



ROAD DIETS – WHITE PAPER

Date: January 11, 2011 **Project #:** 10633.07
To: Jim Olson, City of Ashland
Cc: Project Management Team, Planning Commission, Transportation Commission
From: Marc Butorac, PE and Erin Ferguson
Project: City of Ashland Transportation System Plan Update
Subject: Road Diets – White Paper

DIRECTION TO THE PLANNING COMMISSION AND TRANSPORTATION COMMISSION

Five sets of white papers are being produced to present information on tools, opportunities, and potential strategies that could help Ashland become a nationwide leader as a green transportation community. Each white paper will present general information regarding a topic and then provide ideas on where and how that tool, strategy, and/or policy could be used within Ashland.

You will have the opportunity to review the content of each white paper and share your thoughts, concerns, questions, and ideas in a joint Planning Commission/Transportation Commission meeting. Based on discussions at the meeting, the material in the white paper will be: 1) Revised and incorporated into the alternatives analysis for the draft TSP; or 2) Eliminated from consideration and excluded from the alternatives analysis. The overall intent of the white paper series is to explore opportunities for Ashland and increase the opportunities to discuss the many possibilities for Ashland.

ROAD DIETS WHITE PAPER INTRODUCTION

This white paper presents general information on road diets as well as ideas for how the City of Ashland can use road diets to achieve its goals of continuing to develop a transportation system that is inviting to pedestrian, bicyclists and transit.

ROAD DIETS

Road diets are used to reallocate existing roadway right-of-way to better serve pedestrians, bicycles and transit while continuing to adequately accommodate automobile traffic. Typically, in road diet projects a four-lane undivided roadway is converted to a two-lane roadway with either: 1) a center median (painted or raised) and left-turn pockets at intersections; or 2) a two-way center left-turn lane. This conversion creates space within existing right-of-way to provide:

- Bicycle lanes, cycle tracks, buffered bike lanes, etc.;
- Wider sidewalks for pedestrians;
- Street furniture (e.g., streetscape patios);
- Landscaping buffers between the sidewalk and travel way,
- On-street parking;
- Turn-outs at transit stops; and/or
- Transit stop amenities such as shelters and benches.

Numerous studies have been conducted on road diet projects from across the United States. Several case studies have been documented in the *Road Diet Handbook: Setting Trends for Livable Streets, Second Edition*¹. Agencies and communities around the United States and Canada have found road diets provide the following benefits:

- **Improve traffic flow** – Reducing the number of vehicle travel lanes in the same direction eliminates lane changes and weaving, which improves vehicle flow along the corridor.
- **Reduce vehicle speeds closer to desired operating speed** – Narrowing the roadway cross-section dedicated to personal automobiles as well as adding features such as on-street parking and bike lanes creates a “tunnel effect” that naturally slows motorists’ speeds.
- **Reduce conflicts and number of crashes** – Reducing the number of automobile travel lanes reduces the number of conflicts along the roadway segments and at some intersections. The number of crashes decreases due to the reduced number of conflicts, slower operating speeds and increased motorists’ attentiveness due to increased street activity. National research published in the *Highway Safety Manual* (Reference 1) indicates converting a 4-lane undivided road to a 3-lane road (two-lanes with a center turn lane) reduces crashes by approximately 29%.
- **Create a more attractive environment for pedestrians and bicyclists** – Reallocating existing right-of-way to designate space exclusive for pedestrian and/or bicycle travel provides a more inviting and comfortable setting for pedestrians and bicyclists. Reduced vehicle speed and streetscape improvements that are often accompanied with road diets also improve the quality of travel for pedestrian and bicyclists.

Table 1 summarizes the specific safety, operational and livability effects from five case studies in the United States.

¹ An abbreviated student version of information in the handbook is available online for free at <http://lcmpoweb.las-cruces.org/Training/Road%20Diet/Road%20Diet%20Supplement.pdf>. The full version can be purchased from <http://www.ite.org/emodules/scriptcontent/Orders/ProductDetail.cfm?pc=LP-670> for \$31.25.

