

**National Cooperative Highway Research Program**

**NCHRP Synthesis 233**

**Land Development Regulations that  
Promote Access Management**

**A Synthesis of Highway Practice**

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National Cooperative Highway Research Program

# Synthesis of Highway Practice 233

## Land Development Regulations that Promote Access Management

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*Subject Area*  
Planning and Administration and  
Highway and Facility Design

Systematic, well-designed research provides the most effective approach to the solution of many problems facing highway administrators and engineers. Often, highway problems are of local interest and can best be studied by highway departments individually or in cooperation with their state universities and others. However, the accelerating growth of highway transportation develops increasingly complex problems of wide interest to highway authorities. These problems are best studied through a coordinated program of cooperative research.

In recognition of these needs, the highway administrators of the American Association of State Highway and Transportation Officials initiated in 1962 an objective national highway research program employing modern scientific techniques. This program is supported on a continuing basis by funds from participating member states of the Association and it receives the full cooperation and support of the Federal Highway Administration, United States Department of Transportation.

The Transportation Research Board of the National Research Council was requested by the Association to administer the research program because of the Board's recognized objectivity and understanding of modern research practices. The Board is uniquely suited for this purpose as it maintains an extensive committee structure from which authorities on any highway transportation subject may be drawn; it possesses avenues of communication and cooperation with federal, state, and local governmental agencies, universities, and industry; its relationship to the National Research Council is an insurance of objectivity; it maintains a full-time research correlation staff of specialists in highway transportation matters to bring the findings of research directly to those who are in a position to use them.

The program is developed on the basis of research needs identified by chief administrators of the highway and transportation departments and by committees of AASHTO. Each year, specific areas of research needs to be included in the program are proposed to the National Research Council and the Board by the American Association of State Highway and Transportation Officials. Research projects to fulfill these needs are defined by the Board, and qualified research agencies are selected from those that have submitted proposals. Administration and surveillance of research contracts are the responsibilities of the National Research Council and the Transportation Research Board.

The needs for highway research are many, and the National Cooperative Highway Research Program can make significant contributions to the solution of highway transportation problems of mutual concern to many responsible groups. The program, however, is intended to complement rather than to substitute for or duplicate other highway research programs.

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The members of the technical committee selected to monitor this project and to review this report were chosen for recognized scholarly competence and with due consideration for the balance of disciplines appropriate to the project. The opinions and conclusions expressed or implied are those of the research agency that performed the research, and, while they have been accepted as appropriate by the technical committee, they are not necessarily those of the Transportation Research Board, the National Research Council, the American Association of State Highway and Transportation Officials, or the Federal Highway Administration of the U.S. Department of Transportation.

Each report is reviewed and accepted for publication by the technical committee according to procedures established and monitored by the Transportation Research Board Executive Committee and the Governing Board of the National Research Council.

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## **PREFACE**

A vast storehouse of information exists on nearly every subject of concern to highway administrators and engineers. Much of this information has resulted from both research and the successful application of solutions to the problems faced by practitioners in their daily work. Because previously there has been no systematic means for compiling such useful information and making it available to the entire community, the American Association of State Highway and Transportation Officials has, through the mechanism of the National Cooperative Highway Research Program, authorized the Transportation Research Board to undertake a continuing project to search out and synthesize useful knowledge from all available sources and to prepare documented reports on current practices in the subject areas of concern.

This synthesis series reports on various practices, making specific recommendations where appropriate but without the detailed directions usually found in handbooks or design manuals. Nonetheless, these documents can serve similar purposes, for each is a compendium of the best knowledge available on those measures found to be the most successful in resolving specific problems. The extent to which these reports are useful will be tempered by the user's knowledge and experience in the particular problem area.

## **FOREWORD**

*By Staff  
Transportation  
Research Board*

This synthesis will be of interest to state and local transportation agency personnel responsible for access management, as well as to traffic and highway design engineers, land use planners, zoning administrators, environmental specialists, and policymakers or legislators. It describes the various methods for improving traffic operations by managing the location, design, and operation of driveways, median openings, and street connections from business and residential land uses in urban areas.

Administrators, engineers, and researchers are continually faced with highway problems on which much information exists, either in the form of reports or in terms of undocumented experience and practice. Unfortunately, this information often is scattered and unevaluated and, as a consequence, in seeking solutions, full information on what has been learned about a problem frequently is not assembled. Costly research findings may go unused, valuable experience may be overlooked, and full consideration may not be given to available practices for solving or alleviating the problem. In an effort to correct this situation, a continuing NCHRP project, carried out by the Transportation Research Board as the research agency, has the objective of reporting on common highway problems and synthesizing available information. The synthesis reports from this endeavor constitute an NCHRP publication series in which various forms of relevant information are assembled into single, concise documents pertaining to specific highway problems or sets of closely related problems.

This report of the Transportation Research Board discusses state and local regulatory practice and policy related to subdivision regulations, lot split requirements, development review, access requirements, zoning, and other administrative and legal considerations. The specific regulatory techniques cited by local governments that are used to

support access management are identified and discussed, including setback requirements, driveway spacing and operating characteristics, and land use techniques such as minimizing commercial strip development and promoting mixed-use zoning. The increasingly important role of comprehensive planning and intergovernmental cooperation in access management are highlighted. The role of remedial measures, including special exceptions and waivers, is discussed.

To develop this synthesis in a comprehensive manner and to ensure inclusion of significant knowledge, the Board analyzed available information assembled from numerous sources, including a large number of state highway and transportation departments. A topic panel of experts in the subject area was established to guide the research in organizing and evaluating the collected data, and to review the final synthesis report.

This synthesis is an immediately useful document that records the practices that were acceptable within the limitations of the knowledge available at the time of its preparation. As the processes of advancement continue, new knowledge can be expected to be added to that now at hand.

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The Principal Investigators responsible for the conduct of this synthesis were Sally D. Liff, Manager, Synthesis Studies, and Stephen F. Maher, Senior Program Officer. This synthesis was edited by Linda S. Mason.

Scott A. Sabol, Senior Program Officer, National Cooperative Highway Research Program, assisted the NCHRP 20-05 staff and the Topic Panel.

Information on current practice was provided by many highway and transportation agencies. Their cooperation and assistance are appreciated.



# LAND DEVELOPMENT REGULATIONS THAT PROMOTE ACCESS MANAGEMENT

## SUMMARY

Contemporary access management is a comprehensive approach for improving traffic operations by managing the location, design, and operation of driveways, median openings, and street connections to a roadway. It calls for establishing a logical, functional hierarchy of roadways and for reinforcing that hierarchy by applying various levels of access control. Roadways are classified for access control based on their importance to regional mobility.

Research on comprehensive state access management programs is documenting the safety and operational benefits of access management. These benefits include the potential for reducing access related accidents and preserving the efficiency of roadways in terms of capacity and speed. As a method for protecting the level of service of existing facilities, access management helps to stabilize public expenditures for roads and highways. Reducing the number and frequency of curb cuts or median openings also creates aesthetic benefits, such as more area that may be used for landscaping.

Recognition of these benefits has elevated access management to a policy level. The Intermodal Surface Transportation Efficiency Act of 1991 recommends consideration of access management for congestion management and corridor preservation. States are developing more comprehensive access management programs and strategic highway initiatives that emphasize access control. Metropolitan planning organizations are incorporating access management into their corridor plans, congestion management programs, and safety management systems. A more comprehensive approach to access management is also emerging at the local level—beginning with the comprehensive plan, extending to specific planning studies, and encompassing a broader range of land management strategies.

Access management can also advance growth management objectives. Discouraging urban sprawl, maintaining roadway level of service, protecting community character, and coordination and consistency of land use and transportation decisions are areas where access management and growth management converge. For example, access management can be facilitated through land use strategies that discourage strip development and promote clustering of land uses into unified developments with shared access systems. These same techniques address some defining characteristics of sprawl—strip development and inadequate connectivity among land uses.

Access management considerations also extend to transit, bicycle, and pedestrian access. Bus pullout bays at transfer points reduce vehicular conflicts and help preserve traffic flow. Clustering transit compatible uses around a bus turnaround or locating buildings near the street line with parking in the rear, provides more direct pedestrian and transit access and promotes shared access. Minor changes in a subdivision layout can improve route productivity by providing more direct transit routes.

Competing objectives and inadequate coordination of transportation and land development practices continue to impede access management. State and regional agencies have difficulty achieving access management objectives without collaboration at the local level where land development decisions are made. Alternatively, local access management initiatives are sometimes undermined by inadequacies in state driveway permitting requirements or administrative procedures. The diversity of access related standards across jurisdictions and agencies adds another dimension to the coordination challenge.

Some state departments of transportation have taken the lead in coordinating intergovernmental efforts to achieve access management objectives. In metropolitan areas, some metropolitan planning organizations or councils of government are assuming this role. Regional corridor plans, intergovernmental agreements, access management plans, joint policy resolutions, and procedures for coordinated development review are among the coordination techniques applied by agencies reviewed for the synthesis.

Public involvement techniques are also proving effective as a method for reducing inter-agency conflicts, resolving public concerns, and surmounting political constraints. The Capital Area Council of Governments in Hartford, Connecticut, is among a growing number of agencies that are integrating public involvement strategies into their access management efforts. Their work program for corridor management plans calls for special corridor committees from each affected municipality, newsletters to keep people informed along the way, and special meetings with citizens and local policy makers at key steps in the decision-making process.

The review of current regulatory practice reveals some components of effective access management policies. These include driveway spacing and corner clearance standards, geometric design standards, and traffic impact analysis requirements. Most local access management policies encourage consolidation of driveways or joint and cross access, but some contemporary codes are requiring joint access where driveway spacing cannot be achieved. Retrofitting conditions are included to bring nonconforming driveways into conformance. Like nonconforming use requirements in zoning, these conditions are typically triggered when a property is redeveloped or improved.

The interdependence of land division and access controls is another important dimension of regulating access. Subdivision regulations, lot split requirements, and development review provide an opportunity to assure proper access and street layout in relation to existing or planned roadways. Attention to lot width, depth, and size in zoning helps ensure adequate dimensions for on-site circulation, parking, driveway spacing, driveway throat length, corner clearance, and service drives. Setbacks affect the ability to achieve adequate sight distance and avoid placement of structures within future rights-of-way. Private road regulations and restrictions on flag lots or privately owned access easements address substandard private roads and related land division problems.

Local methods of regulating access vary widely. Some communities apply access management requirements only to designated corridors through a corridor overlay ordinance, allowing them to target access standards to the unique circumstances of a specific corridor. Service drive requirements have also been added to planned unit development zoning and applied to developing commercial corridors. Other communities integrate access management principles and regulations into their entire planning and regulatory program.

Flexibility is being achieved largely on an administrative level through waivers, special exceptions, and variances. Such provisions allow agencies to optimize driveway location, while responding to the diverse circumstances in the built environment. Some communities establish a flexibility threshold where spacing standards prove impractical, such as up to 20 percent reduction in spacing or no less than the spacing of the next lowest access classification. Some also offer flexibility in parking or lot dimensional requirements to property owners who agree to consolidate driveways.

Local authority to engage in access control is implied under the general police power, unless expressly provided through statute. Although recent court decisions have clarified the rules of regulatory practice, local governments may still impose reasonable conditions on development. Access management strategies, such as joint access or service drives, have been upheld where they are equitably administered, because they bear a reasonable and roughly proportional relationship to the impacts of development. A consistent planning and regulatory program strengthens the legal basis for access management decisions.

## INTRODUCTION

### OVERVIEW OF ACCESS MANAGEMENT

Access management can be defined as “the process that provides (or manages) access to land development, while simultaneously preserving the flow of traffic on the surrounding road system in terms of safety, capacity, and speed” (1). It involves management of the location, design, and operation of driveways, median openings, and street connections to a roadway (2). These strategies require coordination between transportation and land development practices.

Definitions of “access” vary geographically and may comprise a variety of terms, including driveways, connections, curb cuts, access points, approach roads, and intersections. These terms are sometimes used interchangeably. AASHTO, for example, classifies driveways as at-grade intersections (3, p. 841). The term “connection” refers to any public or private vehicular connection to a roadway. A curb cut is a depression of a curb, indicating a driveway or connection. An approach road is a means of getting to a site, whereas an access point may be a driveway or the entry to an approach road. Although subtle, these distinctions can be significant depending on how access is legally defined in a particular state.

Contemporary practice calls for establishing a logical, functional hierarchy of roadways and maintaining that hierarchy by applying various levels of access control. As noted by AASHTO:

“The failure to recognize and accommodate, by suitable design, each of the different trip stages of the movement hierarchy is a prominent cause of highway obsolescence. Conflicts and congestion occur at interfaces between public highways and private traffic-generating facilities when the functional transitions are inadequate. Examples are commercial driveways that lead directly from a relatively high-speed arterial into a parking aisle without intermediate provisions for transition deceleration and arterial distributions or, more seriously, freeway ramps that lead directly into or from large traffic generators such as major shopping centers” (3, p. 3).

Roadways are classified for access control based upon their level of importance to regional mobility. The highest level of access control would be placed on interstate freeways or expressways, followed by arterials and collectors. The least access control would be placed on local streets—including sub-collectors, residential access streets, frontage roads, and alleys. The challenges of access management tend to be greatest on arterials where demand for individual property access often conflicts with demand for through traffic movement.

#### Benefits of Access Management

Careful application of access management techniques preserves the capacity of a roadway for through travel and helps

minimize the potential for vehicular (and pedestrian) conflicts or crashes (4). Improvements in highway safety can translate into substantial savings when evaluated against the costs of personal injury, lost wages and productivity, insurance, litigation, and property damage. The Colorado Department of Transportation reported that access related accidents on all public roads in Colorado cost society an average of \$900 million in 1994 alone (5).

Similar data from the Oregon Department of Transportation indicate that in 1993, access/intersection related accidents on non-interstate highways in Oregon comprised 57 percent of all accidents and had a combined societal cost of \$300 million (6). These are conservative estimates, as many access related accidents occur upstream as rear-end collisions and often are not reported as access related.

Access management also helps preserve the efficiency of roads and highways, thereby protecting the substantial public investment in transportation and reducing the need for expensive remedial measures. Computer simulations conducted for the Florida Department of Transportation suggest that poor spacing, design, and location of driveways could reduce average travel speed by 5 to 10 mph (7), whereas, improvements in signal spacing and access management could increase arterial capacity substantially (8). Such improvements in traffic flow decrease travel times, thereby expanding the market area for commercial businesses. (See Table 1.)

TABLE 1  
MARKET AREA AS A FUNCTION OF TRAVEL SPEED

Increase in Average Speed	Increase in Market Area
0	n.a.
+10%	+ 23%
+20%	+ 56%
+30%	+122%

Source: Adapted from Stover and Koepke, *Transportation and Land Development*. Institute of Transportation Engineers, New Jersey: Prentice Hall, 1988, p.8.

From a land development perspective, requirements for well-designed access systems further the orderly layout and use of land and help discourage poor subdivision practices. Mixed-use activity center strategies guide demand for individual property access away from arterials toward shared access and coordinated on-site circulation systems, and are reinforced by access management policies. Improved proximity of land uses and connectivity between sites advances transportation demand management, by enabling travelers to walk, use transit, or accomplish a greater variety of tasks with fewer and shorter automobile trips.

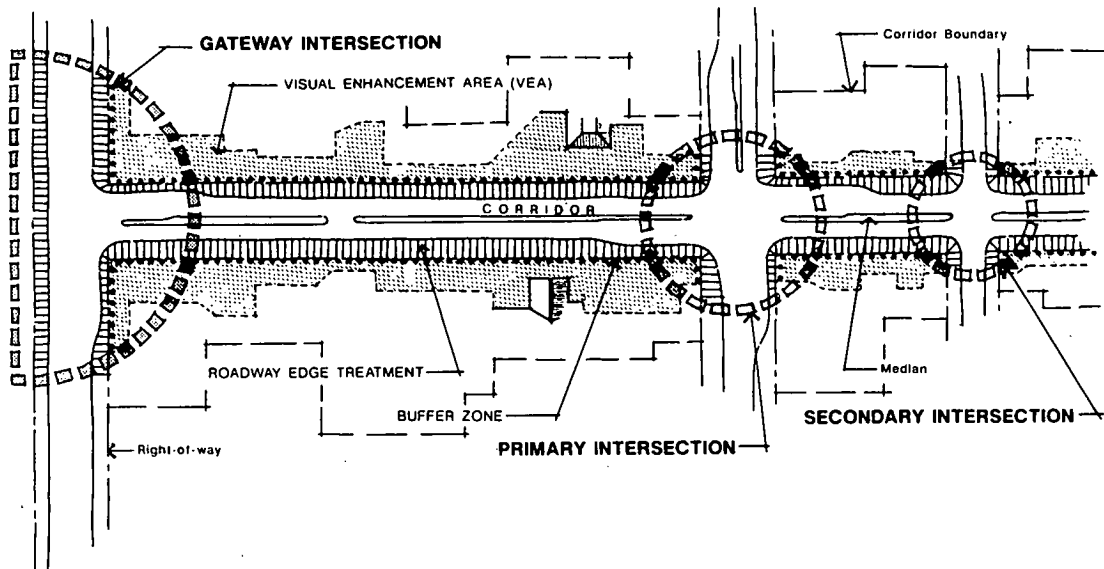


FIGURE 1 Access management is a component of many plans to enhance the image and appearance of major corridors and gateways (12).

Access management offers aesthetic benefits, as well. Reducing curb cuts and installing landscaped medians minimizes the appearance of asphalt and enhances the appearance of major corridors. These strategies are a component of many plans to improve the image of streetscapes or gateways and attract economic development (9,10,11) (Figure 1). The Charlotte-Mecklenburg Generalized Land Plan 2005 calls for reduction of curb cuts and parking lots adjacent to the rights-of-way of major thoroughfares to promote an image "of strength and stability which the investor looks for and which adds to the livability of the area" (11, p. 73).

For real estate development, the quality of site access is an important component of project success. The Urban Land Institute (ULI) warns that "poorly designed entrances and exits not only present a traffic hazard but also cause congestion that can create a negative image of the center" (13, p. 101). ULI advises developers to locate access points to activity centers about one mile from freeways and use signs to direct cars across the arterial network, so that traffic to and from the center is separated from regional traffic (13, p. 34).

#### ISSUES IN CURRENT PRACTICE

Although many local governments recognize the need to manage access to major thoroughfares, few have adequately integrated access management into their planning and regulatory program. Instead, the tendency is to address site specific impacts on a case-by-case basis through individual negotiations, traffic impact studies, or driveway permitting. Local regulations may include standards for driveway location and design, while failing to address access in relation to zoning and subdivision of land.

Results of a survey conducted by the *Urban Transportation Monitor* in the spring of 1995 provide insight into the characteristics of local access management policies and are briefly summarized below (14). A random sample of 350 city traffic

engineers was surveyed about local access management practices (response rate was 27 percent). Fifty-nine percent of respondents indicated that their agency had access management policies, with the majority (91 percent) indicating these were driveway location and design policies (some checked both responses).

The majority (69 percent) noted that their policies were implemented primarily through coordination with developers and property owners, with 51 percent indicating access permit review and 8 percent indicating other techniques such as site plan review, subdivision review, and building and zoning permit review (some indicated more than one method). Forty-eight percent noted that their policies were enforced on a case-by-case basis. Eighty-three percent indicated their policies had provisions to allow for variations. The majority of policies encouraged shared access (72 percent) or driveway consolidation (70 percent), respondents could check both. In addition, 63 percent of respondents indicated they had experienced political restraints to implementing access management.

When asked what an ideal access management policy would include, the responses were as follows: can deny access (77 percent), can control spacing (90 percent), geometric design standards (92 percent), and traffic impact analysis requirements (79 percent). Other responses included: professional judgment, legal requirement that developers are responsible for construction of off-site access improvements, advance review capacity, crossover spacing criteria, fee for permit inspection, restrictive covenants on title or property to notify new residents, variance procedure, stronger political support, and treatment of cumulative impacts of small developments.

