



# Appendix 1

## Field Review Memorandum and Photo Log



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To: Carol Strizich  
MDT Project Manager

From: Sarah Nicolai  
DOWL HKM Project Manager

Date: February 15, 2012

**Subject: Summary of Field Review Conducted on January 31, 2012  
MT 16 / MT 200 Glendive to Fairview Corridor Planning Study**

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DOWL HKM conducted a field review of the study corridor on January 31, 2012. This summary lists existing transportation conditions, constraints, and issues observed in the field during the review, and should not be considered a comprehensive account. Existing transportation conditions, constraints, and issues are listed progressing from south/west to north/east from Segment 1 to Segment 4 under each category. Reference Post (RP) locations are approximated. No testing or detailed inspections were conducted.

DOWL HKM visually inspected the following existing transportation conditions, constraints, and issues.

**Segment 1: Glendive to Savage (RP 0.6 ± to RP 31.5 ±)**

**Tire Skid Marks**

- RP 8.7. Photo 18.

**Turn Lanes**

- Two-way left-turn lanes at RP 0.7. Photo 1.
- Northbound left-turn lane at intersection of Highland Park Road and MT 16 at RP 1.2. Photo 4.
- Northbound right-turn lane at RP 3.1. Photo 10.
- Southbound left-turn lane at RP 3.1. Photo 11.
- Northbound left-turn lane at intersection of MT 16 and County Road 254 at RP 3.7. Photo 12.
- Northbound right-turn lane at RP 17.1. Photo 34.
- Beginning of center left-turn lane at RP 31.5. Photo 50.

### **Intersections**

- Intersection of MT 16 and County Road 550. County Road 550 is unpaved at RP 5.6. Photo 14.
- Intersection of MT 16 and County Road 544. County Road 544 is unpaved at RP 8.7. Photo 19.

### **Signage**

- 45 miles per hour (mph) posted speed limit at RP 0.7. Photo 2.
- 70 mph posted speed limit and 65 mph night posted speed limit at RP 1.3. Photo 5.
- Watch for ice on bridge sign at RP 14.7. Photo 31.
- Slippery when wet sign at RP 24.6. Photo 42.

### **Pavement Conditions**

- Transverse pavement cracking within the travel way measured approximately 0.25 inches in width, approximately every 60 feet. No measurable pavement rutting was observed within the travel way at RP 0.8.
- Transverse pavement cracking within the travel way measured approximately 0.25 inches in width, approximately every 60 feet. Transverse pavement cracking within the shoulder was observed approximately every 16 feet. No measurable pavement rutting was observed within the travel way at RP 3.4.
- Transverse pavement cracking within the travel way measured approximately 0.25 inches in width, approximately every 85 feet. Transverse pavement cracking within the shoulder was observed approximately every 15 feet. No measurable pavement rutting was observed within the travel way at RP 5.4. Photo 13.
- Transverse pavement cracking within the travel way measured approximately 0.125 inches in width. Transverse pavement cracking within the shoulder measured approximately 0.75 inches in width. Pavement rutting within the travel way measured approximately 0.5 centimeters in depth at RP 8.3. Photo 16.
- Transverse pavement cracking within the travel way measured approximately 0.5 inches in width, approximately every 45 feet. Transverse pavement cracking within the shoulder was observed approximately every 15 feet. A pavement depression was observed within the shoulder. No measurable pavement rutting was observed within the travel way at RP 14.1. Photo 29.
- Transverse pavement cracking within the travel way measured approximately 0.5 inches in width. Longitudinal and pavement cracking was observed, as well as a large pothole within the travel way. Pavement rutting within the travel way measured approximately 0.5 inches in depth at RP 19.3. Photos 35 and 36.
- Transverse pavement cracking within the travel way was observed. Narrow shoulder widths and spot resurfacing was observed at RP 19.6. Photo 37.
- Roadway reconstruction with re-graded side slopes at RP 19.7. Photo 38.
- Reconstructed pavement at RP 20.4. Photos 39 and 40.
- Transverse pavement cracking within the travel way measured approximately 0.5 inches in width, approximately every 35 feet. Longitudinal pavement cracking was observed within the travel way. No measurable pavement rutting was observed within the travel way at RP 29.0. Photo 46.

- Transverse pavement cracking within the travel way measured approximately 0.5 inches in width, approximately every 45 feet. Longitudinal pavement cracking was observed within the travel way. No measurable pavement rutting was observed within the travel way at RP 29.5. Photo 48.

### **Wetlands Characteristics**

Areas exhibiting wetland characteristics were observed in the following locations:

- West of MT 16 at RP 1.7. Photo 7.
- East of MT 16 at RP 8.4. Photo 17.
- East of MT 16 at RP 29.2. Photo 47.

### **Bridges / Culverts**

- 96-inch double arch culverts under MT 16 at RP 7.0. Photo 15.
- Lower Seven Mile Creek at RP 10.1. Photos 20 and 21.
- Morgan Creek at RP 12.5. Photos 25 and 26.
- Thirteen Mile Creek at RP 15.5. Photo 32.

