



PNA DESIGN-BUILD PAVEMENT SYSTEM

Advanced Concrete Engineering
for Industrial Pavements



PNA's Warrantied Design-Build Solution for Industrial Pavements

PNA Construction Technologies' Design-Build Pavement System integrates custom engineering services and design tools with commercial concrete construction for quality control and cost savings.

DESIGN



BUILD



Concrete Pavement Experts

When you need advanced engineering and design services for industrial and commercial concrete pavements, turn to PNA Construction Technologies. Our credentialed flatwork engineers use the latest engineering advances and design technology to optimize flatwork performance while minimizing construction and lifecycle costs.



World-Class Partners

PNA partners with industry-leading concrete contractors across the United States and Canada to create a design-build framework that ensures the highest-quality results and on-time project delivery.

Our Design-Build Pavement System comes with a standard three-year warranty for pavements.

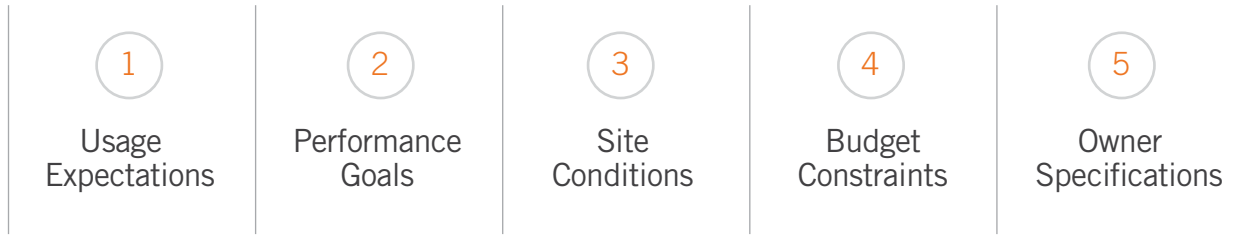


Our Design-Build Pavement System is ideal for heavy traffic and high-load conditions.

- Logistics facilities
- Distribution centers
- Warehouses
- Intermodal freight depots
- Commercial/manufacturing facilities
- Warehouse-style retail outlets

Customized Solutions

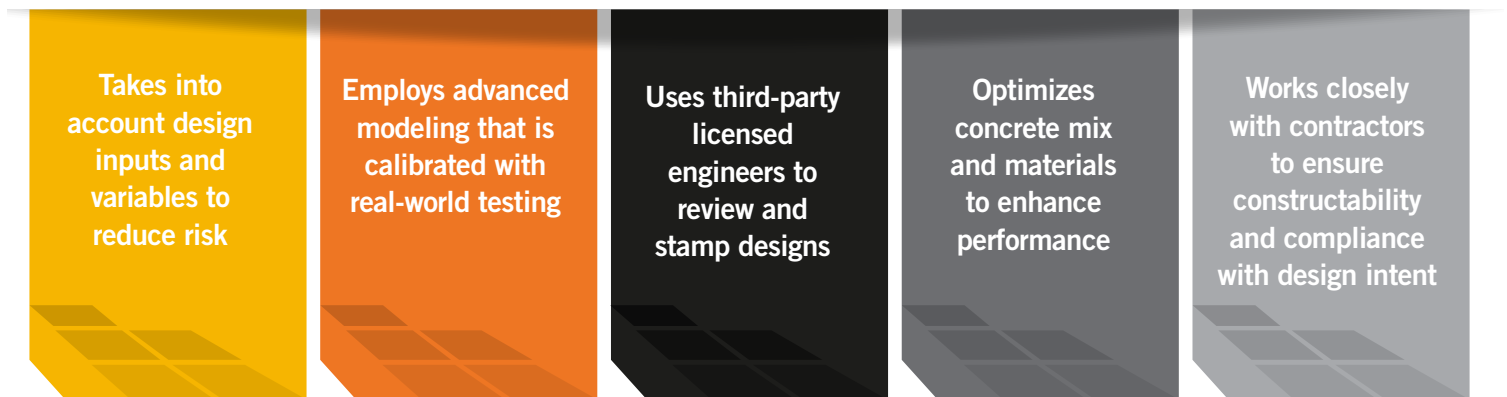
Our Design-Build Pavement System is uniquely tailored to each project. Our engineers use proprietary tools and technologies to optimize designs, taking the following into account:



Precision That Counts

PNA Construction Technologies eliminates the guesswork from pavement engineering and design.

