



COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT

HENRY WARD
COMMISSIONER OF HIGHWAYS

February 19, 1962

ADDRESS REPLY TO
DEPARTMENT OF HIGHWAYS
MATERIALS RESEARCH LABORATORY
132 GRAHAM AVENUE
LEXINGTON 29, KENTUCKY

D. 1. 7.

B. 1. 1. 4.

MEMO TO: A. O. Neiser
Assistant State Highway Engineer

SUBJECT: Cutback Asphalt Emulsion Primer,
Type L, Nelson County, RS Group 38 ,
1961

The Construction Division requested that the Research Division observe the subject project and prepare a report on the material used. The attached report by J. D. Shackelford, Civil Engineering Trainee, records observations and photographs taken during the construction.

It appears that a better penetration of the immiscible, Type L primer might have been obtained if the roadway surface had been lightly sprinkled with water prior to priming.

It is not possible to make direct comparison with other primers under the same conditions since they were not provided on this project. Under the conditions prevailing, it appears that the same problem would have been experienced if other materials had been used for priming.

Respectfully submitted,

W. B. Drake
Director of Research

WBD:d1

Enc.

cc: Research Committee
Bureau of Public Roads (3)

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Commonwealth of Kentucky
Department of Highways

CUTBACK ASPHALT EMULSION PRIMER, TYPE L,
NELSON COUNTY, PROJECT RS GROUP 38 (1961)

by

J. D. Shackelford
Civil Engineering Trainee

Highway Materials Research Laboratory
Lexington, Kentucky
February, 1962

February 19, 1962

B. 1. 1. 4.

MEMORANDUM

TO: W. B. Drake
Director of Research

FROM: J. D. Shackelford
Civil Engineering Trainee

SUBJECT: Cutback Asphalt Emulsion Primer,
Type L, Nelson County, Project
RS Group 38 (1961)

Personnel of the Research Division visited the Nelson County project to observe the application and behavior of the cutback asphalt emulsion primer, Type L, on Ky. 733, northeast of Boston. The following remarks concerning this project are submitted for your information.

Work on Ky. 733 was started on the north end of the project and proceeded to the junction with US 62. A patrol grader was used to prepare the surface. A considerable amount of loose material remained on the surface at the completion of this operation (see Fig. 2).

The primer was applied over most of the project in two passes on October 23, 1961. The rate of application was 900 gallons per 1000 feet (0.415 gal/sq. yd.), and this was divided equally for the two passes. The average width of the roadway was 19.5 feet, and there was an overlap of 4 to 6 feet in the application at the center. The temperature of the primer at the time of application was 100° to 110°F. The road bed was dry and the weather was clear and warm.