### **Side Slopes**

- East side slope transitions from 3:1 to 2:1 approximately 13 feet from northbound travel lane at RP 1.1. Photo 3.
- West side slope transitions from 4:1 to 2:1 approximately 20 feet from southbound travel lane at RP 1.8. Photo 7.
- East side slope transitions from 4:1 to 2:1 approximately 18 feet from northbound travel lane at RP 2.4. Photo 8.
- East side slope transitions from 5:1 to 2:1 approximately 18 feet from northbound travel lane at RP 3.0. Photo 9.
- East side slope was measured at 4:1 out approximately 25 feet from northbound travel lane at RP 7.0.
- West side slope was measured at 4:1 out approximately 21 feet from southbound travel lane at RP 7.0.
- East side slope transitions from 4:1 to 2:1 approximately 18 feet from northbound travel lane at RP 8.5.
- West side slope transitions from 4:1 to 2:1 approximately 16 feet from southbound travel lane at RP 8.5.
- West side slope transitions from 4:1 to 2:1 approximately 17 feet from southbound travel lane at RP 11.8. Photo 23.
- East side slope transitions from 4:1 to 2:1 approximately 17 feet from northbound travel lane at RP 11.8. Photo 24.
- East side slope transitions from 4:1 to 2:1 approximately 20 feet from northbound travel lane at RP 12.7. Photo 27.
- West side slope transitions from 4:1 to 1.5:1 23 feet from southbound travel lane RP 14.2.
- West side slope transitions from 4:1 to 2:1 approximately 20 feet from southbound travel lane at RP 14.2. Photo 30.

### **Side Slopes, continued**

- West side slope transitions from 5:1 to 3:1 approximately 17 feet from southbound travel lane at RP 16.3. Photo 33.
- East side slope transitions from 4:1 to 2:1 approximately 20 feet from northbound travel lane at RP 17.4.
- Reconstructed pavement section ends at RP 24.7. Photo 43.
- Unvegetated side slopes at RP 27.5. Photo 45.
- East side slope transitions from 5:1 to 3:1 approximately 28 feet from northbound travel lane at RP 29.7.
- West side slope transitions from 5:1 to 3:1 approximately 28 feet from southbound travel lane at RP 29.7.

### **Recreational Features**

- Intake fishing access at RP 17.1. Photo 35.

### **Wildlife Issues**

- Deer carcass observed at RP 1.0.
- Wildlife crossing sign at RP 1.4. Photo 6.
- Box culvert/wildlife undercrossing at RP 2.4. Photo 8.
- Wildlife crossing sign at RP 10.9. Photo 22.
- Owl carcass observed at RP 12.9.
- Deer carcass observed at RP 14.4.
- Bird carcasses observed at RP 17.4.
- Wildlife crossing sign at RP 20.9.
- Deer carcass observed at RP 21.7.
- Wildlife crossing sign at RP 30.9.

### **Other Features**

- Damaged guardrail at RP 13.6. Photo 28.
- Paved vehicle pullout at RP 26.4. Photo 44.
- Paved vehicle pullout at RP 30.4. Photo 49.

## **Segment 2: Savage to Crane (RP 31.5 ± to RP 41.5 ±)**

### **Tire Skid Marks**

- RP 40.4. Photo 56.
- Entrance to Crane at RP 41.4. Photo 57.

### **Turn Lanes**

- End of turning left-turn lane at RP 32.3. Photo 51.

### **Pavement Conditions**

- Transverse pavement cracking within the travel way measured approximately 0.5 inches in width, approximately every 35 feet. No measurable pavement rutting was observed within the travel way at RP 32.5.
- Longitudinal pavement cracking was observed within the travel way. No measurable pavement rutting was observed within the travel way at RP 33.7.
- Transverse pavement cracking within the travel way measured approximately 0.25 inches in width, approximately every 50 feet. No measurable pavement rutting was observed within the travel way at RP 36.4.

### **Wetlands Characteristics**

- Areas exhibiting wetland characteristics were observed east and west of MT 16 at RP 37.7. Photo 54.

### **Bridges**

- Dunlap Creek at RP 32.6. Photo 52.
- Irrigation Canal at RP 37.5. Photo 53.

### **Wildlife Issues**

- Deer carcass observed at RP 32.5.
- Deer carcass observed at RP 33.6.
- Deer carcass observed at RP 39.7.
- Bird carcass observed at RP 39.7.
- Wildlife crossing sign at RP 40.9.

### **Other Features**

- Slow moving tractor was observed at RP 38.4. Photo 55.

### **Segment 3: Crane to Sidney (41.5 ± to RP 50.4 ±)**

#### **Intersections**

- Intersection of MT 16 / MT 200 and MT 200 / MT 23 at RP 50.0. Photo 63.

