

Chapter 7 – Implementation and Resources



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Communities are asking that motor vehicle speeds be reduced on their neighborhood streets and that streets be made more accessible and inviting for bicycling (and walking). Some of the most important issues to the public are safety, access, and aesthetics. This chapter discusses some of the issues related to setting priorities and implementing needed bicycling improvements.

GETTING STARTED

Getting started can be daunting—the needs are overwhelming, resources are scarce, and staff time is limited. Every community is faced with the questions of “Where do I start?” and “How do I get going?” While it is not the intent of this guide to provide an exhaustive discussion of implementation strategies, it offers some direction.

PRIORITIES

Since all bicycling needs cannot be addressed immediately, project priorities need to be established. To create priorities requires several program objectives:

- **Safety**—One objective should be to reduce the number and severity of crashes involving bicyclists. Accomplishing this would require: (1) a good understanding of the types of crashes that are occurring in your community, and (2) application of appropriate countermeasures to address these crashes. The information provided in this guide is intended to help select the countermeasures that would be most effective in addressing selected types of crash problems.
- **Access**—A second objective should be to create an accessible community where all bicyclists can reach their desired destinations. Typically, this begins with identifying corridors frequented by bicyclists and how these corridors can be accessed with connecting streets, as well as determining if the main corridor streets need improvements.
- **Aesthetics**—It is not enough to simply have a safe, accessible community—it should also be an aesthetically pleasing place to live and work. Landscaping, lighting, parking, and other facilities help create a “livable community” and should be considered when making bicycling improvements.

ONE STEP AT A TIME

To create a safe community for bicycling, take one step at a time. Along main corridors, check to see that there is adequate space for riding for the speed and volume

of motor vehicle traffic at both midblock and intersection locations. In other words, check block by block and intersection by intersection. Individually, these locations do not create a safe, livable community. Collectively, they create the infrastructure needed for a great place to work, play and conduct business. In other words, the whole bicycling system is greater than the sum of its parts.

COMMUNITY CONCERNS

Be very sensitive to community concerns. Public participation will build community pride and ownership that is essential to long-term success. Some of the problems identified in this guide will not be an issue in your community and some of the tools may be perceived as too expensive (at least initially). There probably will be measures that your community puts on hold for a few years until a community consensus is reached. Conversely, there probably will be measures that your community would like to pursue that are not even mentioned in this planning section.

DELIVERABLES

It is very important to produce immediate deliverables that people can see. For example, the addition of bike lanes and/or the removal of parking along a street are highly visible, while a transportation plan is a paper document that may never be seen or appreciated by the public. To keep its momentum, a program needs some “quick wins.” They create the sense that something is happening and that government is responsive.

ADDITIONAL RESOURCES

The Bikeability Checklist can quickly identify some of the more obvious deficiencies in your neighborhood or community.

http://www.rwjf.org/files/newsroom/interactives/sprawl/bike_app.jsp

<http://www.bicyclinginfo.org/cps/checklist.htm>

The American Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities* is a comprehensive document for information about facilities. The AASHTO Web site is:

<http://www.transportation.org/>

The Bicycle Compatibility Index (BCI) is a tool that can be used by bicycle coordinators, transportation planners, traffic engineers, and others to evaluate the capability of specific roadways to accommodate both motorists and bicyclists.

<http://www.hsrc.unc.edu/research/pedbike/98095/index.html>

Information on both Bicycle Level of Service (BLOS) and the Bicycle Compatibility Index (BCI) is contained at a Web site maintained by the League of Illinois Bicyclists.
<http://www.bikelib.org/roads/blos/>

Information on the Intersection Level of Service: The Bicycle Through Movement is contained on a Florida Department of Transportation Web site:
<http://www.dot.state.fl.us/planning/systems/sm/los/pdfs/BLOSTM.pdf>

NCHRP Project 7-14 provides guidelines for the analysis of investments in bicycle facilities. The research was performed by the University of Minnesota, Planners Collaborative Inc, the UNC Highway Safety Research Center, and the UNC Active Living by Design Program. A cost-demands-benefits analysis tool can be found at this Web site:
<http://www.bicyclinginfo.org/bikecost/>

