

Application of Police Power and Planning Controls to Arterial Streets

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● **MILLIONS** of dollars have been spent over the years in the development of urban arterial street systems. Unfortunately, the utility, safety, and traffic-carrying capability of these facilities generally deteriorate as the city grows up around them. The factors which contribute to this deterioration are internal (traffic on the street) and external (expansion and construction of residential, commercial, and other land uses near the arterial).

In addition to the general increase in volume of all traffic, urban growth aggravates the problems caused by different classes of traffic using the arterial for conflicting purposes. An arterial street is supposed to facilitate relatively long trips by through traffic at higher speeds than would be possible on a lesser city street. However, as nearby land develops, there is an increasing proportion of local traffic on the arterial. This traffic consists of mass transit and private vehicles bringing people to and from the abutting residences and businesses, the pedestrians, and delivery trucks servicing these roadside uses. Once the arterial is used for these local purposes, there is also the problem of automobiles and delivery trucks parked at the curb.

Probably the main external factor in arterial deterioration is the location of major traffic-generating uses immediately adjacent to the arterial without adequate access arrangements. Some of the examples which are all too familiar in every metropolitan area are (a) shopping centers with access along the entire frontage or with too many curb cuts; (b) closely spaced residential driveways; (c) inadequate loading facilities for businesses; (d) narrow commercial driveways which cause entering cars to back up traffic on the arterial; and (e) parking lots so located that pedestrians have to cross the arterial to get to their destination.

Thus the arterial, which was primarily meant to serve highway users, is used to provide land service to local needs as well. It is not surprising that in trying to serve these two conflicting functions the arterial does not serve either one very well. The through traffic and the local traffic interfere with each other and the result is an inefficient facility which does not adequately meet the needs of the highway users, the abutting landowners or, as a result, the taxpayers in general.

Wisconsin Avenue, in Washington, D. C., which was recently the object of intensive analysis by the Bureau of Public Roads, is a good example of an arterial which has suffered from being used for conflicting purposes. All the manifestations of deterioration mentioned above are present to some degree on this street.

The object of this paper is to explore ways in which police power regulations, access control provisions, and land use and planning controls can be used to help solve this arterial problem. Suggestions are made for applying these measures to the internal and external causes of deterioration in an effort to halt it, and to develop the maximum effectiveness of existing arterial streets such as Wisconsin Avenue.

The authors have indicated how each measure could be extended to its legal limits. However, it must be borne in mind that there are often practical limitations which might preclude adopting regulations even though they are legally justifiable. These practical limits are pointed out in the situations where they are most significant.

REGULATORY AND ACCESS CONTROL PROVISIONS

Developing Freeway Characteristics

The best way to accommodate the heavy traffic of the congested city arterial street would be to convert all arterials into high-capacity freeways. This, of course, is an economic impossibility. However, a look at the nature of the freeway can suggest methods of improving existing city streets.

The freeway, as defined by the American Association of State Highway Officials¹ has three chief characteristics in which it differs from a city street and which contribute to its high traffic-carrying capacity: (a) divided roadways, (b) controlled access, and (c) grade separated intersections. Although none of these freeway characteristics can be fully imposed on an existing city street without great cost, they all can be imposed to a lesser degree on many streets at little cost. The result of partial attainment of freeway standards would not, of course, be full freeway capacity, but it could be a substantial increase in the capacity of most arterial streets.

The inexpensive means of getting the benefit of the three freeway characteristics is the exercise of three police power regulatory measures. The proposed application of the three measures will be briefly presented, followed by a more detailed legal analysis of each measure.

Physically divided roadways eliminate friction between opposing lanes of traffic. Much of the benefit of a divided roadway, as far as an urban arterial is concerned, can be realized by merely prohibiting all left turns onto or off the arterial, except at certain designated places. This minimizing and localizing of interfering turns will allow the movements to be accommodated with as little interference as possible.

The control of private access is another important characteristic of the freeway in that it keeps abutting business from growing up and choking the highway. Along the existing arterial, future adjacent growth can be controlled and guided by zoning regulations, building regulations, driveway permit regulations, and other development control devices. The matter of existing driveways which interfere with the traffic flow is more difficult. In some instances such driveways can be closed if there is other access to the land. At any rate, the landowner can be required to construct driveway entrances which are adequate and which will minimize interference. In this manner, although the result is far short of full control of access, some of the more harmful features of free access roads can be controlled or eliminated and the capacity of the street can be preserved or increased.

The third outstanding factor in the freeway's high capacity is the lack of at-grade intersections. Constructing grade separations is very expensive, especially in built-up urban areas. The effect of at-grade intersections can be reduced, however, by reducing their number. This could be accomplished by closing the entrances to many cross streets and concentrating the cross traffic at more widely spaced, well-designed intersections. A less drastic variation of this would be to allow right turn movements at all cross streets, but to prohibit left turns and cross movements except at a relatively few intersections.

Inasmuch as these proposals are intended to be general and adaptable to any urban arterial, as well as to Wisconsin Avenue, the following analysis of each proposal covers the District of Columbia law and also the general law of the United States. This approach results in a broader development of the concept under consideration and suggests arguments for making such restrictions legal under the police power in jurisdictions where they are now held to be unauthorized by the police power.

The Wisconsin Avenue study is generally limited to those corrective measures which do not require a taking of land or compensable interference with abutters' rights of access. Therefore, use of the power of eminent domain is outside the scope of this report and the following analyses concern the application of control measures under the police power.

¹/"A Policy on Geometric Design of Rural Highways." AASHO, p. 632.

Restricting Mid-Block Left Turns

Left turn movements into and out of the traffic stream are a well-recognized source of interference and congestion. If such movements are restricted to specified places, such as intersections, provision can be made to minimize the interference caused by them. There are two ways to prevent left turns between intersections. One is to make them impossible by constructing a barrier in the middle of the road. The other is to make them illegal without physically changing the roadway.

