SHRP2 SOLUTIONS
TOOLS FOR THE ROAD AHEAD

Precast Concrete Pavement (R05)

Tools for using precast concrete pavement (PCP) systems to reduce the duration of construction closures on critical roadways and to provide long-life performance

Challenge

Over the past 10 years, many transportation agencies have recognized the benefits of using precast concrete pavement systems to speed reconstruction on critical roadways. PCP systems can be installed quickly, and roadway sections immediately reopened, minimizing disruption. However, because the technology is relatively new, information on PCP best practices and performance has not been well documented. Further, because many PCP systems are proprietary, some practitioners have found them difficult to specify.

Solution

To fill the knowledge gap that has prevented PCP from being used more widely, SHRP2 developed guidelines and tools for agencies to use in the selection, design, construction, installation, and maintenance of PCP systems, and offers tools to develop a cost-benefit assessment.

SHRP2 investigated 16 PCP projects at locations with a wide range of climates (from Michigan to Texas) and assessed how the PCP systems were used (on ramps, toll plazas, at-grade roadways, and airports). Field surveys included short, intermittent repairs as well as longer, continuous applications. The research found that modular pavement technology is still evolving, but that over the 10 years it has been used, well-designed and well-constructed PCP systems can provide high-quality, long-term service and are often a good choice for rapid repair and rehabilitation of existing pavements. The SHRP2 PCP solution offers a series of guidelines and model specifications to help agencies effectively select projects for PCP, and to design, fabricate, and install long-life jointed and prestressed PCP systems.

Benefits

PCP systems are comprised of high-quality, prefabricated concrete panels that are formed offsite and installed during off-peak travel times. The versatile approach can be used for rehabilitation of roadways, toll plazas, ramps,intersections, bridge approach slabs, and tunnels, in addition to new roadway construction. Cast in plants under ideal conditions, precast panels are subjected to high quality control standards during the fabrication process, which results in a durable and ready-for-traffic road surface. The required smoothness typically is achieved by routine grinding of the panels soon after placement.

Coupled with the fact that the cost of PCP panels has dropped significantly in the past decade, PCP offers transportation agencies significant short- and long-term advantages, such as:

- Shorter installation time
- Reduced construction-related closures, and therefore reduced exposure of workers and drivers to work zone hazards
- Pavement is ready for traffic upon installation—no curing time
- Slabs are cast in plants under ideal conditions for optimum quality and durability
- Installation can take place at night or under adverse weather conditions, extending the construction season

Save Lives

Shorter construction period means less exposure to work zone hazards for drivers and workers.

Save Money

Installation costs for PCP are slightly higher than alternative CIP solutions, but can result in significant savings because of reduced installation time and traffic maintenance costs.

Save Time

PCP enables rapid installation and quality control, and roadways can often remain partially open during the installation process for reduced congestion and minimal impact to users.

RENEWAL

One of four SHRP2 focus areas, Renewal products help transportation organizations rapidly build and restore highway infrastructure that lasts longer while minimizing user disruption and delay.

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Visit: www.fhwa.dot.gov/GoSHRP2
Learn more about products, case studies, and implementation assistance.

- Longer-life performance than traditional cast-in-place (CIP) solutions

The Implementation Assistance Program

Implementation assistance is available to help State departments of transportation (DOTs), metropolitan planning organizations (MPOs), and other interested organizations deploy SHRP2 Solutions. A range of opportunities is available to raise awareness of SHRP2 Solutions and to encourage early adoption of these products. Application periods are offered approximately twice per year. Each product selected for implementation assistance has the potential to deliver more efficient, cost-effective programs to meet the complex challenges facing transportation today.

How can you learn more?

Visit: www.fhwa.dot.gov/GoSHRP2

- Additional product information
- Information about how this product is being used in the field
- Contact information for peers who are familiar with this product
- Links to research reports

Contacts

Sam Tyson (FHWA)
sam.tyson@dot.gov

Kate Kurgan (AASHTO)
kkurgan@aashto.org

About SHRP2 Implementation

The second Strategic Highway Research Program (SHRP2) is a partnership of the Federal Highway Administration (FHWA), the American Association of State Highway and Transportation Officials (AASHTO), and the Transportation Research Board (TRB). TRB completed the research, and now FHWA and AASHTO are jointly implementing the resulting SHRP2 Solutions that will help the transportation community enhance productivity, boost efficiency, increase safety, and improve the reliability of the Nation's highway system.