The Impact of Interstate Highways in Rural Areas

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THE INTERSTATE SYSTEM

Interstate highways are a permanent and increasingly important feature of America's rural landscape. Their impact on agriculture and rural living, which is already felt, will be greatly intensified in the next few years. Consider some of the overall dimensions of this new highway system. Of the 41,000 miles authorized, more than 35,000 miles are classed as rural. (1)* One-third of all counties in the United States will be crossed by one or more segments of the Interstate System. In Indiana, slightly less than 40 per cent of all counties will have some Interstate System mileage.

Our studies indicate that right-of-way requirements for the new highways will take nearly a million acres of land which at the time of acquisition will be in farms. Some 75,000 farm operating units will give up part or all of their acreage for rights-of-way. If our crystal were a little clearer, we might estimate the number of interchanges that will be located in rural areas, the number of secondary roads that will be closed off, the tens of thousands of suburban houses that will rise in farm pastures, and the number of farmers who will commute to nonfarm jobs on interstate highways. But we have said enough to support the assertion that the building of the Interstate System will change dramatically both the face of the rural countryside and the lives of our 3½ million farmers.

The impact on rural America will be all the greater because interstate highways will be built to design standards scarcely dreamed of by rural highway builders ten years ago. The new roads will be wide; they will be straight; they will frequently run on the bias; and access to them will be strictly controlled. For the highway user, the millennium

* Numbers in parentheses refer to the list of references.

has arrived. He can pass with some assurance that the road will accommodate both his and the other vehicle; he can travel to the northeast or southwest without meeting a 90-degree right or left turn at the end of every section; and he can be reasonably confident that he won't suddenly be confronted with a wandering cow, hog, or Model A Ford.

In general, these design standards are justified. One might quarrel with the priority that rural segments are being given relative to urban segments and with the building of interstate projects in states already having adequate primary highways, but these are not the issues to be discussed here. Rather, we will stress the effects of these design standards on the farm communities through which the highways will pass.

Although the new roads will never take enough land to threaten our future food supplies, they do become a major factor in local real estate markets. A 300-foot right-of-way consumes 36 acres per mile, and when acreage for interchanges, borrow pits, and overpasses is added, the average will probably exceed 50 acres per mile. A segment of Interstate 35 in Minnesota, for example, took 47 acres per mile, in Iowa it was 55 acres per mile, and Interstate 70 took 57 acres per mile through one stretch in Kansas.

Furthermore, interstate highways are no respecters of section lines. The recognition that a straight line is the shortest distance between two points is a boon to drivers, but it may impose some rather erratic shapes on farm operating units and otherwise complicate the business of farming. A map of the interstate highways radiating out of Indianapolis presents a graphic picture of both the need for and the frequency of diagonal alignments.

To farmers, controlled access is probably the most novel and the most unwelcome design feature of the new highways. The thinking of most of us on the question of access control has changed during the last few years, but to people in rural areas the concept is truly revolutionary. As late as 1956, the five corn-belt states could boast a total of 22 miles of nontoll, 4-lane, fully controlled-access highway in rural areas —14 miles in Illinois, 2 miles in Ohio, and 8 in Missouri. The Indiana and Ohio Turnpikes added only 400 miles to this total. In contrast, authorized Interstate System mileage for these five states is more than 5,200 miles in rural areas. At the latest check roughly half of this total was either completed or in progress.

In view of the novelty of design and the overall size of the program in rural areas, it should surprise no one that the building and use of the Interstate System have generated conflicts and aroused both ardent support and violent opposition. Perhaps because complaints are usually

expressed more loudly than compliments, the reaction of farmers to the Interstate System seems to be largely negative. We are told, for example, that public hearings are not designed to collect information and get the views of people in the area, that rather, they are held reluctantly because the law requires it and are used mainly to announce decisions that have already been made. We hear that appraisals of land for rights-of-way are made without the landowner's knowledge and that often he doesn't know how the offer for his land was calculated or what items of damage have been considered. We are told that the highways have a variety of unwanted effects on farm drainage and soil conservation practices. We hear, perhaps most frequently of all, that offers for rights-of-way are inadequate and that both land and buildings have been undervalued. An additional comment we have heard a surprising number of times is that farmers near interchanges are annoyed at being awakened in the middle of the night by motorists wanting to borrow gasoline, a bumper jack, the telephone, or a bathroom. We need not add to this list since highway personnel know well how wide the range of comment is and how strongly people can feel about some of these things. Neither will a judgment be made about these complaints, other than to note that some of them are too frequent and consistent to be without foundation, while others have been proved groundless by later developments.

