



## MEMORANDUM

**To:** Bicycle and Pedestrian Task Force

**From:** CMAP staff

**Date:** March 2016

**Re:** FHWA Workbook: Incorporating On-Road Bicycle Networks into Resurfacing Projects

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### **Incorporating On-Road Bicycle Networks into Resurfacing Projects**

This workbook provides recommendations for how roadway agencies can integrate bicycle facilities into their resurfacing program. [https://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/publications/resurfacing/](https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/resurfacing/)

### **INTRODUCTION**

Installing bicycle facilities during roadway resurfacing projects is an efficient and cost-effective way for communities to create connected networks of bicycle facilities. This workbook provides recommendations for how roadway agencies can integrate bicycle facilities into their resurfacing program. The workbook also provides methods for fitting bicycle facilities onto existing roadways, cost considerations, and case studies. The workbook does not present detailed design guidance, but highlights existing guidance, justifications, and best practices for providing bikeways during resurfacing projects.

#### ***Why Include Bicycle Facilities When Resurfacing a Roadway?***

There are a variety of reasons for including bicycle facilities when resurfacing a roadway.

#### **Create Connected Networks**

Well-designed interconnected bicycle transportation facilities allow bicyclists to safely and conveniently get where they want to go. They enhance access to jobs, schools, and essential services and make bicycling for transportation a viable choice for a broad range of people. Including bicycle facilities during roadway resurfacing is one method communities can use to expand their bicycle system and create connected bicycle networks.

#### **Federal Support for Bicycling**

United States Department of Transportation (U.S. DOT) policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. This policy makes clear that it is the responsibility of every transportation agency in the United States to improve conditions for bicycling and

to integrate bicycling into their transportation systems. Additionally, transportation agencies are encouraged not just to meet the minimum requirements of providing bicycle facilities, but to go beyond minimum standards to provide the safest and most convenient bicycle facilities practicable. More information about this policy is available from U.S. DOT: [http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/guidance/policy\\_accom.cfm](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/policy_accom.cfm).

## Cost Efficiencies

All levels of government, from the local level to the State level, operate with constrained budgets for building and maintaining roadways. Constructing a bicycle facility during a resurfacing project is more cost effective than providing the same facility as a standalone project. A Performance-Based Practical Design (PBPD) process modifies a traditional transportation project design approach to a "design up" approach where transportation decisionmakers exercise engineering judgment to build up the improvements from existing conditions to meet both project and system objectives. PBPD uses appropriate performance-analysis tools and considers both short- and long-term project and system goals while addressing project purpose and need. Including bicycle facilities during resurfacing projects can help meet the objectives of PBPD by working toward system network goals in a cost efficient manner.

Chapter 4 provides more information about the cost efficiencies that are realized by including bicycle facilities during routine resurfacing projects.

More information about PBPD is available from the Federal Highway Administration (FHWA): <https://www.fhwa.dot.gov/design/pbpd>.

## Create Safer and More Comfortable Roadways

Providing bicycle facilities on existing roadways often requires narrowing travel lanes or roadway reconfiguration to provide space for the bicycle facility. Both narrowing and reconfiguration can increase the overall safety and comfort of a roadway for bicyclists and pedestrians without negatively impacting vehicular operation. Reducing lane widths can result in lower traffic speeds that better align with posted speed limits and lower traffic speeds typically result in less severe injuries in the event of a crash. A Road Diet or Roadway Reconfiguration can also lower speeds and reduce pedestrian crossing distances, which can result in fewer pedestrian crashes. Adding bicycle facilities significantly improves the safety and comfort of bicycling on a roadway. These factors combine to create a safer and more comfortable roadway for all users.

### ***What is a Bikeway?***

A bikeway is any facility that is open for the use of bicyclists. Bikeways include on-street facilities such as bike lanes and separated bike lanes, as well as off-street facilities such as shared use paths. For the purposes of this Guidebook, "bikeway" is used interchangeably with "bicycle facility," and primarily refers to bicycle lanes—standard bicycle lanes, buffered bicycle lanes, or separated bike lanes. Including these facilities on a roadway requires adequate pavement width, as opposed to shared lane markings which can be installed without changing the street cross section.

## High Quality Markings

Installing bicycle facilities during a resurfacing project allows for the use of high quality and long lasting pavement marking materials. Bicycle facilities that are installed on existing pavements often use less durable materials and because the markings are installed on older pavement, the materials often do not adhere as well. A resurfacing project provides new pavement that provides a better surface for applying markings than older pavements. Chapter 4 provides information based on current current practice and available research about different marking materials and the advantages of installing markings on new pavement versus older pavement.



*Bike lanes were added to 133rd Street in Overland Park, KS, by narrowing excessively wide lanes. Bike lane markings and signs had not yet been installed when this photo was taken. Photo credit: John Keating, City of Overland Park, KS.*

## **Interest from Communities**

### **U.S. DOT Mayors' Challenge Participation**

The following U.S. DOT *Mayors' Challenge for Safer People and Safer Streets* communities and agencies actively participated in the development of this workbook.

