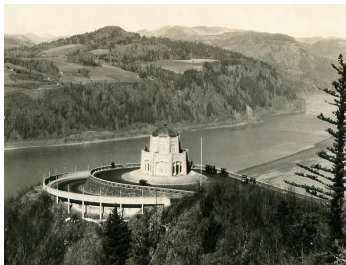


# THE PRESERVATION OFFICE GUIDE TO HISTORIC ROADS

*Clarifying Preservation Goals for State Historic Preservation Offices,  
Establishing Preservation Expectations for State Transportation Departments*



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**With the generous underwriting of:**  
The James Marston Fitch Charitable Foundation  
New York, New York

**June 2010**

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# 1. INTRODUCTION



Rock Creek and Potomac Parkway, Washington, DC, 1937. District of Columbia Public Library

The United States possesses a rich collection of historic roads. From leafy parkways and majestic park roads to utilitarian routes that embody local craftsmanship and environmental accommodation. While many represent a response to transportation and engineering design that can be codified by historical periods, each also represents a unique contribution to the historic fabric of communities and regions. Sadly, many of these historic roads are at risk. National Register listed roads face overwhelming pressures that have resulted in the loss of intrinsic qualities. While transportation departments can be blamed for insensitivity, the preservation community has been slow to impose its authority in both identification and review of projects impacting historic roads.

State Historic Preservation Offices (SHPOs) across the nation have had difficulty defining and defending historic roads in the face of overwhelming political, social, and judicial pressures predicated on highway safety and efficiency. This is due, in part, to a limited familiarity with roads as historic resources, but more importantly, to the absence of a clear taxonomy defining our nation's historic roads. Without uniform definitions and standard historic road

language within the preservation nomenclature, SHPOs, and their tribal counterpart (THPOs) cannot effectively define the impacts of proposed transportation projects on historic roads, nor can they establish clear expectations for the transportation department during the scoping, planning, or implementation process.

The need for a uniform national taxonomy for historic roads is particularly pressing at this moment as a study is underway by the National Cooperative Highway Research Program (NCHRP) to determine the needs of historic road resources and corridors within national transportation policy. This landmark study, which will likely be adopted in whole or part by the American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA) in the next few years, will place the onus on, and create the opportunity for, SHPOs to identify the historic roads in their states. If SHPOs cannot respond to this opportunity with a clear and standardized lexicon of historic road types, resources and character-defining features, the implementation of federal guidance for historic roads will be left to the determination and discretion of state departments of transportation (DOTs).

### **Resource at Risk**



Despite listing in the National Register of Historic Places and a Connecticut Department of Transportation (ConnDOT) historic preservation manual developed in the 1990s, the Merritt Parkway is suffering from insensitive alterations and poor maintenance. In 1996 the National Trust gave ConnDOT an honor award for its exemplary management and preservation policy and in 2010 listed the parkway on the “Eleven Most Endangered List.” The same year, the World Monuments Fund placed the Merritt Parkway on its critical Watch List. Paul Daniel Marriott

Across the United States historic roads are being lost through demolition, neglect and poor management. Sometimes this is due to transportation policy, sometimes due to external pressures (such as land use development) and

sometimes simply ignorance. These losses can be swift and devastating or slow and incremental—hardly noticed until it is too late.

It is important to recognize and preserve historic roads. One need only consider the lost resources of earlier transportation eras now lamented. Canals, railroad stations and the pony express route. The U.S. has already lost long stretches of Route 66 and segments of the Columbia River Highway—our first great scenic automobile highway.

While it is fair to say that no one organization or group is responsible for these losses, it is also fair to say that the basic “idea” of a historic road, much less the preservation of historic roads, is not well understood in the United States. In some instances state transportation offices, historically charged with the safety and efficient movement of the traveling public, may not consider the historic aspects of a road during their planning process or may even consider historic preservation an impediment to progress. Conversely historic preservationists may “trump up” the value of a questionable historic road resource to serve ulterior motives—preventing a new highway project or blocking the development of a proposed housing subdivision, for example. Local residents may lobby for the demolition of an historic brick road because the ride is too rough for their precision automobiles while their neighbors may argue the historic pavement serves as a traffic calming (speed reducing) device.

Historic preservation should not, however, be about a smoother ride, slower traffic, or lost opportunities. It is about the preservation of legitimate historic resources that represent unique attributes of the American experience or are valued elements of a community. In some instances the preservation of a historic road may, indirectly, calm traffic, enhance safety, or provide some other secondary, even unexpected, benefit. What must be remembered is that these benefits should evolve from the planning process to manage and preserve a road that has been determined historic—not as a means to justify historic preservation.

Increasingly, communities across the United States are beginning to recognize that their roads are historic. From Duluth, Minnesota where local advocates petitioned city hall—and won—to save an innovative early twentieth century pavement called granitoid to East Maui, Hawaii where the preservation of the historic Hana Highway (circa 1920) was recognized as a critical component for the preservation of the larger historic landscape, communities are viewing roads as credible historic features defining their past and culture. Historic freeways, transcontinental highways, parkways, farm-to-market roads and traffic circles are increasingly being studied, inventoried, and discussed across the United States.

## **Preserving Historic Roads**

The concept of roads as historic resources requiring study, conservation, and management is relatively new. Historic sites are increasingly recognizing the design and construction legacy of their roads and are developing programs, policies, and treatments to ensure their preservation.

The design, materials and construction technology of roads is as important to a site's history as the buildings, structures and landscape. In some historic settings they are simply a means of circulation—their design and development representative of a utilitarian and vernacular exercise. In others, they represent a passion for design, complex theories of landscape and scenery, and advances in civil engineering development.

Like all built resources from the past, historic roads have specific needs and require unique treatments.

Roads, due to wear, weather, and use, require regular and intensive maintenance. Surfaces erode and degrade; surface water, groundwater, and frost undermine the structure, and vegetation constantly works to reclaim what is often a tenuous line across the landscape. If this can be said of our modern asphalt and concrete roads, it is all the more true for gravel and dirt roads.

### **Challenge**



When the Hawaii Department of Transportation proposed the demolition of a series of 51 early twentieth century concrete bridges with new 32-foot-wide bridges on the historic Hana Highway on the Island of Maui, the Native Hawaiian community objected strongly. Community leaders argued the negative impact the project would have on the historic road, highway safety (the one lane bridges are an effective traffic calming feature) and the cultural landscape. The local community, arguing safety and function as well as historic preservation won. Paul Daniel Marriott

Our nation's historic roads, while appreciated and admired for the technology, craftsmanship and beauty of another era, must also function as a part of the modern transportation network. While some historic roads present challenges in meeting modern safety expectations, many historic roads throughout the nation continue to provide reliable and safe transportation. The fact that so many historic roads are still in use is a testament to their good design and logical location. Historic road resources, like other historic sites and places, require stewardship and sensitivity in their management and maintenance. But unlike traditional historic sites, such as a house museum, pleasure garden or a rural one-room schoolhouse, most historic roads cannot be separated out of modern reality as a museum property or romantic curiosity. They cannot be "snapshots" of life in the past. They must continue to serve the transportation needs of modern American travel—and in that service must meet modern expectations for safety.

Thus a conflict is created. How do we preserve the qualities of its historic roads without sacrificing the safety and efficiency required by modern use?

### **Conflict**

The nation's historic roads are at risk. New vehicles, growing populations, and advances in safety are placing a great burden on all roads to conform to modern expectations. Cars travel faster and driver's expectations for highway safety are based more on the geometry and speed of the Interstate System than a country lane. This conflict places pressure on the state, tribe or local jurisdiction to "upgrade" older roads. In many places these pressures have led to the alteration, destruction or abandonment of historic roads. In instances, concerns for safety, real or imagined, legislated or administrative, have fueled the belief that historic roads are inherently unsafe. Before premature decisions are undertaken and quick-fix solutions advocated for historic roads, a thoughtful and considered analysis should be undertaken.

When looking at historic roads it must be remembered that we, as a society, have never consciously designed unsafe roads. It is the change in our vehicles and the change in our use of these historic roads that has raised safety concerns. Often our contemporary use is more at fault than the historic design of the road. Regardless of blame, our historic roads must meet modern expectation for highway use and safety. Meeting this challenge without understanding historic features and design places many historic roads at risk for alterations and demolitions that will destroy historic character.

### **Safety**

Safety and efficiency in roadway design are as old as roads themselves. The Anasazi people of today's American Southwest were erecting safety barrier walls along their mountain roads in the eleventh century. The routes of Iroquois Confederation carefully followed ridgelines and stable soils, and the State of Oregon erected state-of-the-art wooden guardrails in the 1910's based on safety

standards that we would find woefully inadequate today. Safety is a part of the legacy of our historic roads, and must be a part of their continued use and enjoyment. Understanding that some roads are historic and finding the correct balance between safety and preservation is the challenge.

It is the purpose of this guidebook to demonstrate that the preservation of the character, beauty and legacy of historic roads does not need to be sacrificed to improve safety. Historic preservation and safe roads need not be mutually exclusive concepts.

### **Opportunity**

There are a growing number of options now available to transportation departments to balance historic preservation with highway safety. Design flexibility, alternative safety barriers and traffic management solutions are but a few of the techniques many states and communities are investigating and implementing across the United States. Their application to the historic highways and byways that crisscross the countryside offer new options for the management of rural and small town historic roads. Before this can be accomplished, the features and components of historic roads must be acknowledged and respected.

Historic preservation and highway engineering are new acquaintances. The opportunities for future cooperation are limitless—the experiences to date are limited. This guide will encourage you to enter into this new relationship with patience, consideration and a willingness to embrace creativity and compromise. Historic roads cannot be unsafe roads. Safe roads, however, can be historic roads and state historic preservation offices have an important role in helping to ensure that our nation’s historic roads are considered as viable resources.



Efficiency, safety and congestion drive the decision-making process at most DOTs. Historic preservation, conservation and landscape issues are little considered. Interstate 95, Delaware. Paul Daniel Marriott

## 2. INTRODUCTION TO HISTORIC ROADS

### Historic Roads

Historic roads represent one of the newest and most exciting areas of historic preservation.

When looking at historic roads it is important to consider both the accepted engineering standards and technologies of the time of construction and the local/regional characteristics that make each road unique. Is the road's design and construction evolved from a nineteenth-century turnpike network or based on the highway technology of the early twentieth-century? Beyond the road's engineering what about related features? Do the stone walls, paving bricks, or sidewalks reflect local building materials, traditions or craftsmanship?

Many of the nation's most notable historic roads possess some form of recognition through local, state or national programs. These include the National Register of Historic Places, National Scenic Byways Program and National Historic Civil Engineering Landmarks. For historic roads to fully realize the benefits and protections afforded by these programs, preservation offices must better understand the heritage, design traditions and character defining features of historic roads.

### Road Definitions

For the purposes of this document, the word "road" is used as both a specific type of resource (as defined below) and also as a general term encompassing all land-based travel routes (routes facilitating individual travel and accommodating multiple vehicle types—not, for example, railroads). The term will be used in much the same way as "preservation," which both a specific type of treatment based on the Secretary of the Interiors Standards for Historic Preservation and a general reference to all activities encompassing the conservation and management of historic sites.

Like all historic resource types, roads have some very particular historic definitions. Familiarity with the correct origin of a term can be useful to determine resource intactness and quality. Here are a few basic introductory terms:

***-road***

A longer transportation route generally running through the open country and often connecting more distant locales

***-street***

An urban thoroughfare defined by architectural edges (buildings)

***-avenue***

A broad urban thoroughfare, usually tree-lined and often for ceremony or show

**-boulevard**

Like an avenue with the addition of a center median for planting

**-lane**

A narrow passage usually defined by buildings, fences or hedges

**-parkway**

A road contiguous with or connecting park areas and designed to showcase the surrounding landscape. In its truest sense a parkway must have a recreational component.

**-turnpike or “pike”**

A road constructed, with government or private funds, with the expressed goal of collecting a fee, or toll, to pay for the construction and upkeep of the thoroughfare.

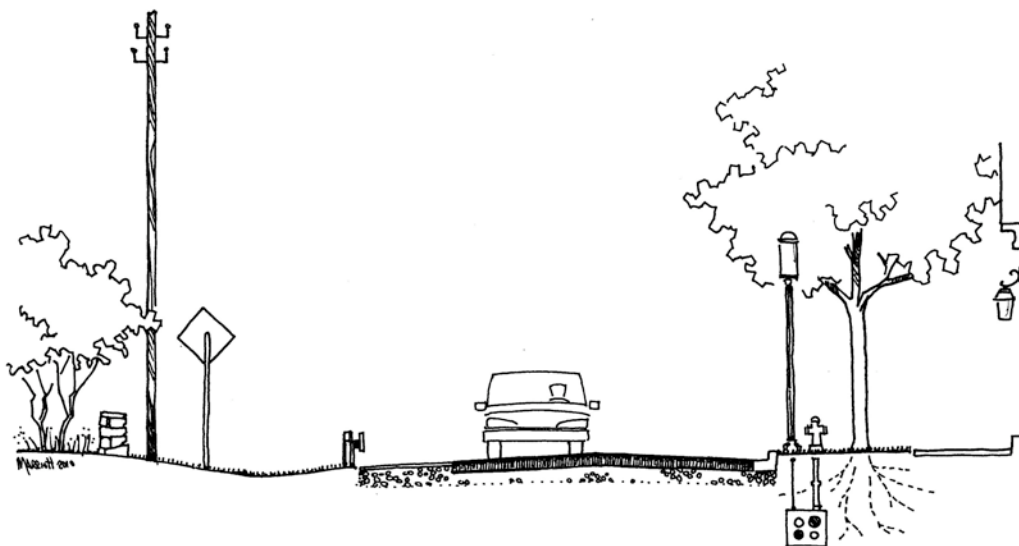
**-highway**

A principal or long distance road. The term comes from the Roman roads in Britain that, being elevated for drainage above the landscape, were called “high” ways.

**Road, Roadside and Setting**

Before assessing the historic features a road may or may not have, or whether it should be included on a list, it may be helpful to review the basic components of all roads. Only with a thorough understanding of the anatomy of a historic road and a familiarity with the vocabulary of road planning, engineering and construction, will you be able to articulate the distinctive features that collectively define a historic road.

Every road is comprised of three parts: the road, the roadside and the setting. The lists and illustrations included here will allow you to define the anatomy of a historic road.



## **The Road**

The road is the physical construction or resource that has been designed or traditionally used for the movement of people and goods. The road is composed of the following elements:

### **-travelway**

The travelway refers to the area of the road dedicated to the movement of vehicles. This may also be referred to as a “carriage way” or “travel lane”.

### **-pavement**

Pavement is the durable or semi-durable surface of the travelway. Pavement may be dirt, gravel, wood (planks, wood block, or corduroy—logs lain side-by-side), stone (cobblestone or granite Belgian-block), brick, macadam, concrete or asphalt.

### **-alignment**

Alignment refers to the horizontal or vertical movement of the road. More specifically, horizontal alignment refers to a road’s movement to the left or right - its curves -- and vertical alignment refers to a road’s movement up and down -- its hills. Horizontal and vertical alignment may, of course, overlap—a winding road up a mountain slope, for example, has aspects of both horizontal (curves) and vertical (mountain slope) alignment.



Horizontal alignment (curves) on California Route 1 in Marin County. Paul Daniel Marriott

### **-subsurface**

Subsurface refers to the stabilized base beneath the pavement. The subsurface provides both a stable base to support the pavement and a finished surface on which to lay or adhere the pavement. It is the subsurface that comes in contact

with the ground. For some cultural routes, the subsurface may be the pavement of an earlier era, thus making the subsurface an archaeological resource.

**-crown**

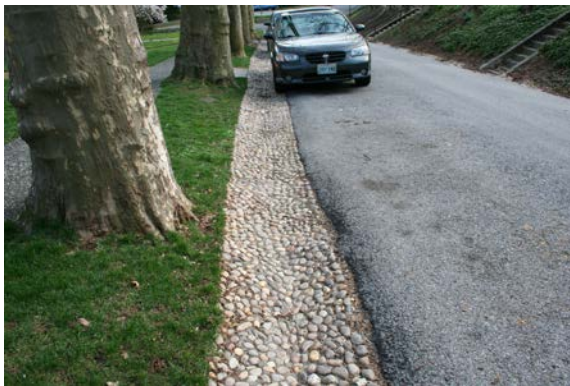
The crown of a road is the rise or upward arc toward the center of the travelway that provides for drainage. The crown directs water away to a gutter, shoulder or swale.

**-curb**

A curb is a raised face at the edge of the travelway or gutter. Generally 6-12" in height, a curb provides a physical barrier between the travelway and the adjacent sidewalk or landscape. Curbs may be granite, concrete, asphalt, stone, brick or wood.

**-gutter**

A gutter is a channel at the edge of the travelway designed to collect and direct surface or rainwater away from the road. Gutters are generally concrete or brick.



Cobblestone gutters in Baltimore's National Register Roland Park (designed by Frederick Law Olmsted Jr.) are a character-defining feature of the street plan. Paul Daniel Marriott

**-shoulder**

A shoulder is a stabilized surface that runs parallel to and is flush with the travelway. In general a shoulder is utilized for higher speed roads without a curb and gutter. It varies in width and may or may not be constructed of the same material as the travelway. Shoulders are generally viewed as a safety feature—providing a disabled vehicle a safe and easy place to pull over.

**-structures**

The road may be associated with essential structures that are integral to its design and function. These may include bridges, culverts, tunnels, tollbooths and retaining walls.

**The Roadside**

The roadside is composed of the elements and structures that are immediately adjacent to the road and enhance its function, use or safety, or utilize the publicly held lands or easements associated with other public services (utility poles for example). Elements associated with the roadside include:

***-right-of-way***

The right-of-way includes the road and the adjacent lands parallel to the road under ownership or easement by the transportation department (or other agency or road owner) and includes the road. In many instances the right-of-way also includes road related features (drainage or signage) or general public services (utilities). The right-of-way may exactly equal the width of the road, or may include an area of sidewalks, street trees or bike paths; or land reserved for future highway construction. Some parkways and scenic roads have extensive right-of-ways (in cases extending significant distances from the roadway) for the conservation of natural areas or the provision of a buffer from adjacent development. Historic roadside features may be located within or outside the right-of-way.

