



MR. JOHN POELMA

Laramie County Public Works
13797 Prairie Center Circle
Cheyenne, WY 82009

SPEED STUDY



WHITNEY ROAD (CR 129) LARAMIE COUNTY, WYOMING



INBERG-MILLER ENGINEERS

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23682-HE



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June 14, 2024

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PDF REPORT EMAILED: JOHN.POELMA@LARAMIECOUNTYWY.GOV
THIS CONSTITUTES THE ORIGINAL

Mr. John Poelma
Assistant Director
Laramie County Public Works
13797 Prairie Center Circle
Cheyenne, Wyoming 82009

RE: WHITNEY ROAD (CR 129)
SPEED LIMIT EVALUATION REPORT
LARAMIE COUNTY, WYOMING

Dear Mr. Poelma:

This letter transmits our speed limit evaluation report for the above-referenced project. The report outlines our findings for the recommendation of speed limit as requested by Laramie County Public Works.

It has been a pleasure participating in this project.

If you have any questions or comments, please contact us at (307) 635-6827.

Sincerely,

INBERG-MILLER ENGINEERS

Daniel J. Hayes, P.E.
Civil Engineer
dhayes@inberg-miller.com

REVIEWED BY

Gary L. Steele, P.E.
Senior Civil Engineer
gsteele@inberg-miller.com

DJH:GLS:bbP:\23682-HE LARAMIE COUNTY PUBLIC WORKS County Road Speed Studies\Civil\Whitney Rd\23682-HE Speed Study Report.docx

Enclosures as stated



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1.0 [INTRODUCTION](#)

Whitney Road (CR 129) is a paved county road from Mile Point (MP) 1.3 to MP 5.0 with a speed limit of 45 mph as shown in Figure 1. The main traffic on this road is residential and through access connecting rural areas of the urban-rural interface of Laramie County and the City of Cheyenne. The roadway averages a width of 29 feet with 18 major access points and 5 minor access points which translates to 6.2 access points per mile. The type of terrain is rolling and the adjacent land use is characterized as residential and agricultural. There are a few locations that have steep backslopes that would not be recoverable in case of running off the road, as well as two locations that have reverse curves.



Figure 1: 45 mph speed limit sign at MP 1.3.

2.0 [TRAFFIC COUNT](#)

The automated traffic counters were placed at MP MP 1.8, 3.5, and 4.6 and are shown on the map Appendix A. The traffic counter results are shown in Appendix B. The traffic count was recorded from April 8 through April 15 (Traffic Counter at MP 1.8 only produced counts until 4/11 due to tube malfunctions after that date.) with an average of 7,593 vehicles. The Average Daily Traffic (ADT) was recorded at 1,949, 1,097, and 777 vehicles a day for the three counter locations which average of 1,274 vehicles a day. The Average Daily Truck Traffic (ADTT) was recorded as 49, 50, and 46 vehicles a day for the three counter locations which average 48 trucks per day. The average 85th percentile speed between the three locations was calculated at 59 mph with the 50th percentile speed at 51.6 mph. The pace speed included an average of 53.1% of vehicles between the three counters and was calculated from 47 mph to 56 mph. According to the standards, the upper bound of the recommended speed limit is the rounded 85th percentile speed that was determined at 60 mph. The lower bound is either the rounded 50th-percentile speed or the lower limit of the 10-mph pace which was determined at 47 mph. Appendix C shows a table with general information, roadway characteristics, crash data, and the range of the speed limit.

3.0 ROADWAY SAFETY

Prior to conducting the speed study on Whitney Road (CR 129), a safety assessment was performed on November 13, 2023. This included a sign inventory, crash analysis, and a ball bank test.

Table 1 shows the detailed 10-year crash history from 2013 to 2022. 12 crashes occurred with 4 crashes resulting in an injury. The first harmful event shows the most predominant crash was a motor vehicle in transport on the roadway resulting in a collision between multiple vehicles with 5 instances. There were three instances of an overturn/rollover and two instances each of a collision with a delineator post or fence (including post). The time of day showed that 3 crashes occurred between 5:00 PM to 5:59 PM. The most crashes for a one-mile section of the road occurred between MP 2.0 to MP 3.0 where 11 crashes occurred. The location of each crash is shown on a map in Appendix D.

Table 1: Detailed 10-Year Crash History

| MP | Year | Month | Day of the Week | Time | Crash Severity | First Harmful Event |
|------|------|----------|-----------------|-------------------|------------------------|---------------------------------------|
| 2.42 | 2021 | February | Monday | 10 to 10:59 AM | Property Damage Only | Motor Vehicle in Transport on Roadway |
| 2.43 | 2014 | March | Monday | 1 to 1:59 PM | Property Damage Only | Motor Vehicle in Transport on Roadway |
| 2.62 | 2021 | June | Sunday | 2 to 2:59 AM | Property Damage Only | Motor Vehicle in Transport on Roadway |
| 2.73 | 2013 | October | Monday | 10 to 10:59 PM | Property Damage Only | Overturn or Rollover |
| 2.74 | 2014 | March | Friday | 11:00 to 11:59 PM | Suspected Minor Injury | Overturn or Rollover |
| 2.81 | 2014 | November | Monday | 9 to 9:59 AM | Property Damage Only | Fence (including Post) |
| 2.81 | 2013 | October | Monday | 10 to 10:59 PM | Suspected Minor Injury | Overturn or Rollover |
| 2.82 | 2022 | June | Wednesday | 5 to 5:59 PM | Property Damage Only | Motor Vehicle in Transport on Roadway |
| 2.83 | 2014 | January | Thursday | 4 to 4:59 PM | Property Damage Only | Fence (including Post) |
| 2.90 | 2022 | October | Thursday | 5 to 5:59 PM | Possible Injury | Motor Vehicle in Transport on Roadway |
| 2.91 | 2015 | January | Friday | 7 to 7:59 AM | Suspected Minor Injury | Delineator Post |
| 4.6 | 2019 | May | Monday | 5 to 5:59 PM | Property Damage Only | Delineator Post |

Table 2 shows the sign inventory for Whitney Road (CR 129). Every sign on the road was inventoried, and given a GPS location and a picture. The condition of each sign was obtained visually with the wear and type of sheeting of the sign rated. There are a total of 12 signs located between MP 1.3 to MP 5.0. The visual inspection identified 6 signs in fair or poor condition and 12 signs had reflective sheeting. The locations of all 12 signs are shown on a map in Appendix E. All the signs in fair and poor condition should be replaced and all the signs with old sheeting should be updated with new ASTM sheeting when the sign is replaced in the future.

Table 2: Sign Inventory

| MP | Sign | Travel Direction | MUTCD | Reflectivity | Condition | Comment |
|-----|--------------------|------------------|-------|--------------|-----------|-----------------|
| 1.3 | 45 mph Speed Limit | North | R2-1 | Y | Fair | Scratches |
| 1.3 | 40 mph speed limit | South | R2-1 | Y | Poor | Faded/Scratched |
| 2.5 | 45 mph Speed Limit | North | R2-1 | Y | Fair | Faded/Scratched |
| 2.5 | 45 mph Speed Limit | South | R2-1 | Y | Good | |
| 2.7 | Reverse Turn | South | W1-4 | Y | Fair | Chipping |
| 2.9 | Reverse Turn | North | W1-4 | Y | Poor | |
| 3.1 | Reverse Turn | South | W1-3 | Y | Fair | Chipping |
| 3.1 | 45 mph Speed Limit | North | R2-1 | Y | Good | |
| 4.8 | Reverse Turn | North | W1-4 | Y | Good | |
| 4.9 | Do No Pass | South | R4-1 | Y | Good | |
| 4.9 | Stop Ahead | North | W3-1 | Y | Fair | Birdshot |
| 5.0 | 45 mph Speed Limit | South | R2-1 | Y | Good | Bullet Holes |

A ball bank test was performed on Whitney Road (CR 129) to determine the safe speed of all the curves. Traveling at a speed of 50 mph, no curves failed the ball bank test as shown in Appendix F. A Laramie County representative should consider safety measures at adverse curves such as signage, advisory speeds, delineation, shoulder widening, or guardrails.

