



# BARNES COUNTY ROAD 21

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# Background

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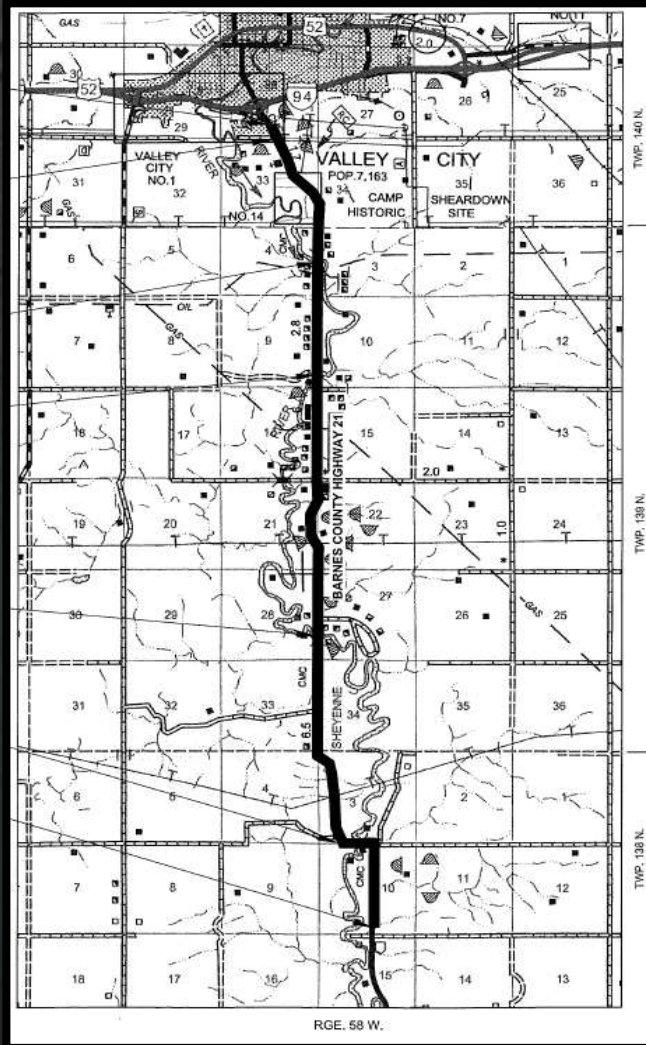


- ▶ Barnes County ND was the owner of the project
- ▶ Project was located South of Valley City.
- ▶ Project Scope was a Cold In Place Recycling
- ▶ Jason Manlove, PE
  - ▶ Construction Project Manager for projects
- ▶ KLJ Corporately has approx. 750 employees and is a multi-disciplinary engineering firm
  - ▶ KLJ-Valley City has approx. 40 employees mostly in Surface Transportation and Survey Groups. The Valley City office was the design office for this project.





# 2007 Project



- ▶ Project Length 9.6 Miles
- ▶ Existing Section Approx. 6.5" of Asphalt on 6.5" of Aggregate Base Course
- ▶ Proposed Typical Section 4" of Cold In Place Recycle
- ▶ Existing Roadway has depressed transverse cracks approx. every 25'