Preventing mid-block left turns does not deprive the abutting landowners of their right of access, but it does make such access more inconvenient and circuitous. For an adjacent business, such as a gas station or parking lot, this more inconvenient access may well mean a loss of business. Does the municipality have the power to impose such regulation? What are the rights of an abutting landowner where such a restriction is imposed?

Court decisions generally hold that prohibition of left turns into and out of private driveways, even where it causes considerable inconvenience or loss of business, is within the authority of a city. Such prohibition, because it promotes public safety and convenience, is a valid exercise of the police power and does not require compensation of affected abutters. Furthermore, it does not make any difference whether the left turns are eliminated by putting a barrier in the middle of the street or by simply forbidding the turns without physically changing the roadway. Some of the cases which developed the rule previously stated involved a law against crossing the centerline² which required a landowner to travel five miles to get to his land on the other side of the road, and construction of roadway dividing barriers which affected the business of a trailer court,³ a truck repair shop⁴ and a "truck stop" restaurant and gas station.⁵

There are no District of Columbia statutes or cases on the matter, but the rule that left turns may be prohibited in the public interest seems to have been applied universally by the courts which have tried the question, and it would almost certainly be applied here.

Inasmuch as this regulation is for the good of the community, many, if not all, property owners will agree to it willingly instead of taking the case to court. In the District of Columbia, left turns have been restricted in several instances without objection by the affected landowners. Peak hour left turns into three downtown parking garages and all left turns into and out of a busy driveway on an arterial outside of the downtown area have been prohibited with satisfactory results.

The Wisconsin Avenue Research Project turned up several instances where application of this regulation would be helpful. Left turns into and out of driveways serving gas stations, parking lots, restaurants, stores, and other businesses cause interference at several points along the arterial.

It is emphasized that this part of the study is concerned with the legal authority to make regulations. There may be practical reasons for not prohibiting left turns, such as the desire not to hurt local businessmen, but nevertheless the legal authority to do so does exist.

Closing Driveways

Roadside development has caused the deterioration of many highways. The situation became so bad that a radically new concept of highway engineering—control of access—was developed to combat this deterioration. It would be impractical to try to impose complete control of access on existing built-up city streets. However, some of the benefits of access control could be enjoyed by closing some of the more troublesome driveways along an arterial. Whether and under what conditions a city can close driveways involves the question of what legal rights of access a property owner has in an abutting highway.

²/ Jones Beach v. Moses, 268 N.Y. 362, 197 N.E. 313 (1935).

³/ Fort Smith v. Van Zandt, 197 Ark. 91, 122 S.W.2d 187 (1938).

⁴/ Holman v. State, 97 Cal. App.2d 237, 217 P.2d 448 (1950).

⁵/ Iowa v. Smith, 248 Ia. 869, 82 N.W.2d 755 (1957). For diagram and explanation, see HRB Bul. 189, p. 38.

The driveway closure device would be most applicable in situations where a piece of property, such as a gas station or parking lot, has access to both an arterial street and other streets. The effect of closing the arterial driveway would be less detrimental in such a case than in one where the property owner had no other access. The analysis of this proposal then revolves about the question of whether a city is authorized under the police power to close driveways on one street where there are driveways to the property from other streets.

A general statement of the law accepted by all courts is that an abutting owner has a right to construct a driveway to the public street,⁶ but that this right is subject to reasonable regulation in the public interest. But the courts, while agreeing on the rule, disagree in its application. Some courts hold that cutting off all access to one abutting street, if it leaves reasonable access from the property to another street, is not necessarily a compensable taking, and may be allowable under the police power.⁷ However, other courts applying the same rule hold that there is an absolute right of access to every abutting street, that the right to regulate does not include the right to prohibit, and that all driveways from one street to a piece of property cannot be closed under the police power, even if other access to the lot exists.⁸

The rule, that the closing of all existing access to one abutting street cannot be accomplished under the police power, has the advantage of drawing a sharp line beyond which the police power cannot be exercised. This rule may make things easier for the courts if the problem comes up for litigation, but it seems doubtful whether that advantage should be determinative when it is considered that it is gained at the expense of unnecessary restriction of the highway department in its function of providing an adequate system of roads for the use of the general public.

The other rule, that the closing of all access to one street is not necessarily a compensable taking, does not present any hard and fast line beyond which the police power cannot operate. The question to be decided would be whether the closure was reasonable. The factors to be weighed in making this decision would be the amount of access taken away, the amount of access remaining, the resultant loss to the property owner, and the resultant gain to the highway users and the general public. If the closing of all access to one street would not work an unreasonable hardship on the individual owner, it would be allowed. If on the other hand such closure would cause an unreasonable injury to the individual, compensation would be required. This element of flexibility, where the exercise of police power is limited, not by a set mechanical rule but by the equities of the situation, would promote increased highway effectiveness, while protecting the rights of abutting landowners.

In applying this approach to a particular problem, for instance a customer parking lot for a store, the highway department would have to make a detailed analysis of the situation. Traffic counts, interference counts, and other engineering techniques could be used to show clearly the amount of interference with through traffic which results from the use of the driveway to the lot. From this information the department can make an estimate of the benefit which will accrue to the public from the closing of this driveway.

Studies of possible alternate access arrangements would be made to determine which arrangement minimized the damage to the landowner. After this device had been used for some time, case studies could be developed which showed the actual effect of such driveway closure on various businesses. The department would then have an authoritative and objective estimate of the benefits and losses to be expected from

⁶/This does not refer to new construction which is designated as controlled access highway. Several States have held that no right of access arises in such a case. See HRB Bul. 189, p. 31.

