

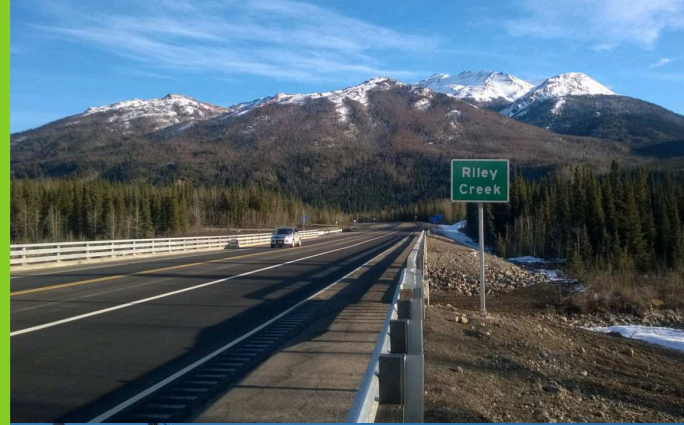
SECOND EDITION

Guidelines for Geometric Design of Low-Volume Roads

2019

AMERICAN ASSOCIATION
OF STATE HIGHWAY AND
TRANSPORTATION OFFICIALS

AASHTO



This is a preview. [Click here to purchase the full publication.](#)

SECOND EDITION

Guidelines for Geometric Design of Low-Volume Roads

2019

AMERICAN ASSOCIATION
OF STATE HIGHWAY AND
TRANSPORTATION OFFICIALS
AASHTO



American Association of State Highway and Transportation Officials
444 North Capitol Street, NW, Suite 249, Washington, DC 20001
202-624-5800 phone/202-624-5806 fax
www.transportation.org

© 2019 by the American Association of State Highway and Transportation Officials.
All rights reserved. Duplication is a violation of applicable law.

Publication Code: VLVLR-2
ISBN: 978-1-56051-726-9

Cover photos courtesy of Caltrans Photography.

[This is a preview. Click here to purchase the full publication.](#)

EXECUTIVE COMMITTEE

2018–2019

Officers

President: Carlos Braceras, UTAH*

Vice President: Patrick McKenna, MISSOURI*

Secretary/Treasurer: Scott Bennett, ARKANSAS*

Executive Director: Jim Tymon, WASHINGTON, D.C.

Regional Representatives

REGION I

Jennifer Cohan, DELAWARE

Victoria Sheehan, NEW HAMPSHIRE

REGION II

Russel McMurray, GEORGIA

Melinda McGrath, MISSISSIPPI

REGION III

Joe McGuiness, INDIANA

Mark Lowe, IOWA

REGION IV

Roger Millar, WASHINGTON STATE

Kyle Schneweis, NEBRASKA

Immediate Past President: VACANT

* Elected at the 2018 Annual Meeting in Atlanta, Georgia

TECHNICAL COMMITTEE ON GEOMETRIC DESIGN

2018–2019

Officers

Jeff C. Jones, Chair	TENNESSEE
Jim Rosenow, Vice Chair	MINNESOTA
Elizabeth Hilton, Liaison	FHWA

AASHTO Members

Kent Belleque	Oregon
Antonette Clark	California
Chad Frisinger	North Dakota
Aaron Frits	Kansas
Michael Fugett	Arkansas
Mark A. Leiferman	South Dakota
Deanna Maifield	Iowa
Eric Marabello	Maryland
Brent Story	Georgia
Bart Thrasher	Virginia
Ryan VanKirk	Pennsylvania
Amutha Vijayakumar	New Jersey
Richard Wilder	New York

Other

Patricia Bush	AASHTO Liaison
Ray Derr	Transportation Research Board
Marshall Elizer	American Public Works Association
Armando Lepore	Port Authority of New York and New Jersey
Ricky Mitchell	National Association of County Engineers
Robert Wunderlich	National League of Cities