THE LONG-RUN IMPACT OF THE INTERSTATE SYSTEM

In organizing our comments about highway effects, we have drawn upon an old and frequently-used concept that provides a useful way of looking at highway effects. It is the distinction between what economists call the "short run," and the "long run." The dividing line between the two time periods is mainly a question of how completely certain changes and adjustments have taken place. In the short run, you can see that certain things have begun to happen, but only in the long run do they fully work themselves out. The long-run impact of the highways now being built will differ from the short-run impact, and effects that can now be seen only dimly, if at all, will appear later.

In the long run, we expect the economic effects of the Interstate System in rural areas to be largely favorable. As the speed of truck transport is increased and its cost lowered, market areas will be expanded and marketings will be adjusted more precisely to demand. Producers of perishable commodities, particularly fruits and vegetables and dairy products, are likely to benefit most from these improvements. To the degree that transport costs in general are lowered, the farmer, who

over the years buys more and more inputs that are produced off the farm, will find his costs of production lower. The net effect will be that specialization and large-scale production will be encouraged with a resulting increase of efficiency in the use of farm labor and capital.

But these will not be the most far-reaching, long-run consequences, nor are they the ones we want to emphasize. More significant will be those developments that involve rural areas and rural people ever more deeply in the traditionally urban, nonagricultural segments of the economy. Good highways take the farmer into the city and bring the city to the countryside. We are becoming increasingly aware that industry and commerce are forsaking the central city and relocating in the rural-urban fringe or beyond. Improved highways can only speed up this decentralization. The familiar postwar spread of residential development along major transportation arteries serving our cities will probably also be intensified. Large areas of rural land become "developable" when they are linked to urban centers by interstate highways. Also of significance will be the traffic in rural areas that is stimulated by these better roads. Increased highway transport and highway travel will be accompanied by increased demands for roadside services, many of which will be supplied in rural areas.

While it is impossible to foresee in detail the net effects of these changes in rural areas, a number of developments seem inevitable. One is that the pressure of nonfarm demands in the rural land market will increase. Some owners of farmland served by the new roads have been able to sell their land at prices that are two, three, and four times its agricultural value. This appreciation will probably continue; it can be expected to be greatest in urban fringe areas and in the vicinity of major interchanges.

A development that is likely to be of more permanent and widespread benefit is the increase in nonagricultural job opportunities for rural people. If the trend toward decentralization of industry continues, as we expect it to do, farmers will find nonfarm jobs being brought closer to them. The dispersal of manufacturing plants and the development of highway service facilities will increase farmers' opportunities to supplement farm income or to move permanently into the nonagricultural labor force. High-speed highways also tend to increase the area from which employers draw their labor force by reducing commuting time and the unpleasantness of traveling on inadequate roads. Each of these inducements to increased off-farm work will strengthen the trend toward part-time farming that has been so dramatically accelerated during the postwar years. According to the 1959 Census of Agriculture, two-thirds

of all farm operators in the United States did some off-farm work, and 30 per cent worked off the farm at least 100 days per year. The census also showed during the last five years a drop in the number of farms for the country as a whole from 4,800,000 to 3,700,000. This trend also should be strengthened as interstate highways increase the occupational mobility of rural people.

The economic gains will not come painlessly, however. The isolation of rural areas from the consumption patterns, the habits, and the values of the city will break down ever more rapidly and completely. The presence of increasing numbers of nonfarmers in rural areas can generate very real frictions between the new and the old residents. Scattered residential, commercial, and industrial development often drives farming out of the intervening spaces, without providing a productive use for the land removed from agriculture. Strains are imposed on local governments as new residents demand new services that town and county governments have neither the experience nor the tax revenue to supply. Another problem is how to assess and tax farm property that is interspersed with residential and industrial development. This problem becomes particularly critical when industry has been attracted with promises of low taxes, thereby increasing the burden on other landowners.

