ROAD READY R3 RESEARCH

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RESEARCH REVIEW: Roadway Reversion

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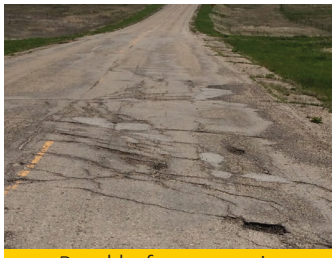
"The rural road network is just as critical to the nation's economy as the Interstate system, but a large percentage of the sealed low volume part of it (carrying less than 400 vehicles per day) is way past its use-by date. Long gone are the days where funding was available to overlay or reseal at optimal intervals, which begs the question whether some of the very lightly trafficked roads (less than 100 vpd) should have been surfaced in the first place if funds to reseal them after 8 to 10 years were unlikely to be available. Hindsight is of course easy, but rather than dwell on what should have been, we have to explore what can we do with what we have. Continue trying to maintain them with band-aids, or "upgrade" them to an engineered unpaved standard? Agencies nationwide are increasingly favoring the latter option because these roads are easier to maintain, and chemical treatments can be used to keep the surface material in place and reduce dust to the extent that they can be resealed at a later date with minimal additional cost if sustainable funds become available."

– David Jones, Associate Director, University of California Pavement Research Center
Chair, Transportation Research Board Standing Committee on Low Volume Roads



Road before reversion

Previously, low construction and maintenance costs for pavements allowed local jurisdictions to pave large portions of their roadway network. More recently, construction and maintenance costs for asphalt roadways have risen faster than inflation and, more importantly, funding. Because of this, local roadway jurisdictions are un-paving, or reverting roadways back to an engineered gravel surface. The process has been used in more than half of the states in the United States, in Canada, and in Finland. It requires proper equipment, materials, final roadway grading and full public support to be successful. This document will review current practices including some researched best practices from NDLTAP, FHWA, and other sources.

Road after reversion

Several factors must be considered before a roadway is reverted back to gravel. This includes the current roadway condition, safety of the corridor, the social aspects of the roadway (commerce, residents) and traffic volume. Jurisdictions must make their own decisions on the best surface for the roadway based on these factors and their road management plan. Often, the economics and the future maintenance needs lead to the decision for a roadway reversion. One tool to help with the economic analysis of future maintenance is the Local Road Surface Selection Tool (https://dotsc.ugpti.ndsu.nodak.edu/SurfaceSelection/).

Reversions take two forms, active and passive. Active reversions are where a local jurisdiction makes the decision to change a paved roadway to gravel using construction equipment and design techniques to produce an engineered final product. In passive reversions, the paved roadway is allowed to deteriorate to an unpaved state, and then is maintained as a gravel or unpaved roadway surface. Passive reversions happen slowly over time, while active reversions are usually a local construction project which turns an entire segment of roadway to gravel.

Reclaimer blending the roadway during active reversion

The design of active reversions can be straightforward, as the paved roadbed already contains an aggregate base and the asphalt material on the roadway can be used as an aggregate blend for the road top. The main design considerations are the depth of reclaiming and how much additional virgin aggregate must be added to create a proper aggregate blend of existing milled roadway and aggregate. The aggregate added to the roadway must be of high quality to create a good blended roadway material. Additionally, some minor grading may need to be completed to change the roadway drainage slope from 2.1% to 4%, and to improve the ditch inslopes (if necessary). Passive reversion will only require minor regrading of the road top to ensure proper drainage.

Ensuring that you maintain a quality gravel testing and maintenance program after the project ensures that fugitive dust and safety issues do not appear. Regular blading will be necessary and dust control methods may be required to maintain public acceptance of the new surface.

The final hurdle for many jurisdictions is public acceptance. Many times, local residents will consider a reversion project as a roadway with a lower level of service than even the poorest paved road. Appropriate terminology and education during project planning are essential to public acceptance. Public education sessions may also be required to gain trust that safety and an improved driving surface will result from the project. With public education and proper maintenance of the new roadway, many projects have been deemed successful from the public with time.

Reversion is a cost effective way for localities to stretch their budgets by changing lesser-used and aged paved roadways to gravel surfaces. Proper planning and education of the public are required for a successful project and maintenance is key to long-term success and savings.

RESOURCES

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