

May 8, 1964

H. 1. 64. 9

MEMORANDUM

TO: A. O. Neiser
Assistant State Highway Engineer

FROM: Jas. H. Havens *J. H. Havens*
Director of Research

SUBJECT: Inspection Report; Performance of Initial Surfacing
Projects, Constructed During 1963; Class I, Bituminous
Concrete, Containing PAC-9.

Following the Research Committee meeting, April 17, 1964, at which time you expressed an urgent but timely interest in the performance of initial surfacing projects constructed during 1963, Mr. R. L. Florence, Research Engineer, made an expeditious inspection of all such projects of record and prepared the brief report which I have appended hereto as attachment No. 1. This report supplements two previous reports pertaining to the use of PAC-9 in Class I, bituminous concrete for initial surfacing of traffic-bound macadam roads. Those two reports are appended hereto, as attachments 2 and 3, for your convenient reference. They are concerned, of course, with the Morgantown-Woodbury Road. You will recall that attachments 2 and 3 were also previously used as supplemental information in our March, 1964, research report, entitled "Base Stabilization; Initial Bituminous Treatment", which was submitted to the Research Committee at its recent meeting.

I am sure that you will find Mr. Florence's photographs and observations to be reassuring -- that is, provided that certain exceptions are admissible. Figure 17, SP26-165, illustrates what I would consider to be an admissible exception. Perhaps, we should not even expect roads of this type to withstand heavily loaded trucks without sustaining severe, recurring damage. Also, mention is made in the report to instances where the edge-support is inadequate; but, there again, this may be an admissible exception when the type and class of road is taken into account. Weaknesses in the foundation material seem to become exposed in a very disturbing way; however, this seems to be the general rule rather than the exception on all light-surfacing projects which carry loads heavier than passenger cars.

Memo To: A. O. Neiser

-2-

May 8, 1964

I had an opportunity to inspect the Morgantown-Woodbury Road on May 7th; and, although there were several localized failures, they constituted only a very small percentage of the length of the road. Certain portions of the surface had bled somewhat, but elsewhere the surface had bleached and looked rather dry.

By copy of this memorandum and the attachments hereto, I am requesting Mr. W. B. Drake, Assistant State Highway Engineer, to forward any comments which he might wish to add.

Attachments

cc: W. B. Drake

May 4, 1964

H.1.64.9

MEMORANDUM

TO: J. H. Havens
Director of Research

FROM: R. L. Florence *RLF*
Research Engineer

SUBJECT: Performance of Initial Treatments, Constructed
During 1963; Class I Bituminous Concrete Sur-
face, Containing PAC-9.

Seventeen initial bituminous treatment projects were advertised for bids during 1963, which permitted bituminous concrete Class I Surface (hot-mix) as an alternate to Class C-1 Surface (road-mix). The hot-mix surface course was to contain a minimum of 6 percent PAC-9. Eleven of the contracts, totaling 38.841 miles in length, were awarded as hot-mix; and the remaining six contracts, totaling 18.12 miles in length, were awarded as road-mix.

Nine of the eleven hot-mix projects were inspected this month by personnel of the Research Division. The two remaining hot-mix projects were not inspected inasmuch as one, Muhlenberg County RS89-288, has not been constructed to date and the other, Fleming County SP35-160, involved considerable reconstruction and is only 0.099 miles in length. Inasmuch as three of the contracts were for a group of roads, the projects inspected were made up of seventeen roadways--totaling 35.442 miles in length.

On most of the projects, the construction consisted only of priming the existing traffic-bound base with RT-2 and then laying the hot-mix surfacing. Ditching and shouldering was included in the contracts for three projects. On the Clay County project, SP26-165, the contract required 1000 tons of additional base stone for reshaping and compacting. Binder and surface mixtures were placed on Crittenden County RS28-606.

At present all of the surfaces are in good condition. In general the surface courses are dense, appear to contain an ample amount of asphalt cement, and the centerline joints are tight. No significant amount of flushing of the asphalt cement was apparent on any of the surfaces. Only a very small amount of rutting and cracking has occurred to date. Cracking and rutting of the surface was noted on only five of the seventeen roadways inspected and in every case the cracking was limited to a very small percentage of the total surface. On most of the roadways the shoulders are very narrow, or virtually non-existent, and some cracking along the pavement edge, such as shown in Figure 3 attached, may be anticipated.

RLF:lga
Attachments

ANDERSON COUNTY, RS3-911

Road: The Leathers Road from RHL049 to Ky. 1291,
a distance of 2.400 miles.

Width: 12 feet

Contract Tonnage: 1465

Contractor: MaGo Construction Company

Comments: The overall appearance of the road was good.
The mixture was tight and appeared to contain
an ample amount of asphalt cement.



Fig. 1. Anderson County, RS3-911. General Condition of the
Leathers Road (4-27-64)

MEADE COUNTY, RS82-523

Road: The Bee Knob Road from Ky. 333, 1.4 miles southwest of Ky. 144 to Ky. 1600, 0.5 miles west of Flaherty, a distance of 3.504 miles.

Width: 16 feet

Contract Tonnage: 3645

Contractor: MaGo Construction Company

Comments: The mixture was dense and appeared to contain an ample amount of asphalt cement. The overall condition of the surface was good. Some cracking has occurred along the edge of the north-bound lane for an approximate distance of 150 feet (Fig. 3).