These difficulties must be placed on the debit side in balancing out the pros and cons of rural highway improvement. The prospective gains, however, seem to outweigh the losses, and in the long run, the outlook is for substantial benefits to the rural population. But, as John Maynard Keynes has so well said, "In the long run, we're all dead." We must go through a succession of short runs before we can fully enjoy the long-run benefits, and it is to some of the problems that rural people face immediately that we now turn.

THE SHORT-RUN IMPACT OF THE INTERSTATE SYSTEM

In developing the short-run picture of highway impact, we concentrate on the farmers who own or operate land lying in the path of the highway—those who actually lose right-of-way when the highway is built. It is in their experience that the specific consequences of highway building stand out most sharply. These farmers will be faced with more difficult adjustment problems than others, and as a consequence, this picture is not representative of the effects on agriculture in general. At the same time, these are the people with whom you will have your acquisition dealings, and these are the people who will take you to court, write to their Congressmen, or complain to the Department of Agricul-

ture. A review of some of their adjustment difficulties and of some of the ways in which the difficulties might be eased can point the way to faster, smoother, and perhaps cheaper highway building.

The first thing to remember is that the long-run benefits we have discussed may be quite a while in coming. Farm areas already served by all-weather roads will experience few immediate transportation benefits from the new highways. The recent census indicates that 85 per cent of all farms in the United States are located on either gravel or hard-surface roads. We must remember that the industrial and commercial establishments that are brought by the Interstate System do not arrive overnight and that farmers will not suddenly be faced by a multitude of off-farm jobs. Nonfarm demands for farmers' land will also probably be slow in coming and will be decidedly spotty for the next few years.

In contrast, a number of highway effects are felt immediately and, for the farmers involved, they seem to be mainly bad. We will discuss just two: the loss of acreage to right-of-way and the barrier effect of the highway itself. Recently, we studied some 80 farms in south-central Iowa which four years ago lost land to Interstate 35 south of Des Moines. (2) We observed the experience of these farmers during the three years following the right-of-way taking. During this period, one in four of the farmers added more land to his operating unit than he sold for the highway. But more than 70 per cent of them still operated less land than they had when acquisition began. This difficulty in recouping lost acreage is particularly significant in view of the finding from the 1959 census that during the preceding five years the average size of farms for the country as a whole increased from 242 to 302 acres, a jump of 25 per cent.

The second short-run adverse impact—the barrier effect of the highway—also showed up clearly in our Iowa study. Exactly half of the 80 sample farms were so situated that some of their land was separated from the farm headquarters by the highway, and the highway landlocked one or more parcels on 16 of these segmented farms. For the separated tracts that were not landlocked, the distance to the farm headquarters was increased by about 2 to 3 miles. The adjustment problems inherent in this fragmentation of operating units are obvious. Additional time, effort, and gasoline must be expended in operating the separated fields, and frequently rubber-tired implements need to be bought. Such difficulties have been and will continue to be a source of farmer dissatisfaction.

The loss of acreage and the splitting of farms had two discernible effects on the agriculture of the area. The first was a flurry of activity

in the local real estate market. Farmers bought land or sold it, rented additional land, or leased out land far more frequently than was normal for the area. Nearly 60 per cent of the farmers who lost land entered into some kind of real estate transaction during the three-year study period, compared with about a third of other farms in the area. We would expect the upshot to be some upward pressure on the price of farmland in the area. We might add that a number of the transactions were with the Iowa Highway Commission which, through its power to buy and sell excess land, substantially eased the real estate adjustments faced by these farmers.

The other effect was an apparently lasting increase in the dispersion of land within the operating units that were studied. At the time of the taking 31 per cent of these farmers operated one or more tracts of land that were not contiguous to the farm headquarters. Three years after the taking this proportion was 62 per cent, double what it had been. Although there is a general tendency for dispersion to increase as farms grow larger, other farms in the area showed considerably less of this kind of separation.

We call your attention to these at least temporarily adverse impacts because they help to explain many of the complaints voiced by farmers selling right-of-way. These impacts are also felt by other farmers in the vicinity, less severely perhaps, but sufficiently to account for some of the broader rural opposition to highway building. (3) But, you may well say, landowners receive just compensation both for the land they give up and for severance damages to their remaining property. This is an adequate *quid pro quo* and should satisfy them. The question of what constitutes justice in compensation is most complex and is beyond the scope of this paper. There are, however, a number of fairly well-known aspects of right-of-way acquisition that go far toward explaining the adverse reaction of farmers.

