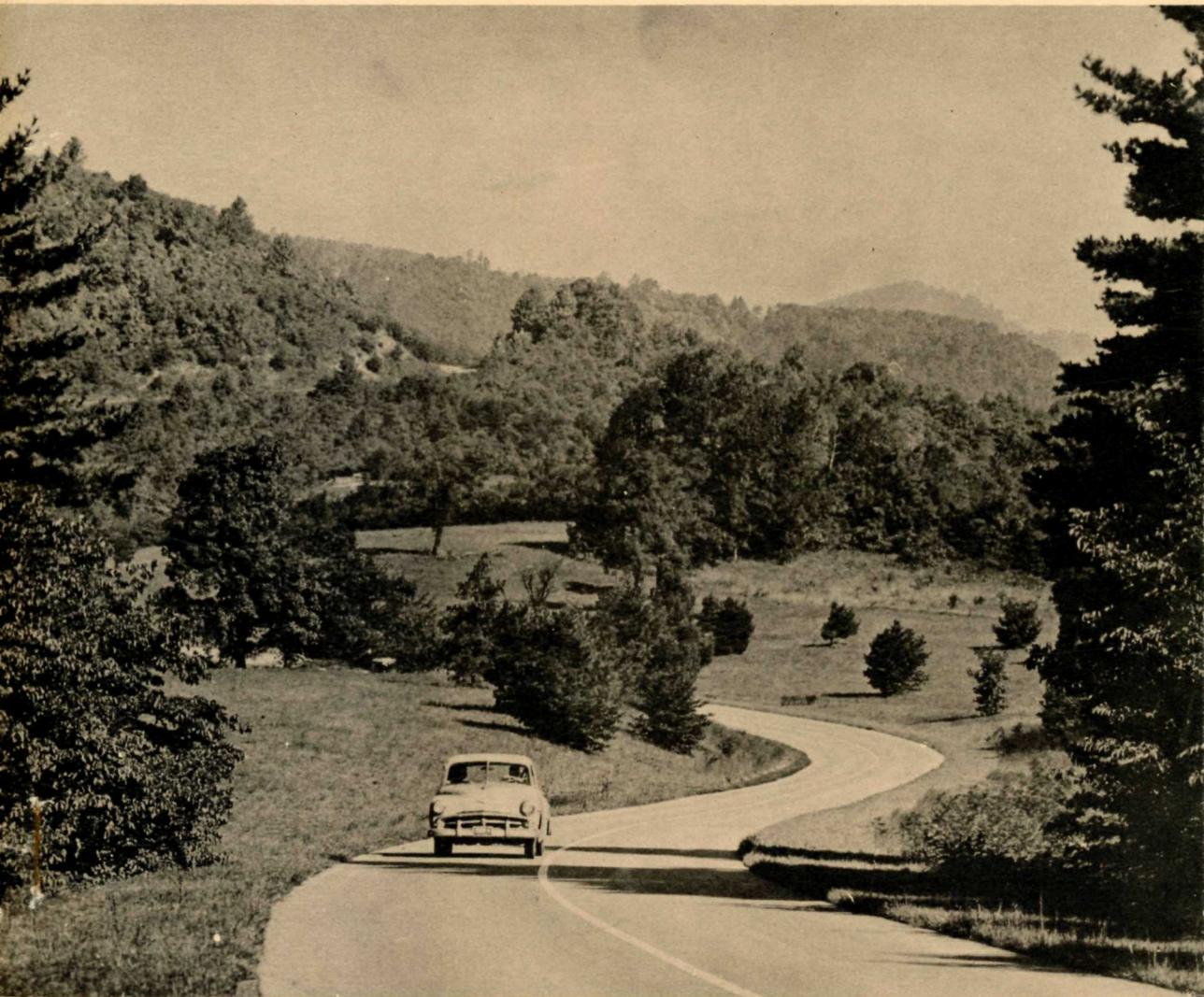


# Planning Our National Park Roads And Our National Parkways

DUDLEY G. BAYLISS



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

PLANNING OUR NATIONAL PARK ROADS  
AND OUR NATIONAL PARKWAYS

Foreword

Pages 417 through 440 and the accompanying illustrations comprise a reprint of the article as it appeared in the July 1957 issue of Traffic Quarterly.

Additional photographs are included after the reprint on pages 1 through 20 as listed below.

The cover photograph by Abbie Rowe is of a portion of the Blue Ridge Parkway in a mountain valley location showing how the addition of a few native shrubs and trees helps create a natural appearance.

Pages 1 through 7 illustrate the infinite variations of nature in the National Park System and how the dominant physical features determine and control road system locations and development.

Pages 8 through 16 illustrate and describe Parkway design and construction principles followed on the Blue Ridge Parkway and in the adjoining Shenandoah and Great Smoky Mountains National Parks. The photographs are arranged generally in sequence from north to south.

On pages 17 through 20 are illustrated planning and development practices on the Natchez Trace, Colonial, George Washington Memorial and Baltimore-Washington Parkways.

Dudley C. Baylis

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# Planning Our National Park Roads And Our National Parkways

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THE basic premise controlling all planning, as well as development and management of the national parks, monuments, and parkways, is embodied in the Act of 1916, which established the National Park Service of the United States Department of the Interior. It is quoted in part as follows:

The service thus established shall promote and regulate the use of Federal areas known as national parks, monuments, and reservations hereinafter specified by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

This continues to be the guiding principle of the National Park Service as recently restated by Director Conrad L. Wirth in his Foreword to *Mission 66*:

Appropriate park use by present and future generations requires preservation and protection of the resources of the parks. But the underlying purpose of national parks, a purpose deriving clearly from the Act of 1916 as well as from the several acts establishing the national parks and monuments, is to yield certain benefits to the Nation and its people. These benefits result primarily from the visitor's experiences in the areas of the System. It is the function of the National Park Service and the objective of the MISSION 66 program constantly to improve the quality of that experience.

*Mission 66* is a far-reaching ten-year conservation program for the National Park System, conceived by Mr. Wirth, approved and

recommended to the Congress by the President in 1956. It is intended to provide facilities in the parks for the more than 80,000,000 visitors expected to be using the system by 1966 – fiftieth anniversary year of the establishment of the National Park Service. It will also provide stronger and more effective safeguards for the scenic, scientific, and historic resources of the system. Both the enlarged appropriation for the present (1957) fiscal year and the budget for 1958, provide for carrying the program forward at the recommended rate.

### **National Park Roads**

Landscape architects and engineers of the National Park Service soon learn that it is difficult to follow explicitly the requirements in the basic legislation to “*conserve the scenery,*” and “*provide for the enjoyment of same in such manner and by such means as will leave them unimpaired.*”

Anyone who has seen a road built knows that the “dozers” and “cats” are not generally regarded as instruments of conservation. So what is the fine line of distinction, and how far can you go in opening up roads to enjoy the scenic and historic wonders of our country at the expense of destruction of some part of the very thing you are striving to protect?

This conflict of interests has concerned not only the landscape architects and engineers of the service but also the engineers of the Bureau of Public Roads of the United States Department of Commerce, who have, by interbureau agreement for the past thirty years, collaborated on location surveys, preparation of construction plans and contracts and supervision of construction of the major road and bridge projects throughout the 181 national parks, monuments, and parkways now included in the National Park System.

### **Distinguishing Characteristics**

Over the years there have developed between the two Federal bureaus the recognition and acceptance of national park roads as being specialized means of access and circulation that differ, radically in most cases, from the high-speed highways and turnpikes of this era as follows:

1. They are planned to reach the principal features of the park rather than to serve as the most direct route from point to point.

2. They are located and designed to best fit the topography of the particular park rather than to conform to standards of alignment, gradient and curvature which are established for statewide or national application. If possible the road is "laid on the ground" rather than cut through it.

3. Since they are the means by which visitors see and enjoy the park, they are essentially *low speed roads*, and thereby are more readily adapted to being fitted into the landscape with consequent reduction of construction scars.

4. Having as their objective the various points of scenic, historic or scientific importance in the park they are, whenever possible, planned and located to present the story or picture of the park in the best chronological or interpretive order.

5. In the location of new roads or the relocation of old ones, the landscape architect searches out and incorporates all worthy points of scenic, historic or other interest even at the expense of some additional length or nondirectional alignment. Parking areas or turnouts at these and other points of interest are part of the normal construction.

6. All time-tested methods of protecting the roadside slopes and healing cuts and fills, guarding against erosion, are employed, such as flattening and rounding slopes, fertilizing, mulching and seeding, using native plant materials to restore natural appearance, protecting large trees from blasting operations, careful marking of tops of cuts and toes of fills to insure against unnecessary clearing, and locating of borrow pits and quarries out of sight of roads.

7. To obtain maximum and continuing benefits of scenic locations of roads selective cutting and thinning operations help open up views or vistas. Wherever possible canopy type views are obtained by removing the understory and lower branches only, thereby retaining the larger trees and their shade.

Maintenance of the vista is provided by annual mowing or cutting according to a maintenance plan (Figure 1) which defines the various areas and their treatment for mowing, vista maintenance, and does not rely on verbal orders or previous experience.

8. All park development, including visitor centers, administra-

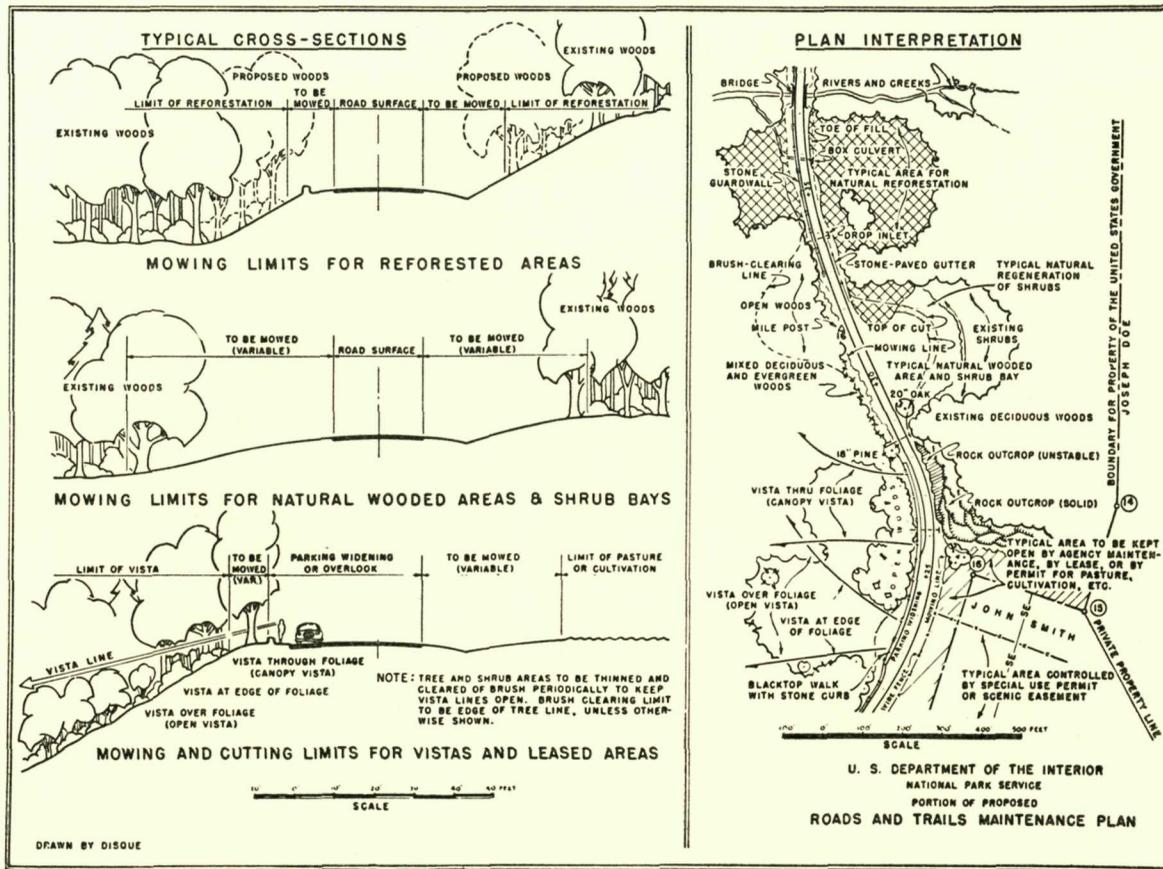


Figure 1. Park and Parkway Road Maintenance Plan



Picnic scene on the Merced River on the south side below the suspension bridge.  
Cloud's Rest in the background. (Yosemite National Park)