These results suggest that the tendency to administer access management policies as guidelines and enforce them in an ad hoc manner, allows them to be more easily compromised and leads to inconsistent results. In addition, piecemeal implementation can hinder public understanding of the purpose and intent of access management programs. Political constraints are common without an overall access management

strategy that is clearly articulated to the public and equitably administered.

An effective access management policy would reinforce policy guidelines with geometric design standards, and would provide for denial of access under specified circumstances (1). It would also establish spacing standards, traffic impact analysis requirements, and parameters for flexible, but consistent administration.

#### Land Planning and Regulatory Practices

Poor subdivision practices and inadequate minimum lot frontage requirements along thoroughfares are other impediments to achieving access management objectives. Typical subdivision problems include inadequate attention to lot shape, location, and internalized access to subdivisions along arterials. Constraints also arise in relation to small, nonconforming lots platted years ago or thoroughfare frontage that has been extensively subdivided into small lot frontages with no alternative to direct highway access (Figure 2).

Yet lot split exemptions also provide an avenue for property owners to circumvent residential platting requirements and related expenses. The resulting subdivisions may rely heavily on private access easements or flag lots, resulting in inefficient use of land, easement disputes, inadequate connectivity of roads, and poor site design. More common is the tendency to rely on existing roads and highways, creating residential strips, rather than subdivisions with a supporting internal street system. Residential strips along state and county roads can be as damaging to the regional transportation network as commercial strips because they may occupy hundreds of miles of highway frontage.

When subdivision exemptions are combined with inadequate minimum lot frontage requirements, the result is a regulatory prescription for closely spaced driveways along major thoroughfares. Without alternatives to direct highway access, controlling access becomes difficult. Buyers are often unaware that a property violates state or local regulations or that access may be hazardous, until they apply for a building or driveway permit. At that point the government agency is typically compelled to issue a variance. As a result, the number of individual driveways increases, as does the potential for

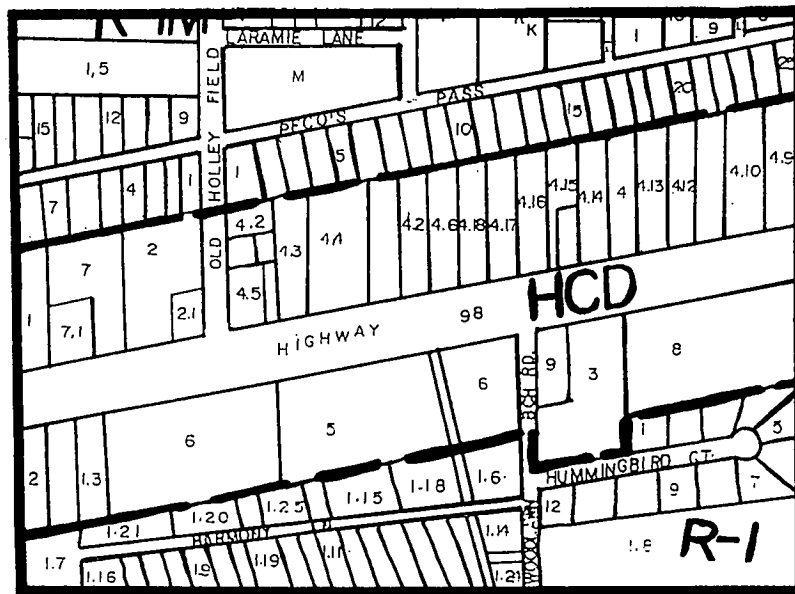


FIGURE 2 Commercial strip zoning of highway frontage and inadequate minimum lot frontage requirements lead to access problems along highway corridors.

Rural and urban fringe areas frequently exhibit irregular or poorly designed subdivisions—a problem often attributable to subdivision exemptions in local land development codes. Exemptions are typically provided for dividing land into large parcels or splitting off a small number of lots, unless a street or an alley is established. The original purpose of such exemptions was to allow property owners to engage in minor subdivision activity, such as transferring a lot to a family member, without incurring the expense of platting.

dangerous conflicts between high-speed traffic and residents entering and exiting their driveway. A largely hidden cost of poor subdivision practices along major thoroughfares is an increased incidence of access related accidents (5,6).

These problems are exacerbated by conventional zoning practices. Nowhere is this more apparent than the cycle of functional obsolescence created by strip zoning major corridors for commercial use. The primary reasons are accessibility and the expedience of rezoning highway frontage for commercial use

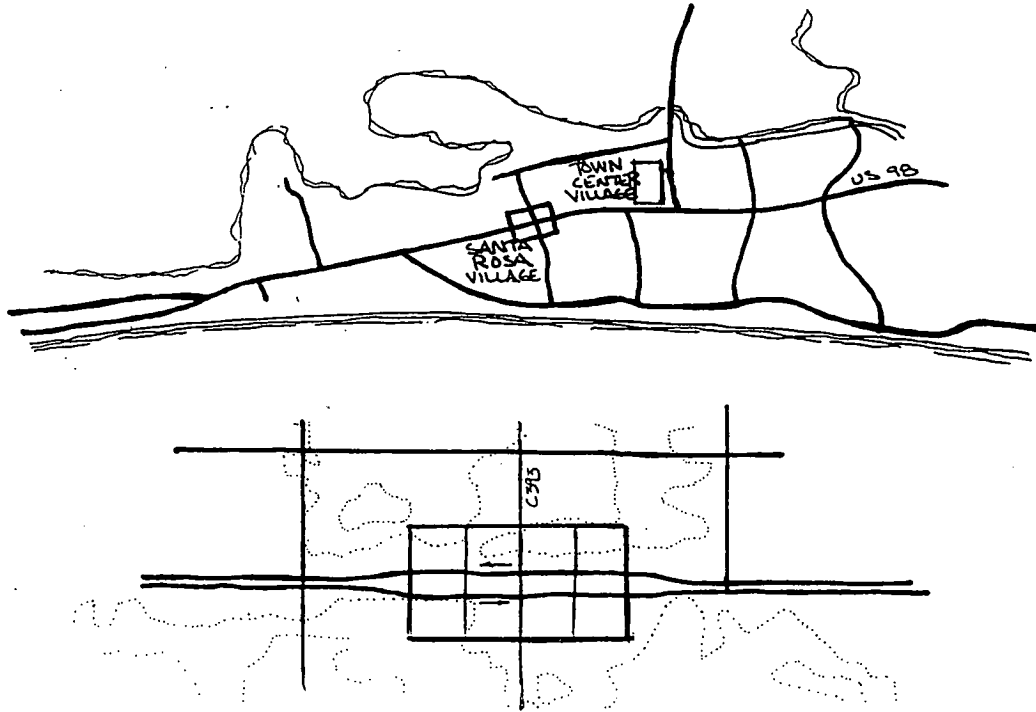


FIGURE 3 A network of parallel roads and side streets, and activity center strategies, help to preserve highway capacity (17).

as additional land is needed. Extension of utilities along highway rights-of-way promotes this linear land use pattern, and commercial businesses favor corridor locations because they are highly visible to a higher volume of potential customers.

As development intensifies, the growing number of curb cuts and turning movements conflicts with the intended function of arterials—to move people and goods safely, quickly, and efficiently. Poorly coordinated access systems force more trips onto the arterial, traffic conflicts multiply, and accident rates and congestion increase. As the level of service declines, additional lanes and other costly improvements are needed to maintain the capacity of the corridor for regional traffic. Eventually the image of the corridor may also deteriorate as the proportion of land available for landscaping is consumed by curb cuts and asphalt.

A corresponding problem is the tendency of local governments to underestimate transportation needs in the development planning process (15). Large land areas may be set aside for development, with few mechanisms to ensure a balanced transportation network to accommodate that growth. Without a connected network of collectors, local streets, and internal subdivision roads, more trips are funneled onto a few arterials—the same arterials that are often strip-zoned for intensive commercial use. At the extreme are communities that have evolved in a linear fashion with primary commercial activity focused along a major highway, thereby mixing daily local traffic with through traffic.

These practices magnify demand on the arterial system, aggravate existing deficiencies, and constrain the effectiveness

of access management programs. To counter this problem, some states are encouraging local governments to provide a supporting system of streets parallel to the highway, and to increase the depth and connectivity of the overall local roadway network (16, pp. 75–77) (Figure 3). Some states and provincial governments have also established requirements related to local subdivision and development practices in their access management laws (Chapter 2).

#### OBJECTIVES

The synthesis reviews current land development practices related to access management and techniques for integrating access management into the local land development process. Specifically, the synthesis:

- summarizes issues in current practice and the changing policy environment for access management,
- identifies state policies for strengthening state and local coordination on access management,
- reviews methods of integrating access management into local comprehensive planning,
- provides examples of regulatory techniques and design standards that promote access management, and
- reviews legal and administrative considerations in integrating access management into the local development review process.

## **METHODOLOGY**

This synthesis builds upon previous and continuing research. Examples of regulations and model ordinances were collected from various geographic regions in the United States and Canada, different levels of government, and urban, suburban, and rural areas. Selected state and federal statutes and rules were also reviewed, as well as legal cases and law review articles involving access and land development issues.

Additional information was obtained through a questionnaire mailed to all state departments of transportation and selected regional agencies (Appendix A), discussions with noted experts in access management, a review of the literature, and a request on the Internet for relevant information. Telephone interviews were conducted with selected state, provincial, and local officials for more in-depth information on their experiences with the regulatory program.

## THE CHANGING POLICY CONTEXT

### FEDERAL POLICY

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) established strong national policy support for access management and coordinated land use and transportation solutions. State and metropolitan transportation plans are to consider transportation system management strategies, like access management, that make more efficient use of existing transportation facilities. Plans must also address the effect of transportation policy decisions on land use and development and demonstrate consistency with “all applicable short- and long-term land use and development plans” (18).

This emphasis is even stronger in metropolitan areas of more than 200,000 persons, which are designated as Transportation Management Areas (TMAs). TMAs are developing congestion management plans and congestion management systems that track the effect of systems management strategies on traffic congestion. Congestion management systems are to address a wide variety of strategies, including access management and land use management and activity center strategies.

The new requirements also emphasize the need for improved connections between transportation modes and greater collaboration between planners, users, and transit providers to resolve travel demand. Many MPOs are considering methods to expand and enhance transit service and encourage transit use—including transit-oriented land use and design strategies. This has resulted in growing interest in strategies to incorporate transit and pedestrian access into land use decisions and roadway improvements.

ISTEA’s new planning requirements are beginning to effect changes in state and regional planning practice. Several MPOs are now preparing corridor preservation plans with strong access management components that address needed changes in local land use and regulatory practices. The need to resolve inconsistencies between transportation and land use practices will become more pressing as transportation planning agencies incorporate access management strategies into their plans and work programs.

### STATE ACCESS MANAGEMENT PROGRAMS

All states have some degree of access control, but traditionally these programs have focused more on specifics of driveway design and location. As understanding of the principles and benefits of access management grows, more states are rethinking traditional driveway permitting programs in favor of comprehensive approaches that address the overall effect of access on the operation of a roadway. Among the

states with a comprehensive access management program in place are Colorado, Florida, New Jersey, and Oregon (2). Several other states, including Michigan, are now reevaluating their access management policies or have expressed interest in a more comprehensive approach (19).

By adopting a state policy of access control, these states are establishing a framework for local action. To effect changes in local practice, several states include requirements in their access management and strategic highways policies aimed at achieving consistency and coordination at the local level. Some go beyond access connections to address subdivision activity on state highways. A few examples are described below.

The Colorado State Highway Access Code requires all proposed plats seeking access to state highways to comply with state access requirements (20). The code establishes specific warrants for each access design element and criteria for the location (spacing) of access and traffic signals. It prohibits direct highway access from subdivisions where the access approach does not meet access location and design criteria.

The Colorado code requires subdivisions to have internal local and collector street systems. It further stipulates that direct highway access to individual lots or parcels created by a subdivision may not be permitted, depending on the assigned access category. All proposed plats abutting state highways are reviewed by the Colorado Department of Transportation (CDOT) for conformance with the state highway access code. Colorado law allows local governments to adopt the state standards or establish their own ordinance.

CDOT has also entered into intergovernmental agreements with local governments to facilitate state and local coordination in accordance with an approved access control plan (Appendix B). These plans establish a design plan aimed at determining a comprehensive and applicable plan to meet community access needs, while bringing a highway segment into conformance with its established access category to meet regional and state needs.

Access control plans must include a conceptual roadway design plan, proposed access designs and signal locations, and provisions for temporary and phased access construction. In addition, all highway construction projects incorporate improved access design and location standards to the extent feasible within the project scope and budget. CDOT often acquires access deeds to achieve full access control of private property along high-priority corridors.

The New Jersey Highway Access Management Code (1992) requires consistency of local master plans and circulation plans with state access management requirements, and prohibits access when the subdivision of property on a state highway is not consistent with state access standards (21). It provides an opportunity for municipalities to adopt access management plans



and submit them for review and adoption by the New Jersey Department of Transportation. NJDOT is currently working to form partnerships with municipalities to develop and implement access management plans on state highways. Several intergovernmental agreements are currently being developed.

The Oregon Department of Transportation uses corridor planning as a mechanism for coordinating state and local transportation planning and access management objectives (16). Corridor plans are prepared by ODOT for long-range management of transportation facilities. The corridor planning process integrates state corridor plans with local comprehensive plans and provides an opportunity for local governments to demonstrate compliance with the State Transportation Plan. ODOT has used this process to facilitate agreements with local governments to apply land division and access management strategies in advance of specific development requests.

The Wisconsin DOT has statutory authority to regulate access to the state highway system by monitoring the subdivision of lands that abut the highway (22). Regulations are designed to limit the number of connections along a state highway by establishing that local traffic generated in subdivisions abutting a state trunk highway must be served by an internal street system. In addition, new subdivisions must be designed so that individual parcels do not require direct highway access. During the subdivision review process, WDOT may consider: the subdivision's relationship to adjacent subdivisions and unplatted lands; the access requirements of adjacent lands; setbacks within subdivisions; and drainage requirements.

## STRATEGIC HIGHWAY INITIATIVES

Strategic highway programs establish a network of high-priority corridors that are essential to regional mobility and the efficiency of the transportation system. This network then becomes the focus of capacity improvements, corridor preservation, and system management measures. ISTEA called for designating a National Highway System for this purpose that would consist of 165,000 miles of interstate and other principal arterials. Similar programs are being employed at the state, provincial, and regional levels.

Florida established the Florida Intrastate Highway System (FIHS)—defined as the statewide system of limited-access and controlled-access facilities that allow for high-speed and high-volume traffic movement within the state (23). The FIHS program involves development of a program of highways with strict access controls. All segments are planned to be brought into compliance with system criteria and standards for access management, design, and level of service within a 20-year period. *Process, Criteria, and Standards for the FIHS Plan* call for FDOT to enter formal agreements with local governments to coordinate land planning and regulation with state access standards for controlled-access facilities (24).

The Maryland Department of Transportation has designated a State Primary Highway System and is currently pursuing partnerships with local governments to reduce the number of access points and improve right-of-way reservation practices

along these corridors. An access management team was established to identify opportunities for improving access and to develop recommendations.

The team also reviews site plans and building permit applications in coordination with county planning offices. Local governments are encouraged to develop corridor preservation plans, purchase strategically located properties, and coordinate development approval processes with the State Highway Administration. Other recommended local actions include developing local roadway networks and requiring service roads to offset demands on highway corridors.

A Strategic Arterial System initiative was designated for the Chicago region, as part of the *2010 Transportation System Development Plan for Northeastern Illinois* (25). The purpose of the initiative was to identify a regional network needed to accommodate long distance travel needs that were not, or could not, be accommodated by the interstate freeway system. Sixty-six routes, encompassing a 1,340 mile network, were designated as a second tier to the freeway system.

The program involves a series of studies to analyze existing transportation and land use conditions, and explore various strategies for maintaining the functional integrity of the system. Access management, intersection improvements, and median control are some of the design techniques and concepts recommended for these corridors. Opportunities for public involvement are provided to stimulate dialogue on improvement alternatives and achieve agreement across agencies, jurisdictions, and interest groups on appropriate access management treatments.

The Highway Act of British Columbia provides for designation of a system of "controlled access highways" having high priority for regional mobility (26). The Act prohibits any connection to controlled-access highways without a special permit from the Minister of Transportation and Highways. It further requires ministry approval of all municipal zoning by-laws or rezoning proposals within an 800-meter (half-mile) radius of an intersection with a controlled-access highway.

The provincial highway agency uses this opportunity to slate transportation and access requirements for inclusion in the bylaws. This may include changes in land use intensity and site design requirements. In urban areas where intersections are closely spaced, the zoning approval areas interlock, thereby providing provincial input throughout the corridor.

A related law, the Land Title Act of British Columbia, provides for ministry review of all proposed subdivision plans adjacent to a controlled-access highway (27). The Act allows denial of a subdivision plan by the highway agency where it does not adequately provide access to land within or adjacent to the subdivision and through the subdivision to lands beyond via a frontage road, service road, or local street. The ministry's approving officer reviews plans for road dedications by considering such factors as the location and width of the subdivision road; the suitability of the roads in relation to existing uses and the proposed subdivision; the relation of the road to the existing highway; and the likely role of the road in a future highway network serving the area.

Site impact analysis may be required by the ministry to support the following applications impacting controlled-access

highways: all subdivisions in incorporated areas, rezonings within 800 meters of an intersection; commercial or industrial buildings over 4500 square meters gross floor area; requests for an access permit; and requests for a permit to construct an access in a rural area or an arterial highway in a municipality.

## GROWTH MANAGEMENT

Growth pressures and the complexity of development problems have led a growing number of states to modernize their planning laws. Many states are updating and expanding their planning enabling acts, mandating comprehensive planning, or pursuing more extensive growth management mandates. Some states with comprehensive growth management requirements are Florida, New Jersey, Oregon, and Washington (28).

State growth management statutes confer broader planning and regulatory powers on local governments and encourage or mandate use of various growth management techniques. This may extend to adequate public facilities (concurrency) measures, urban service areas or growth boundaries, impact fees, transfer of development rights, thoroughfare plans and standards, development agreements, development of regional impact/areas of special concern review, and flexible or performance zoning. Many of these tools offer unique opportunities for integrating access management into the land development process.

State growth management policies that converge with access management fall under the following general categories:

- discouraging urban sprawl and promoting compact urban development patterns,
- maintaining roadway level of service and providing infrastructure concurrent with the impacts of development (concurrency),
  - protecting community character and rural landscapes, and
  - coordination and consistency of land use and transportation decisions.

Access management can be achieved through land use strategies that discourage strip development and promote clustering of land uses into unified centers. This also advances growth management policies aimed at discouraging sprawl by addressing some of the defining characteristics of sprawl—strip development, poor connectivity among land uses, and poorly planned conversion of rural land to other uses.

Access management supports concurrency, as a method of improving or maintaining roadway level of service. “Concurrency” requires that the necessary public infrastructure and services be in place concurrent with the impacts of development. Transportation concurrency is tied to level-of-service standards, elimination of existing service deficiencies, and provision of infrastructure to accommodate new growth. Several states have adopted enabling legislation for adequate public facilities ordinances, and Washington and Florida have mandated concurrency (28).

Another characteristic of growth management statutes is an emphasis on internal and intergovernmental consistency of

planning and regulation. Consistency may be enforced through interagency negotiations or more formal compliance review procedures. New Jersey engages in a “cross-acceptance” negotiation process to resolve inconsistencies between state growth management policies and regional and local plans. The process involves informal negotiations on planning policies among local, regional, and state planning agencies, to identify and resolve areas of disagreement (28).