***-clear zone***

The clear zone, a safety provision, is a strip of land parallel to the road, and maintained free of rigid or fixed hazards (trees, utility poles, fire hydrants), to enable a vehicle that accidentally leaves the road the opportunity to “recover” and return safely to the road.

***-swale***

A swale is a slight depression or ditch parallel to the road that serves as a collector for rainwater runoff. Swales are most generally found along roads that do not have a curb and gutter system.

***-barrier***

A barrier is a safety feature designed to protect the vehicle from a hazardous situation. Barriers are commonly constructed as guardrail, walls, or posts.

***-lighting***

Lighting refers to both the source of light (and its intensity), and the design of the fixture that supports the light source.



Historic light fixture and historic operating traffic signal in the Pioneer Square district of Seattle. Paul Daniel Marriott

***-signs***

Road-related signs provide information for the traveler about road identification (route numbers), location, direction, distance, warnings and regulations. Other public signs provide visitor information, serve as commemorative or gateway features, or provide visitor orientation.

***-sidewalks***

Sidewalks are durable paved surfaces that generally run parallel to the road and are dedicated to the use of pedestrian (and sometimes bicycle) traffic.

***-paths***

Paths provide access for pedestrians and bicycles and are generally less formally defined than sidewalks. Paths may originate from an unplanned or organic use (people tend to create paths if no other accommodation is provided), or may have been designed. Paths may be unpaved or have a gravel or asphalt surface.

***-tree lawn***

A tree lawn is the area between the curb and sidewalk usually dedicated to the planting of street trees. In some areas this may be referred to as a tree reservation or grass verge.

***-street trees***

Street trees are trees planted parallel, and generally in a formal pattern or spacing, to the road.

***-utilities***

Utilities may be above or below ground and include electric, cable, telephone and fiber optic lines; gas, water, irrigation, storm and sewer pipes; and transformers, service boxes and steam tunnels.

***-structures***

Structures within the right-of-way may include bridges and aqueducts that carry other roads, railroads or water over the road. They may also include administration buildings (often associated with toll roads and bridges) or maintenance structures.

***-service areas***

Service areas may include highway maintenance yards, rest areas or driver/auto plazas providing fuel, food and information.

***-waysides and overlooks***

Waysides and overlooks are pull-offs adjacent to the road designed to provide access to a scenic view, interpretation or historical markers, or picnic tables. Such facilities are generally without restroom facilities.

## The Setting

The setting refers to the area beyond the right-of-way. The elements comprising the setting are often the features we most associate with a road and use to determine if a drive is pleasant or unpleasant. Elements defining the setting include:

### ***-roadside architecture***

Road-related features include structures and spaces of businesses that are integral to the use of the road. Structures may include gas stations, motor courts, drive-ins, diners or taverns. Seasonal structures may include farm markets, ice cream shops or calm shacks. Some of these structures showcase decorative or fanciful architecture designed to capture the attention of the motorist.



Along Historic Route 66, Gallup New Mexico.  
Paul Daniel Marriott

### ***-landscape features***

Landscape features include parklands, natural areas and plantings designed in conjunction with or resulting from the creation of the road.

### ***-character***

Character refers to the nature of the landscape or community through which your road passes. It may be rural, suburban or urban in nature. It may be local in character—the temple fronts of Greek Revival farm houses set well back from the road—or it may be more regional in character with businesses catering to the needs of the traveler and defined by the corporate architecture of a gas station. Character may be reinforced through common or repeating elements that create identifiable, even unique, patterns, colors, and styles along the roadside—fences, fields and woodlands, for example.

### ***-streetscape***

A streetscape defines the physical setting and structures along a road in a settled area. A streetscape, whether urban, suburban or rural, is generally associated with a built-up area or concentration of development. Key characteristics of streetscapes are street trees, lights, utility lines, styles of architecture, relationship of structures to the street (adjacent to the street, setback by a wide lawn), public spaces (walks, plazas, village greens and parks) and street furnishings (benches, lights, planters, parking meters, mailboxes).

### ***-cultural landscape***

The cultural landscape defines the patterns, design and structure of a landscape influenced, altered or changed by human activity. Hallmarks of a cultural landscape may include the size and shape of fields and orchards, the characteristic layout of communities (a grid pattern, a linear alignment along a road or settlements at mountain passes or river confluences), or the nature of the road network (along colonial land grant lines, paralleling waterways through a valley or following the dictates of a regional transportation plan). Cultural landscapes are generally not designed by a master landscape architect or planner, but may be “designed” or influenced by the traditions or goals of social, religious or ethnic groups.



Roadside setting, character, cultural landscape and architecture along the alignment of the Old Santa Fe Trail and the first alignment of U.S. Route 66. San Miguel County, New Mexico.  
Paul Daniel Marriott

### ***-viewshed***

Viewshed refers to the “view” from a particular point in space. The viewshed encompasses everything that can be seen from this point. A viewshed may be very large, such as the view across a valley from a ridge road, or the view of Lake Erie as it stretches to the horizon. It may also be very narrow, such as the

view from a village street, no wider than the sidewalk and terminated by the façade of an adjacent building, or the limited view along a road in a densely wooded area. The viewshed of a road is generally considered the view to the left or right from the centerline of the road.

### ***-foreground, middle ground, background***

Foreground, middle ground and background are landscape terms that assist in defining the viewshed. Foreground refers to that part of the setting that is immediately adjacent to the road and clearly discernable. Middle ground refers to the near distance where larger features such as trees, roads or buildings may be recognized as individual elements—but not clearly. Background refers to the far distance where only basic forms are discernable and the intensity of the colors in the landscape begins to fade to gray. Naturally, not all viewsheds will possess all three elements.

## **Materials and Construction**

Materials and construction techniques are important tools to understand and evaluate historic sites and places. The same approach to analysis can be applied to historic roads.

### ***-materials***

Construction materials for historic roads may include concrete, brick, stone, iron, steel, aluminum, glass and wood. Landscape materials, materials consciously designed and installed as a part of the road environment, may include trees, shrubs, groundcovers and flowers. Materials may be highly visible, such the iron or steel on a bridge, a row of horse chestnut trees in full bloom, or invisible, such the gravel sub-base over which an asphalt street is laid.

### ***-construction***

Construction techniques for historic roads will address dimensions (thickness, width, height and depth), assembly (mortar, steel reinforcing, nuts and bolts, rolling, compacting and anchoring) and applications (painting, galvanizing and liquid treatments such as tar and asphalt). Like any historic property, construction techniques may be economical and efficient or the result of an experienced craftsman employed due to a recognized skill or talent.

## **The Three Types of Historic Roads: Aesthetic, Engineered and Cultural**

Like today's roads, historic roads were authorized and constructed for numerous reasons. Some were hastily constructed for military campaigns while others were dramatically sculpted in the landscape to showcase the natural beauty of a place. Some pushed the boundaries of speed, while others encouraged travelers to slow down to enjoy a view—and some simply evolved under no apparent vision or scheme, simply influenced by topography and the engineering abilities and materials of the day. These initial decisions and goals

(or lack thereof) determined the design, materials and route of most of our historic roads. Understanding the origin or intent of your historic road will greatly assist in determining the best approach to its analysis and management—and ultimately its preservation.

Looking at historic roads broadly, most can be ascribed to one of three general categories: aesthetic, engineered and cultural.

### **Aesthetic Routes**



Bronx River Parkway, Westchester County, New York, 1922.  
Westchester County (NY) Archives.

Aesthetic routes represent historic roads designed to provide a very specific, and positive, traveler experience. In general these historic roads were designed for scenic enjoyment, leisure, recreation or commemoration. As such, aesthetic routes will have a documented purpose or goal behind their development (“Our village should have a beautiful waterfront avenue.”) and a documented date of construction.

Seldom intended as the fastest or most direct route, aesthetic routes typically follow the natural topography of a region. They may wind through river valleys, along ridge tops, or follow the shore of a lake. In urban areas, aesthetic routes are more typically represented by park boulevards or monumental avenues. These routes may be lined by great sculptures, anchored by grand public edifices, or shaded by ancient rows of trees. Whether crossing the natural landscape, or defining the civic landscape, aesthetic routes are noted for their attention to the traveler’s experience and their attention to detail. Each view, be it a distant mountain range enframed by trees or a courthouse tower rising above

the city, is carefully planned. Every detail such as plantings, lighting, barriers and pavement is consciously selected both as an individual element and its contribution to the whole. In urban settings these details may be elaborate and grand, while in rural settings they may be simple and non-obtrusive. Often aesthetic routes may have policies to influence the larger landscape such as easements to protect a parkway's viewshed or guidance for the materials and design of building facades along an urban route.

Due to their conception and design as a singular statement, alteration to any component of an aesthetic route will significantly impact the historic integrity of the resource.

### **Engineered Routes**



Triborough Bridge, New York, 1937. New York Public Library

Engineered routes represent historic roads designed for the efficient movement of people, goods and services. They are our most common designed roadways. While they may exhibit some aesthetic qualities or features, their design intent will be rooted in efficiency of movement, ease of access, and prudent construction cost. Like aesthetic routes, engineered routes will have a documented purpose or goal behind their development (“We need a road to

connect the new factory to the county seat.”) and a documented date of construction.

More pragmatic in their origins than aesthetic routes, engineered routes have been designed to open isolated areas to commerce, reduce traffic congestion, link the nation, or simply link farm to market. The alignment and details of an engineered route may be important in the representation of new roadway technologies or material innovations from earlier eras. Early transcontinental highways, turnpikes and toll roads represent many such engineering advances in materials, design and safety. Most basic city grid patterns represent the characteristics of engineered routes. Today, due to location or earlier technologies, many engineered routes have taken on aesthetic qualities as the design and construction techniques of the past become appreciated by new generations of users. Similarly, engineered routes confined to their right-of-way and constructed with little regard to their setting, may now have scenic associations within the larger landscape.

Due to their conception and design as a singular statement, alterations to any component of an engineered route may significantly impact the historic integrity of the resource.

### **Cultural Routes**



Rural road, Marshall County, Iowa, 1940.  
U.S. Library of Congress

Cultural routes represent historic roads that evolved through necessity or tradition. While it is possible some cultural routes may have a documented goal (“We need a reliable route to deliver the mail”), they will not have the design and construction legacy of an aesthetic or engineered route. (It is possible, and likely, later additions or alterations may be well documented—cultural routes,

however, always begin with an analysis of the nature of the *original* road.) These may be roads that evolved from American Indian paths or roads, animal trails, colonial roads, or simply logical connections between villages or through difficult terrain. Roads through mountain passes or water gaps, paralleling the foot of mountains, or following a line of stable soils or river courses are typical of cultural routes.

In use as roads today, cultural routes generally exhibit the greatest number of historic periods or layers. Beneath the modern pavement are potentially rich archaeological sites representing not only people and cultures over the years, but also the history of the very route—compacted soil from a 15<sup>th</sup> century Indian portage road, evidence of a widening to accommodate a carriage in the 1730's, remnants of an old corduroy road from 1790, and early twentieth century highway improvements. For cultural routes it is important to understand these layers as you make a determination as to the principal eras or periods of significance that are worthy of preservation. Remember too, these layers also likely exist as resources parallel to the road, as evidenced by the architecture and land use in the historic corridor.

Due to their more organic and undocumented origins (or undocumented periods), cultural routes are the most difficult to assess for impacts by proposed changes. Alterations to cultural routes must be carefully considered based on the evolution of the road and its multiple periods of significance.

### **Multi-Category Roads**



The Arroyo Seco Parkway, between downtown Los Angeles and Pasadena, California, opened in 1940. It combined both parkway qualities and emerging freeway concepts. Highland Park Heritage Trust

While the aesthetic, engineered and cultural categories should capture the characteristics of most historic roads in the United States, there may be exceptions. For the three historic road “types” the question is not so much “exception,” but rather combination or evolution. Such roads may be understood as multi-category routes. Every road can be categorized as aesthetic, engineered or cultural. Some, however, may represent the characteristics of two or three of the defined categories at the point of design and construction. Such historic roads may be early freeways (engineered) that were also designed to provide an *aesthetic* experience. Others may be parkways (aesthetic) that were also designed to provide quick efficient movement (engineered). Usually, but not always, one of the three categories will be recognized as the primary characteristic-defining origin of the road.

The Bronx River Parkway in Westchester County, New York, for example, was designed principally as a scenic pleasure drive (1907-1923), but constructed with state-of-the-art engineering advances (a center median and separated-grade crossings) that would eventually influence the interstate system. So while the parkway is primarily categorized as an aesthetic route, it does have significant engineering features that should be considered among its integral components.

Multi-category routes may be represented by cultural routes with origins as American Indian trails that were adopted by European settlers for their trade needs and ultimately, through use and over time, evolved and were reconstructed (engineered) as a part of the state highway system. A town grid pattern, as a whole, may be viewed as characteristic of the engineered routes category, but may include a grand avenue, “broad” way, or boulevard clearly characteristic of the aesthetic category. Additionally, many routes may have cultural associations through use, activity or events—a religious pageant or civil rights march, for example.

Much like cultural routes, any alteration to any component of a multi-category route should recognize its evolution, design origins and intents.

## **Planning**

In addition to individual historic road types, many communities possess larger historic road planning histories. In general, these planning efforts can be ascribed to the aesthetic or engineered categories.

The typical American town grid plan is an example of organized road making that has roots in European military theory—the grid plan of Philadelphia (1683) a particularly good example of that rational theory adapted to the commercial city of North America. Others had greater aesthetic and symbolic goals such as the Baroque-style plans for both of Maryland’s colonial capitals (St.

Mary's City, 1634; Annapolis, 1696) and the nearby newly established federal capital of Washington designed by Frenchman Pierre Charles L'Enfant in 1791.

Other large-scale aesthetic planning concepts can be seen in the Westchester County, New York parkway system or the boulevard system of Denver. Some city plans are based on European policy, such as the city plans for Santa Fe and Albuquerque, New Mexico dictated by the town planning dictates of the Spanish Laws of the Indies, compiled in 1680 to regulate and order colonial territories. At the macro scale patterns of road organization may be associated with the Land Ordinance of 1785 (establishing the national grid pattern) and the US Route system (1926) and the Interstate System (1956).

Planning patterns are distinguished by geographic relationships and the intersection of associated roads.

### **Period of Significance**

A well-established period (or periods) of significance is as important for historic roads as any other historic resource. They should be distinctive and cohesive periods with a strong historic context. A period of significance associated with a particular historic road will share a common history, technology and details. For roads with extended histories there may be multiple periods of significance. Periods of significance may be very short—five days for Dr. Martin Luther King's civil rights march along the Selma to Montgomery Highway in Alabama—or last over a period of decades—1926 to 1960 representing the heyday of auto travel and culture on Route 66.<sup>1</sup> The period of significance determined for the National Register application for the Bronx River Parkway in Westchester County is 1915-1930.

For aesthetic and engineered routes there is most always an initial period of significance associated with the years of design, construction and initial use. Cultural routes are more likely to have multiple periods of significance as changes in transportation or use affected the evolution of the historic road. The National Road in Pennsylvania, for example, has identified four primary periods of significance—Early Trails and Military Roads (1750-1810), Construction of the National Road (1806-1834), Toll Road Era (1830-1900), and The Automobile Era (1890's to present). Each of these periods represents a particularly intensive time of activity, use and change. Across the border in Maryland, three periods of significance have been identified for the National Road.<sup>2</sup> For each state,

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<sup>1</sup> This period of significance is generally cited by Route 66 scholars. A National Park Service study, Special Resource Study: Route 66, identified 1926 to 1970 as the period of significance for Route 66. It is often impossible to assign exact dates for periods of significance. The 1960 date, often cited, applies more to the popular culture of Route 66, while the 1970 Park Service date is a more technical reference looking broadly at Route 66 resources.

<sup>2</sup> The State of Maryland identifies three periods of significance for its stretch of the National Road: Heyday of the National Road (1810-1850), Agriculture and Trade (1850-1910) and Revival of the National Road (1910-1960).

fortifications, taverns, toll houses and gas stations are among the architectural artifacts from these eras. Maryland and Pennsylvania demonstrate that there is considerable latitude in the development of a period(s) of significance for historic roads.

When considering period of significance questions establish or identify the significant dates or eras for which the historic road was. It is, of course, possible from the analysis that a period of significance associated with the historic road, while well documented, has no remaining artifacts that can tell the story of the historic road today.



U.S. Route 66 across Oklahoma, Texas, New Mexico, Arizona and California, and U.S. Route 99 in California, were the principal migration highways during the Dust Bowl exodus of the Great Depression. Photo by Dorothea Lange, U.S. Library of Congress

### 3. HISTORIC PERIODS OF ROAD BUILDING IN THE UNITED STATES

Before considering the detailed components of a historic road, its history and significant periods, it may be helpful to review this information in the context of road history in the United States. Like any constructed or designed aspect of the historic past—architecture, gardening, or painting, as examples—roads have a distinct history of design, technological and artistic advances and popular styles.

The following identified historical periods represent the broadest possible summation of historic roads in the United States. Settlement patterns, population and other distinguishing regional characteristics shaped and defined our diverse highway history throughout North America, and resulted in many unique local adaptations and innovations during different periods. The following periods and associated dates are intended as an introductory structure from which to determine the history of road making in your state, tribe or region.

#### Native Origins



The Cohoes Falls on the Mohawk River, New York, location of an important Indian Portage Road.  
New York Public Library

Many of our historic roads and highway networks can be directly traced to the trade routes, paths and roads of the Native peoples of what is today the United States. With respect for both the land and environmental systems, the first inhabitants of North America charted routes that followed the contours along the high ground, across the stable soils and interconnecting the rivers and tributaries of the continent.

In the eastern part of the continent, Native peoples utilized waterways as a preferred mode of transport and communication. These were linked by Indian roads that provided access across watersheds, around rough waters or falls (portage roads) and to inland and mountainous areas. With the establishment of the Iroquois Confederation in 1570, much of what is present-day upstate, central and western New York was traveled among the tribes of the united Confederation over a reliable transportation network.