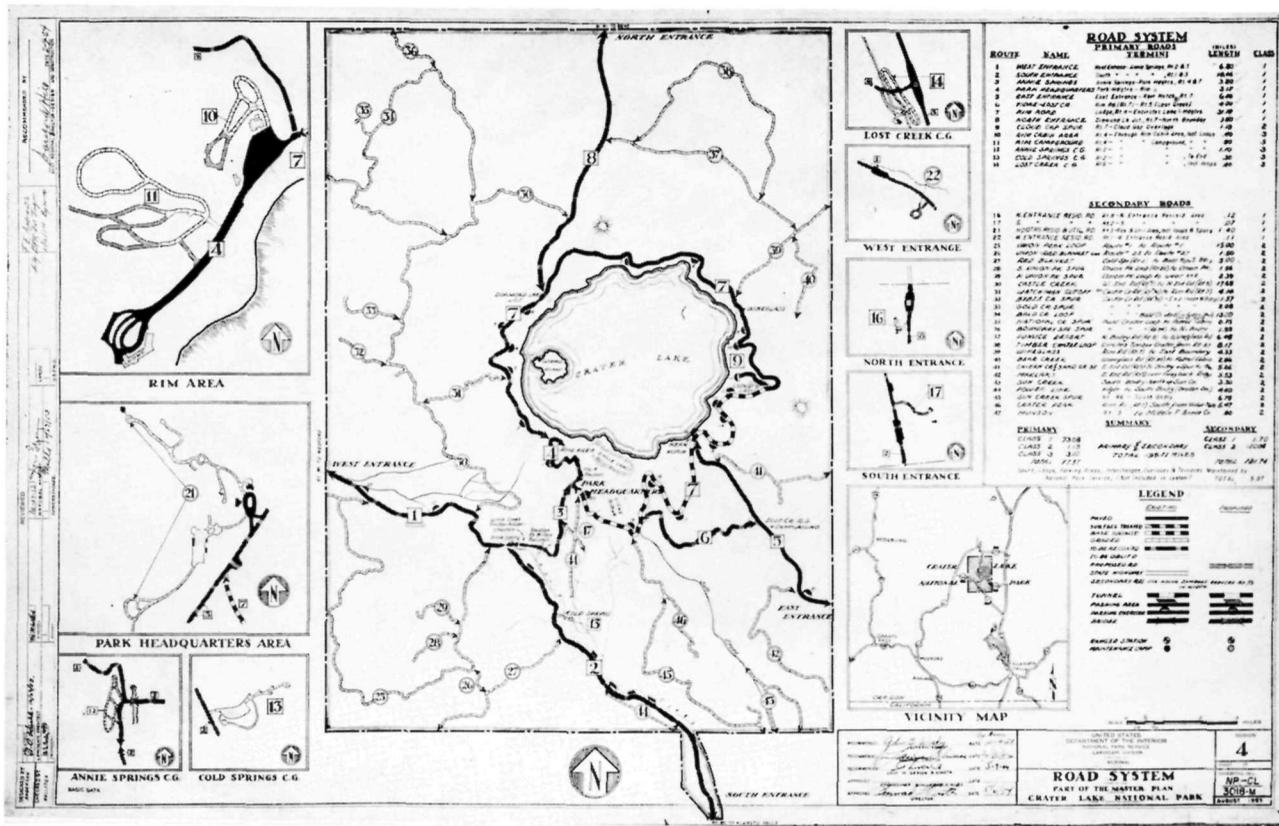
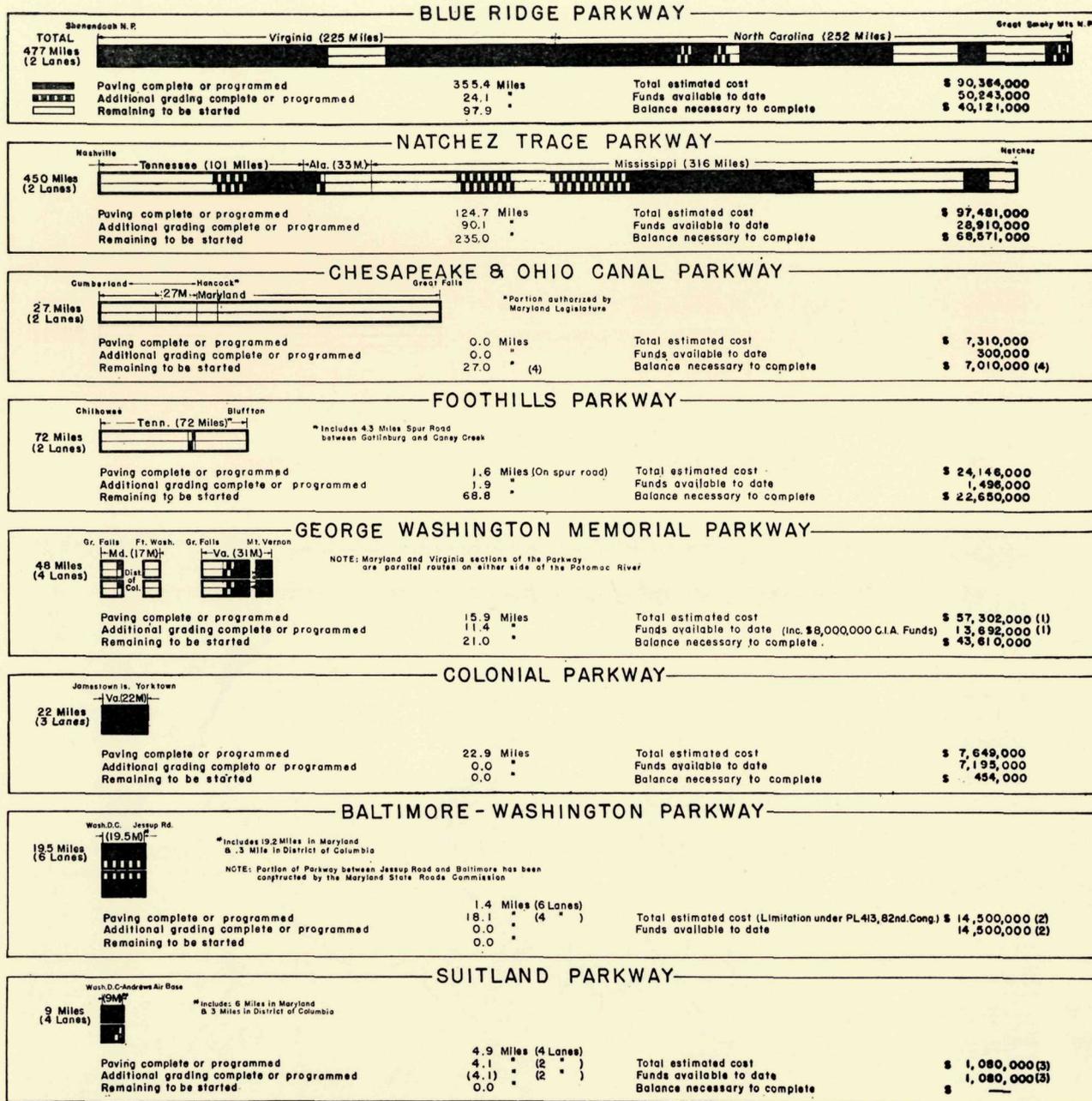


Figure 2. Road System Plan: Crater Lake National Park



### SUMMARY

1126 Miles	Paving complete or programmed	549.0 Miles	Total estimated cost	\$ 299,832,000
	Additional grading complete or programmed	127.5 "	Funds available to date	117,416,000
	Remaining to be started	449.7 "	Balance necessary to complete	\$ 182,416,000

(1) Not including cost of Mount Vernon Memorial Highway (\$ 7,200,000)

(2) Not including wartime expenditures by Bureau of Public Roads (\$ 2,000,000)

(3) Based on proposed legislation (\$ 3,000,000)

Figure 3. National Parkways: Status as of June 30, 1957

tive and maintenance areas, concession and residential areas, and the connecting road system, is controlled by the *master plan* for the park. This is a detailed graphic, as well as narrative plan, which defines the theme or basic importance of the park, the areas to be developed and likewise those to be kept free from development, as well as the method of interpreting the important story or features.

### **Type of Control**

No road construction is undertaken until the system has been studied, carefully planned and delineated in the *plan*. The *road system plan*, one of many parts of the master plan, illustrated in Figure 2, is an example of existing and proposed work in Crater Lake National Park. The benefits of this controlling master plan have been well worth the time and effort expended by the landscape architects, engineers, and other professional and administrative representatives of the service in their preparation. Conceived by Chief of Design and Construction Thomas C. Vint, and adopted by former National Park Service Director Horace M. Albright in 1932, this type of control insures against whims of opinion or varying methods of development brought about by changing administrative or professional personnel and at the same time permits orderly progression of work and revision.

9. The landscape architects' and engineers' ingenuity in blending the roads into the topography through careful location, design and technique of scar-reduction is constantly taxed due to the variety of terrain encountered that ranges from the tundra of Alaska to the rain forests of Hawaii and the Northwest; the High Sierras and Rocky Mountains to Death Valley and the desert, and the rocky promontories of Maine through the eastern Appalachians and the Virginia Capes to the everglades of Florida. No two parks are alike in their demands or their requirements for visitor use.

### **Collaborative Work**

The National Park Service has been fortunate in availing itself of the fine engineering services of the Bureau of Public Roads over the past thirty years. Working together the two bureaus have lo-

cated and constructed roads within most of these 181 parks, monuments, and other gems among America's collection of Crown Jewels.

Some of the outstanding examples of the collaborative efforts in the western parks are the Going-to-the-Sun Highway in Glacier National Park, the Trail Ridge Road in Rocky Mountain National Park, the Rim Drive in Crater Lake National Park, the Stevens Canyon Road in Mount Rainier National Park, and the Tioga Road in Yosemite National Park, the central unit of which is scheduled for completion during the forthcoming fiscal year.

In the eastern portion of the country, the principal large scale projects include the Blue Ridge Parkway, a 477-mile roadway threading the picturesque southern highlands between Shenandoah National Park and the misty folds of Great Smoky Mountains National Park and encompassing with those two areas some 640 miles of continuous mountain road location; and the Natchez Trace Parkway, a 450-mile scenic route connecting Nashville, Tennessee, and Natchez, Mississippi, over the historic Natchez Trace, one of the first post roads in the country, which followed Indian trails and was used by river travelers returning to their homes in Tennessee and Kentucky.

The Bureau of Public Roads has assigned many of its best engineers to the special requirements of national park and parkway work, handled through the bureau's regional offices and the National Park Service eastern and western offices of the division of design and construction. The working procedure is outlined in a document known as the Road Regulations, formerly an Interbureau Agreement, which states the responsibilities and various steps in carrying out the location, design and construction.