# Problems

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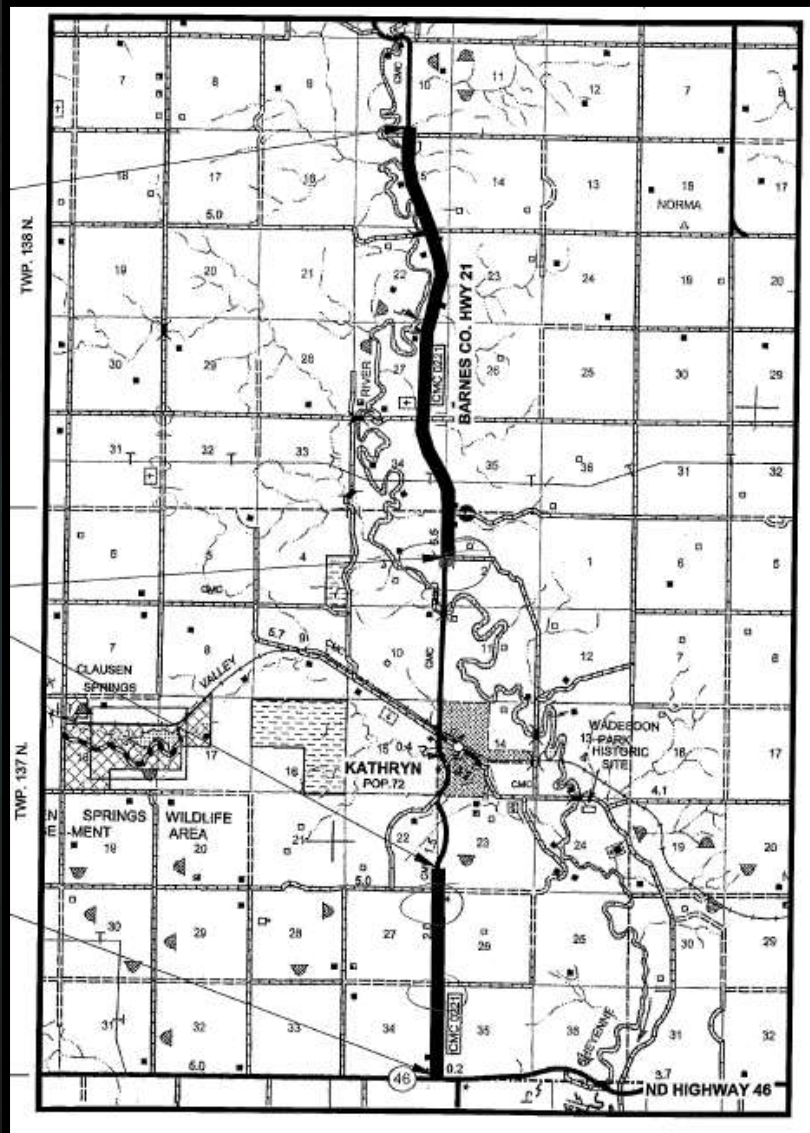
- ▶ At the completion of the project during the curing period 11.5" of rain was received.
- ▶ Weight restrictions were not issued during curing period. During this time several loads of aggregate and borrow were hauled from a local supplier resulting in premature rutting of 1/2".
  - ▶ In 2009, a Microsurface project was completed to eliminate the rutting.





# 2009 Project

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- ▶ Project Length 7.0 Miles
- ▶ The project scope was the same as the 2007 project



## 2007 - Lessons Learned

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- ▶ To increase angularity, 125 Tons/Mile of crushed granite was incorporated during the 2009 milling process which provided more stability in the cold in place material and greatly reduced rutting.
- ▶ The County imposed load restrictions during the curing period.





# Project Costs

## ▶ 2007 Project Costs

▶ Cold In Place Recycling = \$55,000/Mile

▶ County Chip Seal = \$15,000/Mile

▶ Microsurfacing Project = \$52,000/Mile

= \$122,000/Mile

## ▶ 2009 Project Costs

▶ Cold In Place Recycling = \$92,000/Mile

▶ County Chip Seal = \$17,000/Mile

= \$109,000/Mile



# Thin Lift Overlay

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- ▶ In 2015, a thin lift overlay was added to both projects.
- ▶ Project cost =\$110,000/Mile





# Total Project Costs

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- ▶ 2007+2015 = \$232,000/Mile
- ▶ 2009+2015 = \$219,000/Mile
- ▶ Other options discussed but ruled out due to cost
  - ▶ Total Reconstruction = \$750,000/Mile
  - ▶ Widen & Structural Overlay = \$350,000/Mile



# Project Outcomes

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- ▶ Cold In Place Recycling is a good fit if used in conjunction with a tied HMA overlay
- ▶ Good fit for narrow roadway sections
- ▶ Restrict road to truck traffic during curing period