Congress in October 1965. At that time, there were no pat answers to the many problems of implementation that could be foreseen. Of course, we cannot supply any official answers to these questions this afternoon. In the highway field, the official answers must come from the state highway departments and the Bureau of Public Roads. But a purpose will be served, we believe, by the kind of discussion we can have this afternoon, for it may help bring into better focus the questions that are in people's minds, and it may aid in the ultimate solution of these problems to examine the factors that we now can see have a bearing on them.

With this introduction, then, I am going to ask each of our panelists to speak briefly about a particular aspect of the total subject, and then open the floor for a general discussion with the panelists. Our intent is to have as complete an exploration of these problems as time permits.

PROTECTION OF SCENIC VALUES

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Scenic highways depend upon scenic values. In turn, scenic values can be broken down between natural and cultural values in our landscape. Before we can fit our highway ribbons of concrete into harmony with the landscape to assure future generations a pleasant scenic driving experience, we also have to call upon lawyers to devise ways to see that these scenic values are protected. But even before this, we must get out into the landscape and see what values need to be protected.

In Wisconsin we determined that the four major resources which were worthy of protection and enhancement were waters, wetlands, flood plains, and sandy soils adjacent to water. These are all flat surface patterns, narrow linear bands or ribbons intertwined throughout the landscape. We also saw that there were slopes of varying degrees enclosing these surfaces and ribbons. In Wisconsin these slopes were

identified by blocking out all slopes of 12-1/2 percent or greater in grade. We selected this figure because we found that when slopes are of more than 12-1/2 percent the farmer can no longer easily plow the land, or if he tries to he creates major soil conservation problems. Thus we found that one of the results of our work was to stabilize those slopes.

We also found that these slopes were enclosed by rims, and it was from these rims that we saw the exciting views below. It is along these rims that we could lay out hiking trails, bridle paths, and scenic highways. When we know where these various quality patterns are, we can develop our rim areas to take advantage of them. In short, the corridor patterns that we term "environmental corridors" were along our major tributaries of the state's waterway system, and within that system we also have other features -- rapids, fish habitats, natural timber (which is on slopes too steep to permit logging operations), and wetlands. So we have a combination of outstanding natural resources arranged in a pattern that gives us opportunities for development of scenic qualities in the environment. We also had our major ridge lines -- in Wisconsin the Baraboo Range, the Iron Ore Range, the Kettle Moraine -- all linear in nature. And we had the shorelines of our lakes with their exciting views of the water. These outstanding visual quality patterns are, one might say, ribbons in the landscape. On a statewide basis, these patterns can be mapped, and when they are, they appear in striking fashion. People who never had looked at the state in this way before found that it was quite a discovery to see this map.

Inventories of these resources in greater detail were made on a county by county basis, and this information is available to the highway designer, the urban designer, and to planners. If one is seeking to determine where the outstanding scenic or recreational values are, a map of the highway transportation network can be overlaid on this map. Along with this, other overlays can be made to show the population pattern, and the estimates as to its future distribution. When these are viewed against the pattern of the water, lakes, timber land, and steep topography, and the natural habitats of fish and game, they show their relationship to the transportation pattern, and natural linear corridors can be recognized.

On closer examination, these corridors utilized the flow plains (where one would not want to build) on the steep topography (which also is impractical to build on), and the "back-40-with-the-law-tax-base" (which the farmer always wishes he could use in some way). Yet these areas all had scenic quality and contracts which were of some

value. If you can imagine Milwaukee, sprawling out from its present borders in the next few years -- which is inevitable -- you can visualize how wonderful it would be to use legal means to protect these patterns, and make them serve as an urban form-determinant to guide the growth that is to come. These could give the growing city a built-in system of open spaces and recreational and scenic areas. It is ridiculous to build a city and then have to go back and acquire these natural qualities in the future at great cost. We can also see the relationship between the existing highway system to these natural corridor patterns. Where they run parallel or penetrate the corridor, we do have an opportunity to establish an outstanding scenic highway system.

Those are the linear patterns -- narrow bands running through the landscape. In addition, we identified about 250 additional isolated specific resources, both natural and cultural, which occupy a limited space in the landscape. These include historical buildings, chasms, agate beaches, springs, waterfalls, and the like. All were values that were meaningful to some group. We created symbols for each of these, and plotted these on our maps. To our surprise we found that 90 per cent of these lay within the linear system of our corridors. Also, in various areas they clustered in nodes, suggesting the possibility of multi-purpose land use. This showed that some corridors were more important than others in terms of the number of resources they served, and so we had the basis for establishing a priority system for their development as open space or park development, and for planning highway system improvements.

As a landscape architect, I am interested in knowing which of the patterns will not stand a great deal of traffic before they begin to deteriorate or be destroyed. So it becomes important to understand these patterns before one begins to weave new highway patterns through the natural corridor system, and to funnel traffic along various routes. This is not only true of highways, but of other types of human impact.

When we have identified our scenic highway system, we are also interested in the three-dimensional aspect of the route. We do not want more and more of what we leave the city to get away from. Even the countryside can be monotonous, as one discovers traveling through the north woods mile after mile with nothing but the same scene. As a matter of fact, these rural areas contain lakes, marshes, wetlands, and other interesting scenic features. With good selective cutting, it is possible to open up these views, and make travel on the road a more interesting experience. Opening up views of marsh lands, hilltops, church steeples, and other visual features can create a much more exciting scenic highway system. Where the natural pattern does

not have a great deal of variety, quality can be created through the manipulation of space.

Space is probably the most neglected resource in this country. We can, however, create "outdoor rooms" by vegetation or land forms, and give differing characteristics to the rural scene depending upon how we thread the highway ribbons through these features. Land forms, deciduous plantings or evergreens can be used to create differing shapes, forms and scales. The scale on which these features are created should be adjusted to the speed of the automobile traveling on the highway. Faster highway speeds mean that the features have to be placed further apart or else they simply become a blur to the traveler. Once the regional pattern has been inventoried, it can be seen how much natural variety is available in useful position; after that it can be developed by cutting out new "windows" into the landscape, or adding new features to the otherwise monotonous open space.

Manipulation of the roadside features is not the only means of developing scenic quality. The nature of the highway is such that generally it can be threaded through the landscape in order to achieve desired effects. A highway does not have to be straight and flat; curvilinear designs may be utilized. Thus designers can combine functionalism and aesthetics to give the right amount of variety to the driving experience, and at the same time serve the objectives of safety and economics.

An essential factor in the scenic highway corridor is the means of protecting the landscape qualities that have been built into the system and eliminating those features that detract from the quality. Hopefully we will be able to develop much better controls on a much wider scale for the protection of corridor areas. Often it is possible, by protecting or developing the distant scenes within the highway corridor, to do away with the necessity to enhance the immediate roadside with additional plantings.

What we are attempting to do in Wisconsin, then, is to understand the fabric of the land, with its patterns of resources arranged in their natural corridors, and then to fit the highway system into this fabric in such a way as to create variety, surprise, and visual experiences which otherwise would be lacking. In this way our highways surely will become much more valuable to us than they are if they are conceived and planned merely to move traffic.