

## LOCATION AND ROAD-FOCUS

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### SYNOPSIS

A new term, "road-focus," has been coined to define the focal point at which eye strain so frequently develops, resulting in confusion and lack of alertness on the part of the driver. At the lower speeds the eyes are relaxed and able to see objects well off the side of the highway, as well as the road ahead. As speed increases, this range of focus narrows until side view entirely disappears. Such concentration of the eyes results in eye strain and increases the likelihood of accidents. The author has noted that on long monotonous stretches of road the eye strain is relieved by means of group plantings, such as groves of trees in bottle-neck fashion, which narrow the horizon and give the eye vertical objects to rest on, thus softening the focus.

In general, such measures have thus far been corrective, not preventive. Proper thought in location can prevent eye strain by making the road blend into the landscape. Location lines can be directed towards such immovable objects as tree groves or church steeples, and then curved easily around such prominent features. Locations of this type will bring prominent features of the landscape directly into the line of vision of the driver, making it unnecessary to take his eyes from the road ahead.

The program of roadside development has brought about innumerable problems. Roadside development properly begins with location; it is inseparable from construction, and then continues on with maintenance. Roadside development should not be dealt with as something apart in the process of road construction. It is too intricate a part of all features in road design.

For several years a large problem has been the reconstruction of old roads. Following a transition period a broader viewpoint has been taken as greater highway problems presented themselves. With the more speedy vehicles, the roads simply had to be designed to fit the automobile. In many instances, instead of a complete revolution in design, often a mixed design was utilized in which the old was coordinated with the new practices, and roadside development was used to camouflage the defects. In reality, roadside development should be the leader in the field of advancing new thought in every phase of highway construction, particularly that of location. Let us then view how important location is in roadside development.

I have coined the term "road focus." Road focus is that focal point where eye strain so frequently develops, resulting in confusion and a lack of alertness on the part of the driver. During the transition from the old to the new, quite a few long tangent highways were constructed. These long tangent highways are of no particular danger to the slower moving automobiles. The eyes at low speed are not focussed at any particular given point; they are relaxed and able to absorb not only the objects on the highway proper, but also the fields beyond the right-of-way. As speed is increased, the range of focus narrows to where side views disappear. In other words, the action of the eyes may be likened to the rays of an adjustable flashlight. At a near point the instrument is adjusted to throw a fanlike spray of light which illuminates a broad area, but at a far point it must make a narrow beam which brings a distant spot into view, but leaves all else in semi-darkness. This concentration of the eyes results in eye strain, and as a result, side-swiping, head-on collisions, and other curious accidents occur. On the old, monotonous roads