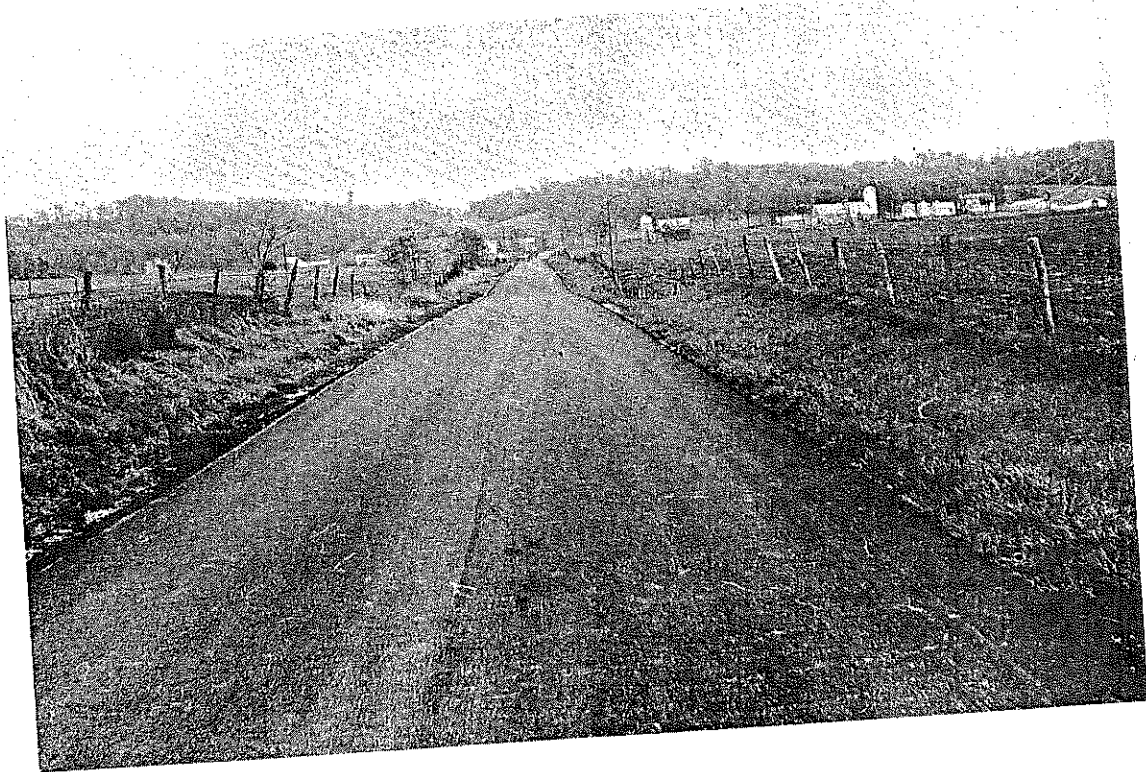


Fig. 2. Meade County, RS82-523. General Condition of the Bee Knob Road (4-21-64)

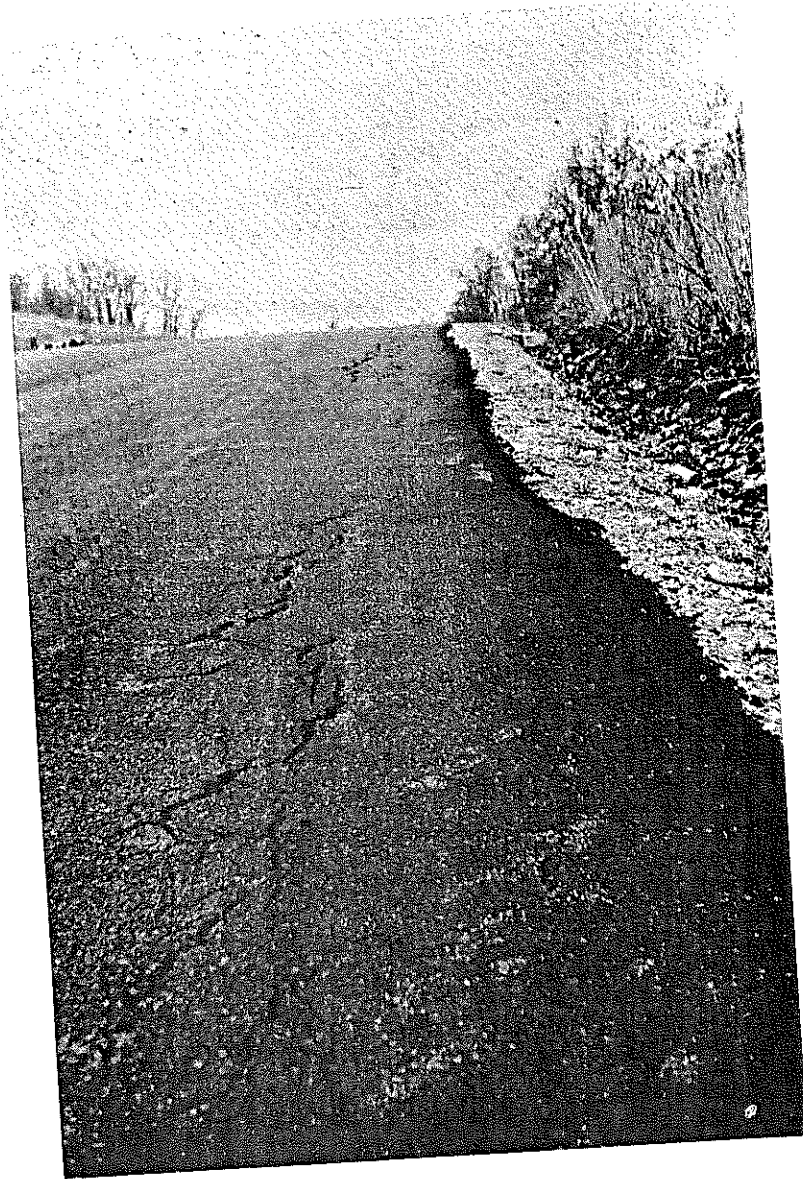


Fig. 3. Meade County, RS82-523. Rutting and Cracking Near the Pavement Edge. The failed area is approximately 150 feet in length. (4-21-64)

HART AND LARUE COUNTIES, RS GROUP 69 (1963)

Hart Co. Roads: RS50-220. The Laton-Turner Road from Ky. 357 extending westerly to RH1024, 1.500 miles.

RS50-220. The High Hickory Road from the Laton-Turner Road extending southerly to RH1050, 1.200 miles.

Larue Co. Roads: RS62-441. The McCubbins Road from the end of the old bituminous surface extending south-westerly to RH1051, 2.000 miles.

RS62-701. The Parkers Grove Road from end of old bituminous surface extending northerly and northwesterly 2.000 miles.

RS62-441. The Harned Road from RH1057 extending southerly to Ky. 222, 1.000 miles.

Width: Laton-Turner Road - 18 feet
High Hickory Road - 18 feet
McCubbins Road - 14 feet
Parkers Grove Road - 14 feet
Harned Road - 14 feet

Contract Tonnage: 7360

Contractor: Elizabethtown Paving Company

Comments: No cracking was apparent in any of the surfaces. The mixture was dense and appeared to contain an ample amount of asphalt cement. There was some rutting near the edge of the surface on the Harned Road. All of these roads appeared to be lightly trafficked.

