How Sustainable Materials for Construction Can Help Your Company

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The construction industry is going through big changes, and now is the time for construction managers to adapt to a growing demand for more eco-friendly building materials. If you aren't already taking the use of sustainable materials for construction seriously, your business risks losing out to innovative builders who are meeting the changing customer demand for a healthier home and earth.

WHAT ARE SUSTAINABLE BUILDING MATERIALS?

Sustainable materials are building materials that are environmentally friendly or "green" in the respect that they are natural, durable, reusable, or recyclable, and they do not require a lot of energy to extract or transport. Examples of sustainable materials include soil, cork, bamboo, straw, and recycled content materials.

A Software Advice Construction Survey from 2019 shows that the public cares deeply about green construction processes with more than 80% of respondents saying it is either somewhat or very important to use eco-friendly/sustainable construction materials. Fifty-seven percent say they would pay more for such a home.

The industry is rapidly moving to sustainable materials. According to the 2021 Global Green Building Materials Market Outlook Report, the green building materials industry is expected to witness a considerable growth rate from 2021 through 2026. This means construction managers should adapt and submit bids that please environmentally conscious clients. As a construction manager, you must:

- Choose at least one sustainable material that works best for your business.
- Use construction software to track its usage.
- Start implementing the new material within the next six months in order to win more bids by allowing you to market greener practices.

But what sustainable building materials are out there, and how in the world do you even begin to implement them in your next construction project? Let's go through each of your options and determine whether they might work for you or not.

1. Bamboo

We all know bamboo is the favorite food of pandas, but it has important construction attributes. It's lightweight, strong and—most importantly for the purposes of this discussion—is an entirely sustainable material because it can be grown locally and doesn't need to be imported.

Bamboo has been used for years in furniture and even utensils, but it has seen growing popularity for use when creating strong and resilient structures. Bamboo has a higher strength than steel by weight, with tensile strength of 28,000 per square inch compared to 23,000 for steel. And while

costs vary depending on a construction manager's individual project, experts say that bamboo is almost always the cheaper alternative.

Alternative to: Rebar, steel, and concrete construction

2. Cork

Cork is another lightweight material that is both ˛exible and resilient, as it's able to absorb pressure and then return to its original shape. It also muf˛es noise, which is why it is often used for ˛oor tiles and sub-˛ooring. There are plenty of other bene˚ts: Its ˚re resistant, it doesn't absorb water (and therefore doesn't rot), and it can be harvested from trees without killing them.

The downsides to cork are that it can become brittle over time, and that it is often shipped from far-off places such as the Mediterranean, which makes it more expensive and have a higher environmental impact (since current transportation options typically have high carbon emission rates).

In general, though, cork is a cheaper and greener option when compared to the typical building materials it would replace.

Alternative to: Wood, tile

3. Rammed earth

Rammed earth is by no means a new construction technology—it's been in use for thousands of years. However, it has come back into the spotlight in recent years as the construction industry looks to the past to ˚nd a more sustainable future.

Rammed earth involves ramming aggregates such as gravel, sand, and clay between ˛at panels known as formwork. Sometimes, a small amount of cement is used to increase the strength of the structure.

Rammed earth is an especially good option if a lot of the materials listed can be gathered on site or nearby, lessening the energy consumption required if you had to quarry and transport them. You can even fortify it with bamboo rebar.

Alternative to: Concrete

4. Ferrock

Ferrock

cheap: Ferrock may cost more than cement to produce because of its production process.

However, as we noted above, customers may be willing to pay more for a structure that uses sustainable materials, offsetting your costs.

Alternative to: Concrete

5. Timbercrete, hempcrete, and ashcrete

A number of concrete alternatives have been popping up using a variety of different materials: Timbercrete, ashcrete, and hempcrete are some good examples of this.

- **Timbercrete** is composed of sawdust that is mixed in with concrete, making it lighter as well as more sustainable. It also has greater energy ef ciency.
- **Ashcrete** uses y ash a byproduct of burning coal instead of cement, replacing 97% of the typical components of concrete with a recycled material.
- **Hempcrete** is a material that is created from the bers of the hemp plant, which is bound with lime and used to create a strong, light alternative to concrete.

But what about costs? Timbercrete manufacturers argue that costs are similarly priced to traditional materials. However, they note that savings will largely depend on speci cations, and it is ideal in scenarios where you would usually use brick.

Similarly, ashcrete and hempcrete will cost about the same as conventional materials in most cases, but you shouldn't expect to save money with these types of building materials. The bene ts they provide are sustainability and therefore a more attractive building for the modern buyer.

Alternative to: Concrete

6. Straw bales

Straw bales de nitely sound like a throwback to a few thousand years ago. However, they're great for replacing materials used to construct walls and can be very insulating. Straw is cheap, which is great for the bottom line, and it's a totally sustainable material.

A straw bale building will typically use stacked rows of bales on a foundation, with a moisture barrier to protect them. Bamboo or wood can be used to bind the bale walls together.

There are some disadvantages, however. The main issues are that it is susceptible to rot, and it takes up a lot of space. Straw is

already cheap. However, governments in some cases will provide subsidies, so check with your local government on any programs they might provide that can lower the cost of the process.

Alternative to: Any materials commonly used for the following: Insulation, Structural support, Roo ng tiles, Fencing

INCORPORATE SUSTAINABLE MATERIALS INTO YOUR NEXT PROJECT

Now is the time to act: Sustainable materials are widely available, and you should be able to implement them into your next construction project, even if it's in a limited fashion.

Our survey data shows that customers not only want construction rms to be using green building materials, but they may actually make purchasing decisions based on that.

Don't be afraid to start small rather than jump in with both feet. Here are some action steps you can take to make sustainable materials a greater part of future construction projects:

Sit down with your leadership team and go over these alternatives. Choose at least one that you think might work for your next project.

» Map out a small pilot program to see if it could work for your rm.

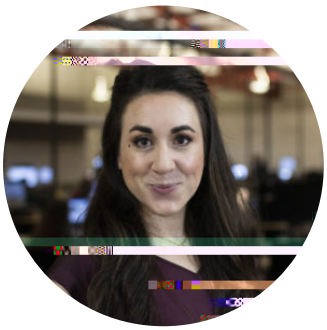
» For example, if you want to test out straw bales for building walls, use them for the rst section of wall you build, and then decide whether to expand to the rest of the project.

At the end of the project, evaluate how you used the material, and then have a follow-up meeting to discuss the results:

» How much did it cost compared to conventional materials?

» How did your processes change to accommodate this new material?

» Is this something you should be using regularly, or should you look at a different material?



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About the Article

Originally published in Software Advice online. With a goal of bringing more insights and better quality to customers, in 2014 the company joined forces with Gartner, the world's leader in IT research and advisory services, and Software Advice has helped more than 600,000 people ˛nd the top software options for their companies.