

Barnes County Cold-In-Place Recycling Project



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Introduction

- Barnes County Facts
- Why CIR
- Existing Conditions
- Planning & Design Process
- Construction
- Questions



Barnes County, North Dakota

The map displays the county's highway network. Major highways are labeled, including HWY 1, HWY 2, HWY 3, HWY 4, HWY 5, HWY 6, HWY 7, HWY 8, HWY 9, HWY 10, HWY 11, HWY 12, HWY 13, HWY 14, HWY 15, HWY 16, HWY 17, HWY 18, HWY 19, HWY 20, HWY 21, HWY 22, HWY 23, HWY 24, HWY 25, HWY 26, HWY 27, HWY 28, HWY 29, HWY 30, HWY 31, HWY 32, HWY 33, HWY 34, HWY 35, HWY 36, HWY 37, HWY 38, HWY 39, HWY 40, HWY 41, HWY 42, HWY 43, HWY 44, HWY 45, HWY 46, HWY 47, HWY 48, HWY 49, HWY 50, HWY 51, HWY 52, HWY 53, HWY 54, HWY 55, HWY 56, HWY 57, HWY 58, HWY 59, HWY 60, HWY 61, HWY 62, HWY 63, HWY 64, HWY 65, HWY 66, HWY 67, HWY 68, HWY 69, HWY 70, HWY 71, HWY 72, HWY 73, HWY 74, HWY 75, HWY 76, HWY 77, HWY 78, HWY 79, HWY 80, HWY 81, HWY 82, HWY 83, HWY 84, HWY 85, HWY 86, HWY 87, HWY 88, HWY 89, HWY 90, HWY 91, HWY 92, HWY 93, HWY 94, HWY 95, HWY 96, HWY 97, HWY 98, HWY 99, HWY 100.

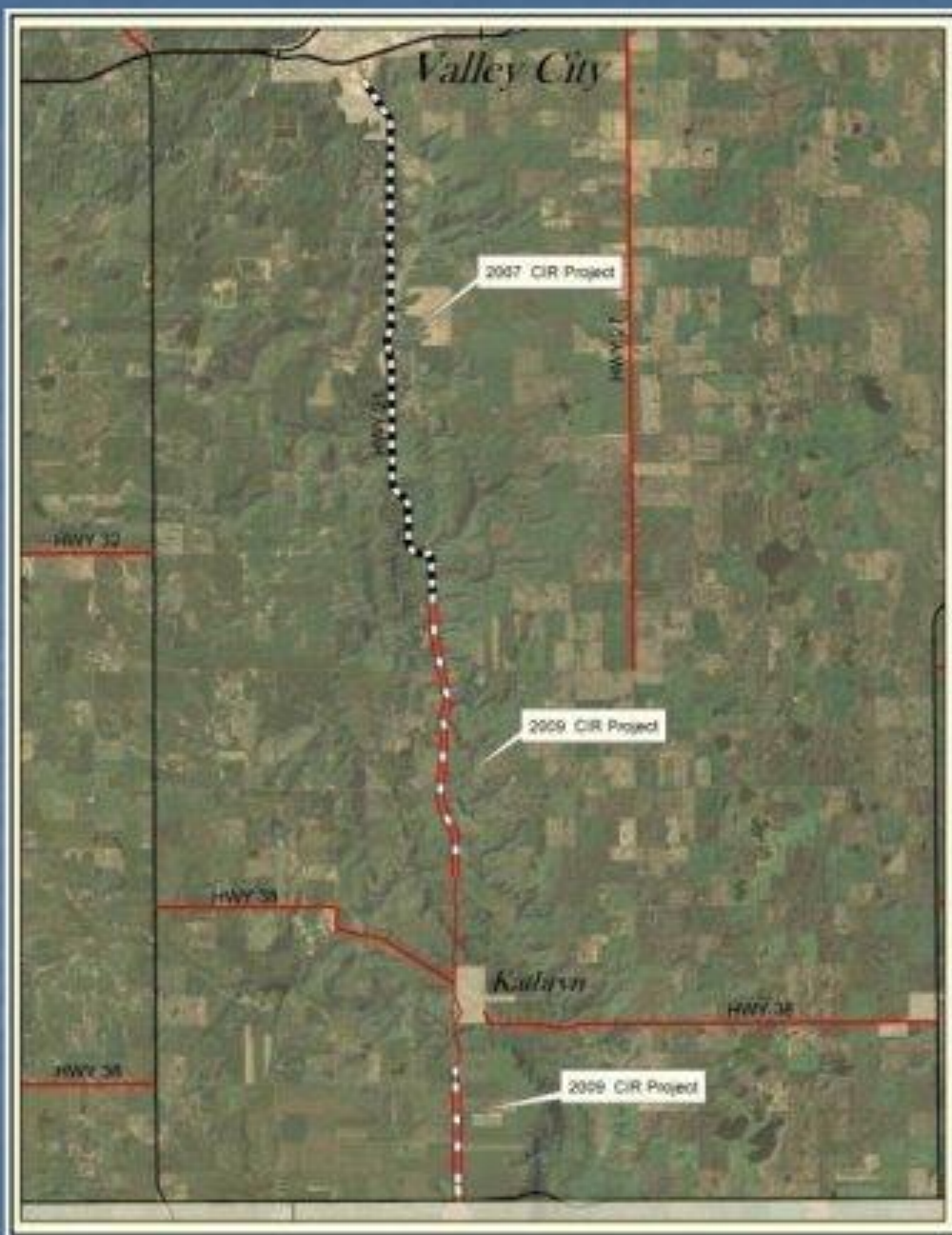
A callout box points to a specific area on the map, stating: "2007 / 2009 CRR Projects".

