

THE AMERICAN HIGHWAY SYSTEM

Introduction

With the national Interstate Highway and Defense System nearing completion the need for re-evaluation and re-codification of the social, cultural and economic value of the system is imperative. The highway system is being used to a higher degree than ever before in the history of the roadway and, as a result, the deterioration of the roadway infrastructure that underlies the system requires immediate as well as long range attention. The economic requirements necessary to revitalize a highway system that has been in operation for 20 years is staggering.

The landscape is constantly being modified, reflecting complex changes in the role of transportation and the networks necessary to support those changes. As the expansion mentality of the 1960's slowly dissipates, all that remains from the millions of dollars invested are endless stretches of highway that connect urban centers in the most direct route permitted by the landscape and the state of highway technology. The current state of the national interstate highway system (based on the latest data released by the NHTA) suggests that over 40% of the highway infrastructure is in need of repair, replacement or retrofitting to meet the expanded useage. The economic implications of this scale of work are staggering compared

New Jersey's I-280 aligned for minimal impact on neighborhoods and existing traffic patterns.



to the initial investment. The cost per mile of roadway has trebled compared to that of 15 years ago. If the future roadways that connect the geographical ends of the United States of America are not perceived from a point of view that stresses the aesthetic component, a tremendous opportunity will be lost and our future culture will again be denied the true worth of the landform.

National Awareness of the Problem

The American interstate highway system has isolated large segments of the population, throwing a noose of ring roads around urban centers, and separating them from the land. The highway system has been employed in a variety of ways to reshape the landform at the Urban, Suburban and Rural levels to such an extent that while the technological aspects of roadway design are seen as wondrous, the natural landform as a resource and an aesthetic has largely been ignored.

While the highway beautification process, begun under the Johnson administration, did much to clean up the adjacent roadbeds and the visual blight, it did little to attack the underlying problem - that the highway "strip" had already been damaged and that superficial repair made very little difference considering the extent of the highway system. Little, if any, effort was invested toward the preservation of the highway "strip" as a cultural and historical asset. The absence of billboards and automobile junkyards indicates

Dan Ryan Expressway and Robert Taylor Homes, Chicago.



that the "beautification" process has worked to a surficial level but has not focussed on the central problems:

a. the value of the land has been treated only from an economic perspective negating any aesthetic value that the "strip" might have.

b. an attitude that places the land in a position of having little or no representation in the planning process.

c. that the "new" technology can accomodate the vast network of roadways and their specific techno-material requirements.

d. an attitude that stresses speed and efficiency of movement as the prime design and planning imperatives.

e. that the structure and material constraints necessary to construct the roadway have become the major planning issues and not that of form.

f. the highway and its immediate environment is rarely "seen" at the assigned highway velocities and therefore becomes invisible to the traveler.

g. with an accelerating technology, society is not willing to slow the process in order to prioritize its values, ie., the technological imperative is determining societal values and their respective priorities.

Aerial view of the Massachusetts Turnpike, Boston.



h. distance to a society used to speed is not measured in distance but rather in units of time.

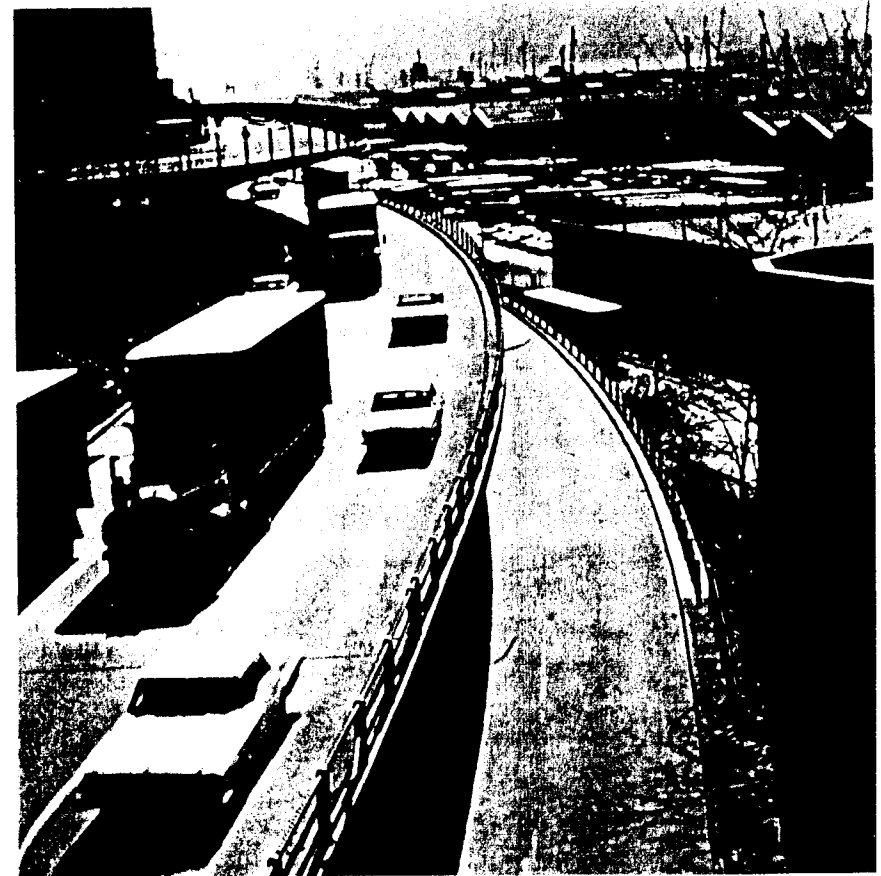
i. the vast number of professionals involved in the planning process creates a chaotic and uncorrelated environment through which the highway design emerges.

