

Cargo Container Camper Case Study:

Cargo Camper – “Little Footprint in a BIG Forest”

Cargo Camper

Little Footprint in a BIG Forest

Project Team

- Bill Schwartz, Project Manager (permits, materials, project scheduling)
- Jason Anglin, Carpenter (project coordination, interior finishes, concrete casting, carpentry)
- Patti Southard, Project Manager (GreenTools expertise, interior finishes, design review)
- Nori Catabay, Project Manager (Scorecard expertise, project review)
- Sujata Goel, Project Manager (project coordination)

Sponsors

- Matson
- Skanska
- Premiere Spray Foam Insulation
- TriVistro Corporation

About the Project

The BIG idea behind this little footprint was rethinking how King County Parks could expand its camping offerings in a sustainable and cost effective way - by “upcycling” an empty cargo container. The BIG idea leads to a big surprise; an industrial relic was transformed into a cozy, welcoming eco-friendly camper. It’s hard to imagine that this was once a hulking metal box destined for the scrap heap. The interior is flooded with natural light, warm finishes and handsome furnishings. It’s definitely a place you can imagine spending time in while connecting to the great outdoors. The space is roomy and comfortable, providing sleeping accommodations for up to four guests. This replicable model is the prototype for what will likely be a new solution for camping accommodations in the King County Parks system. The camper is currently located at Tolt MacDdonald Park in Carnation, WA, but could easily be transported to other parks in the future.

Inspiration

King County Parks Project Manager, Sujata Goel, was riding the bus one day to work when she spotted a vast amount of cargo containers from a distance. This image got Sujata’s creative wheels turning. What could be done with this inventory of existing structures that still have a useful lifespan? Could they be used for camping in the King County Park’s system and could it be done for a reasonable investment utilizing the County’s scrap materials and building salvage? In addition to container reuse, an ambitious goal was set to design the project for under \$10,000. What came next was an effort by Sujata to secure a number of containers to develop the prototype. Four containers in all

were donated by Matson. The containers were carefully chosen to insure that they had only seen domestic use and had not been sprayed with dangerous chemicals like many containers that are used for moving goods to and from foreign countries.

Five key goals were established; the cargo camper had to be:

1. Securable
2. Durable
3. Relocatable
4. Sustainable
5. Affordable

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Quotes

“There were many teaching moments along the way and this process was a new learning lesson for us. One important lesson was that the use of surplus stock was just as time efficient as specifying new materials.”

— **Bill Schwartz,**
Capital Planning
King County Parks Division

“I had my doubts, but this worked out better than I expected. We have a waiting list for camper use.”

— **Alan Sinsel,**
Parks Manager

Meeting user needs/ESJI

King County would use its own Sustainable Infrastructure Scorecard to gauge a level of success for the prototype. The project’s final evaluation received a Platinum score of 79, which is substantial considering the lack of HVAC and water systems in this simple structure.

Demand for close in camping has increased in last five years. King County Parks wanted to meet this need and also meet the needs of changing families in King County. There is a rise in single family and multi-generational households and any new amenity needed to take a broader set of users into consideration.

A Winning Design

In 2011, King County Parks conducted a competition to design the containers, drawing 12 entries from around the world. The challenge was to create a design for an overnight camping structure from a used cargo shipping container that could be placed in select areas of King County Parks’ 26,000 acres of open space.

Members of the King County Green Building Team took part in evaluating design proposals and Scorecards that were submitted by the 12 competitors of the competition, and contributed to determining the finalist.

The winning design, REtain, was selected by a panel of judges that included King County Executive Dow Constantine, Stone Gossard from Pearl Jam, wild life photographer Art Wolfe, Eric Corey Freed, Kim Muniza in addition to other local and regional architectural and sustainability experts. REtain was designed by Hybrid Architecture; a Seattle firm that specializes in cargo container adaptive reuse. “REtain” features an adaptable floor plan complete with queen-sized bunk beds, a table that can be moved outside for more floor space inside, and a multi-purpose mess cabinet made from recycled and reclaimed materials that allows access from inside and outside the structure.