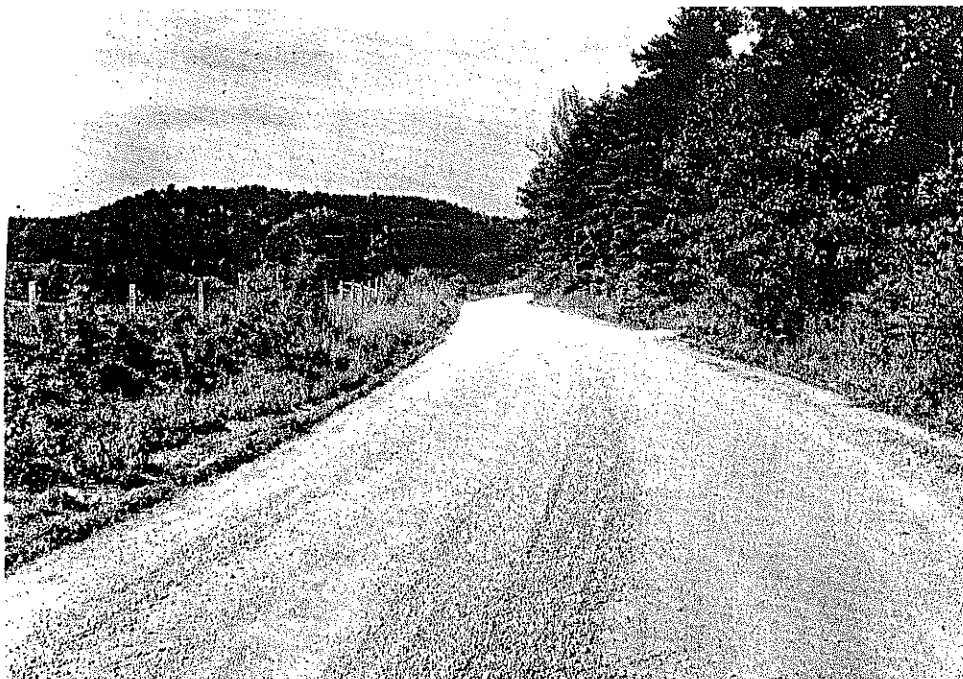


Fig. 1. Roadbed Condition before Construction.

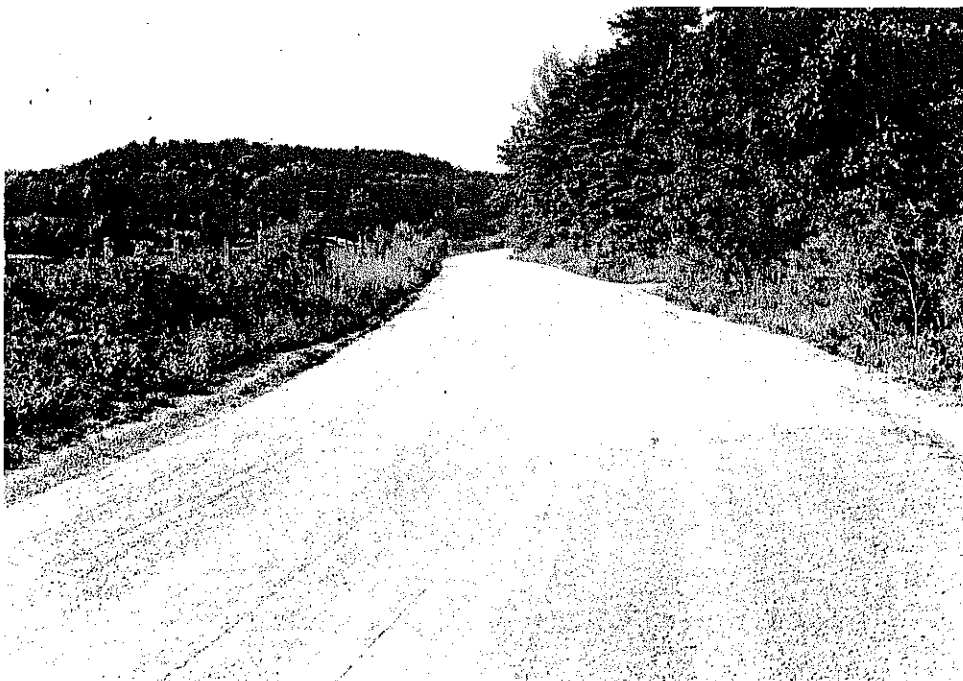


Fig. 2. Condition of Roadbed after Grading.

The primer penetrated to a depth of approximately 1/4 inch in about 30 minutes. The initial application was not sufficiently uniform to cover the surface; some puddling was noted and some bare areas were observed (see Fig. 3). An automobile traveling over the road after this first application still raised a considerable cloud of dust. Where loose floater material was present, the primer did not penetrate significantly into the compacted material underneath. This loose material was quite easily picked up by traffic (see Fig. 4).

On the southern 4000 feet of the project, the loose floater was removed before applying the primer. There the penetration was more uniform but was still essentially the same (1/4 inch in 30 minutes). On the final 300 feet on the south end of the project, the primer was applied in a single pass. This rate of application was more than sufficient, and runoff occurred (see Fig. 5). No significant runoff was noted when the primer was applied in two passes.