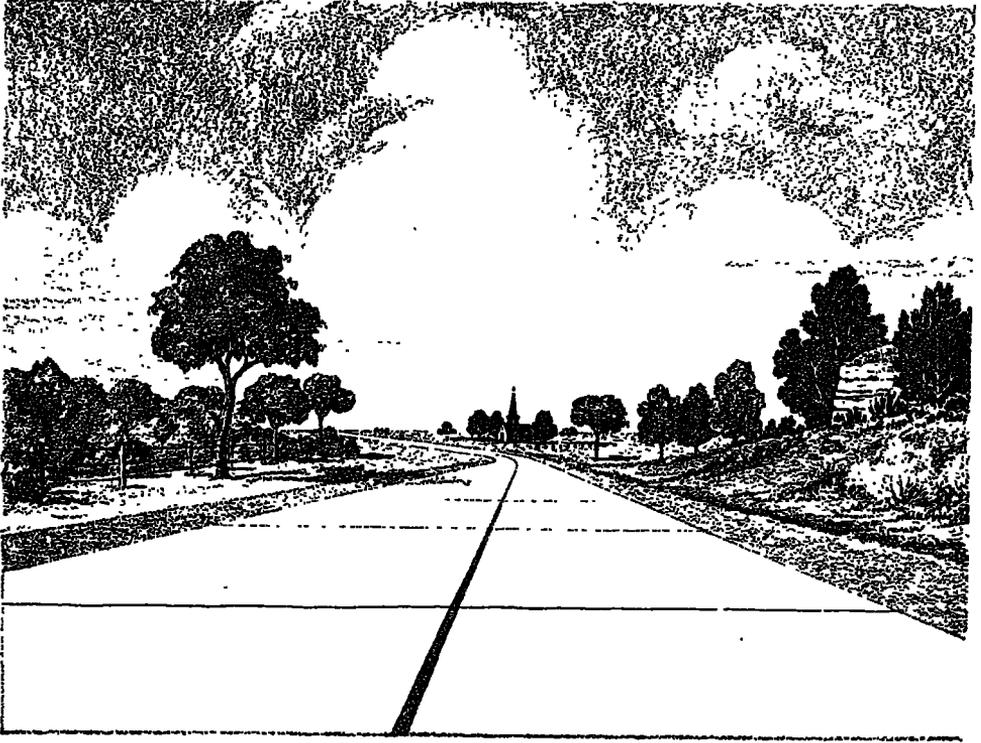


Figure 1. The Driver's Attention is Directed to the Highway with the Steeple in the Distance

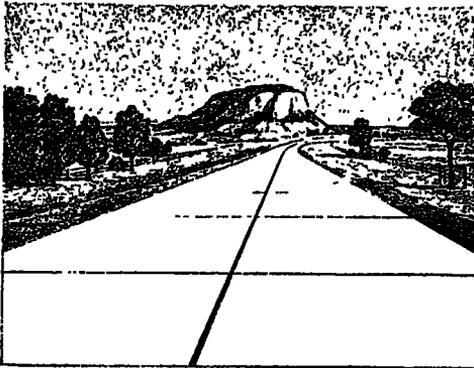


Figure 2. The Direct Approach to this Prominent Landscape Feature Presents an Interesting Picture of Light and Shade.

which will not be reconstructed for many years, we try to remedy this condition by means of group planting to narrow the horizon, which give the eye vertical

objects to rest upon, softening the road focus, and preventing eye strain. This method of reducing eye strain works, as I have often observed among fellow drivers. Groves of trees in bottle-neck fashion are invaluable to shorten the focus and prevent eye strain. However, the remedy must be understood as artificial, because it is a corrective measure rather than a preventative one. Thought in location can prevent eye strain; if not, then it may be termed a wrong location, regardless of its destination or objective.

In the past, it was not unusual for the engineer to direct the line at removable objects—a tree, or an old barn, for example. These objects could be removed. This gave the engineer an opportunity to construct the road on the most direct route, with variations from a straight line reduced to a minimum. What would

happen if the location engineer directed his instrument at an immovable obstruction, such as a hill, a dam, a grove of trees, a country church, a rural home, the vertical architectural features of a village, or any one of the innumerable features which can be found in the landscape? Such a highway disappears naturally into the landscape while at the same time permitting the driver to view the scene before him. In other words, if the approaching highway leads directly towards a grove of trees, or other obstruction, and then curves easily to the right, or to the left away from the grove of trees, the landscape becomes the prominent feature.



Figure 3. On Construction these Trees were Preserved in a Bottle-Neck Design

Location is, and will continue to be a technical engineering problem. However, since a road is laid through a landscape, it is the landscape with which we are concerned in order to reveal greater beauty, insure greater safety, more economy, and present to the motorist and the engineer wider opportunities for an appreciation of the landscape.

From an engineering point of view, the highway means many things. To one intimately familiar with the problems of construction and maintenance, almost any highway is interesting. To the engineer, a road is much like reading an interesting book. He occupies himself with the profile, the vertical and horizontal curvatures, sight distance, passing distances, cross-sections, erosion, drain-

age structures, shoulders, pavement, center striping, sign marking, bridges, grade separations, intersections, and other innumerable items. These features present to him a continuous variety of interest which causes him to maintain his alertness while driving. However, these features are of such a technical nature that they do not concern the casual driver. Therefore, to the average motorist the road is less interesting than it is to those who deal with highway construction.

At low speed it was natural for the motorist to take in the scenic views which lay on either side of the right-of-way. However, since speed has increased, it becomes more and more apparent that those side vistas, which were once enjoyed, are now usually lost. Should a driver take his eyes from the road ahead, he endangers his life and the lives of others. It follows then that in order to make modern motoring more interesting, the scenic vistas should be within the motorist's vision ahead of the car, instead of merely a straight highway constantly in front of him.