The Empire State, as you love to call it, was once laced by our trails from Albany to Buffalo; trails that we have trod for centuries; trails worn so deep by the feet of the Iroquois that they became your roads of travel, as your possessions gradually ate into those of my people. Your roads still traverse those same lines of communication, which bound one part of the Long House to the other.

--Cayuga Chief Peter Wilson, speaking before the New York State Historical Society in New York City, 1847

The Iroquois Trail ran from the Hudson River to the Niagara River through the territory of the Six Nations. The route, roughly 350 miles in length, provided moccasined runners with easy access deliver news of war or peace to the tribes of the “Long House,” as the territory was known.

In places like Cahokia on the Mississippi River (present-day Illinois) urban peoples had constructed monumental avenues and ceremonial routes within a larger network of utilitarian streets for a city with a population estimated near 20,000 (AD 1100-1200). The Anasazi People of the Southwest had an extensive and highly engineered system of roads. In the region surrounding Chaco Canyon, in present-day New Mexico, the Anasazi developed a regional network of over 100 miles of roads during the eleventh and twelfth centuries. The roads connected some 75 communities, averaged 30 feet in width and were constructed with rock edges to maintain the integrity of the travel surface. In steep terrain, masonry walls or boulders were provided as a safety feature.

European colonial powers quickly adopted and adapted these existing continental networks. El Camino Real de Tierra Adentro (the Royal Road to the Interior), the great Spanish highway from Mexico City to Santa Fe utilized many existing aboriginal communication and trade routes. Historic tradition has generally referenced these Indian routes as “trails” while the colonial routes have been termed “roads.” While this raises the question of difference between a road and a trail, it should be noted that no culture has constructed roads wider than necessary. For the Native peoples, narrow routes sufficed for foot travel. For the colonial peoples, wider routes were needed to accommodate wheeled-vehicles and beasts of burden—and the Spanish, French and British quickly widened many of the roads they found.

The journals of the Lewis and Clark expedition note a well-worn Shoshone “road” near the headwaters of the Missouri River in present-day Montana. The expedition utilized an Indian portage road around the Cascade Rapids on the

Columbia River during their return trip in 1806 noting “...this portage is two thousand eight hundred yards along a narrow rough and slippery **road**....” (emphasis added). Despite the poor quality of the portage road described in the journals, it is interesting to note that Lewis and Clark describe the route as a road and not a trail—suggesting that utility and location define a road, or perhaps providing insight into the quality and structure of European roads.

Our modern highway network utilizes many of these historic travel corridors established by the first North Americans. South Dakota State Routes 50, 47 and Bureau of Indian Affairs (BIA) Routes 4, 5 and 10 parallel the Missouri River roughly following trade routes of the Arikara People and Great Sioux Nation. The Natchez Trace Parkway in Tennessee, Alabama and Mississippi began as a series of Natchez, Chickasaw and Choctaw Indian trails that would become an important trade and military route for European and later American interests.<sup>3</sup> In New York, State Route 5 and the New York State Thruway (Interstate 90) closely follow the route of the Iroquois Trail.

### **Hawaiian Roads**

In Hawai'i we find comprehensive highway construction programs as early as the sixteenth century as various kings attempted to control individual islands prior to the consolidation of the Hawaiian Islands under King Kamehameha I in 1810. On the island of Maui, for example, King Pi'ilani (d. 1527), known for a long peaceful and prosperous reign, began construction of the “Alaloa” or long-road. His brother King Kihapi'ilani is credited with completing the road around 1516. Paved with lava rock, rounded stones and coral, the four to six foot wide road was also referred to as the “Kipapa (pavement) of Kihapi'ilani.” With its completion, Maui became the first island in the Hawaiian chain with a paved road around the entire island. The 138-mile road facilitated rapid movement for the King's frequent military campaigns; it also helped with the efficient collection of taxes and enhanced intra-island communication via runners known as “kukini.”

### **Colonial Roads, 1560-1776**

The Caminos Reals (Royal Roads) of the Spanish colonies linked the distant settlements of New Spain to the capital at Mexico City. The oldest of the Caminos Reals, in the present-day United States, was opened in 1581 by Friar Rodriguez and ran along the Rio Grande from El Paso and eventually linked Santa Fe (settled in 1610) with Mexico City (US Highway 85 and New Mexico Route 1 follow segments of the original route). El Camino Real in present-day California began in 1769 with the founding of a fortress and Franciscan mission at San Diego. The royal road would eventually link twenty-one missions (each a day's travel apart), two pueblos and four presidios across a distance of roughly 600 miles, before ending at Mission San Francisco de Solano in present-day Sonoma County in 1823. Known popularly today as the “Mission Route,” historic

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<sup>3</sup> South Dakota State Routes 50, 47 and 10 (known collectively as the Native American Scenic Byway) and the Natchez Trace Parkway have been designated as National Scenic Byways.

El Camino Real in California largely follows U.S. Route 101. Farther east Florida and the Gulf Coast were linked to the capital by a Camino Real that began in St. Augustine (settled in 1565) and roughly followed the path of today's U.S. Route 90.

The general organization of the Spanish colonial transportation network was outlined in the Laws of the Indies (Leyes de Indias). Codified by Charles II in 1680, the Laws provided a comprehensive approach to colonial settlement policy throughout the New World—including issues of town planning, communication and travel.

### **English Colonial Roads**

In the English Colonies, under colonial law based on British precedents, road-making and repair were decentralized and the responsibility of the local governments. All of the colonies authorized local authorities to require compulsory road service (labor) or its equivalent in cash. This “statute labor” was for the colonial period, and well into nineteenth century, the principal resource available to local governments for road construction and maintenance.

One such road system was established by statute in 1690 in Charles Towne (Charleston), South Carolina. Following long-established Native American routes, these planned roads were to radiate from Charles Towne along the Ashley, Cooper, Wando and Stono Rivers toward the wealthy rice plantation districts. Laws required that the roads be “made, mended and kept clear” through slave labor provided by local landowners and the statutes established stiff penalties for “all persons hereafter refusing or neglecting to send their slaves to labor on the high roads.” In 1721 specific legislation was put in place to protect the grand trees that shaded the roads from the intense summer sun.

### **Post Roads**

In 1711 the British Parliament established the first organized postal system in America. This led to the creation or recognition of a number of post roads. Prior to this more comprehensive program to deliver the mails, the Boston Post Road, one of the first recognized long-distance routes in the colonies, was established by command of King Charles II. The inaugural service, leaving New York City on January 22, 1673 with the mission that “His Sacred Majestie” had “injoined his American subjects to enter into a close correspondency with each other,” arrived in Boston two weeks later.

The Dutch had established a post road from New Amsterdam to Albany in 1669. After the British gained control of New York from the Netherlands (1674), the Provincial Legislature, in 1703, passed a “Publick High-ways” act declaring the Albany Post Road, now renamed the Queen’s Highway in honor of Queen Anne, to be a:

Publick and Common General Highway to extend from King's Bridge in the County of Westchester through the same County of Westchester, Dutchess County and the County

of Albany, of the breadth of four rods, English measurement, at the least, to be, continue and remain forever, the Public Common General Road and Highway from King's Bridge aforesaid to the ferry at Crawler over against the city of Albany.<sup>4</sup>

The post roads would also prove useful at moving troops, cannons and supplies as well as the mails.

### **Military Roads**

During both the French and Indian War and the Revolutionary War military roads were strategic elements of the conflicts. In addition to existing stagecoach and post roads, crude military roads were hastily constructed to maintain or acquire strategic advantage over the enemy. Corduroy roads, made of logs from trees felled while clearing the route and laid side-by-side, were often built by the military as an efficient use for cleared timber and as an effective means of providing a stable, if uncomfortable, alternate to mud.

While there is little documentation of the construction techniques or exact routes of the military roads, historic records make frequent reference to military roads.

For example, a significant Indian portage road, connecting the Great Lakes to the Ohio River between Lake Erie and Lake Chautauqua (and ultimately the Mississippi River and Gulf of Mexico) was highly coveted to control the interior of the continent during the French and Indian War. The portage road was first recorded for Europeans in 1615 by Samuel de Champlain's interpreter, Étienne Brûlé. Due to its strategic position and escalating tensions between the British and French to land claims in the Ohio Valley, the French military improved the portage road in 1749—clearing trees and widening the route; and marking it with lead plates claiming the territory for France.<sup>5</sup>

Farther west, and later, military roads would be constructed by the U.S. Government in the federal and state territories well into the nineteenth century.

### **The Young Republic, 1776-1860**

After independence, the United States was faced with a growing peacetime population and a paucity of funds to provide internal improvements. Westward migration was placing new pressures to expand the transportation network beyond a loose collection of roads along the Atlantic seaboard. A few long range transportation plans were proposed for a national system of roads and canals, most notably the 1808 report by U.S. Secretary of the Treasury, Albert Gallatin. Congress, still unsure if it was the responsibility of the federal

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<sup>4</sup> C. G. Hine, *The New York and Albany Post Road*, (New York: C.G. Hine, 1905) p. 1.

<sup>5</sup> Much of the route today, New York State Route 394 between Mayville and Barcelona, follows the 1753 alignment of French military engineer Hugh Peon and is locally referred to as the Old French Trail or Portage Trail.

government to construct roads and canals, debated this plan but undertook little action.

### **The National Road, 1806-1840**

The federal government did, in 1811, begin construction of the National Road—the first federally funded inter-state highway. Beginning in Cumberland, Maryland and extending west to Wheeling on the Ohio River, the road crossed through three states (Maryland, Pennsylvania and Virginia—now West Virginia) and was later extended into Ohio, Indiana and Illinois. The road was a challenge to the U.S. Constitution as the young government debated the merits and legalities of the federal government owning land and operating a road in individual states. Under the 1806 law that authorized construction, the Federal Government built the road with the consent of the States through which it passed, but the state's retained jurisdiction of the land on which it was built. The new National Road was a success from a transportation point-of-view, but much more expensive to construct and maintain than expected. To meet maintenance needs, the Congress passed a bill in 1822 authorizing the federal government to collect tolls to pay for the road's upkeep. President Monroe vetoed the bill arguing it implied jurisdiction the federal government did not have. As a compromise the federal government, beginning in 1831, improved the road and constructed a series of tollhouses; it then turned over ownership of the road to the local states to operate it as a toll road.

### **Turnpikes, 1785-1830**



Philadelphia and Lancaster Turnpike by Bureau of Public Roads Artist Carl Rakeman. Collection, Federal Highway Administration

Limited funds and arguments over the responsibility for developing long-distance roads were no different at the state level. The need was there, but since colonial times (in British America) road building and maintenance was a local responsibility. Many states continued the colonial practice of requiring local labor to make and mend roads.

To meet the growing demand for overland transportation, westward expansion and population growth after the American Revolution, many states turned to the development of toll roads or turnpikes. The first, chartered by the Commonwealth of Virginia in 1785, ran west from Alexandria on the Potomac River to the Blue Ridge Mountains. The Philadelphia to Lancaster Turnpike in Pennsylvania began construction in 1793. The well-designed route covered 62 miles and showed a modest profit to its investors in the first five years—with profits climbing in subsequent years due to increased traffic from westward expansion. The turnpike was fifty feet wide between fences (what today we would define as the right-of-way), of which 21 feet was:

made an artificial road, which shall be bedded with wood, stone, gravel, or any other hard substance, well compacted together, a sufficient depth to secure a solid foundation to the same; and the said road shall be faced with gravel, or stone pounded, or other small hard substance, in such manner as to secure a firm, and, as near as the materials will admit, an even surface....<sup>6</sup>

Due to the success of the Lancaster Turnpike and the urgent need for internal improvements, most states adopted toll financing for roads and canals by 1800.<sup>7</sup> While investors eagerly poured their money into these projects, most were financial failures.

Growing investments in rail and canal developments and rapid improvements in the efficiency of both quickly displaced the financial and time advantages the turnpikes had initially offered. By the 1830s turnpikes were in decline and turnpike corporations failing. Many of the roads would revert to local service and fall into disrepair.

### **Plank Roads, 1846-1854**

Plank roads, wood roads constructed of boards, briefly revived many turnpikes in the 1850's. Constructed of cheap and plentiful wood, plank roads were easy to build (wood boards laid across stringers), eliminated mud and potholes, and were as much as half the cost of macadam roads.

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<sup>6</sup> Albert Gallatin, "Report of the Secretary of the Treasury on Roads and Canals," S. Doc. No. 250, 10<sup>th</sup> Congress, 1<sup>st</sup> Session, 1808, p. 895.

<sup>7</sup> *America's Highways, 1776-1976*, (U.S. Department of Transportation, Federal Highway Administration, 1976), p. 10.

The first plank road in the United States was constructed in New York State between Salina and Central Square in 1846. It was hailed as efficient, economical and comfortable—the plank road craze had begun! In just seven years 350 private companies, in New York State alone, would build over 3,500 miles of plank roads.<sup>8</sup> Strategically, many plank roads provided access and connections to and between rail and canal facilities.

The initial craze, fueled by expectations of low maintenance and long life, and promoters' assurances of high returns on stock, collapsed as fast as it rose around 1854. Wood, in direct contact with the ground, not surprisingly tended to rot. Like the turnpikes, many routes were abandoned and reverted again to dirt roads. A few of the more successful plank roads would be paved in macadam and continue in a largely secondary function of providing access to the dominant canal and rail network.

### **Pleasure Drives, 1830-1890**

Not all the roads constructed in the young republic were utilitarian. The romantic or picturesque era of landscape design, based on English landscape precedents, was utilized for scenic and pleasure drives for estates, parks and cemeteries in the mid-nineteenth century. Examples of Andrew Jackson Downing, the first great American landscape designer, and later, those of Frederick Law Olmsted in New York City's Central Park, demonstrated the art and science of a designed landscape—and the necessity for attractive access and circulation.

In his widely read and influential book, *A Treatise on the Theory and Practice of Landscape Gardening Adapted to North America With a View to the Improvement of Country Residences*, Andrew Jackson Downing quotes the eight principal requisites for roads in the “modern style” as developed by Humphry Repton, a man he calls “one of the most celebrated English practical landscape gardeners.”<sup>9</sup> While these eight principles focus primarily on the approach to the house, they clearly establish the theory behind the development of a curvilinear circulation system and its logical placement within the larger landscape. In particular, Repton notes the need for curvilinear routes that are logical and based on physical landscape forms—natural or artificial: “As soon as the house is visible from the approach, there should be no temptation to quit it (which will ever be the case if the road be at all circuitous), unless sufficient obstacles, such as water or inaccessible ground, appear to justify its course.”<sup>10</sup> It is important to note the negative connotation he ascribes to “circuitous,” suggesting curvilinear forms simply for the sake of form, without logical physical rationale, detract from the visitor's experience of the landscape.

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<sup>8</sup> Eisenstadt, *The Encyclopedia of New York State*, p. 1209.

<sup>9</sup> Downing, *A Treatise on the Theory and Practice of Landscape Gardening*, p. 339.

<sup>10</sup> *Ibid.*, p. 339.



Fig 8 Cottage Residence of Wm H, Aspinwall, Esq

Example of a carriage drive designed to provide visual access to the residence while maintaining a curvilinear alignment within the landscape. New York Public Library

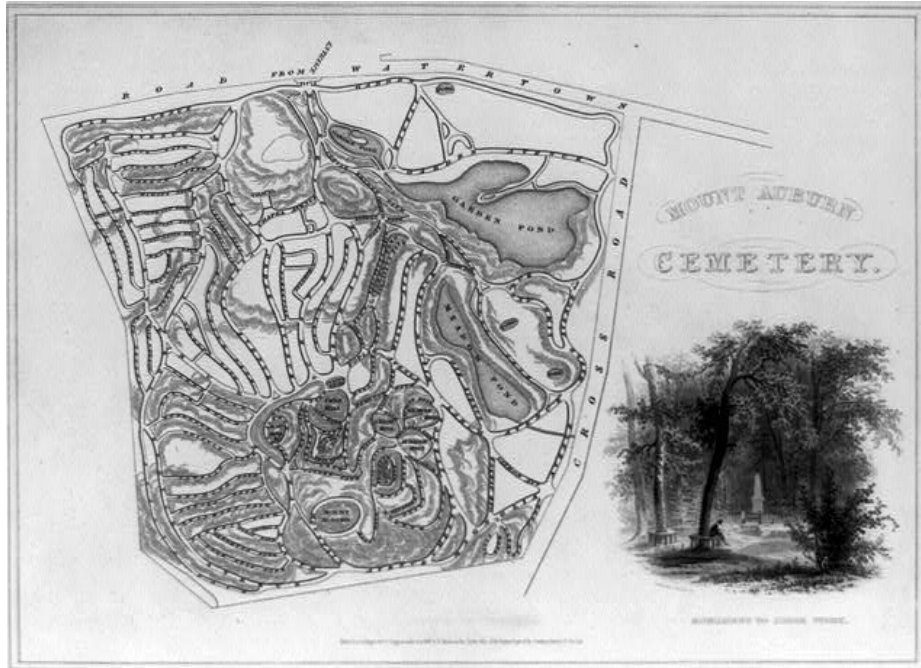
Andrew Jackson Downing wrote extensively on the design and layout of pleasure drives as an integral part of landscape design and appreciation.

