

Better Solutions for Unpaved Roads

Rural Roads Committee, July 2022

Project Goals

- Find better surface treatments for our gravel roads that are less expensive than asphalt, that are safe, environmentally friendly, and
- that maintain our rural character
- while reducing potholes, dust, wash-boarding and similar problems

Findings

- VDOT carefully applied test surfaces on sections of Old Waterford Road and Purcellville Road.
- Physically they performed very well and
- a more in-depth test would determine the initial savings versus asphalt, and
- by how much lower maintenance costs would be than with the current surfacing material.
- Additional testing is needed to see if there are still-better alternatives.
- REQUEST: Support our efforts by pausing new asphalt paving after the Goshen Road commitment.

Synopsis of Rural Roads Committee/VDOT Surface Tests

- Goal: To find a surfacing solution for Loudoun's gravel roads that would be safe; that would maintain our rural character; that would reduce potholes, dust and wash-boarding; that would be less expensive and simpler to maintain; and that would be significantly less expensive than hard-surface asphalt.
- The Rural Roads Committee learned about an improved surface treatment called DSA – Driving Surface Aggregate. We were impressed by a Maryland road that was reconstructed with DSA and looked for innovative surfacing solutions that could be used here.
- We contacted Dr. Edward Hoppe of the Virginia Transportation Research Council to inquire about developing a better surface treatment for unpaved roads throughout the state. VDOT has no material specification for a driving surface material and the gravel it uses is generally a sub-base material, not a product for driving surfaces.
- Dr. Hoppe conceived of a mixture that would use RAP – Recycled Asphalt Product – blended in with 21A aggregate, with RAP acting as a binder to hold the aggregate together. He found two materials, Branscome and Carmeuse, to test against the RAP blend and to compare with VDOT's 21A product.
- Test sections were placed in September 2020 on Old Waterford Road and on Purcellville Road. In addition to testing the two materials, placement methods were also tested on Purcellville Road: comparing end-dumping of the Carmeuse 21A product (end-dumping is the standard VDOT procedure for placing gravel on a road) versus compacting it with a roller and adding calcium chloride as a binder. The Carmeuse product out-performed the Branscome.

Synopsis of Rural Roads Committee/VDOT Surface Tests

- The RAP blend did not perform well at either location, perhaps because of inconsistencies of the delivered material. However, the Carmeuse 21A material, when placed and compacted by a roller and with calcium chloride as a binder, performed very well.
- In March 2021 VDOT and the RRC concluded that future tests were needed to examine other binding products. These comparisons await funding.
- In January 2022, Del. David Reid of Ashburn put forth our proposal for \$1M for a Pilot Program to conduct these tests. It did not succeed in making it into the state budget, but Del. Reid brought the proposal to Sen. Mark Warner who included it in his Congressionally Directed Spending requests for FY 2023.
- Conclusions: With funding of a comprehensive pilot program, we may find solutions that perform even better than the initial tests. The County and VDOT should pause any plans for hard-surface asphalt paving of rural roads, other than Goshen Road.

Old Waterford Road,
Carmeuse test surface
March 10 2021



**Test surface on Old Waterford
Road after grading,
March 23, 2021**



**Purcellville Road, Carmeuse test
surface compacted by roller
December 2020**



**Close-up of Purcellville Road
test surface
October 2021**