Aesthetics: California's Local Government Commission has some great resources on street design and livability.
<http://www.lgc.org/transportation/street.html>
<http://www.lgc.org/center/index.html>

CONSTRUCTION STRATEGIES

There are many ways to accomplish projects. Be creative; take advantage of opportunities as they present themselves. Here are some suggestions:

REGULATION OF NEW DEVELOPMENT AND REDEVELOPMENT

Issues here tend to pertain more to pedestrian activities. For example, developers can be required to install public infrastructure such as sidewalks, curb ramps, and traffic signals. In addition, zoning requirements can be written to allow for or require narrower streets, shorter blocks, and mixed-use development. However, these infrastructure items benefit bicycling as well. Encouraging developers and community leaders to focus on basic pedestrian and bicycling needs will benefit the community and increase the attractiveness of the developments themselves.

ANNUAL PROGRAMS

Consider expanding or initiating annual programs to make small, visible improvements. Examples include improving space for bicyclists on streets where it is poor, or adding space to a link between two areas to improve connectivity. This creates momentum and community support. Several considerations should be made when developing these programs:

- Identify corridors where bicycling takes place and give priority to these locations.
- Consider giving preference to requests from local bicyclists about spot improvements or addressing a crash problem.
- Evaluate your construction or renovation options. Consider having city crews do work requested by residents to provide fast customer service while bidding out some of the staff-generated projects.

CAPITAL PROJECTS

“Piggybacking” bicycling (and pedestrian) improvements onto capital projects is one of the best ways to make major improvements in a community. For example, when a street is resurfaced, consider whether lanes should be narrowed when the street is re-striped to provide for bike lanes, wide curb lanes, or simply more space for cyclists. Landscaping, lighting, and other amenities can be included in road projects, utility projects and private construction in public rights-of-way (for example, cable television, high-speed fiber optics, etc.). To accomplish this, there are several things that can be done:

- Contact all State and regional agencies, and local public and private utilities that do work in public rights-of-way. Secure their five-year project plans as well as their long-range plans. Then, work with them to make sure that the streets are restored in the way that works for your city.
- Look internally at all capital projects. Make sure that every opportunity to make improvements is taken advantage of at the time of construction.
- Consider combining small projects with larger capital projects as a way of saving money. Generally, bid prices drop as quantities increase.

PUBLIC/PRIVATE PARTNERSHIPS

Increasingly, public improvements are realized through public/private partnerships. These partnerships can take many forms. Examples include Community Development Corporations, neighborhood organizations, grants from foundations, direct industry support and involvement of individual citizens. In fact, many public projects, whether they are traffic-calming improvements, street trees or the restoration of historic buildings, are the result of individual people getting involved and deciding to make a difference. This involvement doesn't just happen; it needs to be encouraged and supported by local governmental authorities.

ADDITIONAL RESOURCES

Cities such as Cambridge, MA, Eugene and Portland, OR, and Seattle, WA have adopted plans and procedures to ensure that bicycle improvements become a routine activity in new development projects, reconstruction work, and retrofits. Charlotte, NC, also has some exciting urban street design guidelines out for public review. These include a chapter on the design of streets for multiple users, as well as an appendix with a tool to calculate bicycle and pedestrian level of service at signalized intersections. Please note that Web site addresses change frequently.

City of Cambridge, MA

<http://www.cambridgema.gov/~CDD/et/bike/>

City of Eugene, OR

http://www.eugene-or.gov/portal/server.pt?space=CommunityPage&cached=true&parentname=CommunityPage&parentid=3&in_hi_userid=2&control=SetCommunity&CommunityID=435&PageID=541

City of Portland, OR

<http://www.portlandonline.com/transportation/index.cfm?c=34772>

City of Seattle, WA

<http://www.ci.seattle.wa.us/transportation/bikeprogram.htm>

City of Charlotte, NC

<http://www.charmeck.org/Departments/Transportation/Urban+Street+Design+Guidelines.htm>

FUNDING

Bicycling (and pedestrian) projects and programs can be funded by federal, State, local, private, or any combination of sources. A summary of federal bicycling (and pedestrian) funding opportunities can be viewed at <http://www.fhwa.dot.gov/environment/bikeped/bp-broch.htm#funding>.

