

CU: Becoming a Greener Campus

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As a respected college in one of the most environmentally conscious places in the country, there is plenty more to do to create a greener campus. Even with growing knowledge of the dwindling natural resources around the country, the staples for building materials in America are still wood, metals, and concrete. These materials are either beginning to run out, or are causing great harm to the environment around them. Ever since the first building to use concrete in America was created in 1854, the country has never looked back. Today, concrete production is the third ranked producer of man made CO₂ in the world after transport and energy generation. The making of concrete results in four to five percent of the world's CO₂ emissions (GreenSpec). Even with these known facts, America refuses to change its ways.



While The University of Colorado, Boulder has 11 LEED Platinum certified Buildings and 16 LEED Gold certified buildings, many of the materials used could still be improved to create a more sustainable campus. Most of the pathways on campus are made of concrete. Most buildings use wood and metal as their skeleton. CU has a regulation on the style of all buildings on campus. They all share a Tuscan Vernacular aesthetic originally designed by architect Charles Klauder (Colorado.edu). This style uses mortar and stones, which look very pleasing to the eye, but still have a negative impact on the environment. All buildings are expected to have this look, but how they are built could still be improved.



[Colorado.edu/about/history](https://colorado.edu/about/history)

Using different materials on the inside of buildings and on the paths around the campus will maintain the desired aesthetic of the buildings on campus, while creating more environmentally friendly structures. Instead of using lumber and steel to reinforce the interior of buildings, bamboo could be used instead. Because of its fibers running axially, bamboo has a higher tensile strength than steel, at a fraction of the weight and cost. It is one of the most rapidly growing plants with a growth rate more than three times most others (theconstructor). This rate makes it a much more sustainable resource to use. Harvesting it is also much cheaper and has less of a negative environmental impact than steel. There will be far less disturbance of the environment without the need for mining. Using bamboo could also create safer structures in an environment that has such a high fire hazard. Bamboo has a very high fire resistance, being able to withstand up to 4000 degrees C. Bamboo can also be bent, molded, and cured in order to create nearly any shape needed (TheConstructor). Not only will this method of construction be cheaper, but it will also introduce many benefits for the buildings, and it has much less of a negative impact on the environment.



There has been a large amount of research gone into finding a more sustainable alternative for concrete. One of the more promising options has been hemp concrete. Hemp

plants are one of the most versatile and oldest culture plants, with evidence of existence dating back to over 6,000 years ago (Brümmer). First used in Europe, Hemp concrete has begun to work its way into construction. The hemp core is mixed with lime in order to create this concrete like material at about an eighth of the weight. Hemp itself, is a very sustainable crop without the need for any pesticides, fertilizers, weed killers, or fungicides. Hemp can be harvested annually or in some areas twice a year, allowing for a mass amount to be used each year around the country with very little risk of overusage. The use of lime instead of cement will save about 80 percent of CO2 emissions during manufacturing (NHA). Slowly integrating the use of hemp concrete in pathways and buildings around campus will not only reduce the amount of CO2 emissions created during construction, but the weight of the materials will cost less to ship, resulting in less pollution during transportation. Not only is this material good for the environment, but it matches the colors and aesthetic of the campus buildings perfectly.



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With CU campus being in Boulder, one of the more environmentally aware places in the country, the school already does a lot to try to help the environment. There are trees and plants all around campus. There are many LEED certified buildings. CU even pushes students to compost as much as possible by having compostable food containers, cups, utensils, and many compost bins around campus. This does not mean there is not more to be done. While it may be too expensive and unrealistic to rebuild existing buildings, it is very possible to start using

new building techniques with all new or repaired buildings, along with slowly integrating the concrete pathways to hemp concrete. This will be a lengthy process, but with the world being quickly affected by climate change and lack of natural resources, it is crucial to find the small ways to help.

Bibliography

“Bamboo Architecture Construction: Earth Construction.” *Bamboo Earth Architecture - Chiangmai Life Construction*, 25 Sept. 2020, www.bamboo-earth-architecture-construction.com/.

“Bamboo as a Building Material - Its Uses and Advantages in Construction.” *The Constructor*, 6 Dec. 2016, theconstructor.org/building/bamboo-as-a-building-material-uses-advantages/14838/.

Brümmer, Monika. “Hemp Concrete: A High Performance Material for Green-Building and Retrofitting.” *UrbanNext RSS 092*, 2020, urbannext.net/hemp-concrete/.

Burkey, Dave. “Some Interesting Facts About Hempcrete As a Building Material.” *National Hemp Association*, 30 Mar. 2016, nationalhempassociation.org/some-interesting-faces-about-hempcrete-as-a-building-material/.

“The Environmental Impacts of Concrete.” *Greenspec*, 2020, www.greenspec.co.uk/building-design/environmental-impacts-of-concrete/.

“LEED Certified Green Buildings at CU-Boulder.” *Facilities Management Sustainability*, 11 June 2019, www.colorado.edu/fmgreen/leed-certified-green-buildings-cu-boulder.