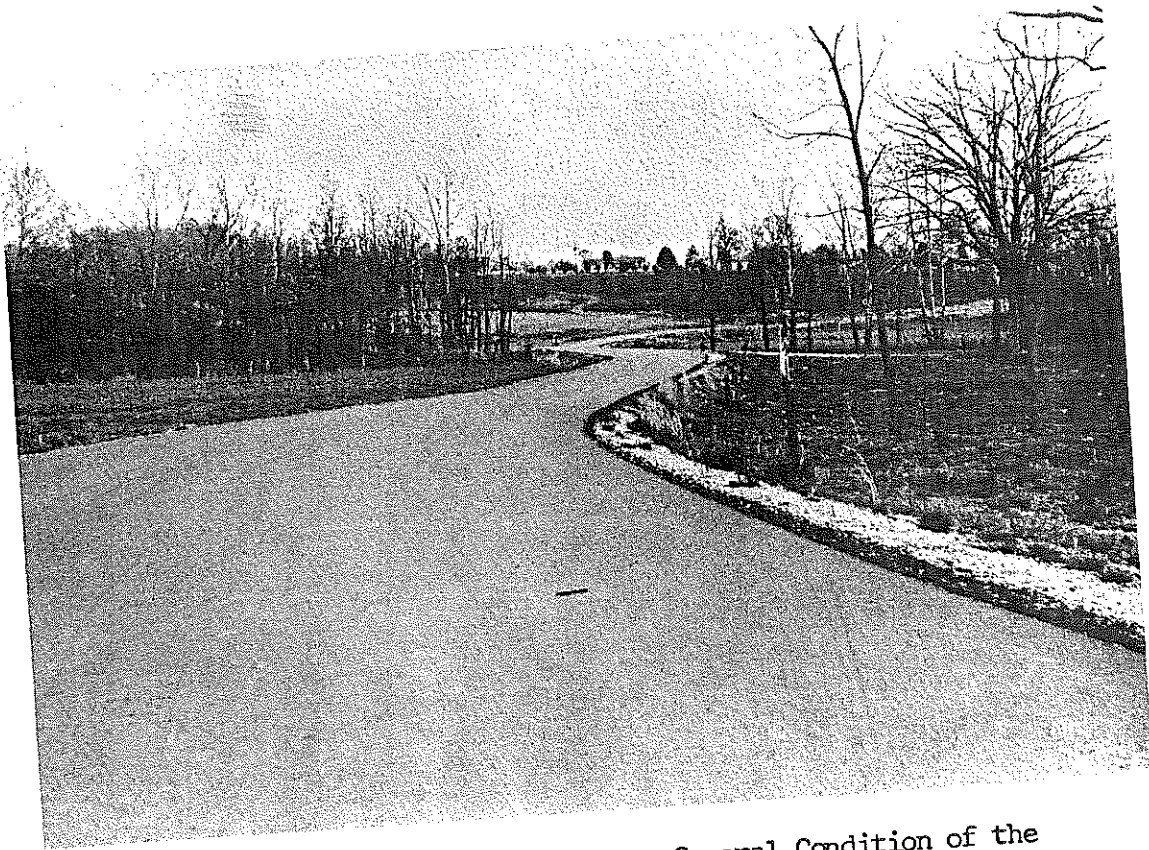


Fig. 4. Hart County, RS50-220. General Condition of the
Laton-Turner Road (4-21-64)

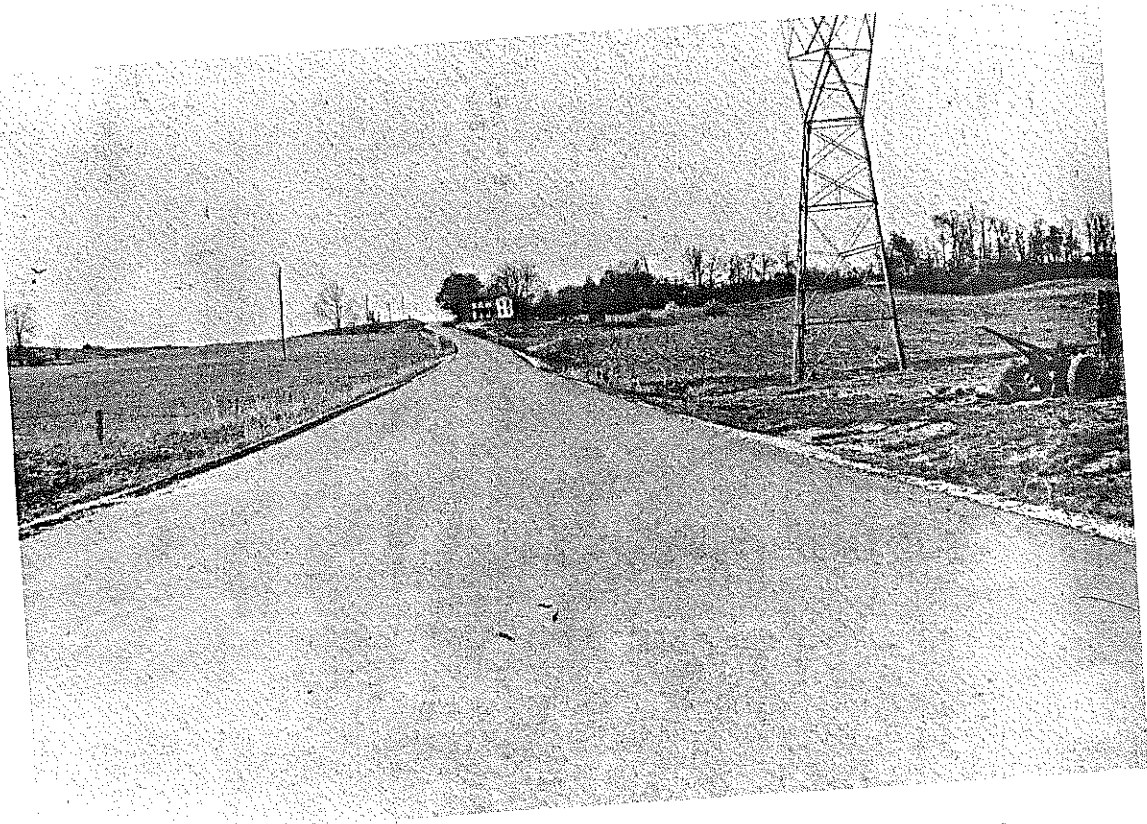


Fig. 5. Hart County, RS50-220. General Condition of the
High Hickory Road (4-21-64)