Communities that are most successful at securing funds often have the following ingredients of success:

- **Consensus on Priorities**—Community consensus on what should be accomplished increases the likelihood of successfully funding a project. A divided or uninvolved community will find it more difficult to raise funds than a community that gives broad support to bicycle (and pedestrian) improvement programs.

- **Dedication**—Funding a project is hard work, and generally, there are no shortcuts. It takes a great amount of effort by many people using multiple funding sources to complete a project successfully. Be aggressive and apply for many different community grants. While professional grant-writing specialists can help, they are no substitute for community involvement and one-on-one contact (the “people part” of fund raising).
- **Spark Plugs (Change Agents)**—Successful projects typically have one or more “can do” people in the right place at the right time who provide the energy and vision to see a project through. Many successful “can do” politicians get their start as successful neighborhood activists.
- **Leveraging**—Funds, once secured, should always be used to leverage additional funds. For example, a grant from a local foundation could be used as the required match for a Transportation Equity Act for the 21st Century (TEA-21) Enhancement grant.

WEB SITES

There are dozens of Web sites that contain information on bicycle safety and mobility. The Pedestrian and Bicycle Information Center (PBIC) maintains a list at <http://www.bicyclinginfo.org/links> of national and international government agencies, state and local government agencies, professional organizations, advocacy groups and other sites as listed in the following sections.

GOVERNMENT AGENCIES AND OFFICES

Danish Road Directorate

<http://www.vejdirektoratet.dk/roaddirektoratet.asp?page=dept&objno=1024>

Federal Highway Administration (FHWA)

<http://www.fhwa.dot.gov>

FHWA Office of Highway Safety

http://safety.fhwa.dot.gov/ped_bike/bike/index.cfm

FHWA/NHTSA National Crash Analysis Center

<http://www.ncac.gwu.edu>

House Committee on Transportation and Infrastructure

<http://www.house.gov/transportation>

International Bicycle Fund

<http://www.ibike.org/>

National Highway Traffic Safety Administration (NHTSA)
<http://www.nhtsa.dot.gov>

Transportation Association of Canada
<http://www.tac-atc.ca>

U.S. Architectural and Transportation Barriers
Compliance Board (Access Board)
<http://www.access-board.gov>

U.S. Department of Transportation (U.S. DOT)
<http://www.dot.gov>

GOVERNMENT PROGRAMS AND INITIATIVES

FHWA Bicycle and Pedestrian Program
<http://www.fhwa.dot.gov/environment/bikeped>

FHWA Office of Safety
<http://safety.fhwa.dot.gov/index.htm>

FHWA Bicycle Safety
http://safety.fhwa.dot.gov/ped_bike/bike/index.htm

FHWA Pedestrian and Bicycle Safety Research Page
<http://www.tfhr.gov/safety/pedbike/pedbike.htm>

FHWA Pedestrian/Bicyclist Crash Analysis Tool
(PBCAT)
<http://www.walkinginfo.org/pc/pbcats.htm>

NHTSA Fatality Analysis Reporting System (FARS)
<http://www-fars.nhtsa.dot.gov/main.cfm>

NHTSA Traffic Safety
[http://www.nhtsa.dot.gov/portal/site/nhtsa/
menuitem.5928da45f99592381601031046108a0c/](http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.5928da45f99592381601031046108a0c/)

For NHTSA Bicycle Safety
[http://www.nhtsa.dot.gov/portal/site/nhtsa/
menuitem.810acaee50c651189ca8e410dba046a0/](http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.810acaee50c651189ca8e410dba046a0/)

For NHTSA Pedestrian Safety
[http://www.nhtsa.dot.gov/portal/site/nhtsa/
menuitem.dfedd570f698cabbf30811060008a0c/](http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.dfedd570f698cabbf30811060008a0c/)

Pedestrian and Bicycle Information Center (PBIC) Web Sites
<http://www.pedbikeinfo.org>
<http://www.walkinginfo.org>
<http://www.bicyclinginfo.org>
<http://www.pedbikeimages.org>
<http://www.iwalktoschool.org>
<http://www.walktoschool.org>
<http://www.saferoutesinfo.org>

