



Figure 11. Devils Garden, North Carolina—Parkway road leaves heavy rock cut and skirts edge of escarpment.

The entire philosophy of a national parkway such as this is to give each traveler the opportunity to see, feel, and enjoy the mountains in a leisurely visit. He sets his own pace and pauses where his interests lie—perhaps to listen to the murmur of a clear mountain stream or the throaty roar of a waterfall (Fig. 10). He has many glimpses of rural farming scenes mixed in with splashes of fall color or spring bloom. He, or she, can stroll along a trail, and if the spirit moves him, climb to a rugged outpost of the ancient Appalachian range. In quieter mood he may gaze over a Persian carpet to far away places or marvel at the endless patterns of leaves against the sky.

Who can estimate the appreciation of nature and love of country that may be awakened by such a succession of ever changing panoramas along the parkway? In simple terms is it not a new form of the old Sunday Drive? To those who were fortunate enough to enjoy those weekly excursions each bend in the road brought some fascinating sight or experience. Here they are again for you and millions of others to enjoy in this quiet way through a living section of the scenic southern highlands (Fig. 11).

II. State Parkways

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A State parkway is a modern high-speed highway designed to carry passenger vehicle traffic only. Commercial vehicles are excluded so as to provide a free, rapid, and constant flow of traffic, which is necessary for the moving of large volumes of passenger traffic.

This traffic facility is designed to eliminate all crossings at grade. Existing and future cross roads and highways are carried over or under the main parkway to provide uninterrupted easy flow of traffic.

The parkway is designed as a limited-access highway. The main traffic streams are protected from roadside friction caused by vehicles entering and leaving the highway at random, by acquisition of a continuous land strip, improved as may be necessary, and landscaped with grass, trees and shrubs. Access is provided at planned intervals under controlled conditions. This type of design helps to insure safe and free flow of traffic.

A State parkway may be designed, constructed, and maintained as a free traffic facility. The original sections of the Garden State Parkway built by the New Jersey State Highway Department are free. The major portion of this same State parkway built by the New Jersey Highway Authority is a toll parkway with the southern portion open to mixed traffic.

The definition of "Parkway" in accordance with the New Jersey Freeway and Parkway Act, Chapter 83, Laws of 1945 is as follows: "'Parkway' shall mean a state highway especially designed for through passenger traffic over which abutters have no easement, or right, of light, air or direct access, by reason of the fact that their property abuts upon such way, with special treatment in landscaping and planting between roadways and along its borders, which borders may also include service roads open to mixed traffic, recreational facilities such as pedestrian, bicycle and bridle paths, overlooks and picnic areas, and other necessary noncommercial facilities.

"Property needed for any parkway is declared to be all those lands or interests therein required for the traveled way, together with those properties, including lands and interests therein, necessary to provide land between roadways, to provide occasional parking areas, to provide for treatment of borders and landscape areas and to provide recreational facilities as referred to in the definition of a parkway under section one of this act."

PRINCIPLES OF STATE PARKWAY DESIGN

Width and Acquisition of Right-of-Way

The Garden State Parkway was designed as a controlled-access type of toll parkway to accommodate two roadways with three 12-ft lanes with 10-ft outside shoulders and 3-ft inside shoulders in each direction. Four lanes were initially constructed and the additional two lanes constructed as needed on the inside adjacent to the median. Median separator varied from 50 to 200 ft located within a varying width of right-of-way. In urban areas the minimum width of land acquired was 200 ft, where service roads were required, a minimum width of 300 ft of right-of-way was purchased. The width of right-of-way was increased—varying from 300-600 ft—where the parkway passes through suburban and rural sections of the state. At stream crossings, where unusual landscape features existed, right-of-way takings were widened from 600-800 ft. Other outstanding natural landscape features such as existing wooded areas, streams, ponds, scenic overlooks and picnic sites were all carefully considered and included in the original right-of-way acquisition. Before right-of-way taking lines were finally set, the parkway grading and drainage was designed in all details. This made it possible for the designer to know where stream channel changes were to be located and where drainage swales and limits of cuts or fill slopes would be, in relation both to the right-of-way line and natural landscape features. Taking lines were governed by topography and should extend to the top of slopes and to the far sides of streams so that the hillside and streams may be protected from being removed by future growth of residential, commercial and industrial developments. No uniform taking line was followed.