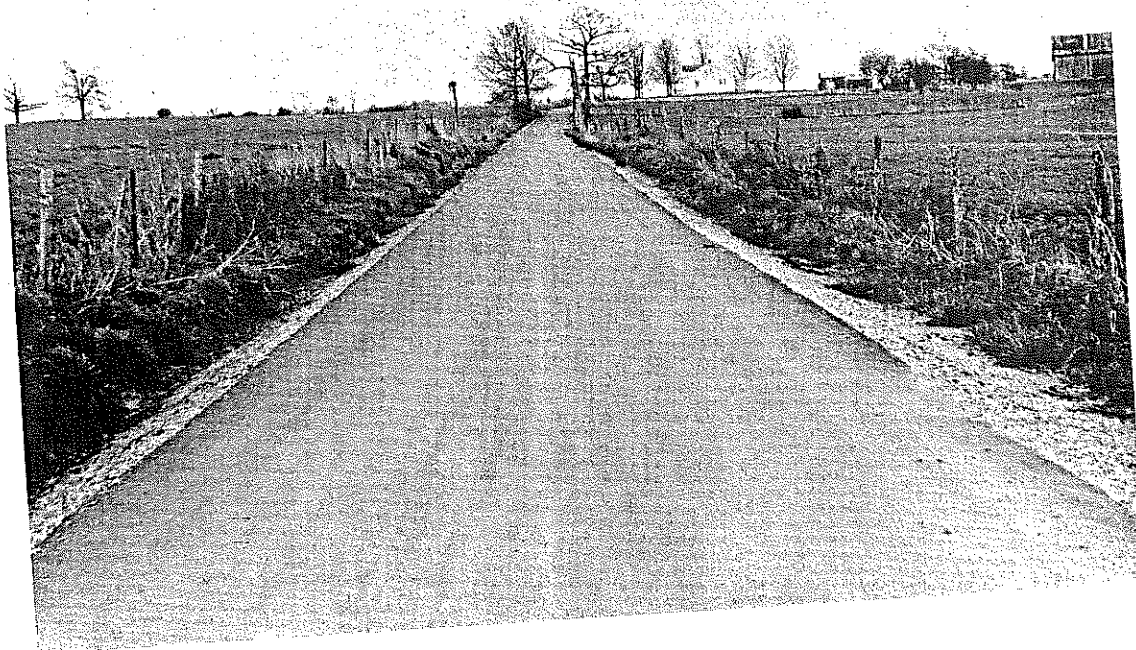


Fig. 6. Larue County, RS62-441. General Condition of the
McCubbins Road (4-21-64)

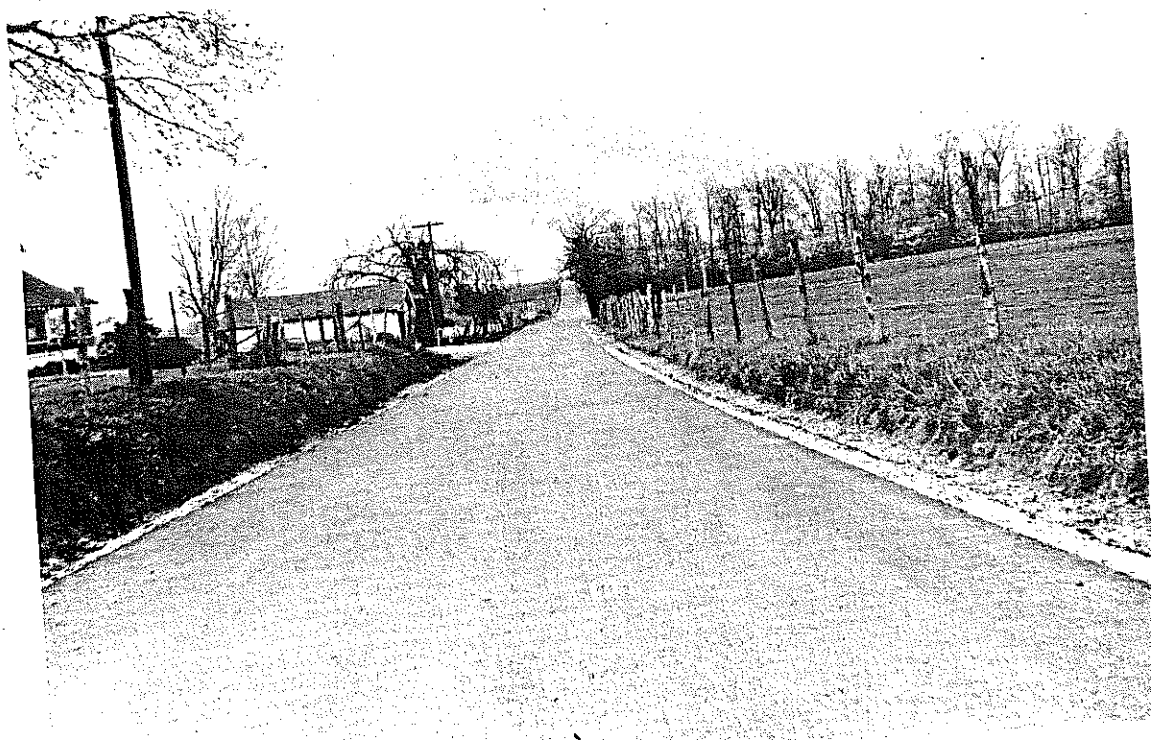


Fig. 7. Larue County, RS62-701. General Condition of the
Parkers Grove Road (4-21-64)

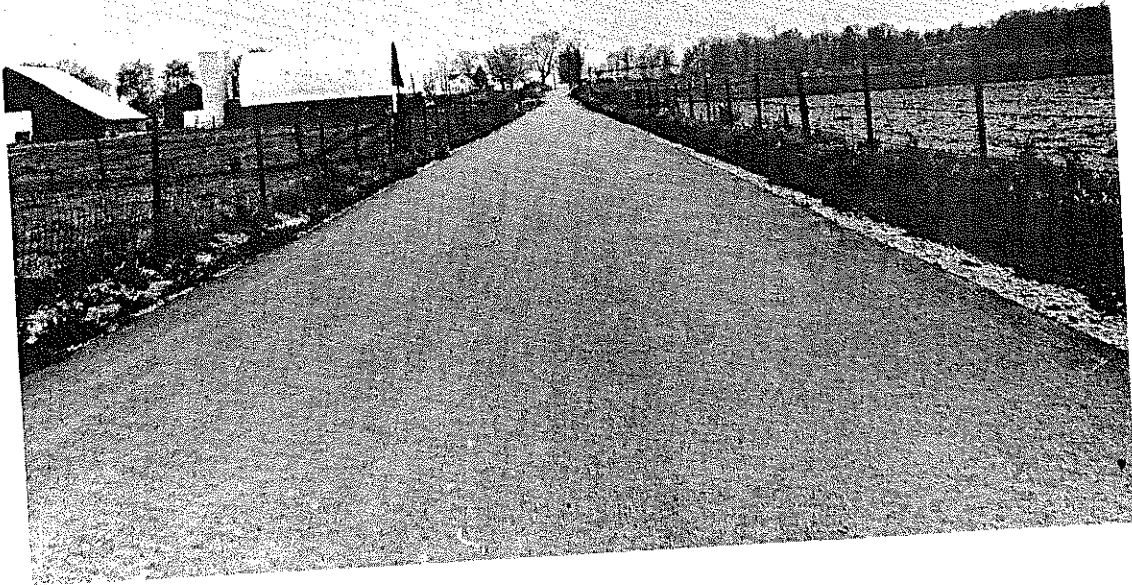


Fig. 8. Larue County, RS62-441. General Condition of the Harned Road (4-21-64)

CRITTENDEN COUNTY, RS28-606

Road: The Irma-Salem Road from Ky. 297 at Irma to the Livingston County Line, a distance of 7.137 miles.

