

SUMMARY

The Greene County, Iowa, overlay project, completed in October 1973, was evaluated in October 1978, after five years in October 1983, after ten years and most recently in October 1988 after fifteen years of service.

The 33 fibrous concrete sections, four CRCP sections, two mesh reinforced and two plain concrete sections with doweled reinforcement were rated relative to each other on a scale of 0 to 100. The rating was conducted by original members of the Project Planning Committee, Iowa DOT, Iowa County, Federal Highway Administration and industry representatives. In all, there were 23, 25 and 17 representatives who rated the project in 1978, 1983 and 1988 respectively. The 23, 25 or 17 values were then averaged to provide a final rating number for each section or variable.

All experimental overlay sections had performed quite well in the period from five through 15 years, experiencing only limited additional deterioration. The 4" thick nonfibrous mesh reinforced continuous reinforced concrete pavement overlay sections provided the best performance in this research project. Another nonfibrous 5" thick bar reinforced overlay section performed second best. The best performance of a fibrous reinforced concrete section was obtained with 160 pounds of fiber per cubic yard.

The use of 750 pounds of cement per cubic yard in the fibrous concrete overlays provided no benefit over the use of 600 pounds of cement per cubic yard.

The performance of the fibrous overlays was directly related to fiber content of the concrete mix. The 160 pounds per cubic yard provided the best performance with the poorest performance exhibited by the 60 pounds of fiber per cubic yard. There is no significant difference in the performance of the 2 1/2" long and 1" long fibers.

The 3" thick fibrous concrete overlays yielded substantially better performance than the 2" fibrous overlays.

Substantial bonding was not achieved on any of the fibrous concrete overlay sections and, therefore, no conclusion can be reached in regard to the type of bonding.

In general, the thicker, nonfibrous pavement overlay sections performed better than the fibrous reinforced concrete overlays. The additional cost of the fibrous concrete overlays cannot be justified based upon the comparative performance of the fibrous and thicker nonfibrous overlay sections.