

Expressways

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● THE BUREAU of Public Roads defines an expressway as a "divided arterial highway for through traffic with full or partial control of access and generally with grade separations at intersections." The primary function of expressways is to serve existing land uses. They have become necessary to move the large volumes of urban area traffic that could not be handled over existing routes, which also provide direct access to abutting uses.

The obsolescence of many highways has been due to the inadequate right-of-way and capacity, the frequent intersections at grade, and the fact that the route had to serve the property alongside it. This obsolescence has been accelerated by congestion, principally at the point of access to the major uses abutting the highway that generate traffic; namely, business in commercial zones, employment centers, dense residential developments, and recreation centers. By providing expressways for the movement of large volumes of traffic, the traffic movement function of the highway can be protected and the need for the uses of land to be served can be fulfilled.

Everyone is familiar with commercial developments abutting highways that have not only destroyed the landscape but also have destroyed the highway as a travelway. By denying access to abutting properties except at specially selected and designed access facilities or at interchanges, it is possible to relate expressways to land use in a way that is consistent with the primary function of the highway.

Expressways are the most important advance in the field of highway transportation in the last 30 years. Recent estimates of toll-free and toll expressways in the United States place the total of the free roads at more than 4,500 miles and the total of toll expressways at more than 3,000 miles. This latter figure includes projects which are completed, under construction, or for which finances have been arranged. In addition, 3,600 miles of toll roads have been authorized and an additional 1,300 miles proposed. All told there are more than 7,900 miles of toll expressways. This, together with the free expressways, totals more than 12,400 miles.

The free roads are concentrated mostly in urban and metropolitan areas in the form of radials and circumferentials, and the toll expressways connect cities or pass near them over predominantly rural routes.

Expressways have already had a great impact on the areas along their routes. They have extended urban development and land use changes appear to be more rapid than in other areas similarly located in every way except proximity to the freeway (1). If the present rate of construction continues, expressways will be a familiar feature of the entire national landscape in the current generation. They will also continue to be one of the dominant influences on the direction and character of territorial expansion of urban and suburban areas.

All forms of development and future land use will be affected—industrial, residential, commercial, and recreational. The potential benefit from freeways will be determined not only by what uses of land are stimulated, but also by the way these uses are arranged in relation to each other and to the transportation system. The following discusses briefly the major trends in land use as a result of expressway development, in contrast to the community development patterns resulting from highways where there is no control of access, and the kind of development that could be brought about by comprehensive city and regional planning coordinated with highway planning.

Where there is no control of access, goods and services are most commonly provided in ribbon developments along the highways. These services are intended mainly for the residents of the surrounding area; but even so, through travelers must pass through these areas because the main road usually goes through the center of the city. Although the type and variety of services vary according to the location of the commercial zone and the size of the city, most facilities catering to the traveler are located in the outskirts.

Noble (2) has stated that expressways protect the roadside from "destructive ribbon commercial development along the boundaries, but the absence of such activities poses a problem in that motorists must be provided with certain essential services otherwise the highway will not render adequate service to the public." He cited the problems and experiences connected with integrating commercial services into the highway system "so that the motorist will not be forced to leave the road to seek them." Fuel and auto services, and food and sleeping accommodations, are the main needs of the traveler. The problem of providing these services varies as between expressways which are operated toll-free and those which are subject to toll and must be revenue-producing. In the first case, service and not revenue is the controlling consideration, whereas in toll highways revenues are of equal importance because toll projects must be self-liquidating.

Service areas have been provided on toll expressways where study shows they can be expected to be most profitable, allowing for competition off the expressways. These service areas are designated by the highway authorities, who determine, design, and site plan, and in addition provide access by adequate deceleration lanes.

SLEEPING ACCOMMODATIONS

The common practice has been to make no provision for sleeping accommodations for the pleasure driver on the expressway right-of-way. The location of points of exit from expressways is a large factor in determining motel sites. According to the Planning Advisory Service, "The primary site preference for motels is direct highway frontage on the right side of the road going into town. . . . on expressways this choice is no longer possible and the remaining preferred choices narrow down to (a) location near a portion of an interchange and (b) location on a frontage road, both locations being visible to the travel road" (3). For this reason, intersection sites for motels are booming and there is an increasing number of motels situated near expressways. There is every prospect that with increased personal incomes, paid vacations, and more frequent extended weekends, a great impetus will be given to such establishments. Such motels, amply set back from the travelway and approached either by an interchange or by way of a service road, undoubtedly will have a competitive advantage over the earlier facilities for transients.