#### **Pavement Conditions**

- Transverse pavement cracking within the travel way measured approximately 0.25 inches in width. The transverse pavement cracking did not span the full width of the travel way. No measurable pavement rutting was observed within the travel way at RP 42.0.
- Transverse pavement cracking within the travel way measured approximately 0.25 inches in width, approximately every 80 feet. Longitudinal pavement cracking was observed within the travel way. No measurable pavement rutting was observed within the travel way at RP 45.9.
- Transverse pavement cracking within the travel way measured approximately 0.5 inches in width. No measurable pavement rutting was observed within the travel way at RP 48.8.

#### **Wetlands Characteristics**

- Areas exhibiting wetland characteristics were observed east and west of MT 16 at RP 47.8. Photos 61 and 62.

#### **Bridges**

- Fox Creek at RP 46.7. Photo 59.

#### **Wildlife Issues**

- Deer carcass observed at RP 48.4.

#### **Other Features**

- Railway paralleling MT 16 at RP 45.0. Photo 58.
- Damaged guardrail at RP 46.7. Photo 60.

### **Segment 4: Sidney to Fairview from Approximate (RP 52.6 ± to 62.5 ±)**

#### **Turn Lanes**

- Return to two-lane configuration and northbound right-turn lane at RP 53.6. Photo 64.

#### **Intersections**

- Intersection of MT 200 and County Road 126 at RP 53.6. Photo 65.

### **Pavement Conditions**

- Transverse sealed pavement cracking within the travel way measured approximately 0.25 inches in width, approximately every 30 feet. Longitudinal pavement cracking was observed within the travel way. Chip seal pavement peeling was observed on the travel way white line. No measurable pavement rutting was observed within the travel way at RP 54.0. Photo 66.
- Transverse and longitudinal pavement crack sealing was observed within the travel way at RP 56.0. Photo 67.
- Transverse pavement cracking within the travel way measured approximately 0.5 inches in width, approximately every 30 feet. Longitudinal sealed pavement cracking was observed within the travel way. Chip seal pavement peeling was observed on the travel way white line. No measurable pavement rutting was observed within the travel way at RP 58.4. Photo 69.

### **Bridges**

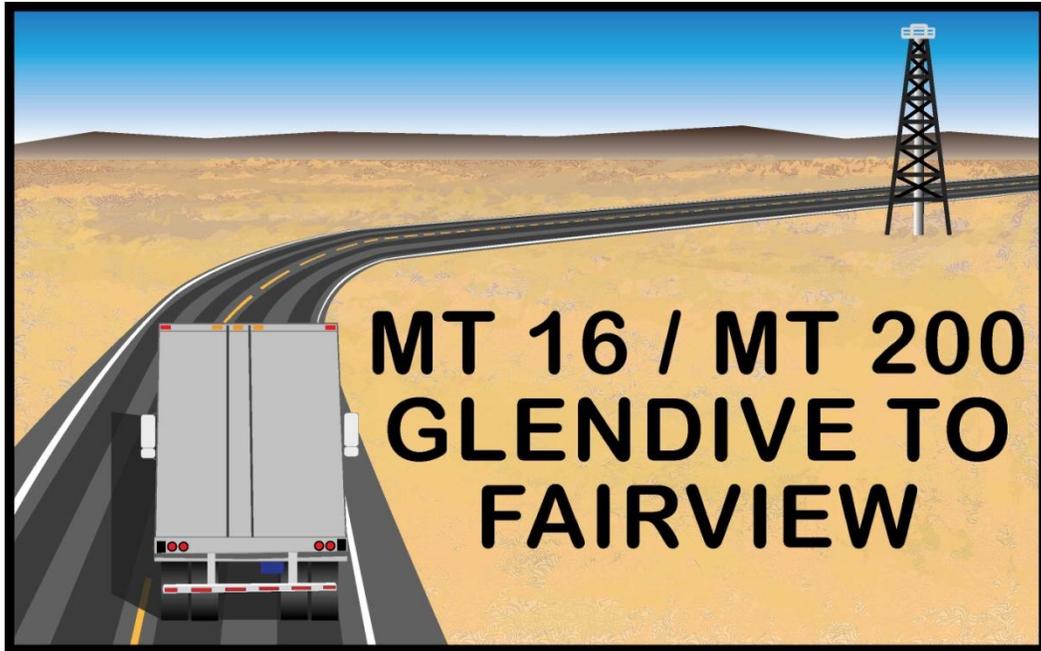
- First Hay Creek at RP 59.5. Photos 70 and 71.
- Second Hay Creek at RP 60.1. Photo 72.

### **Recreational Features**

- Old Fort Gilbert at RP 57.7. Photo 68.

### **Wildlife Issues**

- Wildlife crossing sign at RP 50.9.
- Wildlife crossing sign at RP 60.9.



**MT 16 / MT 200 GLENDIVE TO FAIRVIEW  
CORRIDOR PLANNING STUDY  
PHOTO LOG**

**PREPARED FOR:**



**PREPARED BY:**



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**February 2012**

The photos contained within this photo log illustrate existing transportation conditions along Montana 16 and Montana 200, as well as potential constraints and issues observed in the field during a field review conducted on January 31, 2012. Photos are numbered in chronological order progressing south/west to north/east. Reference Post (RP) locations are approximated. This photo log does not provide a comprehensive account of all existing transportation conditions, constraints, and issues within the corridor. No testing or detailed inspections were conducted.