⁷/San Antonio v. Pigeonhole Parking of Texas, 311 S.W.2d 218 (1958); Alexander v. Owatonna, 222 Minn. 312, 24 N.W.2d 244 (1946); Farmers-Kissinger Market v. Reading, 310 Pa. 493, 165 Atl. 398 (1933); Wood v. City of Richmond, 148 Va. 400, 138 S.E. 560 (1927); Socony v. Murdock, 165 Misc. 713, 1 N.Y.S.2d 574 (1937).

⁸/Brownlow v. O'Donoghue, 276 F. 636 (D.C. Cir. 1921); Newman v. Newport, 73 R.I. 385, 417, 57 A.2d 173, 181 (1948); Elder v. Newport, 73 R.I. 482, 57 A.2d 653 (1948).

closing the driveway. If the loss to the property owner is not unreasonable when compared with the resulting gain of the traveling public, this rule will allow closing of the driveway under the police power. When these estimates and comparisons are presented to a landowner, he might be convinced that the loss of one of his driveways would not unduly hurt him and that he should not object. However, if he does object to the extent of going to court, the facts which the court needs to reach a just conclusion have already been developed and organized. This procedure should lead to orderly settlement of these cases.

On Wisconsin Avenue there are several corner businesses, such as gas stations and parking lots, which have driveways to another street. The only D. C. case on closure of such driveways,⁹ unfortunately, adopts the rule that compensation must be made when all access to one street is taken. But the case was decided in 1921 and urban transportation and highway law have changed greatly since then. In view of this, the courts might be prevailed upon to adopt the other rule (closure under the police power) if a detailed study clearly showed that such adoption would further the public interest without seriously injuring the private parties involved.

Of course, such closure is a rather drastic step, and it would be much better to control the use of driveways so that they will not develop into extreme points of interference and to remedy these trouble spots, if they do develop, by restricting only some of the turning movements or by redesign of the driveway. This police power device, however, does serve as a last resort which can be used to prevent an access point from choking the life out of a highway when the problem has deteriorated beyond the stage where lesser measures will help.

Barricading Cross Streets

The third method of increasing the efficiency of an arterial street is to restrict or prohibit conflicting vehicle movements at certain cross streets. Several alternate degrees of restriction were mentioned in the section on "Developing Freeway Characteristics." Each is treated in more detail here and also the question of legal authority for such restriction is considered.

One possibility is to barricade entrances to most of the side streets and force traffic to enter, leave, and cross the artery at fairly widely spaced intersections. This would eliminate all the minor intersection interference and the remaining street crossings could be designed to handle the traffic as efficiently as possible for an at-grade intersection.

On many arterials, traffic during the day is light enough so that vehicles entering and leaving cross streets do not cause much interference, but these same movements are very troublesome during rush hours. In this situation a better solution is to barricade the cross streets only during rush hours. This would best serve the needs of the arterial traffic when it is heaviest without interfering to any great degree with the local neighborhood traffic on the cross streets.

If complete barricading of the cross streets is not warranted on a particular arterial, even during rush hours, all left turns and cross-movements could be prohibited, while allowing right turns either onto or off the arterial. This regulation could be set up permanently, or just during rush hours. If it is to apply all day, a barrier island could be constructed on the arterial, through the intersection. Such island might be objectionable, however, especially if reversible flow is used on the arterial.

Probably no one of these variations would be universally applicable to a particular city or even to a particular arterial street. At different intersections different movements may be the cause of interference. For instance, at one intersection there might be plenty of room for right turns and the only interference is caused by left turns and crossing vehicles. Here only the troublesome movements would have to be prohibited. At another intersection on the same arterial right turns, either because of their number or the shape of the intersection, may cause congestion and here complete blocking of the entrance would be the appropriate regulation.

⁹/Brownlow v. O'Donoghue, supra, note 8.

A thorough search turned up no cases or statutes which concerned barricading one end of a street. There is, however, a considerable body of law dealing with the abandonment, vacation, or closing of streets, and principles which apply to barricading can be drawn from this law of vacation.

Vacation or abandonment of a portion of a street is a much greater interference with the rights of, or at least the convenience of, the abutting landowners and the traveling public than is the closing of one entrance to a street. If the street is merely blocked at one end, the abutters' access to the street is not disturbed as it would be by vacation. The other interested party, the highway user, is also hurt more by vacation than by barricading. If a street is vacated, it is no longer part of the highway system; if the road is only barricaded at one end, the road user can still traverse the street from one end to the other. Thus, it would seem that, because vacation is a more severe restriction than barricading, the power to vacate would include the power to barricade. To clear up any logical difficulty in inferring the power to barricade from the power to vacate, the barricading could be considered as vacation of a very short segment of the street.

Whether a highway can be vacated depends on considerations of its necessity or public utility. It is generally the law throughout the country that roads may be vacated¹⁰ if they are useless, inconvenient, or burdensome.¹¹ If a cross street is hampering the heavy flow on an arterial while benefiting only the relatively few drivers who use it, the net effect of that street remaining open is burdensome and probably dangerous. This, under existing law, would give the city the right to vacate the street and, it follows from the reasoning developed in the preceding paragraph, also the right to barricade on end of the street.

The Commissioners of the District of Columbia are authorized by statute¹² to close a street or highway if that street becomes useless or unnecessary. This fits the general pattern of law developed in the foregoing, and it follows that the District of Columbia also has the authority to barricade cross streets.

