

Subdivision Controls Applied to Highway Problems

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● **TRAFFIC CONGESTION** is seldom caused by any one factor. It is usually the result of many influences, one of which is the helter-skelter location of new residences, businesses, and industries along and near highways. Such development can be detrimental in two ways: (a) it may increase the volume of traffic beyond the capacity of existing streets and (b) it may interfere with the free flow of such traffic without increasing the volume.

The first problem, that of volume, is a matter of having too dense a concentration of traffic-generating land uses for the streets and highways to handle. Of course, this can be stated the other way—it is also a matter of having insufficient highway facilities to accommodate the transportation needs of the existing land uses.

The second detrimental effect of land development—interference with the free flow of traffic—is more a matter of arrangement of the land use pattern than its over-all density. For instance, if several roadside businesses have driveways too close together, the interference from turns into and out of the driveways creates a bottleneck even though the highway otherwise has plenty of capacity to handle the traffic. The congestion in such a situation is not due to the number of vehicles that use the road but rather to the manner in which the road is used. Such congestion could have been avoided by wider spacing of the businesses or different arrangements of the access facilities.

So it is seen that highway facilities can get out of balance with the density and arrangement of land use and that the imbalance leads to traffic congestion. What can be done to achieve or maintain this necessary balance between land use and traffic facilities? Should the highway pattern conform to the land use pattern or vice versa? Which one should "give" to accommodate the other? One way would be to consider the land use as it is and build highways that accommodate its traffic demand. The trouble with this approach is that land use does change and almost certainly will change once the new road is built. No matter how wide and straight a road is built, uncontrolled development of the land it serves can turn it into a congested and ineffective facility.

Another approach would be to locate the road and then force the land use to conform to a pattern that would not interfere with the road or increase traffic on it. This would be objectionable because it would amount to building our cities to fit the streets when actually streets and highways should be a means of meeting the changing needs of people.

Since neither extreme is feasible, the answer probably lies somewhere in between. Neither land use nor highway location will be considered as constant or absolute, rather there will be an attempt to strike the necessary balance by adjustment. The governmental powers to locate highways and to control land use must be exercised with due regard to the effect that each has on the other. This paper is concerned with the degree to which highway problems have been and could be taken into account in one phase of land use control—the regulation of land subdivision.

The report is based on a study of all State enabling legislation and about 150 subdivision regulations and ordinances. The latter sample was selected on the basis of practical considerations rather than scientific principles. It consists of the regulations available in libraries in Washington, D. C. Statutes and ordinances are cited in the footnotes only to illustrate the types of provisions discussed in the text and do not represent the only examples of the provisions.

SUBDIVISION CONTROL

Subdivision regulations, unlike zoning, are not prohibitive. They do not say that a developer may not use his land in a certain manner, rather they say that if a developer is going to use his land in a certain way he must meet certain conditions imposed by the community. Examples of requirements involved are that land be dedicated to the city for streets, schools, parks, and other public purposes; that streets be properly laid out, and that acceptable pavement, drainage, water supply, and sewage disposal facilities be installed by the developer.

These requirements are clearly restrictions of the private developer's use of his own property. The restrictions are justified, however, by the fact that the developer is not only engaging in a private business deal but also determining the character of a portion of the community. If the new development is poorly planned and constructed, it may give rise to traffic congestion, high maintenance costs, cramped school areas, and slums. It seems only fair that the community should be able to regulate subdivisions to protect itself from the imposition of such burdens at the whim of the private developer. The constitutionality of subdivision legislation has only been challenged in a few court cases and the courts have held that the inherent power of the State to legislate for the public welfare includes the power to make reasonable demands on a private land developer.¹

In general, there are the following three phases in the subdivision control process:

1. The State gives control authority to local governments and sets forth the objectives that the exercise of the control is to accomplish.
2. The local government, as directed or authorized by the State legislation, formulates standards for proposed subdivisions.
3. The local government decides whether proposed subdivisions meet these standards.

STATUTES

The first phase, the delegation of authority to local governments, is embodied in statutes passed by the State legislature. Such enabling legislation does two things: it defines the authority that is given and it designates the officials or bodies to whom it is given.