An inset map in the bottom left corner shows the location of Barnes County within the state of North Dakota.

Annual Budget ~ \$2.5 million



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2007 TRAFFIC DATA (AADT)

North 1.0 Mile = 1800

South 8.5 Miles = 600

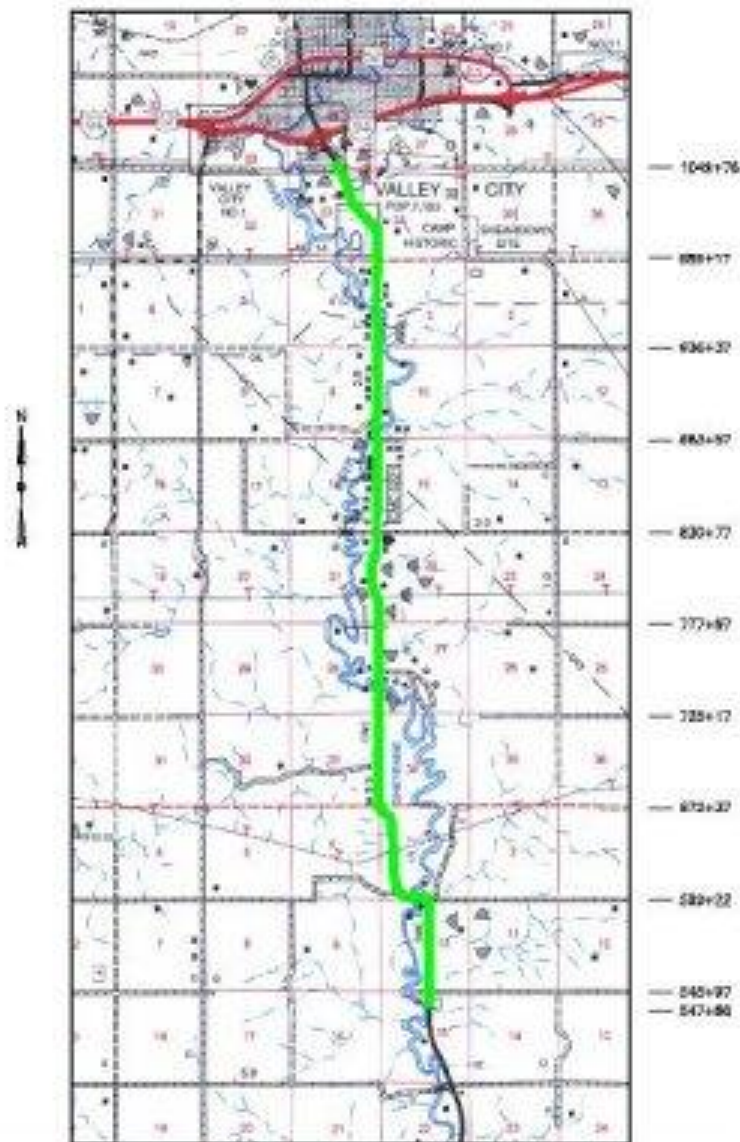
2009 TRAFFIC DATA (AADT)

Entire Project = 400



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2007 Project Location



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Selection of CIR

■ Why CIR?

- Reflective Cracking/Maintenance Costs
- Life Cycle Costs
- Budget Constraints
 - Phased Construction
 - Phase I CIR & Chip Seal
 - Phase II HBP Overlay



Roadway Information & Construction History

■ Roadway Section

- | | |
|---------------|---------------------|
| - 1958 – 1959 | 32' Graded Roadbed |
| - 1958 – 1959 | 6.5" Aggregate Base |
| - 1960 | 2.25" HBP Surfacing |
| - 1982 | 3.25" HBP Overlay |