The part of the street in the same block as the barricade is effectively turned into a dead-end street or cul-de-sac, and the same rules of compensation to abutters are assumed to apply. There are many decisions to the effect that, unless an owner retains access in both directions at least to the next intersecting street, any decrease in value resulting from a cul-de-sac is "special" injury and requires compensation to the owner, even though reasonable access may be available in one direction.¹³

This is a controversial area, and there seems to be a trend toward the view that the mere creation of a cul-de-sac is not of itself sufficient to entitle an owner to compensation and that the real question is whether he still retains reasonable access to the general system of highways.¹⁴

The creation of a cul-de-sac and the creation of a one-way street have similar effects on the abutting property. The owners still have their old access to the street, but for some purposes their access to the general highway system will require some circuitry of travel. There are a tremendous number of one-way streets in this country, but there are no cases in which property owners were compensated because the streets they abutted were made one-way. Inasmuch as the infringement on the enjoyment of

¹⁰/A. T. & S. F. Ry. Co. v. Shawnee, 183 F. 85 (8th Cir. 1910); Lockwood v. City of Portland, 288 F. 480 (9th Cir. 1923).

¹¹/68 A.L.R. 794.

¹²/District of Columbia Code 7-401.

¹³/Okla. Turnpike Authority v. Chandler, 316 P.2d 828 (1957); Coy v. Tulsa, 2 F. Supp. 411 (1933); Felton v. State Highway Board, 47 Ga. App. 615, 171 S.E. 198 (1933); Cartmell v. Maysville, 231 Ky. 666, 22 S.W.2d 102 (1929); Beals v. City of Los Angeles, 23 C.2d 381, 144 P.2d 839 (1943); Bachich v. City of Los Angeles, 23 C.2d 343, 144 P.2d 818 (1943); 93 ALR 639, 150 ALR 644, at 651.

¹⁴/Dept. of Highways v. Jackson, Ky., 302 S.W.2d 373 (1957); Spicer v. State, 8 Misc.2d 930, 169 N.Y.S.2d 128 (Ct. of Claims, 1957); Warren v. Iowa State Highway Comm., 93 N.W.2d 60 (1958); Handlan Buck Co. v. State Highway Comm. of Missouri, 315 S.W.2d 219 (1958). See also 93 ALR 639; Paper on compensability of interference with access by H.H. Krevor, Asst. General Counsel, BPR, Oct. 13, 1959.

private property rights is similar in both cases, and it is well established that no compensation is due for the establishment of one-way streets, it follows that no compensation should be paid merely because a landowner is placed on a cul-de-sac and that the second rule is the better one. This is supported by the fact that in the usual urban grid street pattern the creation of a cul-de-sac is almost no inconvenience to the abutting owners because there are plenty of alternate routes nearby.

Rush Hour Freeways

These three proposals, of course, will not all be useful in all situations. Differences in traffic patterns, physical characteristics of streets, legal authority, and the lengths to which civic authorities are willing to go to alleviate traffic problems require that different measures be applied to different arterials, and even to different parts of the same arterial. But by adapting and combining variations of these proposals, and of the principles which gave rise to the proposals, freeway characteristics can be developed to some extent in many existing arterials.

An example of such variation would be the institution of all three proposed regulations—left turn restriction, driveway closure, and street barricading—for the rush hours only. The resulting "rush hour freeway" would best provide traffic service to highway users when their needs were greatest without unduly sacrificing the arterial's other function of providing land service for local traffic and abutting owners. Of course such a rush hour freeway might not be adequate for an arterial which carried heavy traffic all day long. This illustrates that the applicability of these proposals depends on the local situation and that this situation should be carefully analyzed to determine which measures will do the most good.

PLANNING CONTROLS

There are a number of land use and planning control measures that can be used to increase the efficiency of arterial operation. The purpose of this section of the paper is to analyze legislation and other legal material pertinent to these measures in the District of Columbia and in other jurisdictions, and to develop legal tools which can be used to increase the traffic-carrying capability of arterial streets and highways.

Implicit in this analysis is the need to investigate many techniques and procedures that might not prove helpful in the situation at hand. Thus, subdivision regulations, conditional use of access permits, restrictive covenants, easements, development rights, and many of the regulations for the control of development did not, even after a thorough study and attempt to extend existing uses and procedures, seem to be of help in solving the problems encountered in the Wisconsin Avenue corridor. For this reason these measures are not discussed. However, it should be stressed that if this arterial went through undeveloped areas these measures would be of considerable use and help.

The land use control techniques that were found to be of use are considered and an attempt is made to develop ways to increase the effectiveness of Wisconsin Avenue as an arterial.

Zoning

Zoning, a government regulation of the uses of land and buildings according to districts or zones, has in the District of Columbia three purposes of special importance:

1. To lessen congestion in the streets;
2. To prevent undue concentration of population; and
3. To promote the general welfare.¹⁵

Zoning regulations should be responsive to transportation requirements. The development of a city and its street system are closely interrelated. Urban development, even with good zoning regulations, will be stifled by an inadequate

¹⁵/Zoning Act of June 20, 1938 (52 Stat. 797), as amended.

street system. On the other hand, haphazard development under an inadequate zoning ordinance will reduce the effectiveness of an otherwise adequate street system. Thus, zoning programs and street systems, if not coordinated, will each tend to reduce the effectiveness of the other. Zoning regulations formulated with transportation requirements in mind can help prevent the zoning and highway programs from working at cross-purposes, and thereby help the community reap the full benefits of both programs.

This section on zoning is primarily devoted to exploring and developing this relationship between zoning and the arterial system and to indicating ways in which zoning can be used to promote the degree of utilization of an existing arterial street. This analysis has been applied to these three general areas of zoning where significant improvement seems to be most possible: (a) provision of adequate parking for new structures; (b) achievement of better use of existing streets; and (c) development of a balance between land use and transportation.

Adequate Parking and Loading Zones for New Structures

Arterials are intended primarily for moving traffic, but unfortunately they must usually serve, as truck loading zones for adjacent businesses and as storage areas for passenger cars. Three important uses compete for curb space: loading, parking, and traffic movement, the latter both pedestrian and vehicular. Wisconsin Avenue is a striking example of an arterial where these conditions exist and where the traffic-carrying capability suffers drastically as a result. Hence, the recommendation is often made that parking and loading be moved to off-street locations in order to reserve street space for the movement of vehicles.

