

Converting Paved Roads to Unpaved

2016 SD County Convention

By

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September 13, 2016

This Presentation is based on a summary of NCHRP Synthesis Project 485 completed in April, 2016

- **Project Overview:**

- **Conduct a national survey on the current practice of converting paved roads to unpaved to determine:**
 - **How widely is this being done?**
 - **Why is it being done?**
 - **How is it being done?**
 - **Impact of Conversion - Is it working? Not working?**
 - **Do agencies need help with this?**



Project Team:

- **Laura Fay, Project Manager**
 - Located at the Western Transportation Institute, Montana State University located at Bozeman, MT.
- **Ken Skorseth, Project Assistant**
 - Located at the SD Local Transportation Assistance Program, SD State University at Brookings, SD.
- **Other Support**
 - Ashley Kroon, MSU
 - Dr. David Jones, University of California, Davis
 - Dr. Richard Reid, SDSU



NCHRP 46-12 Converting Paved Roads to Unpaved Survey

Introduction

Please enter the date (MM/DD/YYYY).

 Calendar

Please enter your contact information.

First Name *

Last Name *

Title

Agency/Organization *

City

State *

Country

Email Address *

Phone Number *

The national survey was done with an online questionnaire distributed by LTAPs and the National Association of County Engineers

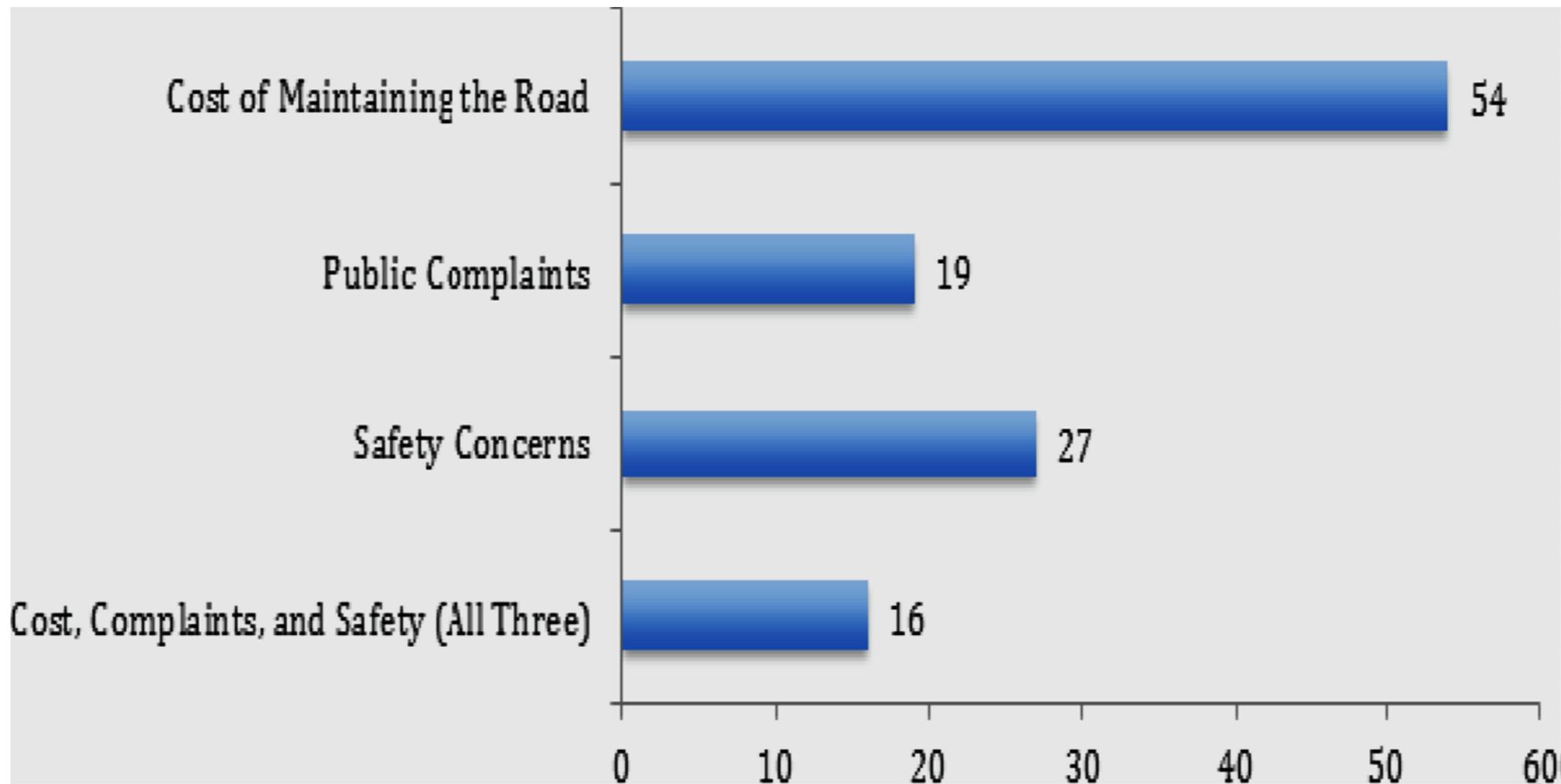


Survey Coverage

- **139 Responses**
- **Most responses from county or road district agencies**
- **Response came from 21 states and three Canadian Provinces**
- **35% of responding agencies have already converted a road**
- **Data was provided on 60 conversion projects**
- **These projects represented 556.4 miles**
- **Literature research indicated six more states have converted paved roads to unpaved (making a total of 27)**



Why is conversion being done?



Cost of Road Conversion Process

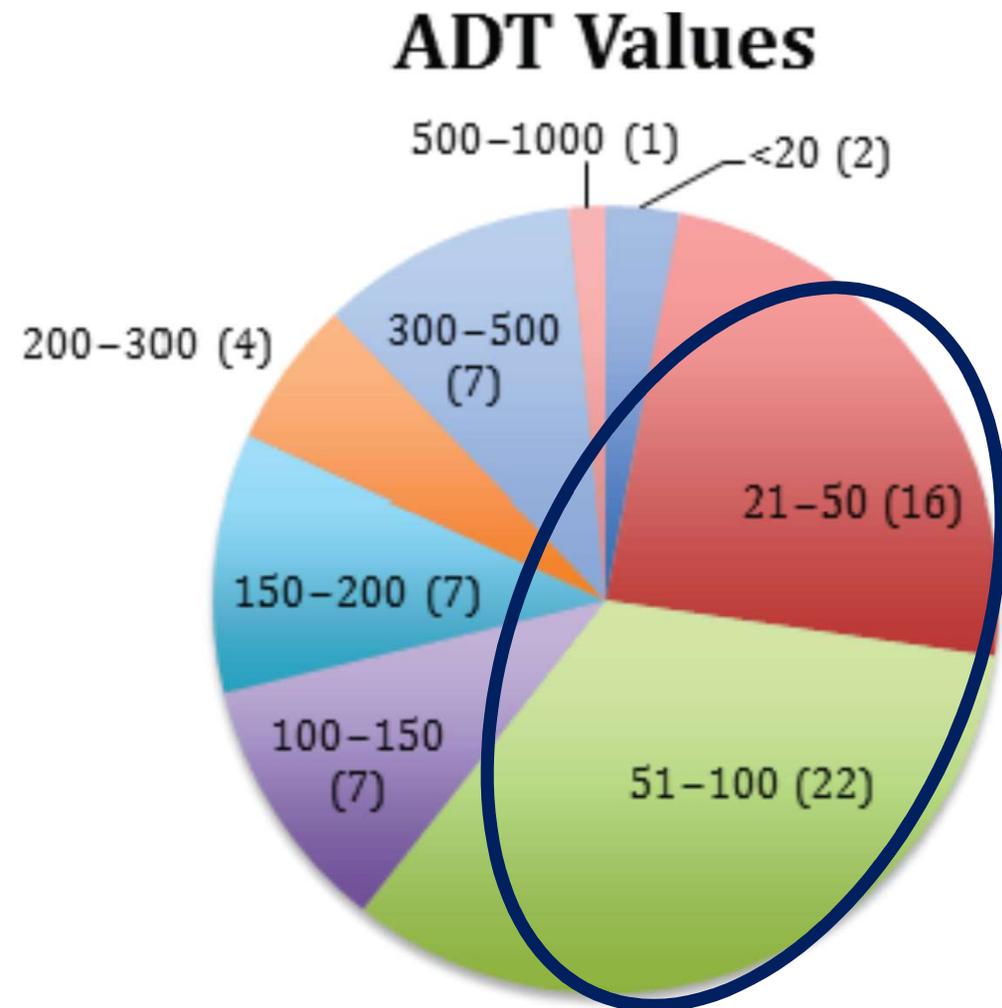
- **The cost of conversion**
 - **A huge range was reported: \$1,000 to \$100,000 per road segment or mile.**
 - **Costs vary greatly due to:**
 - **How they are tracked by agencies (are all costs included),**
 - **How the conversion was done (recycling, adding material?)**
 - **Equipment requirements (In-house, rent, or buy; hourly rates)**
 - **Supplemental materials (was gravel purchased, hauled, etc.)**
 - **Surface stabilization or dust abatement included?**
 - **Were drainage or road based issues addressed?**