Most takings in rural areas are partial takings. The common compensation standard in partial takings is that payment should equal the difference between the market value of the entire property before the taking and the market value of the remainder immediately after the taking. (4) Landowners often find this an inadequate standard. One reason, which we hope will prove to be temporary, is that determining the market value of a segmented property is difficult. Until we have a great deal more experience with this valuation problem, competent appraisers will continue to find that their appraisals of market value "after" the taking are based largely on guesswork and contain room for honest disagreement. With this lack of concensus among experts it is

not surprising that the admittedly biased farmer is dissatisfied. Further, he is likely to object when confronted with an offering price for his land but with no information as to what the appraisals were, how they were made, or what items of damage were considered.

A second source of friction is that under the law of most states, many items of real cost to the farmer are not legally compensable. Moving expenses are perhaps the most obvious omission, but many other expenses entailed in adjusting farm operations to the loss of land are also excluded. In a tight and rising real estate market, for example, the farmer may well be unable to replace his lost land for the sum he is paid. In very few instances are farm tenants entitled to any compensation, even though they may be put to considerable inconvenience and expense as a result of the taking. In each of these cases the payment may meet the legal definition of just compensation but the recipient could rightfully feel that he is not as well off after the taking as he was before.

There are at least four ways in which the acquisition process could be modified or improved from the viewpoint of the farm owner and operator. The first is to liberalize the law of compensation in line with the goal of making the property owner or the farm operator "whole"—that is, to pay him enough to leave him as well off after acquisition as he was before. Compensation for moving and other adjustment expenses and greater recognition of losses incurred by tenants would be a good start in this direction. It has been observed that in fact right-of-way appraisers often do give this sort of liberal reading to the law, so it is not clear that the actual outlays for rights-of-way would rise appreciably. (5) A parallel recommendation is that special benefits to the landowner from the highway improvement should not be overlooked in those instances where they occur.

The second suggestion is that a real effort be made to perfect the art of appraisal in this very difficult area. We need to know more about the sales values of remnants of land, the costs of circuity of travel, and the value of such items of damage as drainage changes, triangulation of fields, and changes in grade. With respect to appraisal procedure, it seems only fair that the elements of the appraisal be disclosed to the property owner, and that he be given the opportunity to call to the attention of the appraiser items of damage that may have been overlooked.

Third, we see the need for a comprehensive information program. (6) Those affected by a highway need a better understanding of the appraisal and negotiation process; they need more information as to their