4.0 DECLARATION OF SPEED LIMIT

Posted speed limits (other than statutory speed limits) on Wyoming local roads should be documented by a Declaration of Speed Limit form as shown in Figure 2. Any speed limit change from the statutory limits shall be verified and sealed by a professional engineer in Wyoming. The form, with appropriate background information, should be presented to the county commission where a resolution approving the proposed speed limit should be approved. The resolution number should be added to the declaration of speed limit form. The form is then returned to appropriate county officials so that the necessary signing changes can be made. Enforcement of the new speed limit cannot occur until the appropriate signs giving notice of the new speed limit have been erected.

According to the speed study data overview summarized in Appendix C, the acceptable range of speed limit on Whitney Road (CR 129) is between 50 and 60 mph.

It is recommended that the speed limit be posted at 55 mph due to:

- ❖ Within acceptable Range
- ❖ Lower than 85th percentile due to adverse road alignments

Post a 55 mph by replacing the existing 45 mph speed limit sign at MP 1.3 and MP 3.1 for northbound traffic and MP 2.5 and 5.0 for southbound traffic. It is recommended that Laramie County place a new 45-mph speed limit sign at MP 3.1 for southbound traffic.

A US Limits 2-speed zone report was completed through the Federal Highway Administration to verify our recommended speed limit. The USLimits 2 report came back at a 55-mph speed recommendation based on inputs from our speed study report. This report can be found in Appendix G. A Laramie County representative should consider safety measures at adverse curves such as signage, advisory speeds, delineation, shoulder widening, or guardrails.

DECLARATION OF SPEED LIMIT ON PAVED ROADS

LOCATION: County Road 129, Whiteny Road, MP 1.3 to MP 5.0.

Method Used: Visual inspection and engineering judgment.
Free flow spot speeds to determine 85th percentile speed and pace.
Procedures for locally establishing speed limits were followed.

Summary of Results:
The existing speed limit is 45 mph. The 85th percentile speed was recorded at 59.0 mph and the 50th percentile speed at 51.6 mph. The 10-mph pace speed was recorded from 47 mph to 56 mph. The roadway width is 29 feet, and the road has 23 access points along the section which translates into 6.2 access points per mile. There were 12 crashes in the last 10 years with 4 crashes resulting in injuries.

Recommendations:
It is recommended that the speed limit be set at 55 mph for this section of the road. Post a 55-mph speed limit by replacing the existing 45-mph speed limit sign at MP 1.3 and 3.1 for northbound traffic and MP 2.5 and 5.0 for southbound traffic. **A Laramie County representative should consider safety measures at adverse curves such as signage, advisory speeds, delineation, shoulder widening, or guardrails.**

Data Collected by. Hayden Altenburg 11/10/2024 Data Summarized by. Daniel Hayes, P.E. 6/12/2024
Printed Name Date Printed Name Date



Approved. Daniel Hayes, P.E. _____ 6/12/2024
Professional Engineer P.E. Seal Date

ORDER TO ESTABLISH RESTRICTED SPEED ZONE

The County Commission approves changing the speed limit to 55 miles per hour on the paved roadway section described above.

Resolution number: _____

Date: _____

Whitney Road - Sign Location Map

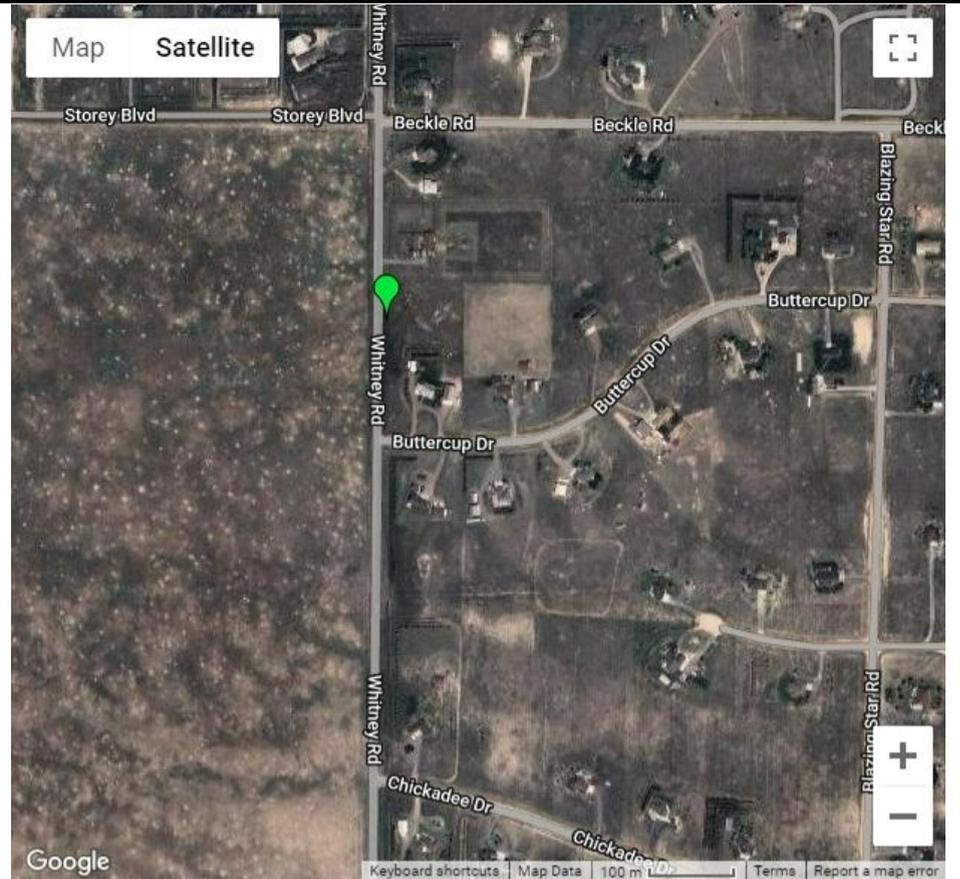


SPEED DATA ANALYSIS

Location



Latitude: 41.172182
Longitude: -104.732069



Analysis Time Period



| Start | End |
|---------------------|----------------------|
| 4/8/2024 1:50 PM | 4/15/2024 2:35 PM |

Vehicles Analyzed



7,795

Speed Limit



45

Total Enforceable Violations



6,540

Average Speed



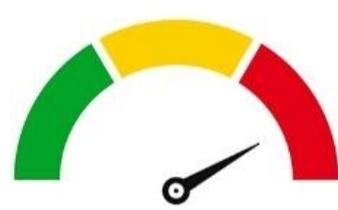
51

85th Percentile Speed



58

Fastest Speed



117

10 MPH Pace Speed



45-54

Slowest Speed



4

Default Report Title
 Use Preferences to Define Titles

Site Code: Whitney Road

Comment 1: Pinnacle traffic
 Counter
 Serial Number: 41396
 Latitude: 41.172182
 Longitude: -104.732069
 GPS Accuracy: 34.16667 ft

Station ID: ~775 Feet South of Beckle Rd.
 Start Date: 4/8/2024
 End Date: 4/15/2024