Florida planning law requires local governments to submit their comprehensive plans and plan amendments to the Florida Department of Transportation for consistency review. FDOT adopted guidelines for review of local plans that direct each District to consider several factors, including the following (29):

- whether the plan provides strategies for achieving consistency with state access management standards;
- whether the plan includes strategies to protect future rights-of-way, including land development regulations on setbacks, right-of-way reservation, and right-of-way purchase;
- whether the plan indicates coordination with the FHHS plan; and
- whether the plan identifies and commits to transportation system management and transportation demand management strategies.

Some states incorporate access management requirements into their administrative rules and compliance criteria for local plans. The Oregon Land Development and Conservation Commission adopted a landmark Transportation Planning Rule in 1991 to integrate statewide transportation planning goals into local transportation and land development programs (30). The rule requires compatibility between state and local transportation and between transportation and land use decisions. Local plans must be consistent with adopted state transportation plans. This includes ODOT’s Highway Plan, which established functional class categories and access level-of-service standards.

Local governments are required to adopt land use or subdivision regulations that advance state and federal corridor preservation requirements. These regulations can include access control measures, such as driveway and road spacing, median control, and signalization standards, consistent with the given functional classification of a roadway. Local governments must also adopt standards for safe and convenient pedestrian, bicycle, and vehicular circulation, such as street spacing or connection spacing standards and requirements for directional channeling of traffic.

Administrative rules of Florida’s land planning agency, the Department of Community Affairs (DCA), require traffic circulation elements of local comprehensive plans to include policies for implementing access controls. DCA also includes access management and development clustering requirements as techniques that will be considered in determining compliance with new administrative rules for discouraging urban sprawl. These requirements are reinforced through policies in the new *State of Florida Land Development Plan* that call for identifying and controlling access points onto major transportation corridors and minimizing curb cuts and median openings through land use planning, regulation, and access permitting (31).

## LOCAL LAND DIVISION AND ACCESS CONTROL

Local governments may apply a variety of planning and regulatory tools to promote access management. The majority of these tools are conventional applications of zoning, subdivision, and traffic controls, and are firmly established in local regulatory practice. Others, such as access classification systems, represent state access management practices that are making their way into local and regional transportation planning practice. A few tools, such as cluster zoning or development agreements, may require specific enabling authority beyond that provided in state planning and zoning enabling acts. Below is a synopsis of these land division and access controls.

### LOT DIMENSIONAL REQUIREMENTS

Minimum lot size, minimum lot frontage, and setback requirements are established in zoning for various zoning districts. Minimum lot size establishes the minimum allowable acreage for individual lots, beyond which properties may not be further subdivided. Minimum lot frontage requirements set the minimum lot width or frontage on a public road. Setback requirements establish minimum front, side, and rear yard setbacks to separate buildings from each other and set them back from the roadways for a desired distance.

Lot frontage requirements affect the ability to achieve adequate driveway spacing and corner clearance. Higher minimum lot frontage requirements on arterials and collectors allow for greater spacing between commercial or residential driveways. Increasing the minimum lot size of corner lots helps to facilitate minimum driveway spacing for corner clearance and provides for minimum required setbacks.

Attention to lot depth, width, and size helps ensure adequate dimensions for on-site circulation, parking, driveway throat length, and service drives. Lot width-to-depth ratios prevent long and narrow or irregularly shaped lots by establishing a maximum depth for a given lot width. Typical width-to-depth ratios vary from 1:4 in rural or coastal areas, to 1:2.5 in some urban areas (32). A higher width-to-depth ratio allows greater lot depth where it is desired, such as along coastal areas subject to erosion or thoroughfares intended for future widening.

### SUBDIVISION REGULATIONS

Subdivision regulations guide the division and subdivision of land into lots, blocks, and public ways. They complement zoning, which establishes development standards related to land use, parking and loading, lot dimensions, and lot coverage. Because zoning and subdivision controls are interdependent, contemporary practice calls for combining them into a

unified land development code (33). This enables municipalities to codify and streamline review procedures and standards.

Subdivision regulations provide an opportunity to assure proper access and street layout in relation to existing or planned roadways. The subdivision ordinance establishes: review procedures for processing plats; information to be included on the plat; design principles and standards for lots, blocks, streets, public places, pedestrian ways, and utilities; required improvements, including streets, sidewalks, water, sewer, and curbs and gutters; and financing and maintenance responsibilities (34).

### Subdivision and Site Plan Review

Many jurisdictions provide for a phased subdivision review process that encourages conceptual review and submission of a preliminary plat prior to a final plat application. Conceptual review allows planning and engineering staff to advise developers on access standards and issues before they have invested in a surveyor or engineer to prepare the plat. This allows problems to be caught early, when the opportunity for effecting changes is much greater.

Access related issues that could be addressed in the subdivision or site plan review process include:

- Is the road system sufficient to meet the projected traffic demand and does the road network consist of a hierarchy of roads designed according to function?
- Are connections and intersections properly planned in relation to sight distance, connection spacing, operational capacity, and other related considerations?
- Do units front on residential access streets rather than major roadways?
- Does the site layout allow on-site vehicular circulation, without having to use the peripheral road network?
- Does the pedestrian and bicycle path system link buildings with parking areas, entrances to the development, open space, and recreational and other community facilities (34)?

Incomplete site plans make it difficult to assess the adequacy of access and on-site circulation. The level of information needed varies with the complexity of a proposed project. A typical list of access-related information that may be required of applicants for the purposes of site plan review includes the following:

- Location of access points on both sides of the road;
- Distances to neighboring constructed access points, median openings, traffic signals, intersections, type of approach

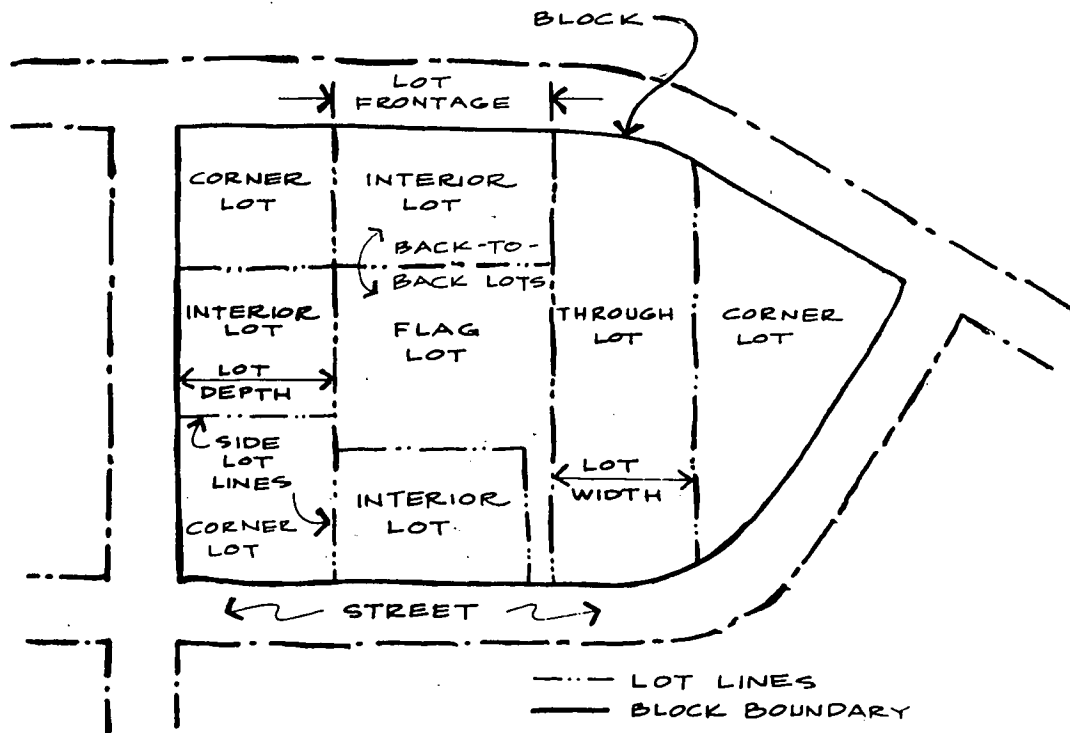


FIGURE 4 Types of lots. (Reprinted with the permission of H. Moskowitz and C. Lindbloom. *The New Illustrated Book of Development Definitions*. New Brunswick, NJ: The Center for Urban Policy Research, Rutgers University, © 1933.)

roads, and other transportation features on both sides of the property;

- Number and direction of lanes to be constructed on the driveway;
- Striping and signing plans for both the road and the driveway;
- All proposed transportation features (such as auxiliary lanes, signals, median treatments, etc.);
- Appropriate traffic studies, including trip generation data;
- Parking and internal circulation plans;
- Plat map showing property lines, right-of-way, easements, and ownership of abutting properties;
- A detailed description of any requested variance, the reason the variance is requested, proof of necessity, and related information (35); and
- A cross-section of the main road.

#### Regulating Minor Subdivisions and Lot Splits

Minor subdivision and lot split regulations provide for local review of minor land division activity that would otherwise be exempted from subdivision review. These regulations provide a streamlined, administrative review procedure for smaller subdivisions and lot splits to assure that public requirements are met, without placing an unnecessary burden on the property owner. They also provide a mechanism to prevent creation of nonconforming lots, or those with inadequate or inappropriate access to a public road. Types of lots that may cause

access problems include flag lots, corner lots, and double frontage lots (Figure 4).

Some local governments apply a graduated scale with more restrictive platting requirements as the number of lots increases. The threshold for what constitutes a minor versus major subdivision varies widely according to the level of urbanization. The trend in current practice is to apply minor subdivision or lot split requirements to the division of land into two or three lots, where no new road or extension of public facilities is involved (36).

Florida's Model Land Development Code calls for planning department review of division of land into two lots or parcels, referred to as minor replats (37). Applicants must submit a scaled drawing by a registered surveyor of the intended division and any principal or accessory structures, and indicate available water and sewer service. All lots must abut a public or private street for the required minimum lot frontage, and conform with other regulations. If a lot abuts a street right-of-way that does not meet design specifications, the owner may be required to dedicate one-half the necessary right-of-way width. The approved replat must be recorded in the official county records. Further division of the property is restricted without an approved development plan or plat.

Local regulations could require property owners to submit proof of lot approval before issuing a building permit. A model lot split ordinance from the Grand Traverse Bay Region of Michigan establishes that no lot will be recognized by the municipality unless it is a lot of record or approved pursuant to local lot split requirements (38). The lot split requirements cross-reference private road regulations and provide that "property

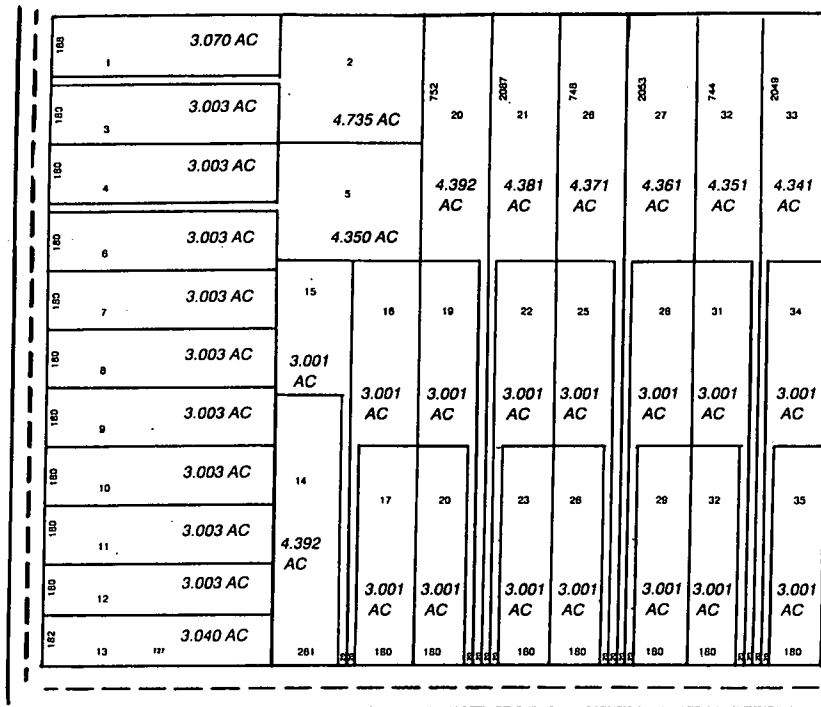


FIGURE 5 Flag lots, like these in northern Florida, are sometimes stacked to avoid the expense of platting and providing a road. The result is poor site design and closely spaced driveways.

lines shall be laid out to promote efficient development with shared access to roads available for future development.”

One issue cited by officials interviewed for the synthesis is inadequate coordination between the affected municipality and the county official responsible for recording new lots. As a result, lots are sometimes recorded in county records prior to any municipal review. An intergovernmental coordination mechanism is needed in the lot recording process to prevent this problem. This may require legislative changes in some states.

#### Flag Lot Standards

Flag lots are lots shaped like flags with long access “poles.” They are useful for providing private access to internalized lots in a recorded plat, or where unique site constraints create access problems. They are often abused, however, to provide interior lots with direct access to a public road, while avoiding the expense of platting and providing a road (Figure 5). Narrow frontages afford inadequate spacing between driveways or are consolidated into shared private drives for multiple properties.

Without written agreements specifying use and maintenance of the drive, disputes can erupt and property owners may lobby the municipality to adopt the substandard private drive into the public street system. Some agencies have successfully negotiated shared access easements and joint maintenance arrange-

ments with property owners to consolidate flag driveways. However, property owners are often reluctant to assume responsibility for maintenance and the associated costs.

The preferred alternative is to require sites to be designed with an internal street system that conforms with established standards and good site design practices (34). Regulations could still provide for flag lots in specified situations. The City of Orlando, Florida, provides for flag lots when deemed necessary to achieve creative planning, to eliminate access to collector or thoroughfare streets, or to preserve natural amenities or important historical or archaeological values. They are allowed only in residential developments approved pursuant to site plan review requirements, and only where the following conditions are satisfied:

- no flag lot shall abut more than one other flag lot, nor shall flag lots be double stacked across a common street;
- in no instance shall flag lots constitute more than 10 percent of the total number of building sites in a given development, or 3 lots (whichever is more);
- the lot area occupied by the flag driveway shall not be counted as part of the required minimum lot area;
- flag lots shall not be permitted whenever their effect would be to increase the number of building sites taking driveway access to a collector or arterial street; and
- no flag driveway shall be longer than 150 feet (39).

## Reverse Frontage

Reverse frontage requirements guide design of subdivisions along thoroughfares to assure that lots abutting the roadway obtain access from a local road (Figure 6). Highway frontage becomes the rear yard and buildings front on a local access road. Sarasota County, Florida provides that when a new subdivision is created, residential lots abutting an arterial are prohibited from having direct access to that arterial. Instead, access to these lots must be from an interior local street or frontage street and access rights to the arterial must be dedicated to the County and run with the land. The easement granted to the County must read "exclusive vehicular access rights granted to Sarasota County" (40).

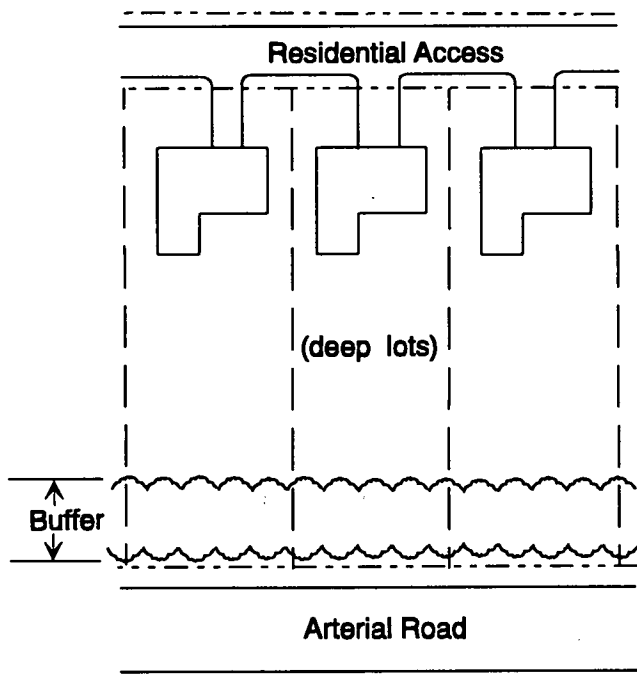


FIGURE 6 Reverse frontage.

Similar standards have also been applied to double frontage lots, which are lots with frontage on two streets. Some municipalities prohibit creation of double frontage lots except where they are employed to reduce vehicular driveway access to major streets (41). Others require existing double frontage lots to obtain access on the street with the lower functional classification unless this poses a safety hazard or would otherwise be impractical. Frederick County, Virginia, provides that lots abutting an arterial and a collector or minor road must provide an entrance on the lessor roadway (if a safe entrance can be provided), in order to obtain an entrance on the arterial (42).

## Outparcel Requirements

Outparcels (or outlots) are lots on the perimeter of a larger parcel that break its frontage along the roadway. Such lots are often created along thoroughfare frontage of shopping center

sites, and leased or sold to capitalize on these highly valued locations. Outparcel regulations foster coordinated on-site circulation systems that serve outparcels as well as interior development, thereby reducing the need for direct outparcel access to an arterial.

Outparcel regulations may include standards governing: the number of outparcels; minimum lot frontage; access; unified parking and circulation; landscaping and pedestrian amenities; building height, coverage, and setback requirements; and signage.

Some local codes require that development sites under the same ownership, phased development plans, or properties consolidated for development, be considered one property for the purposes of access regulation (43). The number of connections permitted would correspond to driveway spacing standards.

The number of outparcels can also be controlled through a fixed density ratio governing the number of outparcels per site area. The City of Pembroke Pines, Florida limits the number of outparcels to one per ten acres of site area, with a minimum frontage requirement of 500 lineal feet per outparcel. Standards also call for a minimum of 300 linear feet of open space (including roadways) between outparcels. The ordinance prohibits more than one building per outparcel and includes the following access requirements:

"Access to the outparcel shall be as direct as possible avoiding excessive movement across parking aisles and queuing across surrounding parking and driving aisles. All access to the outparcel must be internalized utilizing the main access drive of the principal retail center. Storage and service facilities for all outparcels shall be integrated within the building zone and preferably constructed as an integral part of the structure. Drive-in facilities shall be provided on the outparcel site exclusively. In no instance shall the circulation and access of the principal commercial facility and its parking and service be impaired" (44).

In addition, covenants imposed by the Pembroke Pines Planning and Zoning Board restricting the right of direct arterial access must be added to the deed if the title to the outparcel is transferred after the site plan is approved. The seller must notify the buyer, who is bound by the restrictions.

## ACCESS CONTROLS

### Access Classification Systems

Access classification is a hierarchical ranking system for roadways that matches access management standards with the purpose, functional characteristics, and design features of a roadway. Planning principles call for access classifications to parallel the functional classification of the roadway. The level of access control increases with the functional classification of the facility. Access classification systems are based in local and regional transportation plans, and carried out through the regulatory process and improvement program.

A classification system strives to reduce the number of access points along higher priority roadways by assigning it as

high a level of access control as possible, given abutting land use characteristics (1). Although major arterials would typically be assigned a high level of access control, this may not be feasible given the established intensity of land development and existing access characteristics. Access classification studies provide insight into existing inadequacies in functional hierarchy of roadways as well as opportunities and potential methods for upgrading various corridors to a higher level of access control.

Most local governments relate access controls to functional classification. However, some are also establishing access classifications. Examples include the City of Orlando, Florida and Hillsborough County, Florida, which apply access classification systems and standards to local thoroughfares similar to those of the Florida Department of Transportation.

A regional example is that of the Pinellas County, Florida Metropolitan Planning Organization, which is engaged in an access management classification study to determine appropriate access classifications for county roadways (45). The MPO plans to incorporate the resulting access management policies and standards into its concurrency management and congestion management plans, and ultimately to obtain local participation in regulating land division and access along key corridors.

