

- supporting the incorporation of transportation art, gateway monuments, and community identification.

Traveler and Worker Safety

Landscape architects contribute to the safety of the traveling public and highway workers through roadside design techniques that minimize or eliminate worker exposure to traffic. These design techniques can be grouped into three categories: safe facility location, recurrent activity elimination, and safe maintenance access.

Safe Facility Location

These improvements enhance safety by placing or relocating facilities that require recurrent maintenance activities to protected areas or to areas outside the clear recovery zone. Typical examples include locating, relocating, or clustering facilities such as irrigation controllers, backflow preventers, remote control valves, ramp meters, changeable message sign controls, and cabinets to areas adjacent to the right-of-way fence or to protected areas. See the [*Highway Design Manual \(HDM\)*](#), Topic 706, for more information.

Recurrent Activity Elimination

These improvements enhance safety by reducing or eliminating recurrent maintenance activities such as frequent pruning, graffiti removal, irrigation system repair, herbicide application, and weed control. Typical examples include the following:

- Removing plant material that encroaches upon sight distances
- Planting shrubs or vines or using textures on noise barriers
- Automating irrigation systems
- Providing vegetation control treatment beneath guardrails and signs
- Paving slopes beneath bridge structures
- Paving narrow areas
- Providing contrasting surface treatment (paving) beyond the gore area pavement
- Placing rock or other inert mulch materials
- Removing signs that are no longer required

Safe Maintenance Access

These improvements enhance safety by providing maintenance workers with safe access to roadway and roadside facilities requiring regular maintenance and include providing stairs on steep slopes, maintenance access roads, maintenance access gates, and maintenance vehicle pullouts.

References

The [*Highway Design Manual*](#) contains design standards and guidelines concerning the planting and conservation of existing vegetation, the development of highway planting projects, and the incorporation of scenic values in highway design. The manual also includes design standards and guidelines for safety roadside rest areas and vista points.

The [*Storm Water Quality Handbooks: Project Planning and Design Guide*](#) provides design guidance for selecting and designing stormwater quality best management practices (BMPs) during the planning and design phase of a project.

Chapter 27 of the [*Standard Environmental Reference \(SER\)*](#) provides guidelines for conducting scenic resource evaluations and for performing visual impact assessments during the project development process.

Chapter 28 of the [*Standard Environmental Reference*](#) provides guidelines for determinations of historic property eligibility and identification of historic landscapes during the project development process.

The [*Encroachment Permits Manual*](#) contains procedures and guidelines for permitting work by others, including planting design, transportation art, community identification, and gateway monuments.

The [*Construction Manual*](#) describes administration and oversight of projects.

The [*Maintenance Manual*](#) contains instructions about the maintenance of roadside vegetation and other roadside facilities.

The [*Landscape Architecture PS&E Guide*](#) provides guidelines for the preparation of highway planting and irrigation plans, specifications, and estimate (PS&E).

The [*Plans Preparation Manual*](#) and the [*CADD Users Manual*](#) provide guidelines for the preparation of highway planting and irrigation plans.

[Caltrans Best Practices Public Participation Reference](#) provides the planning process to seek out and consider the needs of all stakeholders in order to maximize the potential and benefit of public involvement and to adequately respond to and meet the requirements of State and federal legislation and mandates and Caltrans' policies and goals.

The [Main Street, California](#) booklet emphasizes Caltrans' commitment to and provides guidance on the safe, context-appropriate design of State highways that function as community main streets.

The Headquarters Division of Project Management [Project Communication Handbook](#) helps the project team identify internal and external stakeholders and improves communication among all parties.

[Design Information Bulletin 82 – Pedestrian Accessibility Guidelines for Highway Projects](#), provides design guidance for pedestrian accessibility for highway projects.

The Federal Highway Administration's (FHWA) [Flexibility in Highway Design](#) provides guidance for creating transportation facilities that conserve and enhance environmental, scenic and community resources.

The FHWA Executive Memorandum issued April 26, 1994, *Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds*, provides guidance on using native plant material and integrated pest management techniques to conserve water and reduce pollution.

The FHWA Executive Memorandum issued August 18, 1999, *Guidance Implementing Executive Order 13112 Invasive Species*, provides guidance on implementing *Executive Order 13112* signed by President Clinton on February 3, 1999, which strives to control the introduction and spread of invasive species and minimize their impact on economic, ecological, and human health.