Such a regulation should be accompanied by an attempt to provide adequate off-street parking and loading areas. The extent to which zoning may provide the needed solution in the District of Columbia has been well documented by Lewis in a recent study.¹⁶ Others have outlined these principles also and for a number of years have called for more extensive utilization of zoning powers in programs that seek to solve the parking problem.¹⁷

Recommendations usually encourage:

1. Development of adequate parking facilities for existing buildings of high residual value.
2. Provision for adequate parking for all new or substantially altered buildings.
3. Authorization (or prohibition) of the establishment of parking accommodations as a separate property use either in a parking district or zone, or in some other authorized district or zone.
4. Establishment of entire districts adjacent to commercial areas, dedicated to parking or to a combination of parking and residential uses.
5. Regulation of parking areas in commercial or industrial zones which abut residential property.
6. Adoption of transitional zones where parking uses are permitted in a residential zone along and within a specified distance from a commercial or industrial district.
7. Development of a program providing special incentives (a) for creation of off-street parking facilities to replace curb parking spaces, and (b) for disposing of obsolete structures with parking inadequacies that cannot be remedied.

Each of these could help solve a significant problem prevailing currently along the

¹⁶/Lewis, Harold M., "A New Zoning Plan for the District of Columbia." Washington Zoning Revision Office, Washington, D.C. (1956).

¹⁷/See generally: "Parking Requirements in Zoning Ordinances," HRB Bul. 99 (1955); "Parking Guide for Cities," U.S. Department of Commerce, Bureau of Public Roads (1956); "Parking—Legal, Financial, Administrative," Eno Foundation (1956); Mogren and Smith, "Zoning and Traffic," Eno Foundation (1952); "An Analysis of State Enabling Legislation of Special and Local Character Dealing with Automobile Parking Facilities," HRB Bul. 7 (1947); "Zoning for Parking Facilities," HRB Bul. 24 (1950); "Off-Street Parking: Legislative Trend and Administrative Agency," HRB Bul. 48 (1952).

Wisconsin Avenue arterial. Since even a partial solution of these problems would ease the parking situation along the corridor, adoption of the recommendations would tend to offset the disadvantages of removal of curb parking on the arterial.

The present District of Columbia zoning regulations permit action on most of the recommendations, although new legislation specifically responsive to arterial problems would enable adoption of even more effective measures. For example, recommendations 2 through 6 can be adopted to some extent without additional authority. On the other hand, broadened authority would permit more effective steps to accomplish objectives 2 through 6, and is necessary to accomplish objectives 1 and 7.

Taking the proposals item by item, accomplishing the first objective would require the amortization, as nonconforming uses, of existing buildings with insufficient parking spaces. New legislation specifically covering this course of action would make adopting it more feasible. The second recommendation is covered by sec. 7202¹⁸ which provides that "on and after the effective date of these regulations all structures shall be provided with parking spaces" as specified in the section. Effectively administered, this provision should result in meeting the second objective. Authority to adopt proposals 3 and 4, although not as broad as might be desired, does exist. See, for example, sec. 3104¹⁹ on the R-4 district, especially subsection 3104.44. Likewise the regulations cover recommendation number 5. The sixth can be accomplished at least to a limited degree by taking advantage of subsection 3101.48 and Article 74.²⁰ And finally, to achieve the important objective covered in recommendation 7, it would seem to be necessary to obtain new legislative authority setting up these programs in specific terms.

Generally, even though a more effective parking program could be adopted under broadened authority, the better approach might be to develop a plan of action going to the limit of existing authority. This action program could then, even while it is getting results, be evaluated and used along with other studies to determine the need for new legislation. Should such a need exist, the same studies would be of use in supplying the substantive know-how for drafting effective enabling legislation.

Achieving Better Use of Existing Streets

Removing curb parking from a traffic arterial is an obvious but very effective method of achieving better use of existing streets. It was treated separately because the important role of parking in urban transportation warrants special emphasis. The purpose of this section is to point out the weaknesses of a zoning ordinance as far as traffic needs are concerned and to evaluate the various proposals that have been made on how to use zoning to meet traffic needs. Some of these weaknesses and the benefits that will accrue to the arterial if they are overcome are discussed in the following.

A. Inadequate front yard setbacks in blocks terminating at key intersections of the major thoroughfare plan and lack of control over the build-up of structures on corner lots.

This condition is usually the result of a failure to coordinate zoning and the arterial street plan. With effective coordination, setback requirements can aid in meeting traffic needs by providing extra space for later enlargement of the intersection without excessive cost or building damages if the property must be condemned. In prescribing setbacks, space should be allowed both for street improvements and for replanting and landscaping as well. Also control over build-up of structures on corner lots can main-

¹⁸/Zoning Regulation of the District of Columbia, effective May 12, 1958, adopted by the Zoning Commission under and by virtue of the authority conferred upon it by an Act of Congress, approved June 20, 1938, as amended. No attempt is made in this report to evaluate the requirements for parking spaces, done comprehensively in the Lewis zoning study, but instead it is recommended that an adequate parking program be devised and the ability of the zoning ordinance to support the program thereafter evaluated.

¹⁹/Ibid.

²⁰/Ibid.

tain sight distances and otherwise limit the creation of hazardous conditions. And, finally, combination of control over build-up and adequate setback requirements permits efficient administration of curb opening and control of development programs.

B. Uncontrolled location and design of curb-cuts.

Zoning can supplement a curb-cut control procedure with the objective of reducing to a minimum openings detrimental to the safety and efficiency of the arterial. For example, large traffic generators should not be allowed to locate at key intersections.

C. "Strip commercial or business districts" running along the artery with a shallow depth, back from the road, of 100 to 200 ft.