Table 1 Summary of Road Diet Case Studies

Case Study	Location	Basic Project Facts	Road Diet Elements	Project Cost	Results
Fourth Plain Boulevard	Vancouver, WA	<ul style="list-style-type: none"> Principal Arterial 12,000 ADT Posted Speed 30 mph Residential w/Commercial 1.0 mile in length 	<ul style="list-style-type: none"> Two-lanes w/two-way center turn lane Bike lanes ADA ramps Underground utility work 	\$1.26M	<ul style="list-style-type: none"> Decreased crashes by 52% Decreased vehicle speeds by 18% No queues blocking access to driveways or streets Improved bicycle conditions No traffic diversion impacts Economic growth in adjacent and nearby businesses Easier to cross street Street feels safer to residents
Baxter Street	Athens-Clarke County, GA	<ul style="list-style-type: none"> Arterial 20,000 ADT Posted Speed 35 mph Commercial w/Residential 1.9 miles in length 	<ul style="list-style-type: none"> Two-lanes w/two-way center turn lane Bike lanes Signal modifications 	\$190K	<ul style="list-style-type: none"> Decreased total crashes by 53% Decreased crashes at unsignalized intersections 60% Decreased rear-end crashes by 45% No significant changes to traffic volumes Easier to cross street Slower vehicle speeds Perceived street number of lanes and width "just right"
U.S. 18	Clear Lake, IA	<ul style="list-style-type: none"> State Highway 12,000 ADT Posted Speed 45 mph Commercial w/Residential 1.1 miles in length 	<ul style="list-style-type: none"> Interim project – restriped to two lanes w/two-way center turn lane Shoulders Temporary Signal 	\$105K	<ul style="list-style-type: none"> Decreased total crashes by 65% Decreased aggressive speeding by 52% Decreased vehicles over speed limit by 32% Adequate traffic operations and mobility More uniform traffic speeds closer to speed limit

Notes:

¹Table based on information from *Road Diet Handbook: Setting Trends for Livable Streets, Second Edition*

As can be seen from Table 1, the cost of implementing a road diet can vary widely depending on the treatments used in reallocating the existing right-of-way (e.g., a painted median vs. a raised median), the degree of streetscaping enhancements invested, and other activities incorporated into the project such as relocating above ground utilities to below ground. Road diet concepts can be controversial before implementation but are often widely accepted after implementation. This was the case in Erie, Pennsylvania along 12th Street and as a result the local agency decided to make a minimal investment in a temporary road diet project; a summary of Erie's experience with a temporary road diet is further below.

Road diets have the potential to provide substantial benefits with regards to safety and enhancing the pedestrian and bicycle friendliness of a street; however, to experience the benefits there are situations when extra care needs to be taken to make a road diet successful. These include:

Relatively high access density – Effort should be made to consolidate access and driveways to help reduce conflicts along the corridor. Conflicts tend to degrade traffic operations and safety.

Offset minor streets at intersections – Offset minor street approaches at intersections should be realigned and/or consideration should be given to restricting access to/from those minor streets to right-in/right-out only. This is particularly important in instances where the major street left-turn movements are offset unfavorably such that they conflict with each other. Conflicting left-turn movements into and out of offset minor streets can create congestion along the corridor.

Heavy existing traffic congestion – Efforts should be made to mitigate existing traffic congestion along a corridor with intersections currently operating at or near capacity prior to attempting to implement a road diet on the corridor. In some instances, developing parallel or alternative routes is likely to be a more effective use of funds than a road diet. Potential exceptions to this guidance include, if a road diet is part of a larger effort to facilitate a mode shift from automobiles to pedestrian travel, bicycles, and transit.

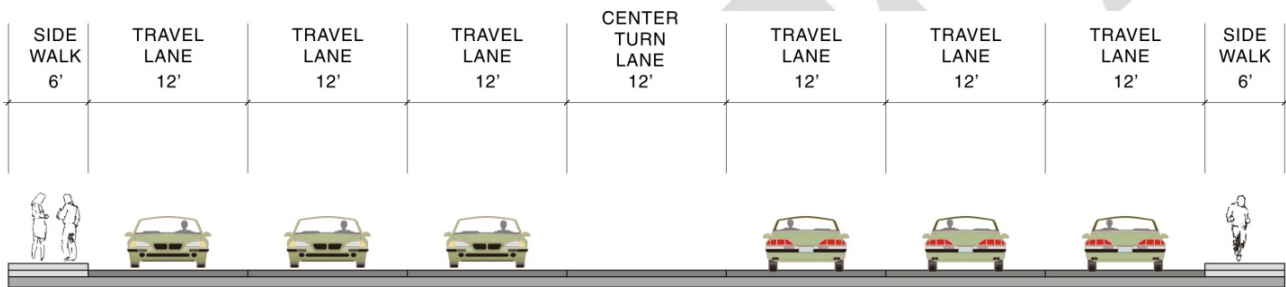
Roadways along which access cannot be consolidated, the impacts of offset intersections cannot be mitigated, and/or existing congestion along the corridor cannot be mitigated are less desirable candidates for road diets. In those instances, road diets tend not to result in the safety and operational benefits discussed above in Table 1.

