

Geometric Design

Safety and Design Technical Services Team

PRODUCTS & SERVICES

Geometric design is defined as the creation of the visible dimensions of a highway in order to form a facility that meets the functional and operational characteristics of drivers, vehicles, pedestrians, and traffic. This is both a science and an art.

The use of design criteria as a fundamental part of highway design is intended to provide consistency in the quality, appearance, and operational performance of the highway system.

Designers and project stakeholders should understand the origin and nature of design criteria to enable good decisions about applicable project criteria and to assess potential design exceptions. This means understanding the functional basis for each design element, not just what the design values are.

Many design values are established based not only on explicit safety considerations, but also to reflect other needs such as traffic operations, capacity, constructability, maintenance considerations, and other factors. Only by understanding the actual functional basis of the criteria and design values can designers and transportation agencies recognize where, to what extent, and under what conditions a design value just outside the typical range can be accepted as reasonably safe and appropriate for the site-specific context.

The Resource Center's Safety & Design Technical Service Team (TST) delivers the technical assistance transportation agencies require.

Examples of services provided to our customers:

- Corridor-level review of an Interstate freeway reconstruction effort.
- Safety and operational analysis of several complex interchange designs.
- Review of a State's proposed change to a design standard and the implications for a specific project design.
- Facilitation of meetings with DOT and public stakeholders to advance Context Sensitive Design/Solutions.
- Guidance on suitability of traditional and non-traditional intersection and interchange design configurations.

Transportation professionals seeking training or assistance with geometric design may contact the Resource Center Safety & Design TST.

SAFETY AND DESIGN TECHNICAL SERVICES TEAM

www.fhwa.dot.gov/resourcecenter



Workshops, Seminars and Courses

Exploring the Green Book: An Introduction to Basic Geometric Design

This workshop helps participants achieve a basic understanding of geometric design criteria.
Contact: John McFadden

Improving Safety of Horizontal Curves Workshop

This workshop is based on *NCHRP Report 500 Volume 7: A Guide for Reducing Collisions on Horizontal Curves*. Topics addressed include the 20 strategies outlined in the *Guide*, as well as additional material provided in other appropriate Report 500 Volumes, by researchers, and by practitioners. Contact: John McFadden

Fundamentals of Planning, Design & Approval of Interchange Improvements to the Interstate System (NHI 380073)

This course presents an introduction to planning and designing for new freeway interchanges and major modifications to existing interchanges. Contact: Mark Doctor

Context Sensitive Solutions

This is customized training and can be adapted to a 2-our briefing or a full-day course. Contact: Keith Harrison

Safety and Operational Effects of Geometric Design Features for Two-Lane Rural Highways (NHI 380070)

This workshop provides quantitative safety assessment methods to the design process for two-lane rural highways. Emphasis is on the application of safety research results to design decisions for application of the requirements and guidelines detailed in the *2004 AASHTO Green Book* for curvature, lane width, shoulder width, grade, and intersection. Contact: Gene Amparano

Designing and Operating Intersections for Safety (NHI 380074)

This course examines various aspects of design and operations and how they affect the safety of an intersection and its various users. Contact: Fred Ranck

For more information contact:

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Safer by Design

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