Combined Lanes 4/8/2024 to 4/11/2024

Peak Analysis

Classes Excluded From Peaks: None

| Date | AM Peak | Hour Volume | Highest Interval Time | Highest Interval Volume | Peak Hour Factor | Pm Peak | Hour Volume | Highest Interval Time | Highest Interval Volume | Peak Hour Factor |
|-----------|-----------|-------------|-----------------------|-------------------------|------------------|---------|-------------|-----------------------|-------------------------|------------------|
| 4/8/2024 | No Volume | | | | | 4:23 PM | 237 | 4:50 PM | 66 | 0.90 |
| 4/9/2024 | 7:05 AM | 201 | 7:05 AM | 56 | 0.90 | 4:27 PM | 238 | 4:46 PM | 68 | 0.88 |
| 4/10/2024 | 6:48 AM | 223 | 7:12 AM | 73 | 0.76 | 3:52 PM | 242 | 4:36 PM | 66 | 0.92 |
| 4/11/2024 | 7:05 AM | 216 | 7:19 AM | 74 | 0.73 | 4:19 PM | 242 | 4:35 PM | 65 | 0.93 |

Axle Statistics

| # Axles | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---------|-------|-------|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Count | 7599 | 65 | 125 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Avg. WB | 129.4 | 295.2 | 423.6 | 544.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Axles Per Vehicle: 2.0427

AADT

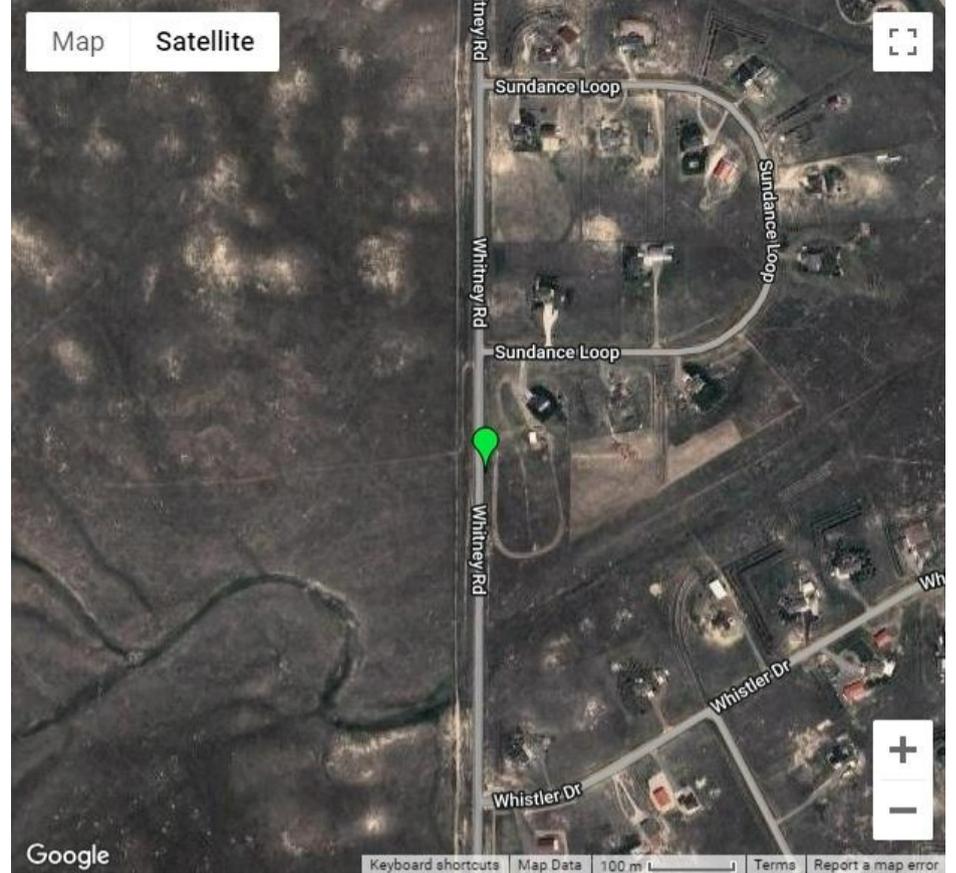
| Date | Lane | Volume | x | User | x | Daily | = | ADT | x | Season | = |
|-----------|------------------------|--------|---|------|---|-------|---|-------|---|--------|---|
| 4/8/2024 | A to B, None Specified | 427 | | 1.00 | | 1.00 | | 427 | | 1.00 | |
| 4/8/2024 | B to A, None Specified | 737 | | 1.00 | | 1.00 | | 737 | | 1.00 | |
| 4/8/2024 | Day Total | 1,164 | | | | | | 1,164 | | | |
| 4/9/2024 | A to B, None Specified | 1,150 | | 1.00 | | 1.00 | | 1,150 | | 1.00 | |
| 4/9/2024 | B to A, None Specified | 1,130 | | 1.00 | | 1.00 | | 1,130 | | 1.00 | |
| 4/9/2024 | Day Total | 2,280 | | | | | | 2,280 | | | |
| 4/10/2024 | A to B, None Specified | 1,067 | | 1.00 | | 1.00 | | 1,067 | | 1.00 | |
| 4/10/2024 | B to A, None Specified | 1,065 | | 1.00 | | 1.00 | | 1,065 | | 1.00 | |
| 4/10/2024 | Day Total | 2,132 | | | | | | 2,132 | | | |
| 4/11/2024 | A to B, None Specified | 1,127 | | 1.00 | | 1.00 | | 1,127 | | 1.00 | |
| 4/11/2024 | B to A, None Specified | 1,092 | | 1.00 | | 1.00 | | 1,092 | | 1.00 | |
| 4/11/2024 | Day Total | 2,219 | | | | | | 2,219 | | | |
| Total | | 7795 | | | | | | 7795 | | | |
| Average | | 1949 | | | | | | 1949 | | | |

SPEED DATA ANALYSIS

Location



Latitude: 41.195913
Longitude: -104.731661



Analysis Time Period



| Start | End |
|---------------------|----------------------|
| 4/8/2024 2:14 PM | 4/15/2024 2:26 PM |

Vehicles Analyzed



8,770

Speed Limit



45

Total Enforceable Violations



6,799

Average Speed



51

85th Percentile Speed



58

Fastest Speed



107

10 MPH Pace Speed



46-55

Slowest Speed



1

Default Report Title
 Use Preferences to Define Titles

Site Code: Whitney Road MP 3.5
 Station ID: ~1,370' north of Whistler Drive
 Start Date: 4/8/2024
 End Date: 4/15/2024

Comment 1:
 Serial Number: 41397
 Latitude: 41.195913
 Longitude: -104.731661
 GPS Accuracy: 65.16666 ft

Combined Lanes 4/8/2024 to 4/15/2024

Peak Analysis

Classes Excluded From Peaks: None

| Date | AM Peak | Hour Volume | Highest Interval Time | Highest Interval Volume | Peak Hour Factor | Pm Peak | Hour Volume | Highest Interval Time | Highest Interval Volume | Peak Hour Factor |
|-----------|-----------|-------------|-----------------------|-------------------------|------------------|----------|-------------|-----------------------|-------------------------|------------------|
| 4/8/2024 | No Volume | | | | | 4:25 PM | 139 | 4:39 PM | 39 | 0.89 |
| 4/9/2024 | 6:38 AM | 111 | 7:04 AM | 39 | 0.71 | 3:51 PM | 146 | 4:32 PM | 50 | 0.73 |
| 4/10/2024 | 6:46 AM | 123 | 7:16 AM | 42 | 0.73 | 4:36 PM | 147 | 4:37 PM | 41 | 0.90 |
| 4/11/2024 | 7:03 AM | 133 | 7:17 AM | 47 | 0.71 | 3:44 PM | 154 | 3:45 PM | 43 | 0.90 |
| 4/12/2024 | 7:07 AM | 121 | 7:35 AM | 41 | 0.74 | 3:46 PM | 138 | 4:06 PM | 41 | 0.84 |
| 4/13/2024 | 8:30 AM | 97 | 8:38 AM | 30 | 0.81 | 3:40 PM | 110 | 3:40 PM | 35 | 0.79 |
| 4/14/2024 | 10:23 AM | 103 | 10:41 AM | 33 | 0.78 | 3:51 PM | 117 | 4:10 PM | 36 | 0.81 |
| 4/15/2024 | 6:55 AM | 128 | 7:22 AM | 41 | 0.78 | 12:20 PM | 103 | 1:04 PM | 31 | 0.83 |