Application in Erie, Pennsylvania

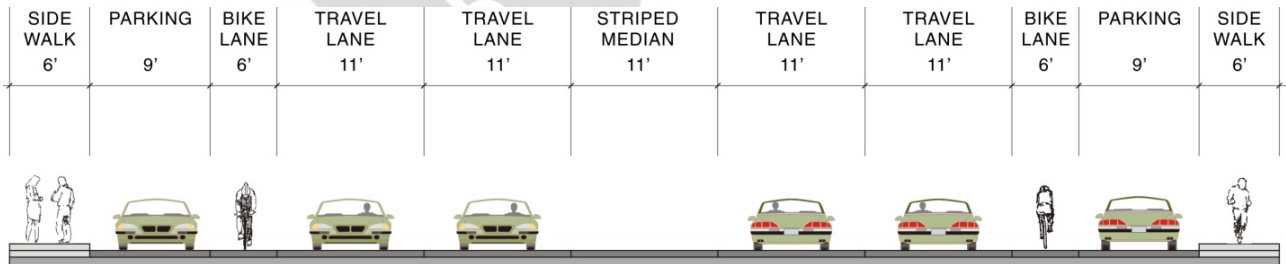
As is commonly encountered with the road diet concept, the road diet concept was contentious among stakeholders and the public when the topic was initially introduced in Erie, Pennsylvania. There was no clear majority of whether or not to implement the road diet and valid concerns were expressed regarding the impacts to vehicle capacity and congestion. The City of Erie of Pennsylvania had hired a consultant to determine the potential limits of the road diet as well as the cross-section. The consultant also conducted traffic analysis to demonstrate the road diet was feasible. However, due to the conflicting points of view on the topic, there was no political will to commit to the road diet on a permanent basis but sufficient interest for the idea remained.

To resolve the issue, the City of Erie decided to implement the road diet on a temporary basis. The basic facts behind the temporary implementation are:

- Name of Street: 12th Street
- Roadway Classification: Major Arterial
- Speed Limit: 35 mph
- Surrounding Land Use: Downtown Urban Area Redeveloping from Industrial to Mixed Residential/Commercial/Retail (City of Erie population of 104,000)
- Length of Road Diet Segment: Approximately 3 miles
- Existing (at time of study) ADT: 27,500
- Previous Cross-Section:



- Temporary Road Diet Cross-Section:



The following series of photos illustrate the previous 12th Street cross-section, the proposed road diet cross-section and the temporary cross-section implemented to test the concept. Exhibit 1 illustrates the “before” 7-lane cross-section on 12th Street approaching an intersection.

Exhibit 1: 12th Street Cross-Section before Implementing the Temporary Road Diet



Exhibit 2 is a rendering of the proposed permanent cross-section for 12th Street at the same location the photo in Exhibit 1 was taken.

Exhibit 2: Proposed Road Diet Cross-Section for 12th Street



Exhibit 3 illustrates the temporary cross-section put in place to test the road diet concept on 12th Street.

Exhibit 3: Temporary Road Diet Cross-Section on 12th Street to Test the Proposed Cross-Section



The road diet implementation increased the corridors efficiency in serving multiple modes of travel and also increased the efficiency of vehicle flow. Reducing the number of lanes eliminated conflicts and lane changes along the corridor. Speeds along 12th Street also decreased to closer to the 30 mph to 35 mph desired operating speed. The temporary road diet was sufficiently well received as was demonstrated by the majority of property owners along the street voting in favor of making the road diet cross-section permanent.

Support for permanently implementing the road diet cross-section lead to more wide-spread interest and support for a Downtown Streetscape Master Plan. The Downtown Streetscape Master Plan outlines five different street types for the downtown core; 12th Street is identified as Two-Way Mobility Street for moving people. The typologies within the plan recommend additional streetscape enhancements such as canopy street trees for 12th Street. The permanent implementation of the road diet cross-section on 12th Street includes these additional enhancements. Other typologies discussed in the Downtown Streetscape Master Plan include Ceremonial Streets, Park Streets, One-Way Mobility Streets, and Community Streets. Information regarding the temporary 12th Street road diet project was obtained from Bill Petit at Pennsylvania Department of Transportation, District 1-0; District 1-0 has jurisdictional responsibilities in Erie, PA.

Opportunities for Temporary Road Diets in Ashland

The following three corridors were identified as potential corridors for temporary road diets within the City of Ashland.

