

RECYCLING OF ASPHALT CONCRETE FROM I-80 IN CASS COUNTY

ABSTRACT

Approximately 40,000 tons of deteriorated asphalt concrete has been removed from Interstate 80 in Cass County and stock-piled. Laboratory tests indicate that this material has considerable value when upgraded with new aggregate and asphalt cement. This report documents the procedures used and results obtained on an experimental recycling project. It was demonstrated that present drum mixing-recycling equipment and procedures can be used to utilize this material with satisfactory results. Laboratory analyses of material components and mixtures were performed; these analyses indicate mixture can be produced that is uniform, stable, and very closely resembles mixture produced with all virgin material.

A 1700 foot long test section was constructed on US 169 in Kossuth County wherein salvaged asphalt concrete from I-80 in Cass County was utilized. The salvaged mix was blended with virgin aggregate and recycled through a modified drum mixing plant, the reprocessed mixture was satisfactorily placed 1½ inches thick as a resurfacing course on an old PCC pavement.

An inspection of the test section was made in December of 1978 to evaluate the performance after one full year of service. There was no evidence of rutting or shoving from traffic. The

surface does, however, have a very dry and somewhat ravelled appearance. This can be related to a low asphalt content in the mix and some temperature control problems which were difficult to get fully corrected on such a short project and with a short supply of readily available materials.

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are justified in light of test results and one year of experience.

1. It is feasible to recycle the salvaged asphalt concrete stockpiled in Cass County.
2. The laboratory tests indicate that a satisfactory and uniform mixture can be produced by this recycling procedures.
3. The poor performance of the test section is related to laboratory work which indicated use of a combination of aggregates and recycled material which would become unstable with asphalt contents at or above 4.75%.
4. The mix design for future use of this salvaged material must provide for the addition of a combination of virgin materials which will permit the use of enough asphalt cement to provide for a final mix which will have a minimum film thickness of 6.5 microns. A minimum void percentage of 3.5 will also be required.

5. The salvaged material should be crushed to a maximum of one inch in size to provide a more uniform blend of new and recycled materials.
6. Where gravel was used for the additive, poor performance resulted because of the low AC content and high voids.
7. The material stockpiled in Cass County should be integrated into a resurfacing project in 1979.