Through the thirty years of collaborative effort over \$280,000,000 have been appropriated and expended throughout the parks and parkways of the United States and territories in all varieties of topography and climate. Both bureaus have profited from the arrangement which has developed appreciative respect for each other's professional work and a healthy, well rounded result which recognizes the practical and economic considerations in proper relation to esthetics and master plan requirements.

During the early thirties the National Park Service was requested to undertake the development of a national parkway 477 miles in

length to connect Shenandoah and Great Smoky Mountains National Parks. Thus started under the authority of the National Industrial Recovery Act, this project became known as the Blue Ridge Parkway and has been the forerunner of seven other national parkway projects, now in various stages of development as shown in Figure 3.

### National Parkways

Being the first truly rural scenic parkway project of such magnitude in the country, the Blue Ridge Parkway has been the pioneer of a new form of recreational development in the national park system. The techniques of park road location and construction have been utilized, though on an expanded scale, since national parkways are essentially elongated parks, in which the campgrounds, picnic areas, lodges and other visitor services are planned and developed at nineteen locations along the route through Virginia and North Carolina, selected to best fit the topography and the requirements of the project.

Large units of the Blue Ridge Parkway lie within the boundaries of the George Washington and Pisgah National Forests. Through the fine co-operative spirit of the Department of Agriculture and the Forest Service, an agreement of many years' duration provides for transfer of parkway lands to the Department of the Interior and National Park Service jurisdiction as well as protection of additional zones adjoining the parkway. Within these zones, selective timber harvesting operations guarantee the maintenance of the forest as seen from the roadway.

The Forest Service has also acquired and transferred lands necessary for the development of Peaks of Otter, a major scenic and recreational park adjoining the Parkway in Virginia.

In addition to the Blue Ridge Parkway, now about three-fourths complete, the National Park Service is developing seven other national parkways, varying in length from nine to 450 miles. As previously mentioned, the Natchez Trace Parkway, nearing the halfway mark in completion, is the other large scale parkway, traversing parts of Tennessee, Alabama, and Mississippi, in its 450-mile course from Nashville, Tennessee, to the Father of Waters at Natchez, Mississippi.

The Foothills Parkway, living up to its name, will furnish spectacular views of the mighty Great Smokies Range, from its location through the foothills skirting the northern boundary of Great Smoky Mountains National Park for a distance of seventy-two miles, and facilitating access to the campgrounds and other developed areas which are tucked into the coves and hollows at the lower elevations along the perimeter of the Park.

One of the first to be started (1930) and the most recent to be completed, is the Colonial Parkway, extending twenty-two miles from Jamestown to Yorktown, Virginia, by way of Williamsburg. Connecting these three important historic shrines over a scenic route along the James and York Rivers and across the tidewater peninsula, this Parkway was completed in conjunction with the celebration this year of the 350th anniversary of the founding of Jamestown.

In the vicinity of the Nation's Capital, work is proceeding rapidly on the George Washington Memorial Parkway, which will occupy the bluffs on both sides of the Potomac River, from a point above Great Falls, where a new bridge is authorized, to Mount Vernon on the Virginia side and Fort Washington, across the river in Maryland. The Mount Vernon Memorial Highway, designed and built by the Bureau of Public Roads in the early thirties, is an important unit of the Parkway, connecting the Arlington Memorial Bridge and Mount Vernon, Virginia. This parkway has fine scenic qualities, and will, by nature of its location within a rapidly expanding metropolitan area, carry a larger volume of traffic and thus require somewhat different design standards than the rural or mountain parkways. Recreational facilities include picnic areas, boating facilities, nature trails, accesses to the historic Chesapeake and Ohio and George Washington Canals, as well as the usual parking overlooks. Large scale public-use facilities are being developed at Great Falls and Fort Washington, the two termini in Maryland.

Two of the parkways near Washington, the Baltimore-Washington and Suitland, were started as military-access roads and later transferred to the National Park Service for completion after World War II. These are relatively short metropolitan parkways of nine-

teen and nine miles in length respectively, and carry heavy volumes of fast-moving traffic. Since they are so directly interconnected with the Maryland and District of Columbia highway systems, they serve more as traffic facilities than for recreational motoring and hence are being considered for transfer to state jurisdiction.

The Chesapeake and Ohio Canal Parkway project, authorized in 1950, has recently been restudied and legislation is pending to restore the canal and acquire adjoining lands for a National Historic Park including a twenty-five-mile parkway road connection through Green Ridge State Forest near Hancock, Maryland.

### **Parkway Roads Compared with Park Roads and Highways**

In many respects national parkway roads are quite similar to national park roads, except that the parkway location is established to conform to the road route selected, while in national parks the roads are located within areas already established. Parkways thus become elongated parks fitted to the type of countryside and incorporating scenic, historic, and other points of interest.

Compared to state highways, the parkway roads carry no commercial traffic; they are based on the acquisition of wide rights of way, from 800 to 1,000 feet average widths generally, providing a protective area which insures against roadside excrescences such as the bill boards, hot dog stands, taverns, and other fringe developments which infest and destroy ordinary highways. Parkways are also distinguished by their safety features such as grade separation structures; avoidance of cities and towns by means of bypass routes; controlled access, and parallel local or service roads to eliminate the frequent entrances and exits found along ordinary highways. Parkways are located with free flowing alignment to take advantage of the best scenic features of the countryside and to traverse regions of historic or scientific interest so that the shortest route is not the primary consideration as it often is in the case of highways.

Parkways are planned and located to provide the most scenic and pleasant recreational developments en route at widenings in the rights of way, where motorists may stop for a picnic lunch, or in the case of long parkway projects, for overnight camping or

lodge accommodations. The ride-a-while, stop-a-while principle is kept in mind throughout planning and development.

### **Land Acquisition**

The general policy incorporated in federal legislation on national parkway projects is that the states through which the parkway passes, acquire and deed to the United States the rights of way, and the federal government then assumes the responsibility for the construction and maintenance of the parkway road and adjoining recreational areas. This results in a cooperative project with a 90 percent federal and 10 percent state initial cost ratio. Acquisition standards which have been developed over many years are set forth in a brief pamphlet entitled *Requirements and Procedure to Govern the Acquisition of Land for National Parkways*.

The extent of lands to be acquired is based on right of way maps which are prepared by the National Park Service after preliminary surveys have been made by the Bureau of Public Roads on a route selected by joint bureau and service reconnaissance. During the process of land acquisition negotiations are carried on between representatives of the state and the National Park Service to settle problems that result from the necessity for relocation of roads, power lines, telephone lines, the acquisition of residual parcels to eliminate the need for private entrances to the parkway road, and other local problems in the area.

### **Construction and Development**

Following acquisition and transfer of title of parkway lands, units of the parkway road are constructed in economical contract units, generally ten to twelve miles in length, and follow the usual stage construction basis, starting with a clearing, grading, draining and base surfacing contract, followed by contracts for major drainage or grade separation structures, and later paving contracts, each unit requiring from two to three years to complete depending upon the availability of funds.

On long parkways such as Blue Ridge and Natchez Trace the policy is to provide long usable units making connections with exist-

ing state highways in order to best serve public needs. This policy is sometimes difficult to carry out, particularly where the parkway crosses several states en route. Over a period of years, however, it has been successfully applied.

The availability of lands acquired by the state for the parkway forms an important basis in determining the units to be included in a construction program. Construction standards depend on topographic considerations and are generally as high as can be reconciled with reasonable preservation of natural values, providing easy alignment and gradient with good sight distance, making for comfortable driving conditions.

Large parkway projects require individual organizations. In order to provide the necessary right of way maps and construction plans, a staff of landscape architects represent the National Park Service, and a staff of engineers represent the Bureau of Public Roads. In accordance with a long-standing working arrangement, these two groups collaborate on the reconnaissance and location surveys and later on the preparation of contract plans. The National Park Service staff prepares the right of way plans on the basis of a route which is approved by the director. In the case of parkways involving historical or archeological considerations of prime importance, those professions are represented on the parkway staff to collaborate on the early reconnaissance work.

The maintenance of the road and right of way, as in other National Park Service areas, is handled by the National Park Service following the completion of construction. During the construction period the Bureau of Public Roads assumes responsibility for maintenance of the roadway proper.

### **Problems Involved in Planning and Developing Parkways**

The problems encountered in planning and developing parkways may be illustrated best perhaps by pointing out situations involved in the progressive development of a particular parkway project. It is assumed in this theoretical case, which is adapted compositely from the parkways now under construction by this service, that the particular project has been authorized by Congress and that preliminary surveys have established its feasibility and desirability.

This is usually accomplished by means of a reconnaissance survey and report approved by the Congress with an initial appropriation following in the annual Interior Department appropriation act.

*A. Selection of Route and Rights of Way*

1. Scenic considerations are of paramount importance in the selection of any parkway route, following map study, stereoscopic aerial photography study and several scouting expeditions through the country to be traversed. The landscape architect familiarizes himself with all points of scenic value en route whether they be landscape, topographic, or scientific in nature; anything that would afford visual or physical pleasure to the motorist or stimulate his interest in the parkway environment is taken into consideration. If a choice is possible the landscape architect seeks for variation; for example, a route that alternates at intervals between the mountain heights and the open valleys so that the traveler looks up at the mountains occasionally and feels the intimacy of the surrounding countryside rather than constantly peering off the edge of the escarpment at the tiny villages, farms and remote life below. The greater the length of the project, the more important this variety of location becomes. The same type of landscape or location can become monotonous no matter what the locale may be.

2. Other important considerations of selecting a route involve the historic, scientific, and archeological subject matter which may be encountered en route. A long parkway project should unfold a description of regions traversed, so to speak, in which historic structures, Indian mounds, exhibits of local or regional agricultural practices, such as cotton planting, sugar cane production, mountain farming, tobacco raising, reclamation projects, national forests, wildlife or game refuge areas, geological exhibits or sites associated with important military or other historical events are all given proper consideration.

3. Right of way maps are prepared to show the land necessary on which the state or other agency involved bases the acquisition. In selecting the boundaries for the right of way the landscape architect follows a varying course dependent upon several considerations. The general requirement in right of way includes 125 acres per mile of varying width with scenic easements occasionally in lieu

of fee simple acquisition. One hundred and twenty-five acres per mile is the equivalent of 1,000 feet in average width. Aside from the problem of selecting sufficient land to provide for the road construction proper plus scenic control and sufficient buffer area to screen out unsightly developments or unnatural features, the landscape architect must take into consideration the following factors:

(a) Provision of sufficient width to accommodate all grade separation structures with the necessary access roads.

(b) Provision for parallel roads where necessary to accommodate local traffic or to replace existing county or state roads which the parkway location has displaced.

(c) Provision for relocation and possible undergrounding of power, telephone, or other overhead wire crossings.

(d) Elimination, insofar as possible, of adverse residual parcels of land on one side or the other of the parkway road, thus eliminating the need for the former owner to cross the parkway land and motor road in his daily agricultural work.

(e) Conserving sufficient acreage within the 125 acres per mile total to provide widenings required for recreational, food, and service station facilities at proper intervals, as well as for maintenance and utility purposes. This is accomplished by reducing the width of the right of way as much as possible to accommodate the items listed above and then widening at strategic points to take in an entire mountain top or range for example, where the lands will be sufficient to accommodate picnic and parking areas, campgrounds, trailer areas, coffee shop, gasoline stations, lodge and overnight developments, plus utility buildings, shops, warehouses, and equipment storage space.