Safe, Accountable, Flexible, Efficient Transportation Equity
Act: A Legacy for Users (SAFETEA-LU).
August 10, 2005, bill authorizing the Federal surface
transportation programs for highways, highway safety,
and transit for the 5-year period 2005-2009.
<http://www.fhwa.dot.gov/safetealu/>

PROFESSIONAL ORGANIZATIONS

American Association of State Highway and
Transportation Officials (AASHTO)
<http://www.transportation.org>

American Planning Association (APA)
<http://www.planning.org/>

American Public Works Association
<http://www.apwa.net/>

American Society of Landscape Architects
<http://www.asla.org>

American Traffic Safety Services Association
<http://www.atssa.com/>

Association of Pedestrian and Bicycle Professionals
(APBP)
<http://www.apbp.org/>

Bicycle Federation of America/National Center for
Bicycling and Walking
<http://www.bikewalk.org/>

Human-Powered Transportation Committee of the
American Society of Civil Engineers
<http://www.ascehpt.homestead.com/>

Institute of Transportation Engineers
<http://www.ite.org/>

League of American Bicyclists
<http://www.bikeleague.org/>

National Safety Council
<http://www.nsc.org/>

Transportation Research Board
<http://www.trb.org/>

OTHER ORGANIZATIONS (INCLUDING ADVOCACY ORGANIZATIONS)

AAA Foundation for Traffic Safety
<http://www.aaafoundation.org/home/>

- America Bikes
<http://www.americabikes.org/>
- Bicycle Helmet Safety Institute
<http://www.bhsi.org>
- Bikes Belong Coalition
<http://www.bikesbelong.org>
- Better Environmentally Sound Transportation
<http://www.best.bc.ca>
- Brain Injury Association of America (formerly National Head Injury Foundation)
<http://www.biausa.org/Pages/home.html>
- Chainguard—Bicycle Advocacy Online
<http://probicycle.com/>
- Conservation Law Foundation
<http://www.clf.org>
- Harborview Injury Prevention and Research Center
<http://depts.washington.edu/hiprc/>
- Highway Safety Research Center
<http://www.hsrc.unc.edu/>
- International Mountain Bicycling Association
<http://www.imba.com>
- Massachusetts Bicycle Coalition
<http://www.massbike.org>
- National Center for Bicycling and Walking
<http://www.bikewalk.org>
- National Safety Council
<http://www.nsc.org/>
- National Transportation Enhancements Clearinghouse
<http://www.enhancements.org>
- Rails to Trails Conservancy
<http://www.railtrails.org>
- Surface Transportation Policy Project
<http://www.transact.org>
- Texas Bicycle Coalition
<http://www.biketexas.org>
- Thunderhead Alliance
<http://www.thunderheadalliance.org>
- Transportation Alternatives Citizens Group (New York City Area)
<http://www.transalt.org>
- Transportation Research Board
<http://www.trb.org>
- Travis County (Austin, TX) SuperCyclist Project
<http://www.ci.austin.tx.us/bicycle/super.htm>
- Tri-State Transportation Campaign (New York/New Jersey/Connecticut)
<http://www.tstc.org>
- Vermont Bicycle and Pedestrian Coalition
<http://www.vtbikeped.org>
- Victoria Policy Institute
<http://www.vtppi.org>
- Walkable Communities, Inc.
<http://www.walkable.org/>
- Washington Area Bicyclist Association
<http://www.waba.org/>

LOCAL/STATE SITES

- City of Boulder, CO, Transportation Planning
<http://www3.ci.boulder.co.us/publicworks/depts/transportation.html>
- City of Cambridge, MA, Environmental and Transportation Division
<http://www.cambridgema.gov/~CDD/et/index.html>
- City of Eugene, OR, Bicycle Information
http://www.eugene-or.gov/portal/server.pt?space=CommunityPage&cached=true&parentname=CommunityPage&parentid=3&in_hi_userid=2&control=SetCommunity&CommunityID=435&PageID=541
- City of Portland, OR, Pedestrian Transportation Program
<http://www.trans.ci.portland.or.us>
- City of Seattle
<http://www.ci.seattle.wa.us/transportation/bikeprogram.htm>

City of San Francisco (and County)
http://www.bicycle.sfgov.org/site/dptbike_index.asp

City of Tallahassee, FL, Bicycle and Pedestrian Master Plan
<http://www.crtpa.org/>