The existing statutory provisions concerning the amount and type of authority given vary widely from State to State in the degree to which they refer to highway matters. Some go into very little detail and just say that the reviewing body shall approve the street system; others are much more specific and set out factors that are to be considered by the approving authority in passing on proposals. These factors are often stated in the form of objectives that are to be sought in the exercise of the power to regulate subdivisions. A fairly common statutory provision is that subdivision regulations shall provide for

1. Proper arrangement for streets, roads and highways in relation to other existing or planned streets or highways, and
2. Adequate and convenient open spaces for traffic, utilities, recreation, light and air, and access of fire apparatus.²

¹Mansfield and Swett, Inc. v. Town of West Orange, 120 N.J.L. 145, 198 A. 225, 1938; Brous v. Smith, 304 N.Y. 164, 106 N.E. 2d 503, 1952.

²Kentucky Rev. Stats., Sec. 100.087; Ann. Code of Maryland 1957, art. 66 B, Sec. 26; Colorado Rev. Stats. 1953, Sec. 139-15-14.

Some other examples of highway-oriented objectives are as follows:

To provide an adequate and convenient ^[street] system for present and prospective traffic needs...³

To coordinate streets within subdivisions with other existing or planned streets...⁴

To lessen congestion on subdivision streets and adjacent public ways; and to coordinate subdivision streets with each other and with streets of the town and neighboring subdivisions.⁵

A few statutes expressly state that the relationship between land use and traffic shall be taken into consideration. For example:

In making street width and location requirements, the municipality shall consider the prospective character of the development...⁶

In establishing subdivision regulations regarding streets, due regard shall be paid to the prospective character of different subdivisions, whether open residence, dense residence, business or industrial, and the prospective amount of travel upon the various ways therein...⁷

These examples show how highway-oriented standards can be included in the description of the authority delegated. Consideration of highway and street problems can also be obtained by stipulating that officials of highway agencies must approve proposed subdivision plats. The enabling legislation of most States provides that local planning commissions shall approve subdivisions; others vest this authority in the local governing bodies without requiring approval by any particular agency. At least two States⁸, however, require that the local city or county engineer must check proposed subdivisions. Two other States provide by statute that the State highway department shall have a hand in protecting the highway system from the possible harmful effects of subdivisions. In Michigan,⁹ a plat that includes or affects a State trunk highway or Federal-aid road must be forwarded to the State Highway Commissioner for approval. In Wisconsin,¹⁰ the localities are the approving bodies, but plat approval is conditioned on compliance with the rules of the State Highway Department relating to access requirements for property abutting State highways and connecting streets. These two States eliminate the middleman as far as highway matters are concerned and subject the developer to requirements determined by the State instead of by the local government.

³Gen. Stats. of Connecticut 1958, Sec. 8-25.

⁴Rev. Laws of Hawaii 1955, Sec. 147-52.

⁵Ann. Laws of Massachusetts, ch. 41, Sec. 81M.

⁶Minnesota Stats. 1957, Sec. 471.30.

⁷Ann. Laws of Massachusetts, ch. 41, Sec. 81Q.

⁸Oregon Rev. Stats., Sec. 92.100; West's California Codes, Business and Professions Code, Sec. 11593.

⁹Michigan Stats. Ann., Sec. 26.465.

¹⁰Wisconsin Stats. 1957, Sec. 236.13.

REGULATIONS

The second level of the subdivision control process involves the standards that the local body determines and applies to proposed subdivision plans that come under its authority. These standards are usually adopted by the local government or one of its agencies and are termed "subdivision regulations." They may be adopted as ordinances by the local government or as administrative regulations of the planning commission or another agency.¹¹ California¹² makes it mandatory that local governments establish standards and regulate subdivisions. Some State statutes say that local governments may do so but the statutes do not make it compulsory.

In some States,¹³ local governments may restrict a subdivider's activity only to the extent of making him comply with officially adopted standards. On the other hand, at least one State statute¹⁴ provides that approval of a subdivision shall be based on its compliance with municipal ordinances and its general reasonableness.

Local Streets

Highway-oriented subdivision requirements are aimed at both minor streets within the development and major streets in or near the development. The function of the minor streets is to provide satisfactory access to the adjacent land uses and a satisfactory pattern for community development. They do not carry heavy traffic and the more important design considerations are safety, easy circulation, discouragement of through traffic, low maintenance cost, and proper drainage.

Almost all subdivision ordinances have detailed design specifications in this area.

Maximum widths, grades, and curvature are usually designated. Intersection design has a considerable effect on accident rates¹⁵ and specifications for the number and angle of intersecting legs and rounding of corners are common. Maintenance costs are minimized by requiring the developer to conform to established standards for the layout and physical characteristics of pavement, curbs, sidewalks, and drainage facilities.