In a society in need of almost instantaneous communication, the Interstate Highway System has performed admirably with direct connections between most geographic locations. The concentration of highways has centered around those areas of greatest population reflecting a society dependent on a transportation network facilitating the flow of goods. While the nation's railroads are struggling for economic survival, road transportation continues to dominate the list of our national priorities.

Definition of the Interstate Highway System

The Interstate Highway System was originally based on the need for a national highway system that facilitated the movement and accessibility of the nation for defense related purposes. The movement of troops, materials and weaponry in as direct and economical a manner as possible was a primary concern after the Korean War. The concept of civil defense and the move toward a more dominant international posture encouraged the development of a new national priority - national defense.

I-278, Brooklyn Heights, N.Y. Clarke and Rapuono, design consultants.



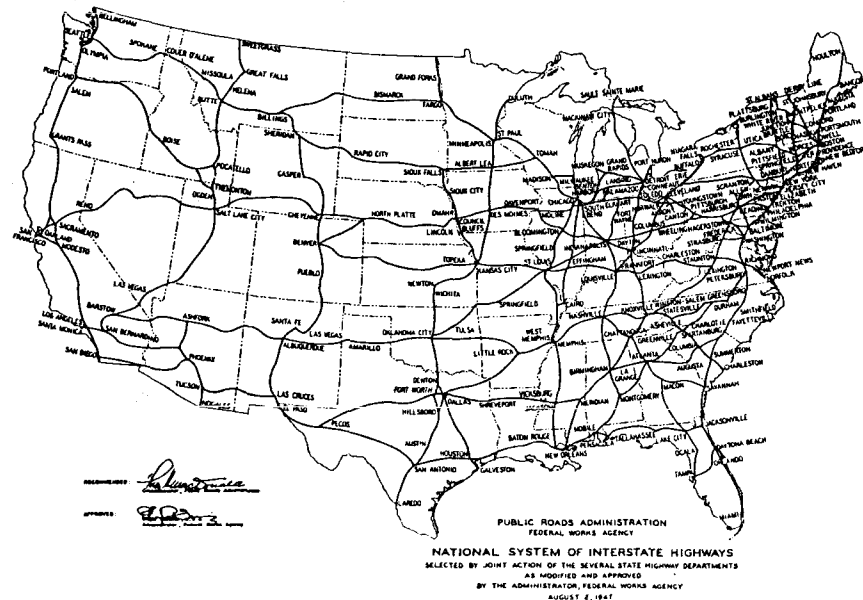
INTEGRATION OF THE HIGHWAY AND LANDFORM

The national defense system (as developed as it was at that period in time) relied on a number of disparate but related parts. The development of weapons systems necessitated a decentralization of manufacturing, research and testing facilities. The need for material acquisition, manufacture and distribution to the weapons facilities coupled with a view that the entire defense system would utilize all geographic locations within the continental United States prepared the platform for the development and implementation of the National Interstate Highway System.

A second level of priority was the national tendency to rely on the roadway system to give impetus to intensive commercial and industrial development. In doing so, the period between 1960 and 1970 showed a tremendous growth of highway development that rivaled that accomplished by the Roman Empire under The Emperor Hadrian (400 AD).

The lattice-like network of roadways linked most major urban centers with the rural expanses increasing the economic and social inter-dependency of the city and its immediate surroundings. The movement toward the country to find relief from the crowded urban condition created new uses for the interstate system. Between 1975 and 1980 the national interstate system began to complete its mission - that of closure. All that remains are isolated sections and outer ring-roads around a number of urban centers.

Projected Routes for the I-system, 1947.