The Washington-Baltimore Parkway has taken a lot of traffic from US 1. No sleeping or service facilities are situated on the parkway or close to it. However, it is unlikely that this opportunity will be passed up indefinitely.

SHOPPING CENTERS

The Planning Advisory Service (3) states that the demand that expressways will create for shopping center sites is less clearly established than for industrial sites or motels, although accessibility is one of the most important site criteria for shopping centers, which depend primarily on established and expanded trade areas. In the same way that stores seek the 100 percent locations in the central city areas to be near the greatest number of potential customers, shopping center operators have followed their customers to the suburbs. According to Homer Hoyt, economic analyst, in addition to accessibility, the main factors are the volume of business from the trade area, the composition of the center, its size, the adequacy of the local road system to provide convenient access from residential areas, the amount and arrangement of customer parking, and the absence of congestion at the point of access to the center and on the approach roads in its vicinity. Insofar as present centers are concerned, they have had enough advantage over the downtown districts, and a sufficient trade area in the growing suburbs, to make many of them successful in spite of the absence of ideal conditions.

Most importantly, expressways have had the effect of breaking down old concepts of trade areas. Urban areas are now meaningless to define trade areas, because an expressway cuts across old boundaries and brings wider areas within easy reach of outlying shopping centers. The Cross Country Center, in Westchester, N. Y.; Northland, near Detroit, Mich.; the projected Peabody Center, near Boston, Mass.; Gulfgate Center, nearing completion in Houston, Tex.; and Hudson Village, in Lexington, Ky., are among the new major shopping centers fed by nearby expressways. There are, of course,

many other shopping centers, some very successful, which are on busy and congested highways. In addition, there are shopping centers such as at Park Forest, Chicago, Ill.; Linda Vista, Calif.; Levittown, N. Y.; and Greenbelt, Md., which are designed as part of these communities.

Baker and Funaro (4) underscore the importance of good access when they say: "In the larger regional and semi-regional centers... good highway access becomes the crucial requirement in selecting a site once the general area has been chosen."

Access by toll roads would tend to have an adverse effect on the potential success of a shopping center. Economists measuring a trade area discount the potential market to the extent that a toll facility enroute to the proposed center would have to be used. Even a \$.05 bridge toll would be a detriment. In the same way, if a retail trade center were located on a toll facility its potential would be reduced to the extent that customers would have to depend solely on such access. Even shopping centers that have had a parking fee attached to self-parking facilities have encountered considerable customer resistance; in at least one instance the direct charge was removed. If the toll roads are an auxiliary facility and the main access is provided by free roads (such as at the site for the proposed Southland Shopping Center in Tulsa, Okla.), the detrimental effect would be minimized.

In Arlington County, Va., one important and successful shopping center was built near the interchange at Shirlington. Its success may be attributed, however, to the fact that it serves the densely populated area within a short distance from it. Another shopping center, located on US 50, is also oriented to the community that it serves. This latter center is very successful. A third center, also in Arlington, is in difficulty, even though it is located near the juncture of two expressways. Its difficulties seem the result of poor relation to the community that it serves, and poor access; it is on the wrong side of the way for homeward-bound commuters.

Baker and Funaro (4) also say: "The modern, well-planned shopping center may well cut down the appalling rate of failure among retail stores. During the last half century, regularly every year, more than one quarter million retail businesses have failed and in most years an even larger number of new ones started. Most of these failures resulted from poor location." Expressways can provide the added measure of security in the well-planned shopping center.

RESIDENTIAL

The growth of cities and expansion of suburbs has been going on for a long time, but increased mobility has pushed it forward at increasing rates. Since the end of World War II there has been an extraordinary growth in the suburbs. In this period approximately ten million homes have been built. The majority of these have been situated on the fringes of urban areas. New housing will continue to bring an estimated three and one-half million persons a year to the suburbs. Highways of all types, and especially expressways, constitute a major force that gives impetus to suburban development in the areas near their routes. In this connection Balfour (5) reported that in the case of the Santa Ana Freeway "the large-scale building activity preceding the actual freeway construction was done with full anticipation of the new highway to provide a good transportation facility to downtown Los Angeles."