Axle Statistics

| # Axles | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---------|-------|-------|-------|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Count | 8365 | 142 | 253 | 9 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Avg. | 127.7 | 321.7 | 424.1 | 454.6 | 622.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

WB
 Axles Per Vehicle: 2.0774

AADT

| Date | Lane | Volume | x | User | x | Daily | = | ADT | x | Season | = |
|-----------|------------------------|--------|---|------|---|-------|---|-------|---|--------|---|
| 4/8/2024 | A to B, None Specified | 273 | | 1.00 | | 1.00 | | 273 | | 1.00 | |
| 4/8/2024 | B to A, None Specified | 355 | | 1.00 | | 1.00 | | 355 | | 1.00 | |
| 4/8/2024 | Day Total | 628 | | | | | | 628 | | | |
| 4/9/2024 | A to B, None Specified | 666 | | 1.00 | | 1.00 | | 666 | | 1.00 | |
| 4/9/2024 | B to A, None Specified | 613 | | 1.00 | | 1.00 | | 613 | | 1.00 | |
| 4/9/2024 | Day Total | 1,279 | | | | | | 1,279 | | | |
| 4/10/2024 | A to B, None Specified | 626 | | 1.00 | | 1.00 | | 626 | | 1.00 | |
| 4/10/2024 | B to A, None Specified | 627 | | 1.00 | | 1.00 | | 627 | | 1.00 | |
| 4/10/2024 | Day Total | 1,253 | | | | | | 1,253 | | | |
| 4/11/2024 | A to B, None Specified | 701 | | 1.00 | | 1.00 | | 701 | | 1.00 | |
| 4/11/2024 | B to A, None Specified | 637 | | 1.00 | | 1.00 | | 637 | | 1.00 | |
| 4/11/2024 | Day Total | 1,338 | | | | | | 1,338 | | | |
| 4/12/2024 | A to B, None Specified | 666 | | 1.00 | | 1.00 | | 666 | | 1.00 | |
| 4/12/2024 | B to A, None Specified | 648 | | 1.00 | | 1.00 | | 648 | | 1.00 | |
| 4/12/2024 | Day Total | 1,314 | | | | | | 1,314 | | | |
| 4/13/2024 | A to B, None Specified | 642 | | 1.00 | | 1.00 | | 642 | | 1.00 | |
| 4/13/2024 | B to A, None Specified | 599 | | 1.00 | | 1.00 | | 599 | | 1.00 | |
| 4/13/2024 | Day Total | 1,241 | | | | | | 1,241 | | | |
| 4/14/2024 | A to B, None Specified | 521 | | 1.00 | | 1.00 | | 521 | | 1.00 | |
| 4/14/2024 | B to A, None Specified | 491 | | 1.00 | | 1.00 | | 491 | | 1.00 | |
| 4/14/2024 | Day Total | 1,012 | | | | | | 1,012 | | | |
| 4/15/2024 | A to B, None Specified | 398 | | 1.00 | | 1.00 | | 398 | | 1.00 | |
| 4/15/2024 | B to A, None Specified | 307 | | 1.00 | | 1.00 | | 307 | | 1.00 | |
| 4/15/2024 | Day Total | 705 | | | | | | 705 | | | |
| Total | | 8770 | | | | | | 8770 | | | |
| Average | | 1097 | | | | | | 1097 | | | |

SPEED DATA ANALYSIS

Location



Latitude: 41.211578
Longitude: -104.731611

Analysis Time Period



| Start | End |
|---------------------|----------------------|
| 4/8/2024 2:34 PM | 4/15/2024 2:15 PM |

Vehicles Analyzed



6,216

Total Enforceable Violations



5,126

85th Percentile Speed

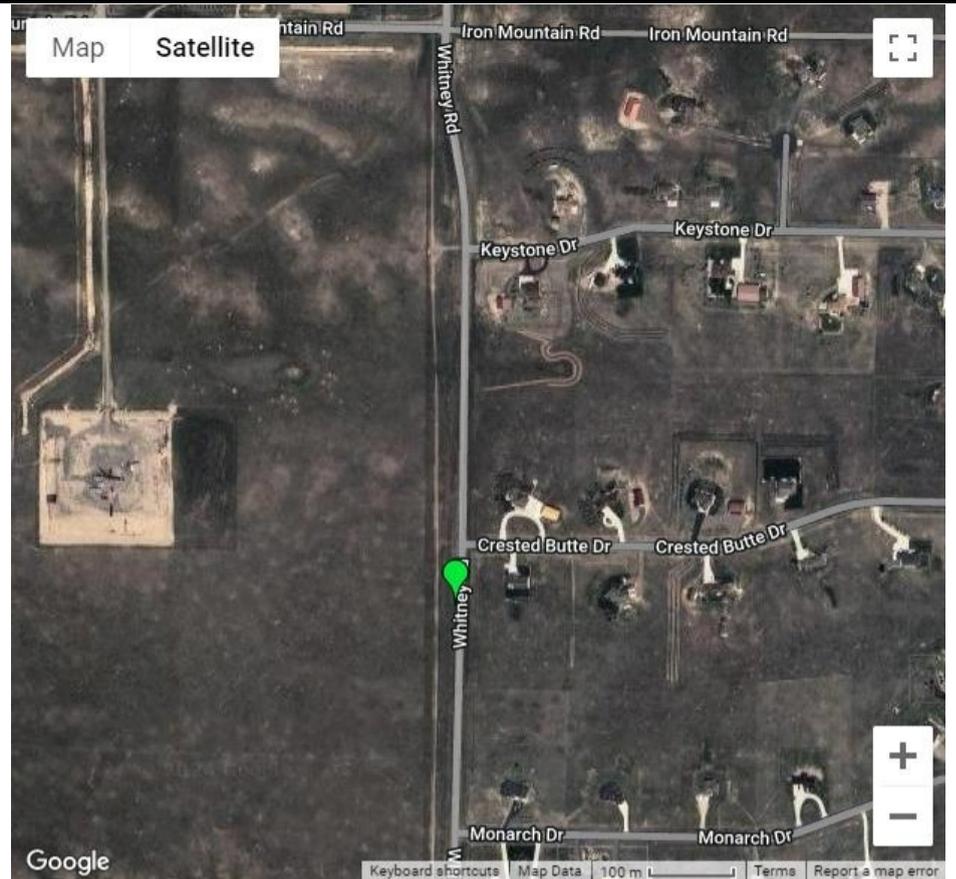


61

10 MPH Pace Speed



49-58



Speed Limit



45

Average Speed



53

Fastest Speed



115

Slowest Speed



1

Default Report Title
 Use Preferences to Define Titles

Site Code: Whitney Road MP 4.6
 Station ID: ~300 feet south of Crested Butte Drive
 Start Date: 4/8/2024
 End Date: 4/15/2024