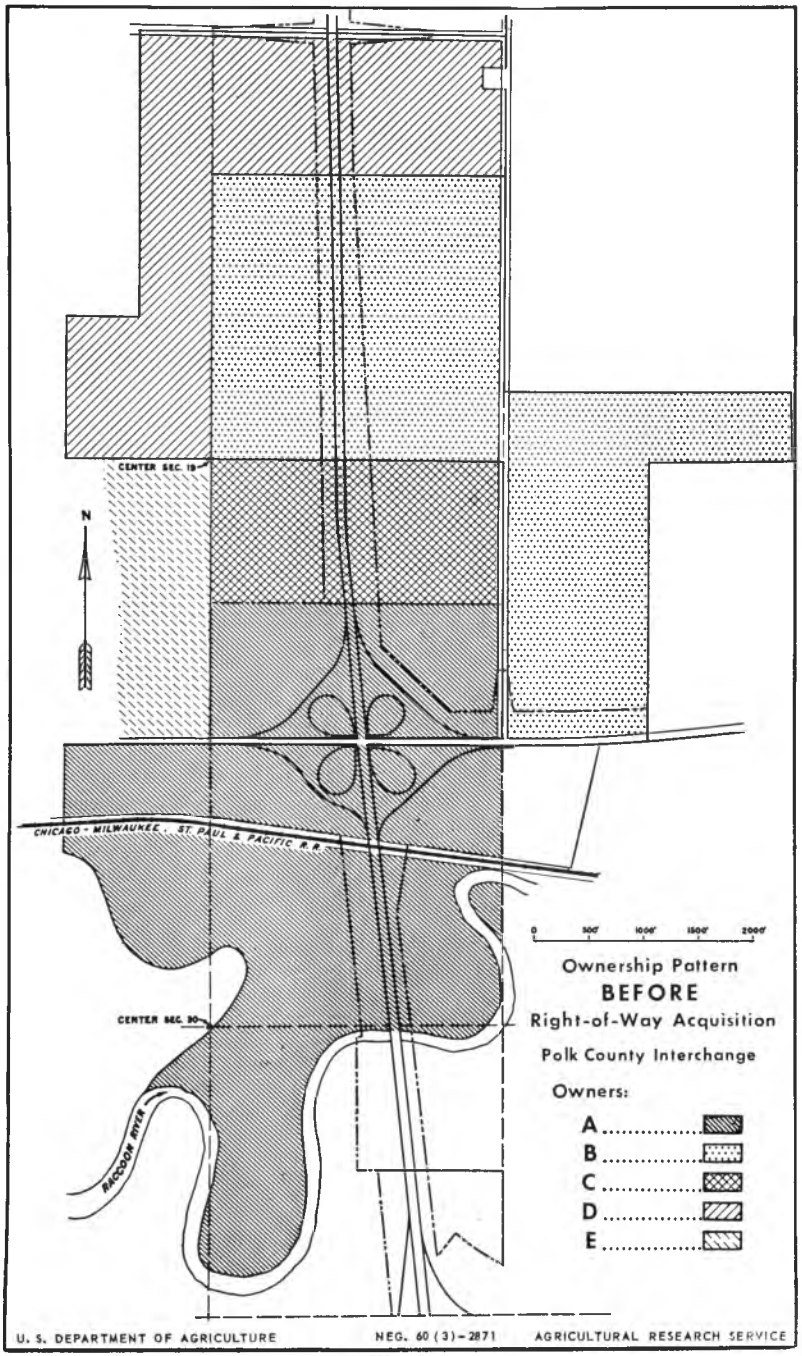
rights and the limits of these rights under the law of eminent domain; and they need information as early as possible on precisely what portion of their property will be taken and when the highway agency will take possession.

One fourth suggestion is that the highway agency be granted and encouraged to use wide flexibility in its taking powers and procedures. We are not urging that the "one price" approach to acquisition be abandoned—quite the contrary—but we do feel that certain other flexibilities may be desirable. When buildings lie in the right-of-way the landowner should be given the option of keeping and moving them at highway agency expense, provided the cost is less than the value of the buildings. If highway agencies had the authority and the funds to buy land well in advance of the date of construction, operators would have an easier and less frantic time adjusting to the loss of land. A more general suggestion made by George Pinnell in a recent issue of the *Appraisal Journal* seems to have considerable merit and is relevant here. (7) He advocates that in case of partial takings the highway agency stand ready for two or three years to buy the remaining land for the difference between what the owner was actually paid and the appraised value of the intact property. In this way, the owner can be sure of getting the full value of his property if he wishes to sell the complete unit.

PURCHASE AND SALE OF EXCESS LAND

A right-of-way agency that has the authority to buy and sell land in excess of that actually required for rights-of-way can do much toward easing the adjustment problems of farmers. We found a striking example of the effectiveness of purchasing and reselling excess land in Polk County, Iowa. It occurred in the course of acquiring land for a major interchange on Interstate 35 west of Des Moines.

Figure 1 indicates the boundaries of the ownership units in the interchange area as they existed before rights-of-way were acquired. The broken line outlines the area the commission had determined to be the minimum acreage needed for right-of-way. This boundary and the location of the highway and the interchange are drawn on this map to indicate the decisions that faced both the commission and the farmers of the area. Owner A, who operated the entire shaded acreage at the bottom, was faced with the loss of nearly a third of his unit because of the substantial area needed for a cloverleaf of the type indicated. In addition, his buildings, which were in the northeast corner of the farm, would be isolated from most of the remaining acreage. Immedi-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Ownership Pattern
BEFORE
Right-of-Way Acquisition
Polk County Interchange
Owners:
A
B
C
D
E
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Fig. 1.

ately to the north, the tract belonging to C was scheduled to be segmented, with the parcel to the west of the highway left landlocked and accessible only through the property of either D or E.