The *Drive* is a variety of road rarely seen among us, yet which may be made a very agreeable feature in some of our country residences, at a small expense. It is intended for exercise more secluded than that upon the public road, and to show the interesting portions of the place from the carriage, or on horseback. Of course it can only be formed upon places of considerable extent; but it enhances the enjoyment of such places very highly, in the estimation of those who are fond of equestrian exercises. It generally commences where the approach terminates, viz. near the house: and from thence, proceeds in the same easy curvilinear manner through various parts of the grounds, farm or estate. Sometimes it sweeps through the pleasure grounds, and returns along the very beach of the river, beneath the fine overhanging foliage of its projecting bank; sometimes it proceeds towards some favorite point of view, or interesting spot on the landscape; or at others it leaves the lawn and traverses the farm, giving the proprietor an opportunity to examine his crops, or exhibit his agricultural resources to his friends.<sup>11</sup>

Some of the earliest examples of roads designed specifically for leisure and enjoyment in the United States were developed in the early nineteenth century for the new landscape cemeteries. These cemeteries created bucolic retreats just outside crowded city centers—designed as much for pleasurable outings as for burying grounds. The first, Mount Auburn Cemetery in Cambridge, Massachusetts (consecrated in 1831), had a well-developed network of carriage drives. The sinewy routes provided ever-changing views of lush plantings, ponds

<sup>11</sup> Downing, *A Treatise on the Theory and Practice of Landscape Gardening*, pp. 341-342.

and lagoons, and ornamental trees, and the well-groomed surfaces of the roads offered a pleasant ride. Designed by Massachusetts Horticultural Society President Henry A. S. Dearborn and civil engineer Alexander Wadsworth, the carriage drives were fitted to the landscape and named for plants.



Mount Auburn Cemetery, Cambridge, Massachusetts. Library of Congress

Romantic cemeteries in Brooklyn, Baltimore, and Cincinnati would quickly copy Mt. Auburn's innovative design, introducing the romantic landscape and pleasure driving to the public. As picturesque drives became popularized by the exposure from landscape cemeteries, many country estates followed with the development of private carriage drives for pleasure and recreation.

Not surprisingly, carriage roads were a significant feature of the design for Central Park in New York City. Here Frederick Law Olmsted and Calvert Vaux continued the tradition of curvilinear alignments and romantic views, but also introduced sophisticated engineering principles in vertical alignment that allowed the carriage roads to pass over and under the park's pedestrian paths and bridle trails to minimize intersections of conflicting interests and activities—allowing the maximum enjoyment of the landscape by each user group.

In addition to the sophisticated and elegant alignment of the carriage roads, Olmsted and Vaux imported the latest technology in road building—constructing the roads in the Telford method from England. Work on paving the roads commenced in 1869. Olmsted wrote:

Roads of binding gravel are always excellent—better for pleasure-driving than any other—so long as their foundation is firm and unyielding. Ordinarily, however, the earth below works up every Spring [sic], and the whole road becomes soft and rutty. It is very

commonly attempted on private grounds to provide against this by laying a stratum of stone under the gravel, which, if the road is much used, serves only to increase the evil, for the gravel stone sinking through the clay more readily than the larger stone, the latter, in obedience to a well-known law, work to the surface. There is one method of using large stones, however, which was first practised [sic] by Telford on the Holyhead road, and which supplies a perfectly unyielding road foundation.<sup>12</sup>

Olmsted and Vaux's attention to the construction technology was important to their desired success of the carriage roads in the park. Most roads in the United States during this period were in poor condition. The few paved roads were generally in urban settings and in varying degrees of repair—most, including the cobbled streets of many cities were wholly inappropriate for a relaxing or pleasurable drive due to their rough surfaces. The concept of pleasure driving was wholly dependent on the provision of a smooth surface over which to travel. Pleasure drives represent some of our earliest efforts at sophisticated engineering design and materials technology through advancements in surface treatments.

### **Grand Ways**

Inspired largely by the urban parks movement, many cities undertook the development of parkways or boulevards during the second half of the nineteenth century.

In his 1866 report, "Preliminary Report in Regard to a Plan of Public Pleasure Grounds for the City of San Francisco," Frederick Law Olmsted, under a section of the report titled "The General Promenade" provides detailed recommendations to create a grand avenue from the existing Van Ness Avenue as part of the park concept.

There would remain a space to be given up to the promenade and ornamental ground 280 feet wide. Within this an excavation would be made, varying in depth a little, according to the shape of the surface, but everywhere at least twenty feet deep. The sides of the excavation should slope so as to have a nearly level space at the bottom 152 feet wide. In the centre of this might be formed a mall 24 feet wide, flanked on each side by a border, to be used as will hereafter be described. Between the borders and the foot of the slopes might be two roadways, each 54 feet wide, 15 feet being made of loose sifted gravel, as a pad for saddle horses, and the remaining 39 feet finished with hard rolled gravel for carriages.<sup>13</sup>

Similar to Central Park's accommodation of cross-town traffic by sunken traverse roads, San Francisco's cross-city traffic would be carried over the Van Ness Promenade by a series of bridges. The plan was never implemented.

Olmsted developed parkway systems for Louisville, Kentucky and Buffalo, New York. In Buffalo, Olmsted developed an elegant system of parkways and

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<sup>12</sup> Charles Beveridge, ed., *The Papers of Frederick Law Olmsted, Volume III: Creating Central Park*, (Baltimore: The Johns Hopkins University Press, 1983) p. 155.

<sup>13</sup> S. B. Sutton, ed., *Civilizing American Cities: Writings on City Landscapes: Frederick Law Olmsted*, (New York: Da Capo Press, 1997), p. 126.

circles from a plan begun in 1868. The road network was largely constructed by 1876. Parkways and boulevards were constructed in Minneapolis based on the 1883 plan of landscape architect H.W.S. Cleveland. Both Olmsted and Cleveland worked on the Chicago parkway plan.

Other notable urban thoroughfares during this period include, Riverside Drive in New York City (1880),<sup>14</sup> Eastern Parkway (1874) and Ocean Parkway (1876) in Brooklyn.



Lake Shore Drive, Chicago, Illinois, 1904. Note the street tree, curb and pavement details.  
U.S. Library of Congress

### **Good Roads Movement, 1890-1926**

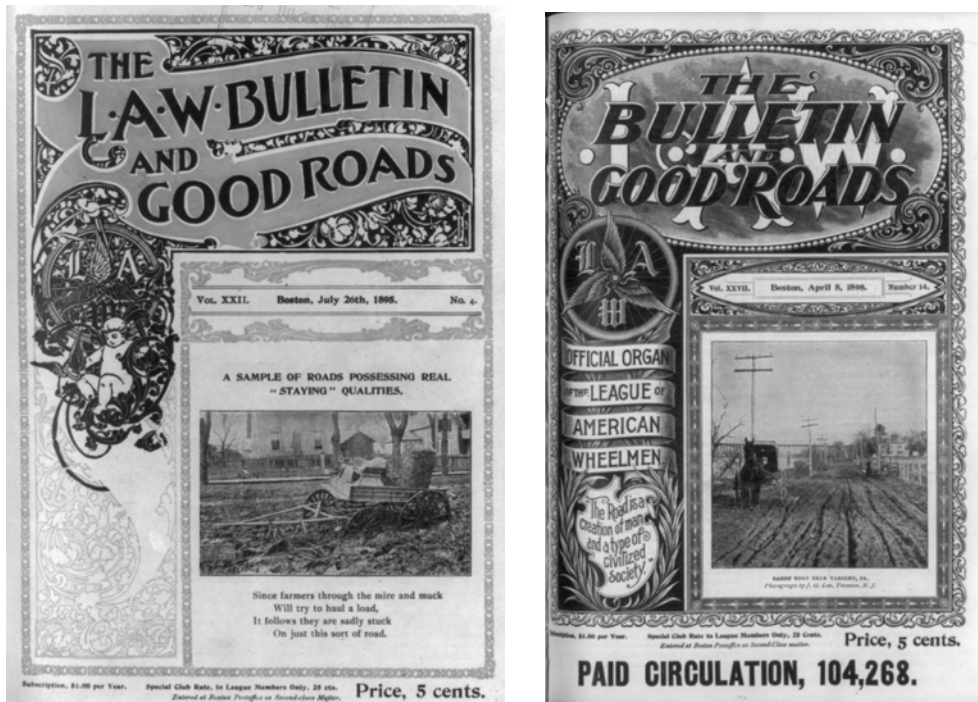
During the second half of the nineteenth century, the dominance of an efficient and reliable rail network (from 1860 to 1910 total track mileage in the United States grew from 30,000 to approximately 240,000 miles) and a large canal network in the East reduced roads to little more than a local network of urban and farm-to-market roads. The invention of the pneumatic tire in 1885, and the unlikely advocacy of America's bicycle riders, laid the groundwork for today's modern automobile network through the Good Roads Movement.

The League of American Wheelmen, a bicycle organization, began advocating in the 1890s for a national network of hard-surfaced roads suitable for the bicycle. Farmers, with poor access to towns and without home mail delivery,

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<sup>14</sup> Originally Riverside Avenue.

saw Good Roads and the newly inaugurated Rural Free Delivery<sup>15</sup> program as intertwined, and joined the cry sometime after 1896. Significantly, recreation and leisure users were actively demanding these improvements as well. Until this time, the justification for building most roads was for either economic or military advantage. The introduction of the bicycle and later the automobile, occurring almost simultaneously with a new awareness for conservation and the first National Parks, was spurring Americans to take to the road and explore the countryside and wilderness.<sup>16</sup>



In 1892 the League of American Wheelmen began publishing a journal dedicated to Good Roads. The bulletin provided advocacy information and showcased examples of scientific road-making—the front cover often depicting the horrible conditions of the nation’s roads. July 26, 1895 (left), April 8, 1898 (right) Library of Congress

In 1891 Missouri became the first state to form a “Good Roads Association.” The same year the New Jersey legislature passed the State Aid Highway Act, the nation’s first act authorizing the expenditure of state funds for general road building, under the auspices of the State Board of Agriculture—in 1894 the responsibility of the act was placed under the newly created Commissioner of Public Roads. Massachusetts had created the first highway department, the State Highway Commission, a year earlier in 1893.

<sup>15</sup> Rural Free Delivery (RFD) was introduced by the US Post Office in 1896.

<sup>16</sup> Yellowstone, the first National Park was designated in 1872; Yosemite National Park was designated in 1890. The Niagara Falls Reservation and Adirondack Forest Preserve were established by New York State in 1885. In 1891 the Forest Reserve Act was established—allowing the president to designate protected public reservations on federal lands. The Sierra Club was founded in 1892.

## **The Federal Government Responds**

Responding to the growing national movement for good roads the US Congress passed an appropriation of \$10,000 to conduct a road inquiry. To implement the authorization the U.S. Secretary of Agriculture established the Office of Roads Inquiry (OPI) in 1893 “to make inquiries in regard to the system of road management throughout the United States, to make investigations in regard to the best methods of road making and to enable [the Secretary] to assist the Agricultural College and experiment stations in disseminating information on this subject.” The office responded to its charge by publishing road building technology bulletins and preparing state and national maps of good roads. In 1897 the OPI began constructing “object lesson roads”—short improved macadamized roads to demonstrate the value of good roads. The first “object lesson road” was a 660-foot stretch near New Brunswick, New Jersey. Within a few years the OPI would be constructing eight or nine roads a year. As many as 500 people would turn out to listen to lectures on modern pavement and good drainage and sample a smooth ride during “good roads day” festivities at the completion of each project. In 1905 the OPI would receive Congressional funding to become a permanent agency and was renamed the Office of Public Roads—in 1915 it was renamed the Office of Public Roads and Rural Engineering.<sup>17</sup>

In 1916 President Woodrow Wilson signed the first bill to establish a federally aided highway program. In order to receive this new federal funding, each state was required to establish a highway department. In 1918 the Office of Public Roads and Rural Engineering would become the Bureau of Public Roads (BPR). The BPR would remain within the Department of Agriculture until 1939 when it was shifted to the New Deal Federal Works Agency and renamed the Public Roads Administration (PRA).<sup>18</sup>

## **State Highway Departments**

The first state highway departments were established in Massachusetts in 1893 and New Jersey in 1894. Early state efforts varied by state and region. Some states provided funding for highways prior to establishing highway departments. Others authorized advocacy groups or established road offices within existing state departments (usually agriculture) before establishing highway departments. The following list identifies some of the first legislatively sanctioned highway departments in the nation:

Vermont, Highway Commission, 1894  
California, Bureau of Highways, 1895  
Connecticut, Highway Department, 1895

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<sup>17</sup> The new titles inclusion of “rural engineering” was a reference to additional farm-related duties unrelated to roads.

<sup>18</sup> The PRA was renamed the BPR in 1949. BPR became FHWA (Federal Highway Administration) in 1969.

New York, State Highway Commission, 1898  
Pennsylvania, Department of Highways, 1903  
Iowa, State Highway Commission, 1904  
Michigan, State Highway Department, 1905  
Minnesota, State Highway Commission, 1905  
Ohio, Department of Highways, 1905  
Virginia, State Highway Commission, 1906  
Maryland, State Roads Commission, 1908  
Colorado, Highway Commission, 1909  
North Dakota, State Highway Commission, 1913  
Oregon, State Highway Commission, 1913  
Florida, State Road Department, 1915  
New Hampshire, Division of the Highway Department, 1915  
North Carolina, State Highway Commission, 1915  
Tennessee, Highway Commission, 1915  
Georgia, State Highway Department, 1916

With federal funding available for highway construction after 1916, states that had not yet developed highway departments were compelled to if they desired access to the federal dollars. States such as Delaware and Texas both quickly established offices in 1917.

### **Named Transcontinental Highways, 1912-1926**

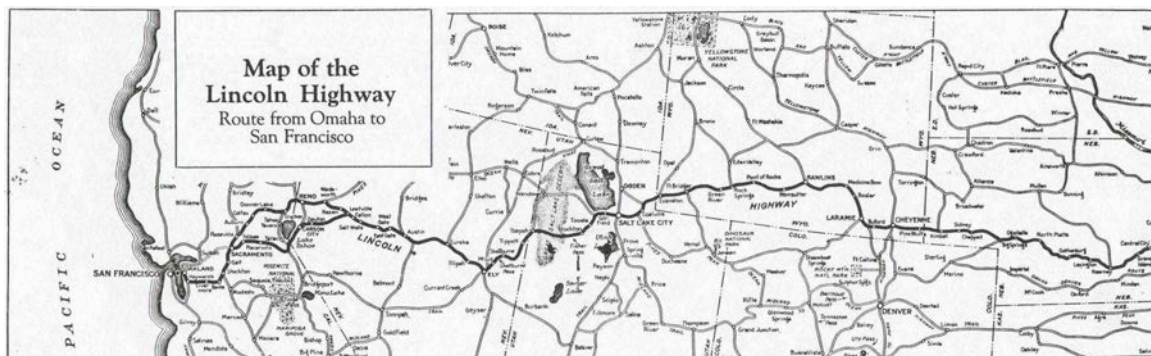


A modern paved Lincoln Highway arrives in Nevada in 1925, just in time for the Reno's "Transcontinental Highway Exhibition" in 1927.  
University of Nevada Reno

The most vocal advocates for the Good Roads Movement were not just arguing an abstract need for better roads, but were promoters and financiers with plans for specific highways.

The National Old Trails Road Association, formed in April 1912, promoted a paved all-weather, no-toll transcontinental route from Washington, DC, and a New York spur, to Los Angeles. The road would make improvements to and link the old National Road and the Santa Fe Trail. Their combined mileage, with a few connections, would not only create a significant national route, but also celebrate the history of the westward migration. To accomplish this radical scheme, the association established a model for organization and promotion that would be one of the most influential transportation structures for the era and inspire additional figures in the transcontinental movement.

One of the most noteworthy Good Roads boosters was Carl G. Fisher. An advocate of the automobile and its potential Fisher, who made his fortune manufacturing Presto-Lite compressed carbide-gas headlights for early autos and established the Indianapolis 500 at his Indianapolis Motor Speedway in 1911, proposed the “Coast-to-Coast Rock Highway”—an improved road from New York City to San Francisco—in 1912. With the financial and political backing of Henry B. Joy, president of the Packard Motor Car Company, the Lincoln Highway Association (it was Joy’s idea to name the highway for Abraham Lincoln) was formed in 1913—the exact route of the highway would be announced after much anticipation and to great fanfare on September 14<sup>th</sup>.



Map of the Lincoln Highway, Omaha to San Francisco. Federal Highway Administration

With the immediate success of the Lincoln Highway, numerous advocacy associations were formed promoting both regional and national highways.

Numerous other road associations would be formed—Fisher himself would help found the Dixie Highway Association promoting the Dixie Highway from Sault Ste Marie and Chicago, via eastern and western branches, to Miami. Others included the Yellowstone Trail Association promoting a route from Plymouth Rock to Puget Sound and the Theodore Roosevelt International Highway Association which promoted a route from Portland, Maine to Portland, Oregon via southern Canada and the northern United States.

## Providing Order



Rock Creek and Potomac Parkway, Washington, DC.  
District of Columbia Public Library

As the early goals of the Good Roads Movement and the fledgling state highway offices became the reality of a growing all-weather nationwide network of highways, it became increasingly clear that order and consistency for safety and traffic control were sadly lacking. Each state and locale built roads to its own standards, and perhaps, more importantly, developed its own home-grown standards for providing directions and warnings. Drivers at best were confused; and at worst, and of far more concern, at danger—represented by the rapidly growing fatalities on the nation’s highways.

Well intentioned advocacy organizations added to the confusion by endorsing and posting their own recommendations for warning signs. For example, the American Automobile Association (AAA) made extensive use of skull-and-crossbones postings to encourage responsible driver behavior.