Guide standards for parkway acquisitions were as follows:

1. Minimum right-of-way to be 50 ft beyond the top or bottom of slope measured from the end of the rounding.
2. Minimum right-of-way to be 100 ft beyond edge of the shoulder. Where the distance called for under 1 is less than 100 ft beyond the edge of the shoulder, Item 2 will govern.
3. Modification in the distance of 1 and 2 may be made where expensive properties are involved.
4. Small acreages of little value that are land-locked, generally will be acquired.

As a rule where land is cheap and valuable natural landscape features exist, the right-of-way width should be widened (Fig. 1). Where land values are high, the acquisition should be reduced to the desirable minimum of 200 ft.

Alignment

The parkway alignment generally consisted of the curvilinear type which fits the surface of the ground in a series of long flat curves connected by short tangents (Fig. 2). Design speed for the Garden State Parkway was 70 mph. The long flat curves measured 15,000-ft radius connected by short sections of tangents, 220-2,300 ft in length. At some locations the type of terrain encountered made it necessary to use curves with 3,400-4,000-ft radii. In urban areas a minimum desirable radius of 2,800 ft was permitted. In the geometric design standards adopted for the design of the horizontal curvature and profiles for the roadway,

the use and pleasure of safe driving were always given careful study and consideration. Great effort was taken to eliminate a monotonous alignment with long tangents, flat grades, and sight distance beyond the requirements of safety. Long flat vertical curves result in causing the constant glare of headlights to blind drivers of vehicles traveling on opposing roadways.

Profile

Desirable minimum grades of 3 percent were used as a geometric design standard in setting profiles on the parkway (Fig. 3). Where the parkway location encountered more hilly terrain it was necessary to increase the profile gradient to 4 percent for a short distance. Inasmuch as only passenger vehicles are permitted on this section of the parkway, the use of the steeper gradient did not affect their operation to any degree. All curves on the main roadways of less than 6,000-ft radius were designed with superelevation. Deceleration lanes of 800 ft and acceleration lanes of 1,200 ft in length were used at all interchanges and service areas to provide safe ingress and egress.

Landscape Design

Aesthetic considerations begin in parkway design with the selection of the road location, design of the streamlined cross-sections with varying medial zone, shallow swale drainageways, and flat rolled fill and cut slopes. Careful study of topography and how it affects the final profiles of the parkway roadways are always considered. The profile of each roadway is designed as a separate roadway on its own profile except where a narrow median is used. The profile of each roadway is set in close relation to the existing terrain so as to keep the amount of cut and fill required to a minimum. Cuts and fills should be blended into the existing ground surface by using varying slope grading design standards based on the height of the slope. Slope grading design standards may vary with the height of the slope in keeping with the economic feasibility. The use of reasonably flat slopes will reduce erosion, roadside mowing and snow removal problems. Most important of all, flat slopes will make the parkway safer to travel as well as reducing miles of expensive guide rail to build and maintain (Fig. 6).

Slope design standards used as a guide in setting side cut and fill slopes on the Garden State Parkway were as follows:

Depth (ft)	Cut Slope Ratio	Height (ft)	Fill Slope Ratio
0-3	6:1	0-5	6:1
3-6	4:1	5-12	4:1
6-25	3:1	12-50	2:1

Length of rounding of the top of the cuts and toe of fills was based on $1\frac{1}{2}$ times height of cut.

