

## Site

Our site is the 100 block of West Pender St. in downtown Vancouver. On the far side of Victory Square is a heritage plaque marking the reference point for the original city layout; we are truly in the cradle of Vancouver. Our downtown location has been urban for the last 100 years. Nearby, there is an opportunity for habitat exchange at 1002 Station St., a brownfield site ideal for conversion to natural habitat.

## Energy

In order to meet our 'Net Zero Energy' goal, we've copied nature and developed a diverse set of integrated systems. The energy for the building will come from a combination of solar, geothermal and biogas, operating on a diurnal cycle. Our system will collect solar energy using a heliostat field and a parabolic mirror on the roof to concentrate light at the thermal collection tower. This will generate electricity to power the building and the ground source heat pump to heat/cool the occupied spaces. The other source of energy is the blackwater system, which produces Biogas through an anaerobic digester. During the peak hours of insolation, the solar system should meet the electrical demands of the building, and also store excess energy as both heat and electrolysis produced hydrogen. During the time of day where the available solar energy does not meet demand, the system can draw on the stored heat. At this time, the system can also produce heat and electricity from a CHP fuel cell, capable of using both hydrogen and Biogas.

## Materials

The primary structural materials of our building are local granite, steel, glass, earth, and wood. For the interior and finishing, our pallet will expand to include brick, aluminum, rubber, nylon 6, linoleum, clay tile. In our detail designs, we hope to minimize sealants, and adhesives, and instead try to use natural rubber and high quality technical nutrients such as Nylon 6. As our building is primarily structural steel, offsetting its embodied carbon will be significant, but justified by its durability and recyclability. The existing buildings on site can provide wood (for floors and finishing) and masonry (for paving the atrium spaces). Any excess material can be reused locally.

## Water

The roof will be used to collect water into a purification system located deep in the building. Water discharge from our building will be sent to a local facility for treatment.

## Indoor Quality

Our building is designed with a shallow plan, so that no-one is more than 30' from a window. The raised floor system in combination with the external double envelope and internal

atrium space allows the stack effect to naturally ventilate the interior space. Dedicated duct work under the raised floor will mechanically vent kitchens, bathrooms, copy rooms, and janitorial closets. Finally, all public entrances will have double sliding door systems, to help keep the interior space clean.

### Beauty & Inspiration

Three main features have been constructed within the site for human delight and celebration of culture. Located in the center of the site is a large steel and glass atrium space where a patron of the building can enjoy the sun on a cloudless day, and experience outdoor space whilst still in disposal of the luxuries of heat and cover from inside the building. The atrium space is also reminiscent of the alleyway that was once there. Though drug users frequented the area, it was also the source of exceptional graffiti art. Tasteful pieces found within the former alleyway have been preserved and used as part of the atrium wall as a reminder to patrons of the misfortunate people in the area, and how they too are capable of greatness. The atrium space leads into where the core of our building resides. The glass tower built around the core serves as a ornate café area that over looks the atrium and the surrounding area. Finally, the original façade that we have kept from the original buildings will serve as architectural features, and as a mean of preserving the history of the building styles in the area.

The work that was been done to the building to create a truly self sufficient building, the public must to provided with readily available information, and tours as to how the building was constructed, and how the site's systems work. With information about the construction of the site posted around spaces in the building that gather the most human traffic and public attention, cafes and lobbies for example, patrons can either learn about the building at there own leisure as the explore it's facilities, take the tour, or visit a website that has been devoted to facts concerning our "living building."