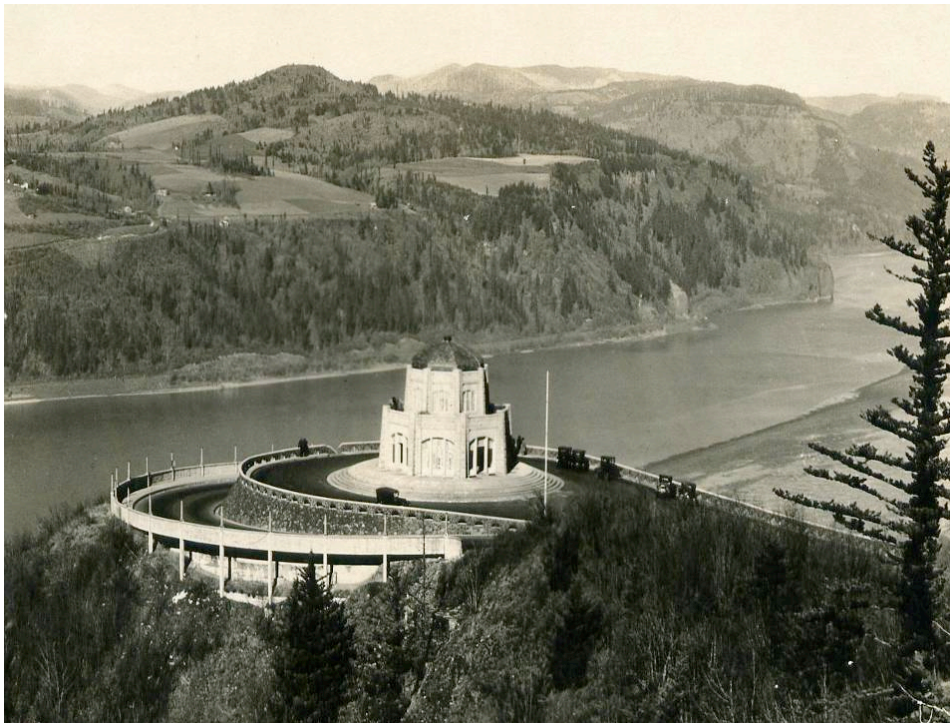
Many states began establishing regulations and policies to better coordinate and manage the development and use of their roadways and vehicle use. Still, there was the need for a national voice. In 1914, the American Association of State Highway Officials (AASHO; today known as AASHTO, the American Association of State Highway and Transportation Officials) was founded to promote national Good Roads legislation and provide a vehicle for communication among the emerging state highway departments.

## **The US Highway System, 1926-1956**

At AASHO's request, the U.S. Secretary of Transportation appointed the Joint Board on Interstate Highways on March 25, 1925. He asked them to "undertake immediately the selection and designation of a comprehensive system of through interstate routes, and to devise a comprehensive and uniform scheme for designating such routes in such manner as to give them a conspicuous place among the highways of the country as roads of interstate and national significance."

It is from this directive that the U.S. highway system was adopted in 1926. To avoid the confusion of named roads and route markings, all principal interstate routes would be numbered in an orderly fashion. Even number routes would run east-west with the lowest number routes in the North. Odd number routes would run north-south with the lowest number routes in the East. Today's familiar black-and-white U.S. Route shield was designed to demarcate the initial national highway network of 96,626 miles. As a result, the country's road network was bracketed by U.S. Route 1 along the Atlantic coast and U.S. Route 101 along the Pacific—interim routes running logically in ascending numerical order across the nation. Route numbers ending in "1" were reserved for long-distance north-south routes, and routes ending in "0" were reserved for the significant east-west highways.

## **Scenic Roads and Automobile Parkways, 1907-1960**



Vista House, Columbia River Highway, Oregon, construction begins in 1915.  
Oregon Department of Transportation

Beyond the enormous task of developing a network of paved, all-weather roads, many also saw the new automobile and investment in new highway construction as an opportunity to provide access to areas of scenic beauty and recreation. The automobile provided, for the first time, affordable individual and independent transportation for the middle classes. Families, once dependent on train schedules and established destinations, were free to pile in the car and select their own destinations and itineraries. Planners, landscape architects and park managers responded to this new-found freedom by promoting and building beautifully designed scenic roads and parkways showcasing the natural beauty and wonders of the nation.

### **Bronx River Parkway**

The Bronx River Parkway in Westchester County, New York established many of the design principles for scenic roads and would usher in the modern era with many engineering and safety innovations. Planned and constructed between 1907 and 1923, the parkway would introduce the motoring public to such safety features as separated-grade interchanges, a grassy median between opposing traffic lanes (in some areas), the first large scale installation of roadway lighting outside of an urban area and the concept of limited-access. Equally impressive was the parkway's serpentine alignment through the Bronx River Valley. The valley, by the end of the nineteenth century badly polluted and cluttered with commercial and industrial complexes, was reclaimed and restored as a picturesque landscape complete with woodlands, meadows and meandering paths—all alongside the newly clear waters of the Bronx River. Billboards, viewed by many as the modern menace, were prohibited. The enormity of the project and its successful adaptation to of the modern automobile inspired a parkway movement and lured curious engineers and landscape architects from as far as California and Germany to study the parkway's design. As a result, Germany's Autobahns, New York's Taconic State Parkway, Connecticut's Merritt Parkway, and the Cabrillo and Arroyo Seco Parkways in California along with many others, would draw a direct lineage to the innovations of the Bronx River Parkway.

### **Scenic Roads**

Farther west, the Columbia River Highway, constructed between 1913 and 1922, showcased the scenery of the sublime Columbia River. Good Roads advocate Sam Hill developed the 74-mile highway based on a scenic road in Switzerland, and designed the highway to accommodate logging trucks as well as scenic drivers. The two-lane road through the Columbia River Gorge used elegant concrete bridges, rustic tunnels, and advanced engineering concepts to negotiate the towering basalt cliffs, ravines, and spectacular waterfalls of the area, while maintaining a maximum grade of five percent.

Storm King Highway, in New York, opened to traffic in 1922. Constructed principally to complete a gap in the highway network, the road across the granite face of Strom King Mountain was an engineering and political challenge.

Opponents of the project argued it would destroy the rugged mountain face and scar the valley, while others envisioned it as a magnificent scenic touring route. Dr. Edward Partridge, an advocate for the road and a member of the Palisades Interstate Park Commission, argued that motorists would enjoy a scenic highway of “spectacular interest” through the Hudson Highlands. He contrasted the highway to the Albany Post Road across the Hudson River which he said was too far back in the hills to offer any scenic views. “As far as the view is concerned,” he noted regarding the Albany Post Road, “the traveler might be a hundred miles from the river.”<sup>19</sup> Whether due to the views or the engineering accomplishment, the highway opened to a “rush of automobilists who wished to ride over the fine boulevard”<sup>20</sup> enjoying the spectacular views beyond the rustic stone walls.

In Denver, a comprehensive plan to develop scenic driving routes in the Rocky Mountains was undertaken as both a recreational and tourism promotion project.

### **National Park Roads**



The Going-to-the-Sun Road at Glacier National Park, Montana, was the first automobile road in a National Park. 1933 image with macadam (crushed stone) pavement. National Park Service

The national parks, long reliant on railroads to provide their principal access, maintained carriage drives for limited touring within the parks. Efforts to accommodate automobiles began in 1915 when the first auto route was

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<sup>19</sup> Frances F. Dunwell, *The Hudson River Highlands*, (New York: Columbia University Press, 1991) p. 179.

<sup>20</sup> “Storm King Highway Open,” *New York Times*, September 25, 1922.

proposed at Glacier National Park—a road and concept so controversial that Stephen Mather, the first director of the National Park Service, personally helped stake the road’s alignment.

Parkways and park roads would be embraced by the National Park Service as they carefully considered the role and relationship of automobiles for the early parks. Early routes included the Mount Vernon Highway to George Washington’s estate and the Colonial Parkway linking Jamestown, Williamsburg, and Yorktown, Virginia. Skyline Drive in Shenandoah National Park, constructed between 1931 and 1942, revived earlier proposals for a “skyline-drive” along Virginia’s impoverished Blue Ridge Mountains to encourage economic development through automobile tourism.<sup>21</sup>

### **Tourism and Roads**

Parkways which tended to focus on metropolitan areas advanced highway beauty and engineering standards that would broadly benefit aesthetic routes. At the same time these pioneering urban parkways were being developed, many rural routes and destinations were being marketed to travelers as visitor destinations. The World’s Columbian Exposition of 1893, the national “See America First” tourism campaign, the newly established National Park Service (1916), and highly visible restorations such as Colonial Williamsburg were creating a new fascination and interest in America’s scenic wonders and historic past. Combined with the increase in prosperity and automobile ownership during the 1920’s, American’s were taking to the road in search of recreational and cultural attractions.

Day trips, Sunday drives, and touring excursions were promoted to the new motoring classes. Many guides and publications identified routes along old colonial roads and turnpikes as a way to explore the historic past. In a 1914 feature article, “Along Beautiful and Historic Old Highways of Long Island,” the *New York Times* provided a detailed history of early highway politics and legislation, historic events, and a travel itinerary to explore the historic roads of the past.

The one day tripper of 1914 cannot choose a better excursion than a trip along one of these old turnpikes, with all the bright modern villages, the fertile fields, the strips of woodland that flash in a panorama along his way. And, wherever they lead, historic associations of the keenest interest to any patriotic American are sure to be found....Let us start out this crisp June morning to follow the old Jamaica and Jericho Turnpike, the main artery of this great old system of veins. We can do more: we can make a little side trip along the Hempstead Turnpike, a most important branch, and still be back for roast chicken with the family at dinner time.<sup>22</sup>

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<sup>21</sup> Matthew Dalbey, *Regional Visionaries and Metropolitan Boosters*, (Boston: Kluwer Academic Publishers, 2002), p. 98.

<sup>22</sup> “Along Beautiful and Historic Old Highways of Long Island,” *New York Times*, June 7, 1914.

It is interesting to note the early appreciation of tourism associated with automobile travel. When criticized before the American Road Congress meeting in Richmond, Virginia, in 1911, for state policies requiring all vehicles traveling in New York, regardless of the owner's home state, *to be registered in New York*, the New York Secretary of State noted in agreement:

“...It seems to be a failure to recognize the importance of the automobile, when a tourist is confronted by the necessity of carrying with him on a tour throughout the States the license of each State he enters.... The automobile gives opportunities of seeing the country which the people have never had to such an extent before. It leads to many small interesting places which even the railroad with its great facilities had not been able to make sufficiently accessible. It enables the people to know their country better.”<sup>23</sup>

### **Foundations of Our Modern Highway Network, 1940-1970**

By the end of the 1930s the declining novelty of the automobile, as cars (and trucks) became fully integrated into the everyday life of most Americans, increasingly diminished the leisure-time appeal of the complete parkway experience. Since the Bronx River Parkway had been designed and constructed, cities and the new suburban commuters faced a daily crush of traffic and gridlock as automobile use continued to skyrocket. The concept of limited-access, envisioned to allow the leisure driver to enjoy the pastoral setting of the Bronx River valley without the visual distractions and traffic congestion of the surrounding communities, had rapidly demonstrated a far more practical use as an efficient commuter arterial linking the city to the suburbs. The Merritt Parkway and Arroyo Seco Parkway, both opened in 1940, would be designed for higher speed travel and commuter use; the landscape more an aesthetic sidebar than integral part of the drivers experience.

#### **The Pennsylvania Turnpike**

The Pennsylvania Turnpike, for many, would be the embodiment of the future of modern travel. Wide concrete ribbons raced across the Pennsylvania landscape as geographic barriers to our forefathers bowed. Rivers were crossed, mountains tunneled and hillsides lowered. Even the pesky tollgates of the past were removed to exit ramps so as not to impede the modern traveler on his high speed mission. Significant too was the abandonment of landscape and parkway considerations that so strongly shaped and defined many of our first modern roads.

As the nation's first long distance, high-speed super highway the Pennsylvania Turnpike, which opened on October 1, 1940, would embrace modern engineering with four, 12-foot concrete lanes, a 10-foot median and 10-foot berms at the highway's edge—all within a then generous 200-foot right-of-way. Superelevation would allow for the maintenance of higher speeds on the

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<sup>23</sup> E. Lazansky, *A Model State Motor Vehicle Law, Papers, Addresses and Resolutions Before the American Road Congress, Richmond, Virginia, November, 1911*, (Baltimore: Waverly Press, 1912), pp. 153-154.

turnpike's few curves and a minimum 600-foot sight distance would ensure good visibility. The turnpike would cut over five hours off the travel time between Philadelphia and Pittsburgh on the Lincoln Highway.

### **Toll Roads**

In neighboring New Jersey, a 1926 study by the State Highway Engineer laid the foundation for a modern road network based on current and projected traffic demands in the Garden State. Forty-five routes were designated as the primary state highway network—based on a plan to distinguish between and provide service for local versus through traffic. The New Jersey Turnpike and the Garden State Parkway, both toll facilities, would provide the ultimate separation between these two uses. As noted in the New Jersey Turnpike Act of 1948, these high-speed super highways would be designed to “remove the present handicaps and hazards on the congested highways in the state and to provide for the construction of a modern express highway embodying every known safety device.”

Toll roads would be opened to the motoring public in Maine (1947), New Hampshire (1950), Colorado (the Denver-Boulder Turnpike, 1952), Oklahoma (the Turner Turnpike, 1953) and West Virginia (1954).

### **The US Interstate System, 1956-1970**



Opening dedication ceremony, Interstate 94, Wisconsin.  
Wisconsin Historical Society

In 1919 Dwight D. Eisenhower traveled across the United States in a post World War I military caravan to promote the Lincoln Highway. The cross-country trip took sixty-two days on the rough transcontinental highway. The poor infrastructure (many of the bridges could not carry the weight of the army vehicles) would be remembered by Eisenhower as he watched the German army mobilize troops and equipment along the streamlined autobahn system during World War II. In July 1954, at a meeting of state governors President Eisenhower's "Grand Plan" to upgrade the nation's entire road network was announced by Vice President Nixon.<sup>24</sup>

In 1956, President Eisenhower signed into law the Federal Aid Highway Act establishing a National System of Interstate and Defense Highways. The Act launched the massive construction program for the Interstate System. The plan called for over 40,000 miles of high-speed, limited-access highways crossing the United States on a roughly north-south, east-west grid and linking over ninety-percent of all cities with a population of 50,000 or greater. The building program mandated uniform national and military building standards with twelve-foot-wide lanes and a minimum clearance of sixteen feet for all bridges. To finance the extraordinary construction project, the federal government authorized \$25 billion over the period of 1957-1969; the Federal Highway Trust was established, providing state governments with ninety-percent of the construction costs.

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<sup>24</sup> President Eisenhower had planned on presenting his plan in person at the conference in Lake George, New York, but a family death prevented him from attending.

## 4. TRANSPORTATION POLICY

This chapter introduces national transportation programs and policies to the preservation office. By understanding their language, application and purpose, your office can be a better advocate for historic roads in your state or under your tribal jurisdiction.

Whether federally, state or locally owned and managed (or a combination thereof), historic roads will interface with a number of transportation policies, regulations and standards. Some are rigid and inflexible (and may be a source of great frustration) while others offer tremendous flexibility and a range of allowable options. To prevent frustration, it is imperative that preservation offices, SHPOs and THPOs understand where options exist, where the transportation agency has discretion, and where time-tested standards and proven methods present little opportunity for change.

Remember, transportation policy is based on safety, so any options or flexibilities you propose for your historic road must maintain or enhance existing safety levels. Fortunately, for historic roads, a revolution in transportation policy, beginning in 1991 with the passage of the federal Intermodal Transportation Efficiency Act (ISTEA), offers numerous new options, methods and strategies for providing safety while preserving historic resources and enhancing aesthetic qualities.

### **Safety and Liability**

For many historic road advocates the first conversation with a transportation agency representative regarding the preservation of a historic road will be about safety, not historic preservation. After all, the state, tribe or the local government that owns the road, not only has a public duty to make the road as safe as possible, but most likely also carries the legal responsibility (liability) for maintaining a safe road.

At times you may hear that safety and liability concerns far outweigh concerns for historic preservation. How can you risk human life—the safety of the motoring public—to save a narrow bridge or a winding lane? Preservation, many historic roads advocates are often told, is OK as long as it doesn't interfere with the management of the road, its safety, or the liability risks the government might encounter.

Such statements should be considered carefully.

It is true that management, safety and liability are important. It is also true that every road has distinct operating characteristics. For some roads, historic features, while not recommended today, do provide safety aspects. The historic

road must be evaluated as a whole, not a set of independent or unrelated elements—lane width, shoulder width, clear zone, geometry, etc. Such an evaluation may demonstrate that the narrow lanes, the nineteenth-century truss bridge and the sharp curve—all elements not recommended by today’s highway policies—collectively support a safe driving environment by defining a clearly comprehended and consistent “older” highway segment where slower speeds and heightened caution are intuitively adopted by motorists. The reconstruction of any single element, widening the road for example, without assessing the larger system may not have the intended safety result desired, and in fact, may make the road less safe—a wider pavement meeting the narrow width of the bridge or the reconstructed curve enticing motorists to drive faster, as examples.

Safety and liability are legitimate and real concerns. They should not, however, be used as generic roadblocks to a historic road preservation goal or project. They should be weighed seriously, along with historic preservation goals, when undertaking any historic road project. As with any undertaking, thoughtful and careful planning addressing *all* the issues and concerns of *all* the users will yield the greatest returns. This includes historic preservation. Good historic preservation is good safety. If the result of your historic preservation project is an increase in accidents or liability, you haven’t succeeded.

## Safety



Safety concerns are not new as seen in this 1930 accident. U.S. Library of Congress

Safety goals and expectations continue to change and evolve with technology and driver behavior. With few exceptions, historic roads, regardless of an illustrious past, must meet many of the expectations and obligations of the

modern highway network. While a historic road may have been a safety innovator and model fifty years ago, it is likely new safety regulations will govern aspects of a preservation strategy. Research safety options and strategies that can enhance the road's safety while also respecting preservation goals. Some solutions may be simple—the redesign of a cast iron lamp post in a light-weight steel that offers a break-away feature should it be struck by an errant automobile. Others may be more involved (and expensive), such as the placement of a concrete core inside an historic stone wall to meet modern crash standards. Still others may involve cutting edge technology and creativity such as intelligent transportation systems (camera and sensor systems that monitor traffic and regulate flow by electronic devices), speed management and traffic calming.

Most importantly, the SHPO will need to work with the transportation agency to know when changes to the historic road are based on specific transportation needs and safety concerns regarding the individual road and when such changes are part of an overall transportation program applying uniform standards and goals based on the generic road type (functional classification)—not demonstrated needs. Physical changes may dramatically alter the character of the road. While there are many options to enhance needed safety additions with minimal visual impact to historic character, it is even better (and fiscally responsible) to avoid construction projects that will have no demonstrated (or minimal) favorable impact on the safe operation of the historic road. Most damaging are “knee-jerk” safety additions after an accident. These can damage historic character and are often undertaken as a response to a tragedy rather than an assessment of the cause of the accident and the function of the road.