Width: 18 feet

Treatment: Prime - 0.4 gal./sq. yd. RT-2
Binder Course - 167 lb./sq. yd. (approximately 1 1/2 in.)
Tack Coat - .05 gal./sq. yd. RS-1
Surface Course - 110 lb./sq. yd. (approximately 1 in.)

Contract Tonnage: 5310 Surface Mixture
8060 Binder Mixture

Contractor: Contractors Paving Company

Comments: The roadway was in very good condition. No failures were apparent in the surface.

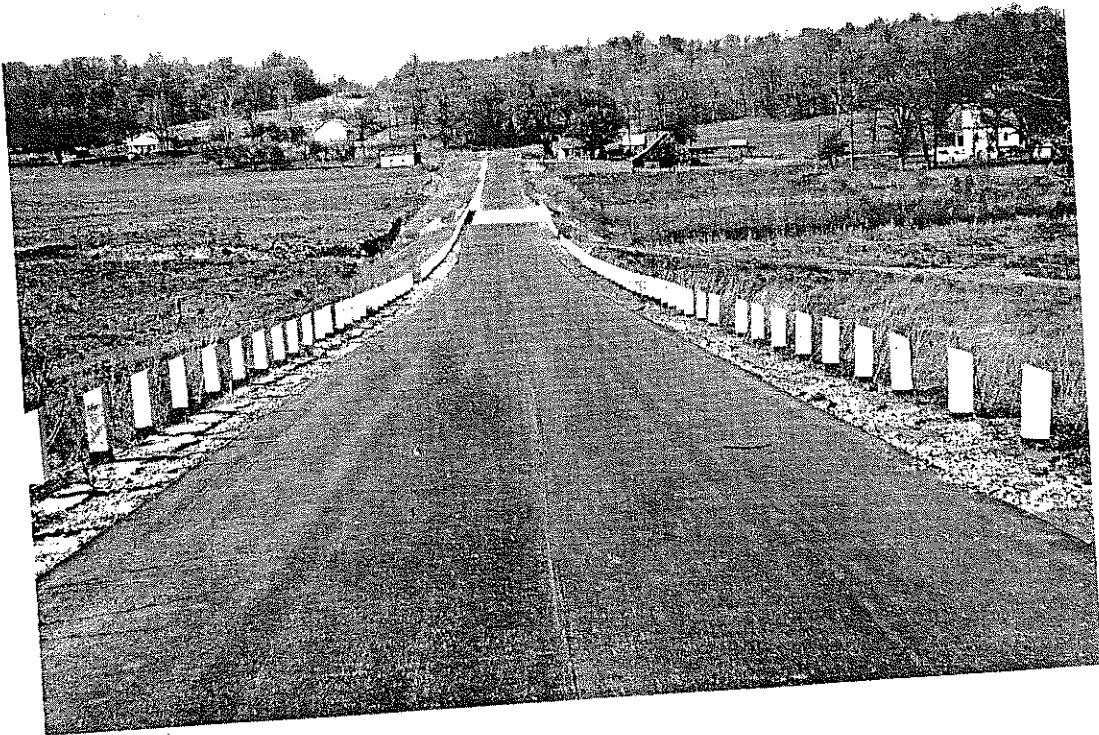


Fig. 9. Crittenden County, RS28-606. General Condition of the Irma-Salem Road. The road is paved with 1 1/2 inches of binder mixture and 1 inch of surface mixture. (4-22-64)

Road: The Hampton-Bayou Road from Ky. 135 at Hampton to RHL071 near Dooley Bluff Church, a distance of 3.500 miles.

Width: 14 feet

Contract Tonnage: 3085

Contractor: Roads, Inc.

Comments: The mixture was not as dense as that on the other roads inspected. Overall the surface was in good condition. For a distance of approximately 100 feet rutting has occurred in both lanes and in one lane the surface has cracked (Fig. 11). The ditches were cleaned out over the full length of the project; but, in some spots they are again filling up with sediment.

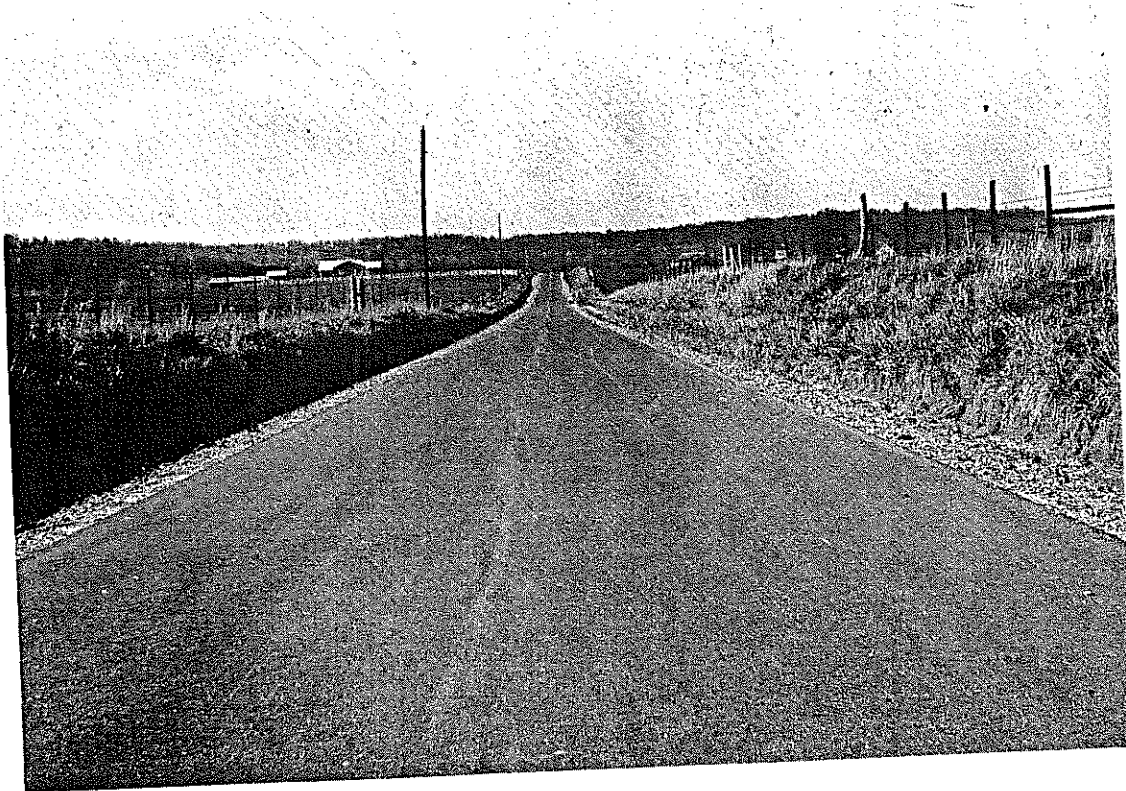


Fig. 10. Livingston County, SP70-750. General Condition of the Hampton-Bayou Road (4-22-64)