**Segment 1: Glendive to Savage from Approximate (RP 0.6 ± to RP 31.5 ±)**



**Photo 1.** Looking north on MT 16 at a two-way left-turn lane north of Glendive. RP 0.7.



**Photo 2.** Looking north on MT 16 at 45 mile per hour (mph) sign north of Glendive. RP 0.7.



**Photo 3.** Looking north on MT 16. East side slope transitions from 3:1 to 2:1 approximately 13 feet from northbound travel lane. RP 1.1.



**Photo 4.** Looking northwest at intersection of Highland Park Road and MT 16 northbound left-turn lane. RP 1.2.



**Photo 5.** Looking north on MT 16 at the beginning of a 70 mph zone. RP 1.3.



**Photo 6.** Looking north on MT 16 at deer crossing sign. RP 1.4.



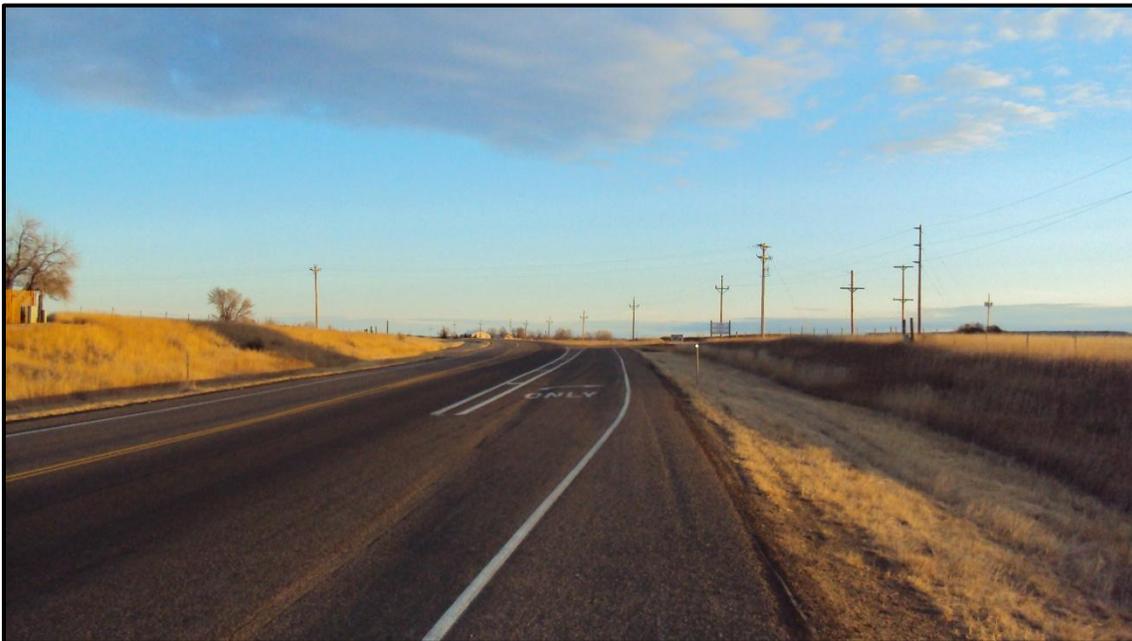
**Photo 7.** Looking north on the west side slope of MT 16. West side slope transitions from 4:1 to 2:1 approximately 20 feet from southbound travel lane. Areas exhibiting wetland characteristics observed west of MT 16. RP 1.7.



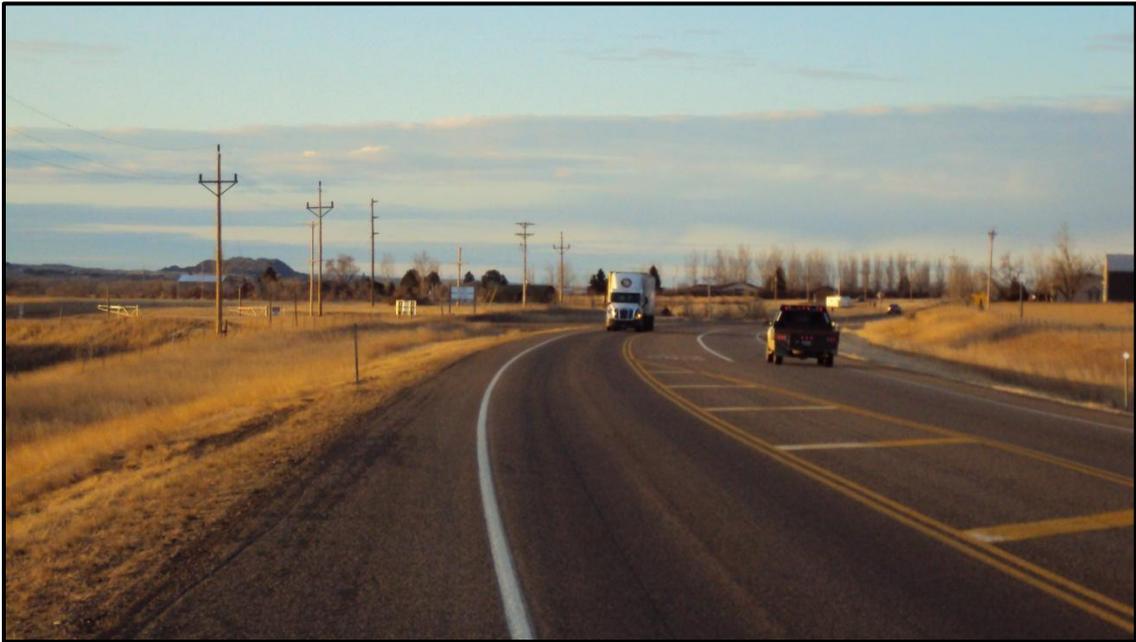
**Photo 8.** Looking west at a box culvert/wildlife underpass under MT 16. East side slope transitions from 4:1 to 2:1 approximately 18 feet from northbound travel lane. RP 2.4.