Considered in this analysis were connection spacing, median openings, average parcel frontage, existing land use, future land use, traffic volumes, future lane improvements, and posted speed. Average connection spacing was compared to desired connection spacing for five access classifications. Connection spacing for each class was established to correspond with the access classification system and standards of the Florida Department of Transportation.

Facilities were evaluated to determine which were appropriate for upgrading to a higher level of access control. Criteria included average spacing of connections and median openings, as well as traffic volumes, prevalence of larger parcels, and intensity of land development. The study expanded recognition of the need to increase lot frontages and improve subdivision practices along selected arterials.

### Driveway Location and Design

Driveway design considerations that relate to access management include turning radius or flare, width, required lanes, throat length, and auxiliary turn lanes and directional controls (e.g., right-turn only). Driveway location issues include placing driveway approaches so that an exiting vehicle has an unobstructed sight distance, and motorists on the roadway have an adequate stopping sight distance.

Some agencies discourage or prohibit the location of driveways along acceleration or deceleration lanes and tapers at street intersections or interchanges because of the potential for vehicular weaving conflicts. Hudsonville, Michigan, prohibits location of driveways along the acceleration or deceleration lanes and tapers connecting to interchange ramp terminals (46).

From an operational and safety perspective, the appropriate width and radius of a driveway is a function of the volume of

traffic served, as well as the need to provide for rapid movement of vehicles off of major thoroughfares. If driveways are too narrow or have an inadequate turning radius, vehicles will be unable to maneuver quickly and comfortably off of the roadway and onto the site. If driveway radius and width are excessive, then rapid maneuvers onto the site could pose safety hazards for pedestrians, bicycles, or vehicles on site.

The length of driveways or "throat length" must accommodate anticipated storage of entering and exiting vehicles to prevent on-site circulation hazards. Insufficient driveway throat length can result in the formation of queues at the entrance of a site and interfere with through traffic on the abutting roadway (Figure 7). Standards for throat length vary according to the projected volume of the driveway and whether it is the principal access or a secondary driveway. These and other standards for driveway design are based on a variety of engineering and site design factors and therefore such decisions require the assistance of a professional engineer.

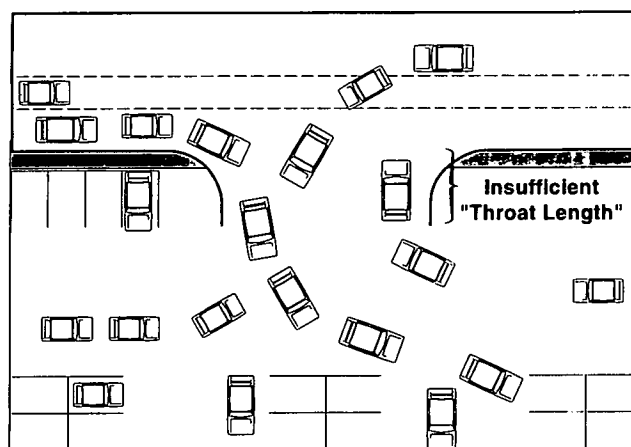


FIGURE 7 Insufficient driveway throat length can cause waiting vehicles to conflict with the flow of traffic, as well as on-site circulation hazards. Source: Florida Department of Transportation.

### Driveway Spacing Requirements

Driveway spacing standards minimize curb cuts on a roadway by mandating a minimum separation distance between driveways. This reduces the potential for collisions as travelers enter or exit the roadway and encourages sharing of access. Driveway spacing standards may be tied to the posted speed limit or functional classification of the roadway, with the minimum distance between driveways greater as speed limits increase. Sight distance standards or desired signal progression could also form the basis for driveway spacing. Guidance on appropriate driveway spacing standards is available in the TRB Circular 456: *Driveway and Street Intersection Spacing* (47).

Local approaches to regulating driveway spacing and minimum separation distances vary widely. Some communities focus driveway spacing requirements on high-priority corridors. The City of Clarksville, Tennessee allows only one driveway or street intersection for every 660 linear feet of

frontage along State Route 374 (48). The ordinance also requires a review and approval of the proposed connection dimensions prior to the issuance of a building permit.

Clark County, Washington prohibits direct driveway access to arterial roads unless no other access to the site can be provided (49). Driveway spacing is tied to posted speed limit along arterials and standards may be reduced to one-half the required distance for adjacent one-way driveways. Temporary driveways are allowed when minimum driveway separation cannot be achieved at the time of permit application, but an access plan that indicates future removal of the temporary drive and construction of the new driveway in accordance with spacing standards must also be developed.

Another approach is to provide variable spacing depending on the land use intensity of a site and that of adjacent sites. Volusia County, Florida groups driveways on major thoroughfares into four categories according to maximum average daily trips or maximum peak hour volume (minor, intermediate, major, and signalized or having four lanes or more) (50). The minimum centerline spacing distance for these driveways is tied to the classification of the abutting driveway and ranges from 335 feet between two adjacent minor driveways, to 400 feet for two adjacent signalized or four lane driveways. A traffic engineering study must be performed where a variance is requested.

Driveway spacing standards could also be tied to particular zoning districts or land uses. Frederick County, Virginia establishes minimum driveway spacing standards along collectors and arterials for commercial and industrial zoning districts (42). The standards also apply to any business, industrial or institutional use in other zoning districts, as well as to any residential development where more than one dwelling unit shares a parking lot.

Some communities regulate alignment of driveways. The City of Hudsonville, Michigan requires that new driveways be aligned with those across the roadway to reduce left-turn conflicts (46). Where alignment is not possible, driveways must be offset a minimum of 150 feet from those on the opposite side of the roadway. Longer offsets may be required depending on estimated left-turn volumes. Frederick County, Virginia requires new driveways to align with existing or planned driveways, crossovers, turn lanes, or other access features unless the resulting alignment proves unsafe.

### Corner Clearance

Corner clearance refers to separation of driveways from street intersections. According to AASHTO, driveways should not be permitted within the functional area of an intersection (3). The functional area of an intersection is that area beyond the physical intersection of two controlled-access facilities that comprises decision and maneuver distance, plus any required vehicle storage length (Figure 8). Driveway spacing at intersections and corners should provide adequate sight distance and response times and permit adequate queuing space (47). Traffic engineering analysis of the proposed connection by a registered engineer may be required of applicants for this purpose.

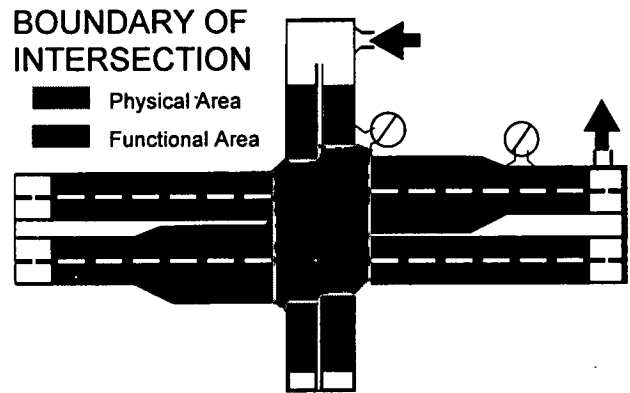


FIGURE 8 Functional area of an intersection. Source: Florida Department of Transportation.

Orlando, Florida prohibits new connections within the functional area of an existing intersection (43). Corner clearances for connections must meet or exceed the minimum connection spacing for the assigned access class. Connections may be placed closer to the intersection if corner clearance standards cannot be met, to provide reasonable access to the property. Applicants must submit a study by a registered engineer and the approving local official must determine that the connection does not create a safety or operational problem.

Some local access management policies provide that where no other alternatives exist, the permitting department may allow construction of an access connection along the property line farthest from the intersection. In such cases, directional connections (e.g., right in/out, right in only, or right out only) may be required. Clark County, Washington limits driveways within 125 feet of the intersection on a collector, and within 250 feet on minor or major arterials to right-turn movements if the intersection is signalized or planned for signalization (49). Another option is to require nonconforming corner properties to share access with abutting properties.

### Joint and Cross Access

Joint access requirements provide for a unified on-site circulation plan serving several properties on a commercial corridor (Figure 9). This serves as an alternative method of achieving adequate driveway spacing where lot frontage is otherwise inadequate. Cross access requirements allow for circulation between sites and may be applied in accordance with a joint access plan, or as a means of connecting major developments to allow circulation between sites.

The City of Orlando is improving driveway spacing by applying joint access and cross access requirements to designated "cross access corridors." Joint use driveways and cross access easements must be established wherever feasible and the building site must incorporate a unified access and circulation system (Figure 10). Orlando's cross access standards require:

- a) A continuous linear travel corridor extending the entire length of each block it serves, or at least 1,000 feet of



linear frontage along the thoroughfare, and having a design speed of 10 mph.

- b) Sufficient width to accommodate two-way travel aisles designed to accommodate automobiles, service vehicles, and loading vehicles in accordance with [design] requirements;
- c) Stub-outs and other design features that make it visually obvious that the abutting properties may be tied in to provide cross access;
- d) Linkage to other cross access corridors in the area (43).

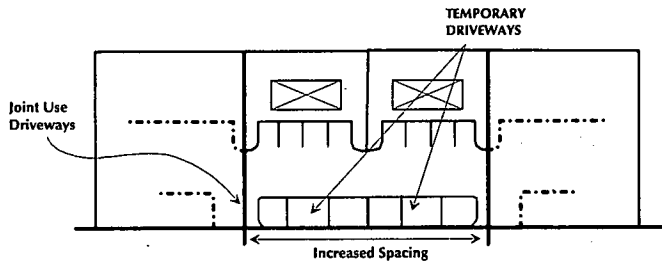


FIGURE 9 Joint and cross access.

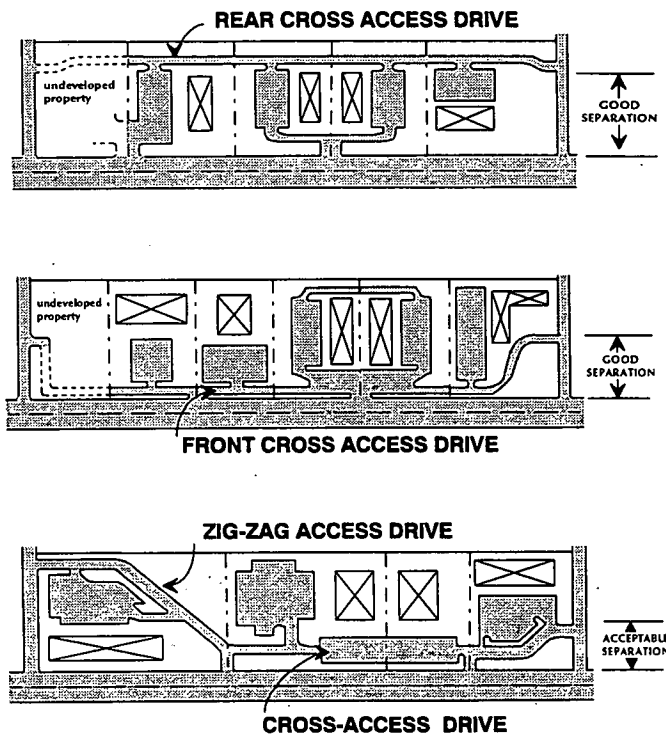


FIGURE 10 Variations of joint and cross access design, illustrating the need for sufficient separation between the side street access and the major road (43).

All plats, site plans, and other developments must meet these standards on designated thoroughfares. Property owners must record an easement in the public records of the County for that property allowing cross access to and from other properties in that affected area. Each property owner must also

record agreements in the property records to dedicate remaining access rights along the thoroughfare to the City, to close pre-existing driveways after construction of the joint-use driveway, and specifying joint maintenance responsibilities (Appendix C).

Once recorded, these agreements constitute a covenant that runs with the land. Standards are included in the land development code for coordinated or joint parking design. Cross access corridors are indicated on the zoning map by dashed or dotted lines and portions of the corridor where easements have been recorded are also identified.

These standards are applied to phased development in the same ownership and leasing situations. Where abutting properties are in different ownership, cooperation is encouraged but not required. However, the building site under consideration is still subject to the requirements, which are recorded as a binding agreement prior to issuing a building permit. Abutting properties are later brought into compliance as they are developed or trigger the City's retrofitting requirements, which are summarized below. In the meantime, the property owner is permitted a temporary driveway that must be closed upon development of the joint use driveway.

If properties are unable to meet driveway spacing requirements of the access management classification system, the Orlando public works director may waive the requirements and provide for less restrictive spacing. The waiver is based on the condition that joint use driveways, cross access easements, and a unified parking and circulation plan must be established wherever feasible.

Chesterfield County, Virginia adopted access requirements in the mid 1980s to promote shared access and improved internal vehicular circulation. The intent of the standards is to provide a high-quality environment for office, commercial, and industrial development. Shared access and internalized circulation are achieved through a requirement that sites must provide "direct and convenient vehicular circulation between adjacent properties" (51).

Developments at existing or proposed crossovers must submit an access plan prior to site plan approval and may be required to provide shared access to adjacent properties. Chesterfield County also increased setbacks along major corridors to ensure that parcels have adequate dimensions to provide shared access and accommodate future roadway expansion.

Local governments could also provide an incentive for combining access points or relax parking and dimensional requirements where necessary to facilitate shared access. Standards of the Tri-County Regional Planning Commission in Lansing, Michigan allow for reduction of minimum lot size, lot frontage, and parking requirements by up to 15 percent for adjacent property owners who agree to establish a common driveway (52).

#### Retrofitting Nonconforming Access

Land development regulations are not retroactive. Existing properties that do not meet new regulations must be designated as

TABLE 2  
RETROFITTING STANDARDS OF THE COLORADO STATE HIGHWAY ACCESS CODE

(2)(A) The property owner or permittee, if applicable, may be required to reconstruct or relocate access to conform to the code if a change in use of the property results in a change in the type or nature of access operation. A change in use may include, but is not limited to, structural modifications, remodeling, a change in the type of business conducted, expansion of an existing business, a change in zoning, or a division of property creating new parcels, but does not include modifications in advertising, landscaping, general maintenance or aesthetics that do not affect internal or external traffic flow or safety.

(B) A change in use which results in a change in the type or nature of access operation is conclusively established when the use of a property or the use of a specific access, either of which has been in a state of non-use for four years or more, is recommenced or, as a result of the change in use:

- I. The use of the access increases in actual vehicular volume by 10 AADT and 20 percent or more;
- II. The traffic volume of a particular directional characteristic (such as left turns) increases by 5 AADT and 20 percent or more;
- III. The use of the access by vehicles exceeding 30,000 pounds gross vehicle weight increases by 20 percent or more or by 10 vehicles per day or more;
- IV. The use of the access increases in actual vehicular volume from a level not exceeding code warrants and standards for design elements, to a level exceeding code design warrants and standards by 20 percent.
- V. The historical use of the access was less than daily use, and the new use would be for daily use of the access;
- VI. The free flow of vehicles entering the property is restricted or such that vehicles queue or hesitate on the highway, creating a highway hazard;
- VII. hazard;
- VIII. The access location fails to meet the minimum sight distance requirements of the code;
- IX. The purposes of the code, as enumerated in subsection 1.2(1), are otherwise detrimentally affected.

(C) A change in use which results in a change in the type or nature of access operation is presumptively established when, following the change in use, any of the events enumerated in (B)(I) -(B)(VII) occur or reasonably are expected to occur by proper application of the ITE Trip Generation Manual.

nonconforming and may continue in the same manner as they existed before land development regulations were adopted—a process commonly known as grandfathering. Such provisions protect private investment in property and acknowledge the expense of bringing properties into conformance.

However, nonconforming properties also have negative impacts that precipitated adoption of new regulations. These may include safety hazards, traffic congestion, reduced property values, and environmental degradation. To address the public interest in these matters, land development regulations include conditions or circumstances where nonconforming properties may be brought into conformance. For access management, such conditions may include:

- requests for new driveway permits;
- increase in land use intensity;
- substantial enlargements or improvements;
- significant change in trip generation; and
- as changes to roadway design allow (43).

Definitions of “a significant change in trip generation” may be adapted for local use from state highway access management programs. New Jersey, for example, uses the term “significant increase in traffic” and defines this as follows: “vehicular use exceeding the previously anticipated two-way traffic generated by a lot by (i) 100 movements during the peak hour of the highway or the development and (ii) 10 percent of the previously anticipated daily movements” (21). The Colorado State Highway Access Code has comprehensive retrofitting standards, as shown in Table 2 (20).

Retrofitting issues also arise in relation to abandoned or vacant properties. The following standard for when such

properties must undergo reevaluation and obtain a new permit is similar to zoning standards for abandoned or vacant nonconforming uses:

“If the principal activity on a property with nonconforming access is discontinued for a consecutive period of 180 days, or discontinued for any period of time without a present intention of resuming that activity, then that property must thereafter be brought into conformance with all applicable connection spacing and design requirements, unless otherwise exempted by the permitting authority. For uses that are vacant or discontinued upon adoption of access requirements, the 180 day period begins on the effective date of those requirements” (35).

#### Private Road Ordinances

Some communities prohibit private roads altogether or require all private roads serving more than one dwelling unit be built to public specifications and paved. This is because of problems associated with private roads, such as inadequate design and maintenance and pressure to adopt the private road into the public road system in the future. Yet if properly regulated, private roads can offer an opportunity for achieving shared access drives for small subdivisions.

Private road regulations typically address design, construction, joint maintenance agreements, signage, and review. Most communities require a minimum 50 to 66 foot right-of-way and require private roads to meet design specifications for public roads (53). Reduced easement and roadway width and pavement standards have been suggested for subdivisions in rural and semi-rural areas to preserve the character of rural landscapes (54). Many rural areas do not require paving if the

roadway conforms to gravel road specifications, whereas others require paving after the number of dwelling units exceeds a certain threshold (53). Some ordinances provide a sliding scale approach, allowing gravel roads of about 12 feet to 18 feet wide for two to four parcels and requiring county road specifications for larger developments (53).

Road maintenance agreements, recorded with the deed of each property served by a common private road, provide a method to initiate, finance, and maintain private roads. Such agreements provide a method of apportioning maintenance costs to current and future users. Local governments may retain authority to inspect and require repairs necessary to ensure safe access for emergency vehicles. Other typical provisions include (53):

- A statement that no public funds shall be used to construct, repair, or maintain the road;
- A provision requiring mandatory upgrading of the roadway if additional parcels are added to reach the specified thresholds;
- A provision that property owners along that road are prohibited from restricting or in any manner interfering with normal ingress and egress by any other owners or persons needing to access properties with frontage on that road;
- A statement that no private road shall be incorporated into the public road system unless it is built to public road specifications and that property owners shall be responsible for bringing the road into conformance; and
- A stipulation that building permits will not be for any lot served by a private road until the private road has been constructed, inspected, and approved, to assure that all lots served by the private road have access to a public road.

As in other land development regulations, private road provisions must be made for grandfathering existing nonconforming situations. Some ordinances address the situation by providing a different set of standards for nonconforming private access or by providing for expansion of existing substandard private roads or easements pursuant to the special use permit process.

### Transit, Bicycle, and Pedestrian Access

Improved transit access requires attention to the proximity and mix of land uses, continuity of pedestrian and bicycle ways, and coordination of land use and transit decisions. Mixed use activity centers, for example, create transit destinations and are more consistent with access management principles than strip development. Smaller blocks and a balanced, connected network of streets and sidewalks make an area more friendly to pedestrians and transit. Planning principles call for key transit destinations to be within walking distance of transit stops and stations and accessible via sidewalks or pedestrian paths (55). Transit stations need continuous pedestrian access via sidewalks or pathways; bicycle access or storage facilities; and clean, visible, well lit, comfortable places for riders to wait (55).

