Pan Tips: A History Lesson

Construction using steel pans is over a century old!

First invented by C. Louie Meyer in 1912, the concept of removable steel pans to void concrete was an industry changing innovation. At the time, concrete buildings were constructed using clay tile to void concrete with the tiles permanently retained in the structure.

Pans were originally shallow (6" deep) and narrow (15" and 20" wide). Over time the depth and width changed, along with the design. The industry standardized around 30" voids with 6" wide joists resulting in structural members at 3' on center. At the time, topping slabs of 2 ½" to 3" were all that was required. Further, designers often placed distribution ribs mid-span of a joist layout. These ribs stiffened the floors and helped to distribute loads among multiple joists. Joists were reinforced differently than beams and given special consideration in the design codes.

That was the shape of the industry until the mid-70's. With code changes, the topping slab depths were increased. Designers naturally wanted to utilize this added depth and soon voided out every other joist to create structural members at 6' on center. This was accomplished by simply placing a steel plate over every other joist void between pans. This was referred to as skip plate or skip joist construction. (You may still occasionally see skip plate techniques used to create custom voids out of standard pans.)

The increased use of skip plates and additional code changes drove suppliers to standardize on wider pans – 66" and 53" wide voids. These pans were called "Wide Module" and the term was soon applied to the design of Wide Module joist construction. Originally, 6" joists were married to the 66" pans to yield support members at 6' centers and 7" joists were married to the 53" pans to yield support members at 5' centers.

As design codes changed and the requirement that reinforcing for the joist follow the rules for beam construction, designers determined a narrow joist width is immaterial to efficiency. Creating a pan layout with 8", 10", 12" or even wider joists drives efficiency. Economy comes from using industry standard material to create the resulting structural members required to carry the loads.

We are grateful for the adaptations and innovation that led us from narrow pan joists to the more efficient wide module construction.

WHEN CONSIDERING LAYOUTS, KEEP THE FOLLOWING IN MIND:

- Wide module pans 66" wide are the industry standard. There are no wider pans commonly available.
- Other pan sizes including widths of 53", 30" and 20" are available and should be used for fillers.
- Standard depths are 16", 20" and 24". Some pans are available in shallower depths.
- Distribution ribs are discouraged as the reinforcing, width and depth of joists do not benefit from their inclusion.
- Topping slab depths are driven by code requirements tied to fire ratings.