Planning Advisory Service also reports on a Southeast Pennsylvania Regional Planning Commission study in which there is the warning that estimates of traffic volume on new expressways can only reflect their immediate impact because "as experience has shown, the extension of new transportation facilities into outlying sections of the metropolitan area exerts a powerful stimulus upon suburban development." This report warns that one of the possible results of expressway extensions is scattered subdivisions in outlying areas "far too small to provide a normal integrated community, and to support economically a full complement of urban services."

The impetus that expressways give to the development of vacant land can be cited for any urban area such facilities serve. Arlington Boulevard and the Shirley Highway have been major forces in shaping the direction of suburban growth in northern Virginia.

INDUSTRIAL

Expressways have given impetus also to the increasing decentralization of industry. In California, New York, Massachusetts, Virginia, and Texas, to name a few areas, industries have selected sites near expressways.

In discussion of the economic impact of expressways, Howard (6) stated:

"The express highway, of course, is a part of the answer to this crucial circulation problem. The automobile, the truck, and the gradually improving highway are the technological developments that have made this dispersion possible. . . . And now the dispersion—universally unplanned, chaotic, wasteful, and by no means successful in fully achieving the individual goals of all those separate people who created it—has brought a situation that forced the invention of this super superhighway.

"What an expressway does, then, is to restore to a plant site all of those advantages of accessibility, to suppliers, related industries, markets, and labor, that a similar plant used to enjoy on intown sites before congestion set in, at the same time making possible the big site, the single-story building, the room for expansion, the amenity of space for landscaping and planting. These advantages are shared by other outlying plant locations, but not to the same degree."

Some examples of the impact of expressways on industrial development follow:

The New York State Thruway was responsible for an investment of more than \$150,000,000 in factories, warehouses, truck terminals, gas stations, motels, apartments, housing developments, shopping centers, and tourist attractions along its routes, in a period of four years.

A measure of the influence of expressways is the intensive development along the Eastshore Freeway between Oakland and San Jose, Calif. As reported by Balfour (5), "this area embraced only 9 percent of the available land in Alameda County that was suitable for industrial development, but within seven years 43.1 percent of the total expenditures for new industrial development had taken place, 29.6 percent of the total number of new plants had been built, and 37.7 percent of the money invested in industrial expansion had occurred."

Expressways also have influenced the food distribution industry in the East. One large national food organization with headquarters in Philadelphia is now able to compete in the Long Island food market because the connection between the New Jersey Turnpike and the Pennsylvania Turnpike brings the main distribution center within easy range for delivery. Thus markets are now open that otherwise were closed because the routes were too costly and time consuming to serve the retail outlets in the trade area.

There are warnings against using any examples of expressway influences on industrial site demand on the ground that the expressway is not an isolated influence but one that is operating in a national context of expanding population growth and is geographically related to an existing industrial region. It is suggested that whether or not the economy continues to expand, and there is every indication that it will, industry will continue to adapt its methods of operation to changes in technology. These adjustments will take into account methods of shipment, sources of labor, plant locations that allow for single-story operations, and such changes as may be justified in order to increase efficiency and therefore reduce overhead in periods of retrenchment. Under these circumstances, however, the rate of industrial relocation may be considerably lower. Even so, sites offering a transportation advantage, particularly to market-oriented industries, would certainly be more attractive than those sites which have higher costs as a result of location near congested centers.

POSSIBILITIES

Since World War II the annual expenditures for highways have risen from a prewar peak of \$1½ billion to nearly \$4 billion estimated for 1955. During the next ten years, if Congress adopts the Highway Revenue Act of 1956, the expenditures will be in the order of \$100 billion dollars, or an average annual expenditure of about \$10 billion

dollars. If the present rate of construction continues, expressways will be a familiar feature of the entire national landscape in twenty years. They also will be one of the dominant influences on the territorial expansion of urban and suburban areas. If the expanded highway program now before the Congress is adopted, this development will be speeded up. If expressways are to have any long-range value beyond helping to meet present traffic and transportation problems, comprehensive planning on a regional level and a corresponding development policy will be needed to guide and control the changes in the patterns of land use.