Clustering transit-compatible uses around a bus turnaround or locating buildings near the street line with parking in the rear, provides more direct pedestrian and transit access and helps facilitate shared access. Bus pullout bays for transfer points reduce vehicular conflicts and preserve traffic flow by removing buses from through-traffic lanes (Figure 11) (55). Minor changes in subdivision layout can shorten perceived walking distances and provide for more direct transit routes (56).

Local governments and transit agencies may assure that sites have adequate transit access by coordinating on development review. Transit considerations could be part of a negotiated development agreement or integrated into local site plan review requirements. This may include standards for transit stops and stations, bicycle parking, bicycle paths, sidewalks or unpaved pedestrian paths, and direct bicycle and pedestrian access to buildings.

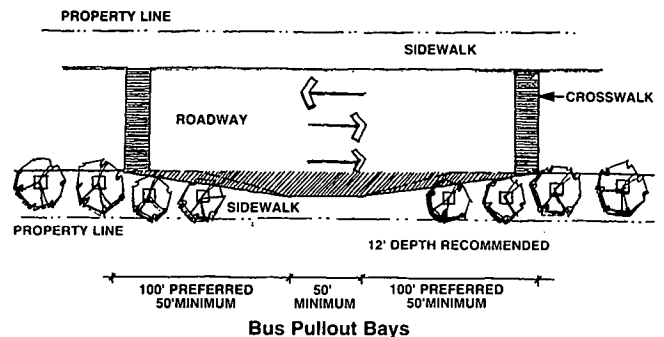


FIGURE 11 Bus pullout bays (55).

## ZONING

### Corridor Overlay Zones

Overlay zones add special requirements onto an existing zoning district, while retaining other requirements of the underlying zone. They are a popular method of managing access along high-priority corridors because they allow communities to tailor standards to the unique circumstances of that corridor. Standards for overlay districts are included in the land development (or zoning) code and affected corridors are designated on the zoning map.

Overlay requirements may address any issues of concern, such as joint access, parking lot cross access, reverse frontage, minimum lot frontage, driveway spacing, and limitations on new driveways or subdivisions. An overlay concept for emerging commercial corridors calls for managing curb cuts by restricting the permitted number of future driveways to one driveway per existing lot or parcel (32, 35). The assigned driveway would be permitted by right, effective on adoption of the ordinance and map. Future land division could occur, but each newly created lot must obtain access via the connection permitted by the ordinance. This would encourage the development of subdivision roads, other private or public roads, or service drives in conformance with specified design requirements.

A variation of this technique appears in the Grand Traverse Bay Region Sample regulations (35). The overlay applies to

300 feet on either side of the designated corridor, establishes a minimum lot frontage of 400 feet, and permits only one access per 400-foot lot. Service drive provisions freeze the number of driveways on a designated corridor to one per existing parcel.

Existing parcels with larger frontages could be permitted more than one driveway and additional driveways could be permitted by special use permit. Existing parcels with less than 100 feet of frontage may be permitted a driveway, but in certain cases a shared driveway or alternative means of access may be required. Additional access connections would not be provided.

The City of Austin, Texas, has established access controls through special corridor zoning for designated Principal Roadway Areas and Hill Country Roadways (57). Lots with less than 200 feet of frontage along all designated Principal Roadways are prohibited from obtaining direct access. Joint access may be required at the time of site plan approval or subdivision for abutting lots with inadequate frontage.

Hill Country Roadways are a designated system of controlled-access scenic highways. Direct driveway access to these roadways is prohibited from any lot that has access available via an intersecting road or joint-access easement. All other access to a Hill Country Roadway is limited to one driveway, unless traffic volumes exceed established limits and approval is given by the reviewing agency. Access is prohibited for lots without direct frontage on a Hill Country Roadway, unless the topography of the land makes joint use impossible or impractical.

Fairfax County, Virginia has established a Highway Corridor Overlay District in its zoning ordinance (58). The overlay may be applied to any street or highway designed to carry through traffic or where the construction of certain land uses may jeopardize the public health or safety. The primary intent is to regulate "quick turn-over" uses, such as fast food restaurants or drive-in banks, and improve the circulation of traffic. The ordinance requires land uses to coordinate pedestrian and vehicular access with adjacent properties and design access drives so they do not hinder traffic flow. It includes requirements related to internal circulation, access drives along adjacent streets, shared entrances, and service drives.

### Flexible Zoning

Flexible zoning relaxes land use and lot dimensional criteria of conventional zoning to promote creative site design (Figure 12). It involves application of performance standards that specify a desired result, without limiting how it will be achieved (59). Allowable density may be aggregated across an entire development site and transferred from one part of a site to another. This technique may be used to create cluster or mixed-use developments that work with the natural features of a site and integrate land uses, access and circulation systems into a unified design. Land uses may also be mixed and conflicts reduced through site design, buffering and screening between incompatible uses.

Mandating cluster zoning along high-priority corridors is one strategy for achieving access management. An innovative approach and cluster zoning techniques, as proposed by Randall

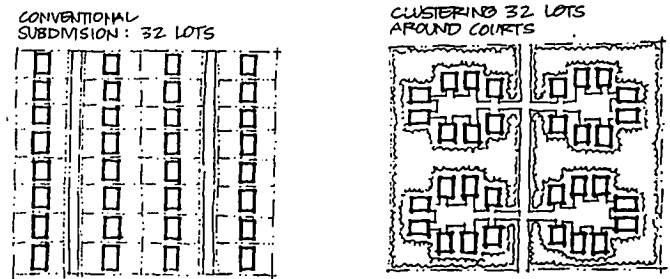


FIGURE 12 Cluster versus conventional site design. Flexible zoning techniques can be used to facilitate shared access and reduce the number of properties requiring direct, individual access to collectors and arterials (60).

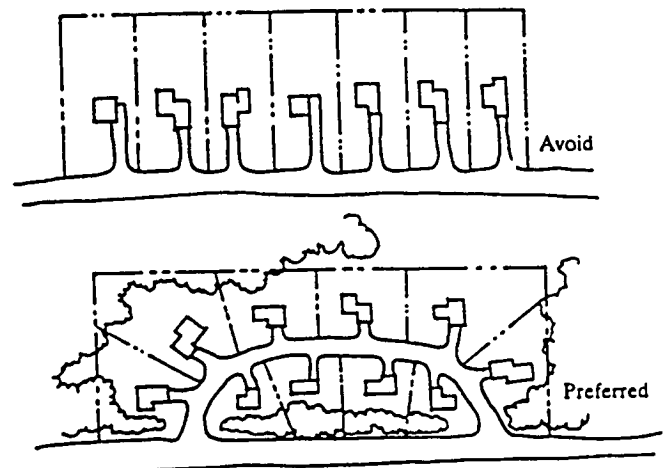


FIGURE 13 In small subdivisions, an interior access road reduces curb cuts along the highway. Reprinted with permission from C. Doble and G. McCulloch, *Community Design Guidelines Manual*, The Tug Hill Commission, January 1991.

Arendt (54,61). This strategy involves mandatory cluster zoning along rural highways, supplemented by commercial and residential planned unit development regulations. Arendt suggests the following access standard for small rural subdivisions: "Subdivisions with frontage on state-numbered highways shall be designed into shared access points to and from the highway. Normally a maximum of two accesses shall be allowed regardless of the number of lots or businesses served" (Figure 13) (61).

The Canadian Province of Newfoundland and Labrador adopted cluster zoning controls to prevent strip development on their highways, reduce the number of access drives, conserve roadside beauty, and ensure highway safety (62). The program involves application of cluster zoning on both sides of designated highways, within 400 meters of the highway in rural areas and within 100 meters of the highway in an incorporated municipality. The zoning establishes permitted land uses and associated setback and buffer requirements.

All prospective developers must acquire permits for any roadside developments. Permit applications are subject to a five-stage review process and developments within a municipality

must obtain approval from both the municipal and the provincial government. These controls cover more than 3000 kilometers of highway frontage and are authorized by the Urban and Rural Planning Act .

A more widely used regulatory technique that incorporates flexible zoning concepts is the planned unit development (PUD). PUD standards provide for clustering and mixed-use development by relaxing lot dimensional requirements and applying density restrictions against an entire parcel, rather than to single lots. A PUD could be applied to a small site or an entire planned community. Most local governments provide

it as a floating zone that may be assigned to a development site where requested by an applicant. It may also be applied to an area in advance by designating it on the zoning map as an overlay zone.

PUDs involve more extensive site plan review and standards vest considerable discretionary authority in the review body. Like corridor overlay zones, they can be used to apply special access requirements to a commercial corridor. The City of Sharonville, Ohio applied PUD overlays to a developing commercial corridor for the purpose of incorporating shared service drives. Similar techniques could be used to facilitate transit-friendly land use design.

## ADMINISTRATIVE CONSIDERATIONS

### ADMINISTERING CONNECTION SPACING STANDARDS

Flexibility is essential in administering connection spacing and joint access requirements, because of the diversity of circumstances in the built environment. Technical criteria establish the parameters for flexibility to help prevent arbitrary and inconsistent decisions. A trend in local practice is to provide flexibility in connection spacing standards on an administrative level through waivers or special exceptions, rather than through variances which are appealed through a quasi-judicial forum. This retains professional judgment in review of access management issues.

Although the terms “variances”, “waivers”, and “exceptions” are sometimes used interchangeably, there are some important differences. A waiver is permission to depart from regulations where required conditions are satisfied. An exception is permission to depart from standards due to unique circumstances of the site or project. A variance is similar to an exception, but requires a far more stringent showing of hardship. Special exceptions and waivers are handled by professional staff at an administrative level, and in some instances are also subject to planning commission approval. Variances are subject to quasi-judicial review by a zoning board of appeals or zoning hearing master.

A flexibility “threshold” could be established for situations where spacing standards prove impractical. Some codes allow for up to 20 percent reduction in spacing and others limit the exception to no less than the spacing of the next lowest classification (38). If the connection spacing still cannot be achieved, then some local governments reserve the right to require a system of joint use driveways and cross access easements wherever feasible. Others provide for reduction in spacing where property owners agree to consolidate access.

Another alternative applied in some codes is to allow waivers at the discretion of the planning commission where the effect would be to enhance the safety or operation of the roadway. Examples might include a pair of one-way driveways in lieu of a two-way driveway, or alignment of median openings with existing access connections. Applicants may be required to submit a study prepared by a registered engineer to assist the municipality in these determinations.

Variances are provided after every feasible option for meeting access standards has been explored and deemed impractical. Applicants for variances may be required to submit proof of unique or special conditions that make strict application of the provisions impractical. Sample variance standards from NCHRP Report 348: *Access Management Guidelines for Activity Centers*, require proof that:

- indirect or restricted access cannot be obtained;

- the proposed alternative meets minimum safety standards;
- no engineering or construction solutions can be applied to mitigate the condition, and
- no alternative access is available from a street with a lower functional classification than the primary roadway (1).

Frederick County, Virginia, provides that no new lot shall be created on an arterial unless it complies with spacing requirements through existing or shared access (42). Parcels that cannot meet the minimum spacing requirement may be granted exceptions only through one of the following methods:

- parcels at intersections must obtain access from the street with the lower functional classification,
- shared access is provided by access easement, shared driveway, or other means.
- special exceptions, such as driveways restricting left-turn movements, may be approved by the Planning Commission. In such cases, the Zoning Administrator may require a traffic access plan.

The County also provides that even where new lots meet spacing requirements, they may still be required to provide for shared access if an adjacent lot is unable to comply. Where such a connection is provided, the abutting property must obtain access via the shared access system. No more than one nonconforming driveway per parcel is allowed. Overall development plans must provide for shared access where necessary to comply with spacing standards and the property owner may be required to dedicate an access easement and provide for joint use and maintenance of the easement.

### IMPROVING COORDINATION

Access management requires improved coordination between land use and transportation, as well as within and across government agencies that share jurisdiction over a corridor. Regional corridor planning initiatives, intergovernmental agreements, access management plans, public involvement, combined review committees, and joint policy resolutions are among the methods being applied to improve coordination on access management issues.

In metropolitan areas, MPOs are the logical entity to facilitate intergovernmental coordination on access management objectives. MPOs are the body charged with conducting regional transportation planning and providing “a forum for cooperative decision making by principal elected officials of general purpose local government” (63).

A growing number of metropolitan planning organizations are incorporating access management strategies into their planning program. A good example is the effort underway by the Capitol Region Council of Governments (CRCOG)—the metropolitan planning organization for the Hartford, Connecticut metropolitan area. CRCOG is currently engaged in corridor studies that will culminate in corridor management and improvement plans for four key routes (64).

Objectives are to prepare a transportation master plan for each corridor that defines transportation management strategies and needed improvement projects. The plans will also establish a congestion management system and strategies for each corridor, including access management and growth management and activity center strategies. All corridor studies will also involve the preparation of an access management plan for each town on the affected corridors.

The project will include extensive public involvement activities. Special corridor committees will be formed to guide the study. These will include a technical committee of planners and engineers from each town, and an advisory committee composed of planning and elected officials as well as business representatives and residents. These committees will address development trends and regulations, assess the viability of alternatives, and provide guidance on key policy issues.

The Connecticut DOT will actively participate and special meetings will also be held with each affected town council and planning commission, as well as separate meetings with the public, at appropriate points in the planning process. At a minimum, special meetings will be held during analyses of existing and future conditions, analysis of alternatives, and development of the corridor plan. Newsletters will be prepared and distributed to keep citizens and local officials informed along the way.

The access management plans will address traffic signal location and problems with existing curb cuts. The study will review and evaluate development regulations in each town and identify options for integrating access management into local regulatory practice. Curb cut plans will be prepared that address needed improvements from a regulatory and design perspective. An access management report will be prepared for each town that sets forth the results of these analyses and study recommendations. Collaborative efforts such as this will be essential to achieving greater local participation and improving intergovernmental coordination on managing access to high-priority corridors.

Another example is the joint policy agreement between the North Carolina DOT and local policy makers in the Charlotte-Mecklenburg metropolitan area for coordinated approval of access, median opening and signalization requests along Harris Boulevard (65). The policy establishes general guidelines for median openings and promotes shared driveways and driveway design “appropriate to the traffic characteristics of the land use.” The MPO Technical Coordinating Committee (TCC) is charged with reviewing requests for median openings and access along the Boulevard, with final authority resting with the NCDOT along selected segments, and the City of Charlotte DOT along other segments.

A method of coordinating land development and access review is through a review process that begins with an informal meeting and concept review (66). The informal review allows officials to advise the developer of state and local permit requirements and special considerations of the development site. The concept review provides developers with early feedback on a proposal, before the preliminary plat or site plan has been drafted. The preliminary plan is then checked to determine if additional conditions are required for approval and the final plan should require only administrative review.

A parallel review process or combined review committee could be established between local governments and state departments of transportation where an application involves access to the state highway system (35). Under this approach the committee would jointly review a development proposal, establishing information required for review and advising the local permitting department whether to approve, approve with conditions, or deny the application. If the application is approved with conditions, the applicant would be required to re-submit the plan with changes. It is important that local review timelines be consistent with those of the state DOT.

Another technique for improving coordination is to establish the building permit as the lead permit during development review (32). Property owners would be required to submit all necessary permits or certificates of approval from other regulatory agencies, before the local government issues the building permit. This ensures conformance with all necessary requirements and helps reduce the problem of conflicting permit decisions between or within agencies. The state department of transportation would be among these agencies where a state highway is involved, to assure conformance with state access management requirements. A space for signature of the approving state DOT official could be included on the building permit application.

## LEGAL CONSIDERATIONS

The legal feasibility of various access control and management techniques is determined by state and local authority to deny, control, and alter private access to public roads, as well as to control and alter the flow of traffic. Two sometimes conflicting rights underlie the discussion: (1) the public right to safe and efficient movement and (2) the landowners right to suitable and sufficient access (1). In regulating land division and access, state and local governments strive to maintain a balance between (1) public police power and (2) private property rights.

The legal basis for the protection of property rights is found in the taking clause of the Fifth Amendment of the U.S. Constitution and similar provisions in state constitutions. In general, when government takes property for public benefit, compensation is required. When it exercises its police powers to prevent harm and protect public welfare, compensation is not required, unless the government goes “too far” (67). The distinction and balance between these two is at the core of most litigation in this area.

In most states an owner of property is deemed to have a right to access to a public street system, but not to any specific street or to any specific point of access (68). A number of jurisdictions do not consider access rights as property rights and their regulation tends to be non-compensable (69). This is significant in light of the Supreme Court decision in *Lucas v. South Carolina Coastal Council* (70), which anchors its decision on whether the background of property law of the state would permit the prohibition (71).

Whether or not there is a “taking” of property for which compensation is due may relate to whether or to what extent access or a specific use of access is recognized as property. In addition, a use of access that would constitute a nuisance is not a property right because no one has a right to create a nuisance (72). Still other state cases hold that whether or not property is actually taken is immaterial to the issue of damages, because compensation is only required when the remaining property is damaged by substantial limitation or loss of access (73).

The regulation of access, both as applied and as regulatory policy, should “substantially advance a legitimate state interest” and have some “nexus” between the burden of the regulation and that state interest (74). A 1994 Supreme Court decision now requires that the burden of the conditions imposed by the regulation have some “rough proportionality” to the impacts caused by the affected property owner (75).

In general, the regulatory action should not be more restrictive than necessary to accomplish the desired public purpose. Governments should not require individuals to bear a burden that is better borne by the public as a whole, and regulations, or any exceptions to those regulations, must be administered fairly and equally (76). These constitutional tenets set the

legal ground rules for government regulation of private property rights.

### STATUTORY AUTHORITY

Historically, public authority to engage in planning and regulation is derived from the inherent power of the sovereign to exercise police power to protect the public (77). Today state statutes, limited by state constitutions, provide express substantive and procedural planning authority. Governments must assess whether they have statutory authority to engage in any program of regulation, and also whether it is consistent with any procedural requirements provided in state statutes. A general rule of administrative law is where an explicit statutory authorization exists, it must be followed and the local government or state agency cannot imply different authority or different powers (78).

Where the statute is silent, local authority to engage in access control may be implied from its general police power. In the majority of states, this authority resides in the planning and zoning enabling legislation stemming back to the 1920s and 1930s (79). Although local access and subdivision controls fall within the scope of these statutes, some related practices may not. These include impact fees, development agreements, transfer of development rights, and off-site exactions. Local regulatory authority is typically broader in states that require local governments to engage in comprehensive planning or growth management.

Statutes governing access management activities of the state departments of transportation may also affect local authority, by allowing or proscribing more restrictive local access controls on state highways. In Florida, for example, local governments are prohibited under the State Highway System Access Management Act from imposing access management standards more restrictive than those of the Department of Transportation. In Oregon, the state access standards are a floor, and the local government may have stricter standards. This may typically occur when a minor state highway is in effect the main arterial of a community.

In some states, local efforts to restrict access to state highways may be viewed by the courts as preempted by the driveway permitting authority of the state highway agency. These issues are frequently dealt with through express statutory language giving state agencies exclusive jurisdiction over state highways.

Where inconsistencies arise between state and local governments in driveway permitting on state highways, unless statutes have declared otherwise (80), courts have determined that states have the final say. In *White v. Westage Development*



*Group* (N.Y. App., 1993) (81), the court held that the authority of the Department of Transportation to impose conditions on a driveway permit under highway law was in no way affected by the Township Planning Board's removal of those same conditions.

## PRIVATE PROPERTY RIGHTS AND POLICE POWER

An owner of property is said to have a "bundle of sticks" that describes the rights, privileges, powers, and immunities that come with property ownership (82). Right of access to a street or highway is another "stick" in the bundle of property rights. Although states sometimes recognize "sticks" within the bundle as separate interests in land, in federal courts at least "such legalistic distinctions within the bundle of property rights are not recognized in takings jurisprudence, which looks to whether there is economic use left in the property as whole" (83).