- North Main Street (OR 99) from Helman Street to Valley View Road
- E Main Street (OR 99 Southbound) from Helman Street to Gresham Street
- Ashland Street (OR 66) from Siskiyou Boulevard (OR 99) to Clay Street

These corridors are a preliminary selection and require further study to determine the feasibility of implementing a temporary road diet as well as the potential value and impacts a road diet would have. Considerations include the project's potential to increase pedestrian, bicycle, and/or transit trips, existing and potential employment and residential density, safe routes to schools, topography within walking distance of the corridor as well as the potential negative impacts on automobile mobility.

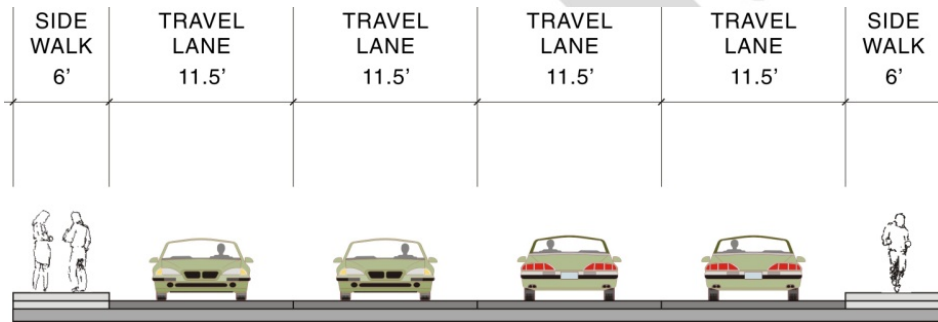
The following section discusses preliminary analysis completed to investigate the feasibility of implementing a temporary road diet on North Main Street. North Main Street is included in this memorandum as a specific example of a potential temporary road diet project due to the frequency with which Planning Commissioners, Transportation Commissioners, and City staff have mentioned the desire for improved bicycle and pedestrian facilities on North Main Street.

North Main Street Temporary Road Diet

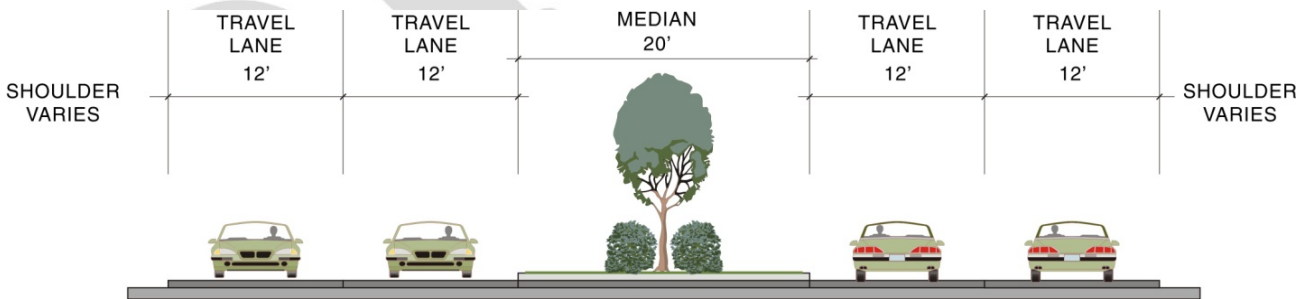
North Main Street (also known as OR 99) from the downtown couplet terminus at Helman Street to Valley View Road is one roadway segment in Ashland is an opportunity for a temporary road diet to test the concept and determine whether there is public support for permanently changing the North Main Street cross-section.

The current facts on North Main Street:

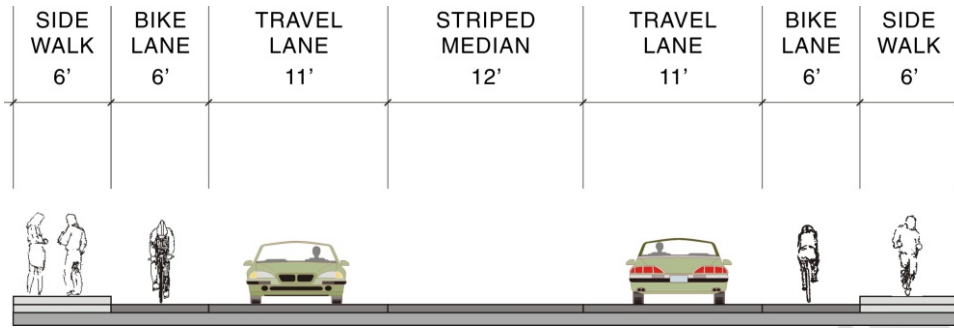
- City of Ashland’s Roadway Classification: Boulevard
- Speed Limit of 25 mph up to 45 mph
- Estimated ADT 17,500 (based on Oregon DOT traffic counts at intersections along North Main Street)
- Basic Cross- Section from Helman Street to Schofield Street