(f) Economic considerations, involving the reduction in width to the minimum possible consistent with safety and protection of the parkway motorist through expensive agricultural lands or through suburban areas. Routes are selected to bypass, by as wide a distance as possible, metropolitan centers, but occasionally it is necessary to pass through the suburban surroundings of these built-up centers of population.

(g) Where justified, the substitution of scenic easements, freeing the rural picture and uses of land instead of fee simple acquisition.

### B. *Establishing State Relations*

An important and ever-present problem is the establishment and maintenance of relations with the state agency responsible for the acquisition and transfer of rights of way.

1. The state highway department is usually designated as the agency responsible for parkway land acquisition. The initial difficulty arises in selling the parkway type of development to the state highway department, which agency is accustomed to acquiring only the right of way necessary for actual road construction purposes. It has been only in recent years, since wider rights of way for state highways have been accepted generally, that any sympathetic response has been made to the width of rights of way necessary for national parkway development. Even now it remains very difficult to convince some state highway right of way officials that the parkway type of development requires much greater width, limitation of access, and separation of traffic than for highway projects.

2. *The Requirements and Procedure to Govern the Acquisition of Land for National Parkways*, which have been approved by the Secretary of the Interior, serve as the basis for acquainting the state right of way agency with parkway land requirements and the general theory of parkway design and construction. These standards set forth briefly the theory and practice of parkway development and suggest means and methods of expediting the transfer of necessary lands through designation of a central state agency, and passage of desirable legislation to accomplish the various objectives in the parkway program.

3. A working procedure on land acquisition and transfer is also outlined in the *Requirements and Procedure to Govern the Acquisition of Land for National Parkways*. This procedure states the method of providing location and right of way maps, type of deeds necessary, provisions for access and frontage rights, replacement of public and private roads, power lines, and other problems incident to right of way acquisition.

### C. *Design of the Parkway Road*

1. In general, problems involved in the design of the roadway proper are similar to those encountered in any park area. The

National Park Service landscape architect works closely with the Bureau of Public Roads engineer in the matter of a location survey in which the controls are selected which establish elevations at mountain gaps, stream crossings, intersections with highways and other public roads, and other topographic factors which actually determine the course of the road through the country.

One of the main points of difference between the parkway type of road and the ordinary highway is that the parkway does not necessarily follow the most direct or economical location, based on the premise that it is a recreational type of road which aims to unfold the most interesting and scenic aspects of the country. As may be surmised, in the early days this developed interesting problems in working out the location with the engineers who, through training and experience on highway work, were justly concerned primarily with cost and directional factors and were not usually sympathetic to the provision of a wide panoramic view for example, in lieu of a through-cut. The latter, of course, would save both mileage and construction costs, but would deprive the vacation motorist of a benefit he should receive. Similarly the advantages of gently curving alignment over beeline tangents have always been subject to careful study from the standpoint of comparative costs and directionality.

Over a period of eighteen years of parkway construction and development, the service and the bureau have reached what we believe to be a fair point of equilibrium in which the elements of pleasure, safety and economy are given the proper weight and consideration in the final construction plans. In that period there has developed a mutual appreciation of these elements, together with the realization that the parkway road is essentially for pleasure driving in contrast to the utilitarian uses normally ascribed to the highway. The trend in recent years is swinging toward curvilinear alignment, controlled access, variable medians and grades for separated roadways, and wider rights of way for the more advanced highways as well as parkways. These are proven values of permanent nature which contribute to the pleasure and safety of the motorist and the economy and permanence of the project. While many of these benefits have been confined to national parkways in the past there is heartening reason to believe they will be-

come standards for all major highways as time goes on. All highway and parkway users are entitled to them.

2. Along with the physical controls established by mountain passes or elevations, river crossings, etc., comes the problem of selecting sites for development areas to include overnight facilities, camp and picnic grounds, gasoline and motor service stations, provisions for meals and the storage of road maintenance equipment. On projects 500 miles in length, for example, it must be assumed that many vacationers will find it desirable to spend several days en route. Proper provision must be made for their accommodation, particularly where the nearest towns or facilities are too far from the parkway road.

The problem of patrolling and maintaining contact with parkway neighbors over a project of such size has led to many complications not ordinarily experienced in most park areas. In the matter of communication, for example, it has been found necessary to utilize the latest type of radio communication system in order that weather conditions, fire locations, traffic violators, and other swiftly moving or widely separated events may be reported and acted upon promptly.

The location of recreational and maintenance facilities in areas remote from towns or villages develops problems of employee housing and provision of water, sewage disposal, and electric power systems.

3. Road design is based on moderate rather than high speed, and the highest standards of flowing alignment and grade possible in the type of country being traversed, consistent with the least possible disturbance of the existing natural features and landscape. Road slopes are flattened to a point of unquestionable stability which, in addition to reducing the "man made" look, eliminates many erosion and drainage problems and reduces maintenance costs such as gutter and ditch cleaning, which for the most part, are caused by insufficient slope stabilization.

High standards of safety are incorporated in the road design, including good sight distance on vertical and horizontal curves, through tunnels and over bridge structures; grade separation structures at all railroad and major road intersections; parking overlooks and widening at preselected points; guardwall and guardrail,

center striping of the roadway, standard traffic signs and markers; and mile posts to assist in location of the traveler on the road and identification of natural features en route.

The combination of all these design and safety standards makes it possible for the parkway traveler to relax from the tensions of ordinary highways and enjoy his driving experience on the parkway with reasonable observance of the scenic beauty of the countryside. The elimination of commercial traffic from the parkway road also contributes greatly to the comfort and safety of the parkway motorist.

Limitation of access points adds greatly to the safety of the parkway. Local roads which cross the parkway at several locations are relocated by means of parallel roads along the outer boundary of the parkway right of way to single crossings at certain selected points where access and visibility are good. The parkway crossing is made, preferably by means of the grade separation structure, with no access from the local roads. If access is necessary, it is accomplished by means of a well-located access road. Adjoining owners enter the parkway only at these widely spaced entrances. Needless to say, this provision eliminates from the parkway road the dangers and annoyances of uncontrolled commercialism found in the ribbon or fringe developments which are the ultimate nemeses of ordinary highways.

#### D. *Construction*

1. Construction of the parkway road and structures is for the most part through competitive bidding by contractors under collaborative supervision of the Bureau of Public Roads and the National Park Service. The Bureau of Public Roads provides engineering services on surveys and plans, and supervises construction with collaboration by the National Park Service on all landscape and architectural phases of the work. Work is undertaken by stage construction in which the clearing, grading, and base surfacing are usually included in the first contract of ten to twelve miles in length. These grading contracts are often under construction over a period of two years due to the large amounts of material to be moved and the difficult construction through mountain areas in many cases, involving shut-downs during the winter season. Problems encoun-

tered are those common to all construction jobs in which the contractor is bound by the terms of the contract and the plans and specifications. This includes interpretation of many items in the plans and specifications which are resolved by the Bureau of Public Roads project engineer and the resident landscape architect working with the contractor's representative on the project.

Principal construction problems from the National Park Service standpoint are the preservation of the natural landscape through supervision of clearing and limitation of blasting; prevention of disposal of rock and excavation to disfigure natural stream beds or to cause unsightly fill-slopes; selection of stone for drainage and bridge structures; selection of quarries and borrow pits out of sight of the parkway or other public roads; avoidance of unnecessary cutting of trees which might be saved close to the road proper through the use of tree protection or through careful construction methods; placing of the contractor's road camp in a location within the right of way which can later be restored to its former condition with little or no damage to the natural landscape; maintenance and protection of natural stream beds or lakes insofar as possible through the use of toe walls and hand placed stone embankment.

In succeeding stages of construction the bridge and overpass structures are built, the road is surfaced with its final paving and guardrails, tunnel portals, parking areas, roadside turnouts, and traffic signs are completed. Most of this work is done by contract although there are some projects on which it is most expedient to use day labor under Bureau of Public Roads and National Park Service supervision.

#### *E. Developed Areas*

Within the adjoining parks or developed areas of a few hundred to several thousand acres, which are ranged at intervals of twenty to sixty miles throughout the longer parkways, the National Park Service through its division of design and construction plans and supervises construction of all roads, trails, visitor centers, utility buildings, and services to concessioner areas. This work is carried out by both contract and day labor according to the most economical method of construction.

Consistent with the established policy on concession develop-

ments in the national parks, the lodges, coffee shops, gasoline stations and other concession buildings are built and managed by private capital in accordance with plans approved by the service.

F. *Management and Maintenance*

1. When the states have transferred sufficient rights of way to the United States to cover several units of the parkway project, problems of protection and management arise which require the services of an administrative staff with the necessary rangers and clerical assistants. There are relations with the state highway department on matters of right of way acquisition, primarily concerned with construction problems. Also local matters on access and rights of abutting owners with regard to water, power, use of roads, drainage, or construction of buildings on abutting land under scenic easement necessitate an administrative organization, patrol of the parkway road following construction and inspection of the parkway rights of way periodically for fire prevention purposes, trespasses on parkway property, violation of parkway regulations against the marring or defacing of natural features, picking of wild flowers or destruction of shrubbery or trees. The rangers cover their assigned districts in easily identified patrol cars and are helpful in furnishing information and general public contacts.

2. The leasing of government lands included in the parkway right of way to adjoining owners has eliminated one of the most serious problems of such an extensive project. A good portion of the parkway right of way includes agricultural lands on which it is desirable to retain the practice of agriculture in order to present a true picture of the adjoining countryside. In order to accomplish this purpose without undue cost and in order to continue the principle of agricultural production immediately adjoining the parkway road, large areas of the parkway land are leased to adjoining owners at a nominal cost and subject to careful regulation to provide proper crop rotation and other principles of good agronomy which will insure a long-time continued maintenance of the agricultural picture from the parkway road.

Similarly other areas carefully predetermined in the early right of way stages are leased for hay production or pasture lands, thus maintaining at low cost the open meadows and pastures with

cattle grazing peacefully within a stone's throw of the parkway road separated therefrom only by a rustic fence of construction long associated with the locality. Negotiation of these leases regularly with the adjoining landowners presents an administrative problem but eliminates at the same time huge maintenance costs and gains friends for the parkway among these owners who thus serve as the maintenance force preserving the agricultural picture.

