

## **Design Philosophy and Background on Design Criteria (AASHTO)**

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Geometric design is defined as the design of the visible dimensions of a highway, with the objective being a facility to meet the functional and operational characteristics of drivers, vehicles, pedestrians, and traffic. This is an art. Geometric design deals with features of location, alignment, profile, cross section, and intersections, types and classification.

The geometric form and dimensions of the highway should properly reflect driver safety, desires, expectations, and convenience. It should do so within the context of a host of constraints and considerations, including terrain, and community effects, and cost considerations.

Central to the geometric design process is the application of design criteria, guidelines, and standards. Such standards provide acceptable dimensions or values for the purpose of producing a facility of a given quality (operational and safety) in an effective manner. Experience has shown that the use of generally accepted practices and concepts and uniform standards provide a reasonable degree of safety. A uniform approach to design provides a consistent "expectation" for the user (e.g., the top of a signal indication, exit to the right, appropriate operating speed, etc.). This expectation is particularly important for the inexperienced driver, the older driver, a driver unfamiliar with the road or area, the distracted or inattentive driver. A uniform design approach also addresses the safety and other needs of pedestrians and bicyclists.

Most agencies develop and use what are referred to as standard drawings, standard details, and other documents and standards. Such documents are useful in that they promote design efficiencies (i.e., in most cases it is not necessarily effective to originally design a feature from scratch each time a project is designed) and as such represent good design practices.

Designers and the public should not confuse use of design standards with providing a "standard" design. A standard design is not always the "best" design. Site-specific issues that dictate another, more "context-sensitive" solution must often be considered. Applying a design that complies with standards or criteria is not always the best solution. Designers are often sensitive in addressing the many facets of design to fit a particular situation. As designers respond to increasing community values, social, economic, and environmental constraints, the need for flexibility in the design process becomes significant. Flexibility is best achieved by experienced design professionals in consideration of all known factors. It should not be viewed as a reduction in geometric criteria. Of course, in the pursuit of flexibility, the expected performance of the facility should be consistent with that expected of a "full standard" design.

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