Florida Department of Transportation Pedestrian and Bicycle Safety Program
http://www.dot.state.fl.us/Safety/ped_bike/ped_bike.htm

Missouri Department of Transportation Bicycle/Pedestrian Program
<http://www.modot.org/othertransportation/bicyclepedestriangeneralinformation.htm>

Montgomery County, MD, Residential Traffic-Calming Program
<http://www.dpwt.com/TraffPkgDiv/triage.htm>

North Carolina Department of Transportation Division of Bicycle and Pedestrian Transportation
<http://www.ncdot.org/transit/bicycle/>
Note: Information from more than 9,000 recent bicycle and pedestrian crashes in North Carolina has been compiled in an interactive database.

Oregon Department of Transportation Bicycle and Pedestrian Program
<http://www.odot.state.or.us/techserv/bikewalk/>

University of California-Davis Bicycle Program
<http://www.taps.ucdavis.edu/bicycle/>

Virginia DOT Traffic Calming Guide
<http://www.virginiadot.org/infoservice/resources/TrafficCalmingGuideOct2002.pdf>

Wisconsin Department of Transportation Bicycle and Pedestrian Information
<http://www.dot.wisconsin.gov/modes/pedestrian.htm>

PEDESTRIAN AND BICYCLE LINK PAGES

Pedestrian and Bicycle Information Center bicycling information sites
<http://www.bicyclinginfo.org>

Bicycle advocacy Web sites provided by Chainguard
<http://probicycle.com/mainnet.html>

Bicycle education and safety sites provided by Chainguard
<http://probicycle.com/mainedu.html>

Pedestrian and bicycle sites provided by TransAct
http://www.transact.org/issues/intro_hss.asp

State bicycle laws provided by Bicycle Coalition of Massachusetts
<http://www.massbike.org/bikelaw>

PEDESTRIAN AND BICYCLE STUDIES AND STATISTICS

Bike Plan Source Hot Topics provided by Tracy-Williams Consulting
<http://www.bikeplan.com/traxq.htm>

BTS National Transportation Library Links to Bike/Pedestrian Transportation Research
http://www.transtats.bts.gov/Databases.asp?Mode_ID=7&Mode_Desc=Bike/Pedestrian&Subject_ID2=0

Bureau of Transportation Statistics
<http://www.bts.gov>

Consumer Product Safety Commission Recreational Safety Publications
http://www.cpsc.gov/cpscpub/pubs/rec_sfy.html

Insurance Institute for Highway Safety – Bicycle Fatality Facts
http://www.iihs.org/research/fatality_facts/bicycles.html

National Bicycling and Walking Study Ten-Year Status Report
<http://www.bicyclinginfo.org/pp/nbws1.htm>

Nationwide Household Travel Survey
<http://www.fhwa.dot.gov/policy/ohpi/nhts/index.htm>

Northwestern University Traffic Institute
<http://server.traffic.northwestern.edu/>

University of Michigan Transportation Research Institute
<http://www.umich.edu/~industry/pedvis.html>

University of North Carolina Highway Safety Research Center
<http://www.hsrc.unc.edu/>

GUIDES, HANDBOOKS AND REFERENCES

There are a significant number of additional resources related to the topic of bicycle (and pedestrian) safety and mobility. A sample of the national and international guides, practitioner handbooks, research reports and other general references are provided in this section. Note that this list is not comprehensive, but it should provide a place to start a search for information.

DOMESTIC GUIDES AND HANDBOOKS

Bike Facility Planning and Design

American Association of State Highway and Transportation Officials, *Guide for the Development of Bicycle Facilities*, Washington, D.C., 1999.

American Planning Association, *Bicycle Facility Planning*, Planning Advisory Service Report 459, Chicago, IL, 1995.

U.S. Department of Transportation, Federal Highway Administration. Tech Brief: Characteristics of Emerging Road and Trail Users and Their Safety. FHWA-HRT-04-104 September 2004. Available at <http://www.tfhr.gov/safety/pubs/04104/>

Institute of Transportation Engineers, *Innovative Bicycle Treatments: An Informational Report*, Washington, D.C., 2002.

Oregon Department of Transportation, *Oregon Bicycle and Pedestrian Plan*, 1995.