Comment 1:
 Serial Number: 41398
 Latitude: 41.211578
 Longitude: -104.731611
 GPS Accuracy: 20.58333 ft

Combined Lanes 4/8/2024 to 4/15/2024

Peak Analysis

Classes Excluded From Peaks: None

| Date | AM Peak | Hour Volume | Highest Interval Time | Highest Interval Volume | Peak Hour Factor | Pm Peak | Hour Volume | Highest Interval Time | Highest Interval Volume | Peak Hour Factor |
|-----------|-----------|-------------|-----------------------|-------------------------|------------------|----------|-------------|-----------------------|-------------------------|------------------|
| 4/8/2024 | No Volume | | | | | 4:28 PM | 93 | 5:02 PM | 32 | 0.73 |
| 4/9/2024 | 7:01 AM | 80 | 7:01 AM | 26 | 0.77 | 3:44 PM | 117 | 4:28 PM | 39 | 0.75 |
| 4/10/2024 | 6:46 AM | 86 | 7:13 AM | 27 | 0.80 | 4:24 PM | 101 | 4:36 PM | 29 | 0.87 |
| 4/11/2024 | 6:46 AM | 90 | 7:22 AM | 28 | 0.80 | 3:45 PM | 106 | 4:29 PM | 31 | 0.85 |
| 4/12/2024 | 7:07 AM | 82 | 7:32 AM | 29 | 0.71 | 3:44 PM | 99 | 4:04 PM | 33 | 0.75 |
| 4/13/2024 | 8:27 AM | 69 | 8:28 AM | 22 | 0.78 | 12:08 PM | 82 | 12:14 PM | 28 | 0.73 |
| 4/14/2024 | 10:13 AM | 67 | 10:18 AM | 24 | 0.70 | 3:51 PM | 76 | 4:06 PM | 26 | 0.73 |
| 4/15/2024 | 6:51 AM | 95 | 7:22 AM | 29 | 0.82 | 12:44 PM | 81 | 1:06 PM | 29 | 0.70 |

Axle Statistics

| # Axles | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---------|-------|-------|-------|-------|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|
| Count | 5845 | 134 | 223 | 13 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Avg. | 143.6 | 366.3 | 456.6 | 472.7 | 0.0 | 0.0 | 55.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

WB
 Axles Per Vehicle: 2.1005

AADT

| Date | Lane | Volume | x | User | x | Daily | = | ADT | x | Season | = |
|-----------|------------------------|--------|---|------|---|-------|---|------|---|--------|---|
| 4/8/2024 | A to B, None Specified | 212 | | 1.00 | | 1.00 | | 212 | | 1.00 | |
| 4/8/2024 | B to A, None Specified | 216 | | 1.00 | | 1.00 | | 216 | | 1.00 | |
| 4/8/2024 | Day Total | 428 | | | | | | 428 | | | |
| 4/9/2024 | A to B, None Specified | 486 | | 1.00 | | 1.00 | | 486 | | 1.00 | |
| 4/9/2024 | B to A, None Specified | 447 | | 1.00 | | 1.00 | | 447 | | 1.00 | |
| 4/9/2024 | Day Total | 933 | | | | | | 933 | | | |
| 4/10/2024 | A to B, None Specified | 460 | | 1.00 | | 1.00 | | 460 | | 1.00 | |
| 4/10/2024 | B to A, None Specified | 450 | | 1.00 | | 1.00 | | 450 | | 1.00 | |
| 4/10/2024 | Day Total | 910 | | | | | | 910 | | | |
| 4/11/2024 | A to B, None Specified | 488 | | 1.00 | | 1.00 | | 488 | | 1.00 | |
| 4/11/2024 | B to A, None Specified | 434 | | 1.00 | | 1.00 | | 434 | | 1.00 | |
| 4/11/2024 | Day Total | 922 | | | | | | 922 | | | |
| 4/12/2024 | A to B, None Specified | 474 | | 1.00 | | 1.00 | | 474 | | 1.00 | |
| 4/12/2024 | B to A, None Specified | 452 | | 1.00 | | 1.00 | | 452 | | 1.00 | |
| 4/12/2024 | Day Total | 926 | | | | | | 926 | | | |
| 4/13/2024 | A to B, None Specified | 456 | | 1.00 | | 1.00 | | 456 | | 1.00 | |
| 4/13/2024 | B to A, None Specified | 422 | | 1.00 | | 1.00 | | 422 | | 1.00 | |
| 4/13/2024 | Day Total | 878 | | | | | | 878 | | | |
| 4/14/2024 | A to B, None Specified | 344 | | 1.00 | | 1.00 | | 344 | | 1.00 | |
| 4/14/2024 | B to A, None Specified | 326 | | 1.00 | | 1.00 | | 326 | | 1.00 | |
| 4/14/2024 | Day Total | 670 | | | | | | 670 | | | |
| 4/15/2024 | A to B, None Specified | 269 | | 1.00 | | 1.00 | | 269 | | 1.00 | |
| 4/15/2024 | B to A, None Specified | 280 | | 1.00 | | 1.00 | | 280 | | 1.00 | |
| 4/15/2024 | Day Total | 549 | | | | | | 549 | | | |
| Total | | 6216 | | | | | | 6216 | | | |
| Average | | 777 | | | | | | 777 | | | |

SPEED STUDY DATA OVERVIEW (WHITNEY ROAD CR 129)

| GENERAL INFORMATION | |
|----------------------------|----------------|
| LOCAL JURISDICTION: | Laramie County |
| ROUTE: | CR 129 |
| LOCATION: | Whiteny Road |
| DATE: | 5/22/2024 |

| AUTOMATED TRAFFIC COUNT VALUES | |
|---------------------------------------|----------------------|
| 85th PERCENTILE: | 59.0 mph |
| 50th PERCENTILE: | 51.6 mph |
| PACE SPEED: | 47-56 mph |
| AVERAGE DAILY TRAFFIC: | 1,274 vehicles a day |
| AVERAGE DAILY TRUCK TRAFFIC: | 48 trucks a day |

| ROADWAY CHARACTERISTICS | |
|--------------------------------|----------------------------|
| ROADWAY LENGTH: | 3.7 miles |
| NUMBER OF ACCESS POINTS: | 23 access points |
| ACCESS POINTS PER MILE: | 6.2 access points per mile |
| ROADWAY WIDTH: | 29 feet |
| ADJACENT LAND-USE: | Residential/Agricultural |
| TYPE OF TERRAIN: | Rolling |

| HISTORICAL CRASH DATA | |
|------------------------------|------|
| FATAL: | 0 |
| INJURY: | 4 |
| PDO: | 8 |
| EPDO: | 22 |
| EPDO PER MILE: | 5.95 |

| RANGE OF SPEED LIMIT (MAXIMUM = 65 MPH) | |
|--|--------|
| PREFERRED SPEED LIMIT: | 60 mph |
| LOWEST ACCEPTABLE SPEED LIMIT: | 50 mph |