**Photo 9.** Looking north on MT 16 at trucks entering 45 mph advisory sign. East side slope transitions from 5:1 to 2:1 approximately 18 feet from northbound travel lane. RP 2.8.



**Photo 10.** Looking north on MT 16 at northbound right-turn lane. RP 3.1.



**Photo 11.** Looking south on MT 16 southbound left-turn lane. RP 3.1.



**Photo 12.** Looking north on MT 16 at intersection of MT 16 and County Road 254 northbound left-turn lane. RP 3.7.



**Photo 13.** Looking across MT 16 at transverse pavement cracking. Pavement cracking within the travel way measured approximately 0.25 inches in width, approximately every 85 feet. RP 5.4.



**Photo 14.** Looking west at the intersection of MT 16 and County Road 550. County Road 550 is unpaved. RP 5.6.



**Photo 15.** Looking east at 96-inch double arch culverts under MT 16. West side slope was measured at 4:1 to approximately 21 feet from northbound travel lane. RP 7.0.



**Photo 16.** Looking across MT 16 at transverse pavement cracking. Pavement cracking within the travel way measured approximately 0.125 inches, approximately every 50 feet. Pavement rutting measured at approximately 0.5 centimeters. RP 8.3.



**Photo 17.** Looking at areas exhibiting wetland characteristics observed east of MT 16. East side slope transitions from 4:1 to 2:1 approximately 18 feet from northbound travel lane. RP 8.4.



**Photo 18.** Looking south on MT 16 at tire skid marks. RP 8.7.



**Photo 19.** Looking west at intersection of MT 16 and County Road 544. County Road 544 is unpaved. RP 8.7.



**Photo 20.** Looking south on MT 16 at Lower Seven Mile Creek. East side slope transitions from 4:1 to 2:1 approximately 15 feet from the northbound travel lane. RP 10.1.



**Photo 21.** Looking north on MT 16 at Lower Seven Mile Creek bridge undercrossing. RP 10.1.



**Photo 22.** Looking north on MT 16 at deer crossing sign. RP 10.9.



**Photo 23.** Looking south on MT 16. West side slope transitions from 4:1 to 2:1 approximately 17 feet from southbound travel lane. RP 12.0.



**Photo 24.** Looking north on MT 16. East side slope transitions from 4:1 to 2:1 approximately 17 feet from northbound travel lane. RP 12.0.



