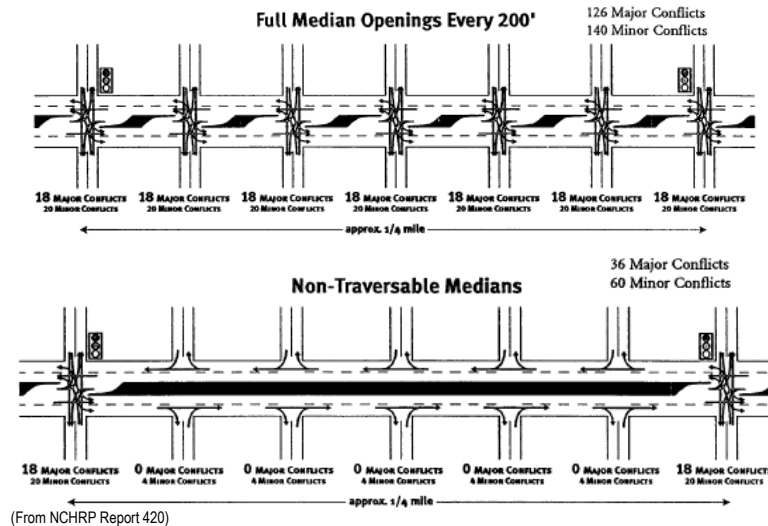




Wisconsin Traffic Engineering Council Issue Paper 5 – U-Turns at Signalized Intersections

Background / Overview

In order to reduce conflicts and improve traffic safety along arterial roads, U-turns are used instead of direct left turns from driveways. The number of conflicting movements can be significantly reduced when full median openings are completely closed and traffic is rerouted to the intersections for U-turns.



However, this leads to lack of direct driveway access and the increased U-turns can adversely affect the capacity and operation at signalized intersections. Traffic engineers need to be informed about the pros and cons of U-Turns at signalized intersections before they can be implemented.

Current National Practices

Most states in the United States (including Illinois, Indiana, Iowa, Michigan, Minnesota) allow U-turns at signalized intersections (unless signing indicates otherwise) when they can be performed without interfering with traffic and a minimum driver visibility (varies by state) is available near a curve or a hill. Some states have adopted U-turns at signalized intersections while two have completely prohibited them.

California, Florida

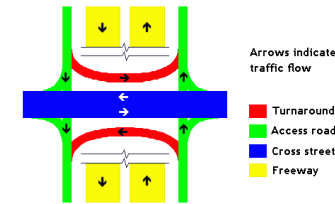
California and Florida use restrictive medians and directional median openings to restrict left turns. As an alternative, U-turns at intersections are allowed.



Double-left turn lane sign in California (Courtesy about.com)

Texas

U-turn only lanes, called turnarounds are used in Texas. Turnarounds precede intersection and drivers are not subject to signals at intersection.



(Courtesy of texhwyman.com.)

Oregon

Prohibits U-turns at the state level

Current Wisconsin Practices

Currently Wisconsin prohibits U-turns at signalized intersections.

Technical Issues

- Safety
 - Crash Frequency and Severity
 - Number of Conflict Points
 - Severity of driver errors
- Traffic Operations
 - Capacity
 - LOS
 - Truck Operations
- Signing and Marking
- Pedestrians and Bicycles

Additional Resources

- U-Turns: State Laws and Practices
<http://www.dot.wisconsin.gov/library/research/docs/tsrs/tsruturnlaws.pdf>
- U-Turns at Signalized Intersections
http://www.ktc.uky.edu/Reports/KTC_04_12_SPR_258_03_3F.pdf
- Impacts of Access Management Techniques, NCHRP Report 420
<http://www.accessmanagement.info/pdf/420NCHRP.pdf>
- Effects of U-Turns on Capacities of Signalized Intersections Transportation Research Record 1920, 2005
- Operational and Safety Effects of U-Turns at Signalized Intersections Transportation Research Record 1912, 2005
- Safety evaluation of right turn followed by U-turn at a signalized intersection as an alternative to direct left turn from driveways. Advances in Transportation Studies, Section B8, 2006
- Operational Effects of U-Turns as Alternatives to Direct Left-Turns, Journal of Transportation Engineering 133(5), 2007