Our engineering approach:



Begin with PNA. End with Success.

Our high-performance pavement solutions produce smooth, flat, level surfaces that are long-lasting.



Reduced cracking,
faulting, spalling and
loose or rocking joints



Reduced risk of
accidents, injury and
product damage



Increased operational
efficiency and
productivity

Cut Costs – Not Quality

Our designs comply with and improve upon the latest industry standards, such as ACI 330.2R-17 “Guide for the Design and Construction of Concrete Site Paving for Industrial and Trucking Facilities” and ACI 325 “Guide for Construction of Pavements.”

By optimizing beyond these standards, PNA can design pavements with highly competitive construction costs. The savings extend beyond first cost, with pavement that has low maintenance and repair costs and a long service life.

Count on PNA to engineer the most reliable platform for your operations at the lowest ownership cost.

Guaranteed Results

PNA Construction Technologies delivers results that last. Our Design-Build Pavement System comes with a standard three-year warranty for pavements, covering design, construction and materials.



PNA's Thin Concrete Pavement (TCP)

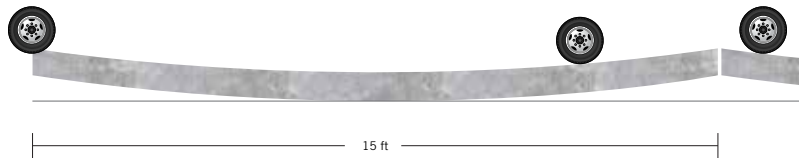
Concrete is a cost-effective alternative to asphalt, thanks to PNA's patented Thin Concrete Pavement (TCP) Design technology. TCP significantly reduces concrete thickness and construction costs while maintaining the superior performance and sustainability of concrete.

Less Out-Of-Joint Cracking

TCP minimizes mid-panel cracking caused by concrete curl. Curl naturally occurs due to shrinkage under ambient conditions; it can be reduced, but not eliminated. Moreover, longer slabs typically exhibit more curl, creating larger voids between the slab and the base.

TCP shortens traditional 12- to 15-foot (3.6- to 4.6-meter) panels to 8 feet or less. This reduces the amount of curl and prevents both edges of the panel from being loaded simultaneously. As a result, the panel experiences less stress and fewer cracks.

Traditional Concrete Design
12'x 15' panels that are 10" thick



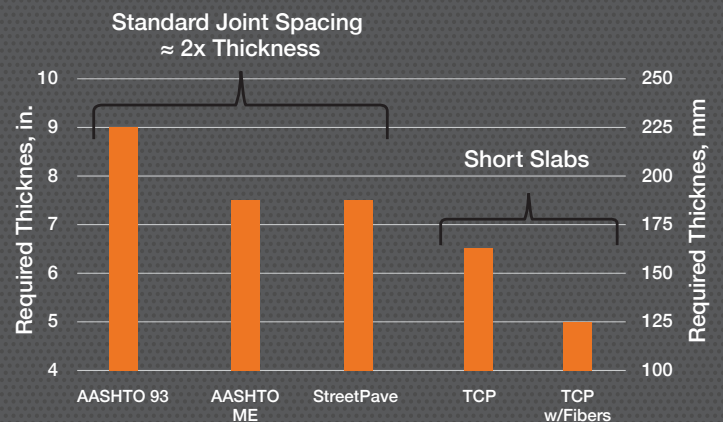
This TCP design uses
37 percent less concrete!

TCP Design
6'x 6' panels that are 6.3" thick



Reduce Construction Costs

By reducing wheel loads over shorter panels, TCP minimizes concrete volume while maintaining the same load-bearing capacity. Slab thickness can often be reduced by 2 inches or more, saving up to 40 percent in material costs while expediting placement work.



Above designs based on 500 trucks/day in freeze-thaw climate.
All other inputs are the same across design methodologies.

PNA's Engineering Expertise

PNA's industry-recognized engineers have focused their academic and professional careers on advancing pavement engineering principles and design best practices.



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B.Eng. and MASc in engineering and MASc in civil engineering from Ryerson University
Previously Director, Cement Association of Canada
Also served as Engineer at Ready Mix Concrete Association of Ontario and St. Marys Cement



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Visit pna-inc.com for more information about our design-build pavement solutions and to view articles, white papers and presentations on pavement design and construction.

Contact PNA today to find out how we can help you with your commercial/industrial flooring and pavement needs.

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