### **Maintenance**

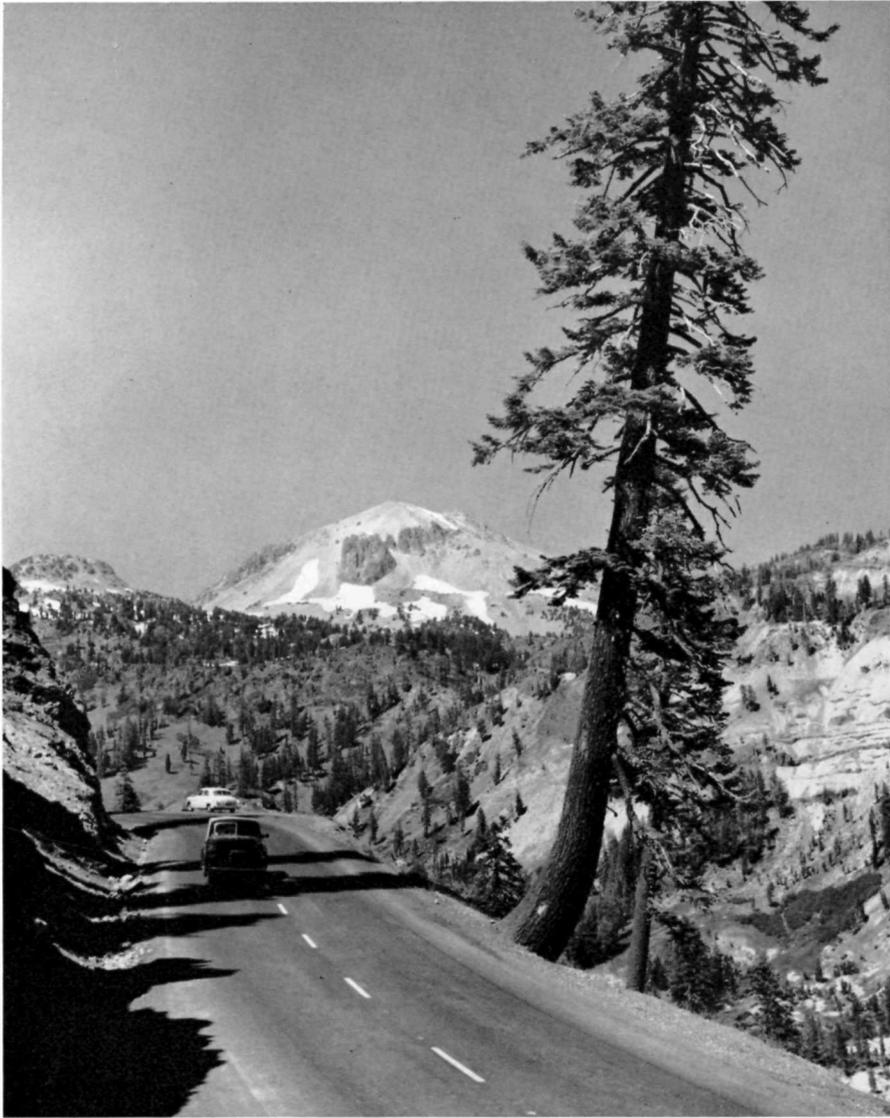
On adjoining timberlands or lands adjacent to the parkway road which are better suited for return to wooded condition, the maintenance problem is the prevention of fire and insect infestations through constant surveillance and the use of preventatives.

Each parkway has a maintenance organization with equipment and personnel assigned to districts to remove slides and fallen rocks, clean ditches and culverts, replace eroded material, maintain shoulders, repaint the center striping, and all other maintenance operations. Snow removal is not considered to be an important maintenance project inasmuch as those sections of the parkways which are subject to snow conditions are paralleled by valley roads which are available for use during periods of heavy snow. The parkway road is closed to traffic during these occasions.

The campgrounds, picnic areas, parking overlooks, maintenance areas, and other parkway facilities not encompassed within the concession areas are policed and maintained either by National Park Service maintenance crews assigned to the particular area or by maintenance crews assigned to a district including fifty to sixty miles of the parkway road and adjacent recreational areas.

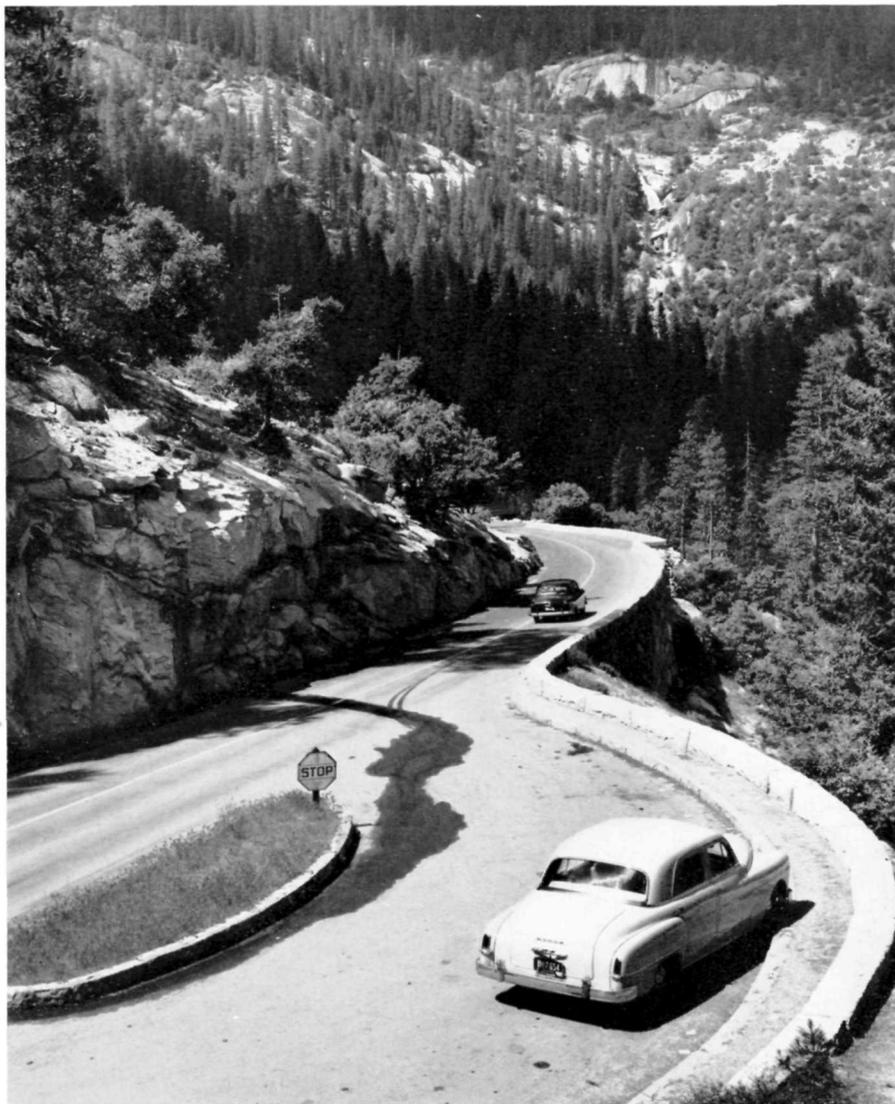
### **The Great River Road**

Initiated through the energy and zeal of the late Albert P. Greensfelder of St. Louis, and deriving from the results of a joint Bureau of Public Roads and National Park Service survey, completed in 1951, with the continued support of a vigorous and capable international planning commission, good progress is being made on the Mississippi River Parkway project. Now known as the Great River Road,



*National Park Service Photo*

Special protective measures during road construction preserved this picturesque spruce to frame a view of Lassen Peak.



Parking turnout at lower end of uppermost tunnel on Big Oak Flat Road. Looking down. Cascade Creek in background. (Yosemite National Park)

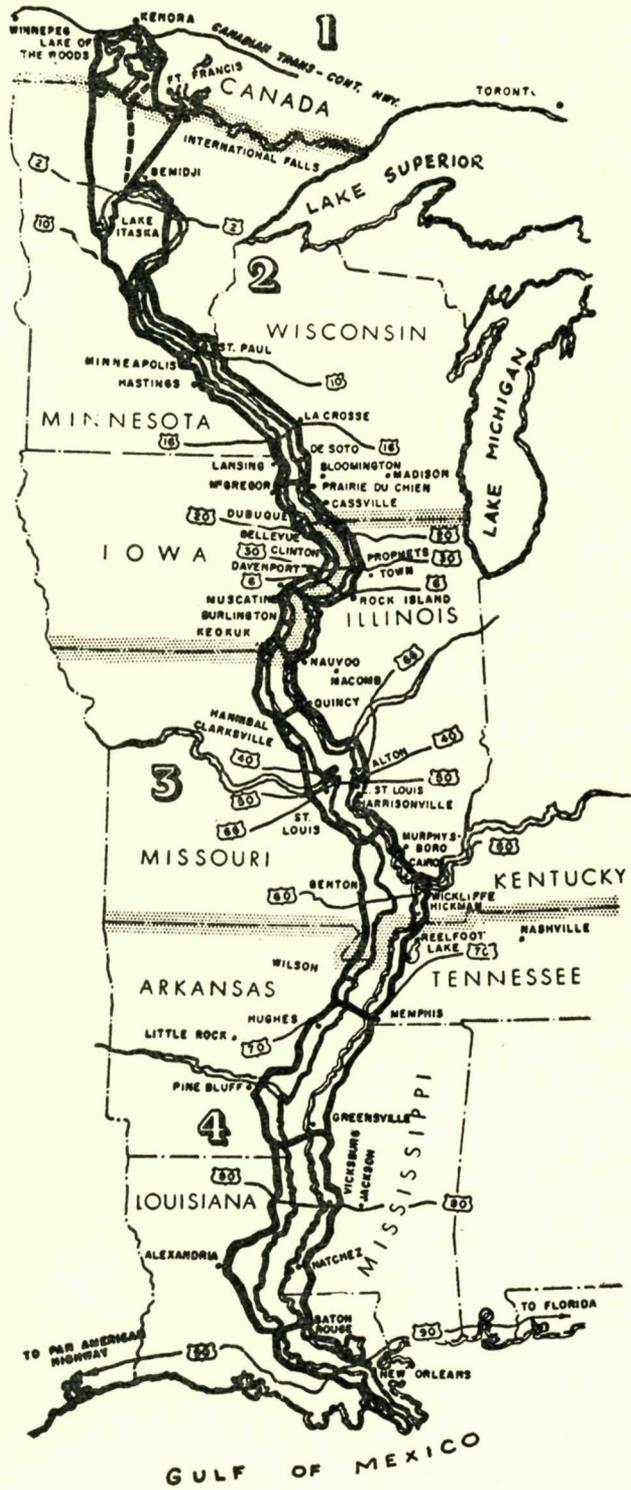


Figure 4. The Great River Road (Mississippi River Parkway)

reaching almost 3000 miles from connections with the Trans-Canada Highway in Ontario and Manitoba through ten states to the Gulf of Mexico, this parkway promises to establish a pattern of international and interstate cooperation with new concepts in parkway development that could well be applied to the interstate system and other important highways throughout the United States and perhaps Canada as well. Figure 4 illustrates the scope of this project.

The Great River Road incorporates all of the principles of national parkway development with a few important variations. It is planned to be administered by the existing state and provincial highway departments, and in the United States, to be financed as a part of the Federal Aid Highway System. Initially about 60 percent of its location would incorporate existing highways along the river which would gradually be converted to parkway character by application of limited access, purchase of wider rights of way generally along the standards of the national system of interstate Highways, and the purchase of outstanding scenic, recreational, historic, natural or wildlife areas including lands for service areas, bluff faces, islands, and other submarginal river lands. (See Fig.5.)

Protection and preservation of the parklike zone on both existing and new location would be insured by this fee simple ownership, which would be supplemented by the purchase also of mildly restrictive easements on adjoining lands up to several hundred feet in width on each side. This would stabilize the agricultural and rural picture as seen from the parkway road at low cost, since only the rights of the adjoining owner to place on these lands structures foreign to the existing farming uses would be bought. Motels, taverns, and other commercial buildings, subdivisions, billboards, automobile graveyards, and trash dumps, would be among the exclusions.\*

No restrictions would be placed on the continuation of farming since the object is to save for all time this living landscape of our life and industry – the vast wheat and cotton fields; the waving sugar cane and the pumpkins among the corn shocks; the cattle grazing in pastures; the hay stacks and corn cribs readied for the

\* This type of easement, the acquisition of adjoining property owners' partial rights, might be an answer to the current billboard problem on the interstate system.

winter; and always the ever changing panorama of the mighty river.