SEGMENT CRASH HISTORY REPORT FOR WHITNEY RD (ML6749B) FROM MILE POST 1.71 TO 5.495 FOR THE YEARS 2013 - 2022

| LRS ID | CRASH STREET | MILE POST | CROSS STREET | DATE | TIME | CRASH SEVERITY | FATAL | INJURY | FIRST HARMFUL EVENT (FHE) | FHE LOCATION | MANNER OF COLLISION | JUNCTION RELATION | VEHICLE | | DRIVER ACTION | PERSON TYPE | SAFETY EQUIPMENT USED | INJURY STATUS | LIGHTING | WEATHER CONDITION | ROAD CONDITION | ALCOHOL INVOLVED | DRUGS INVOLVED | LATITUDE | LONGITUDE | CRASH CASE # | | | | | | | | | | | | | | | |
|---------|-----------------------|-----------|--------------|------------|------|------------------------|-------|--------|---------------------------------------|--------------|---|----------------------|---------|-----------|---------------------|-------------|-------------------------------|---------------|----------|-----------------------|------------------------|--------------------|---|-----------|-----------|--------------|-----------|-------------|------------|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | | | | | # | DIRECTION | | | | | | | | | | | | | MANEUVER | | | | | | | | | | | | | | |
| ML6749B | WHITNEY RD CR 129-1 | 2.423 | | 02/15/2021 | 1058 | PROPERTY DAMAGE ONLY | 0 | 0 | Motor Vehicle in Transport on Roadway | On Roadway | Angle Same Direction (Front to Side) | Intersection Related | 1 | North | Turning Right | 1 | No Improper Driving | 1 | Driver | Shoulder and Lap Belt | No Apparent Injury | Daylight | Clear | Ice/Frost | N | N | 41.174209 | -104.732193 | 21-2828 | | | | | | | | | | | | |
| | | | | | | | | | | | | | 2 | North | Straight Ahead | 2 | Following too Close | 2 | Driver | Shoulder and Lap Belt | No Apparent Injury | | | | | | | | | | | | | | | | | | | | |
| ML6749B | WHITNEY RD | 2.430 | BECKLE RD | 03/24/2014 | 1304 | PROPERTY DAMAGE ONLY | 0 | 0 | Motor Vehicle in Transport on Roadway | On Roadway | Rear End (Front to Rear) | Intersection Related | 1 | North | Stopped in Traffic | 1 | No Improper Driving | 1 | Driver | Shoulder and Lap Belt | No Apparent Injury | Daylight | Clear | Dry | N | N | 41.174330 | -104.732180 | 14-3340 | | | | | | | | | | | | |
| | | | | | | | | | | | | | 2 | North | Slowing | 2 | No Improper Driving | 2 | Driver | Shoulder and Lap Belt | No Apparent Injury | | | | | | | | | | | | | | | | | | | | |
| ML6749B | WHITNEY RD CR 129-1 | 2.626 | | 06/06/2021 | 1704 | PROPERTY DAMAGE ONLY | 0 | 0 | Motor Vehicle in Transport on Roadway | On Roadway | Rear End (Front to Rear) | Intersection Related | 1 | North | Straight Ahead | 1 | Following too Close | 1 | Driver | Shoulder and Lap Belt | No Apparent Injury | Daylight | Clear | Dry | N | N | 41.177110 | -104.732160 | 21-10032 | | | | | | | | | | | | |
| | | | | | | | | | | | | | 2 | North | Slowing | 2 | No Improper Driving | 2 | Driver | Shoulder and Lap Belt | No Apparent Injury | | | | | | | | | | | | | | | | | | | | |
| ML6749B | WHITNEY RD | 2.730 | | 10/28/2013 | 2220 | PROPERTY DAMAGE ONLY | 0 | 0 | Overturn/Rollover | Off Roadway | Not a Collision w/2 Vehicles in Transport | Non-Junction | 1 | North | Negotiating a Curve | 1 | Drove too Fast for Conditions | 1 | Driver | Shoulder and Lap Belt | No Apparent Injury | Darkness Unlighted | Sleet/Hail/Freezing Rain | Ice/Frost | N | N | 41.184620 | -104.731960 | 13-15493 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ML6749B | WHITNEY RD | 2.740 | | 03/07/2014 | 2307 | SUSPECTED MINOR INJURY | 0 | 1 | Overturn/Rollover | Off Roadway | Not a Collision w/2 Vehicles in Transport | Non-Junction | 1 | North | Straight Ahead | 1 | Speeding | 1 | Driver | Shoulder and Lap Belt | Suspected Minor Injury | Darkness Unlighted | Clear | Ice/Frost | N | N | 41.185050 | -104.731930 | 14-2586 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ML6749B | WHITNEY RD | 2.810 | | 11/03/2014 | 900 | PROPERTY DAMAGE ONLY | 0 | 0 | Fence (including Post) | Off Roadway | Not a Collision w/2 Vehicles in Transport | Non-Junction | 1 | South | Straight Ahead | 1 | Ran Off Road | 1 | Driver | Shoulder and Lap Belt | No Apparent Injury | Dawn | Snowing | Snow | N | N | 41.171320 | -104.732140 | 14-14568 | | | | | | | | | | | | |
| ML6749B | WHITNEY RD | 2.810 | | 10/28/2013 | 2208 | SUSPECTED MINOR INJURY | 0 | 1 | Overturn/Rollover | Off Roadway | Not a Collision w/2 Vehicles in Transport | Non-Junction | 1 | North | Negotiating a Curve | 1 | Drove too Fast for Conditions | 1 | Driver | Lap Belt Only | Suspected Minor Injury | Darkness Unlighted | Sleet/Hail/Freezing Rain Cloudy, Overcast | Ice/Frost | N | N | 41.185040 | -104.732110 | 13-15492 | | | | | | | | | | | | |
| ML6749B | WHITNEY RD CR 129-1 | 2.820 | | 06/01/2022 | 1706 | PROPERTY DAMAGE ONLY | 0 | 0 | Motor Vehicle in Transport on Roadway | On Roadway | Rear End (Front to Rear) | Intersection Related | 1 | North | Straight Ahead | 1 | Failed to Yield ROW | 1 | Driver | Shoulder and Lap Belt | No Apparent Injury | Daylight | Clear | Dry | N | N | 41.170749 | -104.732207 | 2022-10171 | | | | | | | | | | | | |
| | | | | | | | | | | | | | 2 | Northeast | Turning Right | 2 | No Improper Driving | 2 | Driver | Shoulder and Lap Belt | No Apparent Injury | | | | | | | | | | | | | | | | | | | | |
| ML6749B | WHITNEY RD | 2.830 | | 01/30/2014 | 1633 | PROPERTY DAMAGE ONLY | 0 | 0 | Fence (including Post) | Off Roadway | Not a Collision w/2 Vehicles in Transport | Non-Junction | 1 | North | Straight Ahead | 1 | Ran Off Road | 1 | Driver | None Used | No Apparent Injury | Daylight | Snowing | Wet | N | N | 41.180180 | -104.732110 | 14-1197 | | | | | | | | | | | | |
| ML6749B | WHITNEY RD CR 129-1 | 2.907 | | 10/13/2022 | 1704 | POSSIBLE INJURY | 0 | 1 | Motor Vehicle in Transport on Roadway | On Roadway | Rear End (Front to Rear) | Driveway Related | 1 | North | Overtaking/Passing | 1 | Avoiding MV | 1 | Driver | Shoulder and Lap Belt | No Apparent Injury | Daylight | Clear | Dry | N | N | 41.181094 | -104.732098 | 22-20154 | | | | | | | | | | | | |
| | | | | | | | | | | | | | 2 | North | Turning Right | 2 | No Improper Driving | 2 | Driver | Shoulder and Lap Belt | Possible Injury | | | | | | | | | | | | | | | | | | | | |
| ML6749B | WHITNEY RD | 2.910 | | 01/23/2015 | 739 | SUSPECTED MINOR INJURY | 0 | 2 | Delineator Post | Off Roadway | Not a Collision w/2 Vehicles in Transport | Non-Junction | 1 | South | Straight Ahead | 1 | Speeding | 1 | Driver | Shoulder and Lap Belt | Suspected Minor Injury | Daylight | Clear | Dry | N | N | 41.189400 | -104.731920 | 15-945 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ML6749B | WHITNEY RD CR 129-1 | 4.602 | | 05/06/2019 | 1757 | PROPERTY DAMAGE ONLY | 0 | 0 | Delineator Post | Off Roadway | Not a Collision w/2 Vehicles in Transport | Non-Junction | 1 | South | Straight Ahead | 1 | No Improper Driving | 1 | Driver | Shoulder and Lap Belt | No Apparent Injury | Daylight | Fog | Wet | N | N | 41.205192 | -104.731717 | 19-9280 | | | | | | | | | | | | |

