city with easy access for all residents of surrounding areas.

The site is located 2.3 miles of drive from nearest health-related facility.

The site is located 4.5 miles drive from two other health-related facilities.



Partners in Hope (PIH) is a Malawian non-profit organization that focuses on improving the country's overall healthcare infrastructure by developing high-quality Medical Center as well as providing assistance along with training to 5 mission hospitals and over 40 health centers throughout the entire country. PIH is improving "physical infrastructures, laboratory capacity, referral mechanisms and the clinical skills of health workers" with a particular focus on HIV/AIDS.

PIH was founded in 2001 and soon became one of the most impactful healthcare organizations in Malawi by offering a 'holistic approach' to HIV/AIDS. The Partners In Hope Medical Center recruited international and national clinical and medical staff. It is equipped with two clinics, one counseling center, laboratory, pharmacy, x-ray/ultrasound and an inpatient facility.

PIH provides a wide range of different services including:
 1. General healthcare for adults and children. 2. HIV/AIDS treatment with antiretrovirals (ARV) 3. HIV testing and counseling 4. Nutrition counseling and demonstration garden 5. Women's health services 6. Community-based support groups and home care

Why Partners in Hope?

There is a massive lack of physicians and medical staff in Lilongwe. PIH can provide training for new students and can pair up with new Lilongwe hospital to train more physicians and medical staff. The educated student can have better hands-on experience with access to higher quality equipment.

Partners in Hope has had a close working relationship with the University of California, Los Angeles Program in Global Health and the Department of Medicine/Division of Infectious Diseases. UCLA is a major partner in EQUIP-Malawi training program. Final year residents in Medicine have to do a one-month international rotation at PIH.

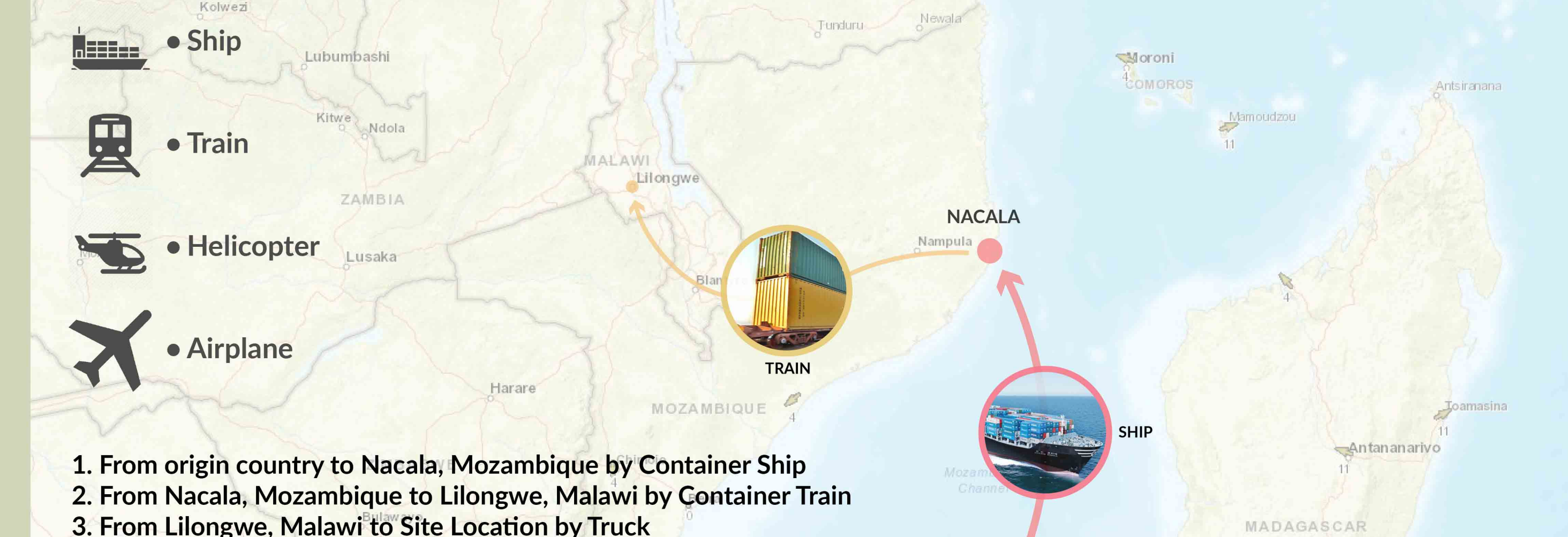
New Facility can partner up with PIH to provide HIV and Malnutrition cares, which is not included in new facility program. These facilities can share expertise and equipment to improve care quality for the whole community.



The site area is 70,000 square meter. The site is located on a major highway that connects southside to northside together as well as connecting the capital to other nearby cities.