New guardrail on the historic Skyline Drive in Shenandoah National Park reflects the historic design of the original wood posts and rustic rails of the 1930s with the addition of steel-backing for reinforcement and “block-outs” at the posts to prevent “snagging” (preventing the wheels of an errant vehicle from striking the post). The barrier has been crash tested and meets federal guidelines for guardrail design.  
Paul Daniel Marriott

To minimize the risks associated with liability, safety accommodations and additions to historic roads should be well documented. Crash tests, alternate constructions or flexible designs should be provided as part of a written record citing the safety rationale for the selected design.

### **Liability**

When advocating for historic roads, it is important to understand what individual, organization or office is legally responsible for the decisions that are made regarding engineering, design exceptions, context sensitive solutions or the even the policy for street trees. If an accident or fatality should occur, legal action is usually focused on demonstrating a design flaw, an omission from standard design or an improper safety provision. Historic roads that are usually built to standards of another era, or have accommodated modern safety features in non-traditional ways, may be particularly vulnerable—and the highway engineer, not the preservation organization, will be required to defend the decisions made. Even if a fatality at a historic bridge was a result of drunken driving and bad brakes on a stormy night, the jury is likely to side with the grief-stricken family and blame the transportation agency for a “sub-standard” facility that clearly does not meet nationally held standards for safety.

Naturally, having a legal responsibility to ensure the safety of the traveling public may make transportation officials cautious in their actions and hesitant to embrace new programs or flexible options. As a preservation office, it is important to recognize this reality and work to assist the transportation agency in collecting the data and documenting the road conditions that will provide the legal basis to justify the decisions made on the historic road should a tort claim ever occur.

Liability concerns are based in safety considerations, but are the direct result of public policy and law. Will the state or local government managing your historic road carry a burdensome risk, or be accused of negligence should an accident, injury or fatality occur on the road? Laws vary by state and jurisdiction.

### **Federal Highway Administration**

The Federal Highway Administration (FHWA) is the division of the U.S. Department of Transportation charged with the development of national policy, goals, objectives and standards for nation’s roads, highways and bikeways. The FHWA works in areas as diverse as highway safety and state funding allocation, to the review of impacts on historic resources as a result of federally funded highway construction, and promotion of the national system of scenic byways. In addition to their main offices in Washington, DC, FHWA maintains a division office in each state and territory in the United States.

With the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991 transportation policy at the federal level has increasingly

stressed flexibility in highway design, sensitivity to local cultural, environmental and historic resources and public involvement in the decision-making processes. Regarding flexibility in design and deviation from traditional highway standards, the 1991 act notes:

If a proposed project...involves a historic facility or is located in an area of historic or scenic value, the Secretary (of Transportation) may approve such project...if such project is designed to standards that allow for the preservation of such historic or scenic value and such project is designed with mitigation measures to allow preservation of such value and ensure safe use of the facility. (Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), Section 1016(a))

This focus on flexible design has been upheld in subsequent transportation acts (TEA-21, 1998; SAFETEA-LU, 2005, 2010),

Roads that are a part of the National Highway System (NHS) must adhere to policies and directives from FHWA. State, tribal or local roads that are not part of the NHS must follow local or state transportation policies as applicable. Depending on the road or jurisdiction, these policies may be based on FHWA guidance—as a locally or state determined policy, *not* as a federal requirement.

### **National Highway System**

The National Highway System (NHS) was established by ISTEA in 1991. The NHS is separate and distinct from functional classification. The NHS consists of the nation's primary interconnected urban and rural highways (including toll facilities) which serve major population centers, international border crossings, public transportation facilities (such as ports and airports), major travel destinations, meet national defense requirements and serve interstate and interregional travel. While the system is principally comprised of freeway and arterial functional classifications, limited local and collector roads have been designated as part of the system. All NHS roads are required to meet FHWA design guidance and policies for safety, design and maintenance.

For roads not listed on the NHS, greater flexibility in design, even if federal funds are being used, is now permitted. It should be noted that listing in the NHS does not exempt any road from required federal reviews for listed or determined eligible properties on the National Register.

NHS roads include:

- the entire Interstate System
- many US Routes
- many state highways

All roads in the United States, whether on the NHS or not, that utilize federal transportation funds, in whole or in part, must comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (see the following chapter) or Section 4(f) of the Department of Transportation Act of 1966.

### **Section 4(f)**

Section 4(f) of the Department of Transportation Act of 1966, 49 U.S.C. § 303, is a substantive requirement that prohibits federal approval or funding of any transportation project that requires the “use” of any historic site, public park, recreation area, or wildlife refuge unless there is “no feasible and prudent alternative to the project” and “all possible planning to minimize harm to the project” has been addressed. (DOT Act, 1966, Sec 4[f])

The use of Section 4(f), long a powerful tool for the preservation of historic roads, was modified in 2005 so that it may be fulfilled in certain situations by the Section 106 process. If there is a finding of “no adverse effect” under Section 106 even with a minor use of an historic property and the SHPO concurs, there is no further requirement for a 4(f) evaluation. An adverse effect finding, on the other hand, requires the agency to seek options/flexibilities for the preservation of an affected historic property, including a historic road (or other historic resources) negatively impacted by a federally funded highway project. In other words, where 106 and 4(f) were once invoked concurrently, 4(f) is now applied only if the Section 106 process results in an adverse effect to the historic property in question. Section 106 is the first course of action for historic properties impacted by federally funded transportation projects.

### **Manual on Uniform Traffic Control Devices**

The Manual on Uniform Traffic Control Devices (MUTCD) is published by FHWA and directs warning and regulatory devices on roads and highways. Everything from the size and location of yellow diamond warning signs and the length of a red light at an intersection to width of highway paint stripes and the height and style of letters on signs is addressed in the MUTCD.

Similar to AASHTO guidance, MUTCD presents a range of options based on the road type. For example, the familiar yellow diamond warning sign used for curve, intersection, merging traffic and stop ahead signs may range in size from 24” x 24” to 48” x 48” depending on the type of road and local conditions. For historic roads and historic districts, ensure that the minimum size sign is installed, and that extraneous, redundant and unnecessary signage is rejected. MUTCD notes: “The use of warning signs should be kept to a minimum as the unnecessary use of warning signs tends to breed disrespect for all signs” (MUTCD Section 2C.02).



The City of Williamsburg, Virginia clusters highway information and uses smaller route shields (as allowed by MUTCD) in built up areas and along lower speed roads. The backs of the signs are painted to minimize the visual impact on the landscape. Paul Daniel Marriott



There is a growing tendency to over-sign as seen here with an “Advance Traffic Control” (stop ahead) sign in Washington, DC. This sign violates MUCTD guidance that states: “These signs should be installed on an approach to a primary traffic control device (the stop sign, in this illustration) that is **not visible for a significant distance....**” (MUTCD Section 2C.29, emphasis added). MUTCD further recommends that advance traffic control signs on posted 25 MPH streets—as in this illustration—should be located 350 in advance if the stop sign is “not visible.” This sign is approximately 40 feet from the stop sign. Paul Daniel Marriott

## AASHTO

Most state and local safety policies are based on the guidance recommended by the American Association of State Highway and Transportation Officials (AASHTO)—generally referred to by its popular name pronounced “ASH-tow”. As an organization of “State Highway and Transportation Officials” AASHTO has been at the forefront of transportation policy for nearly a century.

The American Association of State Highway and Transportation Officials, AASHTO, began as the American Association of State Highway Officials (AASHO) in 1914. AASHTO is a private nonprofit, nonpartisan association representing highway and transportation departments from all 50 states, the District of Columbia and Puerto Rico. AASHTO’s role is to advance responsible practices for highway design and safety based on extensive research and testing. It is important to know that AASHTO recommends policies (often with a range of flexibility included in the recommendation). Most of AASHTO’s recommendations are published in “A Policy on the Geometric Design of

Highways and Streets,” most popularly known as the “Green Book.” AASHTO’s recommendations do not become *policy* unless adopted by the federal, state or local transportation agency—and they may be adopted by the state or local government with a more limited range (or none at all) than promoted by AASHTO. No transportation agency has ever been “required by AASHTO,” to adhere to a certain standard, they are required by federal, state or local policy.

The AASHTO guidance for highway design, *A Policy on Geometric Design of Highways and Streets*, is known most popularly, due to the color of its binding, as the “Green Book.” The purpose of the Green Book is to recommend safe and efficient practices for the design of roadways. The recommendations contained in the Green Book are based on extensive research and study, and generally provide a range of acceptable design criteria based on the type of roadway and the expected traffic volume for the facility. The FHWA has adopted the Green Book as the minimum standard for projects on the National Highway System (NHS), which includes the Interstate System and other selected principal routes and connectors to intermodal facilities. For all other projects, whether developed with Federal-aid funds or not, design is directed by the standards adopted by the state or local government.

The AASHTO Green Book has a reputation for being a rigid and inflexible publication by many in the preservation community. Mention the Green Book to some preservation advocates and they will throw their hands in the air and proclaim a project as hopeless, while others will prepare for a fierce battle with the evil (name of agency). In instances, transportation offices have reinforced this perception by presenting the Green Book as a series of specifications and standards from which no variance is allowed. In reality, the Green Book provides a surprising degree of flexibility and accommodation.

For most all recommendations in the Green Book, AASHTO presents a range of acceptable design solutions. These have been developed specifically to recognize the unique conditions that exist across the nation for many roads, and the need for flexibility in designing and maintaining a highway network. For example, while the standard lane width is recommended at twelve feet, AASHTO presents a range of minimum lane widths for a rural or urban collector—from nine to twelve feet depending on traffic volume, speed and safety history.<sup>25</sup> Similarly, the recommended width of a shoulder on an arterial road varies from two to eight feet depending on conditions.<sup>26</sup> Further, the book makes frequent mention of maintaining existing road widths “where alignment and safety records are satisfactory.”

The higher value within the allowable AASHTO ranges is often preferred by transportation agencies—sometimes as a safety improvement, sometimes as

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<sup>25</sup> *A Policy on Geometric Design of Highways and Streets*, (American Association of State Highway and Transportation Officials, 2004), p.425.

<sup>26</sup> *A Policy on Geometric Design of Highways and Streets*, p.448.

a precaution, sometimes for uniformity within the system. However, it must be remembered that the entire range of values, from low to high, has been reviewed and approved by AASHTO as safe. For each historic road in your state, it is important to determine why a particular value within the allowable range is being selected—and if the safety history or use of your road may permit an alternative value that may better maintain the historic features of your historic road.

Most state DOTs have adopted the green book, in whole or part, for use on their own projects. Since 1991, states have been free to develop their own highway guidance for roads off the NHS. The state of Vermont went the furthest by abandoning the Green Book for all non-NHS roads and developing its own highway design manual. Remember, AASHTO issues *recommendations*—the guidelines and recommendations contained in the Green Book do not become “standards” until adopted by your state, tribal or a local government.

When working with the Green Book it is important to remember the flexibility contained in the range of criteria recommended. As noted, this flexibility is at the discretion of your state or local transportation department. It should also be noted, under special circumstances, that solutions outside the recommended range may be sanctioned by the FHWA for projects on the NHS. This special approval, known as a “design exception,” is based on a clearly articulated need and demonstration that the proposed solution will not lead to a safety problem. Design exceptions should only be considered as a last option and will be discussed at the end of this section. Before requesting a design exception, consider the flexibilities allowed under existing highway policies.

### **Flexibility in Highway Design**

AASHTO has become a national leader in encouraging flexible design in highway design that is responsive to local transportation needs and has been a strong advocate for Context Sensitive Solutions—a new approach to highway design that embraces local community values and concerns as a part of the design process. Through flexible design and CSS many of the historic preservation issues for historic roads can be addressed.

In their publication, *A Guide to Achieving Flexibility in Highway Design*, AASHTO states:

Many states and localities have adopted the AASHTO Green Book (1) for use as the basis of their state guidelines with no change. However the intent of the AASHTO Green Book (1) is that **individual states, cities, and counties have the freedom to develop their own design guidelines** and processes based on sound engineering principles that reflect local conditions and needs as well as the needs of the highway users. For such agencies, the design criteria in the AASHTO Green Book (1) can be a starting point or benchmark. Other published design criteria, such as that published by the Institute of Transportation Engineers, may also be referenced by an agency. The AASHTO Green Book (1) is thus a guide, a reference, and a basis for the development of an agency’s guidelines. Terrain, climate, **culture and values**, and driving habits differ across the

nation; what is good and acceptable in one location may not be satisfactory or practical in another. (A Guide to Achieving Flexibility in Highway Design, p. 8, emphasis added)

Keep in mind that developing or finding alternative engineering solutions is not necessarily an easy task, but that it is an option. It is always best to try to find the flexibility or solution you are seeking within the existing guidance of AASHTO or the highway design manual utilized by your State Department of Transportation.

### **Context Sensitive Solutions**

Context Sensitive Solutions (also known as Context Sensitive Design) is one of the newest movements in transportation policy and planning. As its name suggests, the movement encourages transportation design solutions that are *sensitive* to the natural and built environment—the contextual setting—of a community or locale. Transportation projects, under this theory, should not merely function efficiently and effectively, but also contribute to and enhance the historic, cultural and environmental characteristics of the community. Context sensitive solutions recognizes that every community and setting is unique and that through thoughtful design and planning traffic, safety and mobility requirements can be accomplished through flexible and creative means.

Under Context Sensitive Solutions basic transportation needs and function are not divorced from the communities and landscapes which they are designed to serve. Context Sensitive Solutions acknowledges that transportation facilities have a direct impact on the daily use, structure and aesthetics of communities and as such need to respond to the larger “context” when addressing the impacts and design of highway construction. Thus, considerations for historic resources, views, native plant communities and traditional cultural activities are taken into account during the scoping and design process of a new highway project. Ideally, as one administrator for the Maryland Department of Transportation noted, “we get an improved facility, and when we leave it looks like we were never there.”<sup>27</sup>

AASHTO and FHWA have been encouraging all the states to adopt Context Sensitive Solutions/Context Sensitive Design as an overarching philosophy directing all transportation projects.

In the view of AASHTO, established processes and design guidance are not in conflict with the movement (Context Sensitive Design). Furthermore, a well-designed *context sensitive* design solution need not increase the risk of tort lawsuit to an agency. AASHTO supports the concepts and principles of flexibility in highway design and feels that all professionals responsible for highway and transportation projects should understand how to accomplish a flexible design solution within current design processes and approaches. (AASHTO Flexibility Guide, p. xv)

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<sup>27</sup> Preserving the Historic Road in America conference, Omaha, NE, 2002.

The FHWA states:

The FHWA fully supports the concepts and principles...referred to as “Context Sensitive Design” (CSD). CSD is a collaborative approach to developing and redesigning transportation facilities that fit into their physical and human environment while preserving the aesthetic, historic, community, and natural environmental values. CSD contributes to community, safety, and mobility.

Context Sensitive Design policies and activities are being employed by an ever-increasing number of states.<sup>28</sup>

For historic and scenic roads, Context Sensitive Solutions offer both the philosophical and practical resources to guide the management, restoration, rehabilitation, and reconstruction of historic design features, and the accommodation of scenic and aesthetic environmental features in the design process.

The restoration of historic light fixtures, the addition of a modern guiderail designed to blend into the countryside or designed to look like the historic barrier that no longer meets safety requirements, are all examples of CSS. Additionally, CSS may support a narrower shoulder, develop a safety plan that allows a one-lane bridge to remain in place or influence summer mowing patterns to protect native plants or protect nesting grassland birds.



To maintain the integrity of the Historic Columbia River Highway (National Historic Landmark) in Oregon, the Oregon Department of Transportation redesigned the 1915 wooden barrier rail with slightly larger posts and steel-reinforcing on the back of the rails. The new barrier meets federal standards for roads of this class and looks nearly indistinguishable for the historic rail. Paul Daniel Marriott

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<sup>28</sup> In partnership with FHWA and AASHTO five state transportation departments volunteered to serve as pilot study states in developing and implementing program and policy changes. They are: Connecticut, Maryland, Kentucky, Minnesota and Utah.



This post and cable barrier is a low-tech, low cost CSS alternative. The visually-penetrable barrier provides similar safety as a standard W-beam or K-rail and is approved for use by the federal government.  
Paul Daniel Marriott

### **CSS—Context Sensitive Stupid**

Context Sensitive Solutions are “not an aesthetic treatment, rather, CSS involves developing a transportation solution that fits into its context.” (New York State DOT EI 01-020) Yet throughout the country communities are clamoring for decorative pavements, ornate lights and exotic plantings under CSS programs. In many instances these additions are inappropriate at best and comical at worst. For historic and scenic roads it is essential to work with the DOT to identify and select the details and features that are historically and environmentally appropriate to your road. Multi-globe Victorian-era street lights in a rustic town historically illuminated by stamped reflectors with exposed bulbs, or brick sidewalks when the period of significance documents simple concrete walks, introduce false history, risk the integrity of National Register listings and look, well...stupid.



A wheelchair ramp in Delaware is “decorated” with dwarf pine trees. The prickly pines, if allowed to grow to maturity, are well placed to scratch the hands of anyone using a wheelchair and will eventually block access to the ramp. Paul Daniel Marriott

## **Traffic Calming**

Traffic calming is a relatively new, highly popular and effective tool at reducing the speed of vehicles in urban/pedestrian environments and residential neighborhoods. Traffic calming is based on the premise that physically slowing a vehicle is the only way to guarantee lower speeds in areas where multiple users and activities intersect—pedestrians, bicyclists, street parking, school crossings, children playing—with local or through automobile traffic. To accomplish this goal traffic calming introduces physical features/alterations that require a vehicle to slow down. These include roundabouts or circles at minor intersections that force cars to slow down; chicanes, projecting “islands” along the street that force cars to zigzag, thus reducing speed; and perhaps most popular, speed humps, a raised segment of pavement forcing vehicles to slow. Traffic calming is not recommended for streets with a posted speed limit over 30MPH.

Traffic calming’s utility and impact should not be viewed as a panacea for speeding traffic.

