



Shipping Container Structures: An Eco-Friendly Business Choice

FAQS FOR EARTH-CONSCIOUS
COMPANIES





An Eco-friendly Choice

From “pop-up” boutique hotels to enclosures for water treatment equipment, shipping containers now play a leading role in eco-friendly and modular development. Constructed with heavy duty Corten steel, these containers are durable enough for decades of reuse.

If your company is in the market for portable office space, onsite storage solutions, or temporary housing units, you’re probably comparing options. Modified shipping containers rival factory-built alternatives and site-built structures in both cost and customization.

Above all, shipping container projects are green, especially when businesses opt to use recycled containers.

Because their production is energy and resource efficient, repurposed shipping containers create less landfill waste with a smaller carbon footprint.

In this guide, we address some of the frequently asked environmental questions associated with containerized business operations—including green tax credits and corporate responsibility factors. We’ll cover why the recycled materials and modular building approach of shipping container structures make them the greener choice for businesses.





Why should shipping containers be repurposed?

Tens of millions of shipping containers pass through United States ports every year. In 2016, 15.5 million TEUs—a TEU is a measure of volume equal to one 20-foot shipping container—were imported through Los Angeles and Long Beach ports.ⁱ The port of New York and New Jersey took over 6.2 million units alone.ⁱⁱ The traffic is expected to grow.

Currently, the United States imports more loaded shipping containers than it exports. In 2014 the United States imported 7.7 million more TEUs than it exported.ⁱⁱⁱ

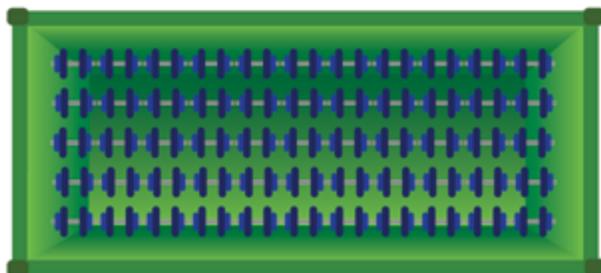
Thus, many of those containers have no return destination. It's often cheaper for companies to purchase brand new containers in the region of export than to retrieve the unloaded containers they have sent to the United States.

Steel shipping containers can hold as much as 55,000 lb. and are strong enough to be stacked 9 loaded containers high. Containers also maintain 50% of their original buying value for 25 years.^{iv} It doesn't make sense to treat something so robust and long-lasting as disposable.

THE STRENGTH OF SHIPPING CONTAINERS

- Shipping containers are made from 16-gauge corten steel.
- A single shipping container can hold 55,000 lb.

 = 1000 lb.



Shipping containers can be stacked 9 containers high, fully loaded.

This container is holding 480,560 lb, on its corner castings.





How does using recycled building components help the environment?

Whenever a natural resource is extracted, there is an environmental cost. Leaders in the lumber and mining industries are making strides to reduce ecosystem disturbances, but energy expenditure and greenhouse gas emissions from manufacturing and transport are difficult to avoid.

Consuming natural resources is an inevitable part of participating in modern society, but we can make an effort to consume much less. Part of the solution will be reusing and recycling what we already have.

In 2013, the United States created 534,068 tons* of waste through construction and demolition.^v Not only will this waste sit in a landfill, but it also means that more virgin materials will be used to construct the next building.

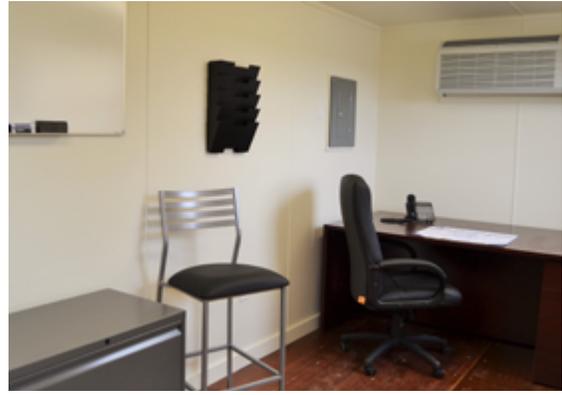
Socially conscious companies are looking for ways to reduce their global footprints. By reusing shipping containers, they can remove huge elements from the country's waste stream.

Plus, when a shipping container outlives its use in a particular location, it can be picked up and moved to the next location. Modified shipping containers can save even more resources by preventing the construction and eventual tear down of immobile structures.



The Falcon office saved resources and prevented waste by using shipping containers as building components.

* For the duration of this guide, we will be using the American short ton which is equal to 2,000 lbs.



*Top Left: A Falcon work space exterior. Top Right: Interior of a Falcon work space.
Bottom Left: The Falcon manufacturing facility. Bottom Right: A forklift moves a Falcon container.*



What is modular building?

The Modular Building institute (MBI) defines modular building as, “a process in which a building is constructed off-site, under controlled plant conditions, using the same materials and designing to the same codes and standards as conventionally built facilities.”^{vi}

In layman’s terms, an off-site factory creates standardized components of a building and then delivers them. These components, or modules, may be built to stand alone as offices or storage, or they may be stacked into a larger building. Falcon’s mobile shipping container offices are an excellent example of a modular structure.

Shipping containers are becoming a key component in modular building thanks to standardized dimensions, portability, and strength.

Stephen Shang, Falcon’s CEO and co-founder, currently sits on the shipping container task force for the Modular Building Institute to help further the modular building movement.



Why is modular building better for the environment?