| LRS ID | CRASH STREET | MILE POST | CROSS STREET | DATE | TIME | CRASH SEVERITY | FATAL | INJURY | FIRST HARMFUL EVENT (FHE) | FHE LOCATION | MANNER OF COLLISION | JUNCTION RELATION | # | DIRECTION | VEHICLE MANEUVER | DRIVER ACTION | PERSON TYPE | SAFETY EQUIPMENT USED | INJURY STATUS | LIGHTING | WEATHER CONDITION | ROAD CONDITION | ALCOHOL INVOLVED | DRUGS INVOLVED | LATITUDE | LONGITUDE | CRASH CASE # |
|--------|--------------|-----------|--------------|------|------|----------------|-------|--------|---------------------------|--------------|---------------------|-------------------|---|-----------|------------------|---------------|-------------|-----------------------|---------------|----------|-------------------|----------------|------------------|----------------|----------|-----------|--------------|
|--------|--------------|-----------|--------------|------|------|----------------|-------|--------|---------------------------|--------------|---------------------|-------------------|---|-----------|------------------|---------------|-------------|-----------------------|---------------|----------|-------------------|----------------|------------------|----------------|----------|-----------|--------------|

| REPORT SUMMARY | |
|-------------------|----|
| TOTAL CRASHES: | 12 |
| FATAL CRASHES: | 0 |
| INJURY CRASHES: | 4 |
| PDO CRASHES: | 8 |
| TOTAL FATALITIES: | 0 |
| TOTAL INJURIES: | 5 |

| YEAR | CRASH COUNTS | | | | SEVERITY COUNTS | | | INJURY COUNTS | | | | |
|------|---------------|----------------|-------------|---------------|-------------------|------------------|-----------------|----------------|------------------|----------------|-------------------|-------------|
| | FATAL CRASHES | INJURY CRASHES | PDO CRASHES | TOTAL CRASHES | CRITICAL CRASHES* | SERIOUS CRASHES* | DAMAGE CRASHES* | FATAL INJURIES | SERIOUS INJURIES | MINOR INJURIES | POSSIBLE INJURIES | NO INJURIES |
| 2013 | 0 | 1 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 3 |
| 2014 | 0 | 1 | 3 | 4 | 0 | 1 | 3 | 0 | 0 | 1 | 0 | 4 |
| 2015 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 2019 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 2021 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 4 |
| 2022 | 0 | 1 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 3 |
| | 0 | 4 | 8 | 12 | 0 | 4 | 8 | 0 | 0 | 4 | 1 | 15 |

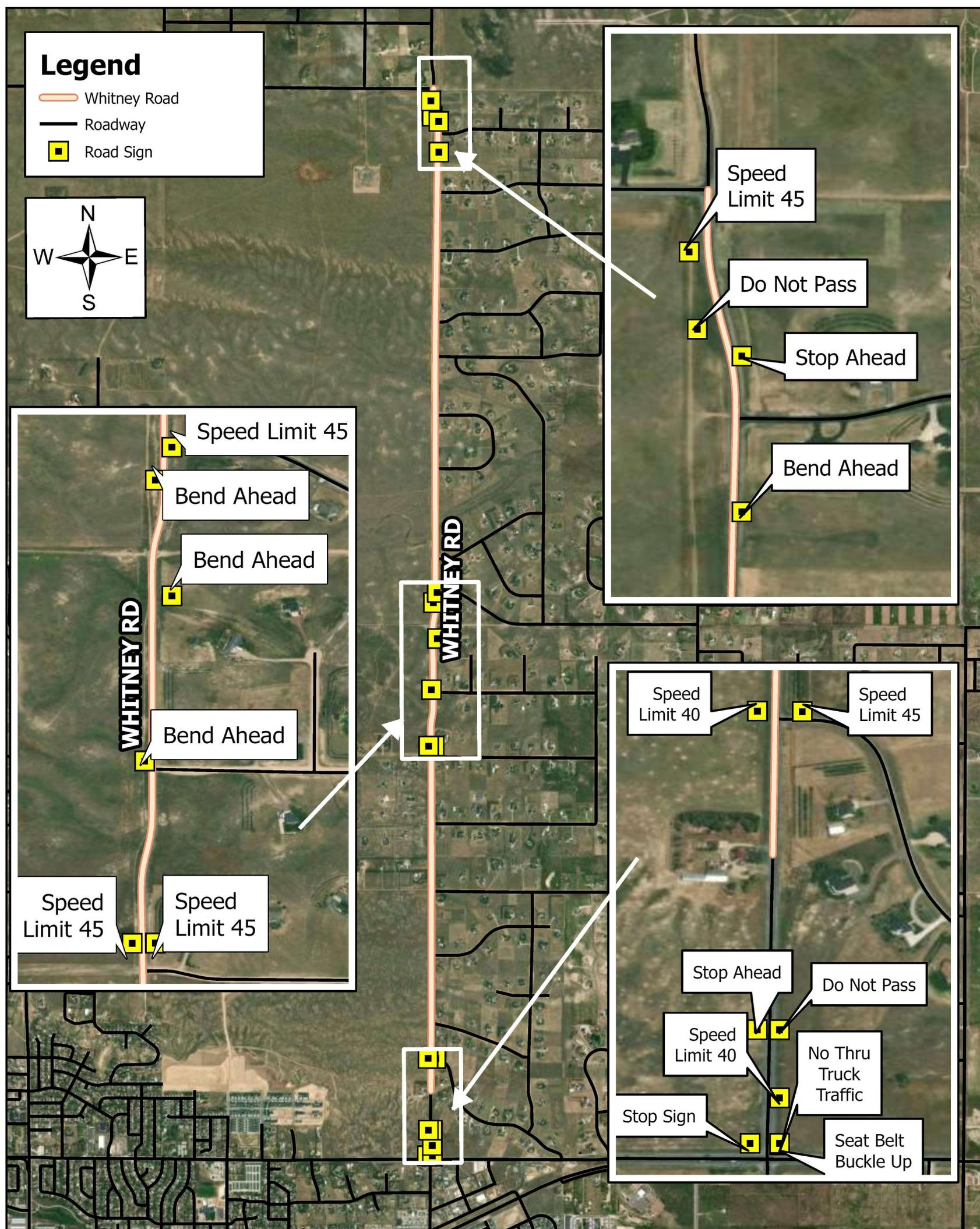
* PDO = Property Damage Only Crashes
 * Critical Crashes = Fatal & Suspected Serious Injury Crashes
 * Serious Crashes = Suspected Minor Injury & Possible Injury Crashes
 * Damage Crashes = No Apparent Injury & Unknown Injury Crashes