**Photo 25.** Looking north on MT 16 at Morgan Creek. RP 12.5.



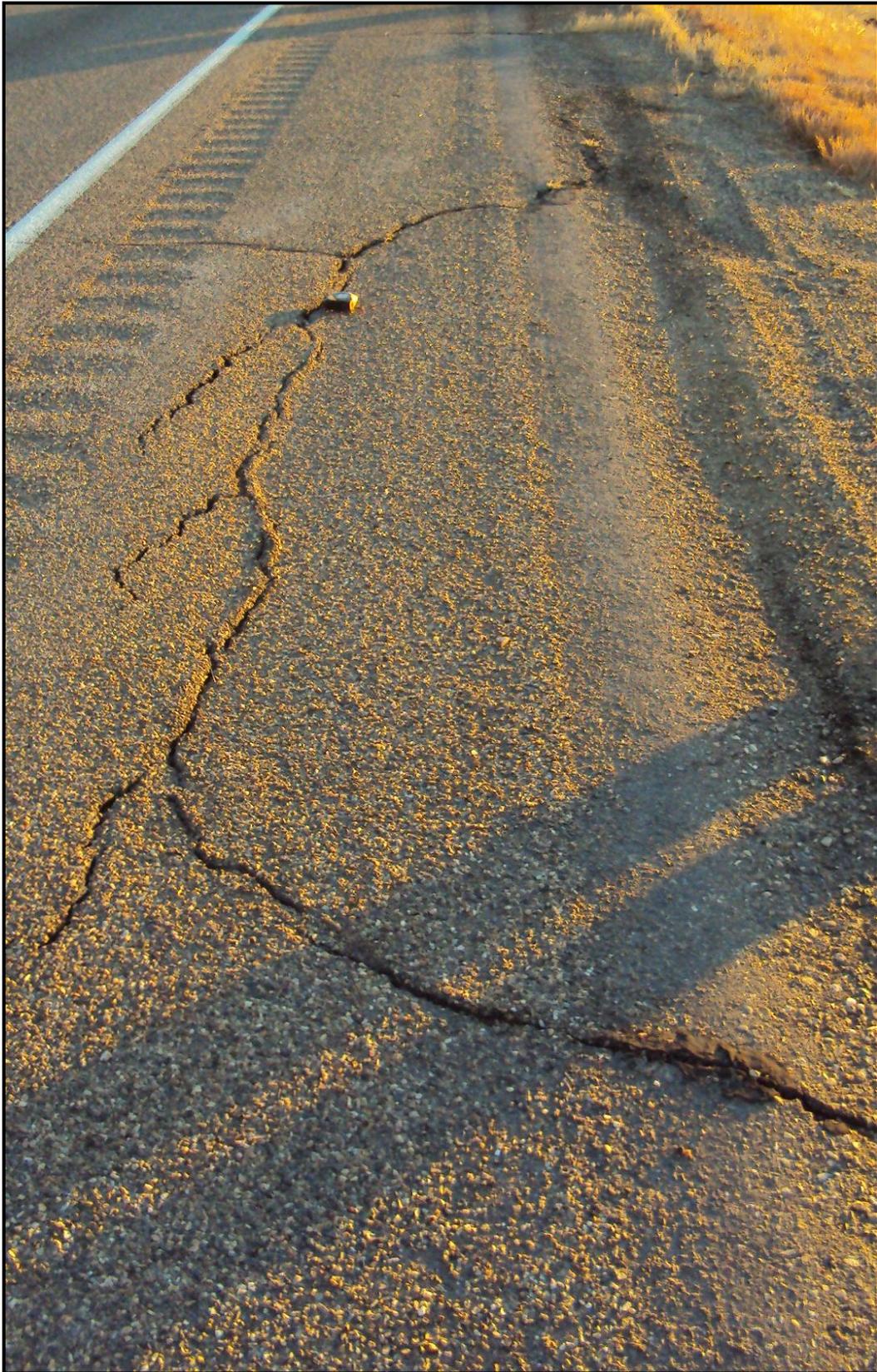
**Photo 26.** Looking north on MT 16 at Morgan Creek bridge undercrossing. RP 12.5.



**Photo 27.** Looking north on MT 16. East side slope transitions from 4:1 to 2:1 approximately 20 feet from northbound travel lane. RP 12.7.



**Photo 28.** Looking north on MT 16 at damaged guardrail. East side slope transitions from 4:1 to 5:1 approximately 23 feet from northbound travel lane. RP 13.6.



**Photo 29.** Looking across MT 16 at transverse pavement cracking. Pavement cracking within the travel way measured approximately 0.5 inches in width, approximately every 45 feet. RP 14.1.



**Photo 30.** Looking south on MT 16. West side slope transitions from 4:1 to 2:1 approximately 20 feet from northbound travel lane. RP 14.4.