Contour Grading

Contour grading was used in designing all traffic interchanges and service areas. Contours were used

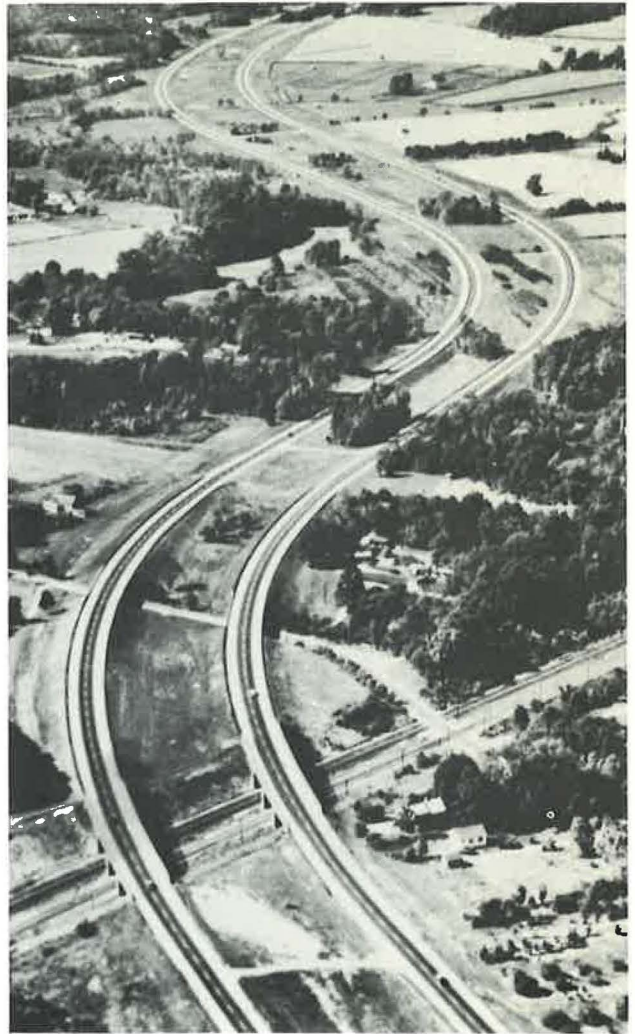


Figure 1. Aerial view of Garden State Parkway in the vicinity of Red Bank, New Jersey. View shows how use of wide median allows existing landscape features to remain between roadways.



Figure 2. The parkway alignment generally consisted of the curvilinear type which fits the surface of the ground in a series of long flat curves connected by short tangents.

