

# Environmentally Conscious Building



If you are constructing or retrofitting towards a goal of an environmentally sustainable building, what materials you use in your project and what is involved in their production, transportation, maintenance and disposal should be considered. As always we need to think about the climate we are building in to ensure structures are safe and resilient to changing weather.

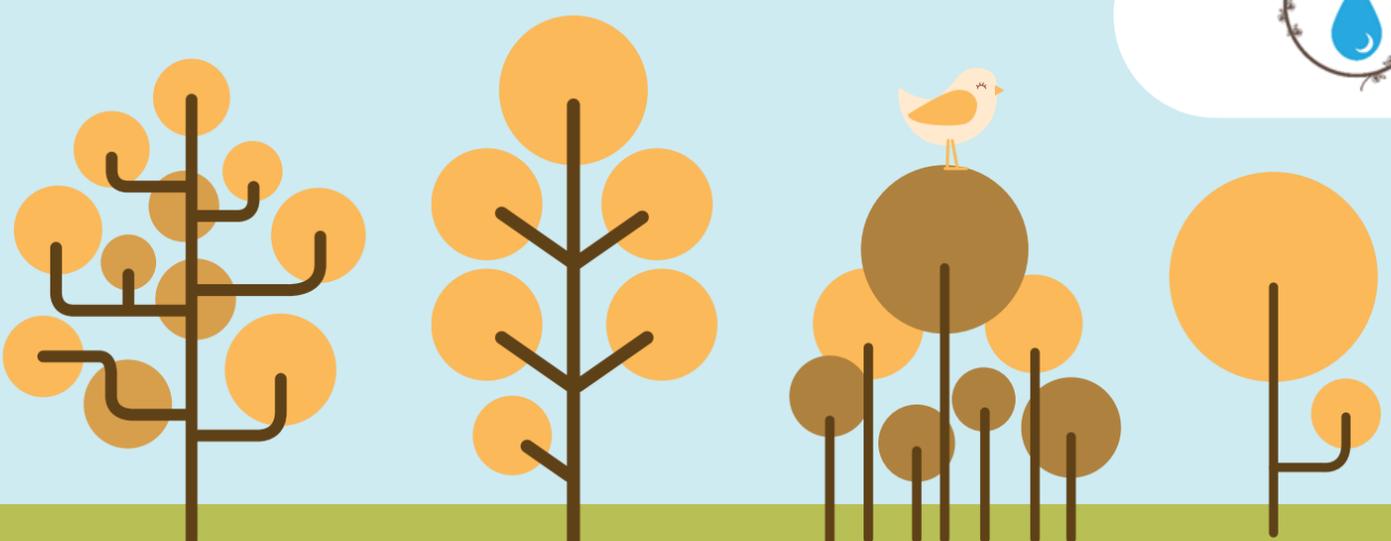
## What's In Your Building Materials?

When deciding on the materials that you would like to utilize for your green building project, often optimal resources are found from the local natural environment that have little to no added harmful chemicals, such as local stones or straw.

Sometimes however, you may seek to re-purpose underutilized materials in your green building design. As an example, car tires are sometimes used for the foundation of green buildings. Although re-purposed tires provide a relatively low environmental impact, you may wish to think about the off gassing of such materials on indoor air quality and re-purpose where it makes sense.



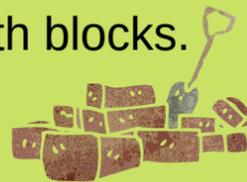
Similarly, some types of foam insulation can be a concern, in particular those products that contain carcinogenic contents or formaldehyde. Consideration should also be given to the adhesive finishes utilized in flooring - depending on the option selected, some contain undesirable chemical additives, which may impact indoor air quality. Re-purposed shipping containers are an excellent option for green building, but again ensure you are aware of what the container was used for and any harmful chemicals which may remain. In general, it is always recommended that you read up carefully on the materials you select for your green building project.