Modular buildings can save energy and resources by increasing efficiency. The controlled manufacturing environment prevents material loss from weather intrusion and theft that may happen on a construction site.^{vi} Repeating designs also means the fabrication process can be perfected and streamlined. Knowing the exact amount of material that needs to be ordered for a project minimizes waste.

Left: A welder grinds a container's edge at Falcon's off-site construction facility.

Right: Two welders plan to cut a container at Falcon's facility.



Are climate control systems in shipping containers more energy efficient than a mobile home's?

It's difficult to compare the two groups categorically. In large part energy efficiency depends on the kind of insulation and HVAC system a building contains. Any structure can minimize its carbon footprint with proper planning and quality construction.

That said, shipping container structures are often more conducive to energy efficiency measures. They lack the nooks and closets that can create competing micro-climates.



Why does fabricating and installing a shipping container structure have a smaller carbon footprint than constructing a typical structure of equal size?

Construction of a mixed material building with the same dimensions as a 40-foot shipping container is estimated to release 9.9 tons of carbon.^{vii} Producing, transporting, and installing a Falcon 40-ft dual office made from a recycled container releases around half of these emissions if no foundation is required.

Three major factors contribute to this difference.

1. The creation and transportation of construction materials uses energy. Since most of a shipping container structure is recycled, it reduces the emissions associated with procuring virgin materials.
2. Falcon Structures' modular building approach makes production material and energy use more efficient.
3. Single container structures need minimal site preparation if the ground is flat and dry. Pouring a ¼-foot thick concrete foundation for a traditional structure with the same dimensions of a 40-foot container would require about 11,800 lb. of concrete. According to United Nations Environment, a pound of carbon is emitted for every pound of concrete produced.^{viii} A foundation alone creates 5.9 tons of carbon emissions!

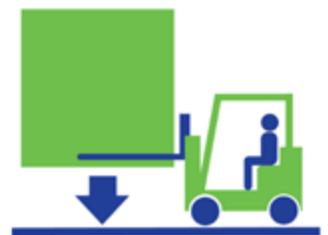
WHY CONTAINER STRUCTURES ARE BETTER FOR THE ENVIRONMENT



RECYCLED MATERIALS



OFF-SITE CONSTRUCTION



MINIMAL SITE PREP

Q: Are there any environmental tax credits available to businesses that use shipping containers?

Since shipping container structures are relatively new, regulatory bodies have not yet come to a consensus on environmental tax credits.

However, federal and state tax credits for energy efficiency measures are always subject to change. It's worthwhile to research current codes before buying, building, or designing any business asset. Typically, green tax credits and qualifying LEED points only apply to permanent structures.

If you're planning to install one with a reclaimed shipping container—either for a home, a home office, a cabin, a barn, etc.—you'll want to register your project through LEED Online and the U.S. Green Building Council (USGBC), and consult with your local tax advisor.

Q: Do recycled containers have damage from their previous travels?

Falcon Structures has strict quality control standards. We never use containers that have lost structural integrity or are otherwise unsafe. That being said, many safe, structurally-sound recycled containers will have superficial dents and scuffs.

A fresh coat of paint can go a long way to beautifying a recycled container. Still if a project calls for a more polished appearance, we can use a one-trip container. One-trip containers have transported cargo only once and are less likely to have dents and dings. However, containers which have had a long life transporting cargo will always be the greener option.

We suspect many eco-minded companies won't mind a few bumps when they consider the environmental benefits of recycling.

Our office is made of recycled containers, and we think it looks great!

Q.

Who can I contact to learn more about environmental practices and eco-related business benefits in my industry?

Construction: Construction & Demolition Recycling Association

Restaurants: The Green Restaurant Association

Building design: Leadership in Energy and Environmental Design (LEED)

Modular building: The Modular Building Institute

Oil & gas: The Intermountain Oil & Gas Best Management Practices Project

Construction Carbon Emissions: Build Carbon Neutral

Q.

Who can I contact to learn more about shipping containers for my earth-conscious company?

Since 2003, Falcon Structures has been working to support client needs—including eco-friendly container sourcing, design, and modification. We built our own office from eight reclaimed shipping containers, and we love any opportunity to share our knowledge with clients. If you're looking for safe, durable, cost-effective business structures that offer the added benefit of eco-friendliness, we want to help. Email Falcon today, or give us a call—[877-704-0177](tel:877-704-0177).



Falcon Structures co-founders Brian Dieringer (left) and Stephen Shang (right).

Sources Referenced

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- iv Safe Use and Compliance of Modified ISO Shipping Containers for Use as Buildings and Building Components. The Modular Building Institute and National Portable Storage Association. White paper. 2017.
- v Construction and Demolition Debris Generation in the United States, 2014. The Environmental Protection Agency, Office of Resource Conservation and Recovery. Dec 2016.
- vi Why Build Modular? The Modular Building Institute. <modular.org>
- vii Build Carbon Neutral. Mithun, Lady Bird Johnson Wildflower Center at the University of Texas at Austin, and the University of Washington Program on the Environment. 2017. <buildcarbonneutral.org>
- viii Greening Cement Production has a Big Role to Play in Reducing Greenhouse Gas Emissions. UNEP Global Environmental Alert System (GEAS). Nov 2010. <unep.org/geas>

About Falcon Structures

Founded in 2003, Falcon Structures manufactures repurposed shipping containers for living, working, and storage spaces that protect what is important. Using time-tested manufacturing processes, Falcon is the first and only manufacturer to create standardized shipping container structures that provide safe, dependable, cost-effective, rapidly-deployable solutions for construction, industrial, workspace, living space, and military applications.

Contact Falcon Structures today for information on modified, steel shipping containers for your next project.

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