Whether the streets of a subdivision are adequate for effective circulation and access, however, depends on many factors besides width, grade, and curvature. A fairly general provision in the ordinance is helpful in that it gives the reviewer the authority to judge the street system as a whole rather than limiting him to looking at one aspect at a time. The following are examples of this type of provision:

The relationship of proposed streets to other existing and planned streets shall be considered.

This recognizes that the subdivision cannot be judged as a self-contained unit. The desirability of a particular street pattern will be determined to a large extent by the way it fits in with the streets surrounding it.

The proposed streets shall conform to the community plan.

This plan is not necessarily a map. It may be a set of rather broad principles governing development that would allow the reviewer quite a bit of discretion in looking at the proposed subdivision in its setting.

The street system shall provide for through and local traffic and a system of service drives that provide access to abutting lots.

¹¹Colorado Rev. Stats. 1953, Sec. 139-59-14; Ann. Laws of Mass., ch. 41, Sec. 81Q.

¹²West's Calif. Codes, B.P. Code, Sec. 11525.

¹³State ex rel. Wollett v. Oestreicher, 121 N.E. 2d 454 (C.P. Ohio, 1953); Colo. Rev. Stats. 1953, Sec. 139-59-14.

¹⁴Rev. Stats. of Maine 1954, ch. 90-A, Sec. 61-v.-A.3.

¹⁵Marks, "Subdividing for Highway Safety." Traffic Quarterly, 11:308 (July 1957).

This provision is just a statement of the desired objective and leaves the reviewer free to choose the criteria on which to base his decision. Although broad, generally worded standards give the reviewing authority the opportunity to exercise his best judgment, they are objectionable in that they do not give the man planning the development much of an idea of what sort of design will be acceptable. This situation can be alleviated by supplementing the broad provisions with more specific statements that will give some guidance to the developer. In addition to the previously mentioned standards for width, grade, alignment, and intersection design, detailed requirements for provision of on-street and off-street parking areas and the length and design of culs-de-sac also bear on the determination of whether the over-all street system provides for adequate circulation and access.

Major Streets

A subdivision, in addition to containing minor residential access streets, will almost certainly include, abut, or be near at least one major street. Such streets serve a dual purpose—they accommodate through traffic and also provide access to adjacent residential, business, and other land uses. These competing functions often interfere with each other and the result is that neither the highway users nor the abutting property owners are served very well. Examples of arterial streets where strip development of stores, gas stations, and other commercial uses has caused congestion are too numerous to require description.

This problem could be attacked by making the road a controlled-access facility and thereby eliminating the land service function entirely. Another way would be to prohibit certain uses but allow those, perhaps residential, that would not unduly hamper traffic flow. This is often done by means of zoning regulations. In many instances, however, it will be desirable to have commercial development on a road that carries considerable traffic. If, for one reason or another, we want to have a road serve both the traffic and land service needs, subdivision regulations can be used to see that these functions do not interfere with each other any more than is necessary. More specifically, if a store is going to be built alongside a busy street as part of a subdivision, approval can be conditioned on the provision of access facilities that will minimize congestion in the street.

There are several type of regulatory provisions that can be applied to this problem of coordinating land use and the street system. Those concerned with the following matters seem to have a good deal of potential.

Traffic Separation.—When a road is to be used by both through and local traffic, separate facilities such as service roads, parallel roads, and extra lanes can be provided for the local traffic.

Rather than having direct access from each abutting lot to the highway, it is often advantageous to provide lot access by means of a frontage or service road that connects with the main highway at fairly widely spaced points. There are many subdivision regulations that require the developer to provide such roads at his expense. These regulations usually specify the types of highways and land use to which they apply.

Under existing regulations, service or frontage roads may be required where commercial lots front on a major or secondary street and where residential lots front on a freeway, parkway or State highway,¹⁶ where lots front on a freeway,¹⁷ or where a subdivision abuts an arterial.¹⁸ Some of these ordinances¹⁸ provide that, as an alternative, access to the arterial may be prohibited and buildings on abutting lots be required to

¹⁶Redwood City, Calif., Sec. 5.15.

¹⁷Kellogg, Idaho, Sec. 9-533.

¹⁸Englewood, N. J., Sec. 22-29; Maricopa County, Arizona, Sec. 301.06 (proposed).

face away from the arterial. This "reverse frontage with nonaccess strips" would seem to accomplish the same result without requiring so much of the developer's land and also would avoid some of the objections of frontage roads, such as light glare and complicated intersections.