This type of "strip zoning," evident on most major arterials, including Wisconsin Avenue, excludes the desirable shopping center cluster and encourages the undesirable "road towns."

In addition to adopting provisions to alleviate these conditions, there are many other positive steps that can be taken to make zoning work to meet traffic needs. For example, where new and remodeled buildings are required by zoning to provide off-street parking, the municipality through a public orientation program could sponsor a plan calling for a pooling of required parking stalls, thus permitting joint operation of a large parking lot or garage.

Use of Zoning to Equate Urban Land Uses and Transportation Facilities

Proper planning for the correction of defects in existing street systems requires an awareness, by those responsible for the planning, of the functional differences and relationships between streets and the zones they serve. That zoning and an arterial system are closely related is borne out by the ability of each to render the other more, or less, effective. For example, a basic purpose of zoning has been to promote control over population density. On the other hand, control over density is also basic to maintaining an adequate transportation system. Since density controls can be made unworkable by an inadequate arterial system, and an arterial system can be rendered ineffective by weak or nonexistent density controls, it is clear they are interdependent. Keeping these two components of the municipality's comprehensive plan in balance must be a prime objective of sound planning.

There are many facets to equating urban land uses and the transportation facilities that serve them, and an exhaustive analysis would not be wholly pertinent to this study of the Wisconsin Avenue arterial. However, two objectives of zoning, land use and density controls, are so closely related to achieving the highly desirable balance between zoning and transportation that they warrant special attention. The following observations on these two functions of zoning refer to conditions encountered during the Wisconsin Avenue research; however, to keep from limiting the analysis, specific examples are not used.

Stability of Land Use. — Planning must reflect changing conditions, and flexibility is an important attribute of any usable comprehensive plan. Since "total planning" must have these characteristics, it seems hardly necessary to point out that land use planning, an important component of comprehensive planning, must be capable of reflecting changing conditions. Nevertheless, planning efforts will fail unless, within certain limits, stability is also a goal of land use planning. A degree of stability is necessary, for example, to provide time for developing a street arterial system sufficient to serve the various zoning districts with efficient and convenient movement of people and goods. Once the system is developed, it can remain sufficient only so long as land use and other conditions are not allowed to change in such a way as to render the system ineffective.

No street or thoroughfare system will remain sufficient if competing demands for land use remain uncontrolled. The number and type of new buildings in congested areas must be controlled. Unfortunately, however, land use controls frequently permit too dense a grouping of large traffic generators, clearly causing traffic congestion. This grouping may occur outside the boundaries of the district where the congestion occurs,

the congestion resulting from too much traffic passing through the district or neighborhood. Traffic congestion, in turn, is a major cause of deterioration and blight, thus calling for remedies more expensive by far than properly conceived and administered planning and zoning would have been in the first place. Nevertheless, the zoning ordinance and administration that takes this cause and effect relationship into account with an action program is rare indeed, and although the D. C. ordinance purports to do so, numerous neighborhoods congested with traffic border Wisconsin Avenue.

Density Controls.—A basic purpose of zoning and planning is to promote control over population density. Population density must be coordinated with available feeder roads and access roads to major thoroughfares and freeways in order to insure the continued efficient operation of the street and arterial system.

When large apartments are involved instead of single family residences, this relationship becomes even more significant. This is clearly the situation along Wisconsin Avenue where transportation problems have been worsened considerably by zoning large portions of the corridor for apartments.

In addition to controlling population density, it is important to control the density and location of large traffic generators both with respect to amount and to type of traffic generated. In fact, it appears correct to say that a zoning plan which does not have as a partial purpose the distribution of major traffic generators is not a completely adequate and properly conceived ordinance. Intelligent dispersal of traffic generators will lessen congestion because the volume of traffic the urban street must accommodate is directly related to the height, bulk and function of the buildings comprising the community. Further, if the character of traffic generated by the use is accepted as a criterion for inclusion in, or exclusion from, the various zoning districts, these districts can then be placed so as to reduce intermingling of various types of traffic on the same facility.

The corollary to this, of course, is that the zoning must provide elsewhere districts for the improvements not allowed in existing congested areas. But these zoning districts must be located geographically so that they do not overload existing or available arteries. The land use study conducted as a part of the Wisconsin Avenue research portrays vividly the need for a planned dispersion of traffic generators. However, a geographic distribution of traffic generators is not by itself sound planning. The distribution must have at least as a partial purpose the improvement of traffic conditions. Nothing is gained by moving, for example, a commercial venture to a location that will soon become virtually inaccessible for many residents in the market area.

Zoning and the Arterial Street System as Planning Tools

Implicit in balancing urban land uses and the transportation facilities that serve them is the use of both zoning and the arterial street system to aid in achieving planning goals. It is well known that, when coordinated with zoning, a street or highway, whether controlled access or not, can be used to give the city form and pattern, to demarcate land uses, and to protect neighborhoods by establishing barriers to the entrance of incompatible land uses. The research needed to apply these principles to Wisconsin Avenue was not performed as a part of this study. However, one significant city planning question kept recurring, especially during the land use study. Is the Wisconsin Avenue arterial giving this area of the District of Columbia the form and structure that sound planning goal analysis would prescribe?

Research Needed to Make Zoning Responsive to Needs of an Arterial System

A few of the critical needs in the field of zoning demanding immediate research are as follows:

1. To devise measures to determine the effect on the traffic requirements of a particular property of rezoning from less to higher intensity of use.
2. To study the relation between zoning and highway obsolescence and to establish a basis for realistic limits of land development.
3. To investigate further the friction between transportation and land uses as evidenced by the location of volumes, points of congestion, accidents and delays.

4. To lay a ground work for a new concept of zoning classification that will result in zoning districts adjacent to arterials, as well as at key intersection areas, that meet the needs of highway transportation.

