PNA CONSTRUCTION TECHNOLOGIES | Walmart Chile Inmobiliaria

TCP Case Study

Walmart began using Thin Concrete Pavement (TCP) technology in Chile in 2011.

Year of Walmart's first project using TCP:
2011

Total pavement surface area:
120,000 square yards (100,335 m^2)

Typical traffic:
500 trucks per day with varying combinations of single-, double- and triple-axle configurations

Pavement thickness with TCP:

- **Main street:** 6.7 inches (17 cm)
- **Platform area:** 5.9 inches (15 cm)
- **Light traffic:** 3.1 inches (8 cm)

Subgrade:
California Bearing Ratio (CBR) – 10 percent

Granular subbase:
6 inches (15 cm) – CBR>80 percent, less than 8 percent fine material

Walmart Chile Inmobiliaria counts on PNA's patented Thin Concrete Pavement Design

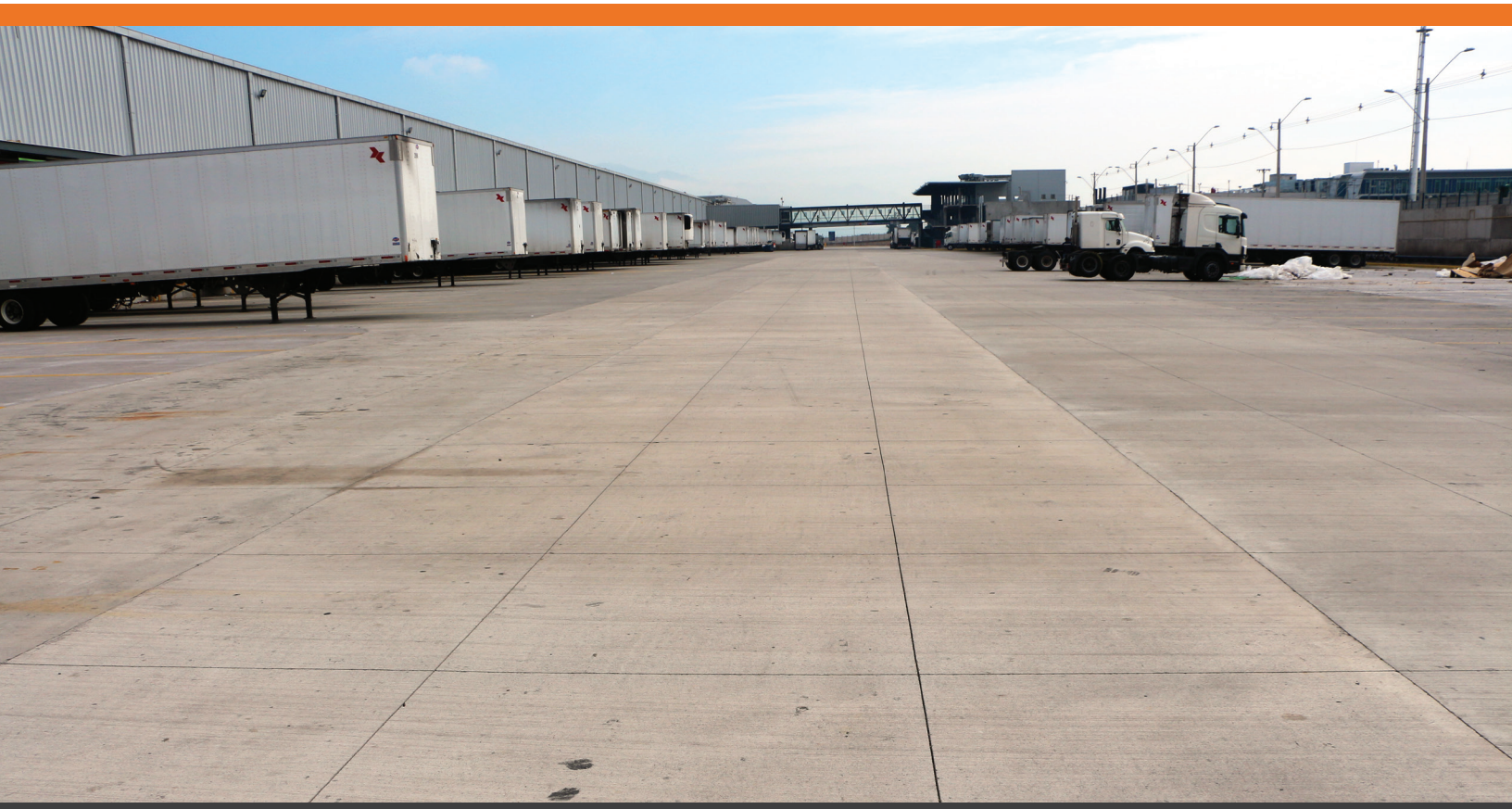
When Walmart Chile Inmobiliaria built a distribution center in Santiago, Chile in 2011, it turned to PNA's patented Thin Concrete Pavement (TCP) Concrete Pavement technology as a cost-effective replacement for traditional concrete pavement design. The company was so pleased with TCP's performance, it used TCP twice more: first, when it expanded the distribution center in 2015 and then in 2018, when it built another distribution center in Santiago.

Challenges

Before 2011, the big-box chain used conventional joint spacing and thickness – 9.8 feet (3 m) to 16.4 feet (5 m) long and 8 inches thick (20.3 cm) – in its distribution centers in Chile. This type of pavement design performed poorly because of significant upward curling. This curl – combined with significant truck traffic volumes and loads – resulted in premature transversal cracking.

PNA Solution

In 2011, the retailer chose TCP for its new distribution center in Santiago. By reducing the joint spacing to 8 feet (2.4 m) or less, the TCP system minimizes upward curling and reduces the stresses truck traffic puts on each panel. This design makes it possible to reduce thickness by 2 inches (5 cm) or more, saving up to 30 percent in material costs.

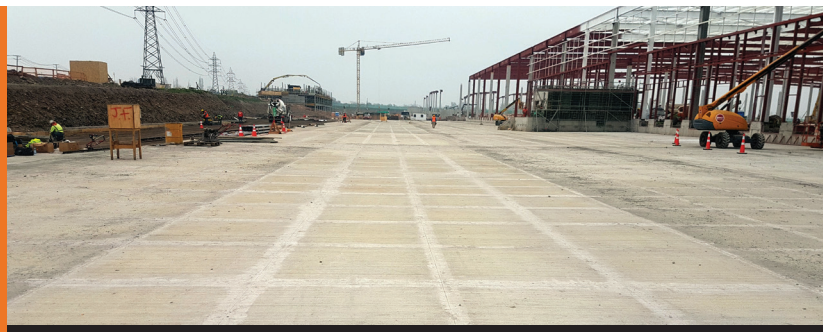


TCP is performing better than Walmart's historic design more than seven years after the retail giant first used it.

TCP cut Walmart's costs 12 percent

Initial Pavement Design	Optimized TCP Design
9.5 inches (24 cm) thick with 15-foot (4.6 m) joints	6.7 inches (17 cm) thick with 6-foot (1.8 m) joints
7.9 inches (20 cm) thick with 15-foot (4.6 m) joints	5.9 inches (15 cm) thick with 6-foot (1.8 m) joints

Four years after the distribution center opened, Walmart representatives were so happy with the TCP pavement's performance, they decided to use TCP technology for an expansion of the original facility. In 2018, the big-box chain built another distribution center in Santiago, choosing TCP as its pavement solution.



Walmart was so happy with TCP's performance compared to outdated concrete pavement designs, it chose TCP for two more pavement projects.