The project was inspected again on October 26, after the primer had been down for three days. Where loose material was present, no puddling was evident. In those places where the loose floater did not cover the surface, puddling was observed (see Fig. 6). This excess primer was readily picked up by traffic. The penetration after three days was about 1/4 to 3/8 inches and was essentially the same as that after the primer had been in place for one to three hours.

In summary to these observations, it is obvious that the penetration of the primer was not altogether satisfactory. The poor penetration is attributed to the fact that the fine material and dust were too dry. Emulsion primers and even RT-2 primers give better penetration into soils and dusty subgrades if the roadway is slightly damp. Type L primer is widely recommended as a dust palliative when used in conjunction with pre-damping treatment.

The primer L was supplied by the American Bitumuls and Asphalt Company. This material met the Kentucky Department of Highway's Standard Specifications 7.7.7 for Primer L. MaGo Construction Company of Bardstown, Kentucky, was the contractor. The construction specifications in the proposal called for a total thickness of

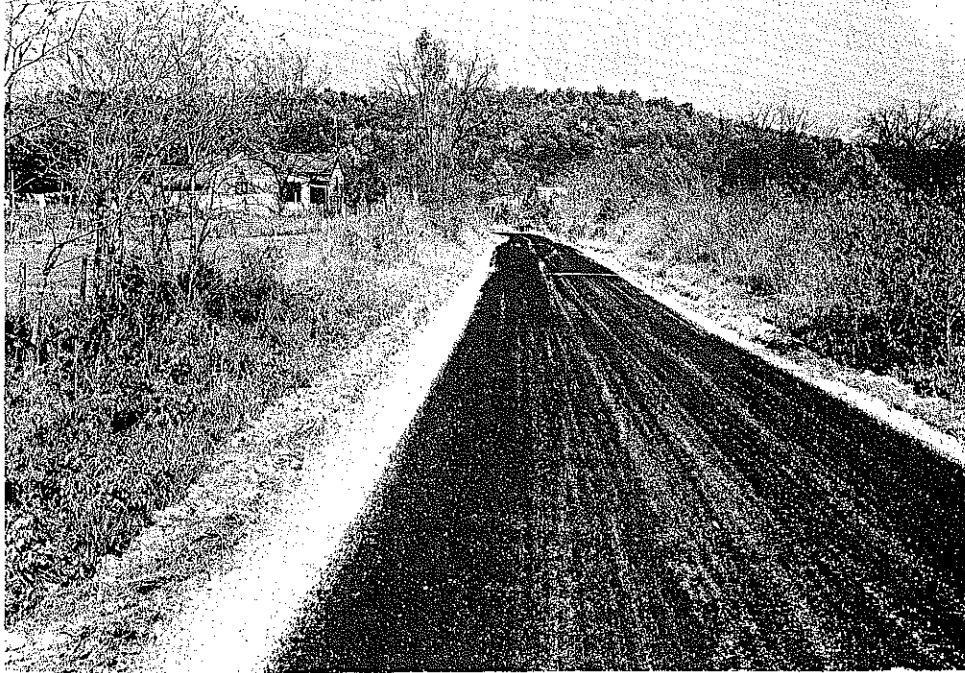


Fig. 3. Non-Uniform Application of Primer after One Pass.