Fig. 11. Livingston County, SP70-730. Rutting and Cracking in Cut Section. The area in distress is approximately 100 feet long. (4-22-64)

TODD COUNTY, RS GROUP 77 (1963)

Roads: RS110-176. The Fulcher School Road from US 68 extending southerly to RH1060 B, a distance of 1.500 miles.

RS110-196. The Fulcher Road from RH1060 B to the Christian County Line, a distance of 3.100 miles.

Width: The Fulcher School Road - 18 feet
The Fulcher Road - 18 feet

Contract Tonnage: 4780

Contractor: Dixie Pavers, Inc.

Comments: No cracking was apparent in either of the surfaces. The surface was dense and appeared to contain an ample amount of asphalt cement. The overall appearance of the surfaces was very good.

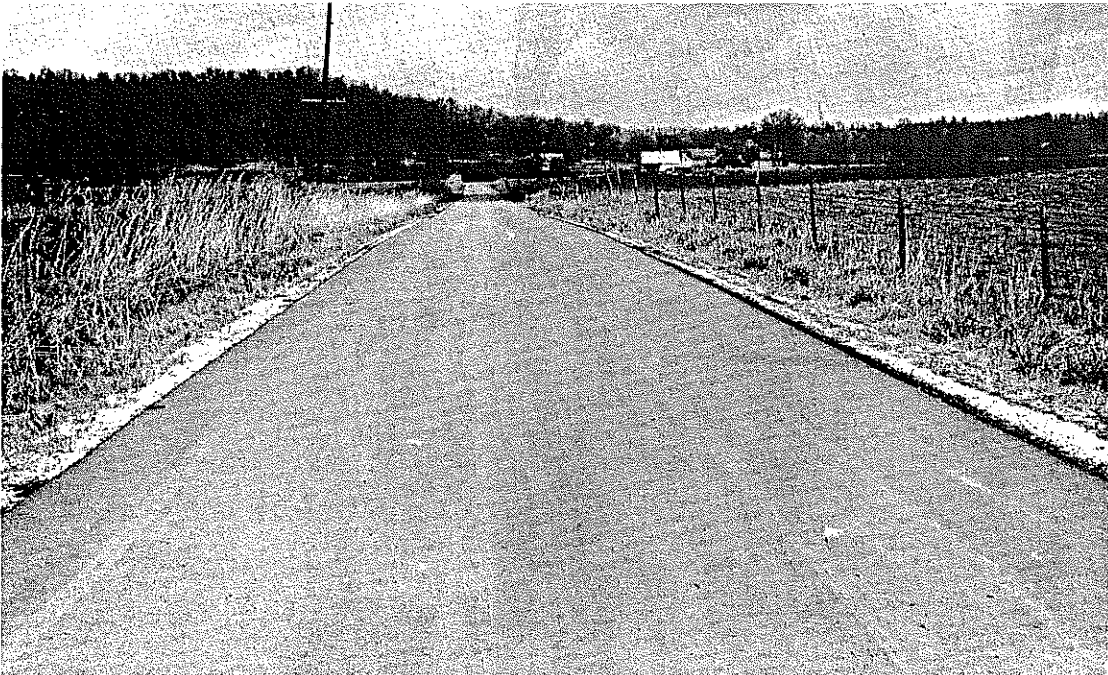


Fig. 12. Todd County, RS110-176. General Condition of the Fulcher School Road (4-22-64)

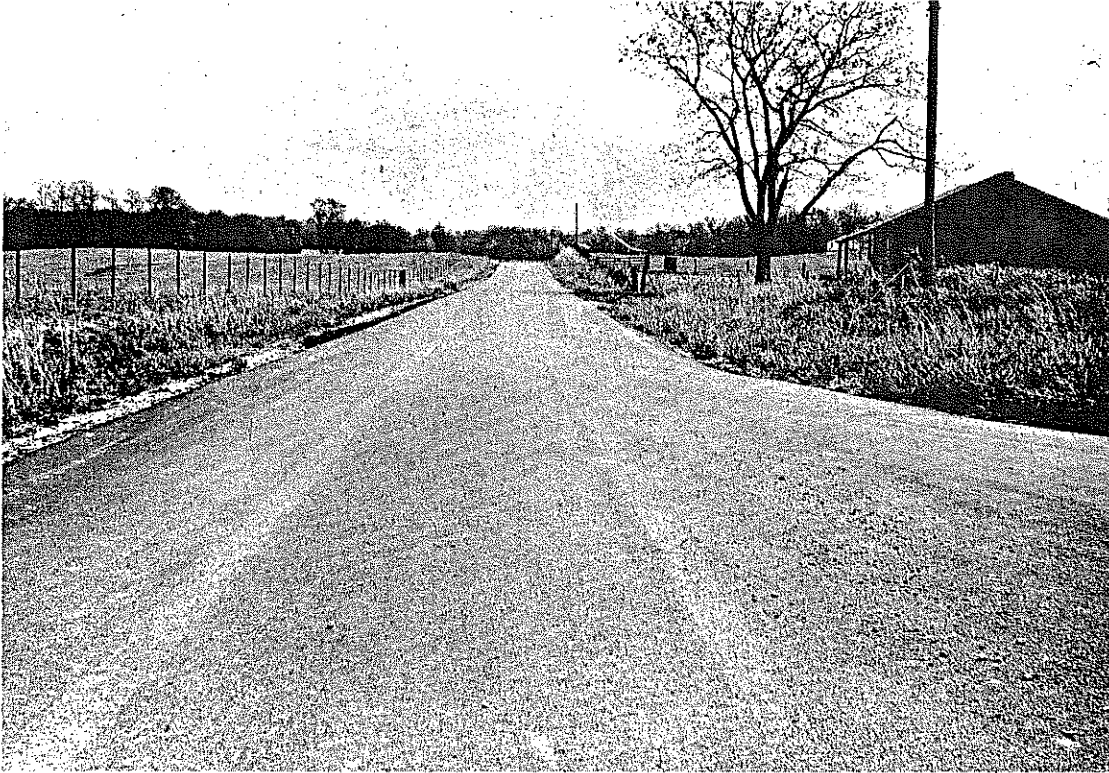


Fig. 13. Todd County, RS110-196. General Condition of the Fulcher Road (4-22-64)

LOGAN COUNTY, SP71-506

Road: The Dunmor-Deerlick Road from Ky. 107 at Deerlick extending northerly a distance of 1.700 miles.