5. To determine ways and means to develop, in the courts, new criteria responsive to traffic problems to be used by the courts when determining the validity of zoning actions.

Conclusion

Zoning, it seems clear, does have substantial promise as a means for maintaining the traffic-carrying capability of an urban street. Properly employed zoning can help achieve a desirable balance between (a) traffic generators of all types and sizes, (b) street capacity for moving vehicles, and (c) off-street terminal facilities for standing vehicles. But none of these goals can be accomplished unless the zoning ordinance is administered in a manner that recognizes the problems and needs of a highway transportation system, and unless much needed research is conducted.

Urban Renewal

The Wisconsin Avenue arterial, as the land use study shows, is bordered by development for the complete length of the District of Columbia portion of the arterial. For this reason, the more obvious benefits resulting from effective use of subdivision regulations are not available in this instance, and subdivision controls are therefore not discussed in this paper.

There is a possibility, however, that neighborhood design standards, similar to standards included in subdivision regulations, for areas undergoing a private renewal process could be developed and profitably promulgated. These standards would require that the private efforts be directed towards desirable goals. Since conservation and rehabilitation programs normally call for some public contribution, what could be more significant than making a part of this contribution the converting of the neighborhood street system from a grid pattern to a limited and controlled access pattern? Properly handled this approach could give the close-in neighborhood many desirable attributes. If this rehabilitation is undertaken along with adoption of meaningful density controls, significant strides towards lessening congestion can be made. This by itself will aid considerably in halting creeping blight.

Urban renewal includes at least four techniques:

1. Redevelopment—demolition and rebuilding in a project area.
2. Housing law enforcement—enforcing of municipal codes and ordinances in a uniform manner to insure maintenance of prescribed standards.
3. Rehabilitation—remodeling and renovating existing structures in a neighborhood or project area.
4. Conservation—preservation of existing structures.

Conservation and rehabilitation programs are frequently conducted together where a community wishes to continue the use and pattern of an area or neighborhood. Among the elements of a conservation program is a neighborhood plan conforming to the community's comprehensive plan providing for the installation of community facilities, demolition of unsound structures, removal of adverse uses, structural rehabilitation, new construction, and relocation of structures. Also important, of course, is an effective housing law enforcement program.

Most conservation and rehabilitation programs embarked upon today have not involved a realignment of the neighborhood street pattern. However, some have closed off existing streets, constructed cul-de-sacs, changed a four-street intersection to two 90-degree elbow turns, to obtain curved street alignment, and made other street improvements resulting in better neighborhood conditions. If the neighborhood street pattern is changed in this manner to increase the amenities of the neighborhood, the access control provisions outlined above that are so helpful in maintaining the traffic-carrying capability of an arterial, can be obtained at the same time. If the objective of aiding transportation is incorporated in the conservation and rehabilitation program,

the result will be not only to aid the arterial system, but also to further the objectives of the conservation and rehabilitation program.

To achieve this goal, it is necessary to develop a two-way exchange of ideas between the local and Federal administrators of the housing and renewal legislation and highway officials. This interchange of ideas should provide the groundwork for a cooperative use by these authorities of the arterial system as a planning tool to aid the urban renewal and housing official, and of the housing and renewal techniques to aid the traffic official.

The always desirable balance between land use and the transportation system serving it can be furthered by cooperative effort during the redevelopment process. If reuse of the land is made to be in balance with available transportation facilities, the benefit will be twofold. The redevelopment will be aided in accomplishing its objective because served by adequate transportation facilities and, in turn, these facilities will not be overtaxed. Such balance was probably intended by the drafters of the legislation to follow naturally as a result of the requirement that the renewal be in accordance with a comprehensive community plan.²¹

The existence along Wisconsin Avenue of a large privately renewed community (Georgetown) suggests the possibility that private renewal programs, encouraged by the application of rehabilitation and conservation techniques, could be generated in other areas along the corridor. These adjacent neighborhoods would then become controlled access neighborhoods with the accompanying favorable access and street design provisions.

Frequently, some of the traffic generators causing the most serious congestion will be located in blighted areas adjacent to the arterial. When this situation exists a great deal can be accomplished, through redevelopment, to alleviate congestion and promote balance between the arterial system and the land uses the system serves. Because congestion is a cause of blight, these areas should get a high priority. Such conditions may, or may not, obtain along Wisconsin Avenue, but the possibility should be investigated.

Official Map

The recommendations made in this report have been limited to measures that would not require acquisition of additional right-of-way. Nevertheless, should future traffic requirements necessitate either additional lanes or a parallel facility, additional property would be needed. Control of the building of structures in the beds of proposed improvements, prior to the time that the governmental body is in a position to acquire the land, can be accomplished through a competent use of mapped street powers, available if proper enabling legislation exists.

Mapped street powers can be used to prevent the owner from building in the areas which the city proposes to acquire at some future date. Compensation is paid him for property taken, but not for improvements made subsequently to the filing of the official map.²²

The use of mapped street powers in connection with an arterial street system would

²¹/ Sec. 105(a) of the Housing Act of 1949, as amended, provides that redevelopment project loan and grant contracts shall require a general plan to which the project conforms. 63 Stat. 416 (1949), as amended, 42 U.S.C.A., Sec. 1455(a) (1957).

²²/ The procedure set forth in the State of Wisconsin official map law is typical of the usual procedures. The official map authorized by the 1947 Wisconsin law (Wis. Stat. 62.23(6)) shows existing streets, highways, parkways, parks and playgrounds. For the purpose of preserving the integrity of the official map, no permit may be issued for any building in the bed of any street, highway or parkway shown on the map. A landowner desiring to construct a building in the bed of a mapped street must apply to the city for a permit. If denied, he may apply for a variance and, if he can prove that his land is not yielding a fair return, the board of appeals may grant a permit for a building which will increase as little as practicable the cost of opening the street. The permit is to be denied where the applicant will not be substantially damaged by placing his building outside the mapped street, highway, or parkway.

permit substantial savings when the facility is expanded or reconstructed. For example, strip development along the arterial could be limited in a manner more strict and sure than zoning permits, since improvements can be limited altogether or at least kept to a minimum. Additionally, it is important to remember that although there are many ways and means of controlling access to arterial streets, each of these methods can be furthered by using them in connection with mapped street powers.