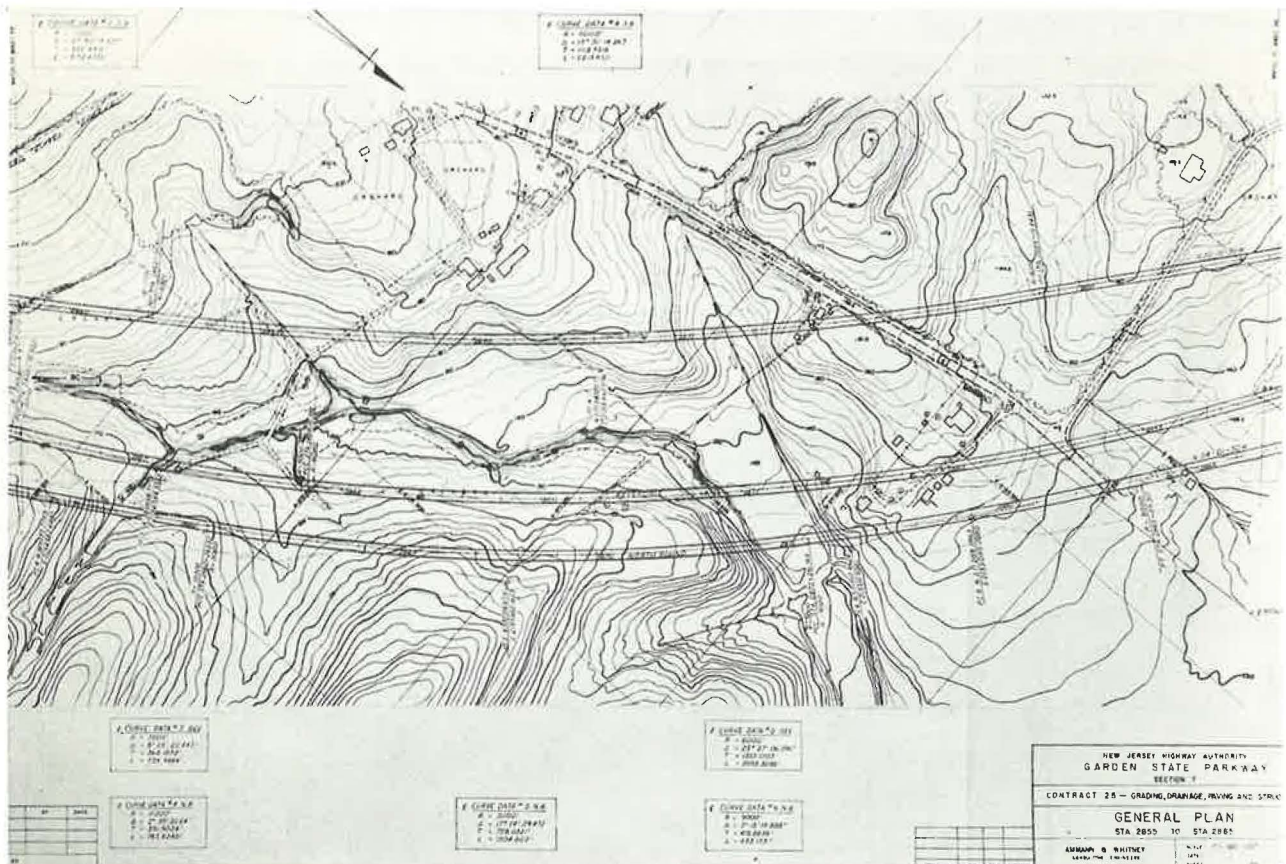


Figure 3. Contract drawing for grading, drainage, paving and structures prepared directly on aerial topographic maps at the scale of 1 in. = 100 ft. Similar topographic maps were used in laying out preliminary alignment and profiles for the parkway.

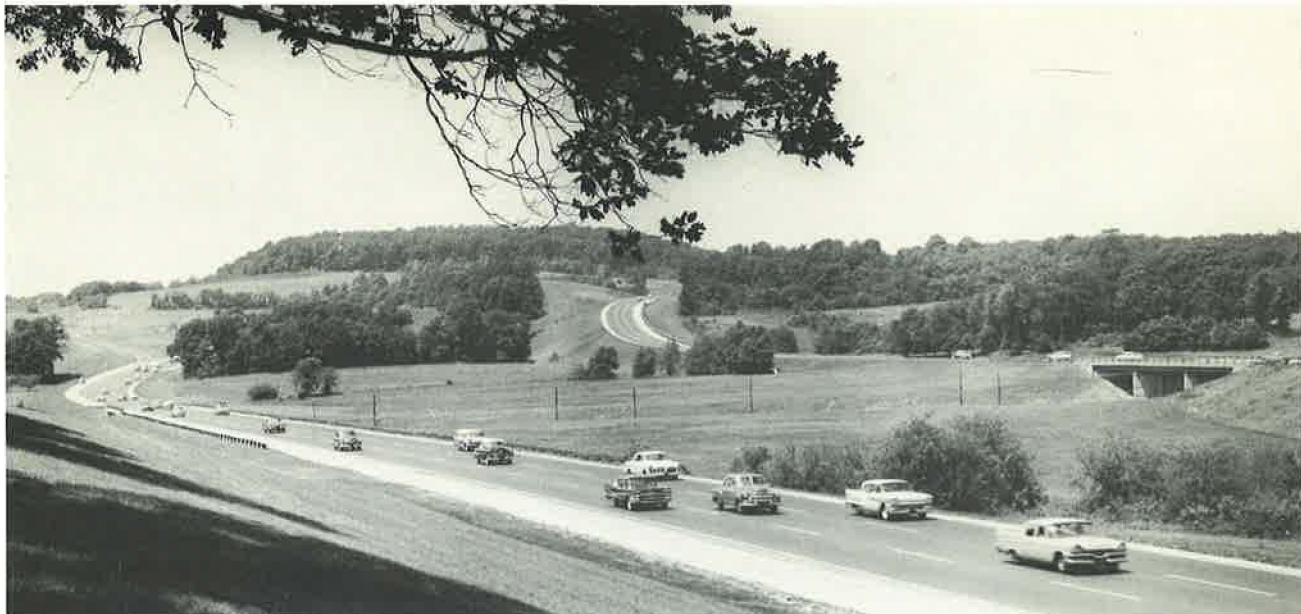


Figure 4. View toward Telegraph Hill where the separate roadways were designed on individual profiles to fit the alignment into the existing rolling terrain.