Width: 16 feet

Contract Tonnage: 1450

Contractor: Kapco, Inc.

Comments: The surface was dense and appeared to contain an ample amount of asphalt cement. Small bleeding spots were widely scattered over the surface. Some longitudinal cracking was noted in the outside wheel-track of the south-bound lane.

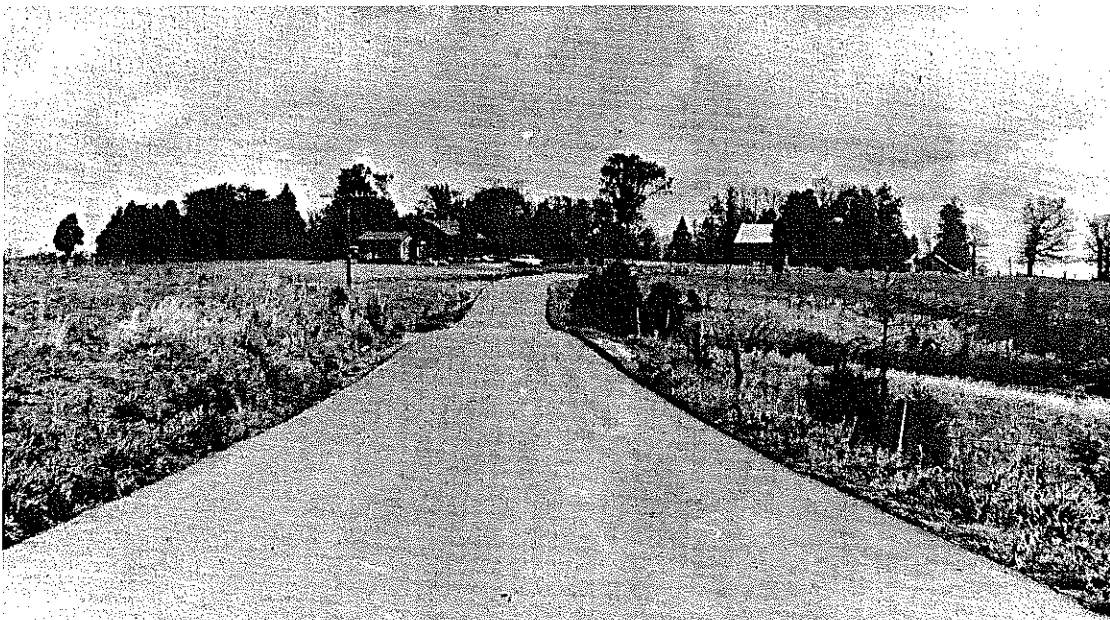


Fig. 14. Logan County, SP71-506. General Condition of the Dunmor-Deerlick Road (4-22-64)

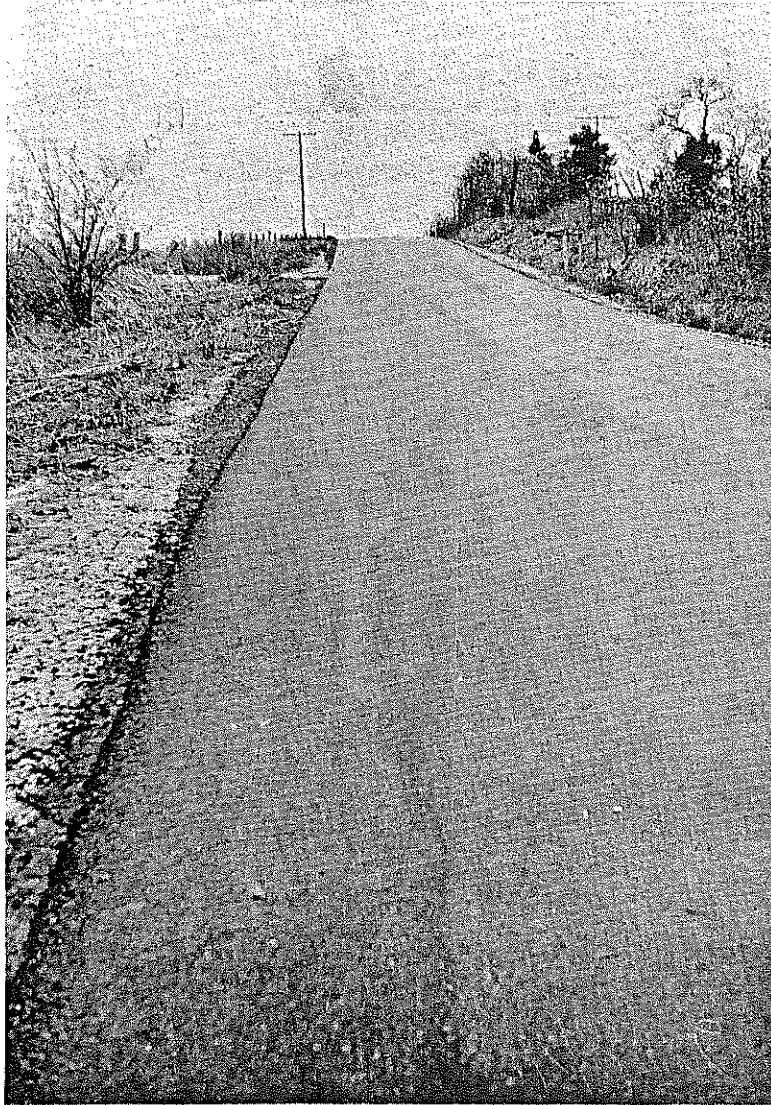


Fig. 15. Logan County, SP71-506. Cracking in the Wheel Track
(4-22-64)

CLAY COUNTY, SP26-165

Road: The Grace-Fogertown Road from Ky. 472 near Fogertown extending to end of blacktop near Philpot School, a distance of 3.700 miles.

Width: 18 feet

Contract Tonnage: 4355

Contractor: Cantrill Construction Company

Comments: The overall condition of the surface was good. The mixture was dense and appeared to contain an ample amount of asphalt cement. Loaded coal trucks haul over the north-bound lane for a distance of approximately 1/2 mile, at the southern end of the surfacing. Alligator cracking, such as shown in Fig. 17, has occurred in five areas in the north-bound lane within this 1/2 mile section.

