

TECHNICAL REPORT TITLE PAGE

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Foamed Asphalt Shoulders City of Muscatine	Final Report, 12-86 to 2-93
5. AUTHOR(S)	6. PERFORMING ORGANIZATION ADDRESS
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7. ACKNOWLEDGEMENT OF COOPERATING ORGANIZATIONS

8. ABSTRACT

Foamed asphalt shoulders were placed on an Industrial Connector road at the south edge of Muscatine. The foamed asphalt was produced by injecting 1 to 2 percent water into hot asphalt cement in a patented foaming chamber. A foam develops which is 10 to 15 times the original volume of the asphalt cement. A 3/8" limestone aggregate was used in the foamed asphalt mixture. This foamed asphalt was placed on the shoulders and in the radii on the Industrial Connector road in May 1987. The radii were later replaced due to reconstruction, but the shoulders remain and performed fairly well with some recent stripping and potholing. The performance appeared to be lower than expected from conventional hot mix on projects with similar traffic.

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VISUAL OBSERVATIONS AND TEST RESULTS

Visual field reviews have been made annually. It appears in the past year the foamed asphalt shoulders have begun to deteriorate somewhat with stripping and potholing. There was some longitudinal cracking in the 12" adjacent to the pcc pavement. The deterioration could be due to the fact that the material was stored over the winter before placement and compaction. It may have performed better if it had been placed warm immediately after mixing. The lower asphalt content could be a factor. Extraction test results of the materials showed bitumen percentage to 2.59. These results are shown in Appendix B.

The Road Rater has been run annually with results given in Appendix C. The structural test results show an increase in the structural ratings each year since the time of construction. This is due primarily to the fact that the foamed asphalt has a wet, mushy texture when placed. Promoters claim it cures and oxidizes slower than normal asphalt mixtures and takes longer to achieve its structural peak. For the reasons stated above, and the low bitumen content, as well as the mix usually having higher air voids, the foamed asphalt sometimes has a tendency to break up quicker than would a normal mixture.

CONCLUSION

The foamed asphalt shoulders performed well for the first four years but began to deteriorate after that point and are now

stripping somewhat and potholes are developing. They do not appear to have given as good of performance as expected from conventional hot mixed shoulder on other projects with similar traffic.