The operating unit belonging to B would have been similarly affected. It would have been segmented by the taking and the portion west of the highway would have been inaccessible to the operator, whose buildings were on the east side. Had the commission not been able to arrange the series of exchanges it did, construction of an access road through D's land, parallel to Route 35, would have been necessary to permit B to get to the separated tract. While D's property would not have been faced with the accessibility problems encountered by other owners, the land would have been badly segmented.

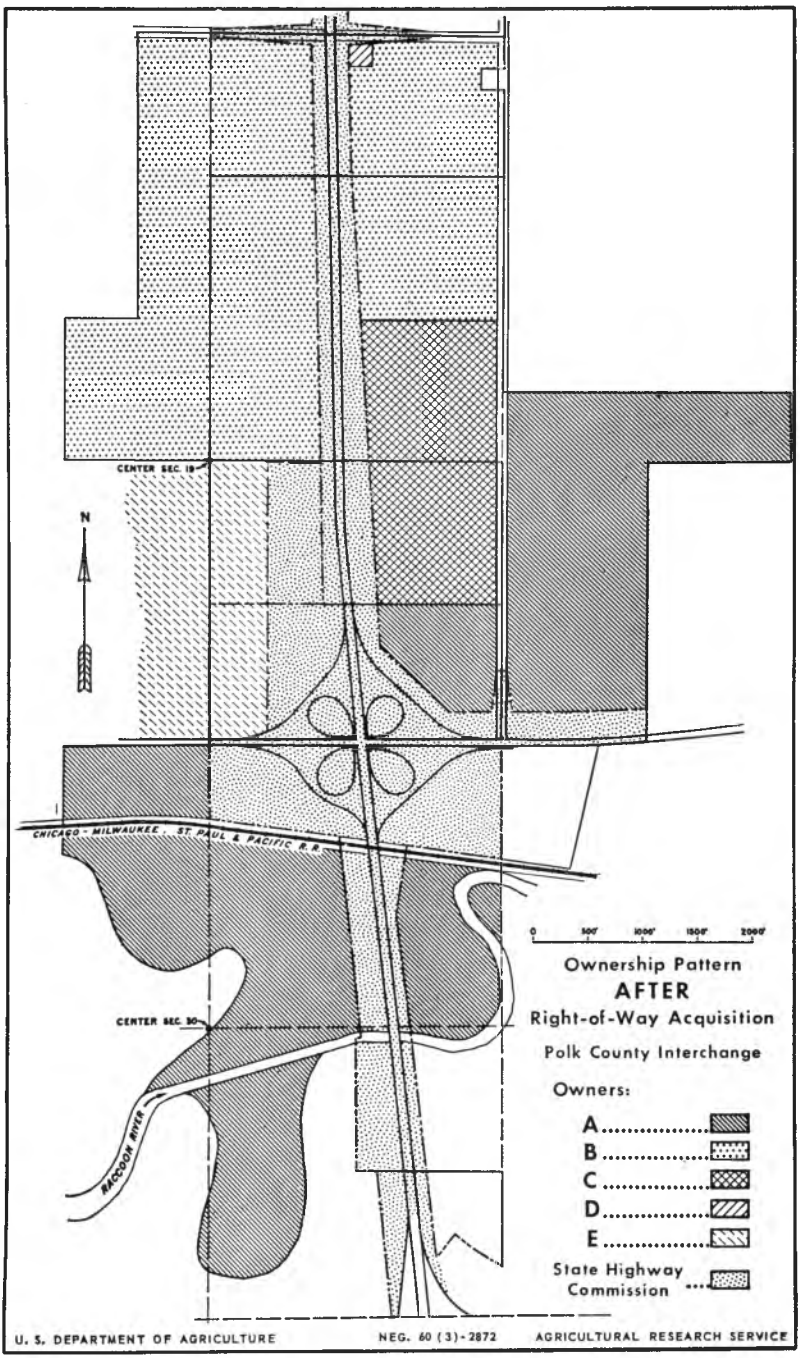
Faced with the prospect of paying heavy severance damages as well as pacifying several farm owners and operators the commission used to the full its power to buy and sell excess land. By first buying from one owner, then selling to another, and finally canceling out the gains of each party against his losses and paying the difference in cash, the commission engineered a series of exchanges that left the original ownership pattern of the area unrecognizable.

