



The largest TCP project at its time of completion, a high performance TCP design reduces the amount of concrete needed.

Year of project completion using TCP:
2021

Total pavement surface area:
2,700,000 square feet (250,838 m²)

Largest TCP project worldwide at time of completion

Designed Traffic:
4 million ESALs

Pavement thickness with TCP:
Heavy Duty: 5.5 in (14 cm)
Light Duty: 4.5 in (11.5 cm)

Soil Contribute:
California Bearing Ratio (CBR): 2-3%
Lean Clay (CL)

Soil treatment/subbase:
8 in Cement Stabilized Soils

National Property Holdings counts on PNA's patented Thin Concrete Pavement (TCP) Design

When National Property Holdings was engaged to build a new distribution center for their Home Center client, they turned to PNA's patented Thin Concrete Pavement (TCP) technology as a cost-effective replacement for traditional concrete pavement design. Before this project was even completed, the Home Center client chose to use TCP for another project based on their experience.

Challenges

Previously, the large home center chain planned to use conventional joint spacing and thickness – 8.5 in (21.5 cm) thick for heavy duty with 15 ft joint spacing and #4 rebar at 18 in (46 cm) on center, and 5 in (12.7 cm) thick for light duty, with 15 ft joint spacing and #3 rebar at 24 in (60 cm) on center. This type of pavement has a history of experiencing an unexpectedly high percentage of slab cracking, mainly due to excessive curling and restraint.

PNA Solution

TCP was chosen for their new Distribution Center in Texas due to significant project savings and superior performance. With this method being used, slab thickness was able to be reduced to 5.5 in (14 cm) and removes the need for continuous steel reinforcement or dowels at sawcut joints. 4 pounds of Macro-synthetic fibers were used per cubic yard of concrete.



With a joint layout optimized by our OptiPave2 software, curling is reduced and axle loads are better distributed, reducing out-of-joint cracking.

TCP saved National Property Holdings an estimated \$2.4 Million

Initial Pavement Design	Optimized TCP Design
8.5 in (21.5 cm) thick with 15 ft (4.6 m) joints and #4 rebar at 18 in (46 cm) on center	5.5 in (14 cm) thick with 6 ft (1.8 m) joints and 4 lbs/CY macro-synthetic fibers
5 in (12.7 cm) thick with 15 ft (4.6 m) joints and #3 rebar at 24 in (60 cm) on center	4.5 in (11.4 cm) thick with 6 ft (1.8 m) joints and 4 lbs/CY macro-synthetic fibers

TCP System Replaces Asphalt

Concrete is a cost-effective alternative to asphalt, thanks to PNA's patented system. TCP significantly reduces concrete thickness and construction costs while maintaining equivalent or better performance.

Category	Traditional Concrete Design	Asphalt Pavement	Concrete Pavement Designed with TCP
First Cost Savings	Baseline	10-15%	20-30%
Maintenance/Repair Costs (Pot hole patching, resurfacing, etc.)	\$	\$\$\$	\$
Safety (Skid/slip hazard reduction, reflectivity)	★★★★★	★★	★★★★★



To learn more about TCP, visit pna-inc.com/tcp