In any given terrain it is possible to make use of some extraordinary features in the landscape to add variety to the road. For the purpose of safety, the scenic beauty of a highway can often be improved by even a slight deviation from the usual directness. After all, directness has no advantage other than to provide the shortest distance possible. This shortest distance often necessitates high construction costs, and excessive maintenance expense.

It is important that road focus be given more study. The underlying reasons for road focus will undoubtedly receive more attention by those who build highways for the traveling public, as well as by the automotive industry. Though the application may be subject to corrections which will come from experiments,

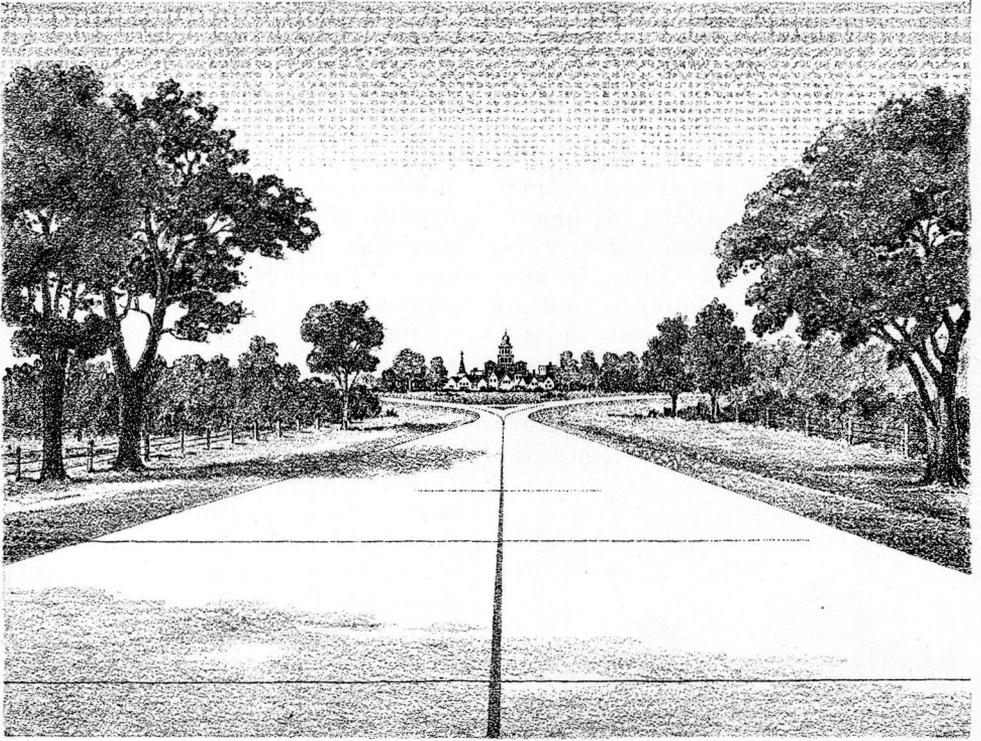


Figure 4. The Interesting View of the City Lies Directly Ahead of the Motorist

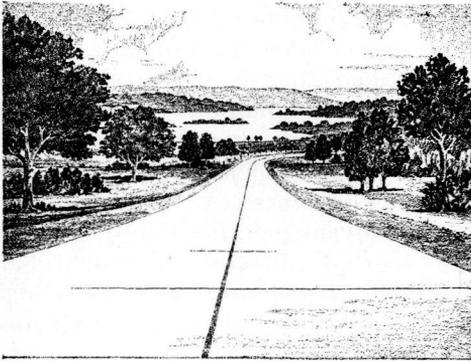


Figure 5. A Direct Approach Overlooking a Bluff Toward the Lake Gives an Attractive Vista for the Motorist.

we may with some confidence make use of it in highway location in coordination with roadside development.

It is unquestionably true that roadside visibility is reduced as the speed is increased. To put it bluntly, it may be said that the faster the car goes, the less the driver sees. Each person will undoubtedly have his own normal road focus at 40, 50 or 70 miles, but very few will have the same reaction. Roadside development should be attained not only through planting, but by means of location so that the highway disappears in the landscape, and thereby becomes a part of it.