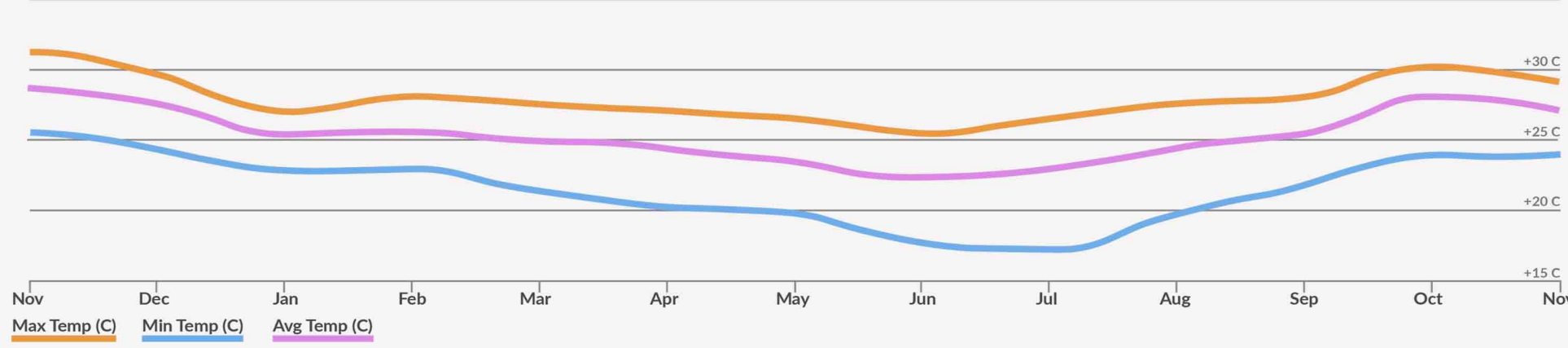
Shipping options to site location



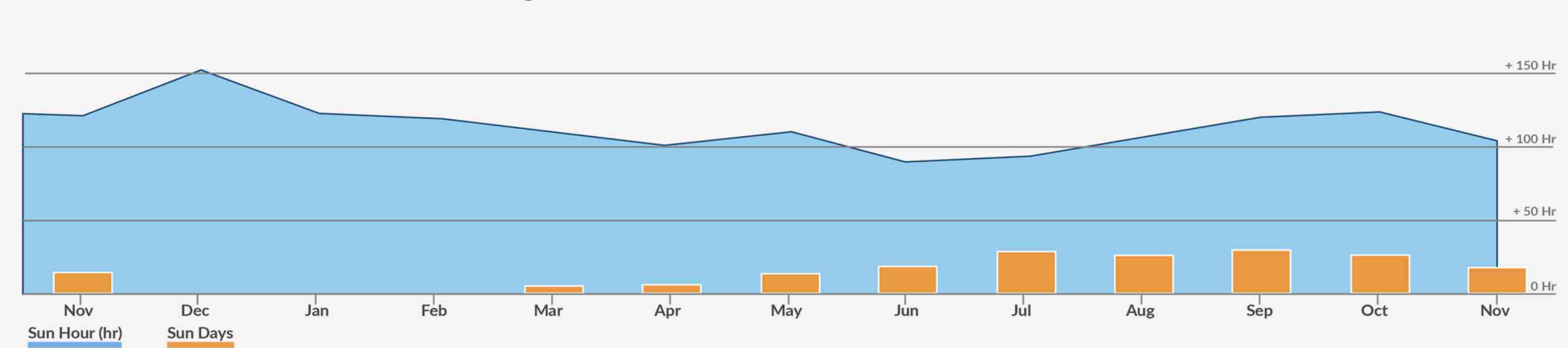
DESIGN GOALS

- Providing easy access to healthcare for the community.
- Improving overall health in the community.
- Implementing high-level sustainable architecture and strategies.
- Exporting a sustainable, and low-cost construction method to help build new high-quality homes for locals.
- Combining high-tech/off-site with low-tech/on-site construction methods and materials to minimize costs and fees.
- Respecting local culture and architecture.
- Utilizing locals as construction crew to create jobs for locals.