What roads are being converted?

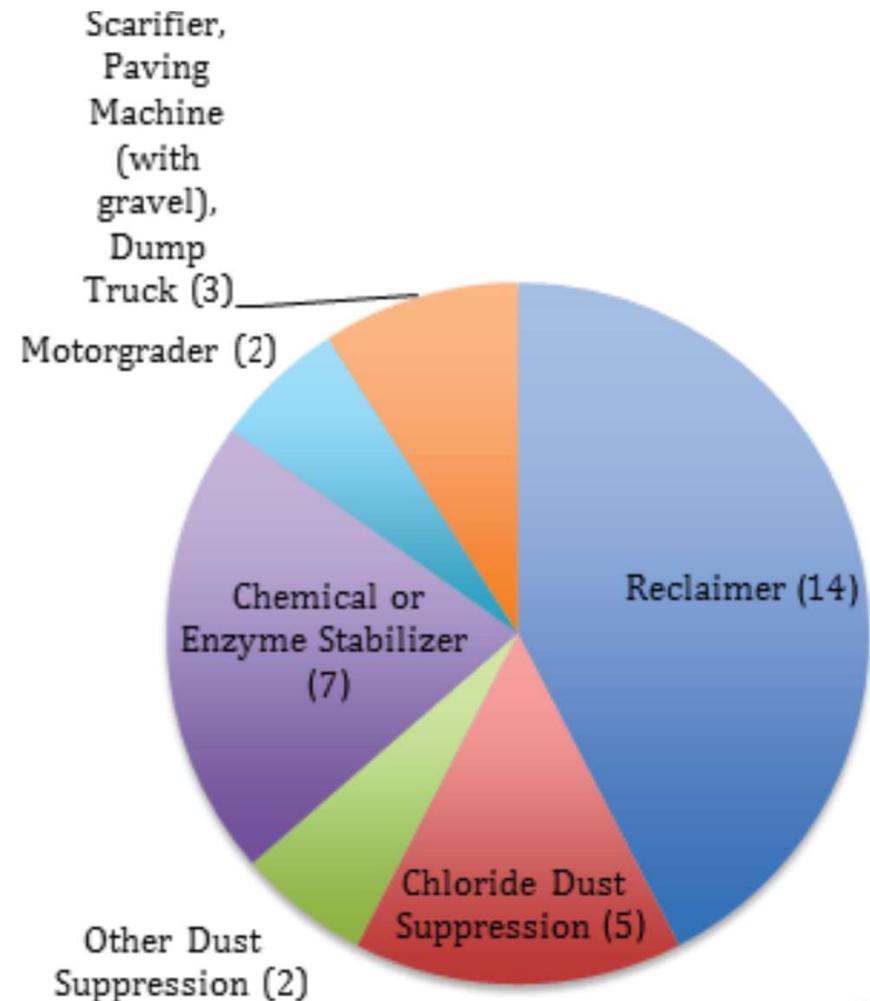
Typically roads with ADT less than 100.

(Should these roads have been paved in the first place?)



How are road conversions typically done?

- Existing pavement is recycled in place.
- Converted with reclaimer or ripper on a motor grader.
- When needed, additional gravel is added to supplement existing material.



Road Conversion Being Done Two Ways

1. **Active Conversion:** using equipment and personnel to recycle the old pavement into a pulverized material that can be used as a base for a new gravel surface or as part of a new unpaved surface.



Road Conversion Being Done Two Ways (Con't)

- 2. Passive Conversion: the natural process of the paved road breaking down and deteriorating to an unpaved surface as a result of exposure to the elements and wear and tear from traffic.**

Some aggregate (gravel) generally placed over the surface.