# Walls, Roof and Climate



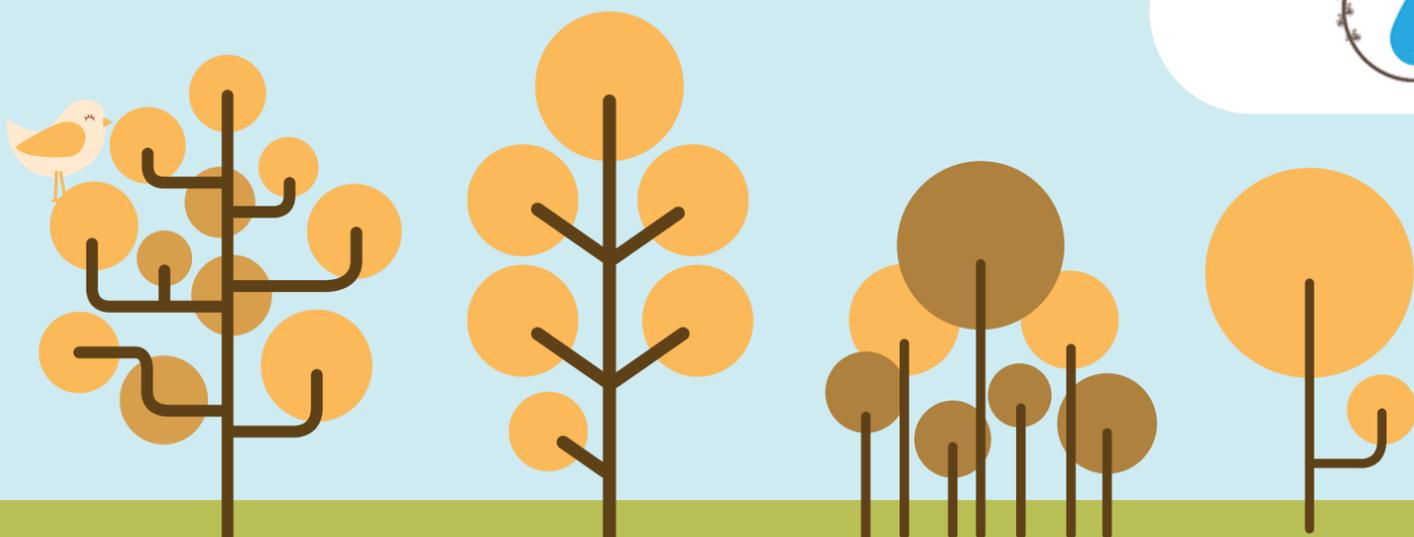
The materials involved with the construction of walls, including their insulation, play an important role in a home's energy efficiency. Straw bale and hempcrete are excellent low impact options for walls. Cob walls are also very low impact, however cob walls generally do not have suitable insulation in colder climates like Canada. Other environmentally sustainable wall options include rammed earth walls and walls made of compressed earth blocks.



In Ontario, cedar shingles and slate are great low impact roofing options. Living roofs are also a great way to green up your building, and could include vegetation that is a sustainable source of food and/or medicine for your family and community. Roof's made of metal, shingles, recycled plastic and/or clay tiles typically have a moderate to high footprint due to the process involved in their production. Regardless of the material selected for your roof, attention should be paid to the content of the material to avoid any negative impacts from leaching to the surrounding air, water and natural habitats, especially if the roof is being used to harvest rainwater.



As the climate shifts around the globe we need to think about how we can ensure resilience in our land and buildings. For example, understanding your water sources such as streams and groundwater aquifers in your community allows you to gain knowledge on the local sustainable sources of water available and will help to ensure you do not disturb their natural processes as you build. Maximizing green space is another simple way to use nature to absorb large amounts of precipitation in storm events. This can be further enhanced by integrating green roofs into your community. There are many innovative low impact development retrofits that can be easily implemented to manage water quality and quantity. Always remember to build at a high elevation and on firm ground.





# Foundations and Flooring

A strong foundation is key to ensuring your green building is robust in all of the weather seasons you have - so that it will last for many years. There are several different materials that can be used to develop a more sustainable foundation such as rocks, stone, hempcrete, soil and wooden piers. In some cases, these materials can be utilized from the land which you plan to build your sustainable community on. If not, these materials can generally be locally sourced and have minimal footprints to process and deliver, with few to no added chemicals.

In contrast, less optimal foundations include concrete which has a high carbon footprint due to the energy utilized to harvest, manufacture and transport the material, it is also notable that sometimes concrete has added chemicals. Similarly, metal piers have a higher carbon footprint than some of the other foundation options mentioned above.

There are several flooring options in green buildings ranging from earth and clay to wood planks and cork. If a heating system is included in the floors, the transfer of heat should be taken into consideration when selecting your flooring. Some of the less optimal flooring options that carry a higher environmental impact include concrete, hardwood, tile and bamboo flooring.

## Did You Know?

There are many environmentally sustainable building techniques which are simple and easy to learn!

Not every element of green building requires a degree, while some areas require unique expertise a lot can be learned by those willing to read and take part in courses and hands on learning - begin exploring what interests you!