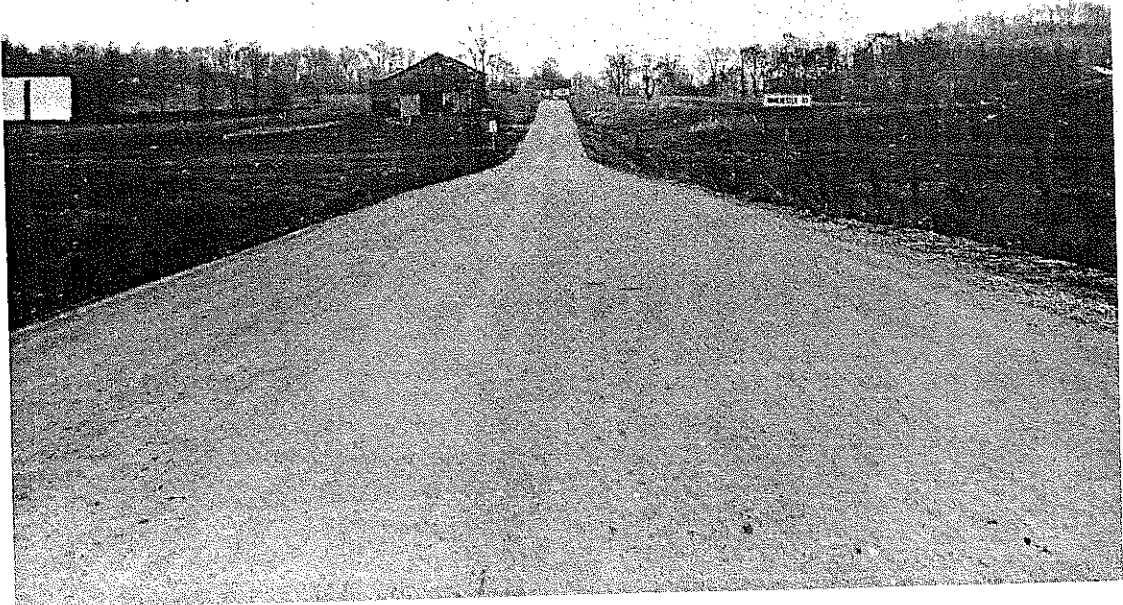


Fig. 16. Clay County, SP26-165. General Condition of the Grace-Fogertown Road (4-24-64)

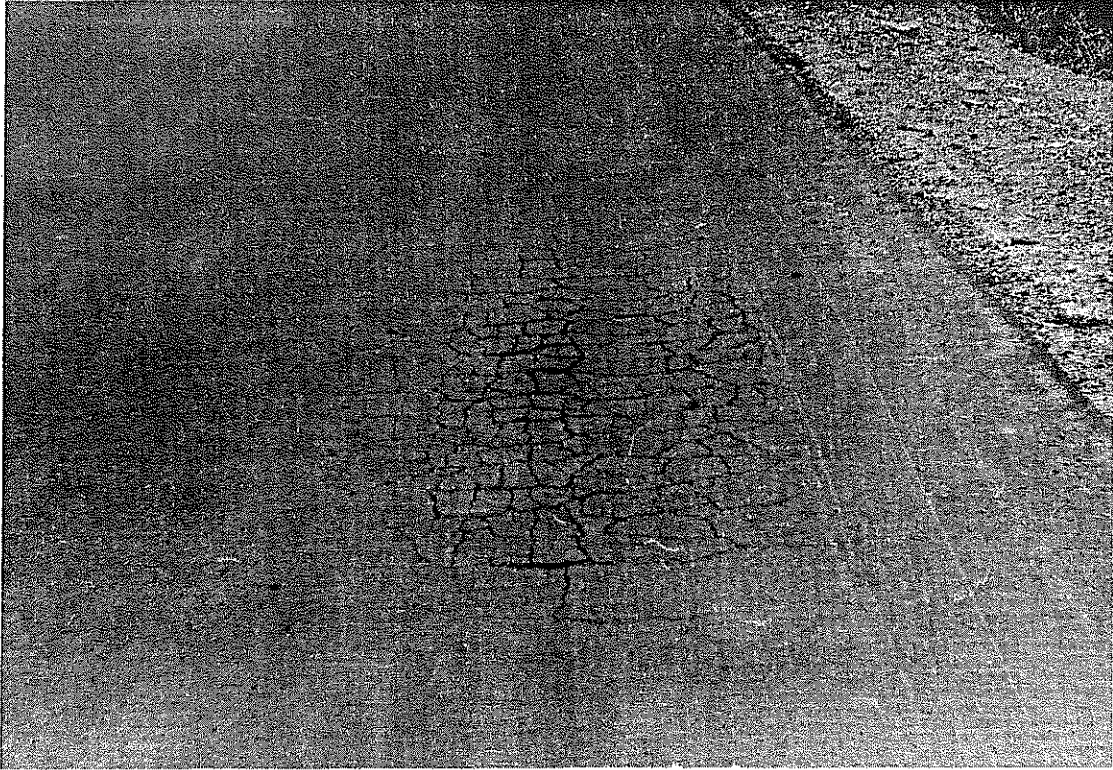


Fig. 17. Clay County, SP26-165. Alligator Cracking in Wheel-Track. Loaded coal trucks haul over the north-bound lane on the southernmost 1/2 mile of the surfacing. Five failed areas, such as shown above, have occurred in the section of roadway traveled by the loaded trucks. (4-24-64)

HARLAN COUNTY, RS GROUP 62 (1963)

Roads: RS48-898. The Dupree Road from US 119 near Rosspoint extending southwesterly, a distance of 0.300 miles.

RS48-913. The Catholic Cemetery Road from US 119, 1 mile south of Cumberland, to Cemetery entrance, a distance of 0.300 miles.

RS48-933. The Huff Cemetery Road from Hogg Street at the W.C.L. of Cumberland and extending to the gate of the Lynch Cemetery, a distance of 0.300 miles.

RS48-953. The Lewis Road from US 119 at Hiram and extending to the Cumberland River Bridge, a distance of 0.300 miles.

Width: All roads - 12 feet

Contract Tonnage: 1260

Contractor: Adams Construction Corporation

Comments: No cracking was apparent in any of the surfaces. The surfaces were dense and appeared to contain an ample amount of asphalt cement.



Fig. 18. Harlan County, RS48-898. General Condition of the Dupree Road (4-24-64)



Fig. 19. Harlan County, RS48-933. General Condition of the Huff Cemetery Road (4-24-64)



Fig. 20. Harlan County, RS48-953. General Condition of the Lewis Road (4-24-64)