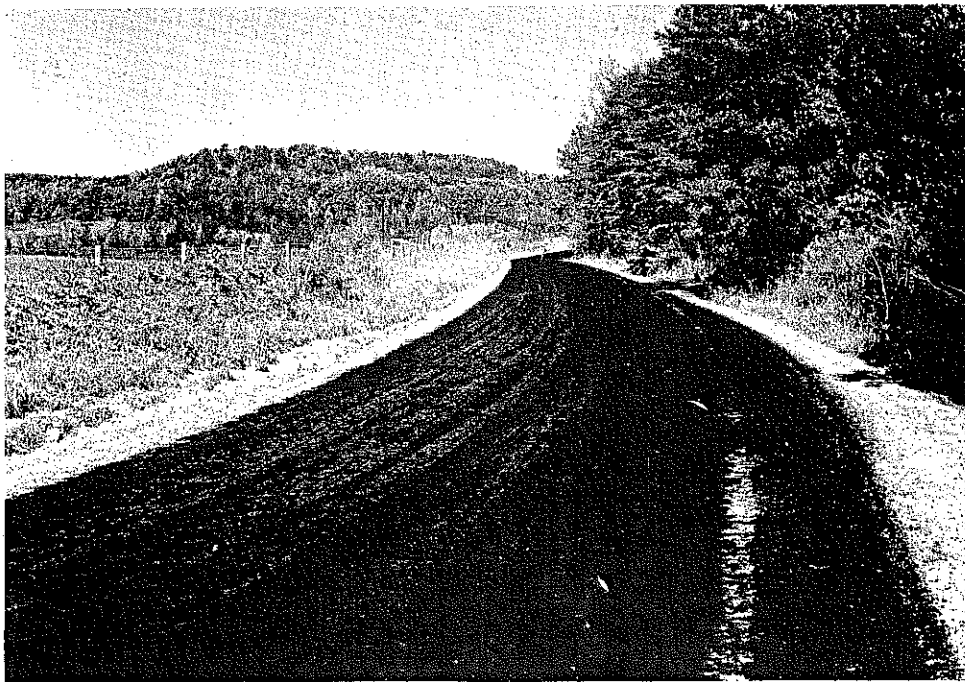


Fig. 4. After Two Applications of Primer. Note Excess in Some Areas and Tracking of Loose Floater in Others.

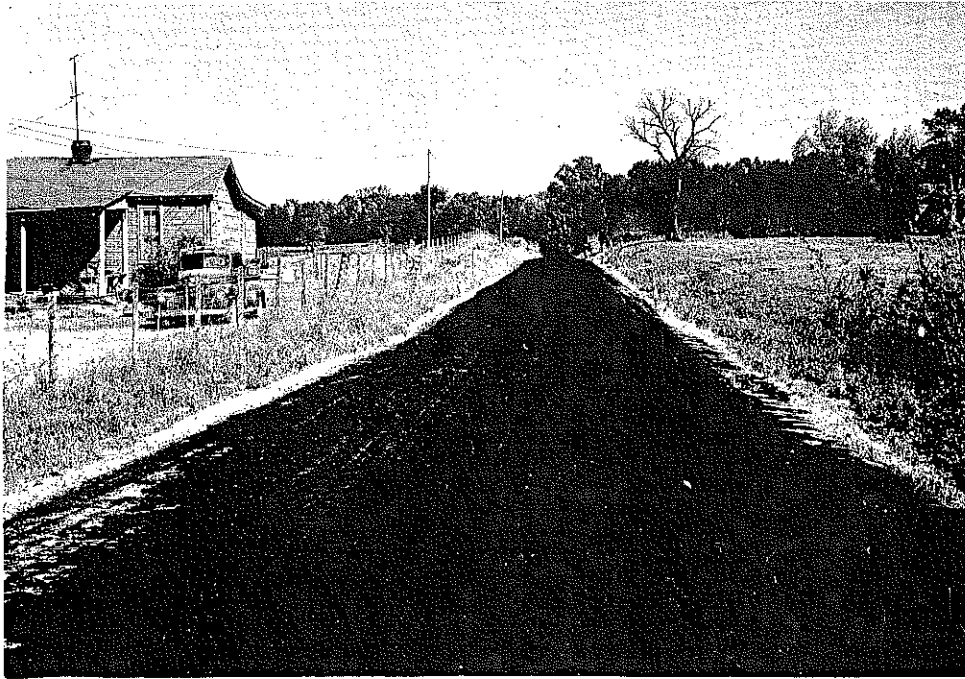


Fig. 5. Primer Applied in One Application. Note Runoff to the Right.



Fig. 6. After Three Days, Note Puddling.

W. B. Drake

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2-1/4 inches -- consisting of a 1-1/2-inch Class I Binder course and a 3/4-inch Class I surface course.

There is on file approximately 120 feet of 16 mm motion picture film of this project that was taken on October 26.

JDS:dl