



ALLAMAKEE COUNTY A-52

Unbonded Overlay and Whitetopping

Project Report #10

November, 1992

During 1992, Allamakee, Cherokee, Dallas, Pottawattamie, Sac and Wright Counties awarded contracts for Portland cement concrete (PCC) overlays totalling 39.64 mi. PCC overlays have been a viable procedure for rehabilitating Iowa pavements for more than two decades. Statewide, 30% of all 1992 secondary road PCC paving projects specified either an unbonded overlay (PC over PC) or whitetopping (PC over AC). Today, with 425 mi. of Iowa's county roads overlaid using PCC, their performance has been found to equal or exceed new pavements built on natural subgrade. Allamakee County is one of the leaders in PC concrete overlay design and construction, having modernized more than 40 mi. of old roads using this technique.



A problem faced by many jurisdictions in recent years concerns what to do with obsolete primary highways that have been transferred into the secondary road system. Often these pavements are

among the older ones in Iowa and have not received the upkeep or repairs that higher priority routes enjoyed. Old Iowa 9 west from Waukon was originally built in 1928, 18 ft. wide, with lip curbs and a 10-7-10 in. thickened edge design. After being bypassed by the new road two mi. south about 23 years ago, it became Allamakee County Road A-52 and still carries up to 900 vehicles per day.

Although it remained structurally sound and required very little repair, the narrow curbed pavement with closed ditches was obsolete by all current standards. After studying his alternatives, County Engineer William C. Kerndt selected an unbonded PCC overlay as the most cost-effective long-term rehabilitation option.

A design was produced requiring lip curb removal by rotomilling, replacing some old culverts with new reinforced concrete crossroad pipes, regrading the right-of-way to create proper shoulder width and opening longitudinal ditches for drainage.



For paving, a 1/4 in. thick slurry seal bond breaker was applied before placing the 6 in. PCC overlay. To modernize the 18 ft. section, a 22 ft. width extending 2 ft. on each side beyond the original slab and 11 in. thick was used. Tied longitudinal, sawed joints requiring #4 deformed bars, 30 in. long on 30 in. centers were constructed by placing bars in the plastic concrete at mid-depth as specified above the edges of the old pavement and at centerline. All contraction joint saw cuts were required to be 1/4 the depth of the slab, with transverse joints skewed 2 on 12 at 15 ft. spacing, sealed with low modulus hot poured material. Electronically controlled slipform paving equipment was specified to be used.

For the 0.94 mi. section just east of Winneshiek County previously built by Allamakee County as a 12 in. thick, 22 ft. wide rolled stone base with 3 in. asphalt surface, a 6 in. PCC whitetopping was constructed, using the same jointing, surface texture and shoulder treatment as specified for the unbonded overlay concept. In addition, a short bonded overlay transition extending into Waukon was included at the request of the city.

The contract for this 7.523 mi. project was awarded to the Fred Carlson Company, Inc. of Decorah, Iowa for their low bid of \$1,233,600, and completed in November 1992. By using these PCC alternates to accomplish "Bonded," "Unbonded" and "Whitetopping" overlay techniques, Kemdt and his Board of Supervisors are confident that they have provided motorists in the Waukon area of northeast Iowa with a brand new Portland cement concrete highway which will give them many years of durable, safe and economical service.

Additional information may be obtained by contacting the Iowa Concrete Paving Association at (515) 278-0606 or William C. Kemdt, Allamakee County Engineer, P.O. Box 493, Waukon, Iowa 52172, (319) 568-4574.