in blending end sections of cuts into existing terrain. The approach fills to all overpasses were contour graded. Two-foot contour interval was used.

Selection of Recreational Areas

Scenic overlooks, picnic sites, and Telegraph Hill Park were designed as part of the Garden State Parkway. These areas provided safe stopping places for the motoring public to rest, relax, and enjoy the countryside scenery for short intervals during their travels over the parkway. Such recreational areas



Figure 5. Scenic view of Garden State Parkway looking south over southbound roadway from Nut Swamp Road, Middletown. Northbound roadway in background. Cuts and fills are blended into the existing ground surface by using varying slope grading design standards.

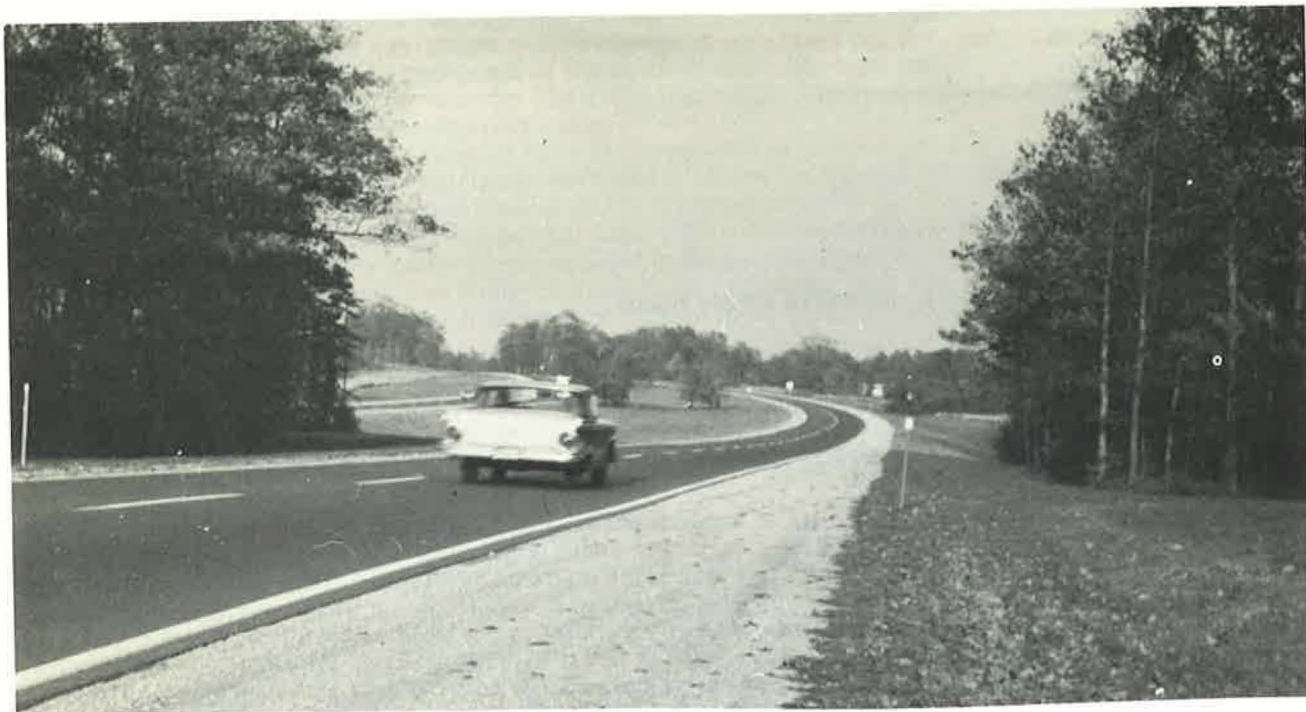


Figure 6. Garden State Parkway in vicinity of Toms River, New Jersey. Wide varying median separation permits the conservation of existing woodland growth in foreground and picturesque apple trees in the background. Flat graded side slopes increase safety and blend the individual roadways into the roadside landscape.