Figure 2 shows the pattern of ownership that emerged from the land trades. A, who stood to lose the largest acreage, transferred to the commission 116 acres, most of which was needed for the building of the interchange. He was compensated, however, with approximately 110 acres previously belonging to B, but close enough to A to be farmed conveniently by him.

B also figured in the commission's dealings with C. The latter agreed to transfer to the commission his landlocked parcel west of the highway in return for a similar 38-acre tract bordering the northern edge of his remaining property. The commission had purchased this parcel from B along with the land deeded to A.

All of these transactions greatly reduced the acreage left to B and pretty well destroyed his operating unit. But the commission was able to reimburse him in kind through the willingness of D to sell outright his entire farm. All of this tract except the 11 acres required for right-of-way was transferred to B, bringing his acreage back to within 33 acres of what it had been originally.

The final transactions in this series were between the Highway Commission and E. E gave up six and one-half acres for the right-of-way but bought from the commission nearly 30 acres of excess land west of the highway which had been purchased from A and C. Figure 3 is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Ownership Pattern
AFTER
Right-of-Way Acquisition
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A
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Fig. 2.

Fig. 3.

an aerial photograph showing the locations of farm headquarters and the completed interchange.

The success of this procedure in easing the adjustment of operating units and assuring their continuity cannot be questioned. The commission's exercise of the power to buy and sell excess land removed from the landowner and the local land market much of the risk associated with the disposition of separated parcels and facilitated the needed reorganization of farm operations. Although negotiating the series of trades was time-consuming, the commission saved more than $9,000 in right-of-way and construction costs.

LAND USE NEAR FREEWAY INTERCHANGES

Having discussed the long-run and short-run impacts on farmers and ways to ease the immediate adverse effects, we turn to a problem of particular concern to those who have responsibility for planning and administering major rural highways. This is the question of what our interstate interchange areas will look like five, ten, or twenty years from now and how changes in the use of land around them will affect the highway facilities involved. We use the term "interchange area" rather loosely to cover the entire vicinity in which the existence of the

interchange may stimulate intensive uses of land that would not otherwise have located there.

Major transportation improvements have always had a powerful influence on the nature and intensity of land use and there are several reasons for believing that the interchanges will tend to concentrate around themselves much of the land development associated with the new highways. Chief among the reasons is the prohibition against service facilities on the right-of-way. This will throw a heavy burden on the most accessible, and perhaps as important, the most visible, land near interchanges. While development at interchanges is of concern from several viewpoints, we want to emphasize here the relation between changes in the use of land and the adequacy of the highway facilities in the area. Different land uses are associated with different amounts and patterns of traffic. For this reason, the uses that develop in interchange areas will be a major determinant of the future balance between highway capacity and the volume of traffic.

Particularly critical is the pattern of development along the intersecting highway—the crossroad. Access controls on the freeway and on interchange structures will go far toward preserving their usefulness, but such protection seldom exists for the crossroad. Not only may the crossroad suffer from an excessive number of vehicles moving along it, but uncontrolled access to service stations, restaurants, motels, drive-in theaters, shopping centers, and other traffic-generating developments may quickly create the kind of congestion so frequently encountered in the commercial strips on many highways today. As this commercial-industrial development slows traffic along the crossroad and interferes with the movement of vehicles to or from the interstate highway, traffic may back up on the interchange ramps and possibly on the interstate highway itself. The prospect of premature obsolescence of any of the facilities calls for immediate and continuing preventive action.

In view of the seriousness of the problem, what action is called for by highway people and by local government officials? (8) The job to be done can be described as that of achieving a balance between the capacity of the facilities involved, on the one hand, and the uses of land and the traffic they generate, on the other. This suggests that the appropriate approach is two-pronged—providing capacity through adequate design and construction standards and controlling traffic through public controls over the use of land. Let us consider each of these in turn.

Our first suggestion is that very serious attention be given to the prediction of interchange traffic volumes and patterns. As suggested earlier, a big part of the job is to learn more about the changes in land

use that are likely to occur. In our work on land use we found that the amount of change in interchange areas varied directly with the size of the nearest urban center, with the closeness of the interchange to it, and with the amount of development in the area when the interchange was built. (9) These and similar explanatory factors need to be better understood before we can feel much confidence in our predictions of land-use change.

