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"An Engineer's Thoughts on The Waffle-Crete System"

As opposed to more light-weight construction materials, pre-cast concrete's mass can be of benefit when stability due to wind loads, or thermal change, or even fire resistance is a design constraint. However, in some cases that same mass can lead to other issues, such as requiring higher capacity cranes for erection or heavier connections, greater foundation support needs, or even cost of construction materials.

Waffle-Crete panels retain the design strengths of traditional precast concrete panels, yet are up to 60% lighter than standard panels of the same thickness. This is accomplished through three different system components all working together: Vertical Ribs, Horizontal Ribs, and the thin shell called the Skin.

The main component, the Vertical Rib, acts both as a column to support compression loads and as a beam to withstand bending loads. As load requirements increase, the rib depth can be increased to compensate, but without a significant increase in material volume that a standard flat concrete panel would require. Almost as important are the Horizontal Ribs, which not only provide lateral support to the Vertical Ribs but also help redistribute large loads throughout the panel. Finally, the Skin ties all the ribs together and allows the panel to act as a shear wall when required.

After more than a half-century of use in the construction industry, precast concrete has had many opportunities to prove its advantages in situations where alternative materials, or even site-cast concrete, could not be used as effectively. Because of its structural capabilities and when partnered with a design team that understands its strengths, the efficiency of pre-cast concrete can save money by reducing the construction timeline, and controlled casting conditions can allow a more consistent product to be produced. In addition to these benefits, the reduced material requirement of the Waffle-Crete system gives producers another option to meet their design and cost objectives.



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