Practitioners have found that increased public awareness of traffic calming is resulting in a call to use it to resolve many traffic problems. **However, traffic calming cannot solve all traffic problems.** The Region, in cooperation with the local community, should examine the project circumstances, establish the project objectives, and consider if traffic calming should be an alternative or an element of the design. (New York State DOT Highway Design Manual 25.1 Introduction, emphasis added)



The Dutch were one of the first to adopt traffic calming to rural communities. As a rural community is approached a series of highway markings and tree plantings gradually increase until the village gateway. At the “gateway” the pavement color changes and a hedge visually “narrows” the road, causing drivers to slow down. Paul Daniel Marriott

## **Historic Roads as Traffic Calming**

The addition of physical features (speed humps, chicanes) to reduce speed is demonstrated effective in communities across the nation. But for historic roads, such physical additions may destroy historic character and historic fabric. The addition of a roundabout at a rural village intersection may introduce a physical feature more associated with urban settings than the quiet countryside. Narrowed intersections, for better pedestrian visibility, may compromise the integrity of a broad avenue as envisioned by nineteenth-century town planners.

Before standard traffic calming features are employed, it may be useful to consider the non-traditional traffic calming features provided by the historic road.

The features, geometry and details of many historic roads already provide desirable traffic calming features. Drivers instinctively slow down due to the vibrations of a brick street, when crossing a one-lane bridge or experiencing a narrow and winding road. Before communities race to add speed humps, roundabouts or traffic circles to a historic road, consider the following:

- Any construction associated with traffic calming may be subject to Section 106 or 4(f), and may impact National Register listing or determination of eligibility.
- Many historic and scenic roads, by their very design “calm” traffic through features such as narrow lanes, coarse pavements (brick, gravel, cobblestone), narrow bridges.
- Parallel street parking along the main streets of many older communities, is recognized as a desirable traffic calming measure and recommended by traffic calming experts to new and suburban communities as a desirable feature.
- The absence of shoulders suggests a road more local or rural in character and suggests to drivers that slower speeds are in order.

Remember too, sometimes non-historic, but simple (and cheaper!) solutions may effect the same result as traffic calming with less physical impact on historic fabric—a four-way-stop intersection will slow traffic as effectively as a traffic circle, or visually “reducing” the width of the street with painted white edge lines. Other options, that are not part of standard traffic calming devices, may reduce speed and restore a historic feature as well. Consider the big budget option of restoring the brick or cobblestones several asphalt layers below the current pavement.

Lastly, if a community determines the need to add features such as chicanes or roundabouts encourage them to resist the temptation to decorate them with ornamental plantings and public art—these are traffic management devices, not civic spaces—attention should be focused on historic buildings and scenic landscapes, not topiary between parked cars.

### **Design Exceptions**

Design exceptions are documented approvals allowing a legal divergence from standard road design and management policies. For any road exhibiting unique resources or special characteristics, a design exception documents the reason for the departure from standard design, outlines the analysis process for the proposed design alternative and identifies how safety considerations will be accommodated. A well researched, thoughtfully

considered, and thoroughly prepared design exception can serve as a powerful legal tool should any future liability claim cite the non-standard design.

A design exception should never be sought as a first solution and cannot be granted as a “blanket” approval for a historic road. The full use of flexibilities within existing standards should always be sought as the first course of action.

Regarding design exceptions, AASHTO notes:

Finally there are occasions in which even the most creative use of design criteria produces an unacceptable or infeasible solution. The judicious application of *design exceptions* (the incorporation of design values outside the typical ranges to avoid a conflict or constraint) is appropriate in the context-sensitive environment as long as the safety and legal risks are understood by the designer, are considered acceptable given site-specific conditions, and are documented well. (AASHTO *Flexibility in Highway Design* guide p. xvi)

AASHTO further notes:

The need for design exceptions is not new and is not inextricably linked to the concept of *design flexibility*. Designers should understand that design exceptions are an acceptable and indeed useful tool *when evaluated and applied properly*. Just as design exceptions should not be sought routinely, acceptance of a design exception should not be viewed as an admission of failure. It does not mean that the design criteria are inappropriate or that a resulting design is automatically less safe substantively than traditional design. **Finally, in discussing design exceptions and criteria with stakeholders, designers should avoid labeling a value that is outside the norm as “unsafe” in specific circumstances unless he/she has a clear understanding or evidence that it is so.** (AASHTO *Flexibility in Highway Design* guide, p. 11, emphasis added)

Design exceptions for NHS roads must be approved by FHWA. For non-NHS state roads the process varies from state to state.

As always, whether seeking a design exception or not, it is wise to have documentation demonstrating that historic preservation issues were carefully and rationally weighed with safety considerations in determining the executed design for any historic road. Such documents, should an accident occur, demonstrate that the road’s design was not arbitrary and capricious, or based on some vague historic preservation goal, but rather a carefully considered balance between safety and historic preservation. Well-documented design exceptions have held up in many liability cases in courts across the country.

## **Key Transportation Terms and Concepts**

### **Roadside Hazards**

Roadside hazards include any rigid object (tree, stone wall, fire hydrant, utility pole, structure) within the recommended clear zone that may be struck by an errant vehicle. The risk of harm, potential severity of impact and frequency of

the hazard must be considered. As always, the accident history of the road should be reviewed when considering how to address a roadside hazard.

### **Clear Zone**

AASHTO recognizes that a “forgiving roadside” environment is an important component of a safe road facility. A clear zone, literally a level area parallel to the road “clear” of fixed obstacles or hazards, allows the driver of an errant vehicle the opportunity to recover or correct a vehicle that has left the roadway. In less technical terms, a driver that accidentally swerves off the road is provided a space in which to safely maneuver his or her vehicle back onto the road without risk of striking a tree or rock outcropping.

Ideally, every road would have a broad clear zone free of trees, utility poles, buildings, signs, lights, rocks—any fixed rigid hazard. The reality is very few real world situations would allow for such an ideal without vast destruction of historic, natural, cultural and environmental features. Further, the enormous cost and disruption of rebuilding virtually every road in the state would unlikely offset the arguably minimal improvement in highway safety. Even with excellent clear zones, driver behavior, poor judgment and drivers under the influence of drugs or alcohol would continue to cause accidents on the roadways.

When working with the DOT in your state, ensure that clear zone policies are being uniformly applied. For example, if historic trees must be removed since they pose a hazard, are the utility poles in the clear zone also being relocated? Often clear zone policies are applied sporadically and may target a single resource. As noted, since any fixed obstacle in the clear zone presents a potential danger make sure historic features are not being unfairly targeted.



A very narrow clear zone in the New Jersey Pinelands. Paul Daniel Marriott

## **Functional Classification**

All DOTs in the United States define roads by one of four standard “functional classifications”: freeway, arterial, collector, and local. Each functional classification carries with it national guidance for lane width, shoulders, turning radii, and numerous other engineering and performance expectations. All our historic roads in use as automobile routes today, whether having origins as an Indian trade route, colonial post road, nineteenth-century turnpike, parkway, or thruway, are classified by one of these four classifications. Considerations for historic design traits, scenic vistas, cultural values, or National Register status are applied, if at all, within the state standards for the functional classification determined.

Functional Classification is a system developed by AASHTO and utilized by the states to characterize different types or categories of roads by their use. In most states, these classifications are further defined as either “rural” or “urban” –for example, rural arterial, urban arterial; rural collector, urban collector and so forth.

Rural versus urban should not, however, be assumed to be the distinction between New York City and a farm town in Illinois. For road design in most states, the DOT defines a functional classification as “urban” by the presence of the following:

- sidewalks
- bicycle usage
- curbing
- closed drainage systems (storm drains and culverts)
- driveway densities greater than 15 driveways per kilometer

The following definitions provide an introduction to the basic functional classifications.

### ***-freeway***

A freeway is a limited access highway with grade-separated interchanges, such as the New York Thruway, U.S. Route 36 (the old Denver-Boulder Turnpike) in Colorado and the entire U.S. Interstate System. Additionally, some parkways, such as the Taconic State Parkway in New York and the Baltimore-Washington Parkway in Maryland are classified as freeways due to their design.

### ***-arterial***

Arterials provide the principal high-volume and high-speed routes within communities and connecting communities. Urban arterials may be two or more lanes, may have a center median and will likely have traffic signals at intersections—most commercial strips are arterials. Rural arterials may be two or more lanes traveling great distances across the countryside and connecting villages and cities. Broadway in New York City is an urban arterial and much of

U.S. Route 30 (the Lincoln Highway) across Iowa is a rural arterial. The Bronx River Parkway in New York, the Rockefeller Parkway in Cleveland, Ohio and the Cabrillo Parkway in San Diego, California are examples of parkways that are arterials.

***-collector***

Collector roads and streets carry traffic between local roads and streets and arterials. A village or town Main Street, bypassed by a state highway would be an example of a collector. In rural areas experiencing growth, traffic increases on the collector roads is often the most noticeable change in the area.

***-local***

Local roads and streets serve farms, ranches, residences and abutting businesses. Local roads seldom have any through traffic and tend to be relatively short in length.

## 5. PRESERVATION POLICY

No doubt, your preservation office is familiar with the details of the National Register of Historic Places and preservation policies both nationally and within your state or tribe. This section is provided to encourage your office to consider how historic roads in your state may be better recognized and protected under existing preservation policies.

### The National Register and Historic Roads

The National Register of Historic Places recognizes historic properties through a number of designations. The following provides examples of historic roads related to standard National Register terminology. After each definition an example shows how an individual historic road, a parkway example is utilized, could be accommodated through various National Register designations.

#### **Site**

National Register sites are individual properties such as a house or a park. Historic roads may be listed as sites—a parkway or turnpike, for example.

*A National Register site listing for an individual parkway would focus on the alignment, bridges and landscape architecture of the road.*

#### **District**

National Register districts are contiguous areas that present a number of contributing resources that are historically interdependent and sufficient in number to showcase a particular period(s) of significance, such as a neighborhood or a waterfront. Historic roads may be part of historic districts—the historic grid pattern of a village or a grand tree-lined boulevard, or represented by historic paving, curbing or lighting resources within the district, for example. In instances historic roads define districts, the “main street” or “river road” historic district, for example.

*A National Register district based on a parkway would include all the elements of the parkway site nomination and include the parkland created by the parkway reservation and the suburban communities that grew as a result of the parkway.*

#### **Multiple Property**

National Register multiple property listings represent properties and sites that have a shared history, but are not contiguous (as in a district), such as steel truss bridges by a particular manufacturer. Historic roads may be a part of multiple property listings—a collection of early concrete highways representing a specific 1920’s paving practice across the state, or a collection of colonial taverns marking the route of an eighteenth-century road long vanished, for example.

*A National Register multiple property listing could be based on parkways designed by a noted landscape architect or engineer, or be based on a state, regional or metropolitan parkway system composed of multiple parkway units constructed over a defined period of time.*

### **Thematic Listings**

Thematic listings identify collections of historic resources associated by a theme, rather than geography or specific construction or technology characteristics, such as nineteenth-century opera houses. Historic roads may be a part of a thematic resource listing—the original 1926 U.S. highway system in your state, or gas stations from the 1950's, for example.

*A National Register thematic listing for roads could be designed around a theme of pleasure driving and include parkways, park roads and scenic drives as representative resources.*

For the National Register, resources are generally considered historic if fifty-years-old or older—a rolling benchmark that serves as a general litmus test of credibility. Approval of the property-owner is required for National Register listing; in the case of historic roads, the local, county, or state agency with management responsibilities would need to support a nomination to the National Register.

### **Section 106**

Section 106 of the National Historic Preservation Act of 1966, 16 U.S.C. § 470f, requires all federal agencies to “take into account” the effects of their actions on historic sites. Section 106 applies only to historic sites (including historic roads) that are listed in or determined eligible (DOE) for the National Register of Historic Places. These actions involve federally sponsored or funded projects, as well as state, local, or private activities and projects that are subject to federal licensing, permitting or other approvals. Whether on the NHS or not, all roads in the United States that utilize, in whole or in part, federal transportation funds, must comply with Section 106 of the National Historic Preservation Act or Section 4(f) of the Department of Transportation Act of 1966 (refer to Chapter 3, for the differences between 4(f) and Section 106).

Most every road project in the United States has federal funding, licensing, permitting or approval at some point during the scoping, design and construction process.

Under Section 106, if the proposed action will have an “effect” or impact on a historic property, the owner or managing agency (local, state, or federal) is required to undertake a review of the proposed action and consult with the SHPO to determine its effects on the integrity of the historic property prior to approving and funding the project. For example, if a locally maintained road is listed in or

determined eligible for listing in the National Register, and the local transportation office/department received federal dollars either directly from FHWA or indirectly through the DOT to reconstruct the road (even if the federal funds were only a partial source of the total cost), the local government is required by federal statute to consult with the SHPO prior to beginning the project for approval.

Often this consultation leads to a modification of the proposed action to protect the historic resource.

In some instances, the historic property can be altered, or even destroyed if there is a compelling reason for the action (a chronic accident site on a historic road, for example). Under such circumstances, mitigation for the loss of historic resources must be arranged in an agreement with the managing agency or owner and the SHPO. Mitigation agreements may take many forms, including documentation of the resource (photos and measured drawings), funding for another historic preservation project in the community, or the development of education and interpretation programs. If an agreement cannot be reached at the state level, the Advisory Council on Historic Preservation may be called on to intervene and render a judgment.

As with all historic sites, listing or eligibility for listing in the National Register for a historic road does not exempt it from change. In the local road example above, a compelling safety concern or overarching regional transportation goal may necessitate reconstruction of the historic road. It is not the purpose of Section 106 to prevent any change to the road, but rather to ensure that whatever action is finally determined will have recognized any historic resources and “taken into account” the full range of options to preserve those historic resources. The result of the 106 review in this example may be the construction of a new road elsewhere to fully preserve the historic road, the application of flexible highway standards to the historic road to minimize negative impacts from the reconstruction, or the documentation of the historic road for future study prior to its alteration or demolition.

### **U.S. Secretary of the Interior’s Definitions for Historic Preservation**

The following text takes the standard definitions for historic preservation from the U.S. Secretary of the Interior and suggests how they may be applied to historic roads.

#### **Preservation**

Preservation applies to properties that are largely intact and reflect the period(s) of significance. This would refer to historic roads and road resources that maintain their original design and materials in good condition. Under preservation, activities and actions associated with such resources largely focus on maintenance and care.

The careful replacement of bricks or cobblestones dislodged by frost-heave or utility work, use of non-chemical de-icing agents to prevent damage to a limestone bridge abutment, the removal of weeds in the gutter on a bridge deck, regular resurfacing of an asphalt highway or annual inspection of street trees by an arborist are examples of preservation of the existing resources.



Repair of this historic brick street would be an example of preservation.  
Paul Daniel Marriott

### **Rehabilitation**

Rehabilitation applies to properties that are largely intact and reflect the period(s) of significance, but may require some repair or alteration. This would refer to historic roads and road resources that maintain their original design and materials in fair condition, or roads and resources requiring modification for safety. Under rehabilitation, activities and actions associated with the resource focus on maintenance, care and sensitive replacement or modification on a limited basis.

The introduction of a visually unobtrusive box beam rail along a segment of a historic road that historically had no barrier but requires one today would be an example of rehabilitation. Similarly, the replacement of a historic wooden barrier with a new wooden barrier with steel reinforcing on the back would also be an example of rehabilitation.



(left to right) Historic stone barrier walls (upper left) along the National Park Service Skyline Drive in Shenandoah National Park, Virginia, constructed during the 1930's, did not meet modern crash standards. The stone walls were dismantled, a concrete core (meeting modern crash requirements) was inserted; the original stone was used to face the core. The completed wall (lower right) closely resembles the historic wall while providing an enhanced safety feature.  
Paul Daniel Marriott

### **Restoration**

Restoration applies to properties that retain significant components of the period(s) of significance, but may require some repair or alteration, or the removal of later features/additions not identified as contributing features. Under restoration, activities and actions associated with the resource focus on maintenance and care of intact historic features, replacement of lost features, and removal of inappropriate features.

The removal of a Jersey barrier erected in front of a Beaux Arts bridge balustrade is an example of restoration.

### **Reconstruction**

Reconstruction applies to properties that are largely beyond repair or have been lost. Under reconstruction the design, appearance and materials of the original road or road features are recreated.

Rebuilding an early tollhouse that was demolished would be an example of reconstruction.



Bellevue Avenue in Newport, Rhode Island was determined to be beyond repair in the 1980s. As a contributing element to the Bellevue Avenue National Landmark District (1976), the Rhode Island Department of Transportation reconstructed Bellevue Avenue in 1991 using the original 1924 concrete specifications. The historic gravel sidewalks were made ADA compliant by the addition of an asphalt subsurface for improved stability. Paul Daniel Marriott

The understanding and correct references to preservation, rehabilitation, restoration and reconstruction terms will assist your office in clearly articulating options and impacts to a historic road with your transportation department. Careful use of these terms may also assist your office and the road manager (DOT) should an action ever come under scrutiny for safety or liability. For example, if you carefully identified “rehabilitation” of historic stone walls to include a reinforced concrete core, rather than “reconstruction” of the stone walls (rebuilding them without modern safety features), you demonstrate an advanced awareness of safety issues and, more importantly, a proactive compromise. Such considerations can have a favorable impact should the decision ever be challenged in court.

## 6. METHODS AND STRATEGY

### Considerations for Advancing the Preservation of Historic Roads

#### **The Language Barrier**

Landscape Architects, Planners, Preservationists and Engineers use many of the same terms while utilizing many different definitions. For example, to a landscape architect or planner, the term “design” is associated with a creative process focused on an aesthetically pleasing roadway environment—such as a sweeping curve designed to showcase a distant mountain view. “Design” for an engineer is associated with the facts, formulas and policies associated with the construction of a road—designing a sufficiently long radius, for example, to ensure that the posted speed of the road can be maintained on a curve. For a preservationist a “rehabilitation” success for a historic road may be the replacement of a historic stone barrier wall with a concrete core barrier wall faced in the historic stone, while for a highway engineer “rehabilitation” may mean the replacement of the historic stone wall with galvanized guardrail. Thus, while all parties may agree to “better highway *design*,” or the “need for highway *rehabilitation*,” individual and organizational interpretations may lead to results very different at the project’s completion.

