USLIMITS2 Speed Zoning Report

Project Overview

**Project Name:** 31st Avenue SW - Speed Reduction

**Analyst:** Stephen

**Date:** 2021-05-11

**Basic Project Information**
- **Project Number:** 4550
- **Route Name:** 31st Avenue SW
- **From:** S Broadway
- **To:** 16th Street SW
- **State:** North Dakota
- **County:** Ward County
- **City:** Minot city
- **Route Type:** Road Section in Developed Area
- **Route Status:** Existing

**Roadway Information**
- **Section Length:** 1 mile(s)
- **Statutory Speed Limit:** 35 mph
- **Existing Speed Limit:** 35 mph
- **Adverse Alignment:** No
- **One-Way Street:** No
- **Divided/Undivided:** TWLTL
- **Number of Through Lanes:** 2
- **Area Type:** Commercial
- **Number of Driveways:** 50
- **Number of Signals:** 0

**Crash Data Information**
- **Crash Data Years:** 5.00
- **Crash AADT:** 4690 veh/day
- **Total Number of Crashes:** 56
- **Total Number of Injury Crashes:** 6
- **Section Crash Rate:** 654 per 100 MVM
- **Section Injury Crash Rate:** 70 per 100 MVM
- **Crash Rate Average for Similar Roads:** 217
- **Injury Rate Average for Similar Roads:** 66

**Traffic Information**
- **85th Percentile Speed:** 34 mph
- **50th Percentile Speed:** 30 mph
- **AADT:** 4690 veh/day
- **On Street Parking and Usage:** Not High
- **Pedestrian / Bicyclist Activity:** Not High

**Recommended Speed Limit:**

**Note:** The section crash rate of 654 per 100 MVM is above the critical rate (306). A comprehensive crash study should be undertaken to identify engineering and traffic control deficiencies and appropriate corrective actions. The speed limit should only be reduced as a last measure after all other treatments have either been tried or ruled out.

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**Equations Used in the Crash Data Calculations**

**Exposure (M)**
\[ M = \frac{(\text{Section AADT} \times 365 \times \text{Section Length} \times \text{Duration of Crash Data})}{100000000} \]
\[ M = \frac{(4690 \times 365 \times 1 \times 5.00)}{100000000} \]
\[ M = 0.0856 \]

**Crash Rate (Rc)**
\[ Rc = \frac{(\text{Section Crash Average} \times 100000000)}{(\text{Section AADT} \times 365 \times \text{Section Length})} \]
\[ Rc = \frac{(11.20 \times 100000000)}{(4690 \times 365 \times 1)} \]
\[ Rc = 654.26 \text{ crashes per 100 MVM} \]

**Injury Rate (Ri)**
\[ Ri = \frac{(\text{Section Injury Crash Average} \times 100000000)}{(\text{Section AADT} \times 365 \times \text{Section Length})} \]
\[ Ri = \frac{(1.20 \times 100000000)}{(4690 \times 365 \times 1)} \]
\[ Ri = 70.10 \text{ injuries per 100 MVM} \]

**Critical Crash Rate (Cc)**
\[ Cc = \text{Crash Average of Similar Sections} + 1.645 \times (\frac{\text{Crash Average of Similar Sections}}{\text{Exposure}})^{1/2} + \frac{1}{(2 \times \text{Exposure})} \]
\[ Cc = 217.36 + 1.645 \times (\frac{217.36}{0.0856})^{1/2} + \frac{1}{(2 \times 0.0856)} \]
Cc = 306.10 crashes per 100 MVM

*Critical Injury Rate (Ic)*

\[ Ic = \text{Injury Crash Average of Similar Sections} + 1.645 \times \left( \frac{\text{Injury Crash Average of Similar Sections}}{\text{Exposure}} \right)^{1/2} + \frac{1}{2 \times \text{Exposure}} \]

\[ Ic = 65.57 + 1.645 \times \left( \frac{65.57}{0.0856} \right)^{1/2} + \frac{1}{2 \times 0.0856} \]

\[ Ic = 116.95 \text{ injuries per 100 MVM} \]