Existing Roadway Condition



- TRANSVERSE CRACKING
 - 10' to 25' Spacing
- RUTING
 - 0" – 0.5"
- CROSS SLOPE
 - 0.5% – 2%



Alternatives Considered

- (20 - 30 yr) Total Reconstruction
- (20 - 30 yr) Shoulder Widening, Blended Base and Structural Overlay
- (20 - 30 yr) Shoulder Widening and Structural Overlay
- (20 yr) 4" CIR & Thin-Lift HBP Overlay
- (10 - 15 yr) 4" CIR & Microsurface
- (10 - 15 yr) 4" CIR & Double Chip Seal
- (10 yr) Thin-Lift HBP Overlay



2005 Estimated Costs

- \$750,000/mile Total Reconstruction
- \$600,000/mile Shoulder Widen, Blended Base and Structure Overlay
- \$350,000/mile Shoulder Widen and Structure Overlay
- \$170,000/mile 4" CIR & Thin-Lift HBP Overlay
- \$125,000/mile 4" CIR & Microsurface
- \$115,000/mile 4" CIR & Double Chip Seal
- \$90,000/mile Thin-Lift HBP Overlay



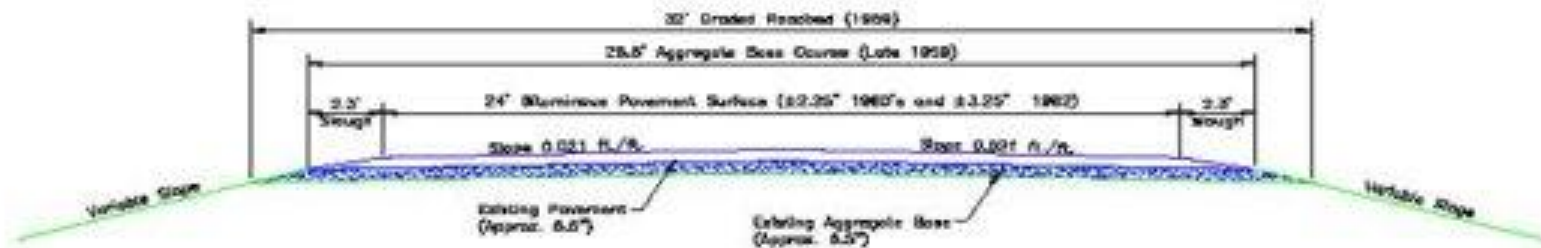
Planning & Design

- 2005 NACE
- ARRA Seminar (Feb. 8th)
- Dakota County, MN
- Core Roadway (March)
- Contractor & Emulsion Supplier Meeting (April)
- CIR Mix Design (AET)
- Plans & Specifications
- Bid Letting May 17, 2007

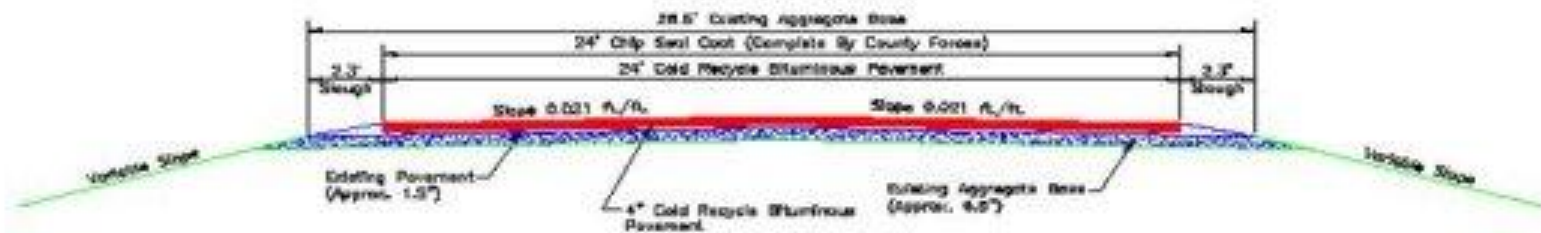


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Typical Sections



EXISTING TYPICAL SECTION



PROPOSED TYPICAL SECTION

Construction

■ CIR

- June 2nd to 14th, 2007



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Construction

■ Weather Issues

- Rain
- 1.5" (June 1st – 2nd)
- 3" (June 6th – 7th)
- 7" (June 16th – 17th)
 - Flooded Road Ditches
 - Overtopped Highway
- 11.5" of rain during Month of June







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On-Going Monitoring

- November 1st – FWD Testing
 - 10 Ton Load Rating
 - Layer Coefficient = 0.26 – 0.28
- Rutting
- Cracking
- Other Distresses





11/13/2007



11/13/2007

Lesson Learned

- Public Relations Success
- Keep heavy traffic off as long as possible
- Longer cure time
- Adjust Mix Properties
 - More resistant to rutting







Conclusion

■ Costs

- 4" CIR & 1.5" HBP Surfacing \$180,000/Mile
- 4" CIR & County Chip Seal \$80,000/Mile

■ Continue to Monitor

■ Plan for Future Projects



QUESTIONS