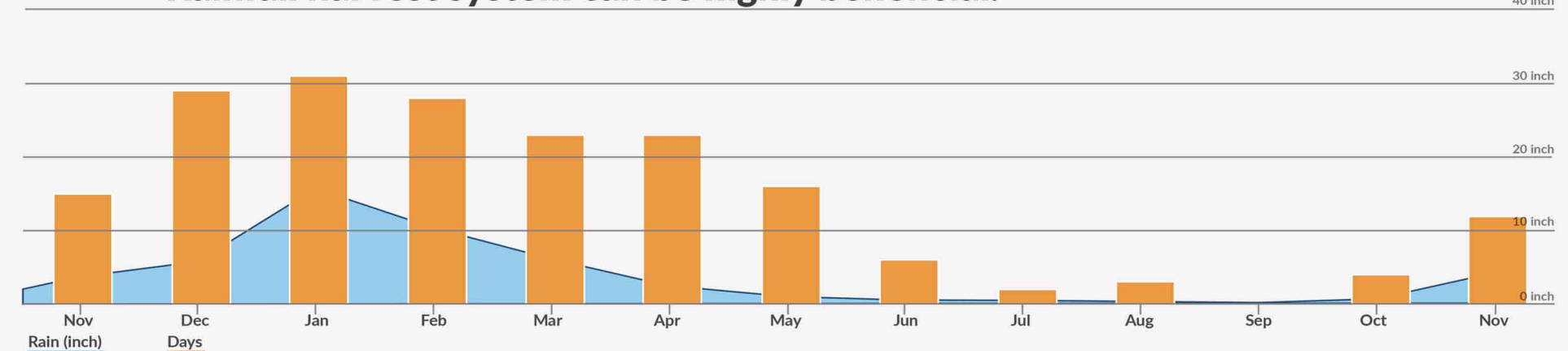
TEMPRETURE



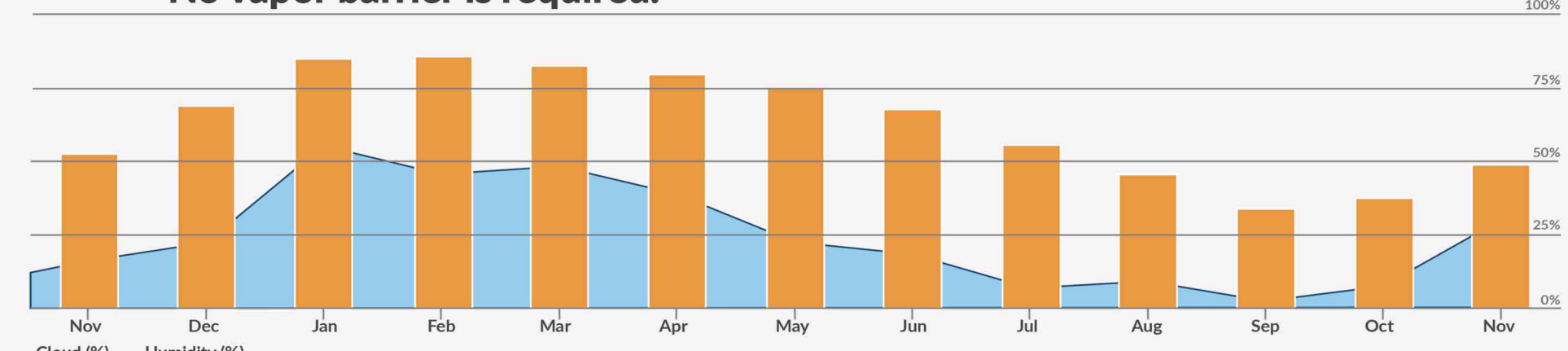
SUN HOURS



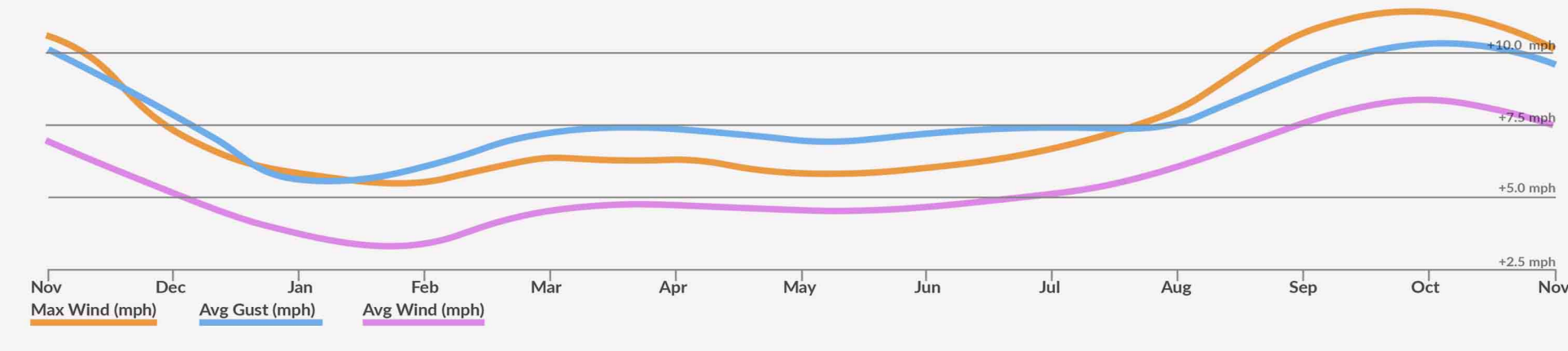
RAINFALL



CLOUD AND HUMIDITY

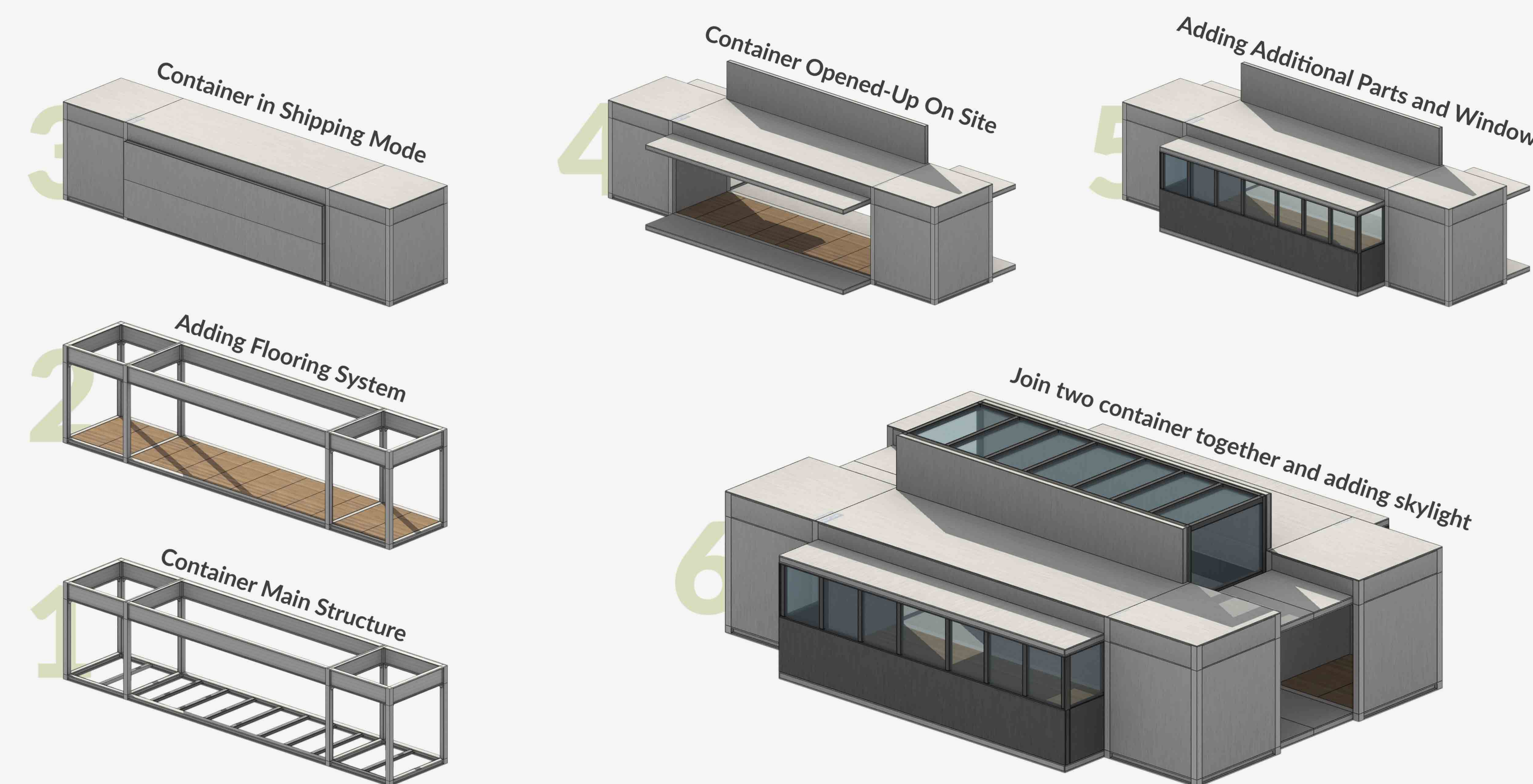


WIND



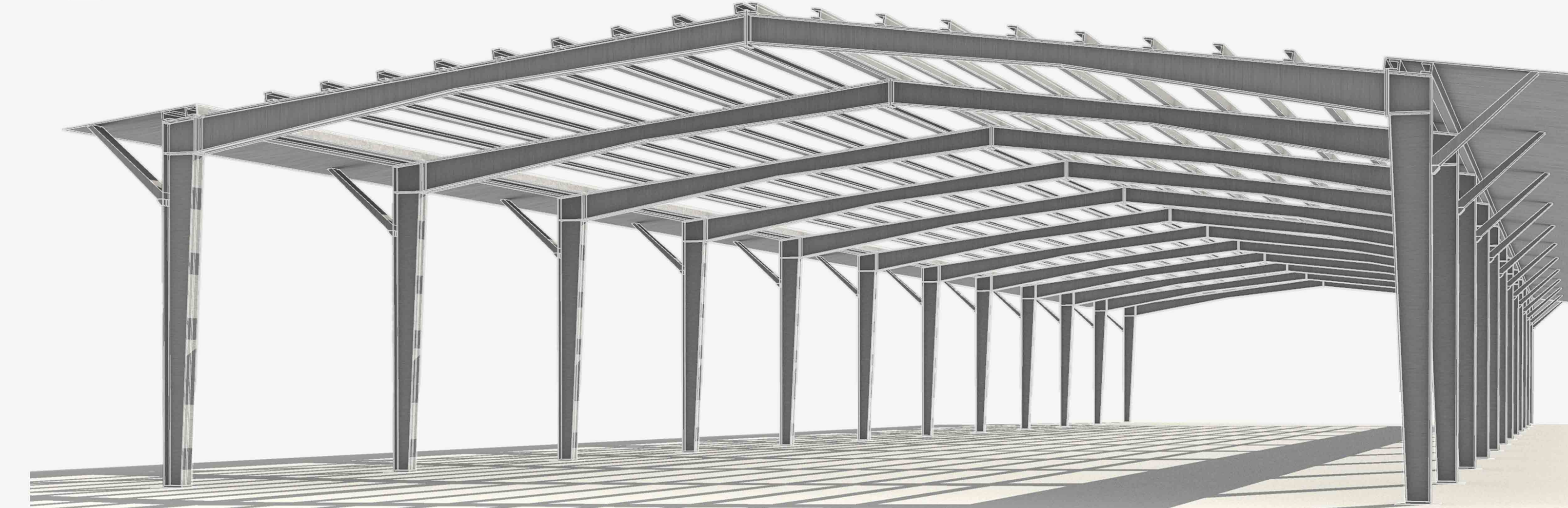
OFF-SITE CONSTRUCTION COMPONENTS

High-Tech Special-Made High-Cube containers as the main module



Utilizing Pre-Engineered Steel Structure

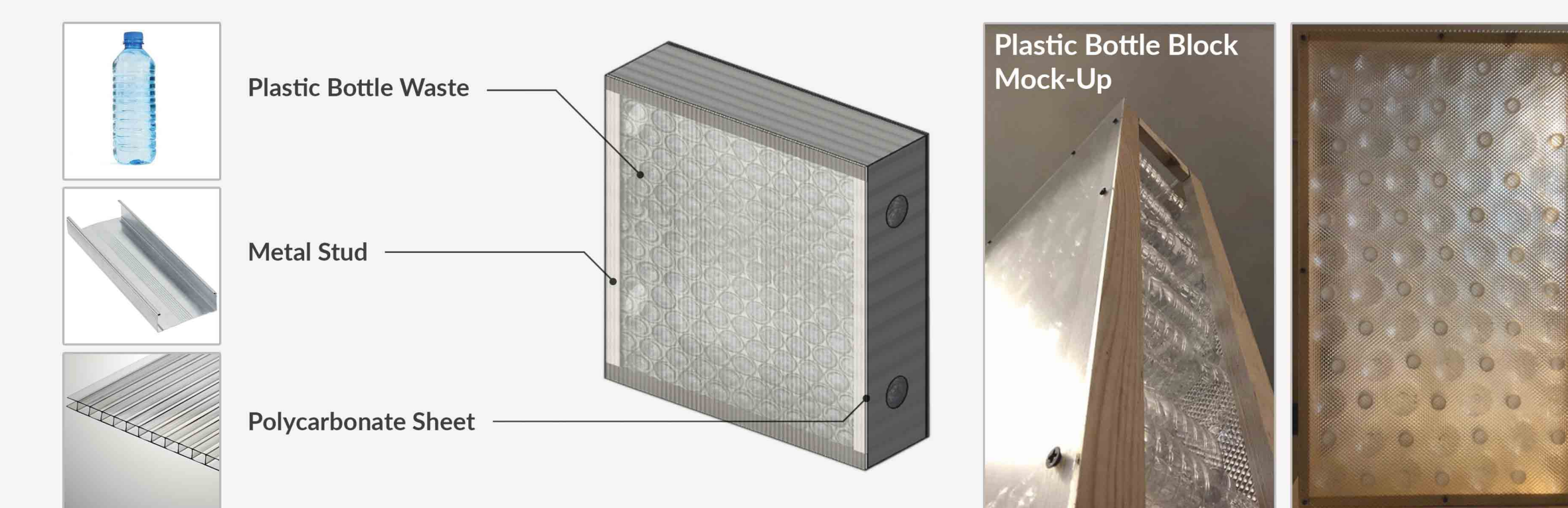
- Implementing P.V. Panels on the megastructure to generate green energy for the facility.
- Implementing Rainwater Harvesting system to collect water for facility and residents use.
- Utilizing Super efficient and cheap steel structure system to enclose the medical pavilion.
- Open ceiling on both sides of the structure to help with passive ventilation as well as rainwater for vegetaions.



ON-SITE CONSTRUCTION ELEMENTS

Utilizing Plastic Bottle Wastes as construction Element

Plastic Bottle Waste Management is one of the biggest crisis in the 21st century. One million of plastic bottles are consumed each minute. We are using 150 million tons of plastic waste each year by current phase. There will be more plastic than fish in the ocean by the year 2050. If each of us uses on bottle each day, then it will be 2.7 trillion plastic bottles each day. Mass use of plastic waste is one of the cheapest and easiest sustainable ways to recycle plastic and take it out of the environment. If we use plastic bottles as construction material, we can eliminate a substantial adverse impact on our environment. Using waste bottles in the form of big light blocks as an insulation element in construction and be highly beneficial and cost-effective. Using cheap and local materials can significantly lower the construction cost along with building a bond between the community and the hospital.



