



Photograph courtesy of Oldcastle Precast Building Systems.

Q How do I get started creating a hollow-core design? What primary factors should I take into consideration for my project?

A. The primary consideration in developing a framing scheme using precast concrete hollow-core components is the span length. Create a list of loads and fire ratings and consult with your local precaster about optimizing the span lengths and slab thicknesses required to meet those needs.

You can also refer to a variety of published load tables. Copies of these can be found on most precasters' websites or in their product binders. The *PCI Design Handbook* recommends limits on span–depth ratios for hollow-core. A span–depth ratio of 45 is common for floors and roofs when fire endurance, openings, or heavy or sustained live loads do not control the design.

Other factors affecting the hollow-core thickness specification for a given span also must be considered. For instance, heavy superimposed loads would require a lower span–depth ratio. An example would be when the design includes heavy partitions or a large number of openings, which require higher load capacities to provide support.



Photograph courtesy of Oldcastle Precast Building Systems.

Getting Started with Hollow-Core

Once hollow-core thickness and spans are selected, the economics of the layout become important. Hollow-core ends can be cut at an angle, but it is more efficient to have the bearing perpendicular to the span; therefore, square-cut ends should be used whenever possible.

While it is desirable to have the hollow-core dimensions fit the bay size or module, the precaster can cast filler pieces to use as partial-width hollow-core if needed. Your precaster can aid with bay spacing and minimizing the need for partial-width hollow-core. The approach will depend on the precaster's techniques and regional availability.

Consider Camber

Camber must also be taken into consideration. As with all prestressed concrete products, initial camber can be predicted. Of particular importance is that differential camber can occur with hollow-core of unequal lengths. This must be recognized, so that any differential camber in the design layout and during placement in the field can be dealt with promptly.

When you are ready to create concrete drawings, feel free to contact a local precaster. Precasters can be especially helpful in the early stages of a project and can guide you through the process to maximize efficiency of pieces and design related to the precast concrete components.

Typically, the designer provides information on the drawings showing the span directions, loading requirements, connection information, fire-resistance requirements, topping requirements (for example, leveling coat or composite topping), and all the openings' locations and sizes (over 10 in. round or square) in the hollow-core.

More Information

This column answers frequently asked questions about designing, casting, and erecting precast concrete components. This issue's response was provided by the members of the Mid-Atlantic Precast Association (www.mapaprecast.org). If you have a question about precast concrete components, please send it to managing editor Craig Shutt at craigshutt@ameritech.net.