Control of Development

Roads and highways without full control of access make up the bulk of the highway transportation system. Billions of dollars have been spent on these roads. Highway authorities have for years recognized the deterioration of these roads as traffic-carrying facilities resulting from uncontrolled and haphazard frontage developments. The only control of this growth has been a limited use of zoning, subdivision regulations, and other regulatory devices. With traffic facilities worth millions of dollars becoming obsolete annually, the need for an effective method of controlling roadside or strip development has become what is probably the most pressing problem confronting highway officials today.

A recent trend in planning that is especially responsive to this need is the granting of authority for administrative control of development along existing and proposed roads and streets in both cities and counties. This control can be exercised in a workable manner by requiring that any building permit, issued for a structure along a major arterial, be referred to the official responsible for operating and maintaining the arterial for his report and approval. This approval may be given subject to stated conditions with reference to curb cuts or other means of access. Also approval should not be granted without taking into consideration the prospective character of the development, the traffic which it will generate, the effect of such traffic upon the existing street system, the design and frequency of access, and the extent to which such development may impair the safety and traffic-carrying capability of the arterials affected. Of course, a provision of this nature should be drafted so that requirements may be varied where there are practical difficulties or unnecessary hardships in the way of carrying out the strict letter of the traffic and street officials' report.

Although development control measures cannot correct existing arterial problems, they can be effectively used on Wisconsin Avenue, or any arterial, to avoid future problems. Specifically, development control measures incorporating the principles outlined can aid in guiding the development of major traffic generating uses that create traffic jams at points of access. Such control measures can be used to require adequate access features for gasoline stations, parking lots, shopping centers, and other roadside developments; and to require developers of residential and commercial subdivisions to provide for access to the lots adjacent to the arterial roads from a side street rather than from the arterial road.

The District of Columbia Zoning Regulations require that detailed plans of all curb cuts and driveway openings be submitted to the Highway Department for approval (sec. 7206.8). The standards set forth in the Zoning Regulations designate minimum widths and maximum grades for residential and nonresidential driveways (secs. 7206.6 and 7206.7) and require that entrances to parking garages be minimum distances from street intersections and alleys (sec. 7402.12). These driveway requirements, as spelled out in the Zoning Regulations, vary only with the broad use classifications of residential and nonresidential. They do not mention the type of street with which the driveway is to connect, the traffic on that street, or the volume or influence of the traffic which will use the driveway. Thus, although the District of Columbia Highway Department does have some control over driveway entrances, it does not have authority to exercise the comprehensive control of development that is contemplated in this paper.

To institute such control, it would be necessary to expand the regulations to cover more than mere width and grade requirements and to make them responsive to highway types, traffic conditions and the present and expected development which would affect or be affected by the proposed driveway. With such regulations, driveway entrances

could be designed and located for the number and type of vehicles which would use them and also to fit in as well as possible with nearby roads and driveways to other lots.

For example, in the case of a proposed supermarket or shopping center on a busy street, instead of only having authority to require a minimum width driveway, the city could require that all access be located on a cross street, that the new driveway include a merging lane to the heavily traveled street, or that some other arrangement designed to reduce traffic friction be constructed. This type of control can eliminate the harmful uncontrolled dumping of traffic onto an arterial street without stifling private development to the extent of prohibiting the establishment of the traffic-generating business.

Law of Nuisances

Many authorities have concluded that substantial interference with safety and free passage of the highway will be enjoined even though the cause of the interference originates on privately owned land abutting the highway.²³ Since the essence of a roadside injunction case is the factual proof of the effect of the roadside use upon the traffic-carrying capability of the highway, this is a course of action in which the lawyer and the traffic engineer can cooperate in a vital program.

Thus, to reap benefit from nuisance law it is first necessary to study the arterial in question and determine whether or not the traffic flow is being hampered by adjacent land uses. Then results of a traffic study, such as the Wisconsin Avenue arterial research, can be used to show that an adjacent roadside use so hampers safety and traffic flow that the use should be enjoined as a traffic hazard.

If a traffic generator of the type that can cause congested conditions if located along a major thoroughfare and if it is also a nonconforming use, the courts are even more inclined to enjoin the use. Beuscher concluded:

Injunctions in cases of roadside abuses can be justified on any one of three lines of court-made case law: (1) the roadside owner has violated his property law duty as owner of a "servient tenement" not to interfere with the "dominant" rights of the public; (2) the roadside abuse is enjoined as a public nuisance; and (3) the roadside owner is guilty of continuing negligent or intentional conduct, in breach of his duty to permit free and safe passage on the highway.²⁴

This is because of the weight usually given in nuisance cases to zoning findings about the character of the district.

Since there does not appear to be an adjacent use along Wisconsin Avenue that constitutes a public nuisance, it is not felt that a further discussion of nuisance law is pertinent to this report. On the other hand, it is apparent that conditions constituting a nuisance could arise in the future. Indeed, there are probably many instances of traffic hazard nuisances adjacent to arterials in cities throughout the country. It would seem then that research is needed to develop nuisance law so that it can be utilized to solve these serious problems. This is not a call for a radical extension of existing law, but rather for recognition of traffic hazards for what they are—a public nuisance.

²³/Beuscher, J.H., "Roadside Protection Through Nuisance and Property Law." HRB Bul. 113 (1956).

²⁴/Ibid. p. 66.