

# Landscape Design Principles and Their Application to the Modern Highway

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Technological advances in highway design and construction over the past few years have been significant. Improvements in geometric design standards, pavement design, noise abatement, snow drift control, erosion control, weed control and other aspects of the complete highway are occurring at a rate to bewilder the layman and, sometimes, the professional. The field has become so complex, and specialization so diverse that it is difficult for any individual to grasp all implications and to make balanced decisions with intelligence. So many different professions and interests are involved with highways that they often seem to be working at cross purposes, each intent on its own contribution without regard to correlation with the total unit. Yet there is a common denominator, which, if held as a basic truth, can integrate and correlate each effort; can solve apparent conflicts of ideology springing from different backgrounds; can relate the complexities of diverse technological problems to one simple common goal. It is said that sometimes the forest cannot be seen because of the trees. Can it be that it is sometimes forgotten that highways are for people?

Is the basic concern with man's convenience, his safety, his comfort, his enjoyment and his economy or that of the vehicle? When point A is joined with point B by constructing a highway between them, is the primary purpose to join the points or to provide man the opportunity to pass from one to the other? Does a person travel on a road or in a landscape?

There is a need for frequent review of the past efforts in relation to the prime objective, not the intermediaries by which it is accomplished. If people are thought of as individuals rather than as statistics, it might be possible to design better highways for them.

Man either adapts to his environment or strives to dominate that environment by adapting it to his needs and desires. His physiological and mental elasticity permits him to achieve the former; his knowledge and ingenuity, the latter. Not long ago roads and other evidences of man's efforts represented tenuous and insignificant elements in a dominant natural environment. Today, the relationship is becoming revised. Formerly, the concern was primarily with mastering nature sufficiently to create routes for sporadic ground communication. Today, there is the monumental task of integrating highways into workable juxtaposition to a myriad of other, interdependent, and occasionally incompatible, land units. A highway is only one element in a landscape—its purpose is to serve other land units and the people who use them.

A highway has certain unusual characteristics which create special problems. It is an extremely lineal unit and, although its primary function may be to provide efficient circulation between the land units it serves, it also interrupts free circulation between immediate land units which it separates. This is a particularly significant problem with limited-access routes. Continued growth in the number of such highways will lead to the encirclement of large land areas and will have more of an impact on their development and socio-economic character than any existing geographic or political boundaries.

Standards controlling alignment, grade, sight distance, median widths and other geometric design factors which must be observed to make the highway safe for travel become more exacting as speed and traffic increase. Growing volumes of traffic produce noise and fumes in quantities sufficient to constitute a serious non-physical invasion of adjacent land units.

The proper integration of a highway into the landscape is as much an art as it is a science. To be of maximum service to society it must be pleasant to use as well as safe and convenient. Its creators have a responsibility to add to the harmonious integration of the total environment, not subtract from it.

It is no longer solely an engineering problem but one demanding collaborative effort between many professions. Since landscape architecture is devoted to the design of land for man's use and enjoyment it would seem that it has much to contribute to highway development. Many existing highways and parkways are eloquent testimonials to such contributions.

The landscape architect in the practice of his profession uses principles common to all design efforts. When he considers a highway he sees it, first, as a land element to be developed for the use and enjoyment of people. He sees it, then, in relationship to all other land units, adjacent and distant, which may affect it and in turn be affected by it. He is concerned with the interesting, sequential presentation of these land units to the view of the highway user not only for his enjoyment but for his safety. By thoughtful composition, he feels it is possible to avoid monotony and reduce driver fatigue. By continually relating the driver to the landscape he hopes to provide familiar types of perspectives by which the driver can judge speed and

distance. Many drivers, have experienced the unusual sensation induced by some super highways with seemingly endless tangential alignment, where one seems to be encased in a speeding projectile under no volition but its own. This loss of identification with the landscape probably has as much to do with excessive speed and the mesmerism that dulls reactions as any other factor in contemporary highway design.

The landscape architect is concerned with harmony and so he considers also the appearance and effect of the highway as it is seen from the landscape. There is no justification for the creation of a land unit that does not fit into its surroundings. The shortest distance between two points may be a straight line, but a tangential road of flat grade is neither the best nor most economical alignment if its achievement leads to excessive grading and a general lack of compatibility with its environment or to driver reactions which lessen his safety or interest. Multilane limited-access routes with wide medians and high geometric standards need special study in this respect because they affect their surroundings to such a high degree. One might adopt the attitude that the elimination of physical access from adjacent land units removes also the responsibility on the designer to consider the visual, audio and circulation effects of such a highway on adjacent land. Such a concept is untenable unless one is also prepared to reject categorically any need for the integration of land units into a controlled total environment. It is practically impossible and generally undesirable to isolate a highway completely from the land through which it passes, and the lack of provision for reasonable cross circulation between land on both sides of the highway is surely short sighted.

The landscape architect seeks to create design forms as expressions of their function. Therefore, he recognizes movement as a basic principle of highways and thus conceives of the road as a rhythmic ribbon of pavement moving through the landscape. Where the land is gentle and rolling the alignment is flowing and subtle. When the topography is rugged the alignment becomes more tortuous. In either case, there is an expression of rhythmic movement for which engineering data can be computed rather than an engineering exercise in which the intersections of tangents and grade lines are softened by inserted curves of sufficient flatness only to satisfy predetermined design speeds.

It is easy to become so lost in a myriad of detail that principles become standards, standards become rules, and rules become inviolate. This certainly intends no implication that the landscape architect is or should be oblivious to the need for technical skills or that he has not contributed significantly in this respect. He is continually involved in research to discover new and better materials and methods of providing more efficient and economical highways. These contributions should be enhanced by encouraging an orderly, coherent and constant relationship of small detail to major purpose and a greater integration of professional effort toward that end.

Man seeks beauty, through the embellishment of his person, his property and his environment. His tastes may be satisfied by simplicity or ornateness. His conscious reactions may range from complete rejection to extreme sensitivity. His specific search may be voluntary or involuntary but seek it he does. Each person involved with the design, construction and maintenance of highways has a responsibility to recognize this need. To do less for those he serves is to short-change them.