

	<p><i>Chapter</i></p> <p>INTRODUCTION</p>
	<p><i>Subject</i></p> <p>Highway Design Philosophy</p>

**HD-103.1 MISSION STATEMENT**

The mission of the Division of Highway Design is “the timely delivery of engineering solutions and construction documents that maximize the use of highway funds and enhance the safety and operations of the highway system, the natural environment, and the human environment.”

**HD-103.2 PHILOSOPHY**

The design philosophy presented in this manual is intended to promote flexibility in the design of highways. The design of highways should incorporate community values and safety and be efficient, effective mechanisms for the movement of people and goods. The Project Development Branch Manager’s (PDM’s) challenge is to balance preserving and protecting the environmental and cultural values in communities while also providing a highway facility that is safe and that provides the necessary mobility to ensure economic opportunities and an improved quality of life.

Design is a key ingredient in the project delivery process, and it is important to realize that the different functional components must work together to deliver projects. Environmental analysis, right-of-way acquisition, utility relocation, etc. are also key components of project delivery, and each component must be considered in the project decision. The National Environmental Policy Act of 1969 (NEPA) is the backdrop for the Cabinet’s transportation decision-making process. The NEPA process requires decision-makers to use a systematic and interdisciplinary approach. They should consider the environment, along with economic and technical considerations. In short, they should consider the three E’s—Engineering, Environment, and Economics—in all decisions. Highway designers should work with the different functional units to determine the best transportation decision.

There is discussion throughout this manual about the roles of project development teams (PDTs), PDMs, and the Central Office. The Central Office Division of Highway Design is in place to participate and provide support for the PDMs in the transportation decision-making process. The division will ensure that processes and procedures are followed appropriately.

**HD-103.2 PHILOSOPHY (cont.)**

The [Code of Federal Regulations \(CFR\) Title 23](#), “Highways,” Chapter 1, “Federal Highway Administration, Department of Transportation,” should be consulted for all federal-aid projects.

Designers should be flexible in decision-making concerning the design decisions made about each project. The context of the project and the identified performance issues need to be considered. The PDM has the responsibility of weighing all the particulars of a given project and making design decisions accordingly. Design decisions should consider safety, mobility, and preserving scenic, aesthetic, historic, environmental, and community values. Applicable performance measures should be applied. Design criteria shown in AASHTO’s “A Policy on Geometric Design of Highways and Streets” (Green Book) are intended as a guide allowing flexibility to encourage independent designs and engineering judgement. Noncompliance with geometric design criteria is not, by itself, a performance issue for a project on an existing road. If some aspects of the existing roadway geometry are out of the design criteria ranges shown in the Green Book and the road is performing satisfactorily, there is no need for a new project to modify those aspects of the existing roadway. KYTC’s limited fiscal resources should target known roadway performance deficiencies.

During the early project development or conceptual design process, key decision points are made that will help determine the outcome of a project. These key decision points are in line with the NEPA decision-making process. The product of the conceptual design phase is a transportation decision with an approved environmental document based on an alternate and not just the preliminary line and grade plans. There is only one product: the transportation decision documented in the environmental document and reflected in the engineering plans.

**HD-103.3 KEY DECISION POINTS**

The following steps are key to the development of the project to ensure a shared transportation decision-making process:

- Purpose and Need
- Range of Alternatives
- Scope of Impacts
- Selected Alternative

[HD-203](#), “Preliminary Design,” provides a detailed example of each step.