Our second suggestion is to urge that the fullest possible use be made of design features and access controls in assuring that highways will be able to handle future traffic. When it seems that heavy traffic generators are likely to locate in an interchange area, adequate interchange structures should be provided and the capacity of the crossroad should be increased. It will be cheaper in the long run to build the full cloverleaf now rather than five years from now. This is also the time to widen the crossroad, freeze existing access points, or convert portions of the road to limited access, rather than after it has become lined with motels and service stations. When the future development is probable but less certain, some measure of flexibility is desirable so that future increases in capacity can be brought about quickly and relatively cheaply. Acquiring excess right-of-way or reserving land for future use as right-of-way is an obvious means of gaining this flexibility. These are expensive suggestions and probably would delay completion of the present program, but they are not nearly as expensive as ignoring them would be.

But it is clear that highway agencies do not have sufficient authority or sufficient funds to rely completely on design features and access controls. Help will be necessary from the local governmental units that have power to regulate the use of land. In rural areas, shifts in land use along crossroads in particular must be controlled if the highway is to maintain its traffic-carrying capacity. Under existing law in virtually every state the necessary controls can be exercised only at the county or municipal level and generally by authorities whose interest in and responsibility for highways is only incidental to their other duties.

In this situation, what can road officials do? The first job is to stir up as much awareness of the problem as possible. The public by and large doesn't even realize that an interchange problem exists. It first becomes conscious of such a problem when congestion in the area has become intolerable, and by then it's too late. What is needed is a continuing and effective public relations campaign, such as those that have been used to sell the Interstate System, to promote highway safety or to convince landowners of the benefits highway improvements bring them.

The basic problem, of course, is to persuade whoever holds the power to control land-use that their authority should be exercised in the interest of highway protection. Ordinarily, this will be the county board or the local planning agency. In most jurisdictions they have the necessary powers. Much can be accomplished, for instance, through judicious exercise of subdivision controls that require service roads, establishment of setback lines, or dedication of land for future highway use. Driveway regulations constitute another class of available controls, and the purchase of development rights is a relatively untried but potentially effective instrument.

The most readily available power, however, is zoning. Many rural units of government have used their zoning authority sparingly and some still have none, but the spread of intensive land uses into rural areas that will be triggered by the Interstate System has already stimulated widespread interest in this control technique. If use permits are granted for industrial and commercial establishments with some regard for the kinds and amounts of traffic they will generate; if these establishments are required to provide adequate vehicle parking space; and if they are forced to observe reasonable set-back requirements, the strangulation that so frequently threatens our major highways may be avoided.

One suggestion with much merit is to establish highway user service centers, much on the pattern of community shopping centers. (10) It appears to be feasible, with the encouragement of appropriate zoning, to concentrate service facilities in a single compact area. The highway user would find restaurants, motels, automobile service facilities, and perhaps other commercial establishments, not scattered throughout a narrow roadside service zone, but developed in depth and connected with the crossroad at a minimum number of access points. To the degree that service facilities are the prime danger, both highway safety and the carrying capacity of the road would be served by this innovation.

The problem remains of convincing local authorities that these roadside-protection devices should be used. Publicity can help, but it is no substitute for a close and cooperative working relationship between highway planners and local officials. One possibility for securing closer cooperation is to make the location of interchanges in rural areas dependent to a degree on the willingness of local governments to provide the necessary protection. This could not be rigorously practiced but even serious discussion of it would serve an important educational function.

A different kind of inducement is the development of state-local cooperation in the exercise of limited zoning powers. State-level action could perhaps be confined to land adjacent to the major highways in

interchange areas. It would be based on a grant of emergency zoning powers to the highway agency to be exercised only when local governments fail to provide the necessary protection. There is a legitimate statewide interest in the preservation of major highway investments, and vesting cooperative control powers at the state level is one way of asserting this interest.

In summary, controlled-access, high-capacity highways are a necessary and highly desirable development. For a nation so dependent upon the automobile they are the only way to avoid transportation chaos. But, like all revolutionary innovations, their introduction is accompanied by stress and conflict. We have tried to catalog for you some of the more important problems that the new highways bring to rural, agricultural areas. The solution of these problems will depend upon our willingness to recognize them, our determination to look at all sides of each issue, and our ability to find new answers to new questions.

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