



Web Exclusive: Stacked for Success

by Joel M. Karr

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Used shipping containers are the refuse of modern consumer society. About 50 percent are designed for a single use and typically pile up at major shipping points. As the population swells and we continue to consume more, the problem grows.

There are a multitude of excellent reasons to reuse shipping containers, transforming them from castoff waste. Shipping containers are perfectly modular structures that can be used in building structures of any scale in a more time- and resource-efficient way. From conceptual housing to emergency shelter to large-scale real estate development, shipping containers are an untapped resource for building in the future.



Conceptual, Affordable Housing

Lifecycle building is the design of building materials, components, information systems and management practices to create buildings that facilitate and anticipate future changes to and eventual adaptation or dismantling for recovery of all systems, components and materials.

In 2008, my firm's "Contain Your Enthusiasm" design was recognized in a competition of the same name for a design that proposed "upcycling" shipping containers to build a house for a site in Houston for under \$99,000. The design demonstrated how three containers can make a gracious three-bedroom home of 1,300 square feet with 9-foot ceilings. The industrial quality of the containers is softened with simple wood trellis elements that also provide shading.

In addition to being an environmentally responsible alternative, used containers are designed for long-term durability and minimal maintenance making them an ideal, affordable material when building in scale and volume.

Exportable Emergency Shelter

According to statistics, there are over 1 billion homeless people on our planet who are either directly homeless or do not have adequate access to housing or shelter. Today, the world's cities are filled with up to 100 million street children and people living in sprawling slum settlements without water, sewage, garbage collection, heating/cooling or electricity. In the United States alone, there are an estimated 700,000 to 2 million men, women and children who are homeless on any given night and living in public places or in emergency shelters.

When Google Inc.'s Project 10^100 put the call out for beneficial, world-changing ideas, we saw it as an opportunity to propose a simple solution.

Shipping containers are the perfect building material to provide housing for those who need it most. Designed for the sole purpose of being easily and efficiently transported around the world, shipping containers represent an ideal solution for international organizations struggling to provide quick, safe shelter for people in need on the other side of the globe.

By employing the simplest of systems, Group 41 demonstrated how one container could be outfitted with photovoltaic panels and rainwater cisterns to create a comfortable home that could literally be installed or built in the span of a day. The systems are placed inside the container during transit. Once the container arrives on site, the photovoltaics and cisterns are installed on the roof and the container is hooked up to other utilities, if available.



Mainstream Building Blocks

Even though the U.S. has been a bit slower than the rest of the world to accept shipping container development, some mainstream developers are starting to come around. With the home building industry changing to meet increasing demands and costs, shipping container construction offers a new, more-efficient way of building in the future.

Our first real-world shipping container commission is for a multifamily project built entirely out of shipping containers in the suburbs of Salt Lake City. The design proposes using nearly 1,000 containers to create up to 200 units of housing and would sit on a concrete commercial "base" that also includes parking. The development is slated for a transit-oriented district. Currently in the preliminary conceptual phase, Group 41's Container Nation has created two different proposed schemes that take different approaches to the stacking and build-out of the containers: the red scheme and the curved scheme. Preliminary planning approvals are expected by mid-2009.

The red scheme employs a stacking strategy for the containers that is relatively simple and inexpensive because the containers are stacked as they are designed to be on board ship. The design interest comes from the stacks being staggered at different locations to create a rhythm of open and closed spaces with "flying bridges" that provide light and air into the interior of the corridors. The basic arrangement is around an open, raised "court" sitting on top of the commercial space and parking "deck."

The curved scheme uses a much more complex stacking arrangement. This scheme would be quite a bit more costly because individual stacks of containers are staggered "within" the stack, which requires the fabrication of additional structural support steel. However, it results in a much more exciting architectural form. It also allows a much more flexible arrangement of the containers, even in the form of a "curve" where an open balcony corridor and outdoor spaces create curved expressions on the exterior. The entire building also curves away from the neighboring parcel opening up a large garden terrace on the west side of the building.

As the economic landscape continues to change and the building industry becomes increasingly competitive, builders will rely on architects and designers to generate innovative and cost-effective design solutions. And over the last 10 years, we've watched the industry change from completely resistant to slightly curious to fully involved. Considering their availability, economy, durability and sustainability, shipping containers -- as building blocks for the future -- are stacked for success.

For details on Group 41's work in shipping container architecture, visit www.containernation.com. Group 41's Project 10^100 submission is available at www.containernation.com/project-google.php.

Group 41 Inc. (Group 41) is a San Francisco-based architecture, planning and development firm specializing in modern residential and commercial design. Group 41 employs a unique "brain trust" business model and cutting-edge technology, which capitalizes on its diverse pool of talent and the global economy in which we live. A longstanding practitioner of sustainable design, Group 41 has built a reputation on thoughtful design that harmonizes the built and natural world. For more on Group 41, visit www.group41inc.com.



Joel M. Karr

Joel M. Karr is founder and principal of Group 41 Inc. Over his 25-plus year career, Karr has designed noteworthy projects with some of the world's most renowned architectural firms, including Kohn Pedersen Fox Architects and CF Murphy/Helmut Jahn. With work that spans the globe, Karr's design style has a distinct international flavor influenced by his love for classic modernist architectural languages and his life overseas. A longstanding practitioner of sustainable design, Karr has won several awards for his innovative work in shipping container architecture.