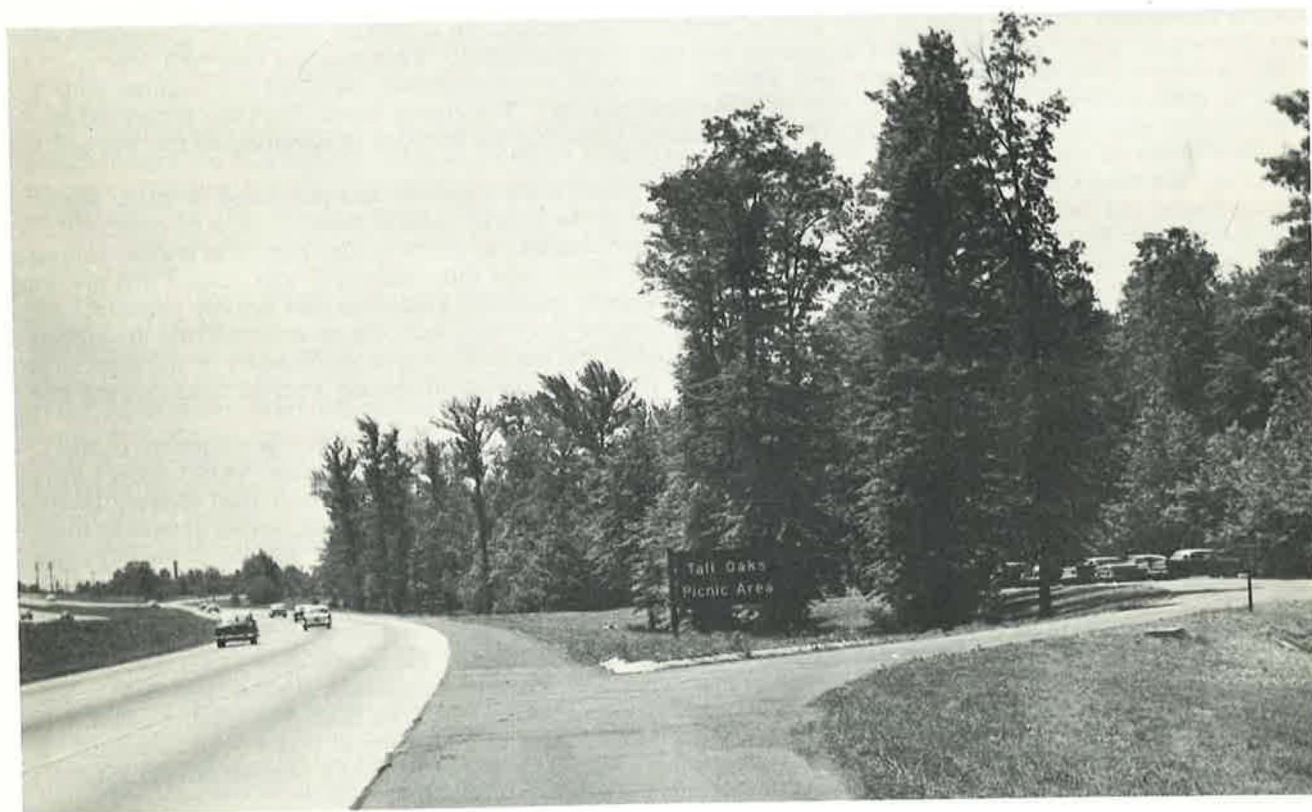


Figure 7. Tall Oaks Picnic Area provides a pleasant recreational area where motorist may stop, relax and enjoy a picnic lunch.

(Fig. 7) help relieve driver fatigue and indirectly make the parkway safer to travel.