North Carolina Department of Transportation, *North Carolina Bicycle Facilities Planning and Design Guidelines*, NCDOT Division of Bicycle and Pedestrian Transportation, 1994.

Bicycle/Pedestrian Safety

Federal Highway Administration. *Good Practices Guide for Bicycle Safety Education*, FHWA-SA-02-001 / HSA-4/30-02(5M)QE, Washington, DC, 2002, available online at <http://www.bicyclinginfo.org/ee/bestguide.cfm>

Federal Highway Administration, *National Bicycling and Walking Study Ten Year Status Report October 2004*, 2004, available online at <http://www.fhwa.dot.gov/environment/bikeped/study/index.htm>

National Highway Traffic Safety Administration /

Federal Highway Administration, *Bicycle Safety Resource Guide* (CD-ROM), see <http://www.bicyclinginfo.org/rd/safety.htm#cd> for ordering information.

National Highway Traffic Safety Administration and the Bureau of Transportation Statistics, *National Survey of Pedestrian and Bicyclist Attitudes and Behaviors, Highlights Report*, n.d., available online at <http://www.walkinginfo.org/survey2002.htm>

National Highway Traffic Safety Administration, *Traffic Safety Facts – Pedalcyclists, 2003 Data*, 2003, available online at <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSF2003/809768.pdf>

Zegeer, C.V., C. Seiderman, P. Lagerwey, M. Cynecki, M. Ronkin, and R. Schneider, *Pedestrian Facilities User Guide: Providing Safety and Mobility*, Federal Highway Administration, McLean, VA, 2002, available online at <http://www.walkinginfo.org/pdf/peduserguide/peduserguide.pdf>, accessed April 23, 2004.

Bridge Design

American Association of State Highway and Transportation Officials, *Guide Specifications for Bridge Railings*, Washington, D.C., 1989.

American Association of State Highway and Transportation Officials, *Standard Specifications for Highway Bridges*, 17th Edition, Washington, D.C., 2002.

Crash Analysis

Harkey, D., S. Tsai, L. Thomas and W.W. Hunter, *Pedestrian and Bicycle Crash Analysis Tool (PBCAT) Version 2.0, Application Manual*, Report No. FHWA-HRT-06-089, and Software FHWA-HRT-06-091, Federal Highway Administration, Office of Research and Development, McLean, Virginia, March 2006. Available online at <http://www.bicyclinginfo.org/pbcats>

Laws

National Committee on Uniform Traffic Laws and Ordinances, *Uniform Vehicle Code*, 1992.

Rail/Trail

“Rails to Trails: Lessons Learned,” FTA-MA-26-0052-04-1. Available online at <http://www.fhwa.dot.gov/environment/rectrails/rwt/>

Roadway Design

American Association of State Highway and

Transportation Officials, *A Policy on Geometric Design of Highways and Streets*, Washington, D.C., 2001.

American Association of State Highway and Transportation Officials, *Roadway Design Guide*, 3rd Edition, Washington, D.C., 2002.

Institute of Transportation Engineers, *Guidelines for Residential Subdivision Street Design: An ITE Recommended Practice*, Washington, D.C., 1993.

Institute of Transportation Engineers, *Guidelines for Urban Major Street Design: An ITE Recommended Practice*, Washington, D.C., 1984.

Institute of Transportation Engineers, *Traditional Neighborhood Development Street Design Guidelines: Recommended Practice*, Washington, D.C., 1999.

Planning Division, *Median Handbook*, Florida Department of Transportation, Tallahassee, FL, 1997, available online at <http://www.dot.state.fl.us/planning/systems/sm/aceman/pdfs/mhb2.pdf>, accessed April 23, 2004.

Roadway Operations and Capacity

Institute of Transportation Engineers, "Guidelines for Prohibition of Turns on Red," *ITE Journal*, Vol. 54, No. 2, February 1984, pp. 17–19.

National Research Council, Transportation Research Board, *Highway Capacity Manual 2000*, Washington, D.C., 1999, 2000.

School Safety

Florida Department of Transportation, *Florida School Crossing Guard Training Guidelines*, available online at http://www.dot.state.fl.us/Safety/ped_bike/brochures/pdf/xingguard.pdf.