Similarly, most transportation professionals routinely use the term “improvement” when referring to a highway project. In many instances preservationists find themselves in the position of arguing “against the *improvement*,” when they should really be arguing against the “*proposed construction project*.”

#### **Working With Transportation Professionals**

While there are many new transportation policies to assist you in the preservation of your historic road, you should recognize that not everyone in the transportation field may be familiar or practiced with these new options. The concept of roads as historic resources may be new to some individuals or offices, and they may be reluctant to try new “untested” alternatives. Whenever possible be prepared to provide examples of the policies or treatments you are advocating on a historic road similar to yours—ideally within your state, but from other states if necessary. As many states have approval and review processes modeled on FHWA and AASHTO guidance, examples from other states may provide insight working with officials in your state or tribe willing to consider the process, policy or treatment you are advocating for your historic road.

#### **Update National Register Historic District Listings**

Colonial taverns, Greek Revival temple fronts, elegant Italianate towers, adobe dwellings, sprawling porches from the Victorian era, National Register Districts across the nation define and locate these architectural treasures in great detail. Yet how often is the road along which these buildings are located

mentioned? Brick pavements, granite curbs, bridges, culverts, cast-iron lights, chestnut street trees, a boulevard of royal palms, and flagstone sidewalks—all valuable historic resources—contribute to the historic district, yet often have no mention in district descriptions. Historic bridges may have also been overlooked from reference in historic district nominations.

Review your state or tribe's older National Register nominations; if you are reviewing a new nomination, make sure historic roads are identified as contributing resources. Be sure to include the following:

- documents, maps, and news stories showcasing the design, location and politics behind your historic road,
- attributes of national significance such as engineering innovations, military campaigns, or transcontinental highway routes.
- original engineering documents, relevant state legislation (early 20<sup>th</sup> century bonds for highway construction, for example) or authorization (the charter from a 19<sup>th</sup> century turnpike company, for example),
- state and local highway department documents from construction projects over time (the 1920 bridge replacing the 1840 bridge, for example),
- an exact definition of the location or segments of the road to be consider for the listing,
- a listing of all relevant historic features (highway alignment, pavement, curb, gutter, drainage systems, bridges, lights, signs, street trees, sidewalks)
- historic photographs
- views created by, or offered from the road (the courthouse tower on axis from the main street or the scenic views from a 1930s highway wayside).

### **Inequities between SHPO and DOT**

In most states, the DOT is the largest agency; the SHPO is often one of the smallest. While the disparity is obvious, it often appears forgotten during daily intercourse between agencies. DOT staff are often impatient with the ability of limited SHPO staffs to turn around reviews in a timely manner. SHPOs, are often frustrated with the bureaucratic obstacles and perceived inability to get an answer (let alone identify the correct individual or department) from the DOT.

It may be helpful, periodically, to remind the transportation department of the inequalities in staff and funding—not as a source of complaint, but as a polite reminder of the legislative duties of the preservation office and the limited staff ability to perform required reviews and oversights.

### **Education in Landscape Architecture**

As shown in the summary of historic periods of roads in the United States, landscape architects have had a significant influence on the design of roads in the United States. Yet many SHPOs and most DOTs have no or limited familiarity with the profession or landscape architecture, access to practicing

landscape architects, or access to historical landscape architects. Consider partnering with a landscape architecture program at a local university or seeking advice from a landscape architect trained in historic preservation. Landscape architects provide a valuable historic perspective on site planning, designed and natural plantings, viewsheds and vistas; and can be invaluable in providing assistance regarding the visual mitigation of new or needed features along the road or roadside.

### **Selecting New or Replacement Features**

Before approving any new or replacement features for a historic road, conduct a thorough research and review using archival materials such as documents, illustrations, photographs and municipal records. Search for information on lighting, pavement materials, curb and gutter systems, sidewalks, barriers, street trees, highway signs and markers, traffic signals and street furniture (clocks, benches, trash barrels and flower boxes). Look closely at the backgrounds of historic photographs—you may find clues to these features over the shoulders the marching band on a parade route, under the feet of a proud owner of a new automobile, or in a downtown promotional brochure published by the Chamber of Commerce in 1920. Consider, as well, that over time the community may have upgraded, replaced or removed roadside features—there may be multiple eras of lighting along your historic road, for example.

For many historic roads modern use and safety considerations require design elements that did not exist during the period(s) of significance. Traffic signals, street lights and signage may be needed and likely have already been installed. For others, significant historic features have been lost and replaced over the years. American elms that succumbed to Dutch-elm disease have been replaced with oaks and maples, and wooden plank roads have rotted and been covered with macadam, and then asphalt.



This postcard of Stapleton, New York shows many road details. The historic bishop's crook light depicted in the image is available as a reproduction fixture as seen (right) in New York City. New York Public Library, left, Paul Daniel Marriott, right

## Lighting

For many historic roads, lighting was not a part of the historic design. Yet, for modern needs, aesthetics and safety, lighting is an important feature. How to accommodate lighting within the context of a historic road is an important consideration. Consider the following:

- If selecting historic-look lighting, choose fixtures that are appropriate to your period of significance.
- Select fixtures that are well proportioned and historically accurate.
- Consider the historic intensity and color of the light source (gas or incandescent, for example).
- If the historic fixture cannot provide sufficient light levels for modern use consider discrete modern fixtures along the road or building mounted that will provide supplemental light without distracting from the beauty of the historic light feature.
- Weigh the often-negative impacts (harsh light and glare) of modern lights against their positive values (low cost and energy efficiency).
- Select or identify features of historic-look lighting that minimize light pollution.
- Along rural historic roads where lighting is required (and no historic precedent exists) select modern, visually non-obtrusive fixtures that will disappear into the landscape. Select fixtures with a light source, or lantern, that directs the light onto the road, while minimizing the bright source of the light.
- Include historic street lights in National Register District nominations.



Washington, DC has been replacing historic light fixtures with near identical new lamps. However, the new lights, due to increased height, are having a negative impact on neighborhood scale. Paul Daniel Marriott

## Sidewalks and paths

Sidewalks are a practical and historic feature alongside many historic roads. Consider the following:

- Identify the historic sidewalk design appropriate to the period of significance.
- Identify preservation needs and treatments for historic stone pavements.
- Avoid the use of artificial concrete “bricks” or stamped or colored pavements—these tend to fade or wear over time.
- Avoid the introduction of non-historic decorative treatments such as strips of brick along the curb or brick bands around trees. The monies saved from such decorative treatments are better spent on larger trees or period street lighting.
- In rural communities that did not have sidewalks historically, consider asphalt paths as an alternative to brick or concrete.
- Include historic sidewalks and pavements in National Register District nominations.



Historic stone sidewalk pavements in Rhinebeck, New York have been poorly patched with concrete (foreground). The color, texture and feel of the concrete is inappropriate to the historic district. Paul Daniel Marriott

## Street trees

Elegant arching trees have long graced many of America's communities. Consider the following:

- Identify historic street tree varieties, the historic setback from the road and spacing.
- Select historically appropriate street trees based on the period of significance.
- Consider modern varieties that maintain the look and structure (arching branches, weeping, or pyramidal, for example) of historic street trees, but are grown for disease resistance or tolerance to highway salt and chemicals.
- Review the historic setback of street trees against safety and clear zone concerns.
- Along historic roads with no record of street trees consider the benefits of the addition of street trees (shade, environmental stewardship) against the absence of street trees (historic authenticity, allowing/maintaining views to architecture, urbanized environments where tree growth may be stunted).
- Avoid low-branching ornamental trees. Main Street businesses often argue for ornamental trees for fear larger trees will obscure their signs. However ornamental trees crown (mature) at the typical height of a business sign, while traditional street trees crown at the second and third story—well above most signs.
- In urban/commercial areas always install the largest trees you can afford—smaller trees are more vulnerable to damage in the early years.
- Be honest about the likelihood for successful tree growth. Trees planted in harsh urban environments (even village commercial centers) are subject to soil compaction and damage from car doors, bicycles and delivery carts. Often trees in such unfavorable conditions develop stunted growth and unattractive branching forms—not favorable additions to the roadside environment. Under such conditions it may be better not to have any trees.
- Consider both overhead and underground utilities.
- Regularly prune the trees to promote good health and form.
- For all of these considerations, consult with a qualified arborist.
- Include historic street trees (species and spacing) in National Register District nominations.



Many communities do not consider utilities (overhead and underground) when planting street trees. These Bradford pear trees in Cumberland, Maryland have been badly pruned by the local utility company. In addition to the poor visual effect, such pruning weakens the tree structure and increases the risk for branches to break during heavy snows and high winds. Be vigilant with buried utilities as well. Digging for underground utilities can seriously damage roots; it will take two or three years for the tree respond to the damage and die—long after the utility has left the site. Paul Daniel Marriott

### **Road and Street signs**

Consider the following:

- In lower speed community settings or on secondary roads, select the smallest allowable signs.
- Paint the back of modern sheet metal street signs a dark neutral color (black, charcoal, dark green, tan or brown depending on local and regional appropriateness) to minimize their appearance—ideally matching the color of the sign post.
- Ensure that sign post are uniform in color and design; that posts and signs are installed at a standard height, and that outdated or redundant signs are removed.
- Minimize sign clutter. Reduce, relocate, or remove all unnecessary or non-essential signs (litter fines, adopt-a-road, parking regulations). Pay particular attention to sign clutter at town and village lines.
- Legibility of signs is tied to speed—the higher the speed, the larger letters need to be. Be sure that signs are properly scaled to your historic road environment.
- Include historic street name and other historic street signs in National Register District nominations.

## **Road surface**

Many communities continue to be enhanced by historic pavements—brick, cobblestone and concrete. Consider the following:

- Determine if the surface treatment of the historic road is a significant feature for the community.
- Consider reconstructing historic pavements for the full width of the historic road, or showcasing the historic pavement for shoulders or crosswalks.
- Identify potential traffic calming benefits associated with existing historic pavements.
- Work closely with utility companies to ensure that any disruption to the road surface is properly repaired and restored after the utility work. Be sure that materials match and patterns (such as brick pavement) are faithfully returned. Also require the utility to lift and stockpile historic pavement materials during construction—do not allow power saws to sever historic materials.
- Include historic street pavements in National Register District nominations.

## **Barriers**

Safety barriers and guardrails have long been distinctive features along the nation's roads. Consider the following:

- Determine the need for new barriers. Ask questions regarding the need for such features and request a copy of the engineering report that determines the exact location for new barriers.
- Consider options to rehabilitated historic barriers to meet modern safety expectations and policies.
- Weigh the value of adding historic-look barriers to locations where no barriers existed historically against aesthetic modern barriers designed to have a minimal visual impact on the landscape.
- Identify the approved speeds and conditions for different barrier types.
- Identify end-treatments for barriers that are aesthetically compatible to the selected barrier style.
- Include historic barriers in National Register District nominations.

## 7. CONCLUSION



California Route 1 in Stinson Beach. Paul Daniel Marriott

Much of what we admire and the beauty that we seek when traveling across the landscapes of the United States is made accessible by the nation's historic road network. From delicate ribbons in harmony with the landscape, to bold statements that revolutionized transportation, America's historic roads reflect centuries of tradition, craftsmanship and innovation.

Despite this legacy, the future of nation's historic roads remains unclear. While some communities, state agencies and local governments have begun to identify historic road resources and develop preservation policies, many others still consider historic roads as obsolete, inefficient and unsafe. As a result, historic roads are being lost through demolition, neglect and poor management. While it is fair to say that no one organization or group is responsible for these losses, it is also fair to say that the basic recognition of historic roads, much less the preservation of historic roads, is not well understood.

Our historic roads are at an important crossroad. To survive they must be recognized and valued—not only for their significant history, but also for the vital transportation and community functions they perform.

The goal of preserving historic roads is not to perpetuate an outmoded form of transportation; it is to integrate viable historic facilities into our evolving, increasingly diverse and multi-modal surface transportation system. It is about the preservation of legitimate historic resources that represent unique attributes of the American experience and valued elements of many of historic communities and landscapes.

Preservation offices at the local, state and tribal level have an important role regarding the review, advocacy, education and protection of historic roads in the United States.

# GLOSSARY

**ADT**—average daily traffic, a calculation of the average number of vehicles on a particular segment of roadway measured in whole days.

**Alignment**—the movement of a roadway through the landscape; its curves, straight sections and hills.

**Arterial**—a roadway providing the principal high-volume and high-speed linkages within a community and between communities.

**Avenue**—a broad urban thoroughfare, usually tree-lined.

**Berm**—an artificial hill or mound created for screening or to enhance a design landscape.

**Boulevard**—a broad urban thoroughfare, usually tree-lined and with a broad median.

**Clear zone**—the recommended area alongside a roadway clear of all potential hazards (something an automobile might strike) such as trees, rocks, utility poles and the like. The recommended width of a clear zone varies based on the functional classification of the road.

**Collector**—a roadway providing service between arterials and local roads.

**Cut and Fill**—the removal (cut) or placement (fill) of soil in construction. Ideally highway construction projects are designed so that cut and fill are “balanced;” i.e., the amount of soil removed in a hillside “cut” equals the amount required to “fill” the ravine at the base of the hill.

**Designed landscape**—a landscape, or the alteration or modification of the natural landscape, that has been created specifically to provide a desired experience (usually aesthetic) to the user or a community. Designed landscapes are generally created by a landscape architect, planner, architect or other design professional.

**Design speed**—the maximum safe speed at which a vehicle can be expected to operate on a roadway. The speed for which a roadway is designed—this may not be the posted speed.

**Errant vehicle**—a vehicle leaving the roadway in a reckless or uncontrolled manner.

**Expectancy**—a theory, based on a motorist’s “knowledge stores” of driving experiences, that suggests predictable driver responses to familiar situations and settings. Routine experiences, such as sufficient merging space at the end of a freeway ramp, become unconsciously established in the driver’s mind—thus creating conflict should the “expectancy” not be met.

**Galvanized steel**—a zinc coating applied to steel to prevent rusting. Galvanized steel has a flat chalky-gray appearance.

**Guardrail**—a barrier, usually of a post-and-beam construction located alongside a roadway, in medians and in front of hazards to prevent an errant vehicle from striking an obstacle or encountering a dangerous slope or drop-off.

**Horizontal alignment**—the movement of a roadway to the left or right; its curves.

**Integrity**—the current quality of a feature or element when compared to its original quality.

**Jersey barrier**—a angled concrete barrier designed to guide an errant vehicle back to the roadway and guard against hazards.

**Lane**—a narrow passage (or road) defined by buildings, hedges or fences.

**Liability**—an obligation to perform a specific duty.

**Limited access**—a concept whereby the entrances and exits of a roadway are restricted to certain locations—generally to allow for higher speed traffic movement due to the absence of cross streets and intersections.

**Local road**—a roadway serving adjacent residences and businesses—generally of low-volume traffic

**Median**—a central space, often planted, dividing opposite moving travel lanes.

**Neat line**—an imaginary line representing the average face of an irregular surface, such as a stone wall.

**Park road**—a road through a park. A park road in an element *within* a park.

**Parkway**—a roadway contiguous with or linking park spaces. In its truest definition, a parkway provides access to recreational, scenic or leisure spaces.

**Post and cable guardrail**—a guardrail constructed of regularly spaced posts connected by a flexible (usually steel) cable.

**Posted speed**—the speed at which a roadway is signed. This is usually, though not always, lower than the design speed.

**Realignment**—the repositioning of a segment of a roadway.

**Reinforced concrete**—concrete with a steel reinforcing framework. Reinforcing enables the concrete to perform in structural situations. Concrete by its nature resists high compressive loads (the heavy weight of a truck, for example). Steel reinforcing resists high-tensile loads (the pull to the left or right one would encounter on a bridge, for example).

**Right-of-way**—the land area dedicated to or associated with a roadway that is owned or managed by the road management entity—including the roadway, shoulder and affiliated landscape.

**Shoulder**—a stabilized level area adjacent and parallel to the roadway that provides a recovery space for an errant vehicle or a safe space for a disabled vehicle.

**Sight distance**—the length of roadway ahead that is visible to the motorist.

**Standards**—the legally adopted policies and practices directing the design and construction of a road.

**Street**—an urban thoroughfare, usually defined by buildings.

**Superelevation**—the banking or sloping of a road curve to enable vehicles to maintain a speed consistent with the overall speed of the roadway. The banked ends of racing tracks represent an exaggerated superelevation.

**Taking**—in legal terms, the direct acquisition of property, or the implementation of policies or actions that significantly impact a property.

**Tort liability**—a situation in which an injury or harm has occurred, due to a breach of a preexisting duty or obligation, resulting in potential exposure to an individual or organization for damages.

**Vertical alignment**—the movement of a roadway up and down; its hills.

**Volume**—the number of vehicles a roadway carries.

**Watershed**—an area of land drained by a particular body or bodies of water. An individual body of water often belongs to a hierarchy of watersheds—a tributary river off the Susquehanna River has its own watershed of creeks, but is also a part of the larger Susquehanna River watershed and the even larger Chesapeake Bay watershed.

## ACKNOWLEDGEMENTS

I am deeply indebted to the James Marston Fitch Charitable Foundation for awarding me a 2008 Mid-Career Grant to pursue my research on historic roads and develop this guide for preservation offices in the United States. I extend my appreciation to Mary Dierickx of the Foundation Board for her personal interest in this project.

A number of colleagues assisted me with my research and provided valuable insights, perspectives and comments. I would like to thank, in particular:

Daniel Forrest, Connecticut State Historic Preservation Office  
Janet Foster, Columbia University Historic Preservation Program  
Robert Hadlow, Oregon Department of Transportation  
MaryAnn Naber, Federal Highway Administration  
Gloria Scott, California Department of Transportation  
Mark Taylor, Central Federal Lands Highway Division, FHWA  
Michael Taylor, National Park Service  
Katherine Slick, US/ICOMOS  
Andrea Tingey, New Jersey Historic Preservation Office  
Michael Tomlan, Cornell University Historic Preservation Program  
Laurel Wallace, New Mexico Department of Transportation  
Richard Weingroff, Federal Highway Administration