Whitney Road - Crash Location Map



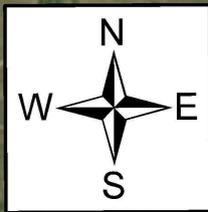
Maxar

Whitney Road - Sign Location Map

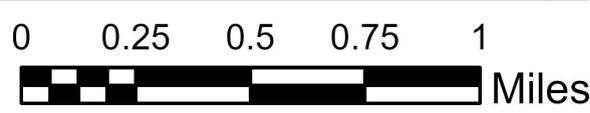


Legend

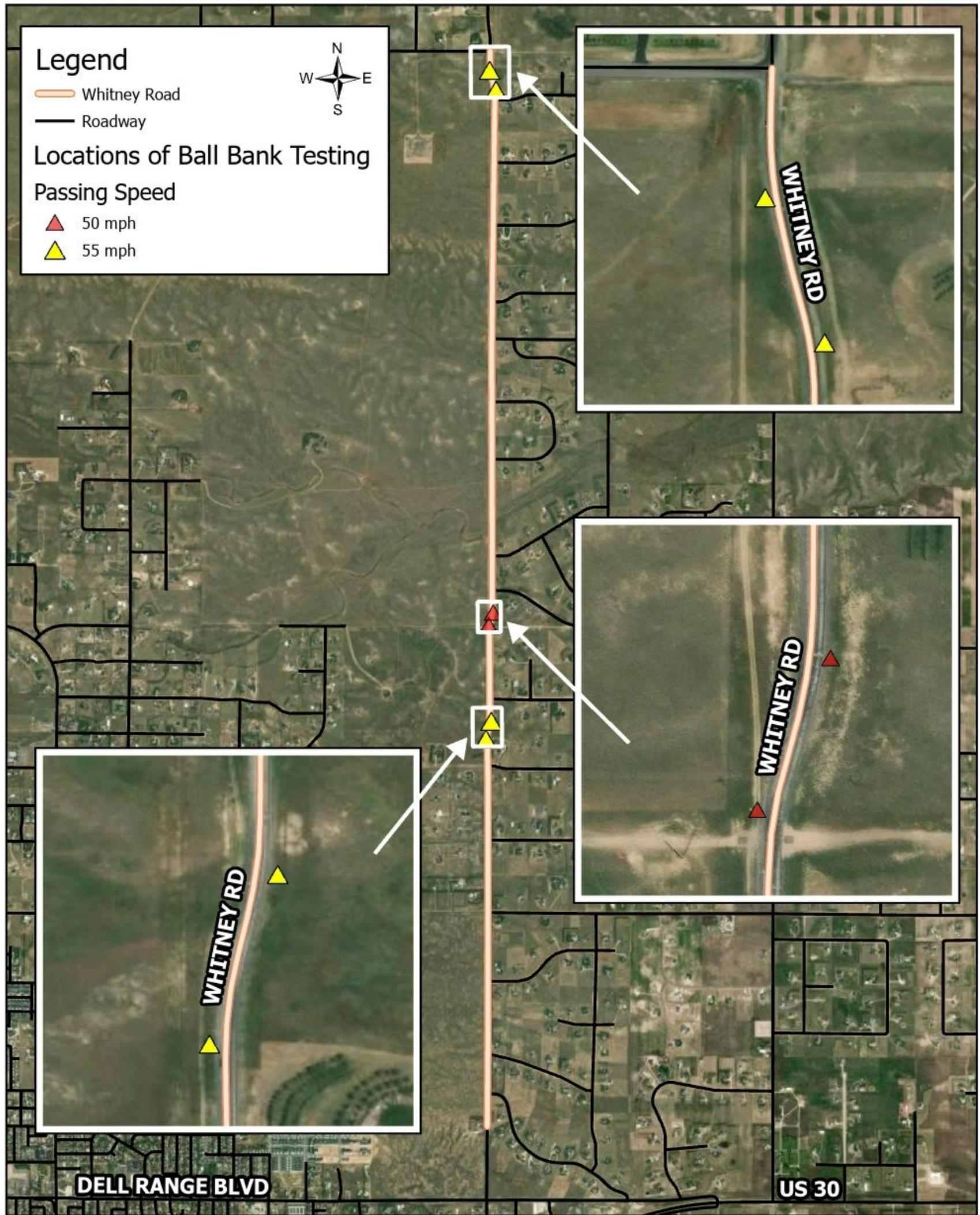
- Whitney Road
- Roadway
- Road Sign



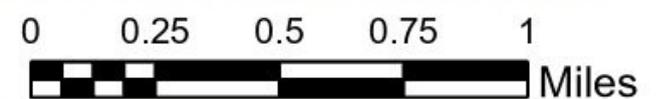
Maxar



Whitney Road - Ball Bank Indicator Location Map



Maxar, Microsoft, Earthstar Geographics, Maxar



USLIMITS2 Speed Zoning Report

Project Overview

Project Name: Laramie County Speed Studies

Analyst: Daniel Hayes

Date: 2024-05-22

Basic Project Information

Project Number: IME 23682-HE
Route Name: Whitney Road CR 129
From: Mile Post 1.3
To: Mile Post 5.0
State: Wyoming
County: Laramie County
City: Cheyenne city
Route Type: Road Section in Undeveloped Area
Route Status: Existing

Crash Data Information

Crash Data Years: 10.00
Crash AADT: 1949 veh/day
Total Number of Crashes: 12
Total Number of Injury Crashes: 4
Section Crash Rate: 46 per 100 MVM
Section Injury Crash Rate: 15 per 100 MVM
Crash Rate Average for Similar Roads: 150
Injury Rate Average for Similar Roads: 51

Roadway Information

Section Length: 3.7 mile(s)
Statutory Speed Limit: 65 mph
Existing Speed Limit: 45 mph
Adverse Alignment: Yes
Divided/Undivided: Undivided
Number of Lanes: 2
Roadside Hazard Rating: 4
Transition Zone: No

Traffic Information

85th Percentile Speed: 59 mph
50th Percentile Speed: 51 mph
AADT: 1949 veh/day

Recommended Speed Limit:



Note: Sections with adverse alignments may need specific 'advisory speed warnings' which may be different from the general speed limit for the section. See [Procedures for Setting Advisory Speeds on Curves](#), Publication No. FHWA-SA-11-22, June 2011, for more guidance.

Disclaimer: The U.S. Government assumes no liability for the use of the information contained in this report. This report does not constitute a standard, specification, or regulation.

Equations Used in the Crash Data Calculations

Exposure (M)

$$M = (\text{Section AADT} * 365 * \text{Section Length} * \text{Duration of Crash Data}) / (100000000)$$
$$M = (1949 * 365 * 3.7 * 10.00) / (100000000)$$
$$M = 0.2632$$

Crash Rate (Rc)

$$Rc = (\text{Section Crash Average} * 100000000) / (\text{Section AADT} * 365 * \text{Section Length})$$
$$Rc = (1.20 * 100000000) / (1949 * 365 * 3.7)$$
$$Rc = 45.59 \text{ crashes per 100 MVM}$$

Injury Rate (Ri)

$$Ri = (\text{Section Injury Crash Average} * 100000000) / (\text{Section AADT} * 365 * \text{Section Length})$$
$$Ri = (0.40 * 100000000) / (1949 * 365 * 3.7)$$
$$Ri = 15.20 \text{ injuries per 100 MVM}$$

Critical Crash Rate (Cc)

$$Cc = \text{Crash Average of Similar Sections} + 1.645 * (\text{Crash Average of Similar Sections} / \text{Exposure})^{(1/2)} + (1 / (2 * \text{Exposure}))$$
$$Cc = 149.84 + 1.645 * (149.84 / 0.2632)^{(1/2)} + (1 / (2 * 0.2632))$$

Cc = 190.99 crashes per 100 MVM

Critical Injury Rate (Ic)

Ic = Injury Crash Average of Similar Sections + 1.645 * (Injury Crash Average of Similar Sections / Exposure) ^ (1/2) + (1 / (2 * Exposure))

Ic = 50.50 + 1.645 * (50.50 / 0.2632) ^ (1/2) + (1 / (2 * 0.2632))

Ic = 75.18 injuries per 100 MVM