Under the rubric of police power, governments may restrict the use of private property to protect or advance the public safety and general welfare, to prevent public injury or where demanded by the "public interest." Private rights of abutting land owners to access their property are generally subservient to the rights of the public to free and safe use of the public street system (84). However, permanent denial of all beneficial use of property is almost always compensable (85).

Zoning, subdivision regulations, and access controls have all been viewed by the courts as a legitimate exercise of the police power. Public purposes behind access control include improved safety of vehicular and pedestrian travel, preservation of roadway level of service and efficiency, and enhanced community character. Courts have historically been responsive to safety considerations, but may view efficiency or aesthetics as public benefits whose costs should not fall solely on the property owners.

Access management is also a congestion management tool, and prevention of excessive congestion has been viewed by the courts as falling within the legitimate purview of police power. In the words of Supreme Court Justice Scalia: "the common zoning regulations requiring subdividers to observe lot-size and setback restrictions, and to dedicate certain areas to public streets, are in accord with our constitutional traditions because the proposed property use would otherwise be the cause of excessive congestion" (86). The implication is that the police power basis for access management is not limited to individual site safety determination, but can be used for broad policy objectives, such as congestion management.

Considerable discretion has been vested in government in defining what constitutes the "public interest" and how it should be protected (87). The major limitation on government activities in this area is that the owner cannot be deprived of all economic value of his or her property. To reiterate, however, "[w]here an owner possesses a full 'bundle' of property rights, the destruction of one 'strand' of the bundle is not a taking, because the aggregate must be viewed in its entirety" (88).

A recent decision by Washington State Supreme Court describes the application of the rule in light of *Lucas*:

"If the regulation does not implicate fundamental attributes of ownership, the court will proceed . . . to analyzing whether the regulation goes beyond preventing a public harm to producing a public benefit. If the purpose of the regulation is to produce a benefit, the court will then proceed with balancing the legitimacy of the State's interest with the adverse economic impact on the landowner. . . . Under the first threshold analysis, if the landowner proves the regulation results in a "total taking", the State will then have the opportunity to rebut this claim by identifying common law principles of state nuisance and property law that prohibit the uses the landowner now intends in the circumstances in which the property is presently found" (89).

The Washington State decision underscores the importance of analyzing access rights as property rights in a state specific context. For example, the Arizona Supreme Court, interpreting a "just compensation" provision in the Arizona constitution said: "We hold—in agreement *with the ever increasing trend of authority*—that direct access to a highway is not a private property right within the contemplation of Article 2, Section 17 of the Arizona Constitution" (90). (emphasis added)

In *State Highway Comm'n. v. Central Paving Co.* (91) the Oregon Supreme Court found that landowners could not recover for circuity of travel resulting from construction of a limited-access highway when access to a frontage road was provided. The Court decided that defendants could not recover under any police power analysis or under eminent domain, because they do not have an interest in land:

"Since we do not regard the limitation on defendant's access to their land from the throughway as the deprivation of an interest in land we need not decide whether, if it were, the state could appropriate the interest without compensation under the police power" (91, p. 75).

In states where the courts or statutes treat access as a property right, this property right of access is often viewed as a right of reasonable access. The Florida Supreme Court, for example, has defined the right of access as "the reasonable capacity of a landowner to reach the abutting public way by customary means of locomotion and then to reach the general system of public ways" (92).

Under this analysis, what constitutes reasonable access becomes the critical element. Most states find that any access to a public street system is reasonable and where some such access remains, there is no compensable taking. Landlocking a property, if it deprived the owner of all economic or substantial value or use of the property would result in a taking and require some compensation. The only exception to the latter rule would be if any access to a public street would be so unsafe as to constitute a nuisance (93).

Governments also have the right of eminent domain which allows them to take private property for public use with just compensation. This occurs through condemnation and public acquisition and does not require a property owner's consent. Even in a condemnation setting, a Colorado court has recently found an owner not entitled to compensation for condemnation

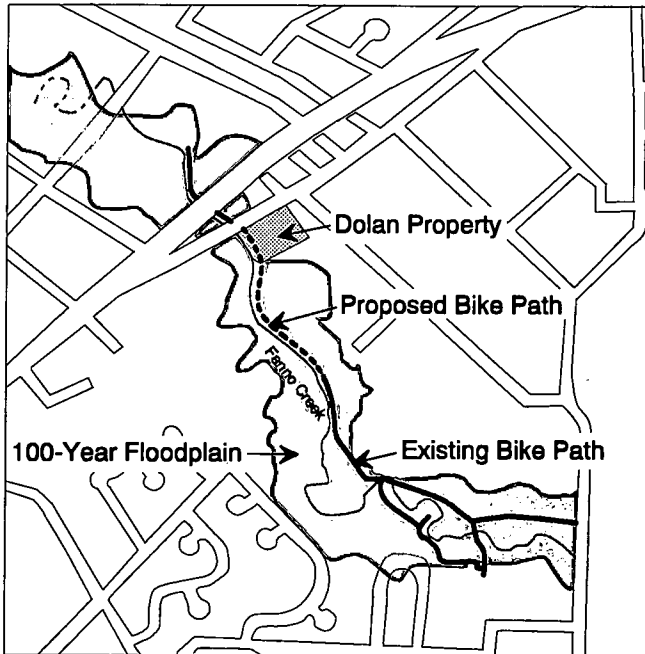


FIGURE 14 *Dolan v. City of Tigard*.

of an access point because he had another one (94). Alternatively, property owners may initiate a condemnation action, in response to a government action that they feel is so harsh it warrants compensation. This is known as inverse condemnation, and is the basis for many takings lawsuits related to changes in highway access.

#### Regulatory Conditions and Exactions

In evaluating the character of regulations, courts look to whether a legitimate state interest is being served and whether an “essential nexus” exists between the impacts of the project and the permit conditions, *Nollan v. California Coastal Commission*, (US 1987) (74). In addition, individual property owners should not be required to carry a disproportionate share of burden for a public benefit. Rather, individual impacts on the property owner should be “roughly proportional” to the impacts attributable to the regulated activity. The most recent U.S. Supreme Court takings decision, *Dolan v. City of Tigard* (US 1994) (75), extended this analysis. A brief summary follows.

The Dolans had applied for a permit to double the size of their hardware store and to pave and enlarge their parking lot. The city approved the request, but attached two conditions to the permit: (1) dedication of the portion of property within a floodplain to the city for improvement of a storm drainage system; and (2) dedication of a strip of land adjacent to the floodplain for a pedestrian/bicycle pathway (Figure 14). The Dolans appealed, alleging that the dedication requirements were unrelated to the proposed development and that the relationship between the impacts of the proposed development and the required exactions was insufficient to justify dedication of their property.

The court affirmed that prevention of flooding and reduction of traffic congestion were legitimate state interests and that a nexus existed between these impacts and the permit conditions. However, questioning whether the degree of exaction bears the required relationship to the impact of the development, the court transferred the burden of proof to the city to demonstrate a “rough proportionality” between the impacts of the development and the nature and degree of exactions. This transfer of the burden of proof to the local government should result in a major difference from prior practice, where the applicant typically had the burden of proof to show absence of impacts from the development.

Allowing that the relationship need not be precisely quantified, the court held that “the city must make some sort of individualized determination that the required dedication is related both in nature and extent to the impact of the proposed development.” Regarding the bikeway exaction, the city was advised to “make some effort to quantify its finding beyond a conclusory statement that the dedication ‘could offset some of the traffic demand’ generated by the development.”

Since *Dolan*, legal opinion has been split regarding whether *Dolan* applies only to instances where a dedication of land is required, or whether it also applies to other conditions. The safer argument is to assume that the “rough proportionality” test applies in both instances (95). In light of *Dolan*, if a dedication is required (cross access easement, auxiliary lane, right-of-way, etc.), the dedication requirement should be connected to and justified by the impacts of the development. If impacts are shared with other developments, some mechanism and formula for cost sharing may have to be provided.

The *Dolan* analysis applied to regulatory treatment of access management issues—such as spacing of access points, internal circulation requirements, spacing of median openings, or requirements for consistency of zoning with access policy—would still require that the specific burden imposed on the owner’s “property” interests be “roughly proportional” to the impacts caused by the owner.

The affected government will not satisfy this test by simply identifying trips generated from a particular development, unless it relates those trips to some adverse condition, such as a failing intersection, congestion, or a safety issue. A recent Washington Supreme Court illustrates this burden of proof: “[the] report prepared by the county planning office for each short plat documented deficiencies in right-of-way width and surfacing of adjoining streets, and [the] county calculated [an] increase in traffic and specific need for dedication of right of way based on individual and cumulative impacts of [a] series of short subdivisions” (96).

#### What Is Reasonable Access?

To the extent states recognize property interest in access, they tend to recognize a property interest in “reasonable access.” Because circumstances of individual properties vary widely, the availability of reasonable access must be determined on a case-by-case basis. In defining reasonable access, some state courts may look to whether access has been substantially

diminished (97), whereas others look to whether the value of the remaining property has been substantially diminished (98,99).

This is evaluated on a continuum from relatively minor route changes, which are not usually compensable, to extremely circuitous rerouting of access or denial of access to a public street, which are compensable. Regardless of a state court's latest pronouncement on what is reasonable access, the old adage that bad cases make bad law, is still valid. Extreme cases involving unusual hardships invite courts to provide caveats and refinements that can erode otherwise clear judicial standards.

Whether circuitous rerouting will require compensation is a state-by-state determination and will depend on how the state court defines access rights as property rights and specific statutory requirements. The legislature can always create special compensation rights, even if the state or federal constitution does not require compensation. In Oregon, the legislature created a right to compensation based on change of grade if the alternative access is not "reasonably equal" to the access denied.

A request for severance damages due to loss of direct highway access following construction of an overpass and service road arose in *Florida Department of Transportation and Pinellas County v. ABS Inc.*, (Fla. App. 1976) (97). The court concluded that where access to property is still available, the right to compensation depends on whether "a substantial diminution in access" has occurred. Because patrons would only have to travel about 100 more yards via a new service road for access to the shopping center, the court found no substantial diminution in access had occurred.

Based on a survey of various state cases and related articles, general guidelines of takings and compensation commonly applied by the courts in access cases can be described as follows:

- complete loss of access is always necessary to demonstrate a taking;
- a substantial loss of access to private property may result in a taking and warrant compensation, although no physical appropriation of property has occurred;
- loss of the most convenient access, or increase in circuitry of access, is not usually compensable where other suitable access continues to exist;
- governmental actions that diminish traffic flow on an abutting road, such as installation of a raised median, are not a taking;
- damages must be peculiar to that property and not common to the public at large for compensation to be paid;
- recoverable damages are limited to the reduction in property value caused by the loss of access, but if the property is landlocked the entire parcel may have to be purchased.

The compensability of access changes is construed differently from state to state. Courts in some states, such as Georgia, Wisconsin, Ohio, and North Carolina, have held that elimination of access to any existing abutting street or highway is a taking that warrants compensation. In other states,

such as Colorado and Oregon, the courts have established that loss of access to an abutting road does not constitute a taking unless the overall right of access to that property was substantially diminished or denied. In *Department of Highways v. Interstate-Denver West*, (Colo. 1990) (99), for example, the court upheld elimination of access to one of two abutting streets as a valid exercise of the state's police power. In New Jersey a revocation of direct state highway access is not generally compensable if, for a commercial property, the alternative access is onto a parallel or perpendicular street and is convenient, direct, well-marked, and of sufficient design.

Some courts are also considering the effect of access controls upon on-site conditions. In a condemnation case entitled *State of New Jersey v. Van Nortwick*, which was decided prior to adoption of New Jersey's access code, the court held that on-property conditions, such as limitation of design options and on-site maneuverability, caused by diminution of access are compensable (100). See also, *Castrataro v. City of Lyndhurst*, (1992 Ohio App) (101), where the court held that an access change created circuitry of travel within, rather than to and from, a property and thus is a burden placed solely on the property owner, which is compensable.

#### Temporary Moratoria

The constitutionality of interim moratoria in relation to access improvements was addressed in *Woodbury Place Partners v. City of Woodbury*, Minnesota, (Minn. App. 1992) (102). Woodbury Place Partners had purchased a tract of unimproved, commercially zoned land near the I-494 interchange to construct a retail and office center. In 1988, they applied to the City of Woodbury for the necessary development permits.

The City had retained a consultant in 1987 to conduct an access improvement study for the interchange area due to concerns about traffic congestion. In 1988, the City Council imposed a moratorium on consideration of proposed development plans, plan amendments, or rezoning applications adjacent to I-494 for a period of two years. The purpose of the moratorium was to protect the planning process and prohibit construction that could adversely affect road design and public health and safety.

Citing the categorical rule established in *Lucas*, Woodbury Place Partners argued that the regulation denied all economically beneficial or productive use of their land. The City argued that "economic viability was delayed, rather than destroyed." The court agreed, stating that "when measured against the value of the property as a whole, rather than against the two-year time frame, the moratorium did not deny the partnership all economically viable use of its property. Turning to the analysis established in *Penn Central* (103), the court remanded the case to the district court for further analysis of potential investment backed expectations and the relative economic impact on the partnership.

#### Joint and Cross Access

Courts tend to view requirements for joint access and parking lot cross access as a legitimate exercise of the police

power and compatible with the economically beneficial use of land. In *Kostenborder v. City of Salem* (104), the Oregon Land Use Board of Appeals upheld a municipal decision to condition a land division approval along a major arterial upon the consolidation of four access drives into a single two-way drive. Petitioners argued that the condition was not properly based on existing regulations and was unreasonable because there were no immediate plans for redevelopment or intensified uses on the parcels being divided. They also questioned the assumption that the partition would increase traffic flow along the arterial.

The board agreed with the City's position that future redevelopment on the divided parcels was highly likely for two reasons: (1) the purpose of dividing the land was to finance and sell the parcels to individual tenants; and (2) because the existing structures on the land were old and prime for redevelopment, it was reasonable to expect the new owners to either redevelop or intensify the use. The board also agreed that the condition would achieve a valid planning purpose. It had foundation in the City's Revised Code, in its Comprehensive Plan, and in the Salem Transportation Plan and it served to further the City's expressed goals to "facilitate safety and traffic on the fronting arterial," "minimize the adverse impacts of traffic on residential areas," and "(limit) or (control) access wherever possible" along principal arterials.

In *Holmes v. Planning Board of the Town of New Castle*, (NY AD. 1980) (105), the court held that conditioning development approval on the provision of interconnected parking lots and common access drives along a portion of an arterial "is not inherently confiscatory. The burdened property is capable of a reasonable return and no evidence has been presented by the petitioners to contradict this conclusion."

Nonetheless, the court rejected the condition because it was based solely on a vague concept plan that failed to address how the requirements would be applied to individual properties. The court required the town to prepare an implementation strategy, stating that, "conditions must be certain and unambiguous. . . . It would be grossly unfair to require petitioners to consent to a common access easement when the implications of their consent are unknown and potentially unconstitutional."

Joint access requirements have been upheld in situations where the implementation process is clear and equitable. An Ohio court upheld PUD zoning that required installation of a shared rear-access drive along a highway corridor on the basis that, "the ability to control all of the traffic serving the subject site and the 11 lots north of the site is greatly enhanced by the uses of the access roads and the single traffic light. . . Such circuitry of access and the resulting inconvenience is not a compensable taking." *O' Neal, et al. vs. City of Sharonville*, (1992 Ohio App) (106).

In this case, objectives of the rezoning were clearly stated (to reduce commercial strip development and limit curb cuts to reduce potential collisions involving left turns onto the subject sites). In addition, an equitable program for implementation had been established involving agreements with each property owner within the PUD, and allowances for temporary access to the highway until the shared access drive was complete.

A substantial body of case law addresses the particulars of easement disputes. In *Kline v. Bernardsville Assn., Inc.*, (N.J. 1993), for example, the New Jersey Supreme Court held that relocation of an easement without the mutual consent of the parties "should be grounded in a strong showing of necessity." (107) The court also held that "a planning board is not vested with the power to compel relocation of an easement at the expense of a property owner who is not an applicant." (107) It added, however that courts may compel properties adjacent to a development site to relocate an existing easement, where the change is minor and the easement holder's right-of-way is not significantly burdened.

*Paradyne Corporation v. Florida Department of Transportation* (108), involved a challenge to a state connection permit condition requiring Paradyne Corporation to share access at its boundary line with the adjacent property (M&B). The court held that Paradyne may be required to concede its property rights only where the condition "furthers a public purpose related to the permit requirement, the elimination of undue disruption of traffic or the creation of safety hazards. The condition cannot be imposed simply to further the private interests of an abutting landowner." The court further upheld the right of FDOT to deny an access permit if a connection would not be safe.

#### Thoroughfare Plans and Ordinances

Traditionally, local governments have reserved future right-of-way through thoroughfare plans, transportation plans, official maps, and associated regulations. This process, together with access controls, can reduce the public and private costs of constructing or widening transportation corridors. When combined with access management, this can serve as an overall corridor preservation strategy.

Whether these strategies work the same way as in the past in light of *Lucas* and *Dolan* has not been fully tested. It is necessary, therefore, to consider what each property owner is being asked to contribute and to analyze that in light of that development's impact on congestion and road capacity, as well as future benefits derived by the property owner.

The widespread practice of reserving right-of-way through setback requirements has met with varying reactions in the courts. Usually, where right-of-way is reserved through setback requirements that are speculative and not related to a specific plan or project, the courts have interpreted this as a veiled taking of private property. To reduce takings liability related to right-of-way reservation programs, Daniel Mandelker, in a 1989 publication, suggests the following:

1. Include provisions that compensate landowners for existing improvements within a mapped street;
2. Provide for short time periods for reservation of the right-of-way based on a public commitment to acquire the right-of-way (generally the shorter the better);
3. Provide remedial measures, including variances and an option for public acquisition of the property when a building permit is requested (109).

Courts may be more likely to find a right-of-way reservation program is reasonable, where it is based on a comprehensive plan and has been adopted in accordance with due process considerations. A frequent objection to a dedication requirement is that there is no plan to develop the property and therefore dedication is perceived by property owners as highly speculative and arbitrary (110).

The validity of protecting future right-of-way through the planning and regulatory process was recently addressed in *Palm Beach County v. Wright*, (Fla. 1994) (111). The Florida Supreme Court upheld the thoroughfare map calling it “an invaluable tool for planning purposes” and a proper subject of the local police power. In its analysis, the court stated that the thoroughfare map outlines generalized corridors, and therefore a takings claim cannot be determined until the property owner submits an actual development application. At that point, when the implementation program affects a specific property, an aggrieved owner could bring an inverse condemnation proceeding to determine if a taking had occurred.

This represented a departure from previous opinions related to state efforts to reserve future right-of-way. In *Joint Ventures, Inc. v. Florida Department of Transportation* (112), the Florida Supreme Court weighed a state statute prohibiting issuance of development permits within mapped right-of-way for 5 years after recording an official map for the state highway system. The Court concluded that the statute was “a thinly veiled attempt to ‘acquire’ land by avoiding the legislatively mandated procedural and substantive protection,” and a

deliberate attempt to “depress land values in anticipation of eminent domain proceedings.”

Still typical in this regard is the Supreme Court of Nebraska’s opinion in *Simpson v. North Platte* (113) where the court held that a city may not require a property owner to dedicate private property for some future public use as a condition of obtaining a building permit when such future use is not “occasioned by the construction sought to be permitted.” Similarly, a Kansas case *Ventures in Property v. City of Wichita* (1979) (114), indicates that a city may not deny approval of a subdivision when a subdivider refuses to reserve land for a highway that is not planned and when its construction is uncertain.