As sections of the parkway are acquired on new location the initial acquisition would include lands for all parkway features, including motor service areas. Commercial traffic would continue

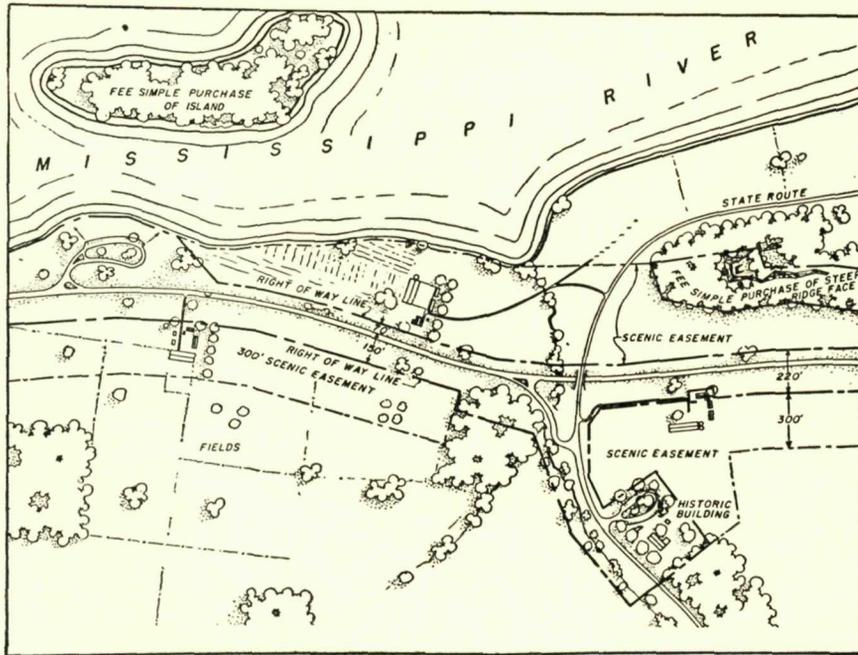


Figure 5. The Great River Road: Parkway Land Controls in Rural Areas

to use the old route. This elastic concept means a gradual conversion to a true parkway geared to each state's desire and ability to participate.

Of most importance in this project is the passage of enabling legislation to permit the ten river states to acquire the rights of way and easements. Once this protective zone is established there is guaranteed forever a parkway clean and clear of any unsightly ribbon development. In accordance with present provisions of the Federal Aid Highway Act, the Bureau of Public Roads and the National Park Service are furnishing advisory planning services to the various river states when requested to do so. A report has been completed recently on the entire 623 miles included in the

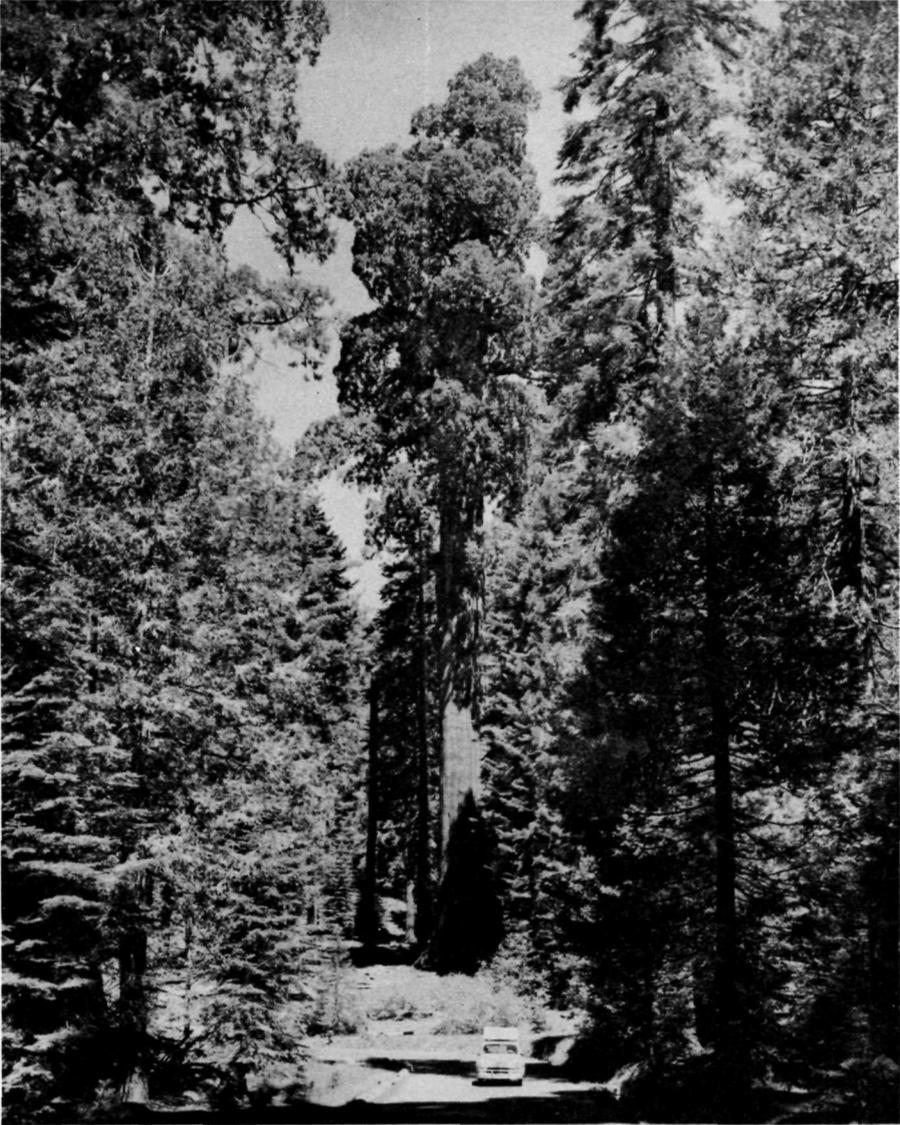
State of Minnesota and additional recommendations are currently being made on the detailed location of a scenic portion of the interstate system which has been proposed for the Great River Road location near Minneapolis and St. Paul.

The State of Iowa has requested a complete report on the location through that state. Following that assignment, which is just being started, the consultants are scheduled for additional advisory work in Wisconsin, Illinois, Missouri, and other states.

A draft of proposed state legislation incorporating the suggestions of the two federal agencies and the Highway Research Board to accomplish these objectives has been given to the newly appointed legislative committee of the Mississippi River Parkway Planning Commission, with the expectation that it will help to advance this most critical phase of the Great River Road project.

The great national interest in good highways evidenced by passage of the Federal Aid Highway Act of 1956, and the similar public and legislative support of the MISSION 66 program for completing park roads and parkways, as well as other public service needs throughout the national park system, holds great promise.

From both the cost and land-use standpoints our people are entitled to, and can afford the best-connected systems of protected parks, you could say – with safe, gently curving roadways and ample space for additional paving width when needed; permanently planned facilities which will stabilize and improve their surroundings rather than degrade them; sensible and satisfying investments in beauty and utility.



SEQUOIA AND KINGS CANYON NATIONAL  
PARKS, CALIFORNIA

California Tree in Grant Grove (1)

National Park Service  
Photo



CAPE HATTERAS NATIONAL SEASHORE  
RECREATIONAL AREA, NORTH CAROLINA

Hatteras Light and the Ocean

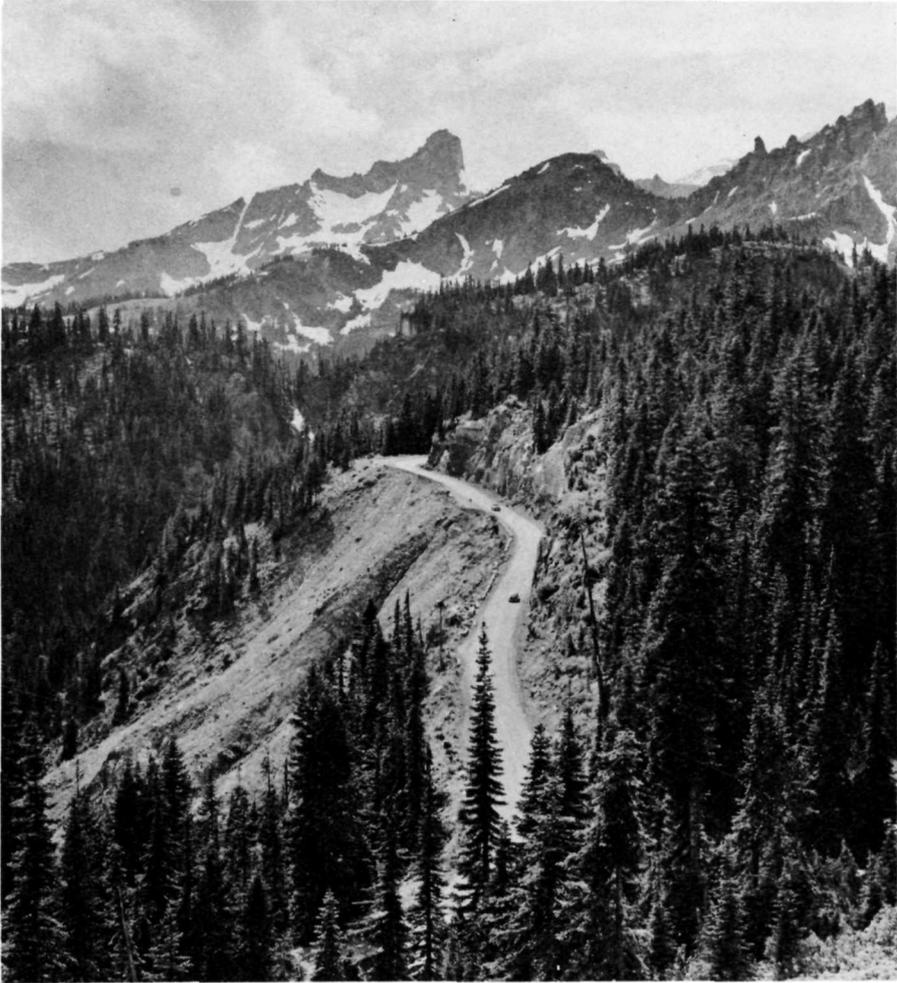
Photo by Ralph H. Anderson  
Courtesy National Park  
Service



WHITE SANDS NATIONAL MONUMENT, NEW MEXICO

White sands, purple mountains and blue sky.

Photo by Abbie Rowe  
Courtesy National Park  
Service



MOUNT RAINIER NATIONAL PARK, WASHINGTON

Stone guardwall and parking turnouts  
under construction below Chinook Pass.  
(3)

National Park Service  
Photo



OLYMPIC NATIONAL PARK, WASHINGTON

The quiet charm of Lake Crescent is evident from this winding road along its shores.

National Park Service  
Photo



MOUNT RAINIER NATIONAL PARK, WASHINGTON

Native stone facing ties bridge into natural rock formation.

National Park Service  
Photo



CAPITOL REEF NATIONAL MONUMENT, UTAH

Road through Capitol Gorge

(5)

National Park Service  
Photo



GREAT SMOKY MOUNTAINS NATIONAL PARK -  
NORTH CAROLINA - TENNESSEE

Mount LeConte, half hidden by the fleecy  
clouds that give the park its name.

