



The Flex House

Ridgecrest, CA

Architect	James Gregory/Shelter Dynamics
General Contractor	Shelter Dynamics
SPF Subcontractor	951 Construction
Insulation System	BaySeal® Closed-Cell (CCX) SPF Insulation, BayBlock® HT coating
Completion	June 2017

Project Overview

The Flex House is a demonstration home that illustrates flexible, right-sized design, total technological integration, and ultra energy and water efficiency. It is also a prefabricated home, showcasing the schedule, cost and quality benefits such construction offers. The base model home is 760 square feet, with a cost range of \$85,000 - \$100,000. Architect Jim Gregory's concept for The Flex House is modeled after R. Buckminster Fuller's groundbreaking work to improve human shelter through three core concepts: making shelter more economically available to a greater number of people, making shelter more comfortable and efficient, and making shelter without ecological offense.

Challenges

As with all modular construction, emphasis during design of the Flex House had to ensure that assembly tolerances could be controlled throughout the manufacturing, transportation and site setting process. However, the Flex House design also needed to be adaptable enough for future horizontal and vertical expansion. Maintaining the integrity of the roofing and waterproofing at several critical transition points within the two base modules and at their connection point was also a concern. The roof system also had to withstand gale-force winds during transport while remaining waterproof. The overarching requirement was for the house to be as efficient as possible, in terms of energy, water and space utilization.

Solution

The base model size of the Flex House is almost 2,000 square feet smaller than the average new house built in the United States today. It is designed for right-sized living; employing good design maximizes all the space within the 760-square foot plan. The house is also designed to work for any type of occupants - from homeowners starting families to empty nesters. The modular construction results in less waste during production. Floors of the Flex House are installed before the interior walls, so construction can begin before the floor plan is finalized. To help achieve zero-energy readiness and add structural strength, all exterior walls have 3" of BaySeal® Closed-Cell Low-GWP (CCX) spray foam insulation and all ceilings have 5". The fluid-applied elastomeric BayBlock® HT roof coating provides the necessary waterproofing and is especially effective for sealing between the two modules and around the solar panel mounts.

Benefits

Accella provided technical support during the Flex House design, to address specific questions regarding the application of SPF. The BaySeal® CCX Low GWP SPF not only provides an integrated thermal, air, moisture and vapor barrier, it also increases the wall racking strength, improving the durability during transportation and reassembly. The product uses the latest generation of blowing agent, with a global warming potential of 1, which is a 99% reduction in GWP, or environmental impact, over many of the SPF blowing agents currently used. It also has an R-value of 7 sprayed at 1", requiring less material to be used. The BayBlock® HT roof coating is self-flashing and seals all penetrations, and because it is 100% acrylic, it is also UV resistant and perfect for any climate zone.





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