

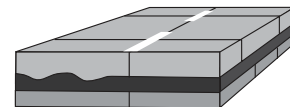
# Targeted Overlay Pavement Solutions (TOPS)

Targeted overlays fit the treatment to the condition of the existing pavement.



U.S. Department  
of Transportation  
**Federal Highway  
Administration**

## Unbonded Concrete on Composite



### Iowa

US 59 is a major north-south artery in Iowa. A 12.3-mile section south of Cherokee County that was carrying approximately 6,300 vehicles per day in 2014 was experiencing **thermal cracks, failing joints, severe joint roll-down, and bottom-up cracking**. The original 7.5-inch concrete slab, constructed in 1937, had been overlaid twice with a total of 6.5 inches of asphalt. To remedy the distresses and the associated poor ride quality, the Iowa Department of Transportation let a two-stage project to mill the existing pavement and place 310,000 square yards of a 6-inch unbonded portland cement concrete overlay. The contract allowed 120 working days for the project, with an incentive/disincentive of \$7,500 per day.

The pavement cross-section design consisted of two 12-foot-wide lanes with 10-foot-wide concrete shoulders. For staging purposes, the contractor chose to pave in two 22-foot-wide passes. The existing asphalt surface was milled for grade control, and dump trucks placed the concrete for the overlay directly in front of the paver. Six-foot #4 tie bars were stapled transversely to the surface during this operation at the interface between the driving lane and the shoulder. Early-entry saw cutting was used to create 6-by-6-foot joints on the mainline section.

To minimize traffic detours during construction, several operations were conducted using a pilot car and flaggers. These operations included concrete patching, subdrain installation, and milling. A stringline was set for the milling operation to profile the existing roadway and ensure milling accuracy.

Stage 1 construction included 208,000 square yards of concrete paving and involved establishing a detour route. This stage was not to exceed 49 calendar days. Even with 13 inches of rainfall during the operation, however, the closure for Stage 1 was only 35 days, which illustrates a benefit of concrete overlays compared to reconstruction. Stage 2 construction included full-depth turning lanes and intersections phased in with the paving operation and was allowed only 28 calendar days. The 102,000 square yards of concrete paving for Stage 2 was completed in only 19 days. **Only 82 of the 120 working days allowed by the contract were needed, which reduced traffic disruption and inconvenience to the public.**



Placing 6-inch concrete overlay on geotextile  
(Iowa DOT)



US 59 open to traffic (Iowa DOT)

[Visit our website](#) for more information on Targeted Overlay Pavement Solutions.

Concrete Materials

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