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International Grooving & Grinding Association

Barlow Road & Gateway Avenue Rehabilitation, Fort Morgan, CO

>>> PAVEMENT REHABILITATION – SLAB STABILIZATION, JOINT SEALING AND DIAMOND GRINDING

BORDERING THE EASTERN and southern sides of the Cargill Meat Solutions Plant in Fort Morgan, Colorado, Barlow Road and Gateway Avenue serve as the only route for continual 24-hour heavy truck traffic to move cattle and product to and from the plant. Because of the high level of wear developed over the years, a one-mile long, four-lane-wide, segment of this roadway was in need of repairs. Nearly all of the road panels experienced faulting in both travel directions at an average panel displacement of 3/8-1/2 inches. As a result, the bumpy riding surface was in need of rehabilitation.

The heart of the problem existed within the design, which did not incorporate dowel bars at the transverse joints and instead relied on base layers and aggregate interlock for load transfer. Unfortunately this design was no match for the extreme truck loading that this pavement received on a daily basis. The solution sub-surface rehabilitation of the non-reinforced concrete pavement in the form of base and sub-base stabilization, under sealing and alignment/lifting of concrete panels, diamond grinding and joint sealing. Each panel was lifted and leveled with the adjacent panel at the transverse joint by drilling a pattern of 5/8-inch holes on 4-foot spacing through the pavement. Next, an expanding structural polymer from Uretek USA was injected to lift and stabilize the surface. Diamond grinding was performed to smooth transverse joints and remove panel warping. The final stepped included sealing approximately 35,000 linear feet of joints.

Deep sub-surface voids under pavement corners and joints in areas of utility cuts required deep stabilization, which posed a challenge on this project. These weak sub-grade areas were treated and stabilized without removal of any pavement, using the Uretek USA technology. In addition, seasonal temperatures delayed some of the joint sealing and tighter joints were difficult to lift and align.

The non-destructive methods used on this project eliminated the need to tear out the existing pavement, which saved time and money. By closing only one lane at a time, the roadway was able to safely remain open full time to local traffic with all lanes available for use between project work shifts.

The result was a largely improved, smooth and safe ride, that is expected to extend the life of the pavement by 20 years. With a total project value of $643,000, the taxpayer cost was estimated at 50 percent of the cost to remove and replace. The project was completed in April 2007. A five-year review completed in the summer of 2012 showed no further deterioration of the concrete pavement or ride quality.

TEAM MEMBERS

- City of Fort Morgan, Colo. (Owner)
- Concrete Stabilization Technologies, Inc. (Prime contractor)
- Anderson & Hastings Consultants, Inc. (Civil engineer)
- Concrete Coring of Colorado (Diamond grinding and sealing)