Insulated Suspended Structural Slab

Residential
Commercial

- Floor
- Deck
- Roof
- Green Roof

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PRODUCT MANUAL
INSTALLATION GUIDE

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By using the FORTRUSS Product Manual, in part or in whole, the user accepts the following terms and conditions.

The FORTRUSS Product Manual shall be used for the sole purpose of estimating, design or construction of the FORTRUSS Floor System used in residential, commercial or industrial structures.

The information represented herein is to be used as a reference guide only. The user shall check to ensure the information provided in this manual, including updates and amendments, meets local building codes and construction practices by consulting local building officials, construction and design professionals, including any additional requirements.

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1.1 – INTRODUCING THE FORTRUSS SYSTEM

Fortruss is a stay-in-place concrete forming system used to create suspended concrete floor and roof slabs for all types of structures, while providing excellent insulation value.

Two components make up the Fortruss; Floor Panels and Beam Forms. The Floor Panels are manufactured with EPS (expanded polystyrene). The Beam Forms are also manufactured with EPS, but wrapped with a sheet metal cladding. This metal cladding provides rigidity to the form system during installation and concrete placement, as well as providing plenty of attachment surfaces for utility installation and underside finishes.

The Floor Panels bridge the gap between the Beam Forms, which are typically spaced at 24 inches on center, and span in one direction.

When assembled the Floor Panels and Beam Forms provide the form work for a suspended insulated concrete slab. The components remain in place to provide superior insulation with a 100 percent thermal break.

The components are available in several size variations allowing engineers and designers the freedom to choose the configuration that best suits their application of various spans and loading conditions.
The structural capabilities when using Fortruss are not provided by the form system. But rather, the concrete and reinforcement placed on the form work becomes a structural one way slab with integral beams.

Some other applications and key features of Fortruss include:

- Compatible with insulated concrete forms, cast-in-place concrete, precast concrete, structural steel, masonry and wood-framed walls.
- Provides a safe working deck for utility and rebar placement prior to concrete placement.
- The Floor Panels and Beam Forms provide excellent insulation, which is ideal for slabs with radiant heat.
- Designed to be light weight, quick and easy to install without the need for heavy equipment or tools, saving costs in labor and construction time.
- Creates a reinforced concrete joist and deck that’s familiar to construction trades, which reduces the learning curve for new installers.
- Contributes to a healthy environment and energy efficient building by providing excellent insulation; EPS and concrete are nontoxic, does not off gas, and provides no nutrient source for mold or pests.

For more information contact techsupport@beaverplastics.com.
There are two principle components to the Fortruss; the Beam and Panel. Both components are available in various sizes allowing a wide range of slab thicknesses and beam depths. (See Section 3, CAD Drawings for Fortruss floor sizes). When assembled the Beam Forms create a floor system with beams spaced at 24 inches on center.

**BEAM COMPONENT**

The Beam Form is available in two depths, 5¾ inches and 11¾ inches, each with 3 inches of EPS thickness in the form bottom.

Five inches of EPS in the Beam Form bottom are also available for the 11¾ inch Beam Forms. Besides adding insulation value, the additional foam thickness below the beam allows for pipe or duct work installations larger than 3 inches to cross the underside of the beams without the need for ceiling drops.
PANEL COMPONENT

The Panel is the second component and is available in four depths and two configurations; the Standard Panel and the Blockout Panel.

The Blockout Panels have additional EPS, which is flush with the bottom of the Beam Form, and can be used for the entire floor, or just at the ends of each beam to close the space between the beam ends and the interior face of the walls. The Blockout Panel also prevents concrete from spilling out between Beam Forms at slab edges.
1.3 – APPLICATIONS

CONCRETE PLACEMENT

Another key feature of the Fortruss is having the choice to place concrete in the beam and slab at the same time (monolithic pour) or in two separate operations (two-pour system).

In many cases it’s advantageous to conduct a two-pour system. The first pour consists of filling the Beam Forms up to the top of the Floor Panel. With the structural reinforcement contained primarily in the beam voids it is possible to pour the structural portion of the floor without the slab portion. This allows projects to maintain tight schedules by grouping all work for each trade to a single site visit.

Fortruss installed with ICF or cast-in-place concrete wall systems can benefit from placing concrete in both the wall and floor forms at the same time.

When only the beams need to be placed for structural integrity, projects are not delayed while waiting to schedule trades for rough-in work before concrete placement can be carried out. The EPS deck can be used as a work platform to proceed with building construction once the concrete has been placed in the Beam Forms. This allows multiple floors to be built without subtrades required to rough-in prior to progressing to the next level.

Even with concrete block, precast, steel and wood frame wall systems it can be advantageous to delay concrete placement between the beam and slab. Most suspended concrete slabs have additional floor
coverings such as carpet, tile, hardwood, etc. However, Fortruss is especially suited for decorative concrete finishes. Slabs requiring special finishes can now be placed inside, sheltered from the environment, after subtrade rough-in reducing both placement difficulties and subtrade damage.
1.4 – STRUCTURAL REQUIREMENTS

Engineering is to be reviewed by the project engineer or a third party engineer, including shoring requirements.

Fortruss is a forming system not a structural system. Fortruss provides standard details for reinforcement placement as well as design tables for span limitations at various design loads. Detail drawings for connection of the Fortruss to various wall or support systems are also provided to aid in the installation.

It is the responsibility of the project engineer to decide which details are applicable for each project or provide specific details for each installation. Various drawings are provided in this guide to aid in the design and installation process. Every project must have a licensed engineer design the structural concrete slab and support wall based system on the loads and forces which will be imposed upon it in its end use. Although Fortruss provides generic span tables and connection details it is still the responsibility of the builder to make sure each application has been reviewed and approved by a structural engineer licensed to practice in the jurisdiction of the project.