- Basic Cross-Section from Schofield Street to Valley View Road:

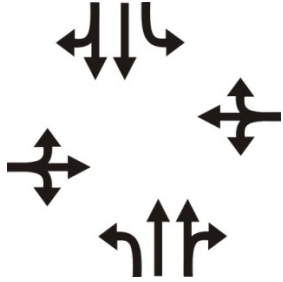
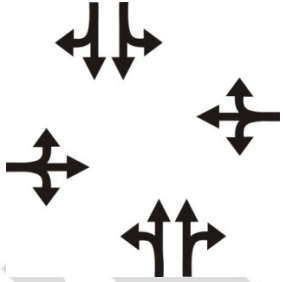
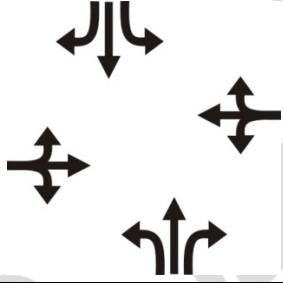
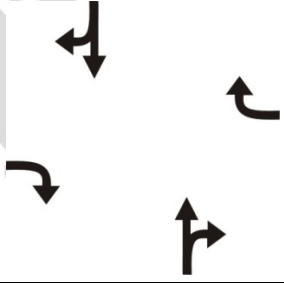


Comments from the public and commissioners at Planning Commission and Transportation Commission meetings indicate an interest in slowing vehicle speeds on North Main Street to make traveling as a pedestrian and bicyclist more comfortable. The public and commissioners have also expressed interest in modifying the cross-section to include bike lanes, pedestrian refuges for crossing North Main Street, and generally, increasing the pedestrian and bicycle friendliness of North Main Street. Considering these comments, the current available right-of-way on North Main Street, and the desire to maintain reasonable vehicle traffic operations, the following cross-section could be considered for temporary implementation:



Variations of the basic cross-section above can be explored in locations with more existing paved right-of-way. Traffic operations analysis was performed for the Maple Street/North Main Street (OR 99) and Wimer Street-Hersey Street/North Main Street (OR 99) intersections. The lane configurations at those two intersections would be modified to fit the proposed road diet cross-section. The modified lane configurations and findings from the traffic operations analysis are summarized in Table 2.

Table 2 Preliminary Traffic Operations Analysis for Study Intersections Impacted by Temporary Road Diet

Lane Configuration/Traffic Operations Results	Maple Street/North Main Street (OR99)	Wimer Street-Hersey Street/North Main Street (OR99)
Existing Lane Configuration on North Main Street ¹		
Existing V/C Ratio ²	0.50	0.63
Future 2035 No-Build V/C Ratio	0.61	>1.0
Meet Mobility Standard? ³	Yes	Yes in Existing Scenario/ No in Future No-Build Scenario
Road Diet Lane Configuration ⁴		
Road Diet V/C Ratio w/Existing Volumes	0.75	0.55
Road Diet V/C Ratio w/Future 2035 Volumes	0.94	0.78
Mobility Standard Met?	Yes	Yes

Notes:

¹These are the existing lane configurations on North Main Street in the north- and southbound directions.

²V/C Ratio is volume-to-capacity ratio for the critical movement at the intersection.

³The mobility standard for both intersections is a v/c ratio of 0.95.

⁴These would be the lane configurations on North Main Street in the north- and southbound directions with the road diet cross-section.

NEXT STEPS

A temporary road diet project presents the opportunity to explore this concept with reasonable investment before committing to a more permanent installation. Permanent road diet projects can also be identified as part of the TSP update process, if the concept is supported by the project stakeholders. Three corridors have been identified as potentially suitable for road diets:

- North Main Street (OR 99) from Helman Street to Valley View Road
- E Main Street (OR 99 Southbound) from Helman Street to Gresham Street
- Ashland Street (OR 66) from Siskiyou Boulevard (OR 99) to Clay Street

The North Main Street corridor was evaluated in more detail based on the level of interest expressed by project stakeholders. Depending on input from the Project Management Team, Technical Advisory Committee, Planning Commission and Transportation Commission, the road diets on the corridors noted above will be identified as: 1) projects for the City to pursue as temporary or demonstration projects; 2) projects to evaluate further and potentially include in the formal TSP update; or 3) projects to exclude from further consideration.

REFERENCES

1. American Association of State Highway Transportation Officials. *Highway Safety Manual, 1st Edition*. 2010.