Sustainable Achievements

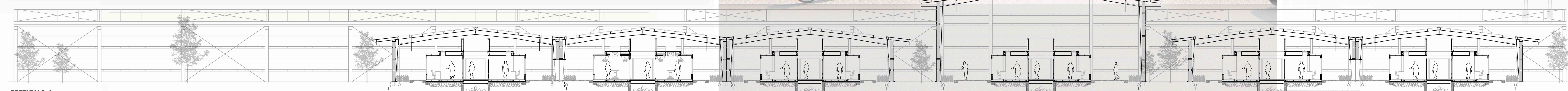
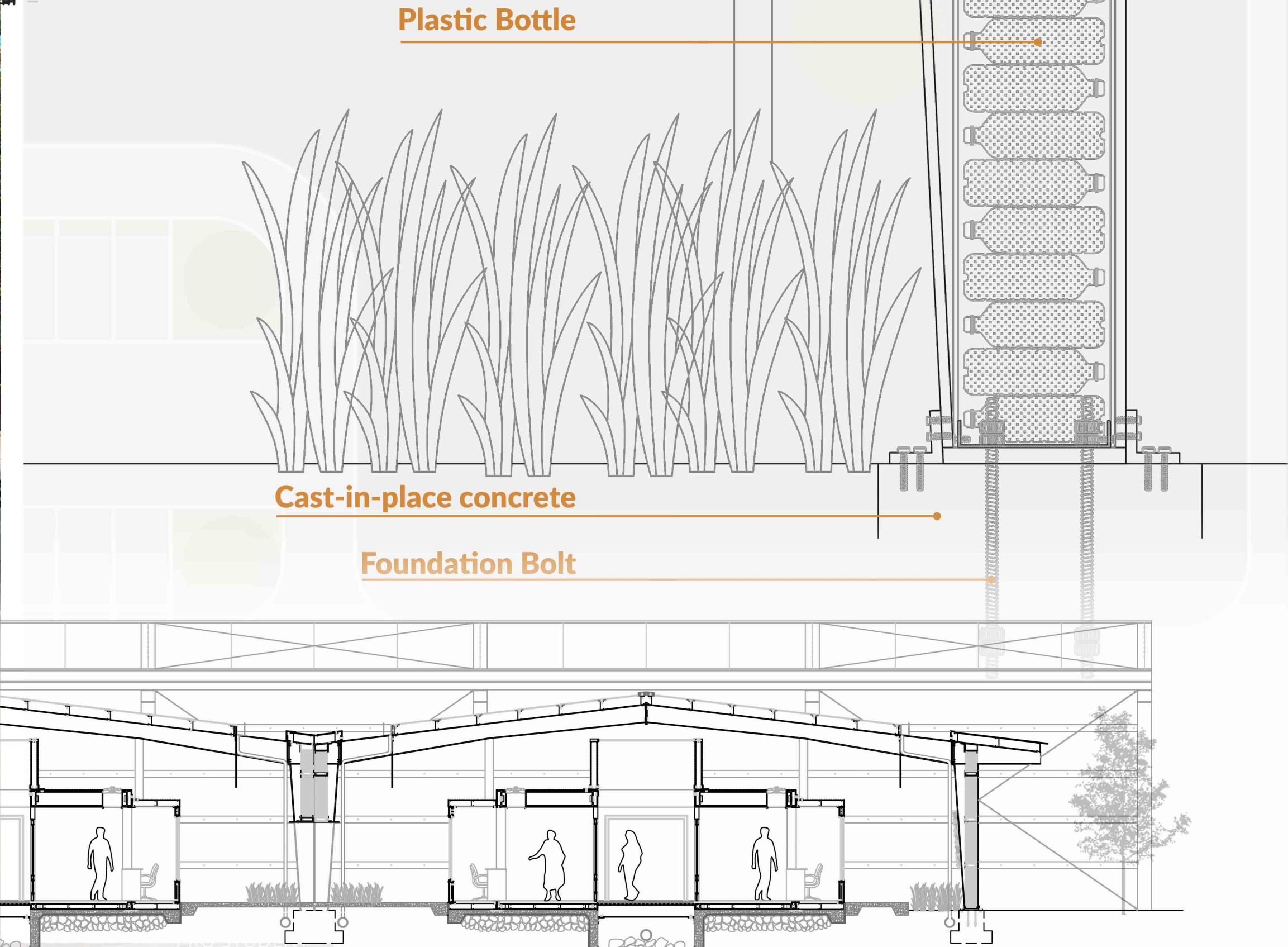
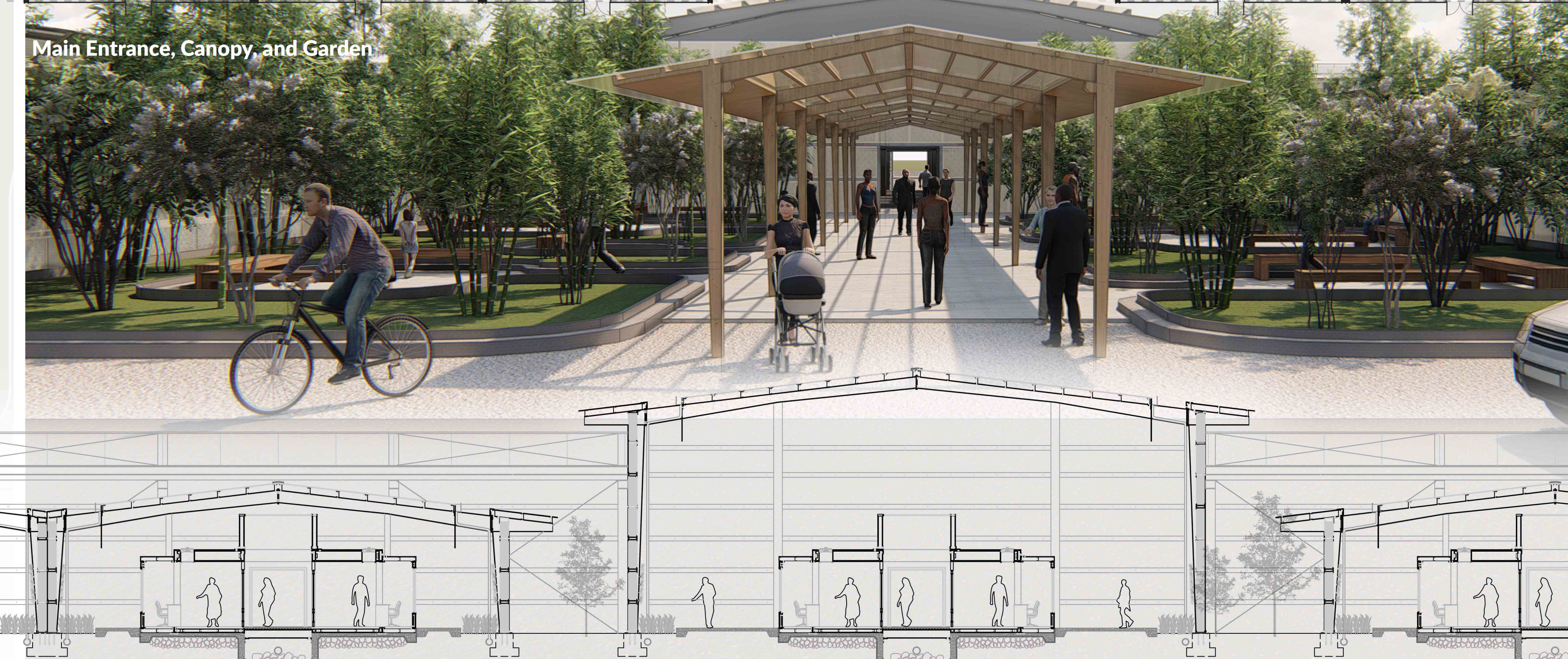
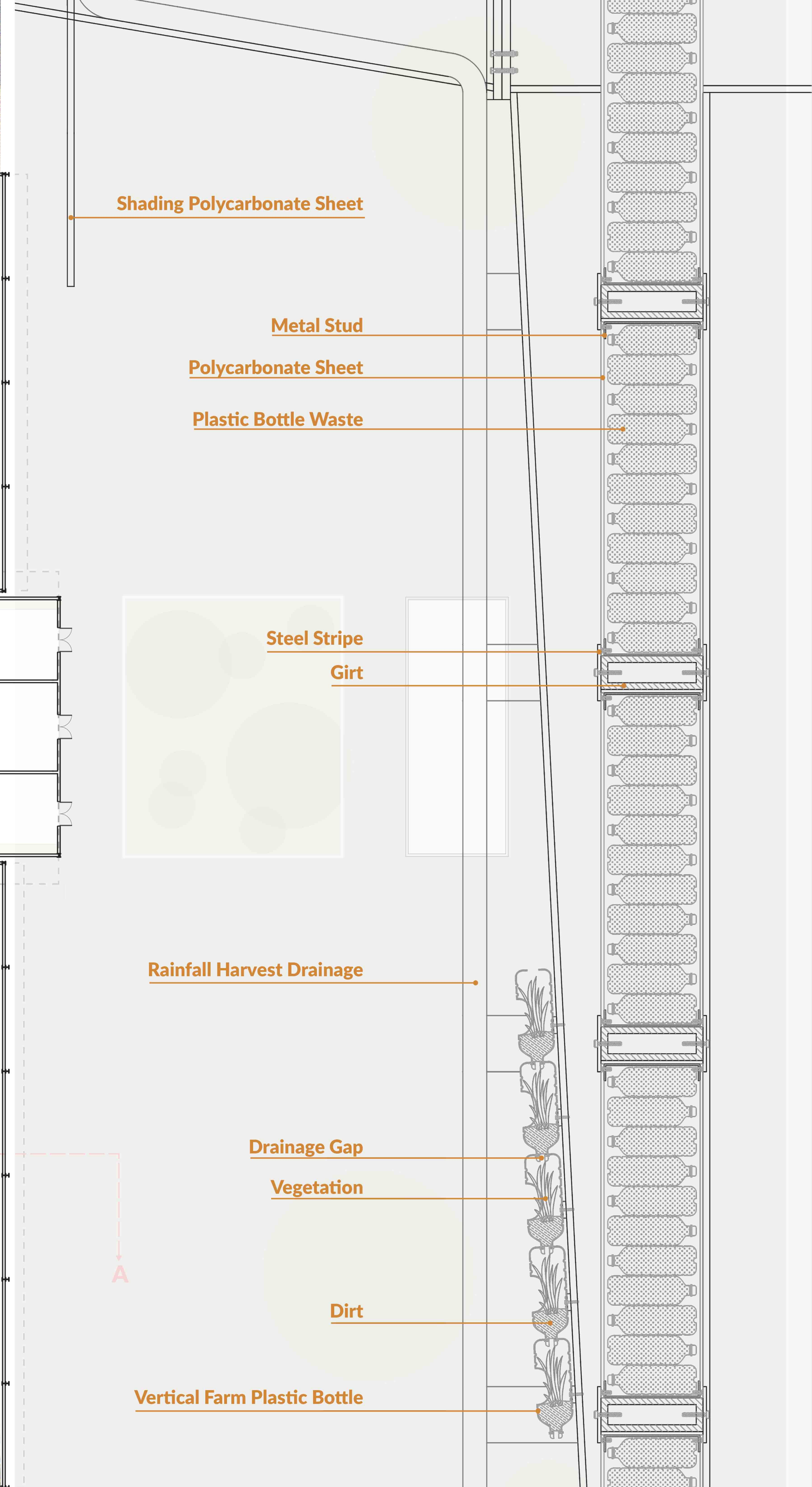
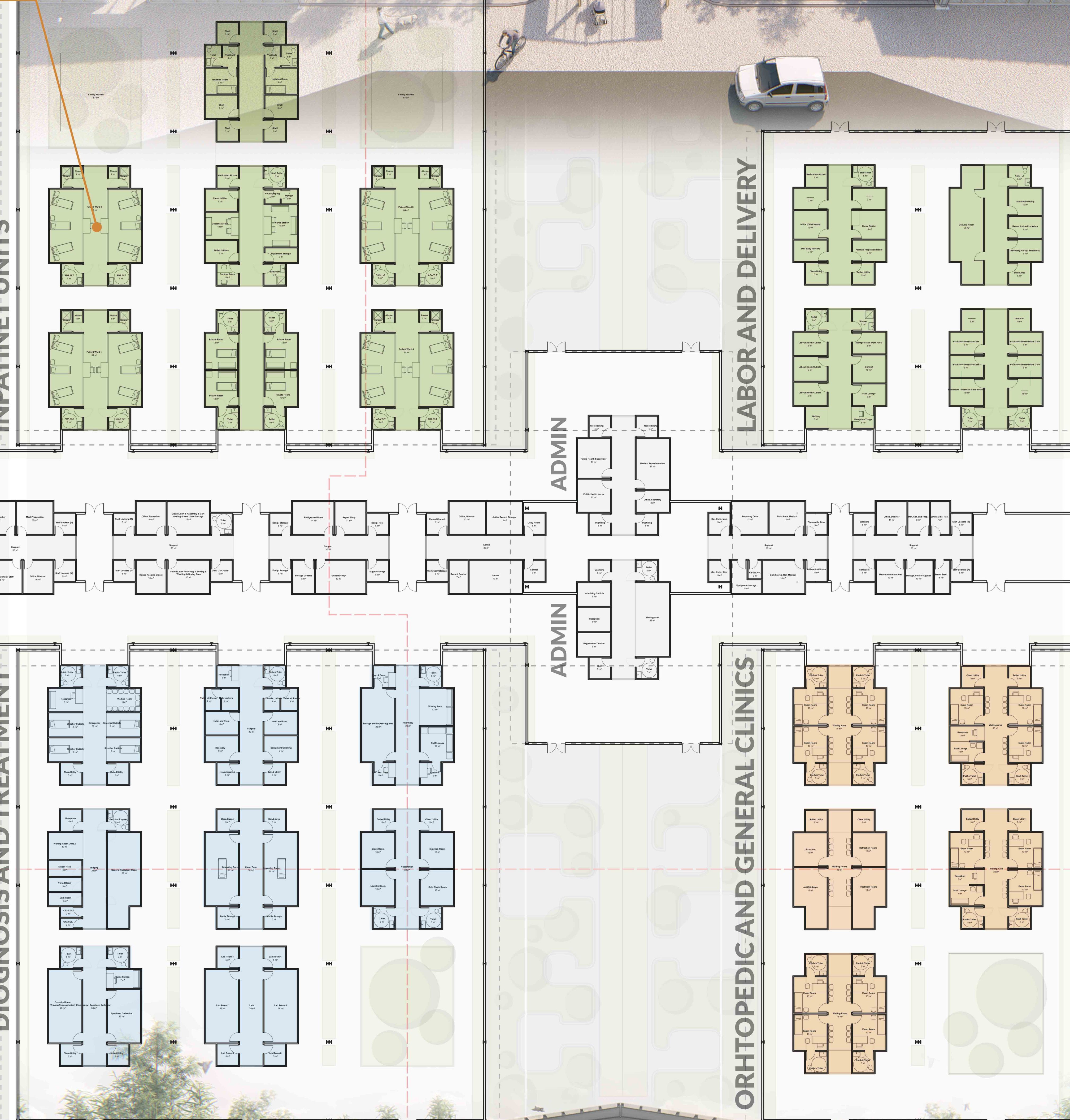
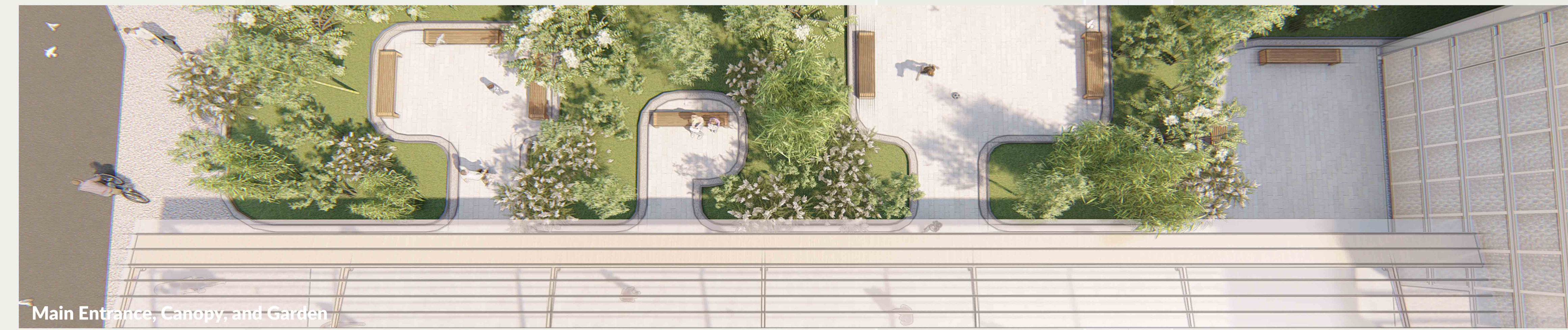
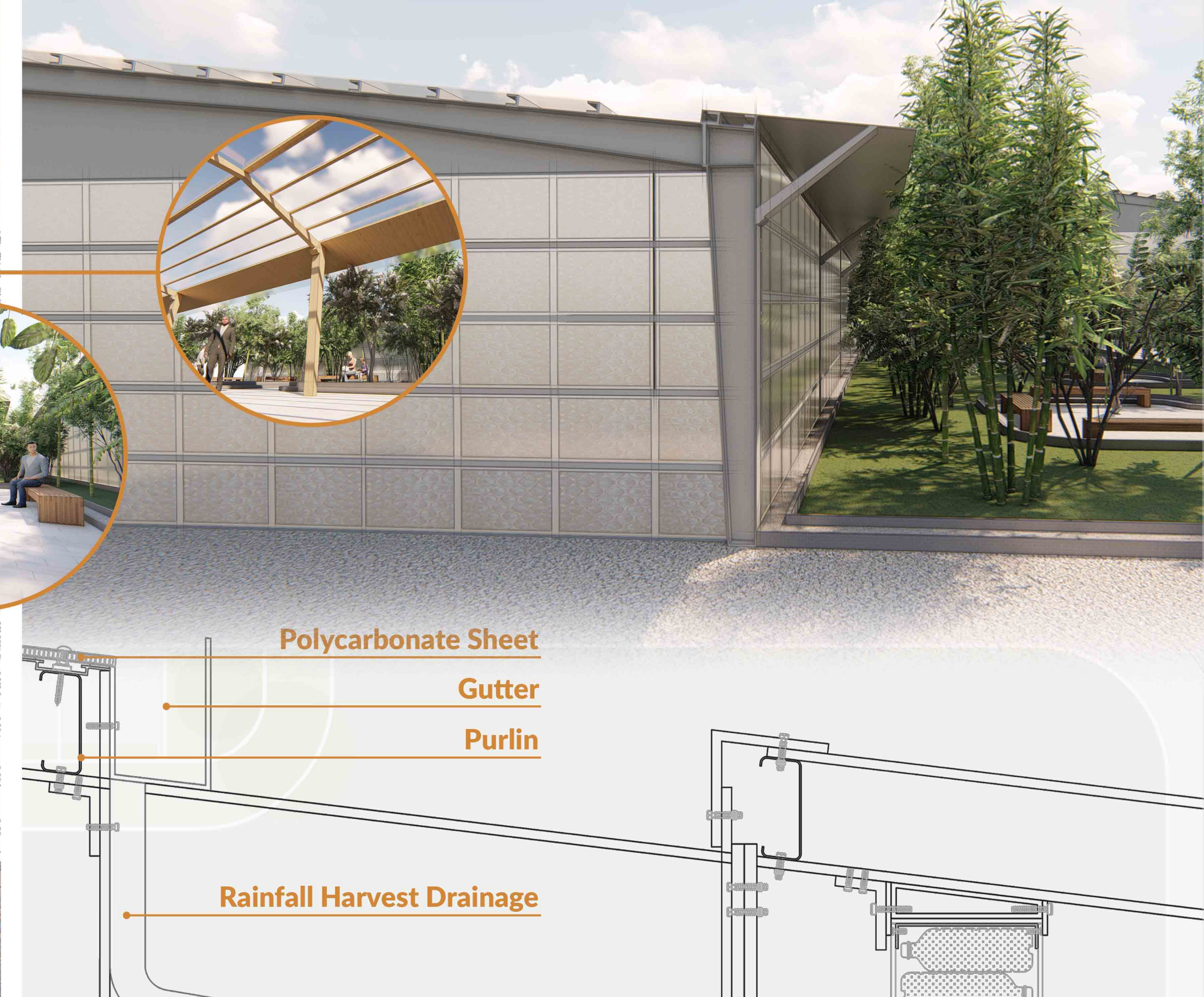
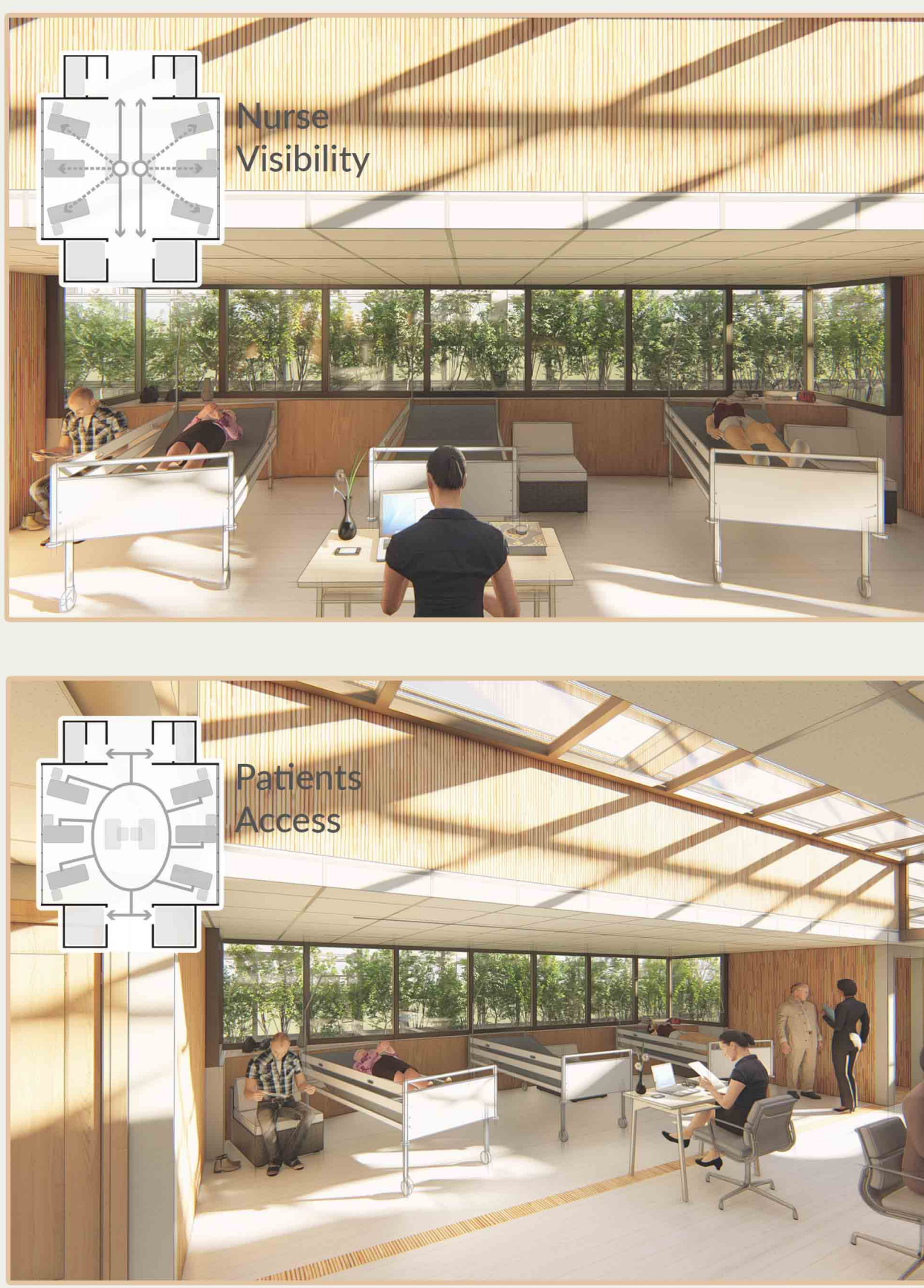
- Preventing environmental damage of more than 550,000 plastic bottles.
- Collecting more than 4.1 million liters of water each year.
- Generating more than 1 million kilowatts of electricity each year, which is enough to service more than 62 average houses in the United States.
- The temperature difference between interior and exterior sides of megastructure in a typical day in summer can go up to 15 degrees Celcius due to utilizing plastic bottle blocks.
- Providing a tempered covered area as the medical pavilion that enables us to grow vegetation with consuming less water due to less evaporation along with implementing vertical farm strategies.

PATIENT WARDS

Visibility
High level of visibility as well as a panoramic view for on-duty nurses.

Daylight
Access to daylight as well as having view to nature for both patients and medical staff.

Access
Easy access to patients beds for nurses as well as easy access to bathroom and toilet for patients and their families.



SECTION A-A