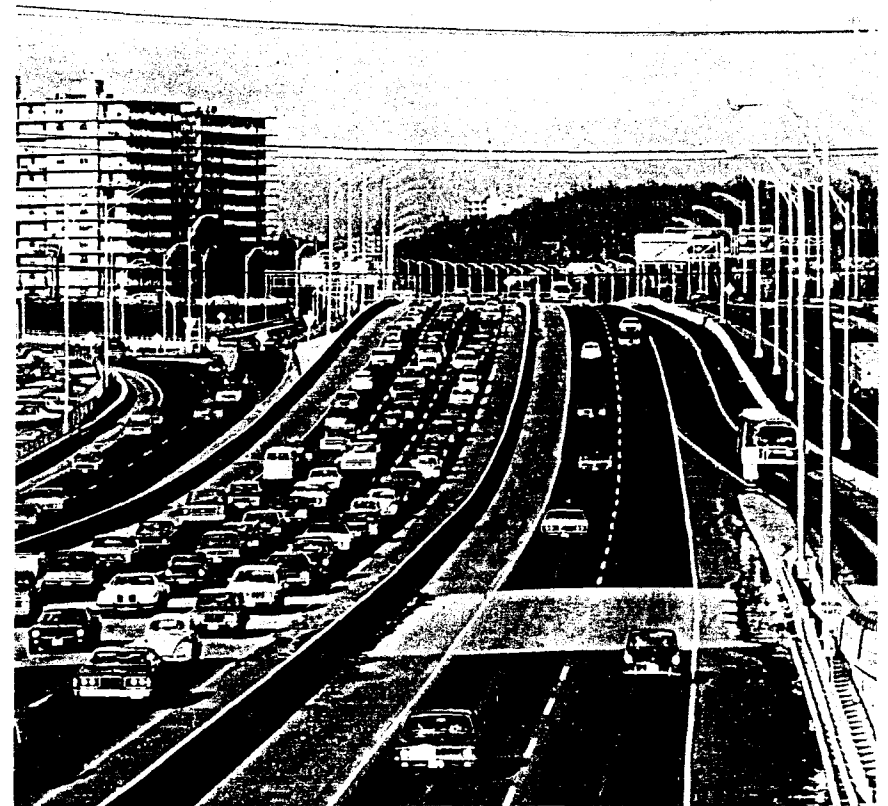
Planning the Interstate Highway System

At the base of planning the interstate system is a confusion about what the highway actually does: when a point "A" is joined with a point "B" is the primary purpose to construct a highway between them to connect the joints or to provide man the opportunity to pass from one to the other?

With the expansionist attitudes manifest as national policy during the period after World War II, a 20 year period of growth precipitated the need for a transportation network that could facilitate the coming of the "new machine age." The political structure, recognizing the need for research and development in the transportation sector invested heavily in a two-pronged attack on the problem: mass transportation and roadway infrastructure. While much has been written about the failures of mass transportation, the national system of roadways has received favorable reviews.

Throughout the development of the roadway system, the American landscape was rarely integrated into the planning process due to a nationalistic perception that the land belonged to the people and therefore should be used to serve that constituency. The land became a platform for the political processes to insure the future of a roadway system that in a few rare cases (Merritt Parkway, etc.,) invoked the land as a part of the larger process. While the American interstate highway system has been regarded as a

Shirley Highway (I-95) near Washington, D.C.



technological masterpiece, it has tended to obfuscate the aesthetic elements which produce extraordinary scenic beauty.

The reliance on the technological solution has produced short-term results that are the envy of the international community, but it is the long-term implications that are of the greatest concern. The translation of socio-political programs into physical form has relied on a long list of professionals who have been schooled in the emergence of the technological solution to problem solving. Most professional curriculums dedicated to the highway and bridge design have relied on the **structural** components of roadbed design: soil mechanics, soil structures, material design, analysis and testing as well as pavement and abutment design. Major emphasis has also been placed on those issues of **function**: stream of traffic, safety regulations, maintenance, rehabilitation and location have been well documented.

There is little evidence that the **formal** issues of "form" and the "aesthetic" of the landscape were incorporated into the curriculum during the 20 to 25 year period after World War II. This leads to the supposition that highway design has been seen as a **technical/material** problem and has had little to do with the cultural, historic or scenic aspects of the landform and its design. The disciplines most capable of introducing the "aesthetic" component into the highway planning process such as: architecture, industrial design, landscape architecture and regional planners, did not see

Waldo Grade, Marin County, California.



the problem with the roadway as a "design" problem. While ecologists, naturalists and conservation related groups decried the desecration of the landscape by the ever expanding highway system, it had little effect on the larger planning processes of roadway design. The current design attitude (often found in the appendices of the engineering handbooks) to enhance or "beautify" the landscape to make it "scenic" suggests effort in the wrong direction. The absence of effective form design guides and the integration of those principles of form within a professional curriculum is at the heart of the problem.

The perception was that the national interest was best served by a highway system that reflected the immediacy of the solution ignoring the fact that an inadequate land and highway planning process would have future environmental, socio-economic and political ramifications.