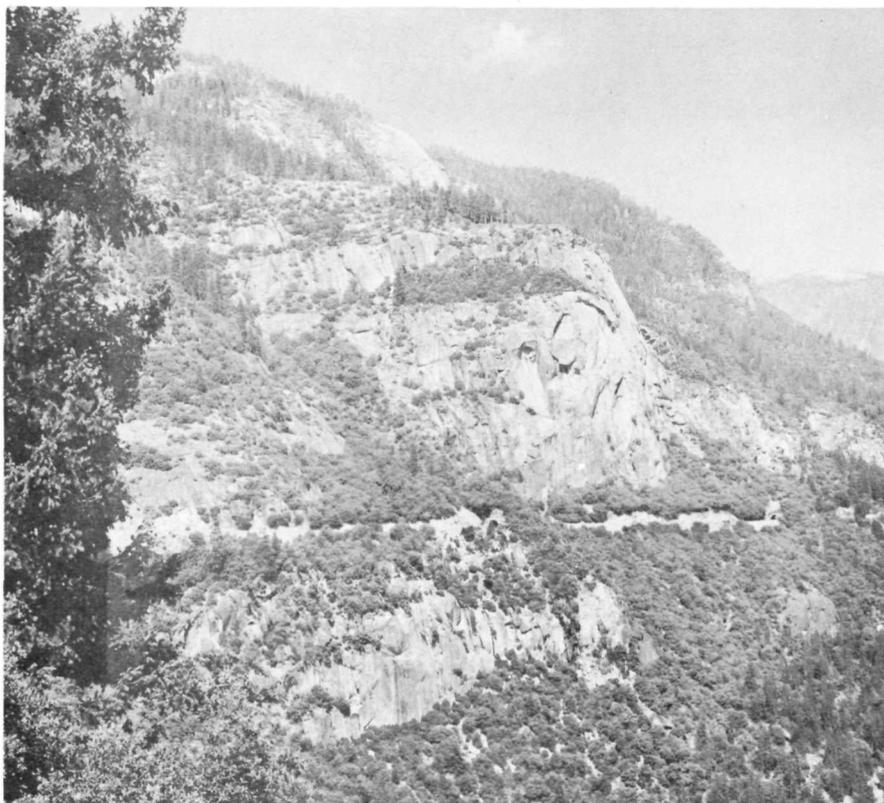
J. Walter Thompson  
Company Photo



CRATER LAKE NATIONAL PARK, OREGON

Rim road, following crater wall closely  
and inconspicuously, seeks advantage of  
overlook points.

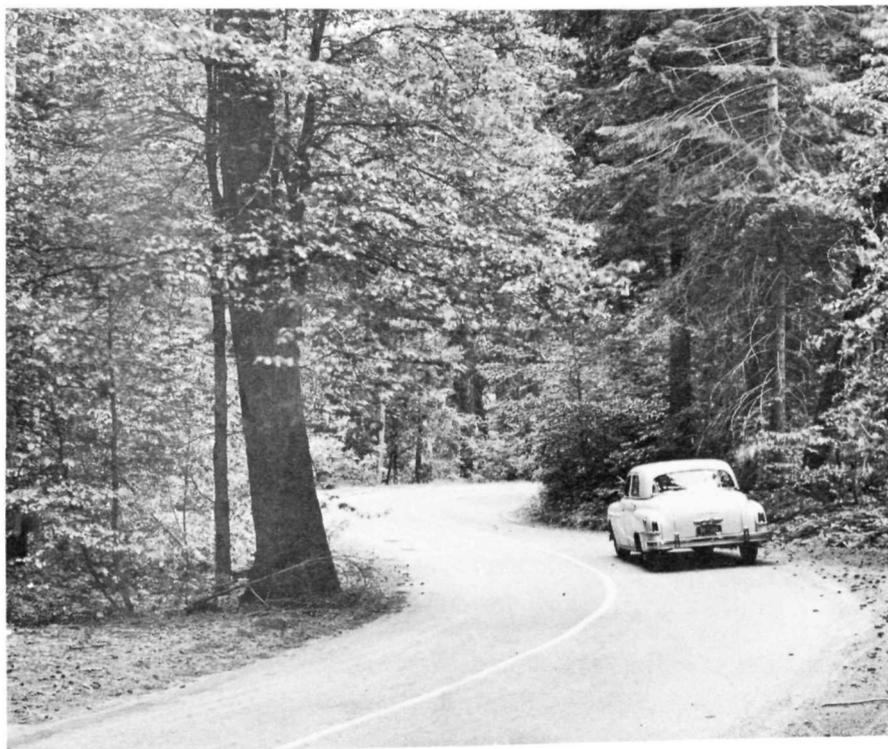
Oregon State Highway  
Commission Photo  
Salem, Oregon



YOSEMITE NATIONAL PARK, CALIFORNIA

National Park Service Photo

Contrast the heavy cliffside construction dictated by topography on the Big Oak Flat Road (above) descending to the valley floor (below) where the road location has been fitted into the landscape.





LEAVING SHENANDOAH NATIONAL PARK, VIRGINIA

477 miles ahead--Great Smoky Mountains National Park.

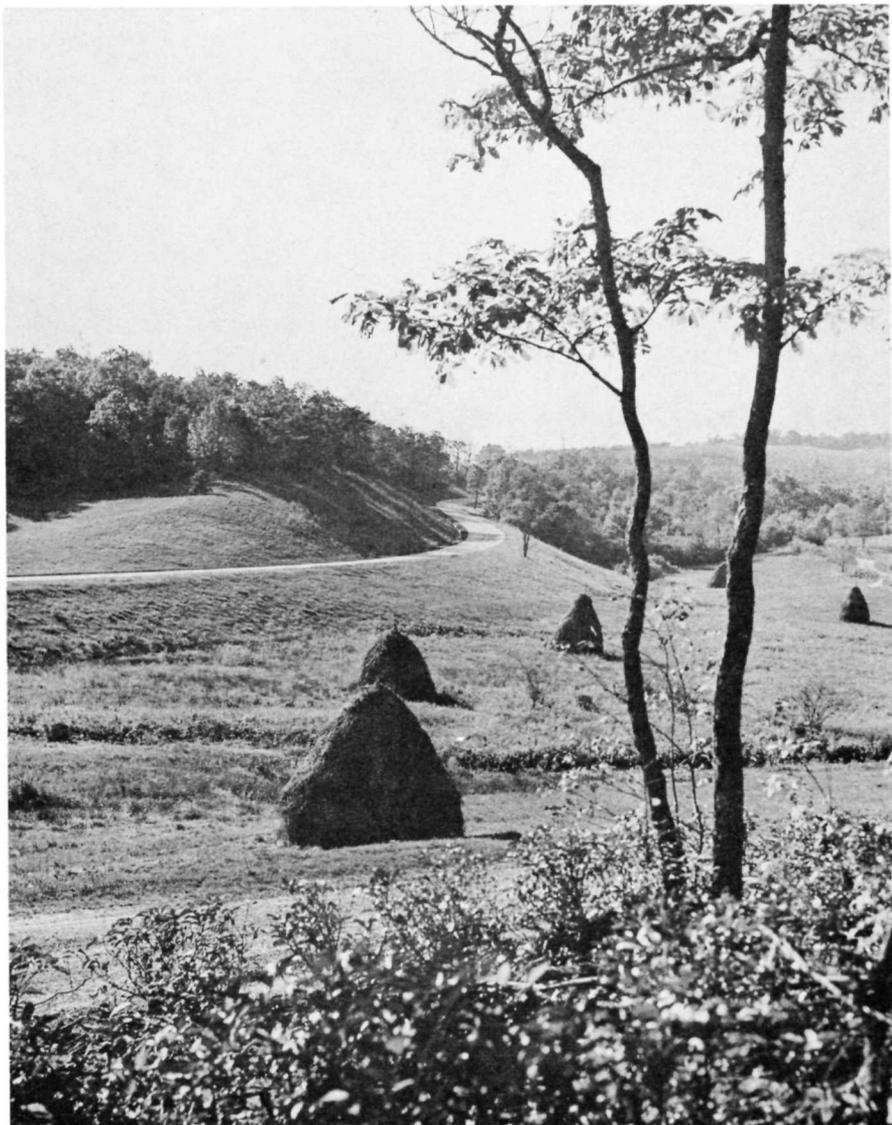
Photo by Abbie Rowe  
Courtesy National Park Service



SILVER PEAK WIDENING

Overlooking George Washington National Forest, Virginia.

National Park Service  
Blue Ridge Parkway Photo



HAY MEADOWS ALONG PARKWAY

Low cost maintenance of pastoral landscape  
by leasing parkway lands to neighbors.

National Park Service  
Blue Ridge Parkway Photo



BLUE RIDGE PARKWAY

Native stone faced structure carries  
Parkway over state highway.

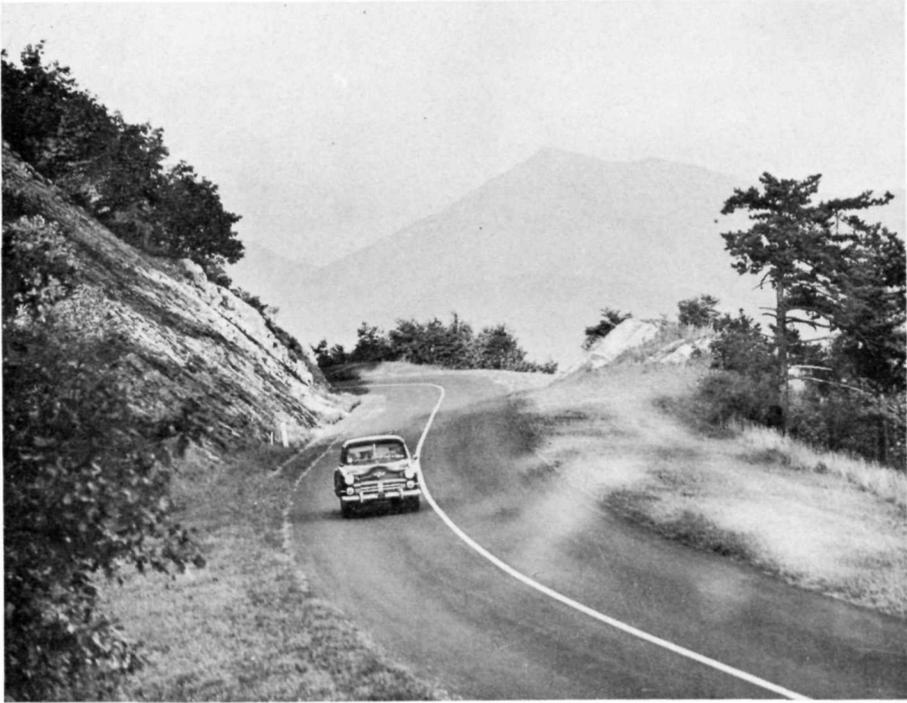
National Park Service  
Blue Ridge Parkway Photo



LAND OF FAR DISTANCES

Balcony Parking Area overlooking  
Persian carpet pattern of Piedmont  
Plateau.

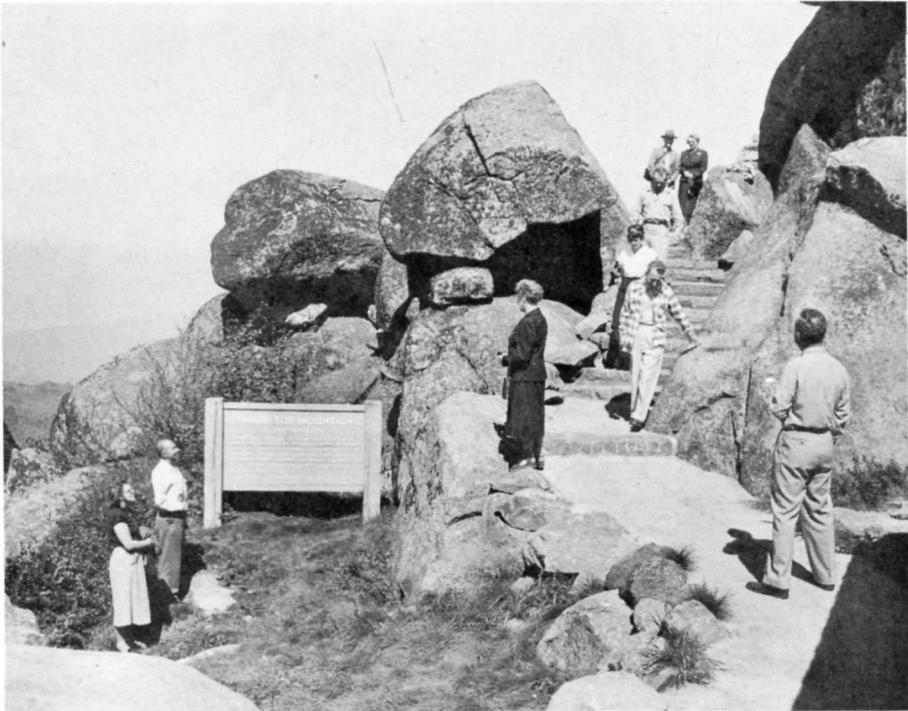
National Park Service  
Blue Ridge Parkway Photo



"IN THE BLUE RIDGE MOUNTAINS OF VIRGINIA"

Peaks of Otter in Background.

