

PCPS System	Design type and developer	Field projects	Applications in field demonstrations	Other comments
KWIK SLAB®	Jointed system developed by Kwik Slab LLC, Honolulu	Limited; Mostly demonstrations in the State of Hawaii	Rehabilitation and reconstruction, but limited field demonstrations	Used on a bus pad, but limited field use information
Precast Prestressed Concrete Pavement (PPCP)	Post-tensioned system developed by FHWA and University of Texas	5 major projects completed and some scheduled	New construction, reconstruction, continuous repairs over long segments, bridge approach slabs; Intersection project scheduled in 2009.	Used on a variety of base types, including a friction reducing layer and different post-tensioning options
Super-Slab®	Jointed system developed by The Fort Miller Co. Inc., N.Y.	More than 500,000 square feet completed (40 projects), mostly in the vicinity of New York	Intermittent and continuous repairs, rehabilitation, new construction, reconstruction, ramps, intersections, bridge approach slabs	Used on a variety of base types and alignments with horizontal and vertical curves

TABLE 1 – Widely used systems and key attributes

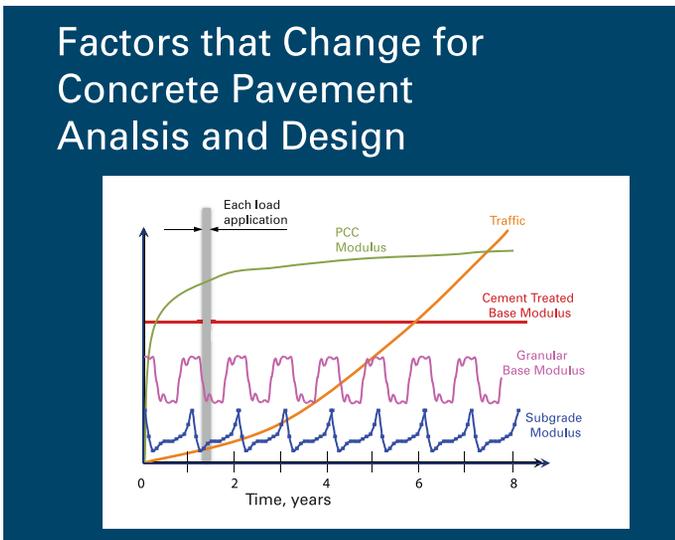


FIGURE 3

Concrete slabs, precast or otherwise, require a mechanism to transfer loads across transverse joints while also holding the slabs closely together. In PCPS, this has been achieved either through post-tensioning the installed slabs or through the use of load transfer devices across the joints (see Figure 2). Post-tensioning operations have been carried out either from the end or from the mid-slab location. Often, an interlayer between the base layer and the slab or immediately underneath the slab reduces the frictional restraint.

In slabs without post-tensioning, several innovative devices and technologies have been developed for achieving load transfer across slabs. The most widely used are dowel bars, but several different means of field installation have been adopted. In addition, mechanical couplers or tie bars are used across longitudinal joints to tie adjacent lanes. A few projects also have attempted to post-tension across lanes. A joint design that allows for free expansion and contraction of the slabs is a critical factor for good pavement performance.

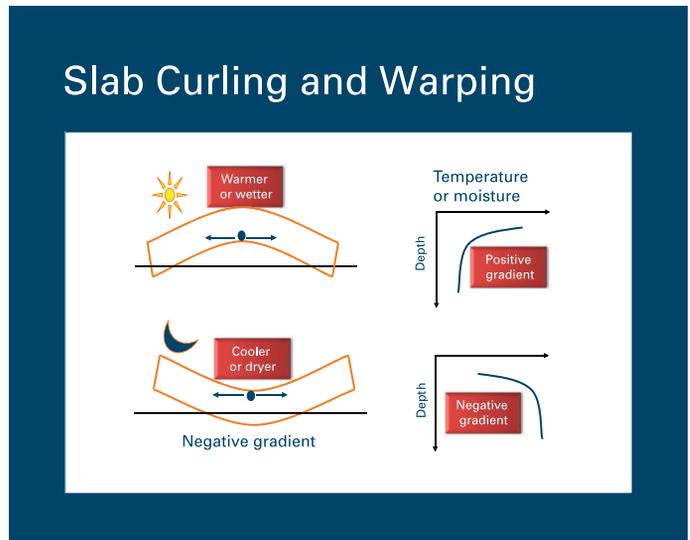


FIGURE 4

Finally, precast slabs also use grouting materials to fill encased hardware used in the installation process, including post-tensioning and load transfer devices. Some PCPS also use bedding materials or a bedding grout to provide a uniform and stable surface underneath the installed slab. The slabs are prefabricated with slots or ports for filling grout into the system.

Current systems

The precast industry has incorporated some or all of the features discussed above into complete systems. The alternatives include both proprietary and nonproprietary products. Three widely used systems and their key attributes are listed in Table 1.

Each system makes use of a specialized design procedure and has unique design, fabrication and installation features. These include all methods to:

- Meet specification tolerances for geometry
- Match required elevations on field