COMMITTEE ON DESIGN

2017–2018

CARLOS BRACERAS, Chair

JOYCE TAYLOR, Vice Chair

ROBERT MOONEY, FHWA, Liaison

PATRICIA BUSH, AASHTO, Staff Liaison

ALABAMA	Steven E. Walker, William Adams, Stan Biddick
ALASKA	Pat Carroll, Mark Neidhold, Sarah E. Schacher
ARIZONA	Steve Boschen, Todd Emery
ARKANSAS	Michael Fugett, Charles Martin, Trinity Smith
CALIFORNIA	Janice Benton, Cathrina Barros
COLORADO	Neil Lacey, Ken Brubaker
CONNECTICUT	Scott Hill, Rabih M. Barakat
DELAWARE	Thad McIlvaine, Michael Nauman
DISTRICT OF COLUMBIA	Paul Hoffman, Adil Rizvi, Zahra Dorriz
FLORIDA	Tim Lattner, Paul Hiers, Michael Shephard
GEORGIA	Brent Story, Andy Casey, Andrew Heath
HAWAII	Julius Fronda
IDAHO	Kevin Sablan, Ted E. Mason
ILLINOIS	Mike Brand, Dan Mlacnik
INDIANA	Elizabeth W. Phillips, Jeff Clanton
IOWA	Michael J. Kennerly, Tony Gustafson, Chris Poole
KANSAS	Scott W. King, Tom Rhoads, Debbie Tanking
KENTUCKY	Bradley S. Eldridge, Jill Asher, Keith Caudill
LOUISIANA	Chad Winchester, David S. Smith
MAINE	Brad Foley, Steve Bodge, Charles S. Hebson
MARYLAND	Jason A. Ridgway, Eric E. Marabello, Angela Smith
MASSACHUSETTS	Andrew Paul, Lyriss Liautaud, Hasmukh M. Patel
MICHIGAN	Kristin Schuster, Colin Forbes, Demetrius Parker
MINNESOTA	Chris Roy, Andrea Hendrickson, Tom Styrbicki
MISSISSIPPI	Richard Pittman, Amy Mood, David Seal
MISSOURI	Eric Shroeter

MONTANA	Lesly Tribelhorn, James Combs, Dustin E. Rouse
NEBRASKA	Mike H. Owen, Nathan Sorben
NEVADA	Paul Frost, Casey Connor
NEW HAMPSHIRE	James Marshall, Keith A. Cota
NEW JERSEY	Robert Marshall, Paul F. Schneider
NEW MEXICO	Gabriela Contreras-Apodaca, Priscilla Benavides, Lawrence Lopez
NEW YORK	Richard D. Wilder, Bradley J. Bortnick, Stephen A. Zargham
NORTH CAROLINA	Christopher Werner, Teresa Bruton, Glenn Mumford
NORTH DAKOTA	Roger Weigel
OHIO	David L. Holstein, Kyle Brandon
OKLAHOMA	Caleb Austin, Eduardo Elder, Tim Tegeler
OREGON	David Polly
PENNSYLVANIA	Melissa Batula, Christine Spangler
PUERTO RICO	Vacant
RHODE ISLAND	Richard Bernardo, Robert Rocchio
SOUTH CAROLINA	Ladd Gibson, Rob Bedenbaugh
SOUTH DAKOTA	Brian Raecke, Mark A. Leiferman
TENNESSEE	Jennifer Lloyd, Ali R. Hangul, Jeff C. Jones
TEXAS	Camille Thomason
UTAH	Ben G. Huot, George C. Lukes, Fred Doehring
VERMONT	Jesse Alan Devlin, Ken Robie, Nick Wark
VIRGINIA	Susan Keen, Vernon W. Heishman, Barton A. Thrasher
WASHINGTON	Jeff Carpenter, Mike Fleming, Julie Heilman
WEST VIRGINIA	RJ Scites, Dirar M. Ahmed, Chad Toney
WISCONSIN	David L. Stertz
WYOMING	Jeffrey E. Brown, Andrea Allen, Sandra A. Pecemka

TABLE OF CONTENTS

FOREWARD	xiv
PREFACE	xvi
Chapter 1	
1.1 INTRODUCTION	1-1
1.2 DEFINITION OF LOW-VOLUME ROADS	1-1
1.3 SCOPE OF GUIDELINES	1-2
1.4 RELATIONSHIP TO OTHER AASHTO POLICIES	1-3
Chapter 2	
2.1 INTRODUCTION	2-1
2.2 AREA TYPE	2-1
2.3 FUNCTIONAL CLASSIFICATION	2-1
2.3.1 Rural Major Access Roads	2-4
2.3.2 Rural Minor Access Roads	2-5
2.3.3 Rural Industrial or Commercial Access Roads	2-5
2.3.4 Rural Agricultural Access Roads	2-5
2.3.5 Rural Recreational and Scenic Roads	2-6
2.3.6 Rural Resource Recovery Roads	2-6

2.3.7 Urban Major Access Streets	2-6
2.3.8 Urban Residential Streets	2-7
2.3.9 Urban Industrial or Commercial Access Streets	2-7
2.3.10 Other Urban Facilities	2-7
2.3.11 Roads that Meet the Definition of More than One Functional Subclass	2-7
2.4 DESIGN SPEED OR OPERATING SPEED	2-7
2.5 TRAFFIC VOLUMES	2-8
Chapter 3	
3.1 INTRODUCTION	3-1
3.2 UNIQUE CHARACTERISTICS OF LOW-VOLUME ROADS	3-1
3.3 BASIS FOR DESIGN RECOMMENDATIONS	3-1
3.4 DEVELOPMENT OF DESIGN GUIDELINES THROUGH RISK ASSESSMENT	3-3
3.4.1 Risk Assessment Approach	3-3
3.4.2 Expected Systemwide Effects on Crash Frequency and Severity	3-5
3.5 GUIDELINES FOR NEW CONSTRUCTION VERSUS IMPROVEMENT OF EXISTING ROADS	3-5
3.6 DESIGN FLEXIBILITY	3-6
Chapter 4	