Title
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Permalink
https://escholarship.org/uc/item/8689z38w

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Publication Date
2003-08-23
PROCESS AND PLANNING ENHANCEMENTS: ROADWAY DESIGN WITH THE ENVIRONMENT IN MIND: A NEW PROCESS FOR PIMA COUNTY, ARIZONA

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Abstract
Pima County, Arizona (area 9,184 miles²; population 843,746) initiated a paradigm shift in the transportation design and construction process. This was in response to an emerging community awareness of the potential conflict between preserving environmentally sensitive areas, and the need for infrastructure improvements involving transportation design and construction. This presentation describes the evolution of developing an environmentally sensitive roadway design process, and serves as a guide for other communities facing similar conflicts.

Over 24 months, Pima County assembled an eight-member expert panel of traffic engineers, cultural resource specialists, landscape architects, and wildlife biologists. The panel was tasked with bridging the gap between the community’s environmental concerns and the need for improved infrastructure. Specifically, the panel was to design county guidelines for new roadway design and improvement of existing roadways in environmentally sensitive areas.

Pima County provides a home for many special status species, including ten that are threatened or endangered, and therefore federally protected. The county also has a rich prehistory, extending back 3000 years, which included large farming communities with well-developed artistic cultures and traditions. The varied topography of the county lends to scenic views of mountain vistas and wide valleys that offer high aesthetic values. The present-day population is growing rapidly, and many public works projects, including roadways, are being implemented to alleviate growth-associated problems. Conflicts have arisen from the community’s desire to preserve its natural and cultural resources, while improving transportation infrastructure.

In general, road building is associated with negative effects on the environment. Partly, this is because the conventional roadway design process emphasizes traffic elements. Attempts to mitigate roadway impacts on natural and cultural elements of the environment are implemented after the design phase has been largely completed, and this inevitably hampers their scope and extent. We have explored another framework for roadway design, in which the biological and cultural elements are integrated into the design process from the earliest stages of the project. This approach appears particularly relevant in areas that are habitat for special status species, contain important cultural resources, or are environmentally sensitive for other reasons. We anticipated that a consensus would be hard to reach given the different viewpoints of the task force members. However, it was quickly apparent that common ground existed on which a new process could be developed, because all task force members highly valued local biological and cultural resources.

The panel formulated a series of recommendations. These include (a) using the new roadway design process, (b) hiring a county natural resource manager, (c) developing standards for native plant use, salvage, and maintenance, (d) developing a process to systematically identify biological/cultural resources and to analyze the proposed effects, and (e) identifying tools to either alleviate or minimize impacts (i.e., different wildlife crossing designs, use of native plants within medians, narrower road widths, slower traffic speeds, use of lights, etc.).

A consequence of growth is environmental perturbation, which can result in destruction of species and cultural and historical resources. The progress made here in ameliorating roadway design with specific recommendations should be broadly applicable to all sensitive environments and their inhabitants.