Another way to segregate local traffic is to require that street layout include minor streets of considerable continuity approximately parallel to, and on each side of, main thoroughfares.¹⁹ Such streets provide alternate routes for local traffic that might otherwise be using the arterial for very short trips. This is one of the functions of a service road, but this parallel street is more desirable to the developer because it does not eat up so much of his land. These streets, however, might conflict with the principle of discouraging through traffic on residential streets.

Another way to segregate traffic entering or leaving abutting property is to provide an extra lane for its use. If the amount of such traffic is not great and if the traffic-generating uses do not extend for a great distance along the highway, this method should suffice. One regulatory provision²⁰ that takes this approach requires that streets in front of areas zoned or designed for commercial use shall be widened at least 15 ft to insure free flow of traffic. The provision states that this extra width is not for parking purposes and is in addition to any parking requirements.

Access.—If access from an abutting lot would be detrimental to the traffic-carrying capability of an arterial street, that access can be controlled or prohibited by means of driveway specifications, agreements limiting the use to which the property is put, and dedication of nonaccess strips.

Often, the cause of interference at a particular lot, such as a gas station, may not be the number of vehicles using the driveways but the physical characteristics of the driveways themselves. Unrestricted access along the whole frontage is more harmful than access by means of a few well-designed driveways of reasonable width. Interference may result from a driveway that is too close to a street corner and could just as well be elsewhere on the lot. Improper driveway designs can be caught and corrected when the subdivision plans are reviewed.

Some States enabling statutes²¹ allow municipalities to contract with the developer on the use to which property will be put. These contracts are then enforceable against future owners as if they were part of the zoning ordinance. By making the developer agree that the lots shall be used only for single family dwellings, for instance, the city can prevent subsequent purchasers from using the property for a gas station or some other heavy traffic-generating use.

Where the rear of a lot borders an arterial street, many subdivision regulations require that a strip of land must be dedicated to the municipality and used for planting to insure that it is not used for access.²²

Parking and Loading.—Parked vehicles are another source of interference with through traffic. The problem is most commonly found in commercial districts where the vehicles either belong to customers or are making deliveries to the business establishments. Off-street parking requirements are found in several subdivision regulations.²³ At least one community²⁴ requires in its subdivision regulations that designated spaces for on-street parking be provided on main traffic thoroughfares and secondary

¹⁹City and County of Denver, Sec. 80-6.

²⁰Natchez, Mississippi, IL-B-5.

²¹Colorado Rev. Stats. 1953, Sec. 139-59-15; Ann. Code of Maryland 1957, art. 66 B, Sec. 27.

²²Redwood City, Calif., Sec. 5.16; Kellogg, Idaho, Sec. 9-534; Englewood, N.J., Sec. 22-29.

²³Redwood City, Calif., Sec. 5.15; Baton Rouge, La., Sec. 7-1-3; Florence, Ala., Sec. 21.54; Ferguson, Mo., Sec. 27-19.

²⁴Dubuque, Iowa, Sec. 23-45 1(b).

and minor streets. Many ordinances²⁵ require alleys, which eliminate the necessity for loading of delivery vehicles on the street, for all commercial lots. Several of these specifically forbid alleys for residential, or single family residential, uses.

LOCAL APPLICATION

The third level of subdivision control, application of the standards by the local government, has the most direct effect on the land use pattern. The existence of highway-oriented regulations makes it possible for planning commissions and other reviewing authorities to see that subdivision are properly coordinated with the transportation system, but it does not insure that they will do so. The regulations themselves, with which this paper is mainly concerned, must be adequate, but whether the desired effect is achieved will depend to a great extent on the skill and judgment with which the regulations are administered. This study did not include an analysis of administrative practices, but it would seem that requiring the approval of proposed developments by State or local highway department officials would tend to make the application of the regulations traffic-responsive.

This paper has identified some types of subdivision standards that can be used to coordinate transportation and land use. There are undoubtedly more. However, the examples presented indicate that substantial benefit can be derived from applying these controls and that they should be considered as one of the means by which a well-balanced highway system can be established and maintained.

²⁵Florence, Ala., Sec. 21.54; Redwood City, Calif., Sec. 5.17; Oakland, Calif., Sec. 7-4-27; Montgomery County, Maryland (13); Maricopa County, Ariz., Sec. 301.09 (proposed).