By combining good engineering and landscape design principles the Garden State Parkway provides the people of New Jersey as well as out-of-state motorists with a parkway that makes driving to business or to shore recreational areas a comfortable, rapid and safe trip.

III. The Protected Travelway

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The modern motor parkway originated in the metropolitan area of New York City shortly after World War I. Later, the parkway idea was extended to include long cross-country scenic drives, such as the Blue Ridge National Parkway, traversing mountains, plains, and fields. Important features of these national parkways are full control of access, restriction of traffic to non-commercial vehicles, and complete scenic control achieved by ownership of a wide belt of land, the right-of-way being, in fact, an elongated park.

The wide belt of land required for a road of national parkway standards and the pre-emption by existing roads of most of the potential corridors where parkways might be planned, has led to the development of a third concept under which roads of parkway-like character might be developed. This "protected travelway" concept is best exemplified by the Great River Road proposed for construction by the ten Mississippi River states, with Federal assistance, in a location generally parallel to the Mississippi River, from Canada to the Gulf of Mexico. The principal characteristics of the Great River Road are: (a) ownership and control by the individual states; (b) design and construction by state forces with Federal advisory services where requested; (c) Federal assistance in financing through the usual Federal-aid channels; (d) partial or complete control of access; (e) an adequate protective scenic corridor by land controls over the adjacent roadside, these controls to consist principally of scenic easements; (f) marshaling of the scenic, recreational, historic, cultural, and geographic resources along the route by interpretive and public-use facilities; (g) utilization of existing highways where these are suitable; and (h) construction of occasional sections on new location excluding commercial traffic where other satisfactory highways exist for such traffic.

In 1907, a decade before World War I, a very civic-minded group of men with vision had the idea of converting the dreary waste-dumps of New York's Bronx River Valley into a narrow ribbon park, through which was threaded a motor road of restful alignment and pleasing roadsides. This was not only brilliant and creative engineering and planning, but also shrewd, practical common sense, because the blighted land could be obtained for a fraction of the cost of other land nearby. The Bronx River Parkway Reservation Commission was authorized on June 5, 1913, to acquire lands for the purpose of cleaning up the sewage pollution in the valley.

Today, the Bronx River Parkway, for which general plans were approved and published in 1918, would be considered old-fashioned in geometrics, yet, because of its access control feature, it still retains its original capacity to handle traffic at moderate speeds, and indeed, is successfully carrying traffic volumes far beyond its planners' expectation. The shrubbery and trees, now fully matured, are restful and pleasing to the eye, and also serve to muffle traffic noises and screen headlight glare, so that nearby residents are scarcely conscious of the parkway's existence. This pioneer parkway, and others successively developed in the New York metropolitan area, have firmly established the usefulness and practicality of the parkways for moving large volumes of commuter traffic and for providing opportunities for recreational driving in crowded urban areas.

In the middle 1930's, the parkway idea was enlarged and somewhat changed in the development of the national parkways, notably the Blue Ridge and Natchez Trace Parkways. In these, the "park" aspect of the parkway received greater emphasis than was possible in urban areas, due to lower land values, thus permitting the addition of recreational and public use features, such as picnic areas, camp grounds, historic sites, and interpretive facilities. The importance of the motor road or "way" aspect of the parkway was correspondingly reduced by its removal from centers of population with their large volumes of commuter traffic. The parkway became a destination in itself—actually an elongated park—rather than a segment of a city, county, or state highway system.

Thus by the middle 1930's there had developed two parkway concepts: the landscaped commuter artery in metropolitan areas; and the elongated cross-country national park of mountains, plains, and fields, with its component parts connected by a recreational rural motor road designed for leisurely traffic. Both types, however, retained the essential parkway elements of: (a) exclusion of commercial traffic, (b) complete control of access, (c) scenic control over the roadsides by outright possession of a comparatively wide right-of-way, and (d) graceful, free-flowing curvilinear alignment and grade.

These characteristics severely restricted the early development of parkways, as indeed they still do in many parts of the country, often because of lack of enabling legislation. The principle of access control