**Photo 31.** Looking south on MT 16 at watch for ice on bridge sign. RP 14.7.



**Photo 32.** Looking north on MT 16 at Thirteen Mile Creek. RP 15.5.



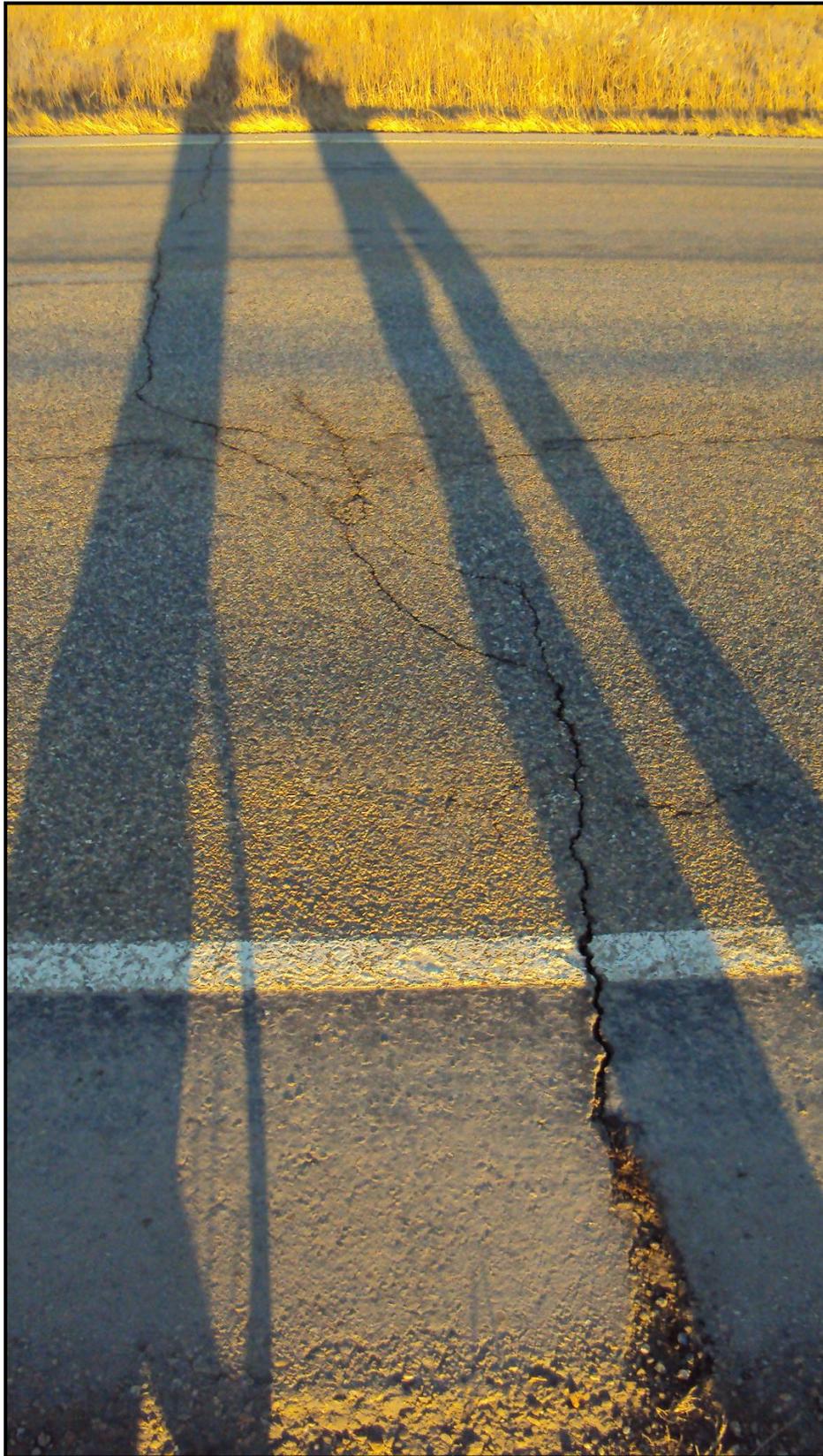
**Photo 33.** Looking north on MT 16. West side slope transitions from 5:1 to 3:1 approximately 17 feet from southbound travel lane. RP 16.4.



**Photo 34.** Looking north on MT 16 at northbound right-turn lane at Intake fishing access. RP 17.1.



**Photo 35.** Looking south on MT 16 at longitudinal pavement cracking and pothole. RP 19.3.



**Photo 36.** Looking across MT 16 at transverse pavement cracking. Pavement cracking within the travel way measured approximately 0.5 inches in width, approximately every 30 feet. Pavement rutting measured approximately 0.5 inches in depth. RP 19.3.



**Photo 37.** Looking south on MT 16 at narrow shoulder widths, longitudinal pavement cracking, and spot resurfacing. RP 19.6.



**Photo 38.** Looking north on MT 16 at roadway reconstruction and re-graded side slopes. RP 19.7.



**Photo 39.** Looking south at reconstructed portion of MT 16. RP 20.4.



**Photo 40.** Looking south at reconstructed portion of MT 16. RP 20.4.



**Photo 41.** Looking north on MT 16. East side slope transitions from 5:1 to 3:1 approximately 28 feet from northbound travel lane. RP 22.5.



**Photo 42.** Looking south on MT 16 at slippery when wet sign. RP 24.6.



**Photo 43.** Looking north on MT 16 at end of reconstructed section. RP 24.7.



**Photo 44.** Looking south on MT 16 at a paved vehicle pullout. RP 26.4.



**Photo 45.** Looking north on MT 16 at unvegetated side slope. RP 27.5.



**Photo 46.** Looking across MT 16 at continuous transverse pavement cracking. Pavement cracking within the travel way measured approximately 0.5 inches in width, approximately every 35 feet. RP 29.0.



**Photo 47.** Looking east of MT 16 at areas exhibiting wetland characteristics. RP 29.2.



**Photo 48.** Looking north on MT 16 at continuous longitudinal pavement cracking. Pavement cracking within the travel way measured approximately 0.5 inches in width. RP 29.5.



**Photo 49.** Looking south on MT 16 at a paved vehicle pullout. RP 30.4.



**Photo 50.** Looking north on MT 16 at beginning of two-way left-turn lane and reduced posted speed limit (55 mph for all vehicles) through Savage, MT. RP 31.5.

**Segment 2: Savage to Crane from Approximate (RP 31.5 ± to RP 41.5 ±)**



**Photo 51.** Looking north on MT 16 at end of two-way left-turn lane and restored posted speed limits (60 mph for trucks, 70 mph for vehicles). RP 32.3.