One form that regional development may take would be self-contained cities on sites designated within the regional plan for future development. Under present and foreseeable economic conditions self-contained cities can be built for the automobile age. Among the reasons for this are:

1. The economy is expanding. In 1956 the gross national product will be in the order of \$400 billion. Estimates for the future are now more astounding, with economists talking of \$1,000 billion production. Not only is great new wealth being created, but this wealth is being more widely distributed. Thus industry has more capital and is increasingly mobile. Similarly, its employees have greater personal incomes and, correspondingly, they have more mobility.

2. Automation in industry will increase the amount of leisure time that is available to employees. Automation will increase the number of three- and four-day weekends and will stimulate greater needs for expressways that reach out in all directions to recreation areas. Paid vacations granted to the workers in industry have already had a tremendous effect on the travel habits and needs of Americans. The overcrowded highways during vacation times and holidays are evidence of the demand that is building up for more and extended expressways.

3. The design requirements of contemporary industry offer new opportunities. The trend in industry as it adjusts to the new technology is to concentrate its operations on one level. Industries have been locating on open land where they can build according to the needs of their operations. New sites are being selected in the open country where the land is less expensive and enough land can be acquired to provide production buildings and employee parking. In such locations industries depend on an extensive road system to provide labor from a wide area, as this labor travels mostly by automobile.

4. The population of the United States is increasing at the rate of 266,000 per month and in the coming year more than 4,000,000 babies will be born. By 1980 it is estimated that the population of the United States will be 250,000,000 and that it may reach 300,000,000 by the year 2000. The requirements for automotive transportation alone to meet the increasing population are staggering. It is estimated that within the next ten years 10 million houses will be built at a cost of \$100 billion. There is an opportunity at the same time to create a better environment.

5. The obsolescence of many central city areas will accelerate the search for new home sites in new environments. This will continue even though American cities are in the midst of great readjustments with shifts of industry and commerce within them. Expressways will be a vital element in urban renewal plans.

6. The automotive economy based on higher personal incomes and preference for personal mobility will continue to stimulate the desire to live in less-dense areas where fixed modes of transportation do not operate.

7. The recognition that the present road systems are incapable of serving the expanding communities and the mounting pressure to do something effective about them will continue. Expressways are the transportation for the future that will be adequate for a dynamic economy, a bigger and richer population.

Recently, the Office of Defense Mobilization announced a new program for the dispersal of defense industries in accordance with Civil Defense recommendations that take into account the destructive power of new H-bombs. This new program scraps the current 10-mile minimum distance that defense plants can locate from target areas. Under this program the Civil Defense Administration has full authority to develop and coordinate programs to reduce vulnerability of the metropolitan areas. The Commerce Department is given the task of helping to prepare dispersal plans. If a firm does not comply with the order, the government has authority to withhold special tax benefits

applying to defense industries.

The significance of this program lies in the opportunity to coordinate the general development plans for a region with a highway network to serve it. The job opportunities thus created can be the basis for planned, self-contained towns that can house the population thus attracted and create the basis for other services as well.

An effective program should be aimed at combining all efforts toward creating an imaginative regional land use plan where self-contained towns could be built on sites appropriately located with respect to existing highways and proposed expressways.

Expressways have already had an impact on the economy. They have influenced land values, the location of certain industrial plants, motels, shopping centers, and residential developments. Even without the impetus of dispersal for Civil Defense, the economy is sufficiently dynamic to bring about new patterns for urban living.

Shall there be contentment with the uncoordinated product of separate moves by government, individuals, business, and industry? Or shall expressway planning be combined with planning for regional development and new towns that would provide a rational arrangement of industry, business, home sites and recreation?

Although this may require new legislation, certainly the lawyers and legislators can devise laws entirely consistent with national philosophy that will enable the engineers and planners to make advances in urban living comparable to those in the remainder of the economy.

Although the problem of the antiquated street system in urban areas will remain to be solved mainly by other means, where expressways are combined with urban renewal projects there is a unique opportunity for improving the situation in urban areas. When the significance of the automobile technology is fully appreciated by all segments of the population, it is hoped that not only will roads be built for the automobile age, but that cities and towns also will be built. The full development of high-standard highway facilities, combined with imaginative land use planning, can mean a new and fuller pattern of life and a more efficient economy in America.

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