#### **Ripeness Rules**

Variations and other administrative remedies may provide the property owner an escape valve from unreasonable hardship posed by the regulatory framework (115). Some jurisdictions have stringent criteria for variances, in which hardship must be related to the condition of land and cannot be self-inflicted (116). Courts typically require property owners to first exhaust available administrative remedies, including appeals to the appropriate local authority before the case may be heard in a court of law. If appeal procedures exist and the property owner sues before first pursuing a variance or other remedial action, the case may be invalidated on this basis (117).

## TOWARD A MORE COMPREHENSIVE APPROACH

The changing policy and legal context and increasing pressures of growth on the transportation network call for a more comprehensive approach to local access management. This involves integrating access management principles into the comprehensive plan and establishing a coordinated regulatory strategy that addresses access in the context of land use, subdivision, and site design. This chapter addresses the role of comprehensive planning in access management and how some local governments are going beyond traditional driveway controls to integrate access management into their entire planning and regulatory program.

### ACCESS MANAGEMENT IN THE COMPREHENSIVE PLAN

The comprehensive plan is the policy and decision-making guide for future development and capital improvements in a municipality. Comprehensive planning is a process for evaluating land division and development trends, identifying key planning issues, establishing a policy framework for decision making, and determining implementation strategies. As such, it is the logical tool for establishing the foundation for an access management program.

T.J. Kent's landmark work, *The Urban General Plan*, sets forth the key purposes of the comprehensive or general plan (118):

- 1) To improve the physical environment of the community.
- 2) To promote the interest of the community at large, rather than the interests of individuals or special groups within the community.
- 3) To facilitate the democratic determination and implementation of community policies on physical development.
- 4) To effect political and technical coordination in community development.
- 5) To inject long-range considerations into the determination of short-range actions.
- 6) To bring professional and technical knowledge to bear on the making of political decisions concerning the physical development of the community.

Comprehensive plans may establish goals, objectives, and policies related to access management, establish the desired access management approach, and identify corridors that warrant special treatment. Transportation elements of comprehensive plans provide a means of achieving roadway systems that are planned, designed, and classified according to function and assigned an appropriate level of access control. Comprehensive

plans may be supplemented with functional plans, such as access management or thoroughfare plans, or with subarea plans, such as interchange or corridor plans.

Comprehensive plans also strengthen the legal basis for access management by establishing the relationship between access controls and public health, safety, and welfare. Plans and related ordinances can be used to clarify the purpose and intent of an access management program, and to establish conformance with plans and policy directives of the state or metropolitan planning organization. Access management policies in the plan indicate an overall public commitment to managing access, rather than an arbitrary approach that singles out property owners for special treatment.

In addition, development decisions that are consistent with a comprehensive plan and supported by specific planning studies or data, have a stronger legal foundation than those which are not (119). Comprehensive plans and corridor studies provide data on traffic volumes, development patterns, and accidents that can be used to document the relationship between inadequate sight distance, poorly spaced driveways, and accident rates or congestion problems (Figure 15). More specific findings on access issues and problems may be made at the site review stage.

### CASE EXAMPLES

The following case examples illustrate how some local governments are addressing the complex relationship between access management and the land development process. They demonstrate the role of comprehensive plans in establishing a foundation for regulatory actions. In addition, they reveal the variation in local regulatory approaches to access management, as well as the interrelationships between regulatory techniques.

#### City of Orlando, Florida

Orlando, Florida has applied access management and related planning principles throughout its growth management plan (120). The City discourages strip commercial districts, limits the supply of commercial areas to encourage reuse and infill development, and mandates mixed use and multimodal access in all activity centers. A comprehensive access classification and driveway spacing program was adopted, modelled after Florida Department of Transportation standards. A separate access classification was developed for the downtown core.

Goals, objectives, and policies of the plan establish a program of parallel roads or cross access easements along arterial

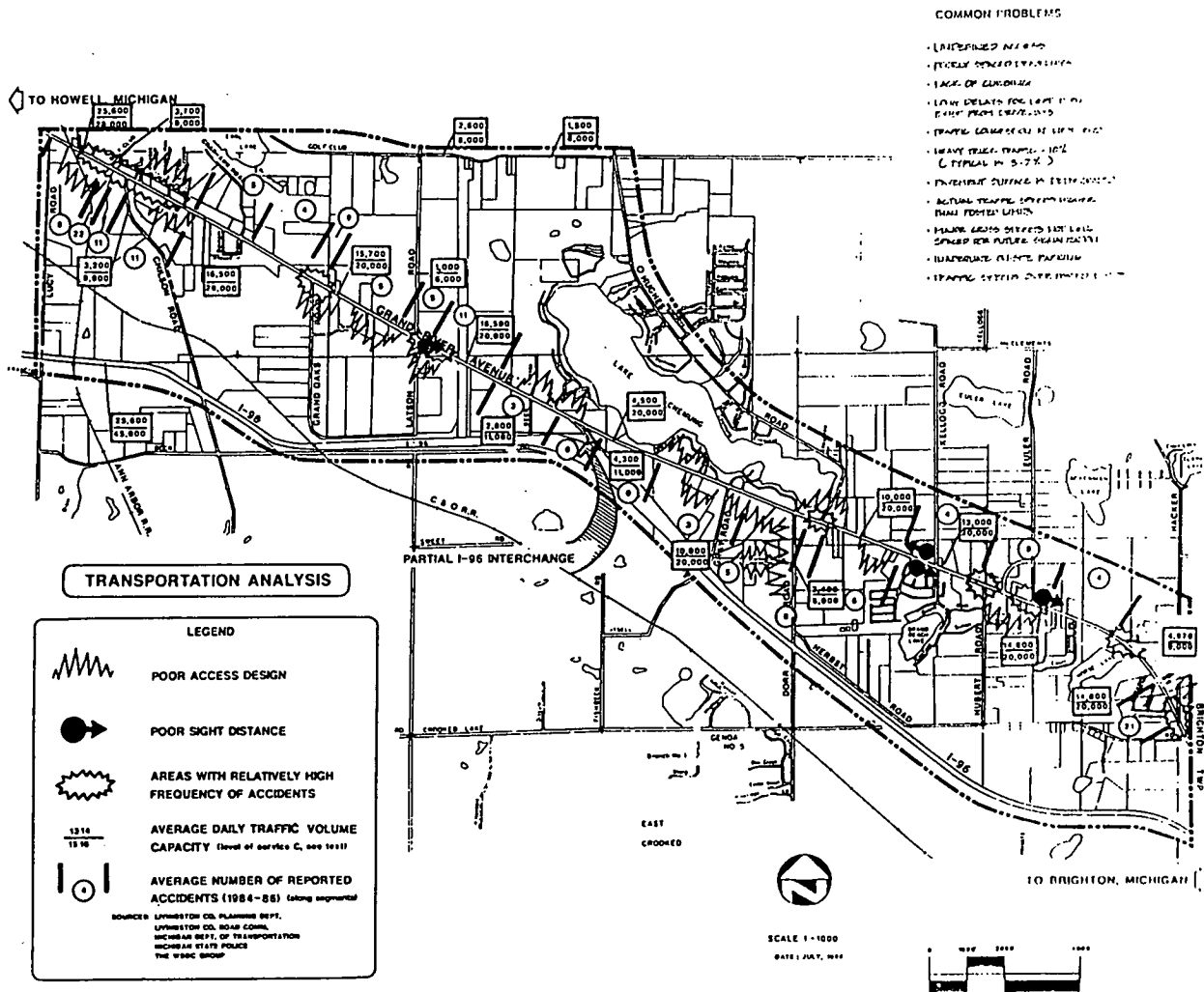


FIGURE 15 Grand River Avenue area corridor study, Genoa Township, Michigan (32).

roadways “to preserve the function of major thoroughfares.” Selected thoroughfares were designated as “cross-access corridors,” with stringent joint and cross access requirements as described in Chapter 4.

An access management ordinance, entitled Roadway Design and Access Management, assigns access classifications and related access management standards to thoroughfares and is updated periodically to reflect changes in access management regulations or roadway classifications. Plan policies also verify the City’s commitment to coordinating with the Florida Department of Transportation on managing access to the state highway system.

City policy is to prohibit issuance of a development order or building permit that creates or exacerbates a safety hazard on the major thoroughfare network. Developers must mitigate the adverse impact or provide safe and adequate access to other thoroughfares. New developments are responsible for the cost of site-related road and traffic operations improvements necessary for safe and adequate access to the development site.

Interconnection of residential subdivisions is strongly encouraged, and subdivision regulations establish standards for

good site design as well as controls related to flag lots, double frontage lots, and related issues. The City also has strong policies and standards for bicycle and pedestrian access, including a classification system and standards for pedestrian streets in the downtown core.

**Washington County, Oregon**

Washington County, Oregon, has established a policy for capacity of streets and highways to ensure that road capacity can accommodate travel demands (121). The implementation strategy requires new development projects to comply with access management standards as established in the Community Development Code, Road Improvement Design Standards, and Comprehensive Plan, to facilitate traffic flow on the major arterial and collector road system.

To maintain efficient roadway operation, the county classifies roadways by function and emphasizes regional mobility and access control for roads with a higher functional classification. Policies in the comprehensive plan encourage location of large-scale, auto-oriented developments near regional arterials

to reduce traffic impacts on residential and neighborhood commercial districts and more efficiently serve regional trips. Access to these uses is encouraged from minor arterial roadways, rather than by direct access from the regional arterial system. The plan also encourages neighborhood commercial centers rather than commercial strip development along major collectors.

A corridor overlay is applied to increase roadway dimensional or design standards beyond those of the corresponding functional classification, where needed to achieve development objectives. This includes a "Commercial/Industrial Street" designation for roadways intended to provide access to commercial or industrial properties. A "Transit Street" overlay is applied to existing or future transit routes, to accommodate the necessary dimensional standards for transit and to allow developments to respond to the availability of transit. Higher density land uses and pedestrian access-ways are recommended along these corridors.

All applicants seeking an access permit must demonstrate compliance with minimum connection spacing standards. Developments that cannot meet spacing standards due to physical constraints of the site, may be granted interim driveway permits until conforming access becomes available. The interim access must adhere to minimum County traffic safety and operational requirements, and property owners must record two agreements with the deed—the first, agreeing to participate in any future project to consolidate access points, and the second, agreeing to abandon the use of the existing private access way when adequate alternative access becomes available.

Developers may request a modification of connection spacing standards through submission of an access management plan. The plan must maintain the functional integrity of the roadway and demonstrate the need for modifying established standards. At a minimum, the plan must:

- encompass a study area defined by the length of the site's frontage plus the distance of the applicable spacing standard, measured from the property lines,
- review both existing and future access for all properties within the study area,
- include in its comparison of alternatives an evaluation of the operational or safety impacts of the proposed modification versus the impacts of adherence to the County standards, and
- include a list of improvements and recommendations necessary to implement the proposed modification.

**Washington County, Oregon: Aloha-Reedville-Cooper Mountain Community Plan**

The *Aloha-Reedville-Cooper Mountain Community Plan* is an element of the Washington County, Oregon, Comprehensive Plan that serves as the development plan for an urbanized, unincorporated settlement. The plan was prepared through an extensive public involvement process to achieve broad-based agreement on regulatory and design strategies.

Areas of the community that pose unique design opportunities or constraints were designated as "Areas of Special

Concern" and given special attention in the planning process. One such Area of Special Concern was the Tualatin Valley Highway Corridor. The corridor was characterized by substandard streets and an abundance of small properties that could not be developed at the planned density of 15 units per acre unless lots were consolidated or incorporated into a joint site plan.

An access management plan was developed for the corridor to minimize access points, without denying direct individual or shared access to existing parcels. Resulting standards attempted to balance the needs of older developed portions of the strip with the need for greater access control. The plan calls for limiting access from new developments or redeveloped properties onto arterial or major collector streets and requiring shared or consolidated access, prior to the issuance of a development permit. It also established that new developments may be required to dedicate right-of-way for road extensions in accordance with the transportation plan.

Connection spacing standards for the highway are based on posted speed as follows: 360 feet between access points in a 45 miles per hour (mph) zone; 240 feet between access points in a 35 mph zone. For minimally spaced parcels of less than 360 or 240 feet of frontage along the highway, an intermediate spacing standard of 150 feet is allowed to provide either direct or shared access. Access points are restricted within 200 feet of an intersection.

Intermediate standards require shared access between adjacent non-residential properties with less than 150 feet of frontage along the highway, unless an approved traffic study identifies safety or operational problems. Existing lots with 150 feet of frontage or greater are permitted direct access. Single driveways are preferred, except where safety, operational, or physical factors require additional driveways.

Shared access among adjacent properties is required only for new developments or redevelopment projects. Adjacent property owners are encouraged to cooperate, but need not comply until they redevelop their property. "Redeveloped" properties must be brought into compliance when they produce a 100 percent increase in driveway volumes; an additional 200 peak hour vehicle trips; a change in land use designation; or the assembly of two or more parcels to create a new property configuration and use.

Property owners must provide cross access easements between adjacent nonresidential properties for internal circulation, wherever feasible. Feasibility is determined based on existing and proposed buildings, parking and driveway locations, existing adjacent buildings, natural constraints, and adjacent site plans. Where deemed feasible, on-site parking and circulation patterns must be designed to accommodate future easements across adjacent property lines. Adjacent property owners are not subject to these standards until they redevelop their properties or consent voluntarily.

The plan also encourages consolidation of smaller lots. For lots that cannot be consolidated, applicants seeking to develop or subdivide the lot must prepare a site plan for the lot and all abutting lots that shows building locations, parking, auto and pedestrian circulation, and landscaping. Site plans must meet County standards and demonstrate that the proposed development



does not impede further development on the abutting lots at the permitted density.

#### **Gloucester County, New Jersey**

In 1994, Gloucester County, New Jersey, completed an Access Management Study (122) with the Delaware Valley Regional Planning Commission to address the problem of "creeping subdivisions" in rural areas and the impact of urban sprawl on the highway system. The study recommended changes to county design standards and regulatory processes, and strategies to manage traffic flow along highways. Design criteria for improving highway access management were recommended for incorporation into county subdivision ordinances.

The study recommended that the county shift from reactively responding to new developments as they occur, toward a more proactive approach. It called for improved coordination on development review with municipalities for early implementation of access management strategies, and preparation of a comprehensive transportation plan for the entire County or specific corridors of concern.

Access management recommendations fell into four categories: general policies in controlling access; issues related to dimensions and location of driveways; street intersections and detailed lane dimensional data; and requirements for traffic studies. Recommendations called for:

- consolidated access drives, shared access, alternate access points, frontage roads, and reverse frontage roads to minimize the number of access points on the County highway system,
- the use of joint access and common driveways where frontages are too small to permit minimum driveway spacing, and

- consolidating driveways at isolated low traffic-generating land uses.

Where planned subdivisions are too small to accommodate reverse frontage access, the study recommended granting one access point for the original lot and one access point for the remainder of the original site. Recommendations for driveway location suggested permitting of driveways only where "traffic conditions, alignment, profile and sight distances are adequate and afford maximum safety to traffic along the county road."

Driveways would be prohibited within intersections, interchanges, and rotaries; adjacent to bridges; and near interchange ramps. Suggested frontage allowances for driveways are: one driveway for up to 100 feet of frontage; two driveways for 100 to 800 feet of frontage; and for properties with more than 800 feet of frontage, the number of driveways would be determined by the County Engineer.

The study recommends spacing of street intersections according to functional classification, as determined in the County Official Map. These are: 600 feet minimum for a local road; 900 feet minimum for a collector highway; and 1,100 feet minimum for an arterial highway. It also recommends establishing dimensional standards for acceleration and deceleration lanes, and turning lanes at both signalized and unsignalized intersections.

A Traffic Impact Study (TIS) is recommended for all developments that generate at least 50 total peak trips during the peak weekday or weekend traffic hour, or 500 total trips in any day. The TIS must include on-site circulation and parking elements; all access points, roadway, and intersection conditions along the applicant's frontage; and analyses of various development alternatives, including existing conditions, future conditions with the development, and future conditions without the development.

## CONCLUSIONS

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) places increased emphasis on access management for corridor preservation and congestion management. States are developing access classification systems and access permitting programs to control access on strategic corridors. Metropolitan planning organizations are incorporating access management and corridor preservation into their planning programs. And growth management policies are providing local governments with broad police power authority to manage the impacts of growth on transportation systems.

Yet competing objectives and inadequate coordination of transportation and land development practices have impeded access management. Because authority for access decisions rests with different levels of government, collaboration will be essential. State and regional transportation agencies will have difficulty achieving access management objectives without coordination at the local level where land development decisions are made.

State departments of transportation and metropolitan planning organizations are facilitating local participation in access management through corridor based initiatives. Intergovernmental agreements, access management plans, joint policy resolutions, and procedures for coordinated review are enabling state and local governments to better manage the complexities of balancing mobility and access along key thoroughfares.

A more comprehensive approach to access management is also emerging at the local level—beginning with access management policies in the comprehensive plan, extending to specific planning studies, and encompassing a broader range of land management strategies. Regulatory techniques that local governments are using to support access management include:

- Increasing minimum lot frontage and setback requirements along thoroughfares and regulating lot width-to-depth ratios.
- Regulating driveway spacing, sight distance, and corner clearance.
- Restricting the number of driveways per existing parcel or lot.
- Establishing driveway design elements and warrants for use of those design features.
- Encouraging or requiring joint and cross access, and promoting unified on-site circulation and parking plans.
- Minimizing subdivision exemptions and reviewing lot splits to prevent access problems.
- Controlling flag lots and regulating private roads.

- Minimizing commercial strip zoning and promoting mixed use and flexible zoning.
- Establishing reverse frontage requirements for subdivisions and double frontage lots.

Because access management programs are politically charged, public involvement and outreach is essential. Potential impacts on business sales, cut-through traffic in neighborhoods, adequate access for delivery vehicles, and general opposition to public control of private property are among the concerns that frequently arise. To address such concerns, the majority of access management programs reviewed for the synthesis provided opportunities for public involvement at key steps in the decision process. Public meetings, newsletters, advisory committees, and opinion surveys are among the techniques being used to elicit citizen concerns, inform the public, and build political support for regulatory change.

From a legal perspective, courts are placing greater weight on the comprehensive plan and planning studies in weighing the validity of regulatory actions. A consistent planning and regulatory program strengthens the legal basis for regulatory decisions and affords greater predictability to developers and the public in terms of legally permitted use of land. Plans and ordinances can clarify the purpose and intent of access management policies, and indicate conformance to plans and policy directives of the state and metropolitan planning organization.

Providing remedial measures, such as special exceptions and waivers, helps avoid unreasonable hardship that could arise from the regulatory framework. Administrative procedures need to be carefully conceived to afford flexibility, while maintaining consistency in the decision-making process. The trend in local practice is to provide for administrative review of deviations from driveway spacing standards, with board of appeals review only in special circumstances. Flexibility is provided through the judicious use of waivers, special exceptions, and variances to optimize driveway location, while responding to the diversity of circumstances in the built environment.

Finally, although taking decisions have clarified the rules of planning and regulatory practice, local governments may still impose reasonable conditions on development. Corridor preservation strategies, such as shared access and parking lot cross access, have been upheld because the relationship between impact and exaction is reasonable. It is important, however, that the program of implementation be consistent and equitable, and that the community be prepared to demonstrate a rough proportionality between shared access requirements and prevention of harm posed by closely spaced driveways.

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# APPENDIX A

## Survey of State Transportation Agencies

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NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP)  
SYNTHESIS TOPIC 26-06, PROJECT 20-5  
LAND DEVELOPMENT REGULATIONS THAT PROMOTE ACCESS MANAGEMENT  
SURVEY OF STATE TRANSPORTATION AGENCIES

**Background:** Access management encompasses a variety of techniques aimed at providing access to land development, while preserving the regional flow of traffic in terms of safety, capacity, and speed. It involves regulation of the spacing and design of driveways, medians and median openings, signals, and interchanges. This research is aimed at identifying successful examples of local land development practices that promote access management, as well as state access management practices that positively affect local practice. Requirements for driveway spacing, joint access, corridor overlay ordinances, flag lot restrictions, and retrofitting standards for nonconforming access are some of the regulatory techniques being reviewed. Please take a few moments to answer the following survey questions. If you prefer to discuss these issues with the researcher, you may call Kristine M. Williams, AICP at the Center for Urban Transportation Research in Tampa, Florida at 813-974-9807.