Photo by Abbie Rowe  
Courtesy National Park Service



PEAKS OF OTTER, VIRGINIA

Unobtrusive natural stone steps lead to observation platform on Sharp Top Mountain.

National Park Service  
Blue Ridge Parkway Photo



THE PATH TO YESTERYEAR

Restored Mabry Mill grinds cornmeal and buckwheat flour for visitors and exhibits early American industry.

National Park Service  
Blue Ridge Parkway Photo



NOONTIME SHADE AT HIGH ALTITUDE

Native style rail fences are both picturesque and practical.

National Park Service  
Blue Ridge Parkway Photo



BLUE RIDGE PARKWAY

Alligator back location through difficult topography.

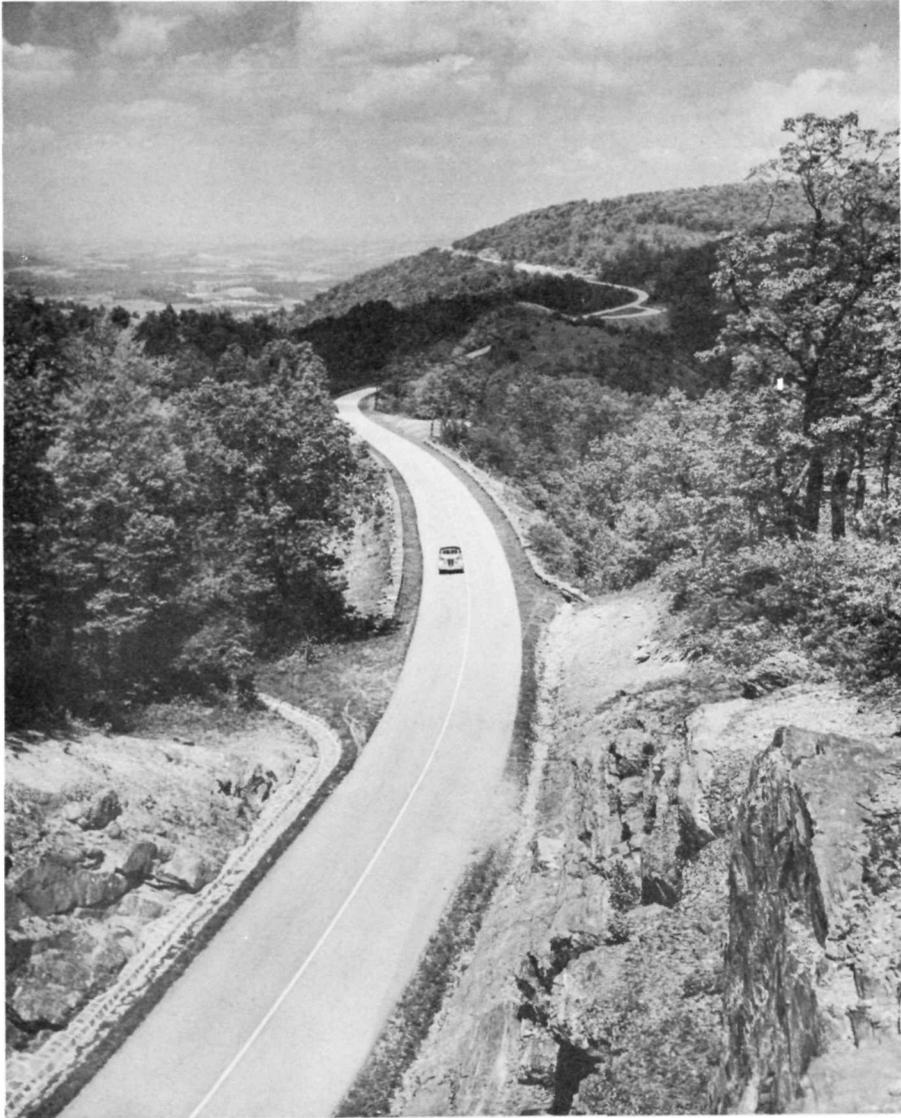
National Park Concessions,  
Incorporated  
Photo by W. Ray Scott



DOUGHTON PARK MEADOWS

High elevation pasture lands.

National Park Service  
Blue Ridge Parkway Photo

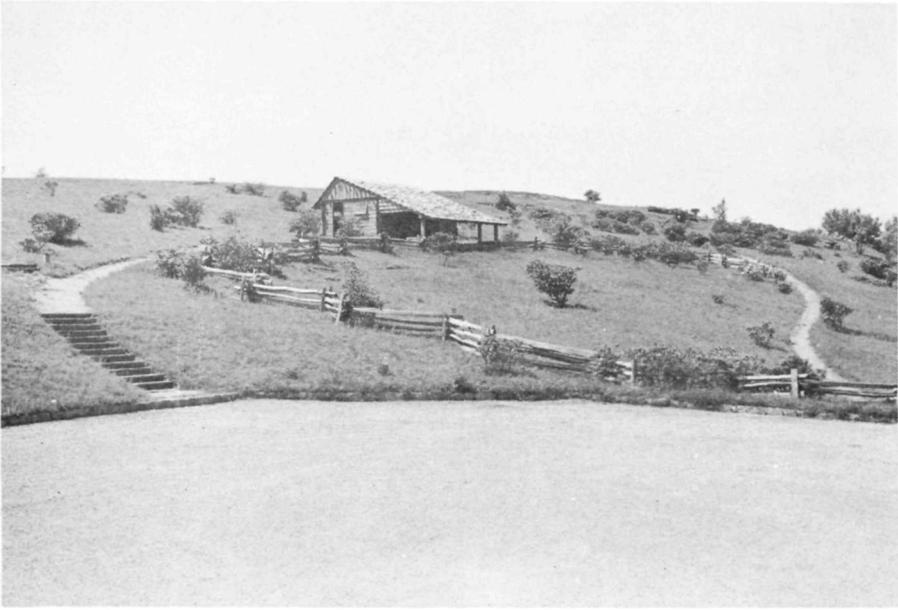


DEVILS GARDEN--NORTH CAROLINA

Parkway road skirts edge of escarpment and enters deep rock cut.

(14)

National Park Service  
Blue Ridge Parkway Photo



PICNIC AREA SHELTER AND COMFORT  
STATION, DOUGHTON PARK, NORTH  
CAROLINA

National Park Service  
Blue Ridge Parkway Photo

Character of Parkway public use buildings  
adapted from materials and appearance of  
native architecture.



GRAZING SHEEP AND RAIL FENCES

Adjoining farmers preserve living rural  
mountain scene through lease of pasture  
lands.

National Park Service  
Blue Ridge Parkway Photo



'NEATH WINTERS ICY MANTLE

Craggy Pinnacle tunnel avoids heavy cut through Rhododendron covered ridge.

National Park Service  
Blue Ridge Parkway Photo



ENTERING GREAT SMOKY MOUNTAINS NATIONAL  
PARK, NORTH CAROLINA

Exhibit farmstead of restored pioneer  
buildings.

Photo Courtesy Asheville  
Chamber of Commerce  
By Lou Harshaw



GEORGE WASHINGTON MEMORIAL PARKWAY

Varied median section above Key Bridge--  
one roadway climbs to high bluffs--the other  
hugs the river's edge.

Photo by Courtesy Bureau  
of Public Roads



GEORGE WASHINGTON MEMORIAL PARKWAY

Picnic tables along the Mount Vernon  
Memorial Highway below Alexandria.

Photo by Courtesy Bureau  
of Public Roads



THE OLD NATCHEZ TRACE - TENNESSEE,  
ALABAMA AND MISSISSIPPI

National Park Service Photo

Paralleling the modern parkway road,  
these sections of the Old Trace will  
furnish one-way living exhibits of  
the original Post Road established  
in 1800.



NATCHEZ TRACE PARKWAY, TENNESSEE

Along Glenrock Branch the picnic areas  
and nature trails are hidden in the  
cool shade.

Tennessee Conservation  
Department Photo



NATCHEZ TRACE PARKWAY, MISSISSIPPI

Open fields are interspersed with wooded areas within the wide rights of way.

Photo by Courtesy Bureau of Public Roads



NATCHEZ TRACE PARKWAY, TENNESSEE

Routed wood informational sign at Parkway entrance.

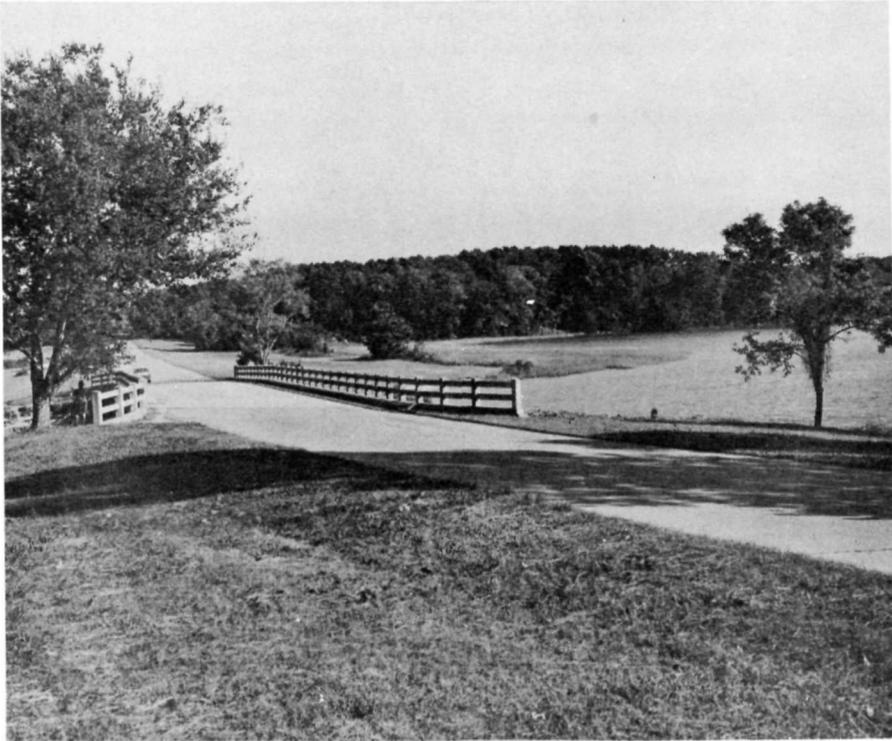
Tennessee Conservation Department Photo



BALTIMORE-WASHINGTON PARKWAY

Gentle curves to fit the rolling topography, controlled access, grade separations and no trucks contribute to easy driving on this heavily used facility.

Photo by Courtesy Bureau of Public Roads



COLONIAL PARKWAY, VIRGINIA.

Connecting Yorktown, Williamsburg and Jamestown, this parkway traverses rolling wooded terrain between the historic York and James Rivers.

National Park Service Photo

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