Concrete Results

Concrete Overlays

The Challenge

After 20 years of continuous service, the Pikes Peak Shuttle Lot, operated by Denver International Airport (DEN), had reached the end of its service life and needed to be replaced. DEN Landside Engineering considered removal and replacement of the existing 5" to 7" asphalt pavement, which was supported by a 12" lime treated base. Additionally, they considered a 5" unreinforced concrete overlay, placed directly on the existing asphalt.

The Solution

DEN Landside Engineering prepared a Life-Cycle Cost Analysis (LCCA) comparing the two options. The LCCA demonstrated the concrete overlay option would provide substantial savings over a 40-year service life. When coupled with the fact that the concrete overlay was also about 30% less expensive in initial cost compared to the remove and replace option, DEN made the decision to build the largest concrete overlay parking lot project in the US.

The Results

Due to the COVID-19 pandemic, only about 55% of the project was built initially. Following the construction of initial test strips, the nominal thickness was reduced to 4.5" and tie bars at the construction joints were eliminated. The only tie bars constructed were in the lanes along the perimeter of the lot, providing a ring of concrete to hold the lot together. Work on Phase One was completed in time for the 2020 holiday season. The start date for Phase Two is unknown at the time of this writing.

PAVE AHEAD

DURABLE. SUSTAINABLE. **CONCRETE.**

Pikes Peak Shuttle Lot

Denver International Airport

Design Factors:

- 4.5" concrete overlay
- Existing curb overlaid with new curb
- Tie bars eliminated at construction joints. Used only in perimeter lanes

Concrete Placement:

- 650 psi flexural strength
- Slipform concrete paver placement
- 6 feet O.C. joint spacing
- Joints sealed with silicon-based sealant