Please complete the following so that we will have a contact for follow-up information:

Agency \_\_\_\_\_  
Name of Contact \_\_\_\_\_  
Title \_\_\_\_\_  
Address \_\_\_\_\_  
Telephone \_\_\_\_\_ FAX \_\_\_\_\_

1. Does your state DOT review subdivision applications on state highways for conformance with state rules and regulations governing access? (circle one) Yes No

If yes, is DOT review of subdivisions specified in your state statutes?  
(circle one) Yes No

2. Are you aware of any local governments or regional planning entities in your state with an innovative or exceptional approach to access management or corridor planning?  
(circle one) Yes No

If yes, please list them below along with a contact and phone number if known:

Agency \_\_\_\_\_  
Name of Contact \_\_\_\_\_  
Telephone \_\_\_\_\_

Agency \_\_\_\_\_  
Name of Contact \_\_\_\_\_  
Telephone \_\_\_\_\_

3. Has your state entered into any formal intergovernmental agreements with local governments that involve access management issues? (circle one) Yes No

If yes, please send an example.

4. Does your state DOT coordinate with local governments regarding access permitting on state highways? (circle one) Yes No

If yes, briefly explain the process in the space below, or indicate who to contact for more information:

Contact: \_\_\_\_\_  
Title: \_\_\_\_\_  
Telephone: \_\_\_\_\_

5. Have there been any recent court decisions or attorney general opinions in your state that involve access management issues? (circle one) Yes No

If yes, please list the case(s) below or attach information on the case if available:

Thank you for your assistance!

Please FAX or mail to: Kristine M. Williams, CUTR, USF College of Engineering, 4202 E. Fowler Ave., ENB 118, Tampa, Florida 33620-5350. (krwillia@eng.usf.edu) FAX: (813) 974-5168

# APPENDIX B

## Sample Intergovernmental Agreement (Colorado)

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INTERGOVERNMENTAL AGREEMENT  
AMONG  
THE CITY OF DURANGO  
LA PLATA COUNTY  
AND  
THE STATE OF COLORADO  
DEPARTMENT OF TRANSPORTATION

THIS AGREEMENT is entered into this \_\_\_\_ day of \_\_\_\_\_ October 1995, by and among the City of Durango, (hereafter referred to as the "City"), the County of La Plata, (hereafter referred to as the "County"), and the State of Colorado, Department of Transportation (hereafter referred to as the "Department").

WITNESSETH:

WHEREAS, the Department, the County, and the City desire to enter into an agreement regulating vehicular access for those sections of State Highway 160 between State Highway 3 and State Highway 550 (hereafter referred to as the "Segment") which are within the City limits, and within La Plata County, in conformance with Section 2.12 of the State Highway Access Code, 2 CCR. 601-1 as amended August, 1985 (hereafter referred to as the "Code"); and

WHEREAS, regulation of vehicular access is necessary to maintain the efficient and smooth flow of traffic, to reduce the potential for traffic accidents, to protect the functional level and optimize the traffic capacity of State Highway 160, to provide an efficient spacing of traffic signals, and to protect the public health, safety and welfare; and

WHEREAS, the Department, County, and City desire to reach a comprehensive and mutually acceptable roadway access design plan for this Segment for the purpose of meeting current and future capacity demands and public safety criteria while also providing reasonable access needs for local planned development to the extent feasible given existing and future conditions along this section of State Highway.

NOW THEREFORE, for and in consideration of the mutual promises herein contained, the parties hereto agree as follows:

1. The Department, County and City, shall regulate access to the Segment of State Highway 160 in compliance with the Access Code, this agreement, and Exhibit 'A' attached hereto and incorporated herein.

.. Vehicular access to the Segment shall be permitted only when such access is in compliance with Exhibit "A", Code section 1.3.2 and the design requirements of section four of the Code

2. Accesses which were permitted or in legal existence prior to the adoption of this Agreement may continue in existence until such time as a change in use of the property results in the occurrence of one or more "access change criteria" as provided in code section 2.10.3 or as provided below. At such time, conformance with the Code and Exhibit "A" may be required.

3. Reconstruction, relocation or other conformance with the Code of any driveway, whether constructed before, on, or after June 30, 1979, may be required either at the property owner's expense if the reconstruction or relocation is necessitated by a change in the use of the property which results in a change in the type of driveway operation or at the expense of the Department if the reconstruction or relocation is necessitated by changes in road or traffic conditions. The necessity for the relocation or reconstruction shall be determined by reference to the standards set forth in the access code and this agreement.

4. Actions taken by the City or the County with regard to transportation planning, traffic operations on parcels adjoining the segment shall be consistent with the Code, section 4, and Exhibit "A".

5. Each party agrees that parcels created after the effective date of this Agreement, which adjoin the segment, shall not be provided with direct access to the Segment, unless such access location, use and design are consistent with the Code, section 4 and Exhibit "A".

6. This Agreement is based upon and is intended to be consistent with the Highway Access Law, §43-2-147 C.R.S., and the Code, both as from time to time amended. Any access decision made on or after the effective date of any amendment to the Code shall be governed by the Code as so amended.

7. Should the Code be revised, any party may withdraw from this Agreement due to specific and applicable revisions in the amended Code effecting this agreement and upon written notification to all parties. If a party withdraws from this agreement, the agreement becomes void. All subsequent access decisions shall be made consistent with the Code in effect at that time.

8. This Agreement supersedes and controls all prior written and oral agreements and representations of the parties regarding the Segment of State Highway 160 and is the complete integrated agreement of the parties regarding the subject matter hereof.

9. This Agreement may not be amended except by subsequent written agreement of the parties.



EXHIBIT A  
STATE HIGHWAY 160 ACCESS CONTROL PLAN  
SH 3 TO SH 550  
CITY OF DURANGO AND LA PLATA COUNTY COLORADO

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10. By signing this Agreement, the parties acknowledge and represent to one another that all procedures necessary to validly contract and execute this Agreement have been performed and the persons signing for each of the parties have been duly authorized to do so.

City of Durango, Colorado

ATTEST:

\_\_\_\_\_  
City Manager

\_\_\_\_\_  
City Clerk

APPROVED AS TO FORM:

\_\_\_\_\_  
City Attorney

La Plata County  
Board of County Commissioners

ATTEST:

\_\_\_\_\_  
CHAIR

\_\_\_\_\_  
Clerk of the Board

State of Colorado  
Department of Transportation

ATTEST:

\_\_\_\_\_  
Chief Engineer for Engineering  
Design and Construction

\_\_\_\_\_  
Chief Clerk

APPROVED:

\_\_\_\_\_  
Regional Transportation Director

PURPOSE

1. The purpose of this Access Control Plan is to provide the City of Durango, the County of La Plata and the Department of Transportation with a comprehensive roadway access control plan for State Highway 160 from the junction of State highway 3 to the junction of State Highway 550. The development of this Access Control Plan adheres to the requirements of the State Highway Access Code (2-CCR-601-1), Section 2.12, 1985. It is the agreement of all parties that all access decisions for this section of state highway shall be in conformance with this intergovernmental agreement.

ACCESS LOCATIONS

2. Indicated accesses may be closed or turning movements restricted when any of the following conditions occur when in the opinion of the Department; A) the left turns create unreasonable congestion and or traffic hazards, B) the access is detrimental to the public's health, safety and welfare, C) the access causes a lower level of service on SH 160, D) the access develops an accident history that is correctable by restricting access, E) The restrictions are necessitated by a change in road or traffic conditions.

3. All movements are in feet south from SH 3, centerline to centerline, of the left turn lane of SH 3 onto SH 160. All measurements are approximate.

4. West Side Access Locations

750' Access limited to right turns only. Currently permitted to serve the Humane Society and the property known as Wal Mart

1400' Right turn only driveway to serve the Wal Mart Development

2280' A full movement public street intersection and future traffic signal, also referred to as New Baker Lane. The access will also provide a local connection to old Baker Lane

2740' Existing Baker Lane will be closed upon the opening of new Baker Lane. The connection between this road and the CDOT frontage road will remain until the parallel collector street known as Rocket Road is completed and open between Backer Lane and River Road. Upon the opening of River Road the west side Frontage Road will be closed as soon as all private properties have reasonable access

to River Road

- 4800' A full movement public street access to be known as River Road. Acceptable as a future traffic signal location when warrants are met and necessary design improvements are completed.
- 8980' Junction of State Highway 550. Full movement public highway with traffic signal. This will remain a 3 leg intersection.

5. East Side Access Locations

Beginning at junction of State Highway 3 and measuring southerly

- 850' Currently a full movement driveway servicing commercial and light industrial including \_\_\_\_\_ and \_\_\_\_\_. If and when feasible, this access should be consolidated with the next access south. This driveway may be restricted to right turns only if any of the conditions are met under paragraph 3 of this exhibit.
- 1025' Currently a full movement driveway servicing commercial and light industrial including \_\_\_\_\_ and \_\_\_\_\_. If and when feasible, this access should be consolidated with the next access north. This driveway may be restricted to right turns only if any of the conditions are met under paragraph 3 of this exhibit.
- 1675' Currently a full movement driveway servicing commercial and light industrial including \_\_\_\_\_ and \_\_\_\_\_. If and when feasible, this access should be consolidated with the next access north. This driveway may be restricted to right turns only if any of the conditions are met under paragraph 3 of this exhibit.
- 2000' Current a driveway serving \_\_\_\_\_. This driveway will be closed as soon as alternative access is available.
- 2000' Permittable as a full movement public street intersection and future traffic signal. This is opposite New Baker Lane. The access will provide a local connection the east frontage road and to properties to the north when the property is developed.
- 2740' Current east side Frontage Road junction. This access will remain open as a full movement until one of the conditions in paragraph 3 is met or the frontage road is connected to the full movement access at 2325'.
- 4400' East side Frontage Road junction to SH 160. This will temporarily remain as a full movement until it needs to be restricted to right turns only when any of the conditions of paragraph 3 are met. If possible, the current location will be relocated to the south at 4800' and opened opposite the west side access known as River Road.

If the relocation occurs, the access can continue as a full movement access with traffic signal.

- 5800' A private driveway serving \_\_\_\_\_. This driveway may be restricted in the future when any of the conditions in paragraph 3 are met or it becomes necessary due to the redesign and reconstruction of the junction of SH 550.

SUPPORTING ROAD NETWORK

6. West Side

Generally provide for a parallel collector public road (referred to as Rocket Road) from the Humane Society to River Road and southerly as necessary to provide for circulation to the approved full movement public intersections at the relocated Baker Lane and to River Road. The points of connection of Rocket Road to Baker Lane and River Road will be at least 300 feet from the edge of the SH 160 pavement.

7. East Side

Extend the public street connection opposite the new Baker Lane intersection to connect to the east side Frontage Road to the south and extended northerly to provide access service to the properties to the north. The north and south connection to the access should be at least 300' back from the pavement edge of SH 160 if possible.

- 8. The attached Exhibit B (map) is for illustration only and is considered conceptual.

End of exhibit A

## APPENDIX C

### Sample Cross Access Agreement (Orlando)

*Background: The following is an example of a cross access agreement from the City of Orlando. It is provided as an example only. Local governments should consult their attorney for advice in preparing these agreements.*

THIS AGREEMENT is made and entered into on this *(date)* by *(owner's name)*, a corporation authorized to transact business in the State of Florida ("OWNER") and the City of Orlando, a municipal corporation organized under the laws of the State of Florida "CITY".

#### RECITALS

1. OWNER owns certain real property ("Parcel A") located *(legal description of property)*.
2. As a part of its land use approvals from the CITY, the OWNER has been requested by CITY to provide cross access to adjacent properties to *(location of abutting properties)*, subject to the terms and conditions set forth below.
3. The CITY has a health, safety and welfare interest in providing for the cross access easement.
4. The OWNER acknowledges the CITY's health, safety and welfare interest and agrees to provide said cross access subject to the terms and conditions set forth in this Agreement.

NOW, THEREFORE, in consideration of the obligations contained herein, and in good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the OWNER and the CITY hereby agree as follows:

Section 1. Recitals. The recitals are acknowledged by both parties and incorporated herein and have been relied upon by both parties in the execution of this Agreement.

Section 2. Grant of Easement in Escrow. Subject to the terms set forth in this agreement, the OWNER hereby grants a cross access easement to the CITY to be held in escrow for the benefit of the owner of that parcel located *(location of abutting property #1)*. The cross access easement is described in *(Exhibit #)* attached to and incorporated in this Agreement. Said cross access easement shall be freely assignable to said Owner; provided, however, that the CITY shall not assign said easement until the Owner of *(abutting property #1)* applies for or is issued any of the following land development approvals as defined in the City Code.

- (1) conditional use permit;
- (2) rezoning;
- (3) master plan approval;
- (4) plat approval;
- (5) variance;
- (6) building permit for a substantial enlargement or substantial improvement;
- (7) building permit which generates automobile traffic trips in excess of current improvements;
- (8) driveway permit; or
- (9) paving and/or drainage permit.

Likewise, the OWNER hereby grants a cross access easement to the CITY to be held in escrow for the benefit of the owner of that parcel located *(location of abutting property #2)*. This cross access easement area shall be of a size similar to that of the one granted for use by the Owner of *(adjacent property #1)* and said location shall be later determined by the CITY and OWNER. Said cross access easement shall be freely assignable to said Owner. Notwithstanding anything to the contrary contained herein, however, the CITY shall not assign a cross access easement to either Owner unless the land use proposed for that Owner's parcel is consistent and compatible with the land use on the OWNER's property.

Section 3. Conditions of the Use of the Cross Access Easement Agreement. The use of two cross access easements to be granted to the CITY and held in escrow pursuant to Section 2 hereof is subject to the following terms and conditions:

(1) The Owner of (*adjacent property #1*) shall equally share with OWNER in the maintenance and repair of the cross access easement area as designated in the attached (*Exhibit #*);

(2) The Owner of (*adjacent property #2*) shall equally share with OWNER in the maintenance and repair of the cross access easement area to be designated by CITY and OWNER;

(3) The Owners of (*both adjacent properties*) to receive such cross access agree to pay the cost of two (2) signs placed on their respective parcels at each side of the pavement of the easement area and the common boundary line of their respective parcel with Parcel A (facing those parcels) which signs shall state that the parking in Parcel A is limited to the guests of the OWNER and the vehicles of unauthorized persons (guests, licensees, invitees, patrons, etc. of the other parcel) shall be towed away at the vehicle owner's expense;

(4) The owners of (*both adjacent properties*) agree to install and maintain on the common boundary line with Parcel A, or other location agreed to by the parties (a) a speed bump and stop sign within the cross access easement leading into (*adjacent property #1*), (b) a speed bump and stop sign within the cross access easement leading into (*adjacent property #2*), and (c) one speed bump each on (*both adjacent properties*).

(5) The use of the cross access easements shall also be subject to (a) a weight limit on the vehicles which utilize the cross access easement (to be established or modified by the CITY's transportation engineer from time to time), (b) a limit on the number of daily trips of no more than 1,000 trips, and (c) a limit on the time of access.

(6) The Owners of (*both adjacent properties*) shall pay the cost of installation of said gates and any other improvements to the cross access easement beyond what has been previously constructed by the OWNER;

(7) Tractor trailer vehicles shall not use the cross access easement for access to or from (*both adjacent properties*).

(8) Buses seating 30 passengers or more may use the cross access easements so long as the buses stack or queue on (*both adjacent properties*) and not in the cross access easement areas;

(9) The Owners of (*both adjacent properties*) shall not use the cross access easement in any manner such as to result in congestion within the cross access easements or the blocking of the cross access easement or driving aisles of Parcel A; and

(10) The cross access easements shall be subject to the joinder and consent of the lender(s) of the OWNER and the Owners of (*both adjacent properties*).

Section 4. Delegation to CITY Transportation Engineer. The parties agree that the CITY transportation engineer has the power and authority to adjust the conditions set forth in Subsection 3(5) hereof in order to preserve the integrity, character, safety of the (*type of land use on OWNER's property*).

Section 5. Covenant Running with the Land. All rights and obligations arising or described hereunder are intended to be appurtenances and covenants running with the title of the OWNER's property and shall be binding upon and inure to the benefit of the parties and their respective successors in title.

Section 6. Dedication. Nothing contained herein shall constitute any rights in the general public.

Section 7. Captions, Number and Gender. The captions and headings are for convenience only and are not intended to be used in construing any provision of this easement. The singular and plural shall each include the other were appropriate, or if any genders shall include other genders when the contract so permits.

Section 8. Governing Law and Venue. The laws of the State of Florida shall govern this agreement. Any legal action instituted herein shall be brought in Orange County, Florida.

Section 9. Modification or Termination. The terms and provisions of this Agreement may be modified, supplemented or terminated only by a written instrument executed by the OWNER and CITY, their successors or assigns.

Section 10. Recording. This Agreement shall be recorded by the OWNER at its sole expense in the public

records of Orange County, Florida.

Section 11. Joinder and Consent. The OWNER hereby agrees to obtain the Joinder and Consent to this Agreement from any superior interest, right, title, lien, encumbrance to Parcel A. The Joinder and Consent shall subordinate the particular interest to this Agreement.

Section 12. Obligation of the CITY. The CITY agrees that it will condition the issuance of any of the permits listed in Section 2, above, to the Owner of parcel adjacent to Parcel A upon the condition that said owner enter into the Cross Access Easement Agreement.

Section 13. No Easement Rights or Other Rights. Notwithstanding anything to the contrary herein, *(both adjacent properties)* shall have no rights to, on, in or over the Easement Area until the Cross Access Easement Agreement is agreed upon between the parties, executed by the appropriate entities and recorded in the public records of Orange County, Florida.

Section 14. Severability. If any term, provision, clause, sentence or other portion of this Agreement shall become or be determined to be illegal, null or void for any reason, or shall be held by any court of competent jurisdiction to be so, the remaining portions thereof shall remain in full force and effect.

Section 15. Entire Agreement. This Agreement constitutes the entire agreement between the parties and supersedes any previous discussions, understandings, and agreements.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed on the date first stated above.

**THE TRANSPORTATION RESEARCH BOARD** is a unit of the National Research Council, which serves the National Academy of Sciences and the National Academy of Engineering. It evolved in 1974 from the Highway Research Board, which was established in 1920. The TRB incorporates all former HRB activities and also performs additional functions under a broader scope involving all modes of transportation and the interactions of transportation with society. The Board's purpose is to stimulate research concerning the nature and performance of transportation systems, to disseminate information that the research produces, and to encourage the application of appropriate research findings. The Board's program is carried out by more than 400 committees, task forces, and panels composed of more than 4,000 administrators, engineers, social scientists, attorneys, educators, and others concerned with transportation; they serve without compensation. The program is supported by state transportation and highway departments, the modal administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation.

The National Academy of Sciences is a nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. Upon the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Bruce Alberts is president of the National Academy of Sciences.

The National Academy of Engineering was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encouraging education and research, and recognizes the superior achievements of engineers. Dr. William A. Wulf is interim president of the National Academy of Engineering.

The Institute of Medicine was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences, by its congressional charter to be an adviser to the federal government and, upon its own initiative, to identify issues of medical care, research, and education. Dr. Kenneth I. Shine is president of the Institute of Medicine.

The National Research Council was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purposes of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities. The Council is administered jointly by both Academies and the Institute of Medicine. Dr. Bruce Alberts and Dr. William A. Wulf are chairman and interim vice chairman, respectively, of the National Research Council.

Transportation Research Board  
National Research Council  
2101 Constitution Avenue, N.W.  
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