Median Acceleration Lanes

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Definition

MAL:
Median Acceleration Lane
Study Purpose

Answer Key Questions:
- When are Median Acceleration Lanes (MALs) used?
- What is the difference in usage between cars and trucks?
- Does the amount of traffic (during peaks, on the mainline, or on the side street) influenced their use?
- Do historic crash records show an improvement in safety?

Study Purpose - MnDOT

- Currently limited experience with MALs but position in Road Design Manual encourages use… “where appropriate"
- Road Design Manual provides desirable lengths for MALs but are they appropriate
- Can better guidance be presented on when and when not to consider MALs

ROAD DESIGN MANUAL
Locations

A. TH 10 EB at Benton CSAH 31 near Rice
B. TH 23 NEB at 36th Avenue near St Cloud
C. TH 23 EB at Fairway Drive near Cold Spring
D. TH 65 SB at 245th Avenue near Bethel
E. TH 36 WB at Demontreville Trail near Lake Elmo
F. TH 36 WB at Demontreville Trail near Lake Elmo
G. TH 61 EB at TH 316 near Welch
H. TH 61 EB at Goodhue CSAH 18 near Welch
I. TH 52 NB at TH 57 near Hader
J. TH 14 EB at 280th Avenue near Byron
K. TH 60 EB at Blue Earth CSAH 109 near Lake Crystal
L. TH 60 WB at Watonwan CSAH 2 near Butterfield

Data Collection

Camera
Tube Counter
Tube Counter
Data Collection
Data Collection

Results

- Passenger Cars - Daily
- Passenger Cars - Peak Hour
- Heavy Vehicles - Daily
- Heavy Vehicles - Peak Hour

Use MAL
Use Entire MAL
Results by Location

Daily MAL Results

Side Street Peak Hour MAL Results

Safety Impacts

Fatal and Serious Injury Crashes

Rear End Crashes

Side Swipe Same Direction Crashes

Right Angle Crashes
Analysis

- Most vehicles use MAL (about 75% - 85%)
  - More cars use MAL compared to heavy vehicles
- Most do not use entire length (about 25% - 35%)
  - More heavy vehicles use entire length compared to cars
- MAL usage during peak hours higher than over course of day
- Not a strong correlation between mainline AADT and MAL usage
- 50% decrease in fatal and severe injury crash rate
- 18% increase in the overall total crash rate

Applications

- Is the guidance in the Road Design Manual Appropriate?
- Are MALs needed?
  - They get used frequently
  - Limited Operational Impacts
- If they are needed are they right sized?
  - 65 MPH road MAL is 1670’ plus 1:40 taper
  - 2200 ft of 14’ road costs @ $10-20/SF = $$$$
Conclusions

- MALs are used by a majority of drivers
- Some similar findings compared to previous study of MALs
- Showed a decrease fatal/severe injury crashes but not statistically significant
- More work needed