Active Conversion

- Typically done by agency staff with agency owned or rented equipment, or by a contractor.
- Road material is recycled, shaped and compacted.



Example of active conversion



Deteriorating road



Road conversion



Newly converted road



2 years post conversion

Example of passive conversion



Challenges in the Road Conversion Process

- **Know what existing road layer(s) are: (historic maps, core samples, soil testing)**
- **Know existing pavement/base thickness**
- **Quality of materials on-site or gravel to be added**
- **If using soil stabilizer and/or dust abatement - selecting the appropriate product for the road.**



Impact of Road Conversion

- **The number of residents along the roads and social and economic impact of the road**
- **The impacts of ride quality and dust on road users, residents, animals, produce, vehicle operating costs, and vehicle productivity (reduced speeds).**



Impact of Road Conversion (Con't)

- **Traffic volume and vehicle distribution/type**
- **AADT – overall traffic counts must be considered when converting a road from paved to unpaved, as well as seasonal distribution of traffic**
- **Presence of heavy and overweight vehicles – a high volume of heavy vehicles has a significant impact on the standard required for pavement maintenance and rehabilitation. The costs to repave or repair need to be weighed with the cost of converting to gravel but with more frequent maintenance.**



Impact of Road Conversion (Con't)

- **Accurate cost of road treatment options wasn't clear**
- **Maintenance capabilities after conversion**
- **Environmental issues and annual precipitation**
- **Dust and erosion control**
- **Availability of quality gravel for surfacing**
- **Public impact issues**
- **Network impact**



Impact of Road Conversion (Con't)



Effects of dust on nearby vegetation

Impact of Road Conversion (Con't)

Land use – heavy agriculture again has a great impact here.



Impact of Road Conversion (Con't)

Land use – heavy agriculture in this region requires pavement thickness design that is often unaffordable for local agencies – unpaved roads are often considered better.



Impact of Road Conversion (Con't)

Maintenance capability – many agencies feel their ability to maintain and rehabilitate unpaved roads is better than ability to do the same on paved roads.



Impact of Road Conversion (Con't)



Is good surface gravel available for conversion?



Impact of Road Conversion (Con't)

- **Public Opinion –**
 - **Initial perception is most often negative**
 - **Perceived as a step backwards**
 - **Feel their road was unfairly selected over others for conversion**
 - **Not convinced the agency provided accurate information on cost, traffic volume, etc., in the decision making process**
 - **Many commented after initial resistance, the public became much more accepting**



What Is Needed to Assist Agencies With the Conversion Process?

- The study found a lack of available resources for practitioners who are considering performing road conversions.
- Many survey respondents commented:
 - No documented resources for planning or performing the conversion
 - Instead used a trial-and-error approach.



What Is Needed to Assist With the Conversion Process (Con't)

- **Guidance for assessing the level of deterioration of a road – at what level do you convert?**
- **Options available to rehabilitate or treat a road**
- **Road survey tools to determine existing road structure and available materials (i.e., recycling depth) or addition of new materials**
- **Selection of appropriate stabilizer or dust suppressant**



What Is Needed to Assist With the Conversion Process (Con't)

- **Guidance for doing public outreach such as:**
 - **Guidance for setting up effective public meetings**
 - **Good meeting format with stakeholders and residents of the road being considered for conversion**
 - **Example letters to sent to affected homeowners**
 - **Use of local media - TV, radio, newspaper, press releases**



Conclusions

- There is a lack of available information on this topic.
- The cost data for conversions is highly variable and often not well documented.
- Public outreach and stakeholder involvement = more favorable public reaction when this is done well.
- Road conversion has to happen – can't sustain current system without it.



Conclusions

- **Research Needs and Gaps**
 - **Improve documentation of road conversions**
 - **Improve documentation of safety and crash rates on LVRs**
 - **Develop a Road Conversion Design Guide or Handbook**
 - **Develop a cost-benefit analysis tool**



Looking Ahead in SD

- **A committee just formed to work on guidance for the conversion process – consists of DOT, LTAP, County, Consulting Engineer and City representatives.**
- **SDLTAP has a basic life cycle cost tool to assist in doing 20 yr analysis on asphalt pavement, asphalt surface treatment, treated gravel and gravel surface types.**



Discussion!