**Photo 52.** Looking south on MT 16 at Dunlap Creek. RP 32.6.



**Photo 53.** Looking south on MT 16 at Irrigation Canal. RP 37.5.



**Photo 54.** Looking east of MT 16 at areas exhibiting wetland characteristics. RP 37.7.



**Photo 55.** Looking south on MT 16 at slow moving tractor. RP 38.4.

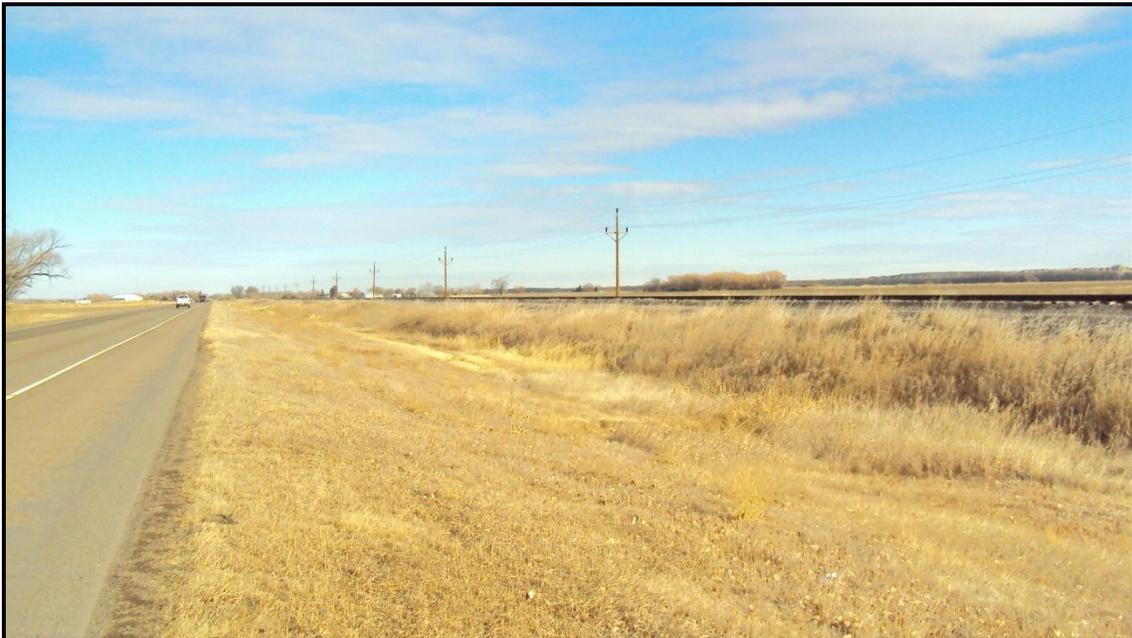


**Photo 56.** Looking north on MT 16 at tire skid marks. RP 40.4.



**Photo 57.** Looking north on MT 16 at entrance to Crane, MT. Speed limits are not reduced through Crane, MT. RP 41.4.

**Segment 3: Crane to Sidney from Approximate (RP 41.5 ± to RP 50.4 ±)**



**Photo 58.** Looking north at railway paralleling MT 16. RP 45.0.



**Photo 59.** Looking north on MT 16 at Fox Creek. RP 46.7.



**Photo 60.** Looking south on MT 16 at damaged guardrail. RP 46.7.



**Photo 61.** Looking northwest of MT 16 at areas exhibiting wetland characteristics observed approximately 32 feet from southbound travel lane. RP 47.8.



**Photo 62.** Looking northeast of MT 16 at areas exhibiting wetland characteristics observed approximately 32 feet from northbound travel lane. RP 47.8.



**Photo 63.** Looking north on MT 16 at intersection of MT 16 / MT 200 and MT 200 / MT 23. RP 50.0.

**Segment 4: Sidney to Fairview from Approximate RP 52.6 to 62.5**



**Photo 64.** Looking north on MT 200 (north of Sidney) at return of two-lane section. RP 53.6.



**Photo 65.** Looking at paved intersection of MT 200 and County Road 126. RP 53.6.



**Photo 66.** Looking at transverse sealed pavement cracking 0.25 inches in width, approximately every 30 feet. Chip seal peeling was observed on the travel way white line. No measurable pavement rutting was observed within the travel way. RP 54.0.



**Photo 67.** Looking north on MT 200 at transverse and longitudinal pavement crack sealing. RP 56.0.



**Photo 68.** Old Fort Gilbert sign. RP 57.7.



**Photo 69.** Looking across MT 16 at continuous longitudinal and transverse pavement crack sealing. Pavement cracking within the travel way measured approximately 1.5 inches in width, approximately every 30 feet. RP 58.4.



**Photo 70.** Looking north on MT 200 at First Hay Creek. RP 59.5.



**Photo 71.** Looking north on MT 200 at First Hay Creek Bridge undercrossing. RP 59.5.



**Photo 72.** Looking south on MT 200 at Second Hay Creek. Distance from the northbound travel lane to concrete wall is approximately 40 feet. RP 60.1