Karplus, K., *Guidelines for Choosing a Safe Bicycle Route to School*, available online at <http://www.cse.ucsc.edu/~karplus/bike/safe-route-to-school.html>, accessed April 06, 2004.

"School Trip Safety Guidelines," *ITE Journal*, Institute of Transportation Engineers, Washington, D.C., 1985.

Traffic Calming

Ewing, R., Institute of Transportation Engineers/FHWA, *Traffic Calming State of the Practice*, Washington, D.C., 1999.

Noyes, P. *Traffic Calming Primer*, Pat Noyes & Associates, Boulder, CO, 1998.

Traffic Control Devices

Federal Highway Administration, *Manual on Uniform Traffic Control Devices for Streets and Highways*, Washington, D.C., 2003, available online at <http://mutcd.fhwa.dot.gov>

Traffic Engineering

Institute of Transportation Engineers, Traffic Engineering Council Speed Humps Task Force, *Guidelines for the Design and Application of Speed Humps*, Washington, D.C., 1997.

Institute of Transportation Engineers, *The Traffic Safety ToolBox: A Primer on Traffic Safety*, Washington, D.C., 1994.

Institute of Transportation Engineers, *Traffic Engineering Handbook*, Prentice Hall, Englewood Cliffs, NJ, 1999 (draft).

Institute of Transportation Engineers, *Transportation and Traffic Engineering Handbook*, Washington, D.C., 1990.

INTERNATIONAL GUIDES AND HANDBOOKS

Bicycle/Pedestrian Safety

Federal Highway Administration, *FHWA Study Tour for Pedestrian and Bicyclist Safety in England, Germany, and the Netherlands*, Report No. FHWA/PL-95/006, Washington, D.C., 1994.

Gilleran, B.F. and G. Pates, *Bicycling and Walking in the Nineties and Beyond: Applying Scandinavian Experience to America's Challenges*, Federal Highway Administration, Washington, D.C., January 1999.

Hummel, T., *Dutch Pedestrian Safety Research Review*, Federal Highway Administration, Washington, D.C., January 1999.

Bike Facility Planning and Design

Dutch Centre for Research and Contract Standardization in Civil and Traffic Engineering, *Sign Up for the Bike: Design Manual for a Cycle-Friendly Infrastructure*, The Netherlands, September 1994.

Diepens and Okkema Traffic Consultants, *International Handbook for Cycle Network Design*, Delft University of Technology, The Netherlands, 1995.

Roadway Operations and Capacity

Denmark Ministry of Transport, *Speed Management: National Practice and Experiences in Denmark, The Netherlands, and in the United Kingdom*, Report No. 167, Traffic Safety and Environment, Road Directorate, 1999.

Traffic Calming

County Surveyors Society, Department of Transport, Association of Metropolitan District Engineers, Association of London Borough Engineers and Surveyors, and Association of Chief Technical Officers, *Traffic Calming in Practice*, Great Britain, 1994.

Devon County Council Engineering and Planning, *Traffic-Calming Guidelines*, Great Britain, 1991.

Hass-Klau, C. et al., *Civilised Streets—A Guide to Traffic Calming*, Environment & Transport Planning, Brighton, England, 1992.

Hawley, L., C. Henson, A. Hulse, and R. Brindle, *Towards Traffic Calming: A Practitioners' Manual of Implemented Local Area Traffic Management and Blackspot Devices*, Report No. CR 126, Federal Office of Road Safety, Canberra, Australian Capital Territory, Australia, 1992.

Herrstedt, L. et al., *An Improved Traffic Environment—A Catalogue of Ideas*, Danish Road Directorate, Copenhagen, Denmark, 1993.

Transportation Association of Canada and the Canadian Institute of Transportation Engineers, *Canadian Guide to Neighbourhood Traffic Calming*, December 1998.

Traffic Control Devices

Standards Association of Australia, *Australian Standard: Manual of Uniform Traffic Control Devices, Part 13: Local Area Traffic Management*, North Sydney, Australia, 1991.

Traffic Engineering

Denmark Ministry of Transport, *An Improved Traffic Environment—A Catalogue of Ideas*, Report 106, Road Data Laboratory, Road Standard Division, Road Directorate, Copenhagen, Denmark, 1993.

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