- Ann Arbor, MI
- Austin, TX
- Baltimore, MD
- Bellevue, WA
- Boston, MA
- Broward Metropolitan Planning Organization, FL
- Carrboro, NC
- Casselberry, FL
- Chapel Hill, NC
- Chicago, IL
- Dayton, OH
- Erie County, PA
- Flint, MI
- Glendale, CA
- Kansas City, MO
- Kauai County, HI
- Lexington, KY
- Longwood, FL
- Madison, WI
- Milwaukie, OR
- Myrtle Beach, FL
- Nashville, TN
- Newport, RI
- Norwalk, CT
- Oakland, CA
- Orange County, FL
- Oro Valley, AZ
- Peoria, IL
- Portsmouth, NH
- Revere, MA
- Ridgeland, MS
- Seattle, WA
- St. Louis, MO
- St. Petersburg, FL
- Temple Terrace, FL
- Tigard, OR
- Travis County, TX
- Tucson, AZ
- Washington, DC
- Winston-Salem, NC

Many communities across the United States are interested in improving bicycling conditions and expanding their bicycle networks. More than 230 cities joined the U.S. DOT *Mayors' Challenge for Safer People and Safer Streets* in 2014. The Challenge builds on the 2010 U. S. DOT Policy Statement on Bicycle and Pedestrian Accommodation to incorporate safe and convenient walking and bicycling facilities into transportation projects. A key component of the Challenge is to take advantage of opportunities to create and complete bicycle networks through maintenance and resurfacing projects. A

number of Challenge Cities were integral in providing information for this workbook about how they are using routine resurfacing projects to provide connected bicycle networks.

## **Significant Amounts of Money are Invested in Resurfacing**

Billions of dollars are spent annually in the United States to resurface roadways-it is important to ensure that these investments are providing complete transportation networks. While national or even State-level figures about resurfacing costs are difficult to attain, it is clear that large amounts of money are used for resurfacing roadways. For example, the 2015 budget for roadway resurfacing in New York City was \$226 million, while Cleveland, OH, budgeted \$26 million for resurfacing in 2014.<sup>1</sup> The Wisconsin Department of Transportation has budgeted over \$120 million per year for resurfacing and reconditioning on the state highway network in 2016, 2017, and 2018.<sup>2</sup> Including bicycle facilities in resurfacing projects can improve roadway conditions and safety at very low cost relative to the funds already being spent on resurfacing projects.

## **Workbook Application**

The workbook focuses on providing bicycle facilities as a part of resurfacing projects. However, the methods and practices described here may also be applicable to restoration, rehabilitation, and reconstruction projects. Users of the workbook should not be overly concerned with a strict definition of what constitutes a resurfacing project; the intent is to be inclusive and demonstrate how communities can create and expand bikeway networks by including bikeways as a part of other projects. The workbook highlights best practices from different communities. Some of these practices may seem outside the scope of resurfacing, however, readers can benefit from a demonstration of what is possible for expanding bikeway networks during roadway projects that include a new surface layer.

## **Design Resources**

This document is not intended to be a design guide, but rather to highlight the reasons for providing bicycle facilities when resurfacing roadways and to provide methods and techniques for doing so.

Detailed roadway design information is available from a variety of sources including the American Association of State Highway and Transportation Officials (AASHTO), the Federal Highway Administration (FHWA), the Institute of Traffic Engineers (ITE), the National Association of City Transportation Officials (NACTO), and other resources.

## **Workbook Development**

The information and recommendations in the workbook were derived from a variety of resources. A traditional literature review of design guidance was conducted, along with research into

### ***Resurfacing and Americans with Disabilities Act of 1990***

Resurfacing roadways triggers requirements for providing accessible curb ramps within the project extents. Although not directly relevant to providing bikeways, this must be considered whenever roadways are resurfaced. More information is available from a joint technical assistance memorandum issued by the United States Department of Justice and Department of Transportation. This memorandum and additional supplemental material are highlighted below:

- Department of Justice/Department of Transportation Joint Technical Assistance on the Title II of the Americans with Disabilities Act Requirements to Provide Curb Ramps when Streets, Roads, or Highways are Altered through Resurfacing [http://www.fhwa.dot.gov/civilrights/programs/doj\\_fhwa\\_ta.cfm](http://www.fhwa.dot.gov/civilrights/programs/doj_fhwa_ta.cfm)
- Glossary of Terms for DOJ/FHWA Joint Technical Assistance on the ADA Title II Requirements to Provide Curb Ramps When Streets Roads or Highways are Altered Through Resurfacing [http://www.fhwa.dot.gov/civilrights/programs/doj\\_fhwa\\_ta\\_glossary.cfm](http://www.fhwa.dot.gov/civilrights/programs/doj_fhwa_ta_glossary.cfm)
- Q and A Supplement to the 2013 DOJ/ DOT Joint Technical Assistance on the Title II of the Americans with Disabilities Act Requirements To Provide Curb Ramps when Streets, Roads, or Highways are Altered through Resurfacing [http://www.fhwa.dot.gov/civilrights/programs/ada\\_resurfacing\\_qa.cfm](http://www.fhwa.dot.gov/civilrights/programs/ada_resurfacing_qa.cfm)

resurfacing practices and policies of various local, county, and State agencies. Focus groups were conducted that targeted planners, engineers, bicycle planning and design staff, and public works managers at all levels of government. Follow-up interviews were conducted with many of the focus group participants. The time and contributions of the focus group and interview participants were invaluable to the development of the workbook.



*Bike lanes were added to Soapstone Dr. in Reston, VA, through a Road Diet. Credit: R.Dittberner, Virginia DOT*