According to Hybrid principal, Joel Egan, King County Park’s objective of using the cargo container, “is a first class move towards 21st Century adaptability to inform and change ethics of sustainability.” Their model provides a built example to inspire the general public in their daily lives. It’s a hard task to put these kinds of dreams into reality. Sujata allowed us to be as creative as possible in adapting the container and in looking at ways to reduce costs.”

Site & Water

The cargo camper was carefully sited to maximize natural day lighting. Water is limited to what is brought in by the campers themselves as the container does not include plumbing or water systems and there is no

Photos left to right: Foot bridge crossing the Tolt River into the park, Interior view of bunk beds.



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“I loved pulling materials out of the scrap bin to make something people would enjoy. It felt good to be this creative.”

— **Jason Anglin,**
Parks Facility Fabricator

“The container itself was fantastic, we were comfortable in our bed with the heater. I love all the recycled material and the artsy touches with the concrete bench and the table.”

— **Amy Hacker,**
First Cargo Container Guest

relevant data on water consumption. Campers use the public amenities provided at the park. The camper is situated on a chassis which allows stormwater to be saturated into the ground or run below the container.

There is a vegetated green-wall which is planted with Amelopsius Vine, a Northwest native plant. Even this particular plant was recycled by being sourced from the County’s nearby plant bank. The structure of the green-wall is an “upcycled” segment of chain-link fence.

Energy

There are no complicated systems to the cargo container project. LED light fixtures are used in both the interior as well as the deck lighting and the space is warmed by radiant heaters. Embodied energy is also addressed through upcycling of the container itself and through materials re-use.

Health & IAQ

Decommissioning the container for healthy re-use was a labor intensive process, requiring extreme attention to detail at every step. The lead paint was hand scraped in a concealed environment. In the future, the parks facilities team would recommend sand blasting instead. Other elements include:

- No carpet installed to improve indoor air quality
- Low-VOC paints and finishes and low-toxic water-based sealants and adhesives
- Operable windows

Materials

Exterior and interior materials were carefully chosen to combine healthy, sustainable attributes and to require minimal to no maintenance. As is the case for any King County Parks project, vandalism and repairs were taken into consideration when materials and fixtures were chosen. Standard vinyl covered mattresses for the sleeping bunks were chosen to meet health codes with water-proof covers for durability. Other elements include:

- Materials chosen for durability, ease of upkeep and high-recycled-content
- Low or no toxicity materials and finishes were used throughout
- 95 percent of waste was recycled
- Re-used, salvaged wood was used for paneling throughout the camper
- Blown-in soy-based insulation went beyond energy requirements for recreation vehicles
 - The doors, windows and cabinets were all salvaged from various demolition projects.
- Flooring substrate utilizes the original plywood floor of the cargo container
- Recycled plumbing pipes serve as curtain rods
- Recycled chain link fencing and soccer goals were used for an exterior green wall and deck railings
- The cargo camper walls represent a big “upcycle” of steel

Photos left to right: Reclaimed cabinets, Heater and concrete bench.



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For more information contact:

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This material will be provided in alternate formats upon request.

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Permitting

Permitting for the project was based on recreational vehicles (RV) and the mobile ability to move the container from site to site. The project meets all the same health and safety

standards as an RV providing living space and [amenities](#) found in a [home](#). The container is situated on a permanent chassis for this permitting standard.

What is Upcycling?

Upcycling is a form of reuse that differs from “recycling.” Upcycling reuses materials and objects to prevent additional waste in the waste stream by reducing the consumption of new raw materials when creating new products. The result of upcycling leads to a reduction of energy consumption, air pollution, water pollution and greenhouse gas emissions.

Recycling often includes converting materials and products into new materials of lesser quality. Most recycling still involves extracting useful materials from a product and creating a different product or material or at times creates a bi-product that has less structural integrity due to all the processing.

In the case of the cargo camper the steel walls of the container itself remain intact as did the upcycled cabinets and wood paneling for the interior features.

The warm surroundings of the camper.

